

National Park Service
U.S. Department of the Interior
Yellowstone National Park
Idaho, Montana, Wyoming



Canyon Rim Drives, Road Rehabilitation Environmental Assessment /Assessment of Effect June, 2006

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Environmental Assessment Assessment of Effect

Canyon Rim Drives Road Rehabilitation

Yellowstone National Park • Idaho, Montana, Wyoming

SUMMARY

This document presents two alternatives that examine three road segments in the vicinity of the Grand Canyon of the Yellowstone River, within Yellowstone National Park. Alternative A, is a “no-action” approach that is status-quo as to the maintenance and use aspects. Alternative B (the preferred alternative), looks at rehabilitating the road surface, drainage features, parking areas, and looks at traffic flow direction changes. These roads; the North Rim Drive (including the Inspiration Point Spur), the Brink of the Upper Falls access road, and the South Rim Drive, are in various states of deterioration, due to age, poor drainage, and increased use by larger numbers and sized vehicles. The pavement is rutted from wear in some places, and cracking because of poor drainage, poor-quality base material, and increasingly heavy vehicle use.

The pavement edge has broken down resulting in an inconsistent 5.4 to nearly 11 meters (18 to 36 feet) road width. All three roads were originally designed as two-way roads, though the North Rim Drive was designated a one-way road in 1957, during the Mission 66 era due to its narrow width. The Inspiration Point Spur, the Brink of the Upper Falls access road, and the South Rim Drive all remain two-way roads. Various safety hazards common to all three roads include: inadequate visibility at pullouts and parking areas, steep side slopes, poor road surface, rock falls and slides, inadequate drainage, and erosion damage.

Road improvements would occur on the North Rim Drive 3,490 meters (2.17 miles), Inspiration Point road spur 1,450 meters (0.90 miles), the South Rim Drive 2,300 meters (1.43 miles), and the Brink of the Upper Falls access road segments 700 meters (0.43 miles). Additional improvements would occur at the Canyon Village horseshoe parking area, Inspiration Point parking area, Grandview parking area, Lookout Point parking area, Brink of the Lower Falls parking area, Wapiti Lake parking area, Uncle Tom’s parking area, and Artist’s Point parking areas which would all be repaved and include various other improvements and repairs to items such as curbing, walkways, railings, and curb cuts. Traffic flow direction on the North Rim Drive would also be evaluated to determine if a change in traffic direction on this one-way road is warranted. The Artist Point portion of the project would also include the rehabilitation of the pedestrian area, paved trails, and overlook areas, along with the addition of a vault toilet. These improvements would take place in phases as funding permits, beginning with a construction contract planned for early 2007. It is anticipated the first construction phase would take approximately one or two years to complete. Variations to this

schedule would vary depending upon funding availability. Alternative B (preferred) would rehabilitate the road and associated parking areas and pullouts. All roads would be rehabilitated at their existing widths. Some minor size increases in some parking lots would occur.

PUBLIC COMMENT

"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. Comments should be received no later than July 3, 2006. 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."

Superintendent
Canyon Rim Drives Road Rehabilitation
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PURPOSE AND NEED

PURPOSE

The purpose of the proposal is to provide and maintain a safe, efficient, and cost effective Canyon Rim area roads by rehabilitating: the North Rim Drive (including the spur road to Inspiration Point), South Rim Drive, Brink of the Upper Falls access road, and the associated parking areas along these roads including the Canyon Village parking lot, all located within Yellowstone National Park. This project also includes the rehabilitation of the Artist Point viewing area and the reconfiguration of its associated parking area. This project would improve approximately 4.93 miles (7.94 km) of road, as follows: North Rim Drive 2.17 miles (3.49 km), Inspiration Point Road 0.90 miles (1.45 km), South Rim Drive 1.43 miles (2.3 km), Brink of the Upper Falls access road 0.43 miles (0.7 km). Improvement of the road would reestablish a smooth driving surface, facilitate better drainage next to and under the road, repair known or suspected problem areas associated with improper base materials, drainage structures, retaining walls, and to reduce congestion. Additional benefits would be to promote safe and pleasant driving experiences, facilitate park operations and emergency services, reduce impacts to park resources, and enable more efficient use of park funds.

NEED

The Canyon Rim Drives are continuing to deteriorate with time. The road pavement is cracking and has numerous potholes that require annual maintenance to keep the road operational. Drainage problems along the road have caused slumping of the road and associated features in places, and left unchecked, could lead to increased safety risks or loss of road infrastructure.

MANAGEMENT OBJECTIVES

Visitor Experience

- Improve parking lot function and reduce congestion
- Formalize existing viewing and pullout areas along the road
- Provide a variety of safe viewing opportunities of the Grand Canyon of the Yellowstone
- Provide a safe visitor-friendly experience without compromising park resources
- Improve ability of visitors to orient themselves to surroundings, and improve interpretation opportunities
- Reduce vehicular congestion along the North Rim road
- Improve access for visitors with disabilities

Resources

- Reduce impacts to natural and cultural resources

Safety and Operation

- Promote a steady flow of traffic
- Provide required emergency response and administrative access
- Provide an adequate number of pullouts for viewing and passing
- Continue the current seasonal visitor use (NPS does not intend to extend the visitor use season for this road segment)
- Provide for emergency vehicle access
- Limit the risk of accidents
- Promote safety for pedestrians and vehicles

Cost and Cost Effectiveness

- Capital costs and maintenance costs should be within anticipated funding levels
- The selected alternative should offer an appropriate balance of costs and benefits

BACKGROUND

Yellowstone National Park by its establishment act of March 1, 1872 (17 Stat. 32), 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 1973 Yellowstone Master Plan translates this original purpose statement as: “To perpetuate the natural ecosystems within the park in as near pristine conditions as possible for their inspirational, educational, cultural, and scientific values for this and future generations.

Further interpretation of the Park’s purpose is stated in a Foundation for Planning Statement derived in 2004 by a joint effort of Yellowstone’s park management team as follows:

The world’s first national park, Yellowstone:

- preserves geologic wonders, including the world’s most extraordinary collection of geysers and hot springs and the underlying volcanic activity that sustains them;
- preserves abundant and diverse wildlife in one of the largest remaining intact wild ecosystems on earth, supporting unparalleled biodiversity;
- preserves an 11,000-year-old continuum of human history, including the sites, structures, and events that reflect our shared heritage; and
- provides for the benefit, enjoyment, education and inspiration of this and future generations.

A goal established by Yellowstone National Park in its *Strategic Plan* (NPS 2000a) is to “provide for the public use and enjoyment and the visitor experience in Yellowstone National Park.” There are two defining parts to this particular goal. The first stating that “visitors to Yellowstone National Park safely enjoy and are satisfied with the availability, accessibility, diversity, and quality of park facilities, services, and appropriate recreational opportunities.” The second stating that “park visitors and the general public understand and appreciate the preservation of Yellowstone National Park and its resources for this and future generations.”

The 1992 *Parkwide Road Improvement Plan*’s stated purpose is: to preserve and extend the service life of principal park roads, enhances their safety, and continue access to Yellowstone National Park and its features.

Park roads, such as those in Yellowstone National Park, are intended to accommodate park visitors safely and efficiently while enhancing visitor experiences according to Park Road Standards (NPS 1984). The National Park Service is responsible for constructing, operating, and maintaining its roads in a safe and aesthetically pleasing condition to the greatest extent possible.

In keeping with this mandate, the National Park Service, in cooperation with the Federal Highway Administration, is in the process of rehabilitating or reconstructing the principal park roads in Yellowstone. The Surface Transportation Assistance Act (PL 97-424), passed in 1982, established the Federal Lands Highways Program (FLHP). This program distributes funds from federal motor fuel tax revenues for work on roads in parks and on other federally administered lands. Recent examples of work performed under this program are: reconstruction of the park road between Canyon Junction and the Chittenden Road; paving overlay work between Canyon and Fishing Bridge and Tower and the Northeast Entrance; reconstruction of the Grand Loop Road between Madison Junction and Norris Junction; and between the Fishing Bridge intersection and Sylvan Pass

on the East Entrance road. Road improvements in Yellowstone generally take many years to complete because of, resource concerns, limited funding, a relatively short construction season and, to the extent possible, the park's desire to allow visitor traffic through construction zones.



Vicinity Map

Roads and parking areas that are shaded on the map below are within the proposed project area.



This project is the next road rehabilitation project for Yellowstone under FLHP is the improvement of the North and South Rim Drives including the Inspiration Point spur road near Canyon, the Brink of the Upper Falls access road and parking area, and the Artist's

Point parking and pedestrian overlook area, and the Canyon Village parking areas, all located in the central portion of the park (see Vicinity map page 5). The first phase of work (North Rim Drive, Inspiration Point Spur, and Artist Point parking area and overlook) is proposed to begin in early 2007 and be completed in one or two years, subject to availability of funding. Additional phases would be scheduled as funding permits. This Environmental Assessment, "Canyon Rim Drives Road Improvement" describes the proposed project, the alternatives considered, and the associated environmental effects. The proposals in this document are based on standards and guidelines set forth in the Park wide Road Improvement Plan, (NPS 1992). That plan described the road improvement program expected to be carried out in Yellowstone over the next 20 or more years. It established standards for improvement of the park's principal roads (for example, width and design speed) and analyzed the cumulative effects of the long-term road improvement program. This route-specific environmental assessment evaluates the effects of road and viewing overlooks, rehabilitation in the Canyon area, and documents current compliance activities as prescribed in the park wide road improvement programmatic agreement between the Montana SHPO, the Wyoming SHPO, the Advisory Council on Historic Preservation, Yellowstone National Park, and the National Park Service's Intermountain Regional Office, 1992 (Appendix B), modifying the Historic Preservation Act Section 106 compliance process with specific attention and guidance to preservation of the historic characteristics of Yellowstone's roads. This will be used in applying for project-specific permits and ensuring that appropriate mitigation measures are implemented.

The Canyon Rim Drives parallel the north and south rims of the Grand Canyon of the Yellowstone River just east and south of the Canyon developed area. These rim drives are very popular with the visiting public, often exceeding capacity, at the parking areas, during the busy summer months. The Canyon area roads provide access to trailheads and overlooks, which offer views into the Grand Canyon of the Yellowstone River, and the Upper and Lower Falls (see Project Area map page 21).



At an elevation of approximately 7,100 feet, the rim drives and Brink of the Upper Falls access road are accessed from the Grand Loop Road and generally parallel the north and south rims of the canyon in the general vicinity of the Upper and Lower Falls of the Yellowstone River. Characterized by moderate to steep side slopes and winding curves, the Rim Drives, and Upper Falls road, provide vehicular access to viewing overlooks including: Inspiration Point, Grandview, Lookout Point, Upper and Lower Falls, Uncle Tom's Trail, and Artist's Point. One designated picnic area (Wapiti Picnic area), and various trail access points located along the Canyon Rim Drives.

Construction of the Canyon Rim Drives began in the early 1890s and continued until about 1905. The roads are typical of the older vehicular roads

in Yellowstone. The last major overlay work done on these roads was during the 1950s under the Mission 66 program. The base material was not designed to accommodate existing traffic volumes and today's heavier vehicles.

Park Visitation:

Visitation has remained relatively flat since 1990, hovering around 3 million visitors annually. Actual annual park visitation during this time has fluctuated between the low 2,752,346 in 2001, and the high 3,144,405 in 1992. These visits represented more than one million vehicles entering the park and using the road system within the six-month period from May through October. Vehicle traffic statistics gathered in 2003 indicate that the North Rim Drive receives 1,424 vehicles per day as an annual average daily traffic (ADT) rate, and 3,534 vehicles as determined for the seasonal average daily traffic (SADT) rate. The South Rim Drive receives an ADT count of 1509, and an SADT of 3747. As the roads are closed to wheeled traffic for much of the year, the SADT rate gives a more realistic view of the traffic likely to be encountered for these road segments.

Road Surface:

The condition of the Canyon Rim Drive roads is generally poor. Lack of drainage, frost heaving, infiltration of water into the base and sub-base and poor road building materials all contribute to the continuing deterioration of the roads and the need for improvement of these 7.94-kilometers (4.93 miles) of roads. The existing roadway pavement widths vary from between generally 5.4 to nearly 11 meters (18 to 36 feet). Most vehicle pullouts located along the Rim Drives are informal and have been created by visitors. No passing pullouts or zones are provided on the Rim Drives.

The pavement structure of the Canyon Rim Drives is deteriorating resulting in increased maintenance costs and a degraded visitor experience. Drainage deficiencies contributing to the rough and rutted surface include ditches and culverts generally being clogged or overgrown with vegetation as a result, surface water is not able to move away from the road structure. Headwalls are in need of repair and some are missing due to erosion undermining. Also contributing to the excessive flexing and cracking is the poor quality of the road base material which isn't designed to today's standards. As a result, the road surface is rough and breaking up including numerous potholes, cracks, and frost heaves. In addition the road has narrow shoulders and abrupt pavement edges. Many letters received by the park are complaints from visitors concerning rough road surfaces.

Engineering:

Rehabilitation of the Canyon Rim Drives presents engineering challenges due to its proximity to the Canyon edge, mountainous terrain and weather. Erosion and failure of walls on the steep slopes adjacent to the road has started to undermine the road and road structure. Shifts in the alignment and wall rehabilitation would be required to stabilize the road. Drainage systems along the Rim Drives need to be repaired to ensure water is moving positively away from the road. Due to the elevation and location, the winters in the Canyon area are long, leaving only a short season for construction.

No road widening is necessary; however, informal pullouts and parking need to be formalized to reduce additional resource damage. Some minor enlargement of select parking areas would occur. Visitor use areas along the roads are not adequate to

accommodate the number and size of vehicles currently visiting the park. Parking numbers and turning radii are insufficient throughout the area and contribute to congestion during peak seasons, resulting in deteriorated road structure, impacts to surrounding vegetation, pedestrian vs. vehicular conflicts and ineffective traffic flow.

Site Features:

Features within the visitor use areas along the Canyon Rim Drives is a collaboration of improvised techniques which have evolved to address social trails, informal parking, erosion, revegetation, seating, repairs, and other needs. Part of the need for the Canyon Rim Drives road rehabilitation project is to restore the rustic character of the area by replacing inappropriate cribbing, curbing, fencing, and overlook material. The project designs would be consistent with the concepts of the 1927 *Yellowstone National Park Master Plan*'s "sacred area" – defined as, a designated 1/8 mile around the perimeter of the canyon rim where facilities were removed in favor of simple overlooks, roads and trails that accommodated quiet contemplation of magnificent canyon views. Facilities in the "sacred area" deemed "appropriate", blend into the surrounding landscape following NPS rustic architectural principles. The rehabilitation and replacement of modern facilities would follow these same rustic principles.

Parking Areas, Pullouts, and Visitor Facilities:

The project area includes: Canyon Village Parking Lot, North Rim Drive (Inspiration Point, Grandview Overlook, Lookout Overlook, and Brink of the Lower Falls), Brink of the Upper Falls, South Rim Drive (Chittenden Memorial Bridge pullouts, Wapiti Picnic Area, Uncle Tom's Trail parking area, and Artist Point Overlook parking area).

Canyon Village Parking Lot:

Canyon Village is a designated historic district, designed and built as part of the NPS Mission 66 program. Modeled after strip mall shopping areas of the day, the Canyon Village parking lot was designed as a walking mall for visitors.

Vehicle capacity is adequate for visitation numbers seen in recent years; however the lot was not designed to accommodate modern oversized vehicles and buses which are very common to the area. Entire parking bays must be allocated to allow buses adequate parking. Turning radiuses on the interior islands of the lot do not allow easy maneuvering of larger vehicles, oftentimes requiring multiple 3-point turns in order to negotiate a turn. These inadequate radiuses increase congestion, back up traffic, increase pedestrian and vehicular conflicts, and lead to confusion. Tour and bus drop-off zones should be created in central locations throughout the lot, to help facilitate the use of such services and any additional shuttle system that could be implemented in the future.

Way-finding and orientation:

Due to the configuration of the Canyon Village parking lot, visitors are generally confused and disoriented; concession operators have installed large signs over stores to assist visitors in locating and identifying facilities. Mature and taller vegetation in the parking lot islands has added to the problem by reducing sight lines through the parking lot, and decreased the effectiveness of visitors to visually orient themselves. The intent of the proposed design is to allow visitors to "freely" roam the sidewalks similar to being in a

plaza. The current lack of long range visibility of the area keeps visitors from visually orienting themselves, and therefore less likely to explore the area.

North Rim Drive:

Traffic is currently directed from the Canyon Village in a north to south direction along a one-way road, sited on the north rim of the canyon. The road connects the Inspiration Point 2-way spur road, Grandview overlook, Lookout overlook, and Brink of the Lower Falls overlook and exits on the Grand Loop Road. Traffic volumes during peak summer months exceeds the capacity of the road and parking areas, resulting in informal parking in non-designated areas, traffic jams, pedestrian and vehicular conflicts, difficult access for people with disabilities, parking backed up into travel lanes, impassable travel lanes and very limited access for maintenance and emergency response vehicles. During peak hours of travel, 1.5 hours is needed to drive this 2.17 mile section of road.

Major repairs are required to stabilize a historic timber crib wall supporting the roadway and North Rim trail at Grandview overlook. Due to the severity of erosion and soil slumping, repairs would require a shift in the road alignment away from the canyon edge.

Brink of the Upper Falls Access Road:

No road widening is necessary. Turning radiuses within the parking areas need to be increased to minimize impacts to the road structure and surrounding vegetation. Oversized vehicle and bus parking is not designated and needs to be clearly marked to facilitate traffic flow.

South Rim Drive:

No road widening is necessary. Turning radiuses within the parking area need to be increased to minimize impacts to the road structure and surrounding vegetation. Oversized vehicle and bus parking is not designated and needs to be clearly marked to facilitate traffic flow.



Visitors enjoying the Chittenden Bridge have created informal parking areas on the east and west sides of the bridge. Although this allows visitors the opportunity to park and view the Yellowstone River from the bridge, limited sight lines of oncoming traffic are a safety concern that has been identified. Informal parking often blocks access to the maintenance road intersection just west and north of the bridge. Visitors walking the South Rim trail are led from the Wapiti Picnic area along a trail and cross the road on the south side of the bridge. Oncoming traffic has limited time and sight distance to adjust to pedestrians in the road, creating a safety concern.

Social trails throughout the Uncle Tom's area have denuded areas of vegetation and resulted in improvised pedestrian control features such as fences, boardwalk, benches and signage. Access to restroom facilities and the viewing platform for people with disabilities is substandard.



The Artist Point parking area, although large enough to accommodate peak season visitation numbers, has continued to be highly congested due to poor traffic flow conditions through the parking area. All vehicles are required to use the single turn around located at the far north of the lot which is undersized for today's oversized vehicles. This is also the primary pedestrian entrance to one of the Park's most popular viewing areas. Pedestrian travel is common within the parking area and in the vehicular travel lane, increasing chances

for pedestrian and vehicular conflicts. Combined, these elements form a bottleneck at the vehicular turn around and throughout the lot. Unstable hillsides adjacent to the parking area have eroded across the sidewalks, and annual maintenance is required to remove debris and keep the walk passable and safe. Erosion from storm water runoff from the existing parking area is accelerating problems near the north end of the parking lot, and the promenade. Parts of the main pathway, to the viewing overlook, is being undermined, and past repairs show need of improved solutions. In some areas, gaps exist in the walkway near its edge and between the boulders lining the walkway. Repairs to this walkway would improve the longevity of the walk, and make it a much safer experience.

The Artist Point overlook area is a cultural landscape that is eligible for listing on the National Register of Historic Places. Features contributing to its eligibility are in need of repair or rehabilitation. Erosion is the leading cause for instability and is undermining boulders lining the edge of the promenade, the lower, and the upper viewing platforms. Informal trails and viewing areas skirting the edges of this viewing area have led to trampling of the vegetation and is an additional source of erosion. Non-contributing features such as metal handrails and log crib wall along the promenade need to be replaced with more compatible features. In addition, the transition area between the parking area and viewing area needs to be improved to better facilitate access for people with disabilities.

SCOPING

Scoping is an early and open process to determine the breadth of environmental issues and alternatives to be addressed in an environmental assessment/assessment of effect. Yellowstone National Park conducted both internal scoping with appropriate National Park Service staff and external scoping with the public and interested and affected groups and agencies.

Internal scoping was conducted by the staff of Yellowstone National Park. This interdisciplinary process defined the purpose and need, identified potential actions to address the need, determined what the likely issues and impact topics would be, and identified the relationship, if any, of the proposed action to other planning efforts at the park. Both a news release and a newsletter describing upcoming road projects, including this project, were issued in July 2003. This project was discussed at the annual tribal consultation meetings from 2002 to present. No public comments were received.

RELATIONSHIP OF THE PROPOSED ACTION TO PREVIOUS PLANNING EFFORTS

The Parkwide Road Improvement Plan (NPS 1992) proposed that most principal park roads be reconstructed on their existing alignments. This 1992 plan did not address many of the park roads that are not considered to be part of the Grand Loop Road or the five major park access roads. The Canyon Rim Drives and the Brink of the Upper Falls access road are all spur roads that intersect with the Grand Loop Road. This environmental assessment is being prepared to determine the impacts of the proposed project to natural and cultural resources that may be affected by implementation of the project.

The Alternate Transportation Modes Feasibility Study, Yellowstone National Park (BRW, Inc. 1994) looked at various modes of transportation for Yellowstone visitors and proposed a visitor transportation system based on buses. This project would look at designing and constructing areas to be used as shuttle bus stops in appropriate areas in anticipation of any efforts to implement a pilot shuttle program in this area to determine its feasibility and acceptance.

Dunraven Traffic Study:

An optional Visitor Transportation System was proposed as an alternative in the Dunraven Traffic Study (1997) that would operate between Canyon and Tower Junction. This was an option if the Dunraven road was reconstructed at its then width of 19 to 20 feet. The service period would have been June through August, and the system would have been targeted towards visitors driving oversized vehicles. It was assumed that approximately 50% of the visitors in oversized vehicles would use the system. This alternative was not implemented, and the road was reconstructed to a 24 foot width for numerous reasons.

Transportation Scholar Report:

The *Canyon Tour District Feasibility Study* (Baron, 2005) evaluated the feasibility of a tour district in the Grand Canyon of the Yellowstone area. Recommendations from the study showed that the district appeared both feasible and desirable. Implementation of such a system should consider:

- beginning with a small scale system, focusing on three to four tours daily during peak visitation,
- marketing the system well; the goal should be to have full buses with happy riders for the entire season,
- focusing the system on being tour oriented, including: a sign-up, fee-based reservation system and extensive park interpretation during the tour, and
- using unique vehicles like the comparable Sunset Tour of Lake Butte that is conducted on historic Old Yellow Buses; a similar unique vehicle will capture the specialness of Yellowstone and promote adoption.

The study also felt that a voluntary transit system is not currently feasible, and that large subsidies would be necessary to operate this type of system.

IMPACT TOPICS

Issues and concerns affecting the proposed action were identified by specialists in the National Park Service, as well as by the office of the Wyoming State Historic Preservation

Officer (SHPO), the Wyoming Department of Environmental Quality, and U.S. Fish and Wildlife Service, and the Army Corps of Engineers. 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 National Park Service Management Policies, 2001, and from input by the SHPO. 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.

NATURAL RESOURCES

(Air Quality, Geologic Features, and Soils, Vegetation and Rare Plants, Wetlands, Wildlife, and Threatened and Endangered Species)

The Canyon Rim Drives project has the potential to affect the above mentioned natural resources. Each is explained further in the following paragraphs. These topics will be discussed and evaluated further in the *Affected Environment* and *Environmental Consequences* sections of this document.

AIR QUALITY

Air quality and visibility are generally excellent in Yellowstone, which is a mandatory Class One area where air quality degradation is unacceptable under the Clean Air Act of 1977. There is the possibility of short-term temporary impacts on air quality or visibility in the Canyon Rim Drives area from dispersed dust and mobile exhaust emissions could be caused by construction truck traffic and equipment activity.

GEOLOGIC FEATURES & SOILS

The Canyon Rims Drive has the potential to affect soils in the area with changes such as drainage alternation, culverts, and crib walls adjacent to the roads and parking areas. Area soils would further be affected by revegetation and reclamation areas in places where soil erosion is occurring.

VEGETATION/RARE PLANTS

Vegetation impacts would come from construction activities along the road edge, at culverts, and at widened or new pullout areas, but confined mostly to the existing road prism. The disturbance associated with construction would provide an opportunity for invasive plant species to become established and spread. Revegetation efforts and control measures to reduce exotic plant species would be done. The addition of native vegetation in parking areas, and the potential removal of some large vegetation from the Canyon Village u-shaped parking area would be done to increase visibility and improve visitor orientation. These, along with additional activities could lead to temporary impacts.

WETLANDS

The National Park Service polices require protection of water quality consistent with the Clean Water Act. Section 404 of the Clean Water Act authorizes the U.S. Army Corps of Engineers to prohibit or regulate, through a permitting process, discharge of dredged or fill material or excavation within U.S. waters. Sixty-one wetlands have been identified within 50 feet of either side of the three road segments proposed for rehabilitation within the Canyon Rim Drives project area.

WILDLIFE

The Canyon Rim Drives project could affect adjacent wildlife habitat and hence wildlife that use the area. Construction activities could impact wildlife using the area temporarily.

THREATENED AND ENDANGERED SPECIES

The Endangered Species Act and NPS regulation and policies require the protection of threatened and endangered species. The changes in the Canyon Rim Drives could have impacts on listed species within Yellowstone: bald eagles, grizzly bears, Canada lynx, or wolves.

CULTURAL RESOURCES

(Prehistoric and historic archeological sites, historic districts, associated structures, historic road structures, cultural landscapes, and ethnographic resources)

The Artist Point viewing area and the North Rim Drive/Inspiration Point Spur road have been determined to be eligible for listing on the National Register of Historic Places. The proposed Canyon Rim Drives project would impact the archeological, historic, and cultural landscapes in the project area. The impacts are evaluated in this document.

SOCIOECONOMIC ENVIRONMENT

(Park Operations, Economics, Public Health and Safety, and Visitor Use and Experience)

Changes to the Canyon Rim Drives and associated parking areas and traffic flow directions could affect the social, economic environment of the Canyon area, as well as visitor use and experience.

IMPACT TOPICS DISMISSED FROM FURTHER CONSIDERATION

Issues and concerns affecting this project were identified by NPS specialists, as well as from the input of other federal, state, and local agencies. After public scoping, issues and concerns were distilled into distinct impact topics to facilitate the analysis of environmental consequences, which allows for a standardized comparison between alternatives based on the most relevant information. The impact topics were identified on the basis of federal laws, regulations, and orders; NPS Management Policies (2001); and NPS knowledge of limited or easily impacted resources. The rationale for dismissing specific topics from further consideration is given below.

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 effects of their programs and policies on minorities and low-income populations and communities. The proposed action would not have disproportionate 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.

FLOODPLAIN MANAGEMENT

(Executive Order 11990, Executive Order 11988, Rivers and Harbors Act, Clean Water Act, NPS Management Policies 2001)

Before taking an action, each agency shall determine whether the proposed actions would occur in a floodplain-- for major Federal actions significantly affecting the quality of the human environment, an evaluation is required to be prepared under Section 102 (2) (C) of the National Environmental Policy Act. There are no floodplains in the project area; therefore floodplains were dismissed as an impact topic.

GEOTHERMAL RESOURCES

Yellowstone contains three-fifths of the world's geysers and countless examples of other geothermal features such as hot springs, travertine terraces, mud pots, and fumaroles. Thermal areas influence Yellowstone's flora and fauna in the winter. Hot water creates microclimates that allow certain plants and insects to remain active and growing. Hot springs flowing into lakes and rivers keep some waters from freezing, increasing habitat for waterfowl and bald eagles during the winter. The Canyon development occurs within the Yellowstone caldera, but there are no geothermal features within this development. Geothermal areas near the development include Washburn Hot Springs 6 kilometers (4 miles) north of Canyon, Mud Volcano 15 kilometers (10 miles) South of Canyon. There are also geothermal and hydrothermal resources in the Grand Canyon of the Yellowstone River. However, this project would not affect these resources and so this topic was dismissed from consideration.

PRIME AND UNIQUE FARMLANDS

In August 1980, the Council on Environmental Quality (CEQ) directed that federal agencies must assess the effects 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 or unique 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 NRCS, 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

None of the alternatives proposed in this document would occur in Yellowstone National Park's proposed wilderness areas.

ALTERNATIVES CONSIDERED

ALTERNATIVE A (NO-ACTION ALTERNATIVE)

No major road rehabilitation work would occur on the Canyon Rim Drives in the near future. Existing use and maintenance of the road and ancillary features would continue. Maintenance activities such as pothole patching, periodic chip-and-seal coat applications, and removal of rockfall and slumping debris would continue. In some roadway sections regular road maintenance would be inadequate because the road has deteriorated to the point where substantial improvements have become necessary. Road maintenance activities would require an increasing proportion of park funds. Federal Land and Highway Program (FLHP) funds, used for highway reconstruction and rehabilitation, would not be available for the types of repairs or maintenance under this alternative of maintaining the existing road only. If continued deterioration is allowed to occur, the road may need to be closed if it becomes unsafe or if sufficient maintenance funds are not available to repair damaged areas.

No modifications to road base, pullouts, culverts, walls, pedestrian or overlook guardrails, fencing, or signs would be made, and no material excavation/site reclamation would be carried out. Road improvement projects that require large quantities of aggregate material, such as asphalt pavement overlays, would be deferred indefinitely, potentially resulting in road closures.

Implementation of any future visitor transportation systems using buses would be adversely affected because of the poor road condition and the lack of areas to serve as bus drop-off/loading areas.

DESIGN RECOMMENDATIONS

The design recommendations for Alternatives A and B vary in that the intent of alternative A does not address present existing traffic flow concerns.

No new cut or fill slopes, guardrails, improvements to drainage would occur. Maintenance of vegetation growing in drainage ditches would occur on a very limited basis. No revegetation would be required.

BRIDGES

The Chittenden Memorial Bridge would remain as is. Any needed repairs that are identified would compete for park funding along with other projects.

CULVERTS AND HEADWALLS

Culverts and headwalls would remain in their present condition. Existing conditions of metal culverts that are eroded or crushed, masonry headwalls in disrepair, and culverts that are clogged and lacking energy dissipaters to reduce erosion would compete for limited maintenance staff time in order to make repairs.

PARKING AREAS AND PULLOUTS AND VISITOR FACILITIES

Safety issues at select parking areas along this route would not be addressed. A slight expansion of the Inspiration Point parking area would not occur. Informal pullouts would remain unimproved, additional resource damage could occur as vehicles continue to park on vegetated areas.

OVERLOOK IMPROVEMENTS

The existing overlooks would be maintained in their current condition. No changes to overlook edging, walls, or surfacing would occur.

MATERIAL SOURCE

No additional material source would be required.

STAGING, STOCKPILING, AND DISPOSAL SITES

Staging or stockpile areas for limited maintenance activities would occur within existing pullouts or parking areas along these road corridors. No new areas of disturbance would occur.

REVEGETATION

No revegetation activities would be anticipated for this alternative. Some existing slopes that were originally cut very steep and have not revegetated well would continue to be poorly vegetated, and materials would continue to slough onto walkways and roads.

VISITOR TRANSPORTATION SYSTEM

No formalized bus drop-offs would be constructed.

TRAFFIC FLOW DIRECTION

Existing one-way (north to south) traffic flow on the North Rim Drive, and 2-way traffic on the Brink of the Upper Falls Access Road and South Rim Drive would continue.

GEOLOGIC/THERMAL FEATURES

Thermal features would not be affected.

WETLANDS AND OTHER WATERS OF THE UNITED STATES

Impacts to wetlands would be limited to the immediate area of culvert inlets, outlets, and ditches associated with culvert and ditch maintenance projects.

WILDLIFE

Road maintenance activities could temporarily displace wildlife.

THREATENED AND ENDANGERED SPECIES

No threatened and endangered species would be impacted.

CULTURAL RESOURCES

This alternative would result in benign neglect to historic properties (the National Register eligible North Rim Drive/Inspiration Point road and its historic features, and the Artist Point viewing area) due to lack of in-kind repair of historic character-defining features.

SCHEDULING OF WORK ACTIVITIES

Periodic maintenance activities would be conducted by park crews on their regular work schedules, Monday through Friday, during normal daytime work hours. There may also be short term, mid-summer road closures of five to ten working days to allow park crews to accomplish minor overlay or patching projects. The schedule of work activities would minimize impacts to visitors during heavy use periods and may include full closures of one drive at a time. Not all viewing areas would be closed at one time.

VISITOR INFORMATION

Road condition information would be relayed to park visitors via the park's morning reports, and posted as is currently done in campgrounds and visitor centers.

CONSTRUCTION STIPULATIONS AND MITIGATION

No construction stipulations or mitigation measures would be required.

OTHER STIPULATIONS

No other stipulations for this alternative would be needed.

PROJECT COST

Maintenance dollars spent to keep the road open and passable have done nothing to correct underlying problems with pavement base or improper drainage. As the road continues to deteriorate an increasing amount of park funds would be required to keep it usable and open. There is the possibility that some road maintenance activities would require road closures of one to two weeks.

ALTERNATIVE B (PREFERRED)

This alternative consists of resurfacing, restoring, and rehabilitating approximately 4.93 miles (7.94 km) of road, as follows: North Rim Drive 2.17 miles (3.49 km), Inspiration Point Road 0.90 miles (1.45 km), South Rim Drive 1.43 miles (2.3 km), Brink of the Upper Falls access road 0.43 miles (0.7 km). Associated parking areas, including Artist Point parking, Uncle Tom's Trail parking, Wapiti Picnic Area, Inspiration Point parking, Grandview parking, Lookout Point parking, Glacial Boulder parking, and the Brink of the Upper Falls area parking, and the Canyon Village parking lot, and Camper Services lot would be included. There would be no widening of these existing roadways, though some minor expansion of select parking areas would occur. The two-way portion of the North Rim Drive road would be rehabilitated at 9 meters (30 feet) wide, with 3.3-meter (11-foot) lanes and 1.2-meter (4-foot) paved shoulders. The one-way portion of the North Rim Drive would be constructed at 5.1-meters (16.7 feet) wide, a single 3.3 meter (11-foot) lane with 0.9 meter (3-foot) shoulder on each side of the travel lane. Inspiration Point would be rehabilitated with two 3.0 meter (10-foot) lanes with no shoulders, and the South Rim Drive would be rehabilitated with two 3.3 meter (11-foot) lanes with 0.3 meter (1-foot) shoulders. The Brink of the Upper Falls access road would have two 3.0 meter (10-foot) lanes with no shoulders.

Traffic Direction:

Traffic would be redirected on the North Rim Drive, the existing exit of the North Rim Drive would become the entrance, and vehicles would enter from the Grand Loop road and travel south to north, exiting at the Canyon Village parking lot. Turn lanes (north and south bound) would be required and marked at the intersection with the Grand Loop road, to minimize traffic congestion. These turn lanes would fit within the footprint of the existing road prism. The speed limit on the Grand Loop Road would be lowered from its existing 45 miles per hour to 35 miles per hour from near the intersection of the South Rim Drive to Canyon Junction.

The Inspiration Point road would continue to be a two-way spur off the North Rim Drive.

Traffic flow patterns on the Brink of the Upper Falls access road and the South Rim Drive would remain unchanged.

Parking Areas:

Parking areas on the North Rim Drive would be redesigned to provide angled parking for traffic flowing south to north.

Parking areas throughout the project area would be reconfigured to address oversized vehicles and buses, drainage, access for people with disabilities, orientation and way-finding, pedestrian and vehicular conflicts. The main Canyon Village parking lot would address improved store front recognition, and vegetation management issues.

This alternative would include repair work on the severely eroded timber crib wall supporting the walk and roadway near the Grandview parking area, and the replacement of a severely eroded timber crib wall between Grandview and Lookout Point, that will require moving an existing historic masonry wall.

Road Surface:

Where needed, drainage problems would be addressed by cleaning, slip-lining, or replacing culverts, where needed, stabilizing slopes, ditch reconditioning, installation of stone, log, asphalt, or concrete curbing, or the replacement of existing asphalt curb. Improvement of the road would reestablish a smooth driving surface, facilitate better drainage next to and under the road, and repair known or suspected problem areas associated with improper base materials. Additional benefits would be to provide safe and pleasant driving experiences, to facilitate park operations and emergency services, to improve resource protection, and to enable more efficient use of park funds.

Road rehabilitation work is anticipated to begin on the Canyon Rim Drives in the near future (potentially starting in spring 2007) although this would be dependent upon the availability of adequate funding.

DESIGN RECOMMENDATIONS

BRIDGES

The Chittenden Memorial Bridge could be repaved, and the existing informal pullouts on the west side of the bridge would be formalized and paved, but no repairs are required for

the structural elements of the bridge. This parking would not block maintenance vehicle access. On the east side of the bridge, the centerline of the South Rim Drive would be shifted towards the outside of the turn. The inside of the turn would be used to accommodate a minor reroute of the South Rim Trail which would continue to the Chittenden Bridge. Restriping would help to reduce congestion around the bridge, vehicles would be discouraged for parking on the blind curve, pedestrians would cross the South Rim Drive in an area with improved sight lines for vehicles, drainage and trail access would be improved. Crosswalk striping would delineate the new road crossing and the old trail would be revegetated.

CULVERTS AND HEADWALLS

Certain culverts and headwalls would be cleaned, repaired in-kind, replaced, slip-lined, or reconstructed. All historic masonry and rubble culverts and headwalls would be repaired using in-kind materials. The August 1, 2005 correspondence from WYSHPO (Appendix C) provided recommendations for the repair of historic road-related structures that are in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties and would help insure that no historic road structures are adversely affected by the repair and rehabilitation. Repairs to culverts and headwalls would require minimal excavation within the existing road prism in such a way as to ensure positive drainage away from the road structure.

GRANDVIEW SLIDE AREA

Extensive repairs are needed to the log cribbed support wall and rubble stone retaining wall under the walk way associated with the road alignment at the Grandview area of the North Rim Drive. Excavation and repair or replacement of buried structural supports and appropriate repairs or additions of drainage structures would be done. The historic log cribbing and rubble stone retaining wall would be replaced, in-kind, to retain the historic appearance of the walk. The centerline of the one-way scenic North Rim Drive would be shifted slightly in the area of the north end of the Grand View parking area approximately 18 feet into the hillside. This would involve further excavation into the existing road cut. This would be done to keep the road on a solid base in an area where erosion has undermined an existing crib wall that supports the road, and an adjacent pedestrian pathway. Shifting the road will also allow room for re-vegetation of the area to reduce to the visibility of automobiles using the road from visitors viewing the Grand Canyon of the Yellowstone River across the canyon.

SLIDE AREA BETWEEN GRANDVIEW AND LOOKOUT

A portion of the paved pedestrian trail located between Grandview and Lookout is supported by a timber crib wall that is in need of replacement. The material supporting the trail is slowly sliding into the canyon, taking the trail with it. An historic masonry retaining wall between the trail and the road would be moved about 1.3 meters farther in towards the road and away from the canyon edge. A new log crib wall would also be constructed, and the pathway relocated on top of the new crib wall. The existing paved roadway width is wide enough to shift the walls over away from the canyon without shifting the paved roadway.

GUARDRAILS AND PEDESTRIAN OVERLOOKS

Future projects, not part of this undertaking, would address the rehabilitation of historic

overlooks, other than Artist Point, which would be rehabilitated as part of the road rehabilitation project for the Rim Drives. Rustic architectural features and principles identified as contributing would be retained or applied, in accordance with the Secretary of the Interior Standards. Non-contributing or inappropriate materials and features such as guardrails, fencing, signage, and curbing would be replaced with rustic material consistent with the natural and cultural landscape. Numerous asphalt overlays have increased the surface height at some overlooks, in effect lowering the height of the masonry walls surrounding them. In some cases the walking surface may need to be lowered to near original grade.

Before future undertakings would occur, the overlooks would be documented, the historic context developed within which the significance of the viewing areas could be evaluated, and the National Register eligibility established. Redesign of the National Register eligible viewing areas would be done in consultation with the Wyoming State Historic Preservation Office and the Advisory Council on Historic Preservation.

TRAILS

Future trail work is envisioned for the future in the area of the Canyon Rim Drives project. Any documentation and consultation would occur as funding for these projects becomes available. Envisioned trail work for the next few years in the vicinity of the Canyon Rim Drives project includes the following:

Cascade Lake Trail/parking lots

The construction of a new trail to join the new trailhead parking area with the existing trail. The short trail from the existing picnic area would be obliterated.

Dunraven Trail

Work would involve addressing erosion issues on the trail, better delineating the trail, and stabilization efforts at the switchbacks of the trail.

South Rim Trail

Work would include switchback stabilization, improving drainage issues, and better delineation of the trail.

North Rim/Brink of the Upper Falls

Work would include surface maintenance, addressing erosion problems and drainage issues, trail stabilization and preservation work on historic masonry walls.

TRAFFIC FLOW DIRECTION

Option 1 (Preferred)

Alternative B would change the direction of traffic flow from its existing north to south, to a south to north direction on the North Rim Drive. The existing exit of the North Rim drive would become the entrance, and vehicles would enter from off the Grand Loop Road and travel from south to north. Turn lanes for north and south bound traffic would be added at the intersection with the Grand Loop Road to minimize traffic congestion, improve safety, and improve visitor convenience. Traffic would end or exit the drive near the Canyon Village parking lot.

Changing the traffic direction on the North Rim Drive would allow the sequence of existing parking areas to be better utilized by allowing visitors to view the overlooks in a direction that has the largest parking areas encountered first and smaller lots later. Most visitors tend to stop at and view the earlier overlooks and bypass the later overlooks. It is anticipated that visitors would stop at Brink of the Lower Falls. This area provides views of the Lower Falls, trail access to the Brink of the Lower Falls, and flush restroom facilities. Visitors would then proceed north-bound along the one-way North Rim Drive experiencing the lesser developed Lookout overlook, Grandview overlook and last, Inspiration Point, eventually exiting near the Canyon Village parking lot.

Option 2

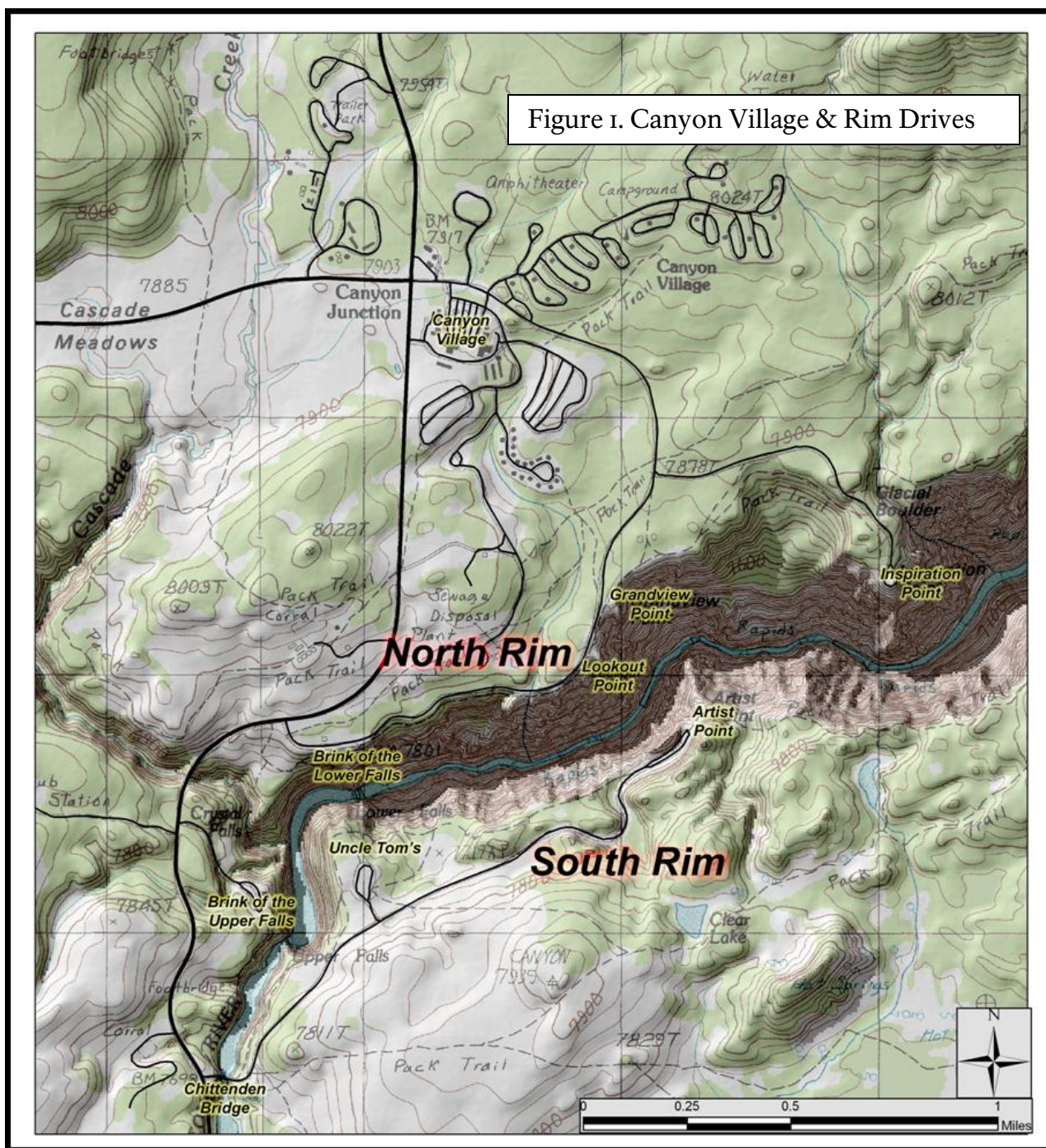
This option would retain the same traffic flow direction currently in use on the North Rim Drive. As the traffic flow direction would stay the same, the turn lanes from the Grand Loop Road would not be needed. Traffic would enter the North Rim Drive from near the Canyon Village parking lot, heading south on the one-way road past Inspiration Point, Grandview overlook, Lookout overlook, Brink of the Lower Falls, and then exiting onto the Grand Loop Road.

VISITOR TRANSPORTATION SYSTEM

The road structure and road surface would be improved to a standard capable of supporting bus traffic. Parking lots would be designed to allow for bus parking and drop off areas and would not preclude the implementation of a shuttle system in the future if one were to be implemented.



A pilot project of a transit system for the Canyon area falls outside the scope of this proposed road improvement project; however, improvements made to the road structure and parking areas of the Canyon Rim Drives as part of this project would not preclude implementation of a shuttle system in the future. Additional funds and planning would be required to implement such a system.



PARKING AREAS AND PULLOUTS AND VISITOR FACILITIES

The project area includes: Canyon Village parking lot, North Rim Drive (Inspiration Point, Grandview, Lookout Point, and Brink of the Lower Falls), Brink of the Upper Falls, and South Rim Drive (Chittenden Bridge, Wapiti Picnic area, Uncle Tom's trailhead, and Artist Point overlook). Roadways along the North Rim Drive, South Rim Drive, and the Brink of the Upper Falls access road would not be widened and construction disturbance would be confined to the existing road corridor. Some parking areas would have slight increases in the number of parking spaces by including some informal spaces into the final design, or

by correcting turning radii. Informal pullouts along the North and South Rim Drives would be formalized.

Repairs to the road sub-structure would need to be done in some areas. Excavation of the road base material in select areas would remove poorly draining soils and gravels and replace them with engineered road base gravel. Installation or upgrading of existing drainage structures would also occur to help minimize damage from water beneath the road freezing and thawing, thus reducing road damage.

Rustic architectural elements built from log, stone, and boulders would replace non-historic modern elements built from dimensional lumber, concrete, and asphalt as funding permits.

Ten to twelve informal vehicle turnouts would be formalized and paved as part of this alternative.

BRINK OF THE UPPER FALLS

The Brink of the Upper Falls parking area would be repaved, and slightly reconfigured to improve the turning radius for oversized vehicles and buses, and to delineate parking spaces for oversized vehicles and bus parking. Traffic flow in the parking area would remain relatively unchanged. However, a turning lane would be added to allow oversized and other vehicles to re-circulate through the lot, and a bus drop-off area added in the proximity of the existing restroom facility. An unused access road off the Brink of the Upper Falls road be removed and revegetated. The dashed lines on the drawing represent existing conditions. There would not be any road shifts on the Brink of the Upper Falls access road.

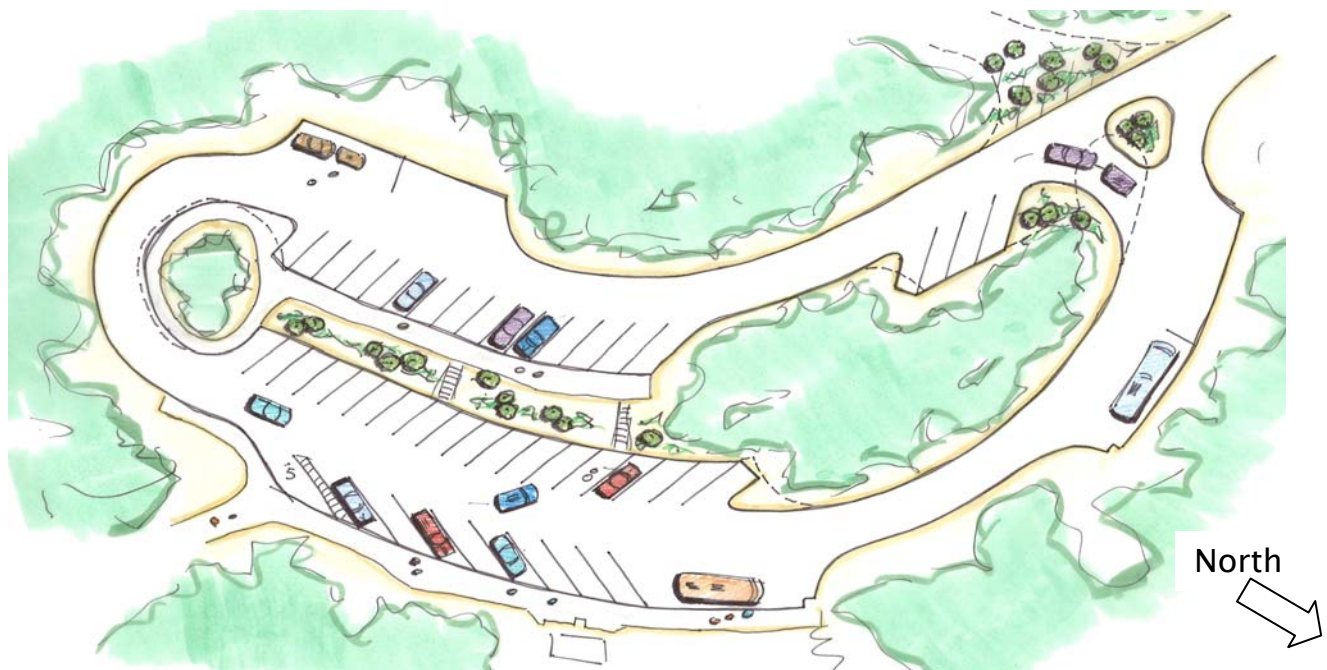


Figure 2. Brink of the Upper Falls Parking Area Design

SOUTH RIM DRIVE

The South Rim Drive would be repaved at its current width, and no changes in road alignment would occur outside the existing road prism. Some reconfiguration of the existing parking areas (Chittenden Bridge, Wapiti Picnic area, Uncle Tom's and Artist Point) would occur. Road structures (ditches, culverts, walls, signs, would be maintained or replaced in kind when needed. Parking areas would be redesigned to accommodate oversized vehicles and buses, improvements would be made for visitors with disabilities, and repairs would be done to improve drainage deficiencies. Two formal pullouts would be added on the South Rim Drive adjacent to the Chittenden Memorial Bridge. There would not be any road shifts on the South Rim Drive.

CHITTENDEN MEMORIAL BRIDGE/PULLOUTS

Informal pullouts on both the north and south side of the South Rim Drive to the west of the Chittenden Memorial Bridge would be formalized. Maintenance vehicle access to the old road alignment north and west of the bridge would be retained. The pedestrian walkway from the bridge to the picnic area would be relocated to start from the north pullout to address safety concerns.

Access to the South Rim trail from the Wapiti Picnic Area would be relocated; the trail would cross the road in close proximity to the Wapiti Picnic area parking lot entrance. This section of trail would be formalized as a sidewalk and follow the inside turn of the road, ending at the east side of the bridge. Placing the pedestrian crossing in proximity to the picnic area entrance would improve overall safety by locating the trail within the sight line of traffic traveling in both directions. Adding a sidewalk to the inside shoulder also addresses the safety concern of vehicles parking informally on this section of road, by reducing the overall width of the road at this point, and eliminating excess asphalt.



Figure 3. Chittenden Memorial Bridge Pullouts

WAPITI PICNIC PARKING AREA

The picnic area parking lot would be repaved, striped, and asphalt curbing would be added. A vault toilet would be added near the south end of the parking lot. Improved access for visitors with disabilities would be accomplished by the addition of curb cuts, and

the accessible vault toilet. Stabilization of the slope on the east of the lot would be done to reduce soil erosion.

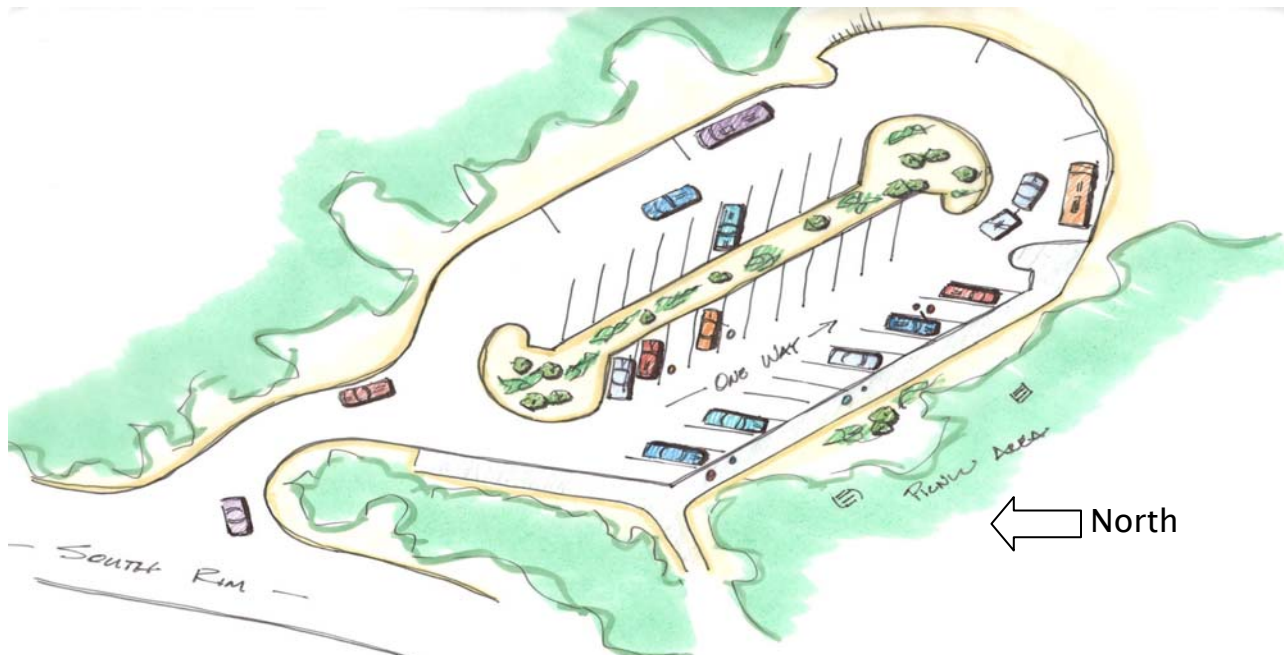


Figure 10. Chittenden Memorial Bridge/Wapiti Picnic Area.

UNCLE TOM'S PARKING AREA

Uncle Tom's parking area would not be expanded outside its existing footprint, but would be reconfigured by locating the automobile parking closer in proximity to the access to the viewing area, and to accommodate buses and recreation vehicles. Oversized vehicles would enter the lot and turn right onto a one-way travel lane, while automobiles would turn left onto a two-way lane (see drawing below). Clear separation of parking for oversized vehicles and automobiles would allow for maximum flexibility within the lot for vehicle maneuverability. This would require the removal of the inside of the dog bone-shaped traffic island. A formalized bus / shuttle stop would be added to the lot. Additional trailhead signage would be added to the west side of the lot. The existing vault toilet would be relocated from the middle of the parking lot to the perimeter of the parking lot. The toilet would be placed near the west side of the lot to simplify pedestrian circulation patterns and to address visitor safety concerns. A formalized dumpster location would be constructed.

Trailhead signage for the Clear Lake trail would extend to the access of the viewing area and direct visitors along the perimeter sidewalk to connect with the existing trail.



Figure 4. Uncle Tom's Parking Area

ARTIST POINT

Overlook

The historic Artist Point overlook is one of the most popular and prominent overlooks of the Grand Canyon of the Yellowstone River. Extending into the canyon, Artist Point provides visitors with spectacular vistas of the Lower Falls and canyon walls. The soils supporting the point are thermally altered and highly erodible, creating spectacular pinnacles and points throughout the canyon.

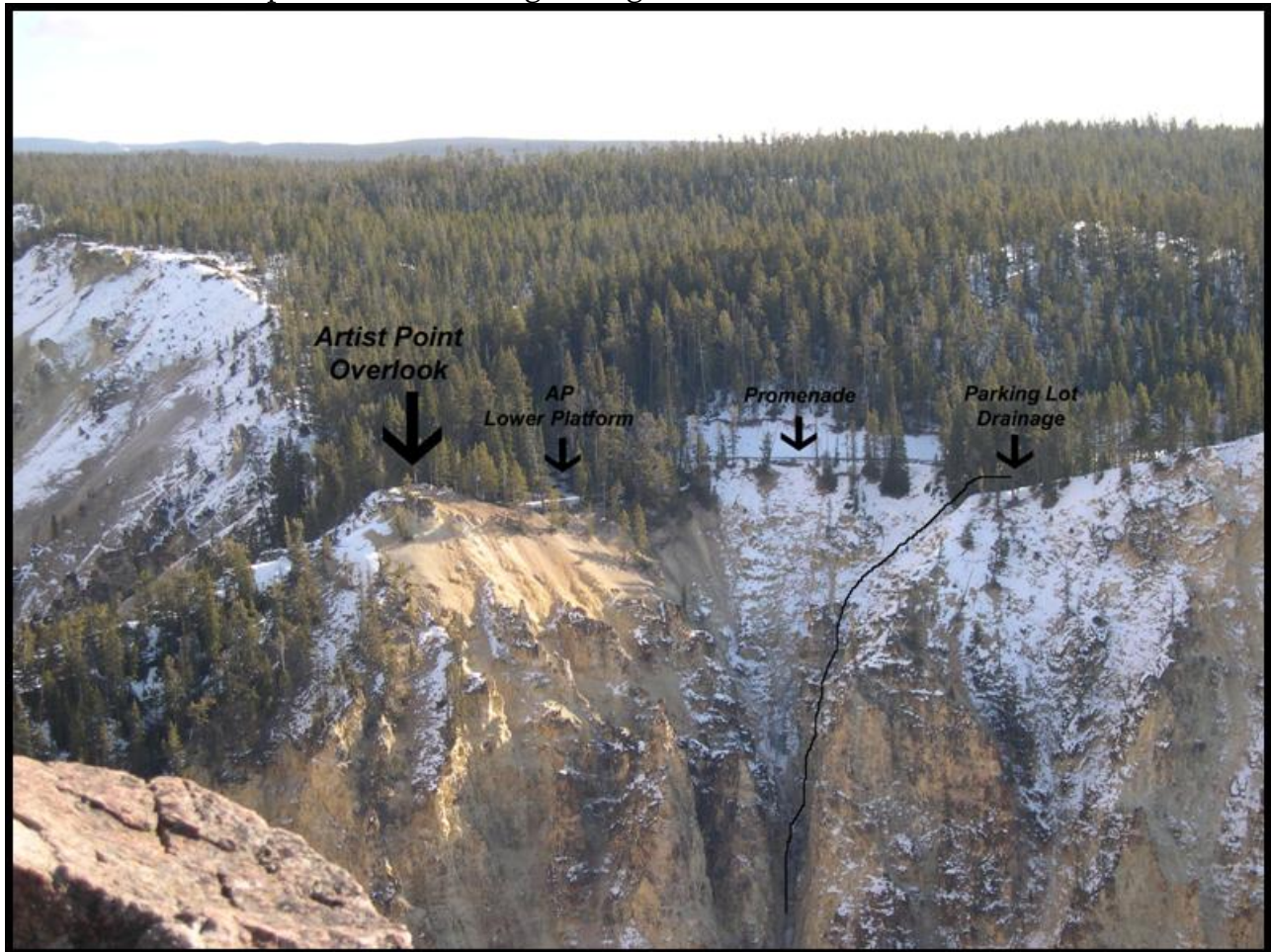
At Artist Point natural erosion has been accelerated by the placement of man-made drainage structures and impermeable surfaces, which has contributed to the instability of many historic site features. Rehabilitation of the Upper Platform, Lower Platform, and Promenade is required to stabilize boulders, walls, and walkways. Safety concerns related to the deterioration of the site and large numbers of annual visitors accentuate the need for improvements.

Rehabilitation of the Promenade, the pathway connecting the parking area with the lower viewing platform, originally the historic roadway, would begin at the vehicle drop-off area. Rehabilitation would involve stabilizing the boulders placed along its edge, and bridging an area where erosion is visibly undermining the pathway. The walkway would be re-graded and the modern stairs connecting the promenade to the parking area would be removed or filled over to improve drainage and allow for wheelchair accessibility. The character of the Promenade would be maintained as the boulders are contributing elements of the cultural landscape. The existing modern log crib wall, which is a non-contributing element, would

be replaced with a retaining structure which is more fitting with the rustic architectural ideals of the area.

Masonry joints on the stone stairs leading to the viewing platform would be re-pointed and some stones reset. Erosion at the base of the lower platform has caused the edge boulders along the lower platform to shift and become unstable. Rehabilitation would stabilize the boulders preventing them from falling into the canyon.

In order to reduce congestion at the primary viewing point on the lower platform, a new stone/log seat wall, compatible in character with the contributing features at Artist Point would be constructed. Two zones would be created; one for viewing the Lower Falls and a travel corridor for pedestrians moving through the area.



The Artist Point overlook would be rehabilitated. The proposed improvements include stabilization of the promenade and the historic rustic stone masonry, addition of compatible seating for an area where interpretive talks could be accommodated, and a short section of new masonry wall added to accommodate an existing interpretive wayside exhibit.



Figure 6. Current view of promenade.



Figure 7. Proposed Stabilized Promenade with rock retaining wall replacing log cribbing

The modern wayside exhibit would be relocated away from the historic view of the falls within the circular pedestrian area leading to the formal stone viewing platform. Vegetation would be re-established where trampling has caused loss of trees important to screen this viewing area from cross-canyon views. Rock edging would be extended to delineate vegetated areas. The proposed additions of benches and stonework would adhere to the use of natural materials and appropriate scale with most the characteristic features of the historic construction being retained.



Figure 8. Current Overlook



Figure 9. Proposed Overlook

Interpretive talks are scheduled on a regular interval at the Lower Platform. Visitors informally gather around an interpretive ranger to hear the tales and highlights of the area. Shade seeking visitors migrate into the vegetated central island. A congregating space would be constructed providing seating and standing areas in the northeast corner of the platform to help alleviate this problem. Vegetation on the edge and in the interior of the platform is considered a contributing element to the cultural landscape and revegetation efforts would include replanting, stabilizing and redirecting pedestrian traffic away from these vegetated areas.



Figure 5. Artist Point (Dotted Lines are existing conditions).

The Upper Platform was originally constructed by excavating the pinnacle about two feet down and then constructing the stone masonry wall that defines the Upper Platform. Soil backfilled on the outside of this wall is now eroding and exposing the mortar bed onto which the stones are set. Some stones have fallen out of place and are now lost. Rehabilitation efforts would replicate the original construction technique and lower the wall and platform by one to two feet. As a result 2-3 steps would be removed from the historic staircase. Remaining steps would be re-pointed and reset.

Parking Area:

The Artist Point parking area, constructed during the Mission 66 program, and not a contributing element to the National Register eligibility of the area, is frequently congested and does not adequately accommodate buses, recreation vehicles, or pedestrians. Automobile and oversized vehicle traffic would be separated at the entrance of the parking lot. Oversized vehicles and buses would veer right to oversized vehicle parking, while autos would veer left to these parking spaces. Parking spaces for approximately 65 cars and eight RV/buses would be provided. A pedestrian drop-off zone would be located at the entrance to the Artist Point viewing area promenade for both autos and buses. The automobile lot would accommodate two-way traffic with perpendicular spaces, while the oversized vehicle parking area would be one-way with parallel parking.

In order to accommodate the expanded vehicle turn-around/drop-off area, some expansion to the canyon-side of the lot is necessary. A rockery-type retaining wall would be constructed at the toe of the existing slope in this area. The increased overall width of the lot would allow for pedestrian sidewalks, and an area for water retention of parking lot storm-water runoff. Energy dissipaters would be added to the outlets of culverts carrying storm water runoff originating from the parking lot. Dry wells or French drains would be added into the parking lot to allow some stormwater to percolate into soils rather than being collected and discharged into the canyon, via storm drains, thus increasing erosion potential. The parking lot would be raised approximately one meter and a half in height by importing a gravel base material that will allow for better percolation of rain water. The new asphalt surface of the parking area would be of a pervious design allowing the water to flow through. Attempts would be made to retain more stormwater runoff in existing

wetlands to reduce the erosion that is currently occurring at culvert outlets. This would be done through raising the inlet side of drainage culverts adjacent to the wetlands. Two sidewalks would be provided for pedestrians making their way to and from cars, one on the east side (existing) and one on the west side. Vegetation and earth berms would be used to help direct pedestrians to the sidewalks.

The drop-off zone would be expanded to allow visitors the opportunity to transition before heading to the viewing area. This area would include additional area for seating/standing, added shade, additional orientation and information signage, and a restroom facility at this location or at the south end of the parking area.

GRAND LOOP ROAD

Turn lanes would be added for both north- and south-bound traffic at the point the intersection of the North Rim Drive and the Grand Loop Road within the existing road footprint. These turn lanes would accommodate five cars each to be stacked behind each other while waiting to turn. Through lanes in both directions on the Grand Loop Road would allow traffic to keep moving if vehicles were not turning onto the North Rim Drive. The speed limit would be decreased on the Grand Loop Road from the existing 45 mph to 35 mph between the South Rim Drive intersection with the Grand Loop Road and Canyon Junction. The reduced speed limit would lower the potential for accidents and reduce the chance of collisions with wildlife due to the frequent wildlife traffic jams in the area.

NORTH RIM DRIVE

In order to facilitate one-way traffic, and reversed traffic (south to north) flow, parking would be reconfigured and angled parking would be delineated in all parking areas along the North Rim Drive, including Brink of the Lower Falls, Lookout Point, and Grandview Point. Inspiration Point would be maintained as a two-way road and the cul-de-sac parking area would be reconfigured slightly. Nine to ten informal vehicle pullouts would be formalized and paved along the North Rim Drive and the Inspiration Point Spur Road.



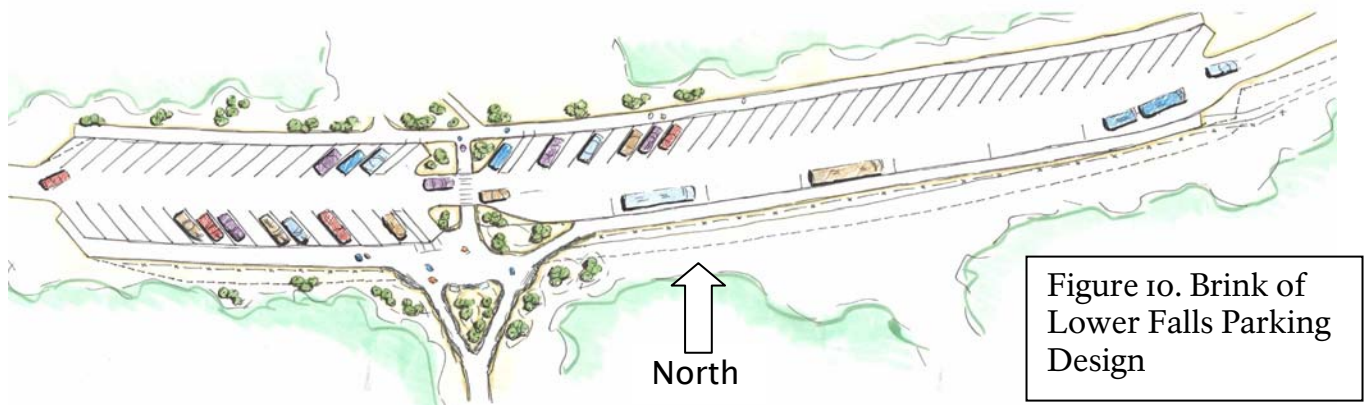
Stone, concrete, asphalt, and log curbing could be retained and added to some parking areas along the North Rim Drive to replace asphalt curbing and reduce informal parking. Access for visitors with disabilities would be improved here and throughout the project area.

BRINK OF THE LOWER FALLS

Parking would be redesigned; and would be expanded by a maximum of 25 vehicle spaces. Oversized vehicle and bus parking would be formalized including a drop-off area.

Improved separation of pedestrians and vehicles within the parking lot would be accomplished by the addition of a designed pedestrian crossing that incorporates traffic calming elements such as a narrower traffic lane and pedestrian islands, and reduced speeds. The pedestrian crossing would be designed to help direct pedestrians towards this

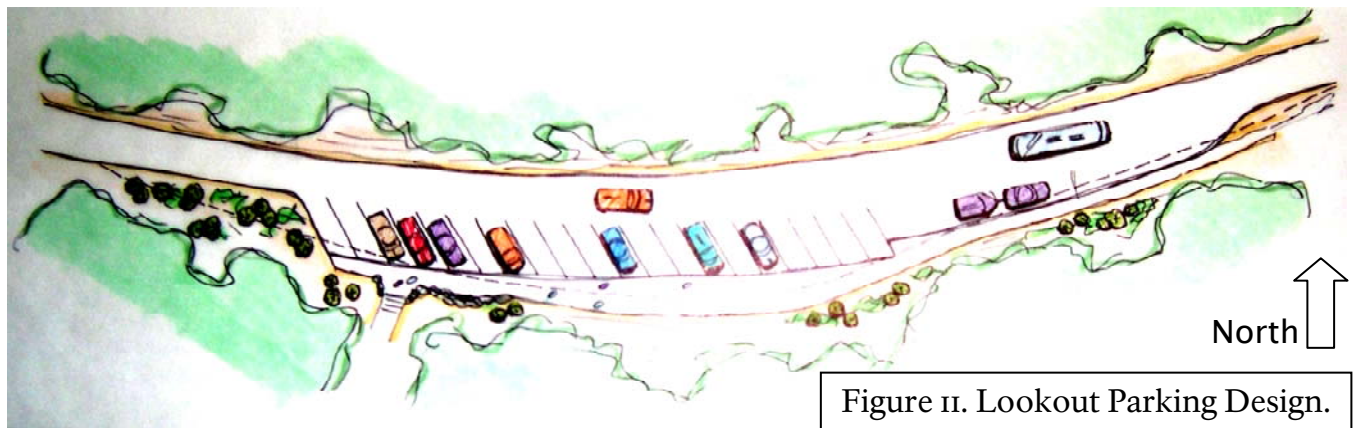
central crossing area. Additional improvements would include seating areas, improved signage, and orientation maps for the Canyon area, improved restroom access, revegetation of certain areas, improved trailhead access, improved access for visitors with disabilities, and an expanded pedestrian area to accommodate the high use of this popular



area. Some minor fencing (constructed in a rustic style of log & stone, and used elsewhere in the Canyon viewing areas) would be added in areas to enhance visitor safety.

The drainage culvert outlet currently disperses water onto the existing trail leading to the Brink of the Lower Falls. Severe erosion has been an ongoing problem with the trail and associated structures. Minor relocation of this drainage pipe and structure to a new area is an option at this site. If relocated the headwall would be constructed of historically compatible materials.

LOOKOUT POINT PARKING AREA



As with other parking areas, Lookout Point is in need of repaving, re-curbings, and better delineated parking. Angle parking would be expanded at Lookout and formal bus/recreation vehicle parking would be added. The redesigned parking area would be generally confined to the existing footprint of previous disturbance, with a few areas being revegetated, and others some being expanded slightly to formalize the lot. Erosion is

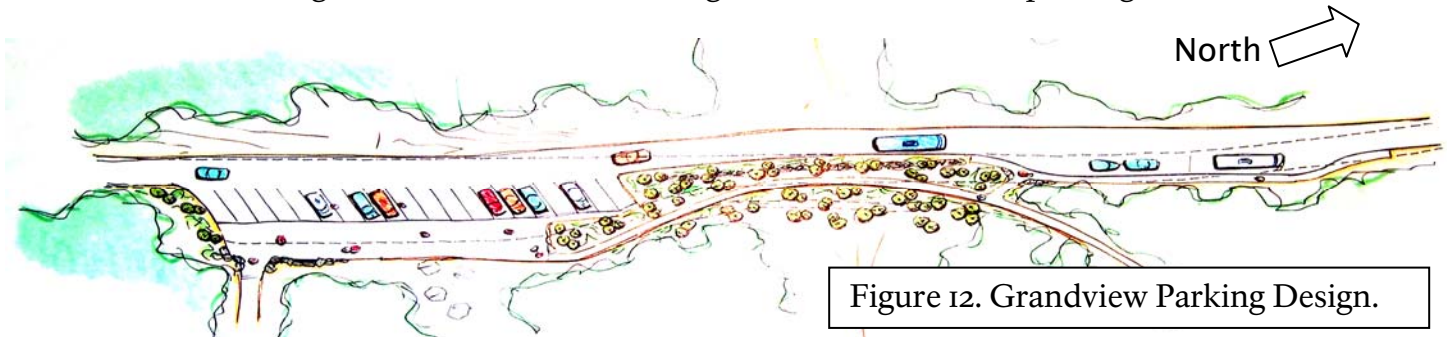


currently undermining parts of the existing pedestrian sidewalk. The construction of some minor safety rails (rustic construction) to guide pedestrian traffic would be installed. Narrowing the parking lot as proposed would allow the

sidewalk to be reconstructed on solid ground. An existing timber crib wall, that is severely eroded, would be replaced and an existing historic masonry retaining wall moved to stabilize the trail and road above it. In-kind materials would be used to retain its historic appearance. The faint dashed lines on the drawings are existing conditions for the edges of the parking areas.

GRANDVIEW

Informal parking would be formalized to allow for approximately 20 cars and two RV/buses, curbing would be used to discourage additional informal parking and to



improve drainage. Oversized vehicle and bus parking would be formalized including a drop-off area.

In order to repair the deteriorating log crib and rubble wall at Grandview the road centerline would shift approximately 18 feet into the adjacent hill and away from the canyon edge. This would facilitate drainage repairs, structural stabilization of the road, and in-kind reconstruction of the cribbed log and rubble stone faced retaining wall. The shift would allow the opportunity to

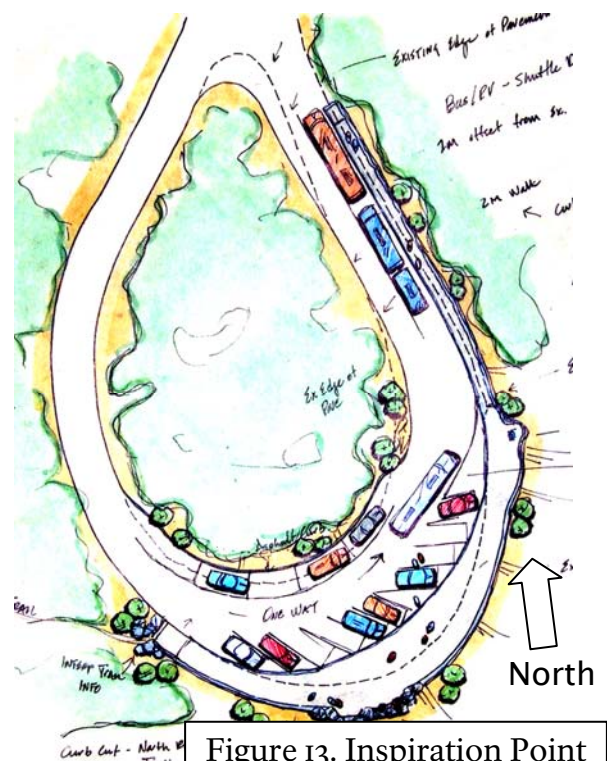
locate oversized vehicles and bus parking north of the automobile parking. The excavated cut into the hill slope would be less steep than the existing cut to allow for better revegetation. The existing sidewalk above the wall would be reconstructed to allow for additional pedestrian space. The dashed line represents existing conditions.

INSPIRATION POINT

Inspiration point was historically and is currently the very first opportunity to view the Grand Canyon of



the Yellowstone River from the North Rim Drive. The terminus of the



Inspiration Point road spur is circular and presently accommodates limited parking. The area is frequently congested.

Reversing the traffic flow to begin the visitors' experience at the other end of the North Rim Drive, where parking areas are larger, is likely to reduce traffic congestion in this area. The redesign of the parking lot is also intended to aid in visitor parking, oversized vehicle parking, and to reduce amount and frequency of informal parking on vegetated areas and thermal soils.

Inspiration Point would also have parking modifications with improved parking layout, drainage, and measures to prevent soil erosion. The parking lot would be designed for approximately 15 cars and three RV/buses. Drainage would be designed to allow storm water runoff to travel to the vegetated space in the center of the circle. The sidewalk would be repaired, and the existing walk and historic barrier wall would be extended to the eastern limit of formalized parking, providing access for visitors to the oversized vehicle and bus parking area. The existing parking area at Inspiration Point would be expanded slightly towards the inside of the circular turnaround at the terminus of the road to avoid impact to the historic rubble stone retaining walls on the outer sides of the roadway. A small rockery-type retaining wall would be constructed to minimize erosion potential near the oversized vehicle parking. The radius of the curve at the outlet/inlet of the parking area would be increased to allow for large vehicles to re-circulate through the parking area. Small parking islands would be installed to help define the pattern of parking for the lot. The masonry and log curbed walkway adjacent to the road on the east end of the canyon viewing area will be expanded. The dashed line, on the drawing above, represents existing conditions.

CAMPER SERVICES

Changing the traffic flow direction of the North Rim Drive would result in visitors ending their drive in the area of camper services and Canyon Village parking area.

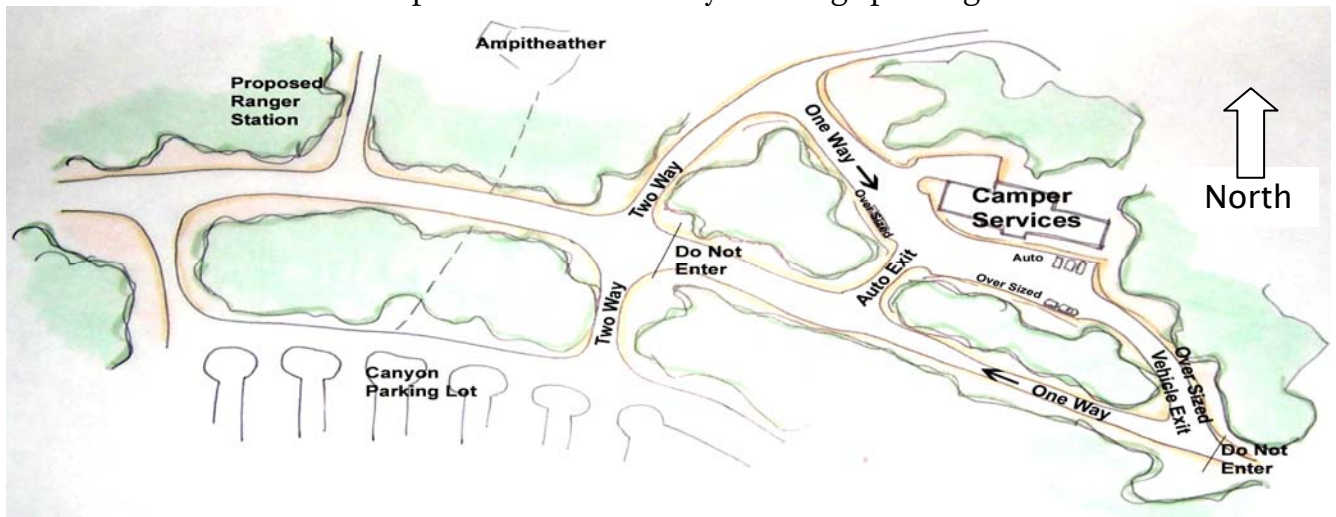


Figure 14 . Camper Services Parking Area Design

Traffic circulation in and around Camper Services would be altered to clearly delineate the one-way road exit while also meeting the needs of the campers using the Camper Services facilities.

Signs would be installed to indicate the one-way road, do-not-enter, and directional signs for the Camper Services area. This parking lot is also in poor condition and would be repaved at some point in the future, dependant upon funding availability. A dump station for recreational vehicles would be constructed in either the Camper Services parking area, the Canyon Village parking area, the service station area, or along the North Rim Drive in this area at an existing pullout, or along the road in the Canyon campground.

The Canyon Village parking area is part of the Canyon Village Historic District. The islands of the parking area though, are not a contributing element of the National Register character of the area. The north to south orientation of the existing parking lot island would be maintained, however the northern ends of the interior islands would be removed to accommodate oversized vehicle and bus parking. Oversized vehicles would be

Visitor orientation and way finding in the Canyon Village parking area is currently confusing and difficult, partially because visitor views are obscured by



vegetation on the parking islands. The original planting design for the Canyon horseshoe parking area called for low shrubs and vegetation that would not obscure views across the horseshoe-shaped mall. Lodgepole pine has, over the years, voluntarily grown in the islands and the tall trees were not a characteristic of the original Mission 66 design. Vegetation on the southern ends of the islands would be thinned and replaced with lower vegetation to increase the ability of visitors to visually orient themselves, increasing way-finding within the Canyon Village. Orientation kiosks would also be added to the parking area to aid with visitor orientation to Canyon Village. Current drainage in the parking area is poor. Improvements to the drainage would be undertaken. The thick dashed lines on figure 15 represent pedestrian trails.

Additional needs include a permanent location and facility for a warming hut and a Post Office. Currently these functions are located in temporary facilities within the Canyon Village parking area. The Post Office is in the old warming hut trailer and has many shortcomings. The current temporary warming hut exists in the trailer that is used as the summer backcountry office, and is currently located in the Canyon Village parking area. Options for a permanent location and structures for both functions are still being explored.

MATERIAL SOURCE

Materials for this construction project would come from aggregate materials that are already stockpiled in the Grebe Lake Pit, the Norris asphalt plant area, or the Gibbon Meadows pit. Additional material would be from the Sylvan Pass pit (reject material from earlier road construction jobs). The first phase of construction work for this rehabilitation project would require about 26,000 to 34,000 cubic meters of aggregate material, and 600 to 800 cubic meters of rock. Completion of all work described in this document would require an additional 33,000 to 43,000 cubic meters of aggregate, and rock would remain the same, at 600-800 cubic meters. The Grebe Lake Pit is located approximately two-miles west of Canyon Junction, the Norris asphalt plant area is approximately one and a half-miles east of Norris Junction, and the Gibbon Meadows pit is approximately three-miles south of Norris Junction. Stone masonry materials would come from existing boulders and rocks periodically placed and lining the South Rim Drive or the old road (now a pedestrian trail) accessed adjacent to the Chittenden Memorial Bridge. A rock crusher and an asphalt plant would be set up at the Grebe Lake pit to produce the aggregate and asphalt needed for this proposed project.

STAGING, STOCKPILING, AND DISPOSAL SITES

Staging or stockpile areas would be located within existing parking areas and pullouts within the project area. Areas being used would either be closed to the public, or if large enough for contractor and visitor use, the contractor use areas would be fenced and designated for no public use of the specific contractor area. Staging and stockpile areas would also be located at the Grebe Lake Pit, the Norris asphalt plant area, the Gibbon Meadows pit, and the incinerator site (previously used on the Hayden Valley Road Rehabilitation project) located just northwest of the intersection of the South Rim Drive with the Grand Loop Road. Excess or waste materials (unusable rock gravel, and soil), about 17,000 to 22,000 cubic meters, would be hauled to Ice Lake Pit to complete an Abandoned Mined Lands reclamation project, or to the east of the existing baseball field located in the Canyon Government/Administrative area to reclaim an old borrow pit site.

The entire project described in this document, including phase I, would generate about 20,000 to 26,000 cubic meters of waste materials. Additional waste materials such as treated timbers, would be hauled to an approved facility outside the park.

WATER SOURCE

The water source for this alternative would be from pumping water from the Yellowstone River near the Otter Creek confluence located about three miles south of Canyon Junction. Water would be used for dust control, compaction of road base material, washing of aggregate materials at the Grebe Lake Pit area, and for water needed in the production of asphalt at the plant that would also be located at the Grebe Lake Pit. Whirling disease is known to infect some fish in the Yellowstone River. Any water pulled from the Yellowstone River drainage to be used for dust control or other construction purposes, such as wash water for aggregate or asphalt production, would not be used where it could potentially run into any tributaries other than the Yellowstone River.

REVEGETATION

Revegetation is an integral part of this alternative. Within the project limits revegetation efforts will address social trails, informal parking, steep cut slopes, slope stabilization and erosion. It is critical vegetation is managed and maintained to prevent the infestation of weeds, loss of screening contributing to the historic district, stabilization of highly erodible slopes and hazard tree management. See Appendix A for *Yellowstone's Revegetation Guidelines*.

GEOLOGIC/THERMAL FEATURES

Thermal features would not be affected, therefore no design recommendations are needed, and no mitigation actions are proposed.

VEGETATION/RARE PLANTS

No rare plants are present in the project area, and as such would not be affected. No design recommendations are proposed.

WETLANDS AND OTHER WATERS OF THE UNITED STATES

Impacts to wetlands would be avoided, minimized, or mitigated by delineation of construction limits, and by stockpiling any wetland soils for regeneration after construction.

WILDLIFE

Road maintenance activities could temporarily displace wildlife.

THREATENED AND ENDANGERED SPECIES

Blasting is not anticipated for this road project, but in the event a need arises to blast, no blasting would occur from April through early August to prevent any impacts to nesting bald eagles.

CULTURAL RESOURCES

Extensive repairs are needed to the log cribbed support wall and rubble stone retaining wall under the walkway associated with the road alignment at the Grandview area of the North Rim Drive. Excavation of the road base material in this area would take place and

repairs and replacement of structural support, and installation of appropriate drainage structures would occur in this area. The historic log cribbing and rubble stone retaining wall would be replaced in-kind (using the historic stone) to retain the historic appearance in this area. Historic landscape boulders lining the pathway would be reinstalled. The centerline of the one-way scenic North Rim Drive would be shifted about 18 feet to the northwest, excavating into the hillside in this area. Shifting the road in this area would help to alleviate pressure on the structural supports for the road and associated walkway. The shift would also allow room for revegetation efforts to help reduce the visibility of vehicles on the roadway from other viewing points in the Grand Canyon of the Yellowstone area. An eroded timber crib wall would be replaced and an historic masonry wall above it would be moved. The wall is located between Grandview and Lookout Point, and work would be completed using in-kind materials to retain its historic appearance.

SCHEDULING OF WORK ACTIVITIES

The first phase of this project alternative would take approximately two years to complete. This first phase would include work to rehabilitate the North Rim Drive, the Inspiration Point spur road, the associated parking areas along these roads, and the Artist Point parking area and viewing area. The schedule of work activities would minimize impacts to visitors during heavy use periods and may include full closures of the North Rim Drive or the South Rim Drive beyond Uncle Tom's parking area. Some viewing areas into the canyon would remain open during the high visitation periods of the summer.

VISITOR INFORMATION

Road condition information would be relayed to park visitors via the park's morning reports, and posted as is currently done in campgrounds and visitor centers.

CONSTRUCTION STIPULATIONS AND MITIGATION

Temporary impacts, such as soil and vegetation disturbance and the possibility of soil erosion, associated with the rehabilitation of the North Rim Drive, the South Rim Drive, and the Brink of the Upper Falls access road would occur. In an effort to avoid introduction of exotic plant species, no hay bales would be used. Hay often contains seed of undesirable or harmful alien plant species. Therefore, on a case-by-case basis the following materials could be used for any necessary erosion control dams : wood bark mulch, straw, sand bags, and silt fences. Wood bark mulch would be used to help retain soil moisture and promote seed generation of native plants. Standard erosion control measures such as silt fences and/or sand bags would be used to minimize any potential soil erosion.

Silt fencing fabric would be inspected weekly or after every major storm. Accumulated sediments would be removed when the fabric is estimated to be approximately 75% full. Silt removal would be accomplished in such a way as to avoid introduction of fine particle materials into any wetlands or flowing water bodies.

Although soil side-cast during construction would be susceptible to some erosion, such erosion would be minimized by placing silt fencing around the excavated soil. Excavated soil may be used in the construction project; excess soil would be stored in approved areas.

Revegetation plantings would use native species from genetic stocks originating in the park. Revegetation efforts would be to reconstruct the natural spacing, abundance, and diversity of native plant species. All disturbed areas would be restored as nearly as possible to pre-construction conditions shortly after construction activities are completed. The principal goal is to avoid interfering with natural processes. In many areas soils and vegetation are already impacted to a degree by various human and natural activities.

Construction would take advantage of these previously disturbed areas wherever possible. Soils within the project construction limits would be compacted and trampled by the presence of construction equipment and workers. Soils would be susceptible to erosion until revegetation takes place. Vegetation impacts and potential compaction and erosion of bare soils would be minimized by conserving topsoil in windrows. The use of conserved topsoil would help preserve micro-organisms and seeds of native plants. The topsoil would be re-spread in as near as original location as possible, and supplemented with scarification, mulching, seeding, and/or planting with species native to the immediate area. This would reduce construction scars and erosion.

Some petrochemicals from construction equipment could seep into the soil. To minimize this possibility, equipment would be checked frequently to identify and repair any leaks.

Blasting is not anticipated, but any blasting would conform to NPS-65, Explosives Use and Blasting Program (1991), specifications. All blasting would use the minimum amount necessary to accomplish the task. All blasting would be used to shatter, not distribute, any material. If blasting is needed, it would not occur from April through August to avoid impacting nesting eagles and peregrine falcons.

Should construction activity unearth previously unknown historic or prehistoric cultural remains or artifacts, work would be stopped in the area of the discovery and the park archeologist would be notified. In accordance with the Inadvertent Discovery Procedures of the Road Programmatic Agreement, the cultural remains would be assessed and the Wyoming SHPO notified. If the cultural remains are assessed as significant and retain integrity for the archeological information they may provide, the site will be avoided and protected. If avoidance is not possible, data recovery excavations will be conducted prior to any construction activity resuming in the area. If Yellowstone National Park, with the concurrence of the Wyoming SHPO, determines the archeological remains are not sufficient to meet the definition of a site, or the archeological information with the site is not significant, all cultural remains will be collected and construction activity may commence with the archeological monitoring. The Road Programmatic Agreement also details procedures in the unlikely event that human remains are recovered.

The Park Service would ensure that all contractors and subcontractors are informed of the penalties for illegally collecting artifacts or intentionally damaging archeological sites or historic properties. Contractors and subcontractors would also be instructed on inadvertent discovery procedures to follow in case previously unknown archeological resources are uncovered during construction. There will be no construction equipment or traffic within archeological site areas until the site is evaluated and all cultural material is recovered. Equipment and materials staging areas would also avoid known archeological resources.

The flow of vehicle traffic on the road would be maintained as much as possible during the construction period. Construction delays would normally be limited to 30 minutes. There may be some periods when the nature of the construction work may require temporary road closures. All efforts would be made to reduce these as much as possible and to alert park staff as soon as possible if delays longer than normal are expected. Visitors would be informed of construction activities and associated delays. The worst case scenario for road closures would be the full closure of one road segment while still allowing viewing into the canyon and the falls at various overlooks on the opposite rim drive.

Contractors would coordinate with park staff to reduce disruption in normal park activities. Construction workers and supervisors would be informed about the special sensitivity of park values, regulations, and appropriate housekeeping.

PROJECT COST

This alternative is expected to cost between 5 and 10 million dollars. The first phase will include work on the North Rim Drive, Inspiration Point and the Artist Point overlook and parking area.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The Council on Environmental Quality defines the environmentally preferred alternative as "...the alternative that will promote the national environmental policy as expressed in the National Environmental Policy Act's §101." Section 101 of the National Environmental Policy Act states that "... it is the continuing responsibility of the Federal Government to

...

- (1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- (2) assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
- (3) attain the widest range of beneficial uses of the environment without degradation, risk to 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 which supports diversity and variety of individual choice;
- (5) achieve a balance between population and resource use which 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."

Alternative A (No-Action) would provide for continued visitor use of the Rim Drives and resource management adjoining habitat along the road edge. Under this alternative, park resources would continue to be protected while providing opportunities for the public to see and learn about some of the natural and cultural resources found in this section of the park. This alternative does not provide for deteriorating infrastructure of the road to be repaired or stabilized in all instances, and would not maintain these resources over time. This alternative, therefore, strives to and meets policies 1-6 to varying degrees. However, this alternative does not fully meet policies 2, 3, 4, 5, or 6. The no-action alternative does

not address the current Canyon Rim Drives needs regarding safety, traffic flow congestion and direction, drainage, revegetation, or visual resources. The no-action alternative does not improve safety or beneficial uses for pedestrians or vehicles (including buses and recreation vehicles). The no-action alternative does not encourage bus, or recreation vehicle traffic because it maintains the inadequate bus/RV parking problems, and traffic congestion. The no-action alternative also continues to allow resource damage caused by informal pullouts. Rough sidewalks, which would be left by Alternative A, limit disability access. Further, no reclamation or revegetation would occur under this option.

Alternative B is the environmentally preferred alternative. Alternative B strives to and meets policies 1-6 to the extent of Alternative A, and would more fully meet policy by

- 1) Staying within the existing footprint of the current roads and parking lots. Addressing the deteriorating paved surfaces extends the life of the infrastructure in the area, hopefully reducing the need for more drastic reconstruction measures to maintain roads and sidewalks in the future. The more that the roads and parking areas deteriorate, the more reconstruction and funding would be needed to repair the infrastructure in the future;
- 2) Providing for safe, healthful, productive, and aesthetically and culturally pleasing surroundings. Parking and redesign would especially increase pedestrian safety. Clearly designated parking for cars, buses, and recreation vehicles and encourage safer parking and reduce accidents. Revegetation of various social trails would improve the visitor experience.
- 3) Attaining a more diverse range of visitor enjoyment without risk of public health or safety. Repaving sidewalks could increase pedestrian and disability access. Clearly designated bus and recreation vehicle parking could make parking safer and more accessible for visitors and for buses and recreation vehicles.
- 4) Maintaining the historic and cultural landscape of the project area. New culverts, walls, guardrails, and curbs would follow historic and cultural design standards.
- 5) Providing a variety of ways for the visiting public to experience the resource.

Table 2: Comparison of Alternatives

Alternative A (No Action)	Alternative B (Preferred)
No major road rehab	Road rehabilitation and improvement would occur
Existing use and maintenance continues: potholing, periodic chip and seal coat applications.	Potholing, periodic chip and seal coat applications would not be needed after the overlay for several years.
No FLHP funds available for standard road maintenance	FLHP funds available for this project, but not for future maintenance..
No changes to road base	Modifications to road base would occur in select problem areas.
No changes to pullouts	Existing pullouts would be paved and 10-12 new pullouts would be added.
No changes to culverts	Existing culverts would be cleaned and repaired (33-47), or replaced in-kind (13-21).
Ditch reconditioning and cleaning would occur as maintenance dollars allow	3,800-5,300 m ² .94-1.31 acres) of ditch would be reconditioned and cleaned

No changes to walls	Existing walls would be repaired in-kind and new rockery walls added
No changes to guardrails	Repairs to guardrails may occur or be replaced in-kind where needed
No new signs	Existing signs would be rejuvenated or replaced
No material excavation	Material stockpiled at Grebe Lake Pit would be used as an aggregate source.
No site revegetation	Site revegetation would occur, the Ice Lake Pit reclamation would continue. 16,000 m ² -21,500 m ² (4.0-5.3 acres) would be revegetated along the road and parking area edges from areas impacted by road rehabilitation activities. Revegetation of 350-500 m ² (0.08-0.12 acre) after the removal of the same area of an unused access road off the Brink of the Upper Falls road.
No staging or stockpiling required.	Staging or stockpiling would be required
Indefinitely deferred pavement overlays	Pavement Overlays would occur
Continued shortcomings in traffic flow; Traffic flow direction stays the same	Traffic flow issues may be addressed. There would be the option of reversing the one-way traffic direction from South to North.
Continued road deterioration	Roads and parking areas would be rehabilitated, repaired, and repaved
Continued resource damage from informal pullouts	10-12 formal pullouts would be created in areas currently being used as informal parking to reduce resource damage.
No improvements to allow for a future bus system	Improvements would provide for the potential for a future bus system
Safety issues at parking areas not addressed	Safety issues at parking areas would be addressed.
Neglect in repair adversely affects historic road structures	Historic road structures are repaired/rehabilitated
The Wapiti Picnic Parking Area remains the same.	The Wapiti Picnic Parking Area would be repaved and redesigned to accommodate the addition of a vault toilet.
Inspiration Point parking, sidewalks, drainage, and soil erosion would not be improved. No pullouts would be added. No parking would be redesigned.	Inspiration Point would have improved parking layout, drainage, and reduced soil erosion. Sidewalks would be repaired. Six formal pullouts would be added at Inspiration Point.

Canyon Visitor Center parking lot would not be reconfigured. Buses and recreation vehicles would not be accommodated.	Canyon Village/Visitor Center parking would be reconfigured to accommodate busses and recreation vehicles. Some vegetation in the south end of the parking area may be removed.
No formal pullouts would be added to the North Rim, Grandview, Lookout, or Brink of the Lower falls. Parking design, traffic flow, informal parking and curbs, and sidewalk conditions remain the same.	North Rim, Grandview, Lookout, and Brink of the Lower Falls would have angled parking for one-way traffic flows. Curbs would be redefined to reduce informal parking. Sidewalks would be repaved
No formal pullouts would be added at the South Rim or Artist Point. Buses and recreation vehicles would not be accommodated. Artist Point overlook would not be rehabilitated.	One formal Pullout would be added at South Rim. Uncle Tom's parking area redesigned to accommodate busses and recreation vehicles and improve safety for pedestrians. Artist Point overlook would be rehabilitated.
Routine road maintenance, road patching, etc could lead to temporary road closures or delays. Notices of closures/delays would be posted at campgrounds and visitor centers.	Road rehabilitation would result in road temporary closures or delays. Notices of closures/delays would be posted at campgrounds and visitor centers.

Table 3: Summary Comparison of Impacts

Impact Topic	Alternative A: No Action Alternative	Alternative B. Preferred Alternative
Air Quality	There would be a temporary direct negligible effect on air quality from Alternative A.	There would be a temporary direct negligible effect on air quality from Alternative B.
Geologic Features & Soil & Vegetation.	Continued adverse impacts to soils as a result of improperly functioning drainages. Soil erosion and undercutting would continue. No revegetation would occur, allowing for continued soil erosion. Resource damage to soil from informal pullouts would continue.	There would be some temporary disturbance to soils associated with drainage reconstruction. Impacts to soils in these areas would be adverse but short-term and minor. Soil erosion would be overall reduced by revegetation and reclamation. Stabilization of slopes would result in long-term beneficial impacts to soils.
Vegetation & Rare Plants	Continued use of informal pullouts would continue, with a potential for increasing amounts of vegetation trampling.	There would be some impacts to natural vegetation along road and parking lot edges, culverts, and parking lot islands including removal of a few trees to improve sightability and orientation in parking lots and for safety issues. Natural vegetation would be reestablished in the project area along currently degraded social trails, trampling zones, and newly disturbed sites after construction. The disturbance associated with construction would provide an opportunity for invasive plant species to become established and spread. Some small trees would be removed from roadside ditches to improve drainage. No rare plants would be affected.
Wetlands and other Waters of the United States	Wetlands would not be impacted by the no-action alternative.	Wetlands would be temporarily impacted by the preferred alternative. Measures would be taken to minimize impacts and do on-site restoration after construction. No impacts would occur to non-wetland waters of the United States. Wetland disturbance would total 0.074 acres of which 0.01 acres are considered jurisdictional wetlands.
Wildlife	Wildlife would not be impacted	There could be a temporary local minor impact on wildlife
Threatened and Endangered Species	Threatened and Endangered species would not be impacted	There could be a temporary local minor impact on grizzly bear habitat, but the effect would be minor.
Cultural Resource: Historic Properties Ethnographic Resources	Benign neglect of repair to historic properties would lead to adverse impact.	Archeological sites, historic structures and districts, and ethnographic resources (historic properties) would be impacted, but no National Register eligible historic property would be adversely impacted. The cultural landscape would be enhanced by adding historically compatible culverts, crib walls, curbs or bumper logs.

Impact Topic	Alternative A: No Action Alternative	Alternative B. Preferred Alternative
Socio-economic Environment (Social, Economic Environment, Visitor Use & Experience).	The socioeconomic environment could be adversely affected by the current traffic congestion and flow direction. Visitor use, experience, and safety would continue to be diminished by traffic congestion, unclear parking, lack of bike lanes, and lack of adequate bus and recreation vehicle parking.	Visitor use, safety, and experience would be improved by providing clearly designated parking for cars, buses, RVs. Parking redesign and reversing the traffic flow direction would reduce traffic congestion and possibly benefit concessions. .

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

METHODOLOGY

Potential impacts 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, lasting less than one year, or long-term, lasting more than one year?), timing (is the project seasonally timed to avoid adverse effects), and intensity (are the 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 in this environmental assessment/assessment of effect.

In addition, National Park Service *Management Policies*, 2001 require analysis of potential effects to determine whether or not actions would impair park resources. The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values. However, the laws do give the National Park Service 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 National Park Service the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the National Park Service 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 National Park Service manager, would harm the integrity of park resources or values. An impact to any park resource or value may constitute impairment, but an impact would be more likely to constitute impairment to the extent that it has a major or severe adverse effect upon a resource or value whose conservation is:

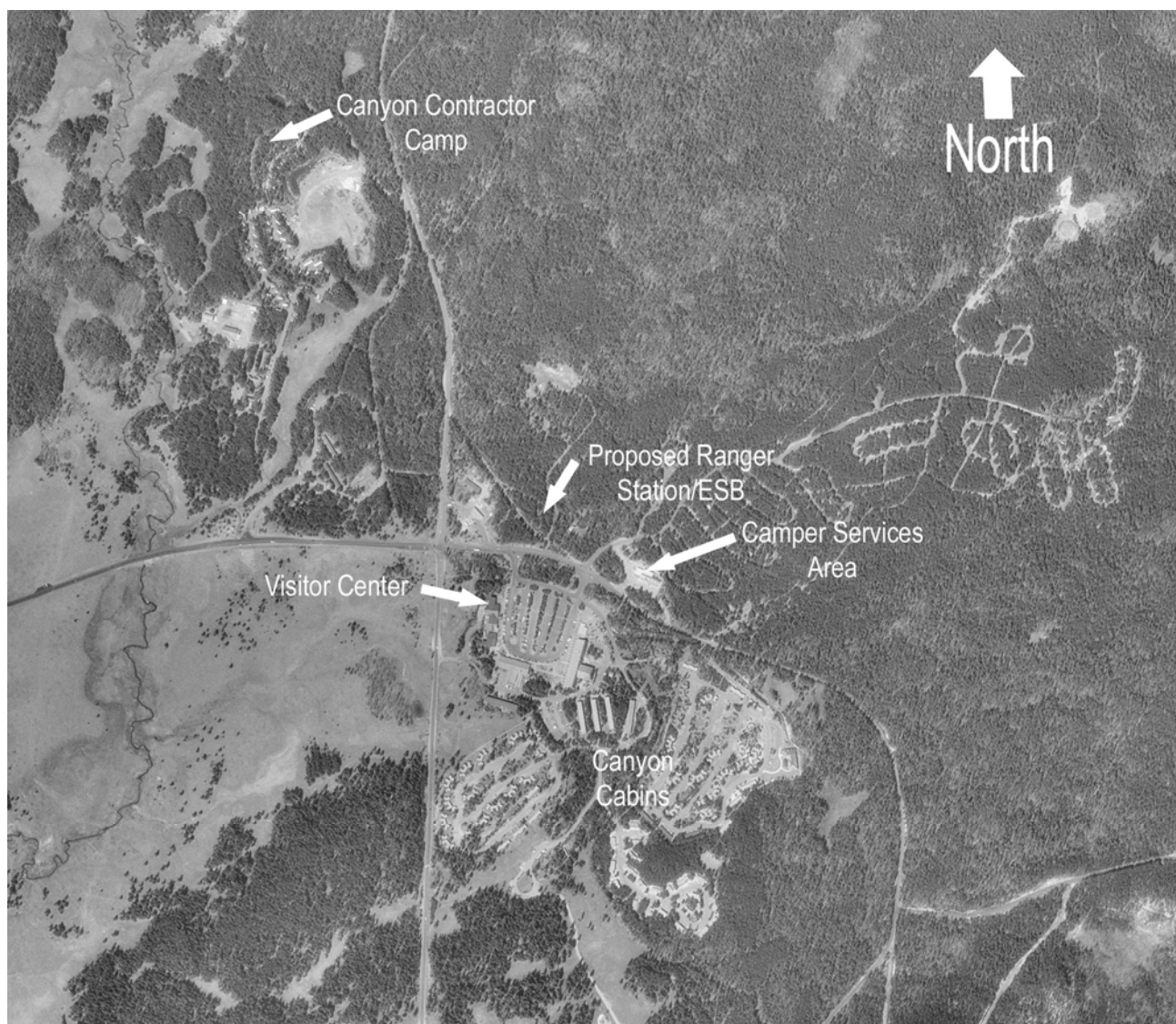
- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park; or
- identified as a goal in the park's general management plan or other relevant NPS planning documents.

Impairment may result from National Park Service 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 natural and cultural resource topics.

CUMULATIVE IMPACT SCENARIO

The Council on Environmental Quality (CEQ) regulations, which implement the National Environmental Policy Act of 1969 (42 USC 4321 et seq.), 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 both the no-action and preferred alternatives.

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 at Yellowstone National Park and, if applicable, the surrounding region. Reasonably foreseeable future development anticipated for the Canyon Rim Area includes: potential stabilization of historic masonry walls at overlooks and trail maintenance work.



APPROVED PROJECTS IN THE CANYON AREA:

CANYON RANGER STATION/EMERGENCY SERVICES BUILDING

The National Park Service (NPS) is proposing to construct a ranger station and emergency services building (ESB) facility for the Canyon Village area. These facilities are needed to provide ranger offices, storage space, a public contact area, and an operations base for emergency response. The FONSI for this project was signed September 21, 2004.

CANYON VISITOR CENTER

This plan is closely linked to the *Canyon Visitor Center Rehabilitation Plan*, which will result in renovation and construction of a new 22,000 square-foot visitor education center. A Finding of No Significant Impact (FONSI) was signed and the plan was approved in 2001.

(NPS 2002a). The construction of the Visitor Center is currently under way. A temporary trailer has been set up as a visitor center until the new facility is complete.

CANYON TO TOWER JUNCTION (DUNRAVEN ROAD) ROAD IMPROVEMENT PROJECT

This road reconstruction project began in late summer 2003. The first phase from Chittenden road to Canyon Village was completed in 2005. The second phase from Chittenden road to Tower Junction would begin when funding becomes available. This project's Finding of No Significant Impact (FONSI) was signed July 2, 2002. The segment of the Grand Loop Road that comprises the Dunraven Road Reconstruction Project covers a total of 18.4 miles (29.3km). The road is being widened from its existing 19-22 feet to 24 feet and is designed to address needs for better drainage, more pullouts and parking areas and slopes that can re-vegetate in the short growing season of 2 to 3 months.

CANYON JUNCTION TO FISHING BRIDGE JUNCTION: ROAD RESURFACING, RESTORATION, AND REHABILITATION

The Finding of No Significant Impact (FONSI) for this project was signed July 02, 2002. The project was completed in 2004 as one of many phases of road refurbishment identified in Yellowstone National Park's Parkwide Road Improvement Plan (approved June 1992). Resurfacing, restoration, and rehabilitation, of this road was necessary to correct road deterioration and numerous safety hazards. An Environmental Assessment (EA) was released to the public in September 2001.

CANYON CONTRACTOR CAMP

The FONSI for this project was signed November 2001, allowing for expansion of the existing trailer park for 50 additional contractor camp sites. These sites are occupied by contract workers doing construction within Yellowstone National Park, such as the Dunraven Road (see below) and would likely be utilized for housing for workers on the Canyon Rim Drives project. The location of the camp is immediately northeast of the Canyon employee residential area and the employee ball field, just west of the Canyon-to-Tower road.

WILDLAND URBAN INTERFACE FUELS MANAGEMENT

The FONSI for this project was approved May 19, 2003. The project was completed in 2005. It consisted of the removal of vegetation, that posed a danger of helping spread wildfire to existing buildings and infrastructure, in the Canyon Developed area.

REASONABLE FORSEEABLE PROJECTS IN THE CANYON AREA:

CANYON LODGING/CABIN REDEVELOPMENT

The concessioner has proposed replacing deteriorating (Mission 66 era) guest cabins at Canyon with multiplex buildings in the future as well as replacing sidewalks in the cabin area. Discussions on this potential project may take place during a Commercial Services Planning effort yet to occur.

CANYON RIM TRAILS

There is discussion of rerouting trails in the Canyon area to better facilitate pedestrian traffic and safety. Some trails are eroded and in need of drainage and support structure repair or relocation.

NATURAL RESOURCES

AIR QUALITY

AFFECTED ENVIRONMENT

Air quality and visibility are generally excellent in Yellowstone, which is a mandatory Class I area where air quality degradation is unacceptable under the Clean Air Act of 1977. 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, recreational vehicles, buses, snowcoaches, and snowmobiles) concentrated along motorized routes or by local road maintenance activities that may introduce short-term periods of dust.

METHODOLOGY AND INTENSITY THRESHOLDS

Analysis of the potential intensity of impacts to air quality was derived from park staff's past observations. The thresholds of change for the intensity of impacts to air quality may be adverse or beneficial and are defined as follows:

- Negligible: The impact is at the lowest levels of detection and causes very little or no deterioration of air quality.
- Minor: The impact is slight, but detectable with few perceptible effects of air quality deterioration.
- Moderate: The impact is readily apparent and has measurable effects of air quality deterioration.
- Major: The impact is severe or adverse or of exceptional benefit and has severe effects of air quality deterioration.

REGULATIONS AND POLICES

Current laws and policies require that the following conditions be achieved in the park for air quality:

DESIRED CONDITION	SOURCE
Air quality in the park meets national ambient air quality standards (NAAQS) for specified pollutants.	Clean Air Act; NPS Management Policies

ENVIRONMENTAL CONSEQUENCES

PREFERRED ALTERNATIVE IMPACTS (ALTERNATIVE B)

Additional dispersed dust and mobile exhaust emissions would be caused by truck traffic and equipment activity. To partially mitigate these effects, water sprinkling would occur to reduce fugitive dust, and appropriate limits would be placed on the idling of vehicles. Contractor activities would comply with state and federal air quality regulations, and contractors would operate under applicable permits. Improved traffic flow and parking conditions could reduce traffic congestion and reduce idling vehicle time, helping improve air quality.

CUMULATIVE IMPACTS

Increased vehicle traffic over time has increased air quality pollution from motor vehicles. However, improving the Canyon Rim Drives is not anticipated to have a significant effect on increasing motor vehicle traffic in the project area. No cumulative adverse effects are anticipated from the preferred alternative.

CONCLUSION

There would be no long- term adverse impacts on air quality or visibility in the Canyon Rim Drives area as a result of this project. Any effects would be temporary and limited to the duration of construction. Implementation of this alternative would not constitute an impairment of park air quality.

NO-ACTION ALTERNATIVE IMPACTS (ALTERNATIVE A)

Negligible short-term direct temporary effects could occur from routine road maintenance activities, but no adverse air quality impairment is anticipated from Alternative A.

CUMULATIVE IMPACTS

Road Maintenance activities on the Canyon Rim Drives are not anticipated to have a significant effect on increasing motor vehicle traffic in the project area. No cumulative adverse effects are anticipated from the preferred alternative.

CONCLUSION

There would be no long- term adverse impacts on air quality or visibility in the Canyon Rim Drives area as a result of road maintenance project in this area. Any effects from activities such as ditch cleaning, pothole patching, and culvert maintenance would be temporary and limited to the duration of the activity. Implementation of this alternative would not constitute an impairment of park air quality.

GEOLOGIC FEATURES AND SOILS

AFFECTED ENVIRONMENT

Yellowstone National Park lies in a geologically dynamic region of the northern Rocky Mountains. The park is noted for its geologic features that are the result of volcanism, glaciation, and continued geological processes fueled by a continental hotspot. The Canyon area itself is located in the caldera of a huge, collapsed volcano. Throughout geologic time numerous lava flows have filled the caldera with subsequent periods of glacial flows covering and further sculpted the landscape. Canyon Rim Drives and Canyon Village are situated between the Washburn Range to the north and Hayden Valley to the south. Elevation is approximately 2,408 meters (7,900 feet). Terrain is predominantly flat to gently rolling. At the southern end of the developed area the terrain drops sharply into the Grand Canyon of the Yellowstone.

Soils

Soils in the Canyon area are derived from the rhyolitic sands and gravels that were originally deposited as glacial till or glaciofluvial alluvium. The resulting soils are moderately coarse textured inceptisols with medium to loose base saturation.

METHODOLOGY AND INTENSITY THRESHOLDS

Analysis of the potential intensity of impacts to geologic features and soils were derived from the available soils and information and park staff's past observations of the effects on soils from both visitor use and construction activities. The thresholds of change for the intensity of impacts to soils may be adverse or beneficial and are defined as follows:

- Negligible: The impact is at the lowest levels of detection and causes very little or no physical disturbance, compaction, or unnatural erosion.
- Minor: The impact is slight, but detectable with few perceptible effects of physical disturbance, compaction, or unnatural erosion.
- Moderate: The impact is readily apparent and has measurable effects of physical disturbance, compaction, or unnatural erosion.
- Major: The impact is severe or adverse or of exceptional benefit and has severe effects of physical disturbance, compaction, or unnatural erosion.

REGULATIONS AND POLICES

Current laws and policies require that the following condition be achieved in the park for geologic resources:

DESIRED CONDITION	SOURCE
Natural soil resources and geologic processes function in as natural condition as possible, except where special management considerations are allowable	Park enabling legislation; NPS Management Policies

ENVIRONMENTAL CONSEQUENCES

PREFERRED ALTERNATIVE IMPACTS (ALTERNATIVE B)

The preferred alternative stays within the existing footprint of development and would have a minor impact on the area geologic features. Though no road-widening would occur, the soil near the Grandview wall would be disturbed by the replacement of a new crib wall and shifting of the road's centerline into the hillside. If any topsoil was disturbed, it would be stockpiled and saved for revegetation purposes. A new crib wall could reduce the erosion caused from the poor drainage and beneficially retain soil.

CUMULATIVE IMPACTS

No cumulative adverse effects are foreseen from Alternative B. Alternative B is not anticipated to cumulatively increase impacts to geologic features or soil.

CONCLUSION

Adverse effects to soil would be direct, local, short-term, minor, and would be mitigated by stockpiling any topsoil in areas of disturbance, to be reapplied after construction. No impairment to park geologic features and soils would occur. There are no thermal features near the road project area, and none would be affected by this project. This alternative would not constitute impairment to thermal

NO-ACTION ALTERNATIVE IMPACTS (ALTERNATIVE A)

The no-action alternative would stay within the existing footprint and would have negligible adverse effects or cumulative effects on the area geologic features. Little topsoil would be disturbed since routine maintenance would stay within the existing footprint and no road widening or rehabilitation would occur. If topsoil was disturbed, topsoil would be stockpiled and saved for revegetation purposes.

CUMULATIVE IMPACTS

No cumulative adverse effects are foreseen from Alternative A.

CONCLUSION

Impacts from maintenance activities associated with the no-action alternative would occur within the footprint of the existing road prism. No impairment to geologic features and soils would occur through the no-action alternative.

VEGETATION

AFFECTED ENVIRONMENT

The vegetation along the North and South Rim Drives is a complex mosaic of meadows, sagebrush steppe, and forest. Most of the forest is lodge pole pine (*Pinus contorta*) with occasional sub alpine fir (*Abies bifolia*), Engelmann spruce (*Picea engelmannii*), and whitebark pine (*Pinus albicaulis*). The forest understory is variable, but often includes elk

sedge (*Carex geyeri*), Ross sedge (*Carex rossii*), bluejoint reedgrass (*Calamagrostis canadensis*), lupines (*Lupinus argenteus*), and grouse whortleberry (*Vaccinium scoparium*). The wetland swales are often dominated by bluejoint reedgrass. mountain sagebrush (*Artemisia tridentata* var. *vaseyana*), Idaho fescue (*Festuca idahoensis*), slender cinquefoil (*Potentilla gracilis*), wildbuckwheat (*Eriogonum spp.*), and thick-stemmed aster (*Eurybia integrifolia*) are common species in the meadows and sagebrush steppe (Whipple 2005). Bear foods in the Canyon area include yampa (*Perideridia montana*), strawberries (*Fragaria virginiana*), sedges (*Carex spp.*) and timothy (*Phleum pratense*). Invasive exotic species such as butter-and-eggs (*Linaria vulgaris*), quackgrass (*Elymus repens*), yellow sweetclover (*Melilotus officinalis*), and Canada thistle (*Cirsium arvense*) are established in the Canyon area.

While there are no plant species protected by state law in Wyoming, and only four federally listed taxa which occur in the state, there are many species that are quite rare within the state. A survey in August 2003 of the project area did not reveal any

Wyoming plant species of concern (rare plants). There are no federally listed or candidate (category 1) plant species that are known to occur in the park. However, there are two endemic plant species that occur only in Yellowstone National Park, Ross' bentgrass (*Agrostis rossiae*) and Yellowstone sand verbena (*Abronia ammophila*). There is no habitat for either species in the area, and neither species was found during the rare plant survey (Whipple 2005).

None of the wetlands surveyed in the area contained rare plants, however noxious weeds were present (Pecha 2004).

Exotic vegetation. At least 187 species of non-native plants are known to have occurred in Yellowstone National Park (Whipple 2001), and many of these species are invading natural communities (Olliff et al. 2001). While the Canyon area has experienced less severe invasions of non-native plants than other areas of the park due to its distance from park boundaries and higher elevation, several of these exotic species are found in the Canyon area, including Canada thistle, butter-and-eggs, yellow sweet clover, quackgrass, orange hawkweed (*Hieracium aurantiacum*), and spotted knapweed (*Centaurea maculosa*). Most non-native plants are found in disturbed areas such as developments and road corridors. Some wetlands contained the following exotic species: timothy, redtop (*Agrostis stolonifera*), Kentucky bluegrass (*Poa pratensis*), alsike clover (*Trifolium hybridum*), and Canada thistle. (Pecha 2004). None of the four federally listed plant species under the Endangered Species Act are found within the project area.

The potential for proliferation of non-native plants during construction operations is a concern. Contractors would be required to adhere to proper construction and precautions, including washing of equipment before it enters the park. Reclamation and revegetation efforts would follow Yellowstone's policy on vegetation management for construction, which also includes procedures for long-term management of non-native vegetation (see Vegetation Management for Construction in Appendix A). Park resource management staff would monitor and control new exotic plant infestations that occur associated with this project. After construction activities are completed, revegetation with native plant materials would return disturbed areas to a more natural state. Plant species used would reflect the vegetation native to the area and would not include plants known to

attract bears. The long-term effects on exotic vegetation of either action alternative would be minor after completion of the revegetation efforts and the monitoring and control of exotic plants. The no-action alternative would not affect exotic vegetation.

METHODOLOGY AND INTENSITY THRESHOLDS

Analyses of the potential intensity of impacts to vegetation were derived from the available information and reports on Yellowstone's plant communities and park staff's past observations. Specific site specific surveys were conducted by park plant specialists for rare plants and exotic vegetation. The thresholds of change for the intensity of impacts to vegetation may be adverse or beneficial and are defined as follows:

- Negligible: The impact is at the lowest levels of detection and causes very little perceptible change to a plant population or individuals of species or a resource.
- Minor: The impact is slight, but detectable with few perceptible effects to a plant population or individuals of species or a resource.
- Moderate: The impact is readily apparent and has measurable effects to a plant population or individuals of species or a resource.
- Major: The impact is severe or adverse impact of exceptional benefit and has severe effects to a plant population or individuals of species or a resource.

REGULATIONS AND POLICY

Current laws and policies require that the following conditions be achieved:

DESIRED CONDITION	SOURCE
Federal- and state-listed threatened and endangered species and their habitats are sustained.	Endangered Species Act; NPS Management Policies, National Environmental Policy Act
Populations of native plant and animal species function in as natural condition as possible except where special management considerations are warranted. (Areas with special management considerations will be determined through management zoning decisions in the GMP.)	NPS Management Policies
The Service will strive to restore extirpated native plant and animal species to parks when specific criteria are met.	NPS Management Policies
Management of populations of exotic plant and animal species, up to and including eradication, will be undertaken wherever such species threaten park resources or public health and when control is prudent and feasible.	NPS Management Policies; Executive Order 13112, Invasive Species

ENVIRONMENTAL CONSEQUENCES

PREFERRED ALTERNATIVE IMPACTS (ALTERNATIVE B)

The preferred alternative would have a minor short-term affect on vegetation in the project area. Eroded areas near the Grandview crib wall would be reclaimed and revegetated. The preferred alternative could have a short-term local negligible impact on narrowleaf goldenweed and no mitigation measures are required (Whipple 2005). Disturbance to vegetation would be mitigated by topsoil conservation, revegetation and noxious weed monitoring and control efforts. The long-term effects on exotic vegetation of either action alternative would be minor after completion of the revegetation efforts and monitoring and control of exotic plants.

CUMULATIVE IMPACTS

Cumulative impacts to park vegetation by implementing the preferred alternative along with the mitigation measures stipulated, would have minor, direct, short-term effects. Long-term, indirect effects, and cumulative effects on park vegetation would be minor from this project and the future construction of the Canyon Ranger Station/ESB.

CONCLUSION

No rare plants were found during surveys of the project area. The long-term effects on exotic vegetation of either action alternative would be minor after completion of the revegetation efforts and monitoring and control of exotic plants. Vegetation impacts from the preferred alternative would not be of a degree that would constitute impairment to park vegetation.

NO-ACTION ALTERNATIVE IMPACTS (ALTERNATIVE A)

Vegetation would be negligible either beneficially or adversely by maintenance activities implemented by the no-action alternative. All routine maintenance activities would occur within the existing footprint of the existing road prism. Very limited revegetation efforts would occur. Routine noxious weed management activities would continue. No adverse impacts to rare plants would occur, since no rare plants inhabit the area.

CUMULATIVE IMPACTS

No adverse cumulative impacts to park vegetation would be anticipated by implementing the no-action alternative.

CONCLUSION

The no-action alternative would not constitute an impairment to park vegetation.

WETLANDS

AFFECTED ENVIRONMENT

Wetlands within 50 feet of either side of the roads in the project area were mapped and described in August and September 2003. Sixty-one wetlands totaling 1.19 acres were located within the survey area. Sedges (water sedge, *Carex aquatilis*, Nebraska sedge, *Carex nebrascensis*, inflated sedge, *Carex vesicaria*) and rushes (*Juncus ensifolius*) dominated the wetlands where the soil typically stayed wet to the surface or there was standing water for most of the growing season. Wetlands which tended to dry out latter in the season were dominated by bluejoint reedgrass (*Calamagrostis Canadensis*) and slender hairgrass (*Deschampsia caepitopsa*). Twenty-two of these Palustrine/Emergent wetlands (following the classification of Cowardin et al 1977) accounted for 0.57 of the total 1.19 wetland acres. Thirteen palustrine forested wetlands dominated by an overstory of lodgepole pine (*Pinus contorta*) and an understory of bluejoint reedgrass and horsetail (*Equisetum arvense*) occupied 0.37 acres. Wetlands which had formed in roadside ditches were dominated by exotic grasses, redtop (*Agrostis stolonifera*) and timothy (*Phleum paetense*). Eighteen ditch wetlands accounted for 0.24 acres.

Six 1.5 to 3 feet wide seasonally flooded intermittent stream channels were mapped within the project area. Five of the six were dry at the time of the survey. One had two to six inch deep standing water within the surveyed section. The stream beds varied from unvegetated gravel and rock to vegetated streambeds dominated by inflated sedge, bluejoint reedgrass, or willow herb (*Epilobium ciliatum*), arrowleaf groundsel (*Senecio triangularis*) and awned wheatgrass (*Elymus trachycaulus*).

Two permanently flooded streambeds were also mapped within the survey area. The streambeds averaged 2.3 feet wide and were filled with algae.

METHODOLOGY AND INTENSITY THRESHOLDS

Analyses of the potential intensity of impacts to wetlands were derived from the available information and reports on Yellowstone's plant communities and park staff's past observations. The methods for wetland determinations were done according to the January 1987 Corps of Engineers Wetlands Delineation Manual and the 1989 Federal Manual for Identifying and Delineating Jurisdictional Wetlands. "Evidence of disturbance or the existence of abnormal circumstances was documented. The routine wetland determination method was selected for all wetlands along the roadway" (Pecha 2004). Analysis of impacts on wetlands is based on the wetland delineations report (Pecha 2004) and on the following criteria.

- Negligible: Impacts would be slight, and if detectable, impacts would be very short-term and highly localized.
- Minor: Impacts would be detectable, short- or long-term but relatively localized, affecting a small area. Changes would require considerable scientific effort to measure and have barely perceptible consequences

to the species or habitat function.

Moderate: Impacts would be detectable, frequent, short-or long-term but affect a moderate number of wetlands.

Major: Impacts would be detectable, frequent, long-term, and impact a large area with permanent consequences for wetlands.

REGULATIONS AND POLICIES

DESIRED CONDITION	SOURCE
The natural and beneficial values of wetlands are preserved and enhanced.	Executive Order 11990; Rivers And Harbors Act; Clean Water Act; NPS Management Policies
The Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise.	NPS Organic Act, NPS Management Policies, National Environmental Policy Act (CEQ Regulations At 40 CFR §1500, Departmental Manual 516, NPS Directors Order-12: Conservation Planning, Environmental Impact Analysis, And Decision-Making), National Parks Omnibus Management Act

ENVIRONMENTAL CONSEQUENCES

PREFERRED ALTERNATIVE IMPACTS (ALTERNATIVE B)

Implementation of the Preferred Alternative would result in temporary impacts to 28 jurisdictional wetlands totaling 0.01 acres. These impacts along with impacts to non-jurisdictional wetlands would be a total of 0.074 acres. The impacts would occur as equipment accesses localized areas to clean, line or replace culverts. To minimize impacts, the wetland vegetation and topsoil immediately adjacent to the culverts would be stripped and temporarily stockpiled prior to the culvert work. Upon completion of the local construction work, the conserved topsoil would be replaced. The topsoil not only provides a growing medium but also a source of live plant material and seed for revegetation. The localized hydrologic conditions are not expected to change; therefore reestablishment of the wetland vegetation should be rapid.

In some places wetland vegetation has become established in ditches where water is sufficient to sustain the wetland plants. These are considered artificial and not under the jurisdiction of the Clean Water Act, Section 404 (Protection of Wetlands and Other Waters of the US) as administered by the U.S. Army Corps of Engineers. Nine of these nonjurisdictional wetlands totaling 0.07 acres will be impacted as the vegetation is removed to clean the ditches. Because these wetlands are artificial, no mitigation to

compensate for the impacts will be undertaken. It is expected that the impacts will be temporary, however, as the vegetation reestablishes in the ditches over time.

CUMULATIVE EFFECTS

Cumulative impacts to wetlands would include the above stated impacts from this project (0.074 acre), plus wetland impacts from recently completed projects on the Dunraven Pass Road project (0.96 acre) completed in 2004.

CONCLUSION

The preferred alternative would have local, negligible to minor, short-term impacts to wetlands in the project area. Park wetland resources would not be impaired due to implementation of this alternative.

NO ACTION ALTERNATIVE IMPACTS (ALTERNATIVE A)

The no-action alternative would have negligible to minor temporary impacts on wetlands due to culvert and ditch maintenance activities. Because current hydrologic conditions would continue, the wetland vegetation is expected to reestablish over time.

CUMULATIVE IMPACTS

Cumulative impacts to wetlands would include the 0.96 acre from the Dunraven Pass Road project, and from ditch cleaning efforts by park maintenance staff. Ditch wetland impacts would be anticipated to be less than the (0.074 acre) that would occur from implementation of the preferred alternative since no culverts would be replaced.

CONCLUSION

The preferred alternative would have local, negligible to minor, short-term impacts to wetlands in the project area. Park wetland resources would not be impaired due to implementation of this alternative.

WILDLIFE/MAMMALS

AFFECTED ENVIRONMENT

Yellowstone has sixty species of mammals, six of reptiles, four of amphibians, twelve of native fish, five of nonnative fish, and more than 300 species of birds. Eight of the mammals are native ungulates, two are bears, three are wild cats, three are canids, and six are members of the weasel family. Large meadows in the vicinity of the Rim and Inspiration Point Drives provide a variety of grasses, sedges, and forbs used by herbivorous mammals; adjacent lodgepole pine forests provide cover for protection from weather and security for resting.

Ungulates. Elk, moose, and mule deer are commonly seen along the Rim Drives or in meadows nearby. Bull bison use the area in early summer and fall seasons, but cow/calf bison groups are rare. Bighorn sheep are found on the rocky slopes of Mount Washburn, north of Canyon Village, but do not use flat areas near the roads. Pronghorns, mountain goats, and white-tailed deer are typically not present.

Black bears. The Rim Drives area receives a high level of use by black bears. The potential for bear-human conflicts is high due to good quality bear habitat in the area and intensive human use. Historically, black bears were involved in more bear-human conflicts than grizzly bears. Since the park began making concerted efforts to reduce artificial foods available to bears in the early 1970s, black bears have been seen less frequently along roads, and conflicts between black bears and humans have declined. Black bears eat grasses, sedges, forbs, ants, roots, and berries; prey on ungulate neonates (e.g. elk, mule deer) and cutthroat trout; and scavenge ungulate carrion when available. However, little carrion occurs near the Rim Drives because few ungulates spend winter and early spring months in this area and because survival rates for ungulates during other months are usually high.

Cougars. Most cougars in the park occur on the Northern Winter Range and adjacent ungulate summer ranges. The Grand Canyon of the Yellowstone provides rocky habitat that attracts cougars; several radio collared individuals captured during ongoing studies use the vicinity of Seven-mile Hole. Several reports of cougar occurrence in the Rim Drives area have occurred in the last three years. Cougars are obligate predators that take mule deer, elk, and moose calves. Thus cougar use of the Rim Drives area would be expected, due to high use by ungulates.

Forest carnivores. These species include red fox, coyote, badger, bobcat, Canada lynx (see threatened species below), wolverine, and pine marten; all occur in the Rim Drives area but their abundances are unknown. These species would typically prey on the small herbivorous mammals or ungulate neonates; and scavenge on carrion. Fishers apparently do not occur in the park. River otter and mink occur along the Yellowstone River near Canyon Village.

Other small and mid-sized mammals. Pocket gophers, meadow voles, field mice, and Uinta ground squirrels are common in the meadows near the Rim Drives. Snowshoe hares, porcupines, chipmunks, golden-mantled ground squirrels, and red squirrels occur in area conifer forests. Beavers and muskrats occur along the Yellowstone River, particularly along sections where water speeds are low. Yellow-bellied marmots occur in the rocky bluffs above the Yellowstone River. Least and long-tailed weasels in the area prey on mice, voles, and snowshoe hares.

METHODOLOGY AND INTENSITY THRESHOLDS

Analyses of the potential intensity of impacts to wildlife were derived from all available information and reports on Yellowstone's animal populations including park staff's past observations of mammals, birds, amphibians and reptiles, fish, threatened and endangered species, and species of special concern. Discussions with park wildlife specialists occurred for wildlife groups listed above to determine affects to various species. Where possible, map locations of sensitive resources were compared between alternative locations. Informal consultation with the U.S. Fish and Wildlife Service will occur as part of this evaluation process prior to any action being taken. The thresholds of change for the intensity of impacts to wildlife may be adverse or beneficial and are defined as follows:

Negligible: An action that could result in a change to individuals of a population of a species or a resource, but the change would be so

small that it would not be of any measurable or perceptible consequence.

Minor: An action that could result in a change to individuals of a population of a species or a resource. The change would be small and localized and of little consequence.

Moderate: An action that would result in some change to a population of a species or a resource. The change would be measurable and of consequence to the species or resource but more localized.

Major: An action that would have a noticeable change to a population or individuals of a species or resource. The change would be measurable and result in a severely adverse or major beneficial impact, and possible permanent consequence upon the species or resource.

REGULATIONS AND POLICY

Current laws and policies require that the following conditions be achieved for wildlife in the park:

DESIRED CONDITION	SOURCE
Natural resources will be managed to preserve fundamental physical and biological processes, as well as individual species, features, and plant and animal communities.	NPS Management Policies
The Service will not intervene in natural biological or physical processes, except: when directed by Congress; in some emergencies in which human life and property are at stake; to restore natural ecosystem functioning that has been disrupted by past or ongoing human activities; or when a park plan has identified intervention as necessary to protect other park resources or facilities.	NPS Management Policies
Natural systems in the national park system, and the human influences upon them, will be monitored to detect change. The Service will use the results of monitoring and research to understand the detected change and to develop appropriate management actions.	NPS Management Policies
Biological or physical processes altered in the past by human activities may need to be actively managed to restore them to a natural condition or to maintain the closest approximation of the natural condition in situations in which a truly natural system is no longer attainable.	NPS Management Policies
There may be situations in which an area may be closed to visitor use to protect the natural resources (for example, during an animal breeding season) or for reasons of public safety (for example, during a wildland fire).	NPS Management Policies

ENVIRONMENTAL CONSEQUENCES

PREFERRED ALTERNATIVE IMPACTS (ALTERNATIVE B)

Short-term effects— Most large mammals readily habituate to vehicle noise and foot traffic in the vicinity of roads if disturbances are not associated with negative stimuli such as shooting or collisions with vehicles. Thus, most mammals residing in the vicinity of the Rim Drives probably already exhibit some tolerance of human-related disturbances. However, because the road overlay and minor reconstruction activity will temporarily introduce more and novel disturbance, some displacement of wildlife from the immediate vicinity of the road would be expected. However, disturbance-related effects to resident, terrestrial mammals would be minor because the roads are short (< 8 km total), only minor road rehabilitation (e.g., culvert replacement) would occur, and disturbance would be limited to a short reach of road at any one time. Project-related disturbances would occur from early summer to fall, a period when stress related to temperature and snow pack is minimal. Closing individual roads to park visitors during the time roads are under improvement will also help reduce disturbance-related stress.

The Rim and Inspiration Point Drives are not known to be important travel corridors for large mammals that are migrating or dispersing. The small number of people and machinery added to the road area will also not represent significant barriers to wildlife movement. Should effects occur, normal patterns of movement should be quickly reestablished after the project is completed. The effects of the project on aquatic mammals would also be negligible because the Rim Drives do not occur in the vicinity of the Yellowstone River or other significant water bodies.

Food and garbage associated with the project would be strictly managed to avoid exposure and food conditioning of bears and other wildlife. Orientation sessions, including information on bears, would be conducted for construction personnel at the project sites to reduce the potential for conflicts. Employee and contractor housing would be permitted in existing facilities. Law enforcement rangers would patrol residential areas for food security.

No net increases in wildlife mortalities associated with the project are expected because road improvement work would be confined to a short reach of road and because road closures to visitors would compensate project-related losses. The road overlay will not modify wildlife habitat along the road, except for removal of some vegetation and landscaping associated with ditch improvements. Similarly, the area new paved turnouts and parking spaces would total less than 0.25 km².

Improvements of the road surface would probably contribute to slight increases in the average speed of vehicles driven by visitors. However, over the 16 year period spanning 1989–2004, there were only two large mammals killed in collisions with vehicles on the South and North Rim Drives.

CUMULATIVE EFFECTS

No cumulative impacts to wildlife resources would occur as a result of implementing the preferred alternative.

CONCLUSION

No impairment of wildlife resources would occur as a result of implementing the preferred alternative. Long-term (habitat-related) effects—Modification or loss of wildlife habitat associated with the project would be insignificant. Wildlife resources of the park would not be impaired by implementation of this alternative.

NO-ACTION ALTERNATIVE IMPACTS (ALTERNATIVE A)

Routine maintenance activities would stay within the existing footprint of development, and would not significantly affect wildlife or wildlife habitat. All activities would be very localized to address very localized problems and would be directly adjacent to the road and within the existing road prism disturbance. No existing gravel turnouts would be paved, and all work would be completed by NPS park staff that is aware of the need to reduce impacts to park wildlife.

CUMULATIVE IMPACTS

No cumulative impacts to wildlife resources would occur as a result of implementing the no-action alternative.

CONCLUSION

No impairment of wildlife resources would occur as a result of implementing the no-action alternative. Short-term (habitat-related) effects—Modification or loss of wildlife habitat associated with the project would be short-term, negligible, and insignificant. Wildlife resources of the park would not be impaired by implementation of this alternative.

THREATENED, ENDANGERED, AND SENSITIVE SPECIES

AFFECTED ENVIRONMENT

One threatened bird species and two threatened mammal species are present in Yellowstone: the bald eagle (*Haliaeetus leucocephalus*), Canada lynx (*Lynx canadensis*), and the grizzly bear (*Ursus arctos horribilis*). Gray wolves (*Canis lupus*) are designated as a non-essential experimental population and treated as threatened in Yellowstone National Park. The whooping crane (*Grus americana*) which is listed as endangered, is no longer considered a species found in Yellowstone National Park.

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 Greater Yellowstone Ecosystem (GYE) has achieved the goals set for establishing a stable bald eagle population in the park. A total of 26 eaglets fledged from 34 active nests during 2005. This is the highest number of fledged eaglets and breaks the record for active nests ever recorded in the history of Yellowstone National Park. The number of bald eagles in

the project area varies with winter conditions. There are between two to twelve wintering eagles in the area. The nearest nest is seven miles from the project area.

Canada Lynx. On March 21, 2000, the U.S. Fish and Wildlife Service (USFWS) listed the Canada lynx as threatened under the Endangered Species Act. In the U.S. Rocky Mountains, lynx occur in cool, moist coniferous forests. These environments typically support heavy snow pack and snowshoe hares, the lynx's principal prey. Historical information suggests that lynx were present but uncommon in YNP from 1880 to 1980 (Murphy et al. 2004). Park files contain records of 73 direct or indirect (tracks) observations of lynx made by park visitors or employees from 1887–2003, including one observation (unknown reliability) within 3 km of the South and North Rim. From 2001–2004, Murphy et al. (2004) documented the presence and distribution of lynx in the park, detecting several individuals in the vicinity of Yellowstone Lake and the Central Plateau by snowtracking in the winter and by setting hair-snares during the summer. No lynx were detected in other areas of the park, including the vicinity of the proposed road project where crews deployed 15 snowtracking surveys, searching 87 total km of transect for lynx tracks.

In 2002, Yellowstone National Park mapped lynx habitat, primarily subalpine fir Engelmann spruce, and lodgepole pine stands, as lynx habitat in accordance with the Canada Lynx Conservation and Assessment Strategy (CLCAS; Ruediger 2000). Twenty Lynx Analysis Units (LAU) were identified per CLCAS guidelines.

No analysis units were identified per CLCAS guidelines. No analysis units were identified in the central and west-central portion of the park where dry lodgepole pine stands predominate at successional climax, including the North and South Rim area. However, three small patches of lynx habitat ($<0.25\text{km}^2$) occur in the vicinity, but none are transected by the North Rim, South Rim, and Inspiration Point roads. Because understory cover is sparse, this area probably supports few snowshoe hares. The area is not a suspected travel corridor for lynx.

Grizzly Bear. In 1975, the grizzly bear was listed as threatened in the contiguous United States. Fewer than 1,000 grizzlies are thought to survive in the lower 48 states. Surviving populations occur in six areas in Montana, Wyoming, and Idaho.

In 2003, the Interagency Grizzly Bear Committee formally accepted and signed the *Conservation Strategy for the Grizzly Bear in the Yellowstone Ecosystem* which outlines how grizzly bears will be managed if and when they are removed from threatened species status. A proposal to remove Greater Yellowstone grizzly bears from threatened species status was published in the Federal Register on Thursday, November 17, 2005.

The grizzly bear population within the 5.5 million acres encompassed by the GYE has been estimated at over 600. Nearly 40 percent of this area, 2.2 million acres, is within the boundaries of Yellowstone National Park. 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.

Occupied grizzly bear habitat in the GYE has been divided into 28 grizzly bear management

units (BMUs), 18 of which are in the Grizzly Bear Recovery Zone. 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 Canyon Rim Drives and Brink of the Falls road segments are within the Washburn and Pelican/Clear BMUs. (Chin and Gunther 2002)

The Canyon Rim Drives and Brink of the Falls contain mostly low quality habitat (70-72%) in the spring and summer (supalpine fir/grouse whortleberry/Ross's sedge/pinegrass). Grizzly habitat increased in the fall (40%) in high quality grassy meadows and non-forested areas, with grouse whortleberry and yampa (Chin and Gunther 2002, p.10). In the summer, the higher preference habitat is south of the Artist Point drive. In the fall, high preference habitat exists on both sides of the Glacial Boulder/Inspiration Point drive. Two hundred sixty seven grizzly bear sighting reports were filed in the project area between 1984 and 2001 (Chin and Gunther 2002, p.14). During the same period, 33 grizzly bear females with cubs were seen, mainly near the Canyon Junction area, South rim drive exit, and Artist Point, with the later being the "largest concentration of activity" (Chin and Gunther 2002, p.14) "No areas of concentrated bear activity have been noted. Any areas in which bears are seen more often are probably due to visibility than bear use (Chin and Gunter 2002, p.14)" (Chin and Gunther 2002). There were 86 grizzly-human incidences in the Canyon Rim Drives/Brink of the Falls area from 1984-2001, mostly traffic jams (bear jams). "Management hazing of bears was conducted in 14 incidents along the Canyon Rim Drives and Brink of the Falls road segments" (Chin and Gunther 2002, p.20)

Gray Wolf. Gray wolves were eliminated by humans from the northern Rocky Mountains by the 1930s and placed on the endangered species list in 1973. After years of research and planning, it was determined that wolves should be re-established in Yellowstone National Park in order to restore this key predator species to the ecosystem. Fourteen wolves were captured in Canada and released in the park in 1995. Another 17 wolves were captured and released in 1996. As of December 2005, there were approximately 317 gray wolves in 31 packs within the greater Yellowstone area (D. Smith, YNP, pers. comm.). Wolves in Yellowstone are designated as an experimental population, and therefore, no areas are designated a critical habitat for wolves. Currently, gray wolves are not known to frequent the project area.

Species of Special Concern.

Wolverine. Wolverines, which are very wide-ranging and rarely seen scavengers, have been reported seven times since 1986 in the vicinity near Canyon but not in the Canyon development area (S. Chin, YNP Bear Mgmt. Office, Pers. Comm.). Wolverine sightings are likely due to the presence of ungulates and the potential for winterkill foraging opportunities. Although wolverines occur in YNP, whether or not individuals are entirely resident and/or breed in the park are unknown.

Peregrine Falcon. Peregrine falcons reside in Yellowstone from April through October, nesting on large cliffs. There have been several adult breeding pairs in the park including activity in the Grand Canyon of the Yellowstone River. Peregrine falcons are summer

residents and are found nesting near the Canyon area during the summer season. They are also known to occasionally hunt in the Canyon area meadows.

METHODOLOGY AND INTENSITY THRESHOLDS

The bald eagle, grizzly bear, Canada lynx, and the gray wolf are federally listed species in Yellowstone National Park. Yellowstone Center for Resources' wildlife biologists and ornithologist were consulted for this environmental assessment. Analysis of impacts is based on park staff observations and reports, as well as on the following criteria:

- Negligible:** An action that would not affect any individuals of a sensitive species or their habitat within the proposed project area.
- Minor:** An action that would affect a few individuals of sensitive species or have very localized impacts upon their habitat within the project area. The change would require considerable scientific effort to measure and have barely perceptible consequences to the species or habitat function.
- Moderate:** An action that would cause measurable effects on: (1) a relatively moderate number of individuals within a sensitive species population, (2) the existing dynamics between multiple species (e.g., predator-prey, herbivore-forage, vegetation structure-wildlife breeding habitat), or (3) a relatively large habitat area or important habitat attributes within the project area. A sensitive species population or habitat might deviate from normal levels under existing conditions, but would remain indefinitely viable within the park.
- Major:** An action that would have drastic and permanent consequences for a sensitive species population, dynamics between multiple species, or almost all available critical or unique habitat area within the project area. A sensitive species population or its habitat would be permanently altered from normal levels under existing conditions, and the species would be at risk of extirpation from the park.

REGULATIONS AND POLICY

Current laws and policies require that the following conditions be achieved for species of special concern in the park:

DESIRED CONDITION	SOURCE
Federal- and state-listed threatened and endangered species and their habitats are sustained.	Endangered Species Act; NPS Management Policies, National Environmental Policy Act
Populations of native plant and animal species function in as natural condition as possible except where special management considerations are warranted. (Areas with special management considerations will be	Park's enabling legislation; NPS Management Policies

determined through management zoning decisions in the GMP.)

The Service will strive to restore extirpated native plant and animal species to parks when specific criteria are met.

Park's enabling legislation; NPS Management Policies

Management of populations of exotic plant and animal species, up to and including eradication, will be undertaken wherever such species threaten park resources or public health and when control is prudent and feasible.

NPS Management Policies; Executive Order 13112, Invasive Species

ENVIRONMENTAL CONSEQUENCES

PREFERRED ALTERNATIVE IMPACTS (ALTERNATIVE B)

Bald eagles. Road overlay and construction activities supporting minor road and parking lot improvements would have no direct effects on bald eagles because eagles are mostly in the area in the winter. The nearest nest is seven miles from the project area. Bald eagles may occasionally travel through the area, but direct visual and auditory disturbance would probably be temporary and insignificant to a traveling individual. No blasting would be conducted from April through early August to mitigate for any possible nesting in the area of any bird species.

CONCLUSION

The affect would be short-term, local, site-specific, indirect, and likely negligible, since bald eagles and bald eagle habitat are insignificantly affected by the preferred alternative. Alternative B **may affect, but is not likely to adversely affect** the bald eagle.

Canada lynx. Road overlay and construction activities supporting minor road and parking lot improvements would have no direct effects on lynx because this species apparently does not occur in this area (Murphy et al. 2004). Lynx may occasionally travel through the area when making dispersal-related or extra territorial movements, but direct visual and auditory disturbance would probably be temporary and insignificant to a traveling individual. Heavy equipment that would be in use during the day, and parked at night, would not represent a significant barrier to lynx movement. The North and South Rim Drives do not occur in a Lynx Analysis Unit or transect lynx habitat mapped in the park. New vegetation disturbance associated with drainage ditch improvement would be insignificant. The project would pave several new turnouts, but affect less than 0.2 hectares (0.5 acre) of area that likely supports few snowshoe hares (Murphy 2005).

CONCLUSION

The affect would be short-term, local, site-specific, indirect, and likely negligible, since lynx, lynx prey species, and lynx habitat are insignificantly affected by the preferred alternative. Alternative B **may affect, but is not likely to adversely affect** the Canada lynx.

Grizzly bear. According to Chin and Gunther (2002), the “Canyon Rim Drives and Brink of the Upper Falls access road segments have low levels of grizzly bear use. Because of the road corridor’s low levels of bear activity, road design and construction activity should not impact bears’ foraging and traveling activities” (p.23). To avoid bear-human conflicts, proper sanitation is essential and “should be a priority during the construction phase of the project” (p.23). Construction workers and visitors would be educated on proper food storage and sanitation to minimize conflicts. The project area has little potential for bear-vehicle collisions. Only one bear was hit by a car in the area between 1984 and 2001.

CONCLUSION

The effect would be short-term, local, site-specific, indirect, and likely negligible, since grizzly bears and their habitat are not significantly affected by the preferred alternative. Alternative B **may affect, but is not likely to adversely affect** the grizzly bear.

Gray wolf. Use of the Canyon development area by wolves is not likely because wolves avoid areas of high human activity and prefer to follow large suitable prey. Human-caused mortality and the availability of prey are the two most limiting factors for wolf populations. To date, most human-caused mortality in the Yellowstone ecosystem is the result of management removals (mostly related to livestock depredations), poaching, and by collisions with vehicles. Within Yellowstone National Park, human-caused wolf mortality is neither from management removals or poaching, but is exclusively caused by automobile collisions (a total of eleven wolves). One vehicle-caused fatality occurred in the Canyon area just west of Canyon Junction. The proposed project is not expected to increase any of these sources of mortality within the park and thus would not have any direct impact on wolves. Prey species for wolves are considered abundant in the park. Elk are the primary prey species. While wolves have killed prey in the Canyon area, no wolf pack has focused its activities here. Wolves follow prey and frequent the valleys near Canyon on established ungulate winter ranges because of the abundance of elk and bison.

CONCLUSION

The proposed project would not be expected to have any significant impact on elk or any of the other species preyed upon by wolves. Long-term, direct, and cumulative effects of the preferred alternative would be negligible to gray wolf populations due to limiting the project area to the existing footprint. According to Doug Smith (2005), wildlife biologist and leader of the Yellowstone Wolf Project, wolves would not likely be adversely affected by the preferred alternative. Since the human footprint is not significantly being expanded and the Canyon Rim Drives project area is one of the lower wolf-use areas in the park, there is no likely adverse effect on wolves. The proposed project **may affect, but is not likely to adversely affect** the gray wolf population.

CUMULATIVE EFFECTS

Since the Canyon Rim Drives project is proposed for a short duration and within the existing human footprint of development, the cumulative effects of this project on threatened and endangered species would not adversely affect the bald eagle, Canada lynx, grizzly bear, or the gray wolf. Neither the action nor the no-action alternative would affect the wolverine or peregrine falcon populations.

CONCLUSION

No major or adverse impairment to threatened and endangered species is likely to occur from Alternative B. The integrity of threatened and endangered species and their habitat would be maintained by the preferred alternative. The no-action and the action alternative would not affect the wolverine or peregrine falcon populations.

NO-ACTION ALTERNATIVE IMPACTS (ALTERNATIVE A)

Bald eagles. Road maintenance activities along the Canyon Rim area roads and parking lots would have no direct effects on bald eagles. Disturbance to bald eagles that may occasionally travel through the area would probably be temporary and insignificant to a traveling individual. Blasting would not be conducted as part of this alternative.

CONCLUSION

Any effects would be short-term, local, site-specific, indirect, and negligible.

Canada lynx. Road maintenance activities would have no direct effects on lynx because this species apparently does not occur in this area (Murphy et al. 2004). Lynx may occasionally travel through the area when making dispersal-related or extra territorial movements, but direct visual and auditory disturbance would probably be temporary and insignificant to a traveling individual. No additional areas would be paved.

CONCLUSION

The affect would be short-term, local, site-specific, indirect, and negligible.

Grizzly bear. Road maintenance workers would be educated on proper food storage and sanitation to minimize conflicts. The project area has little potential for bear-vehicle collisions.

CONCLUSION

The effect would be short-term, local, site-specific, indirect, and negligible, since grizzly bears and their habitat are not significantly affected by the no-action alternative.

Gray wolf. As in the preferred alternative, use of the Canyon development area by wolves is not likely because wolves avoid areas of high human activity and prefer to follow large suitable prey. The no-action alternative is not expected to increase wolf mortality due to automobile collisions and thus would not have any direct impact on wolves. While wolves have killed prey in the Canyon area, no wolf pack has focused its activities here. Wolves follow prey and frequent the valleys near Canyon on established ungulate winter ranges because of the abundance of elk and bison.

CONCLUSION

The no-action alternative would not have any significant impact on elk or any of the other species preyed upon by wolves. Long-term, direct, and cumulative effects of the no-action alternative would be negligible to gray wolf populations due to limiting the project area to the existing footprint.

CUMULATIVE EFFECTS

Since road maintenance activities in the Canyon Rim Drives area would consist of many short duration projects that would occur within the existing road prism, the cumulative effects of this project on threatened and endangered species would not adversely affect the bald eagle, Canada lynx, grizzly bear, or the gray wolf. Neither the action nor the no-action alternative would affect the wolverine or peregrine falcon populations.

CONCLUSION

No major or adverse impairment to threatened and endangered species is likely to occur from either Alternative B or Alternative A. The integrity of threatened and endangered species and their habitat would be maintained by both alternatives. The no-action and the action alternative would not affect the wolverine or peregrine falcon populations. Threatened and endangered species within the park would not be impaired by implementation of either alternative.

CULTURAL RESOURCES

(INCLUDING PREHISTORIC and HISTORIC SITES, HISTORIC DISTRICTS and ASSOCIATED STRUCTURES and CONTRIBUTING ROAD FEATURES, CULTURAL LANDSCAPES, AND ETHNOGRAPHIC RESOURCES)

IMPACTS TO CULTURAL RESOURCES AND §106 OF THE NATIONAL HISTORIC PRESERVATION ACT

In this environmental assessment/assessment of effect, impacts to cultural resources are described in terms of type, context, duration, and intensity, which is consistent with the regulations of the Council on Environmental Quality (CEQ) that implement the National Environmental Policy Act (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 1992 a Programmatic Agreement providing an alternative process for Section 106 of the NHPA compliance was signed by the Advisory Council on Historic Preservation, the Montana SHPO, the Wyoming SHPO, YNP, and the Intermountain Region of the NPS for the long term road reconstruction program in YNP. That road programmatic agreement was re-visited by all agencies in 2000 and found to be adequate and successfully functioning to streamline the consultation or effect of road projects on NR eligible cultural resources within the road corridor.

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 archeological resources, historic structures, ethnographic resources, and the cultural landscape were identified and evaluated by (1) determining the area of potential effects; (2) identifying cultural resources present in the area of potential effects that were either listed in or eligible to be listed in the National Register of Historic Places; (3) applying the criteria of adverse effect to affected cultural resources either listed in or eligible to be listed in the National Register; and (4) considering ways to avoid, minimize or mitigate adverse effects. The road programmatic agreement provides consensus

agreement and guidance on way to avoid, lessen, and mitigate road construction impact on historic properties. Additionally, early consultation with the Wyoming and Montana SHPO provides written guidance to avoid adverse impact to historic properties in the area of potential effect.

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

CEQ regulations and the National Park Service's *Conservation Planning, Environmental Impact Analysis and Decision-making* (Director's Order #12) also call for a discussion of the appropriateness 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. Although adverse effects under §106 may be mitigated, the effect remains adverse. A §106 summary is included in the impact analysis sections under the preferred alternative. The §106 Summary is intended to meet the requirements of §106 and is an assessment of the effect of the undertaking (implementation of the alternative) on cultural resources, based upon the criterion of effect and criteria of adverse effect found in the Advisory Council's regulations.

AFFECTED ENVIRONMENT

The Canyon Rim Drives area has a complex history of prehistoric and historic sites, as well as a myriad of road development, viewing platforms, and visitor services.

Humans have occupied and made use of the greater Yellowstone area for more than 11,000 years, and possibly as long as 13,000 years. Prehistoric cultural groups used the landscape and the resources now within YNP leaving behind archeological traces of campsites, quarries, and lithic workshop areas. Yellowstone contains material remains of cultures whose core areas were the Great Plains, the Great Basin, and the Intermountain Plateau.

Numerous Native American tribes are known to have used this area historically, including the Crow, Shoshone, Blackfoot, each of whom have significant treaty interests in the greater Yellowstone River drainage area. Other tribes with treaty interests include the Gros Ventre, Confederated Salish and Kootenai tribes, and the Nez Perce. Early Euro American explorers documented summer occupations of areas within the park by Shoshonean-speaking bands known as "Sheepeaters" and bands of Blackfoot during the early and middle nineteenth century (Haines 1977). The Hayden survey party, undertaking

the first mapping of the area, found the Bannock (and Shoshone) traveling through Yellowstone National Park on ancient trails. Bands of Crow Indians were also documented early in the park's history, traveling along the same trails. The Nez Perce, in their flight of 1877 traveled through Yellowstone National Park on ancient trails. With the creation of reservations around 1868, the remaining Native Americans were moved out of the park to the Wind River, Shoshone, Lemhi, and other reservations.

During the latter part of the nineteenth century, Euro Americans homesteaded in the upper Yellowstone area. Increasing numbers of explorers, scientists, and visitors publicized Yellowstone's resources and scenery, leading to the formal establishment of the area as Yellowstone National Park in 1872 under the Department of the Interior.

Early explorers of what was to become Yellowstone National Park were awestruck by the beauty of the Grand Canyon of the Yellowstone and its powerful waterfalls. In 1871, photographer William Henry Jackson and noted painter Thomas Moran recorded the canyons dramatic landscape. The first park superintendent, Nathaniel P. Landford was equally impressed by the Grand Canyon and the waterfalls, calling them "perhaps the most stupendous elements of scenery in the park" (Landford 1872).

The Grand Canyon of the Yellowstone presented early caretakers with unique challenges in providing convenient access to these most thrilling views. The canyon region's difficult terrain, its remote location, and the fast-moving Yellowstone River complete with rapids, deep canyons, and waterfalls inhibited road and bridge construction initially (McClure 2002). The development of the road system in Yellowstone National Park was a crucial element in park management and the growth of area tourism.

One of the most popular areas in YNP, the Grand Canyon has a complicated development history that has included the construction and demolition of various hotels and lodges, campgrounds, commercial establishments, administrative facilities, trails, and roads (Whitacre 2000). Tourist facilities developed on the north rim of the Grand Canyon of the Yellowstone first because access to the south side of the Grand Canyon was extremely limited. By 1910 the Canyon Hotel, designed by Robert Reamer, provided luxury accommodations for visitors in the Canyon area until it was closed in the late 1950s and subsequently destroyed by fire. Another early engineering marvel noted for its graceful design, the Chittenden Bridge across the Yellowstone River was built in 1903 after which hotels, campgrounds, tourist facilities, and viewing areas developed along both the north and south rims (also referred to in early accounts as the east and west rims) of the Grand Canyon for the Yellowstone.

Overlooks and viewing platforms were constructed at various places along both sides of the Grand Canyon from 1909-1952 and were interconnected through a series of trails. A wooden observation platform was constructed at Inspiration Point in 1909 and replaced with a concrete platform in 1956. Although that platform was destroyed by the earthquake of 1959, it was later rebuilt and exists today. Other viewing areas along the north rim include Grandview Point completed in 1952, Lookout Point, originally built in 1920, as a "flimsy" wooden structure, built in concrete and stone in 1941. Trails at Red Rock and Brink of the Upper Falls lead to platforms with views from the north rim of the canyon. The viewing overlooks on the South Rim (or Artist Point Road) include Artist Point, a

historically designed National Register eligible cultural landscape, originally constructed as a cul-de-sac viewing area in 1903 and reconstructed in 1930 and then again in 1938-39. The eastern-most lookout was Sublime Point, now closed due to deteriorated trail condition, and Brink of the Lower Falls Trail and platform now known as Uncle Tom's Trail. It evolved as a ladder-and-rope trail leading to the base of the Lower Falls built in 1898 by "Uncle" Tom Richardson, prior to the construction of the Chittenden Bridge. In 1906 the Army Corp of Engineers constructed a stairway with rest platforms and in 1957 Yellowstone National Park replaced the series of 494 steps with a gentle switchback trail and two platforms at the Brink of the Lower Falls. A concrete-and-steel stairway structure replaced the trail in the 1960s (Whitacre 2000).

Although today only a parking area and a public restroom remain, the Brink of the Upper Falls area was once an active government and concessionaire site with the original road alignment and junction for the Canyon to Norris road passing through the area. At various times, the Brink of the Upper Falls area was the site of the first canyon tent camp (1883), the first Canyon Hotel (1886-1890), a Whittaker (later Pryor-Trishman) store, the store's warehouse, housekeeping cabins, a public campground, a soldier station (later ranger station), a gas station, a cafeteria and delicatessen, an Haynes photo shop, and the transportation building (and probably a few associated outhouses) owned by the Holm Transportation Company, as well as a Wylie (tent) Camp (Whittlesey 2002).

Under directives by Stephen Mather, the first head of the National Park Service, concessionaires in the Park were consolidated and simplified in the fall of 1916 and directed to make accommodations for automobile tourists. Initial planning for the Mission 66 program to improve concession facilities throughout the NPS focused on the Canyon area. Tourist facilities and road alignments were "modernized" with the construction of the Canyon Village "horseshoe mall" and the removal of many historic hotels, campgrounds, stores, and ranger stations. The desire was to move visitor facilities and subsequent impact away from the fragile canyon area while still providing access to numerous views, paths to viewing areas, and hiking trails to various areas of the Grand Canyon of the Yellowstone River. Most of the myriad structures built in the Canyon area during the historic period exist today as buried archeological ruins preserving evidence of the rich past history of the area.

The Historic Road System. The Grand Canyon of the Yellowstone River has always been, and remains today, a major draw for park visitors. In 1895-96, the Army Corp of Engineers constructed a 5 to 6-mile road along the north rim of the canyon with a spur to Inspiration Point. The construction of this road opened up scenery to horse-drawn vehicles that was previously enjoyed only by those who could make the trip on horseback.

The South Rim or Artist Point road was constructed immediately following the 1903 construction of the Chittenden Bridge across the Yellowstone River, ½ mile above the Upper Falls at the rapids. The concrete and steel Melan Arch Bridge spanned 120 feet of the Yellowstone River. Due to safety concerns, the bridge was replaced with a modern structure in 1962.

Minor improvements continued to be made to the original north and south rim roads, widening areas at overlooks and turnarounds, and improving the road surface. In 1926 the

westernmost portion of Inspiration Point Road was realigned to become the Grand Loop Road. In 1927, as part of the overall program of improving roads within the park, YNP requested the Bureau of Public Roads to improve the Artist Point (South Rim) road and in 1930 work was completed to extend and widen the roadway and add parking areas. In 1935, a spur road was constructed connecting the future site of Canyon Village to the Inspiration Point Road. This road eventually became the northern portion of North Rim Drive.

Mission 66 era realignments of the North Rim Drive were associated with the 1957 opening of Canyon Village and the realignment of the Norris to Canyon intersection facilitating access to the new Canyon Village area. The western-most portion of Inspiration Point Road became part of the one-way North Rim Drive, a loop that began in the new Canyon Village and exited onto the Grand Loop. The eastern-most portion of Inspiration Point Road became a two-way spur road off of North Rim Drive. The historic masonry culvert headwalls rubble-stone retaining walls, and log cribbing support walls were retained and the road was not widened further. But on the South Rim road, the Mission 66-related improvements included widening the road corridor to 34 feet and replacing all of the historic masonry with modern metal drop inlets. The Artist Point parking area was enlarged and the historic drainage structures were paved over. A large concrete retaining wall was constructed in the enlarged and redesigned parking area. Additionally, two new parking areas were built; one large parking area atop the former parking/cabin area of the old Canyon Lodge and the other just east of the Chittenden Memorial Bridge.

Archival research providing the historic context for both the North and South Rim roads, and documentation of the remaining historic features associated with the roads was provided to the Wyoming State Historic Preservation Officer with YNP's determinations of National Register eligibility of each roadway. The Wyoming State Historic Preservation Officer concurred with YNP that the North Rim Drive/Inspiration Point Road retained enough historic integrity to be eligible for the National Register of Historic Places. The South Rim (Artist Point) road no longer retains integrity of association, feeling, workmanship, and materials and is not eligible for listing on the National Register of Historic Places.

In the mid-1930s, early Yellowstone National Park master plans decried the concentration of development near the Upper and Lower Falls that was destroying the very scenery and natural conditions for which the park had been created. In 1929, a margin of approximately 1/8-mile from the edge of the Canyon was designated as a buffer area. Master plans called for the removal of all park facilities (except for the Canyon Hotel, roads, trails, paths, and overlooks) from this buffer area; relocated in a distant centralized developed area (although this did not happen until the 1950s). Wooden stairways, ramps, and railings that had already been installed at Canyon overlooks presented hard lines that were visible from across the canyon. These were to be replaced with earthen paths and masonry parapets of native stone that blended into nature's surrounding rockwork. Vegetation was preserved during construction and was used to frame canyon views and screen the overlooks from cross-canyon views. This resultant system of overlooks and related trails should be evaluated for eligibility to the National Register of Historic Places.

Documentation of Cultural Resources. The resurfacing of the current Canyon rim

scenic road alignments, is not expected to impact areas outside the footprint of disturbance of previous road construction except in areas where excavation is necessary to repair drainage problems directly related to the roadway, and to add and improve vehicle pullouts and parking. Research was conducted to better understand the history of the rim drive roads, the past and present concessions and administrative development of the area, and to document the archeological sites and the historic road features that lie within the area of potential effect of the planned road improvements.

Documentation of the North Rim Drive/Inspiration Point Road, and the South Rim Drive (Artist Point Road) historic features including historic retaining walls, masonry culverts, log cribbed retaining walls, and other features was conducted in 2000. Mission 66 era improvements on the South Rim (or Artist Point) road had completely removed all of the historic stone and log features replacing them with metal drop inlets with metal apron outlets. The historic features associated with Artist Point parking area were removed or paved over to expand parking. The historic Chittenden Bridge, built in 1903, was replaced in the 1960s with the modern art deco style Chittenden Memorial Bridge to safely facilitate the wider and heavier vehicles currently used.

Archeological inventory of the prehistoric and historic sites located in the area of potential effect of the road improvements was undertaken to document each site and determine the sites' eligibility to the National Register of Historic Places. Prehistoric archeological sites exist in the Canyon rim drives area to some extent, but the area is rich in historic archeological ruins of past developments. Archival research was conducted prior to archeological investigations in the Brink of the Upper Falls area to facilitate identifying buried building foundations (Whittlesey 2002). The archeological inventory was conducted by the Office of the Wyoming State Archaeologist along a 300-foot corridor (150 feet from the centerline on both sides of the roadway) that identified historic and prehistoric archeological sites and recorded the sites. Sub-surface testing was conducted to provide site boundaries and archeological data needed for determinations of eligibility for the National Register. Many historic sites, especially in the Brink of the Upper Falls area, had previously been cleaned up to the extent that little or no evidence remained of the structures that once existed (Sanders and Wedel 2003).

The ethnographic overview and assessment, *American Indians and Yellowstone National Park*, (Nabokov and Loendorf 2002) provided information about native uses of the park. A Northern Shoshone oral narrative was recorded identifying a legendary figure, Coyote, and his inadvertent creation of the falls of the Grand Canyon and thus, the walls of the Grand Canyon of the Yellowstone River, but did not specifically identify ethnographic resources within the area of potential effect of this road improvement project. On-going annual consultation in 2001, 2002, 2003, and 2004 with the 26 tribes affiliated with YNP described the planned road repairs to the Canyon rim roads and requested information on any ethnographic resource within the road corridor that should be documented and protected. To this date, no ethnographic resources within the road improvement corridor have been identified by any of the tribes consulted. The affiliated tribes with whom consultation occurred are (listed in alphabetical order): Assiniboine and Sioux Tribes of Ft. Peck; Blackfoot; Cheyenne River Sioux; Confederated Tribes of Salish & Kootenai; Couer 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; Nez Perce of Nespelem; Nez Perce of Colville; Northern Arapaho; Northern Cheyenne; Oglala Sioux; Rosebud Sioux; Shoshone-Bannock; Sisseton-Wahpeton Sioux; Spirit Lake Sioux; Standing Rock Sioux; and Yankton Sioux.

The Grand Canyon of the Yellowstone, is not only important in the oral tradition and history of the Shoshone among the Eastern Shoshone Tribe and the Shoshone-Bannock Tribes, the Canyon also holds legendary significance to the Mountain Crow descendants of the Crow Tribe. As recorded in Crow oral tradition, all of the landmass, including Artist's Point and other observation points associated with the Grand Canyon was created by a Crow hero with its dramatic views, holds special meaning for many members of numerous tribes. In consultation work conducted subsequent to the ethnographic overview and assessment, no other tribes, as yet, have identified values that the Grand Canyon may hold for them. For at least the Crow and Shoshone, Artist's Point can be viewed as a portion of a much larger ethnographic landscape. Yellowstone National park does recognize the need to conduct an ethnographic survey regarding the significance of the larger landscape of the Grand Canyon to the park's 26 affiliated tribes and will conduct that analysis in the future when funds become available. In the meantime, the park's 26 associated tribes have been consulted regarding the proposed rehabilitation for Artist's Point and none have expressed concerns about the proposed undertaking.

It is probable that all native peoples who had ever been to the Grand Canyon of the Yellowstone, currently affiliated with YNP or not, could have oral traditions about this dramatic viewshed. As with all who view the spectacular and unusual scenery, it holds special significance and that resource, the view of the canyon, will not be altered in character, setting, use, nor access to the view altered.

Description of Cultural Resources. All prehistoric and historic archeological sites and historic structures, including the road structure and remaining features were documented and evaluated for eligibility for listing on the National Register of Historic Places. Consultation with the Wyoming State Historic Preservation Officer provided concurrence for those National Register (NR) eligible archeological sites and structures found within the area of potential effect (APE) along the North Rim Drive/Inspiration Point road, and the South Rim Drive (or Artist Point) road, and along the access road leading to the parking lot/rest rooms in the area known as the Brink of the Falls. The Artist Point viewing area was documented to Class III Level II Cultural Landscape Inventory standards, and a Wyoming Cultural Sites form, both were submitted to the WYSHPO for review and they have concurred that the viewing area is eligible for National Register listing. The Artist's Point parking area is not contributing to the National Register eligibility of this area.

Prehistoric Archeological Sites. The park's prehistoric archeological sites provide evidence of human occupation in the Greater Yellowstone Area for over 11,000 years. These tangible remains provide the only viable means of understanding past cultures which lacked written records and the artifacts provide the basis for continued scientific research. Evidenced by the lack of significant prehistoric archeological sites in the road corridor along the scenic north and south rims of the Yellowstone River, this area does not appear to be part of the ancient travel corridor the Yellowstone River is known to have provided. It is possible that the lack of prehistoric sites is due to difficulty in crossing the mountains to the north of Canyon Village on the west side of the river. Several minor

lithic scatters have been identified in the vicinity of the rim drives and many significant NR-eligible pre-contact archeological sites are located along the Yellowstone River both north and south of the Grand Canyon of the Yellowstone. The steep and dangerous terrain of the deeply incised river canyon, the waterfalls, and the crumbling thermally altered soils may have been an impediment to ancient travel along the river corridor. The Chittenden Bridge pre-contact archeological site (48YE516) was inadvertently discovered in the early 1980s during water line repairs on the river terrace just to the north of the South Rim Drive on the west side of the Yellowstone River. The site was recorded in 1984 (Marceau and Reeve 1984) and revisited after the fires of 1988. Subsequent attempts to relocate the site associated with the road repairs indicate that the artifact rich, stratified cultural deposits have completely eroded into the Yellowstone River and the terrace landform is almost completely gone. Currently there are no NR-eligible pre-contact sites located in the area of potential effect of the rim drives road repair and resurfacing project.

Historic Archeological Sites. Yellowstone's historic resources reflect a number of significant historical themes, including the growth of tourism, Yellowstone as a "proving ground" for America's national park system, Army protection and management of the Park's resources, and the park's pioneer road transportation system. The *Archeological Treatment Plan for the Yellowstone Federal Highways Projects, Historical Archeological Resources* (NPS 1993) was developed at the beginning of the long-term road improvement program, and provides guidance for the identification, interpretation, and when necessary, excavation of Yellowstone's historic archeological sites. There are several significant historic sites located in the vicinity of the road resurfacing that are associated with early Canyon area tourist facilities. Field documentation of sites was conducted in 2000 and 2002 by the Office of the Wyoming State Archaeologist.

The historic site of the Canyon Lodge and associated campgrounds, 48YE638, is adjacent to a parking area on the South Rim Drive. Historic debris consisting of brick and mortar fragments, pieces of wire and metal, and scattered glass fragments are previously documented. Additional investigations and archival research revealed a number of features and artifact concentrations providing clear evidence that the site was the former Canyon Lodge. Constructed in the early 1920s, the Canyon Lodge and the large assortment of camping facilities were demolished in 1958 and the area cleaned up as part of the Mission 66 program to modernize the Canyon area. The present parking lot and restroom facilities known as Uncle Tom's parking area were constructed over the site of the Canyon Lodge. The current road project will be confined to the area of previous disturbance avoiding adverse impact to the NR-eligible site.

In the Brink of the Upper Falls area, two sites associated with the historic Wylie Camp are located in the vicinity but outside the area of impact of the road construction. Historic archeological site 48YE26 consists of buried trash concentrations associated with the 1890s Wylie Camp which lies in close proximity to the Whittaker store, constructed later in the same area. The historic archeological site 48YE158 consists of buried trash and features also associated with the Wylie Camp. Both sites are outside the construction impact boundaries but will be monitored to insure no further impact.

The Canyon Village Historic District (48YE999) was one of the National Park Services early plans for modernization and up-grading infrastructure and facilities in preparation

for the 50 year anniversary of the NPS. The horseshoe mall designed village complex of modern buildings has been determined eligible for the National Register of Historic Places. Consultation was conducted with the Wyoming State Historic Preservation Officer (WYSHPO) concerning repairs needed to improve drainage in the parking area and re-milling the pavement in the parking area will not constitute adverse impact to the historic district.

The Artist Point viewing area is a historically constructed designed cultural landscape that is a component landscape of a larger cultural landscape district comprised of the other constructed viewing areas on the north and south rim of the Grand Canyon of the Yellowstone River. A Level II Cultural Landscape Inventory of the Artist Point viewing area was completed and has been submitted to WYSHPO for concurrence with YNP's determination that it is eligible for listing on the National Register of Historic Places. Alterations and improvements to the historic viewing area will be accomplished in consultation with the WYSHPO to avoid adverse impact the character defining features of the landscape.

ENVIRONMENTAL CONSEQUENCES

Cultural Properties. The Rim Drives road construction project was discussed with the Native American tribes affiliated with Yellowstone National Park during the last four annual Government-to-Government consultations (2001-2004). No information has been received to indicate that National Register eligible ethnographic resources of concern are located within the area of potential effect of the road repair and repaving project.

Intensive archeological surveys identified historic and prehistoric archeological sites along the roadway corridors. Some sites were determined to be not eligible with concurrence from the Wyoming State Historic Preservation Officer's (WYSHPO). Several previously recorded, potentially eligible sites were re-documented in the vicinity of the road repair but outside the area of potential effect of the currently proposed road repair and resurfacing project. The site boundaries were re-evaluated with the help of the Wyoming Cultural Records Office and both YNP and WYSHPO concur that additional investigations are necessary if future projects would impact the sites. These sites will be monitored to insure they are avoided and protected from any impact due to the proposed road construction activities.

Areas being considered for staging and stockpile of construction materials and equipment were previously inventoried and identified sites were evaluated for National Register eligibility. The WYSHPO concurred with YNP's determination that the site located in the staging and stockpile area (48YE23, a historic trash dump) lacked integrity and was not eligible for the National Register. This area has been used for staging and stockpile of construction materials and equipment in the recent past for the Canyon to Fishing Bridge (Hayden Valley) road repair and resurfacing project.

Archival research was completed on the North Rim Drive/Inspiration Point Road and the South Rim Drive (also known as Artist Point Road) to provide the historic context within which the road structures could be evaluated for possible listing on the National Register of Historic Places. The WYSHPO concurred with YNP's determination the North Rim

Drive/Inspiration Point Road retained sufficient historic features to retain integrity and was eligible for listing. Modernization of the South Rim Drive had removed all historic roadside features and therefore was not eligible for NR listing. The access road into the Brink of the Upper Falls parking and comfort station area is not a scenic drive, and was not part of the original or current alignment of the Grand Loop Road and therefore does not meet the requirements for evaluation for the National Register as defined in the Multiple Property Document for roads in Yellowstone National Park.

The rehabilitation of the Artist Point viewing area, which YNP has determined a National Register-eligible historic cultural landscape would be funded through private donations. YNP continues to consult with the Wyoming State Historic Preservation Officer to identify issues and take measure to avoid adverse impact to the cultural properties. The NR-eligible Canyon Lodge archeological site (48YE637) will be fenced and monitored to insure complete avoidance of any impact to the site. On-site consultation with the WYSHPO in 2003 and 2004 identified the parking area as a non contributing feature of the NR-eligible Canyon Village (48YE999).

Table 4: Summary of National Register Eligible Historic Properties in the Area of Potential Effect of the Rim Drives 3(R) Construction

<u>Site Description</u>	<u>Project Effect</u>	<u>Impact threshold</u>
Artist Point Cultural Landscape	Minor adverse impact	Alterations would not diminish NR integrity of landscape. Rehabilitation designed in consultation with WYSHPO.
Canyon Village Mission 66 Historic District (48YE999)	Minor Beneficial Impact	Alterations to parking area mitigated by design. The parking area is not a character defining feature
North Rim Drive Road/ Inspiration Point Drive (48YE1550)	Minor Beneficial Impact	Repairs to road and parking areas beneficial. No loss of historic fabric through consultation on design
48YE637 Historic Archeological Site	Negligible	Protective fencing during construction & complete avoidance of impact to site through design.

Additional cultural resources within the area of potential effect of the road repair undertaking were documented through inventory and evaluated for inclusion on the National Register but were determined to be ineligible for the National Register of Historic Places by Yellowstone National Park with WYSHPO concurrence. These include a historic box spring for the Canyon Hotel area, historic trash scatters, and historic gravel pits with trash, all located adjacent to the North Rim Drive. No pre-contact or historic archeological resources were identified within the Inspiration Point Road corridor. Historic archeological sites within the corridor of the Brink of the Upper Falls access road include the remains of the Whittaker store, the Canyon Ranger Station, the Haynes Photo

Studio and Lab, and the Canyon Housekeeping Cabins, all of which were removed during the Mission 66 era cleanup of the area prior to construction of the current parking area and comfort station. The remains of these historic structures were almost completely obliterated and therefore do not retain integrity sufficient for listing on the National Register of Historic Places. The historic remains of a trash dump and water tank associated with the Canyon incinerator located in the probable construction and stockpile area were previously evaluated for the National Register and WYSHPO concurred with YNP that the site lacked significance and integrity sufficient for NR listing. The South Rim Drive (or Artist Point Road) was documented and evaluated within its historic context but the complete removal of historic character defining features caused sufficient loss of integrity that it is no longer eligible for the National Register. The Brink of the Upper Falls access road, also completely modernized in the Mission 66 era cleanup of the area, does not meet the criteria for historic roads, identified in the Multiple Property Documents for roads, and is therefore not eligible for listing on the National Register of Historic Places.

METHODOLOGY AND INTENSITY THRESHOLDS FOR CULTURAL LANDSCAPES

Cultural landscapes are the result of the long interaction between people and the land, the influence of human beliefs and actions over time upon the natural landscape. Shaped through time by historical land-use and management practices, as well as politics and property laws, levels of technology, and economic conditions, cultural landscapes provide a living record of an area's past, a visual chronicle of its history. The dynamic nature of modern human life, however, contributes to the continual reshaping of cultural landscapes; making them a good source of information about specific times and places, but at the same time rendering their long-term preservation a challenge. Cultural landscapes are defined by the Intermountain Region of the NPS as geographic area that have meaning for people. Within cultural landscapes, people have been, in some cases, still are, modifying, interacting with, and giving human meaning to the land. The landscape does not need to contain visible evidence of human manipulation to be considered a cultural landscape. "Cultural Landscapes" refer to a way of seeing, where all aspects of a place – natural and cultural—are considered together as a part of an integrated, holistic system.

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. The character defining features of a cultural landscape include spatial organization and land patterns; topography; vegetation; circulation patterns; water features; and structures/buildings; site furnishings and objects (see *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*, 1996). For purposes of analyzing potential impacts to cultural landscapes, the thresholds of change for the intensity of an impact are defined as follows:

Definitions of Intensity Levels

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.

REGULATIONS AND POLICIES

Current laws and policies require that the following conditions be achieved in the park:

DESIRED CONDITION	SOURCE
The treatment of a cultural landscape will preserve significant physical attributes, biotic systems, and uses when those uses contribute to historical significance.	National Historic Preservation Act; Executive Order 11593; Archeological and Historic Preservation Act; the Secretary of the Interior's Standards and Guidelines for

DESIRED CONDITION	SOURCE
<p>Treatment decisions will be based on a cultural landscape's historical significance over time, existing conditions, and use. Treatment decisions will consider both the natural and built characteristics and features of a landscape, the dynamics inherent in natural processes and continued use, and the concerns of traditionally associated peoples.</p> <p>The treatment implemented will be based on sound preservation practices to enable long-term preservation of a resource's historic features, qualities, and materials. There are three types of treatment for extant cultural landscapes: preservation, rehabilitation, and restoration.</p> <p>Cultural landscapes are listed in the National Register when their significant cultural values have been documented and evaluated within appropriate thematic contexts and physical investigation determines that they retain integrity. Cultural landscapes are classified in the National Register as sites or districts or may be included as contributing elements of larger districts.</p>	<p>Archeology and Historic Preservation; Programmatic Memorandum of Agreement Among the NPS, Advisory Council on Historic Preservation, and the National Council of State Historic Preservation Officers (1995); NPS Management Policies; Parkwide Road Improvement Programmatic Agreement (1993)</p>

PREFERRED ALTERNATIVE IMPACTS (ALTERNATIVE B)

The planned repair and rehabilitation of the National Register-eligible Artist Point cultural landscape would alter some of the character defining features of the built landscape. The circulation would be altered by adding a short stone wall to accommodate a modern interpretive wayside exhibit that is currently within the historic view of the falls. Benches would be added to provide a gathering area for interpretive talks. Rock edging would delineate walkways and help keep visitors off of vegetated islands that have historically screened this development from cross-canyon views. Vegetation would be replaced where it has been lost due to trampling over the years. The promenade approaching the viewing area would be stabilized by bridging the eroding section. The surface of this bridge would incorporate the boulder edging and asphalt trail so that it looks similar to the extant trail. It would not be widened. The log cribbing would be replaced with compatible boulder edging to retain the slope on the inside of the promenade. Minor re-grading of the promenade would improve wheelchair accessibility.

All construction and repairs would be done with natural stone and log materials, in scale with the original design, harmonizing with the landscape. The significant character

defining features such as the boulder-bordered viewing areas, the stone walkway steps, and circular circulation pattern would be retained. Repairs and improvements to the existing cultural landscape would be completed through on-going consultation of design with the Wyoming State Historic Preservation Officer to avoid diminishing the National Register integrity of the cultural landscape. The rehabilitation and repair of the area is needed to facilitate the greatly increased number of visitors using and impacting the area and facilitate its long-term ability to provide visitor access to the dramatic views of the Grand Canyon of the Yellowstone River. Thus, there would be minor impact and beneficial impact resulting in no adverse effect to the National Register eligible cultural landscape at Artist Point.

CUMULATIVE IMPACTS

Visitor use of Yellowstone NP and the Artist Point viewing area has dramatically increased since the 1938 construction of the popular viewing area. Originally, beginning in 1903, wagons, carriages, and for a short time automobiles, drove directly to the viewing area. In the 1930s, the old circular drive was converted to a pedestrian walk and informal viewing points which have since suffered erosion from overuse. The landscape has changed over time to facilitate changing use patterns but the boulder-lined viewing areas and use of other natural materials in the constructed environment has provided a historic setting for the Canyon views. The addition of a small area with benches, a short stone wall for a wayside exhibit, and stone edging along the walkways would help provide interpretation of the site while protecting the fragile landscape and facilitating the increased volume of visitors to the popular site. The cumulative impact of the preferred alternative, when combined with past, present, and foreseeable future actions would be moderate and beneficial.

CONCLUSION

Implementation of the preferred alternative would not constitute an impairment to park cultural landscapes.

NO-ACTION ALTERNATIVE IMPACTS (ALTERNATIVE A)

No improvements to the Artist Point Mission 66 parking area would occur. This would contribute to the continuation of a dangerous pedestrian-safety situation, where pedestrians have to cross a busy vehicle traffic lane. Erosion caused by parking lot and pedestrian pathways stormwater runoff would continue into the canyon walls, and a non-historically appropriate sense of arrival to one of the most significant views in YNP would continue.

CUMULATIVE IMPACTS

The cumulative impact of the no-action alternative, when combined with past, present, and foreseeable future actions would be minor and adverse due to the continued effects of erosion, weather, and time on cultural landscape elements.

CONCLUSION

The no-action alternative would be minor and adverse in effect due to continued erosion, loss of historic vegetative screening, poor wheelchair accessibility, inefficient pedestrian

corridors to the viewing areas, and congestion. Both winter and summer visitor use of the area increases annually causing increasing impacts the fragile resource area.

Implementation of the no-action alternative would not constitute an impairment to park cultural landscapes.

METHODOLOGY AND INTENSITY THRESHOLDS FOR HISTORIC STRUCTURES

(Canyon Village Mission 66 Historic District and the Rim Drive Roads)

In order for a structure (such as a road) or buildings (either individual or combined into a Historic District) to be listed in the National Register of Historic Places, it (they) must be associated with an important historic context, i.e. possess significance –the meaning or value ascribed to the structure or building, *and* have integrity of those features necessary to convey its significance, i.e. location, design, setting, workmanship, materials, feeling, and association (see National Register Bulletin #15, *How to Apply the National Register Criteria for Evaluation*). For purposes of analyzing potential impacts to historic structures/buildings, the thresholds of change for the intensity of an impact are defined as follows:

- Negligible: Impact(s) is at the lowest levels of detection – barely perceptible and not measurable. For purposes of Section 106, the determination of effect would be *no adverse effect*.
- Minor: **Adverse impact** – impact would not affect the character defining features of a National Register of Historic Places eligible or listed structure or building. **Beneficial impact** – stabilization/preservation of character defining features to maintain existing integrity of a structure or building. For purposes of Section 106, the determination of effect would be *no adverse effect*.
- Moderate: **Adverse impact** – impact would alter a character defining feature(s) of the structure or building but would not diminish the integrity of the resource to that extent that its National Register eligibility is jeopardized. **Beneficial impact** – rehabilitation of a structure or building to make possible a compatible use of the property while preserving its character defining features. For purposes of Section 106, the determination of effect would be *no adverse effect*.
- Major: **Adverse impact** – the impact would alter a character defining feature(s) of the structure or building, diminishing the integrity of the resource to the extent that it is no longer eligible to be listed in the National Register. For purposes of Section 106, the determination of effect would be *adverse effect*. **Beneficial impact** – restoration to accurately depict the form, features, and character of a structure or building as it appeared during its period of significance. For purposes of Section 106, the determination of effect would be *no adverse effect*.

REGULATIONS AND POLICIES

Current laws and policies require that the following conditions be achieved in the park for historic properties (e.g., buildings, structures, roads, trails, cultural landscapes):

Desired Condition	Source
Historic properties are inventoried and their significance and integrity are evaluated under National Register criteria. The qualities that contribute to the eligibility for listing or listing of historic properties on the NRHP are protected in accordance with the Secretary of the Interior's Standards (unless it is determined through a formal process that disturbance or natural deterioration is unavoidable).	National Historic Preservation Act; Executive Order 11593; Archeological and Historic Preservation Act; the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation; Programmatic Memorandum of Agreement among the NPS, Advisory Council on Historic Preservation, and the National Council of State Historic Preservation Officers (1995); NPS Management Policies, National Environmental Policy Act; Yellowstone Parkwide Road Improvement Programmatic Agreement (1993)

PREFERRED ALTERNATIVE IMPACTS (ALTERNATIVE B)

For the Canyon Village Mission 66 Historic District, the level of impact would be a minor beneficial impact. The only planned repairs would be to the parking area which is not identified as a character defining feature of the Historic District. The minor reconfiguration of several islands to facilitate larger bus and recreational vehicle parking would not disturb the vehicular or pedestrian traffic patterns while efficiently accommodating the increased volume of visitor use.

Repair and resurfacing of the National Register eligible North Rim Drive would have minor beneficial impact, providing a stabilized roadbed while retaining all of the identified character defining features. Repairs of the erosion damage to the viewing area walkway and associated road bed at Grandview would constitute a minor beneficial impact, repairing the adverse erosion damage, stabilizing the roadway and replacing the character defining natural materials in-kind with like materials preserving the historic appearance of the road and walkway support. Therefore the determination of effect would be no adverse effect.

CUMULATIVE IMPACTS

The reconstruction of the visitor center within the Canyon Village Mission 66 Historic District is currently underway. The redesign and reconstruction of one of the major character defining buildings within the historic district was done in such a way as to not impact the integrity of the overall horse-shoe design of the village. Re-design of the parking area would facilitate improved visitor access to new interpretative displays and improve visual orientation to the area. Drainage repairs would decrease maintenance activities needed in the parking lot.

The North Rim Drive has been repaired and realigned in the past. It once served as a two-

way segment of the Grand Loop Road. The Inspiration Point Road is one of the earliest two-way spur roads providing visitor access to views of the Grand Canyon of the Yellowstone River, as it still does today. The repair of damaged areas and resurfacing the roadway and improving the parking areas facilitates the growing visitation demands on the area. The construction project has a short term impact, with a longer beneficial result. Therefore the cumulative impacts are minor.

CONCLUSION

This alternative would have minor beneficial effects to the North Rim Drive, the Canyon Village Historic District, and the walkway and associated roadbed that is sloughing towards the canyon near Grandview Point.

NO-ACTION ALTERNATIVE IMPACTS (ALTERNATIVE A)

The no-action alternative would not change the traffic flow direction on the North Rim Drive. Vehicles parking off the paved area, due to the limited parking spaces at the first Canyon viewing opportunities, would further contribute to the resource damage. Degradation of the historic North Rim Drive and Inspiration Point roads caused by poor drainage, inadequate shoulder and curb stones and logs, clogged drainage and culvert damage would continue. Slumping and associated damage to the cribbed log and rubble retaining walls supporting the roadway and viewing area access would continue to accelerate the destruction of those historic and visible road features.

This alternative would not provide the needed drainage repairs to alleviate undermining the historic stone retaining walls associated with the Lookout Point viewing area. Additional parking for longer vehicles and more efficient parking (striping) delineation would not occur. Safety improvements for pedestrian passage through and adjacent to parking areas, such as: better stripping, curbing, and walkway definition, would not be done.

Highly visible erosion man-caused erosion areas along the Grand Canyon of the Yellowstone would continue to impact views. This alternative would not correct erosion problems, which would continue. The lack of addressing needed repairs to these roads would eventually contribute to access problems to some viewing areas because of unsafe conditions on the roadway and because of erosion.

Parking area and landscape improvements in the Canyon Visitor Center parking area would cause continued confusion caused by limited visibility across the horseshoe-shaped area and congestion due to lack of designated parking for larger busses and RV's.

Many needed repairs to the historic roadway and associated features would not be done in this alternative resulting in the benign neglect to the historic roadway, associated features, and cultural landscapes. The continued loss of historic fabric (vegetative and structural) at the Artist Point Viewing area, would be an adverse affect

CUMULATIVE IMPACTS

Over time, the cumulative impact of the no action alternative would have moderate adverse impact on the Rim Drive roads, contributing to continued erosion and degradation at Artist Point, and possibly road failure due to the loss of the retaining wall at

Grandview. The paved surface of all three road segments would continue to deteriorate and visitor enjoyment of the area would be lessened.

CONCLUSION

Implementation of the no-action alternative would allow some continued degradation of specific historic structures, but would not be at a level that would constitute an impairment to parkwide historic structures.

METHODOLOGY AND INTENSITY THRESHOLDS FOR ARCHEOLOGICAL RESOURCES

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 to prehistory or history. An archeological site(s) can be nominated to the National Register in one of three historic contexts or levels of significance: local, state, or national (see National Register Bulletin #15, *How to Apply the National Register Criteria for Evaluation*). For purposes of analyzing impacts to archeological resources, thresholds of change for the intensity of an impact are based upon the potential of the site(s) to yield information important in prehistory or history, as well as the probable historic context of the affected site(s):

- Negligible: The impact is at the lowest levels of detection – barely measurable with no perceptible consequences to archeological resources.
- Minor: The impact affects an archeological site(s) with little or no potential to yield information important to prehistory or history. These archeological resources are generally ineligible to be listed in the National Register.
- 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.

REGULATIONS AND POLICIES

Current laws and policies require that the following conditions be achieved for archeological resources in the park:

DESIRED CONDITION	SOURCE
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Archeological sites are identified and inventoried, and their significance is determined and documented.

Archeological sites are protected in an undisturbed condition unless it is determined through formal processes that disturbance or natural deterioration is unavoidable.

In those cases where disturbance or deterioration is unavoidable, the site is professionally documented and excavated to recover archeological data.

National Historic Preservation Act; Executive Order 11593; Archeological and Historic Preservation Act; Archeological Resources Protection Act; the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation; Programmatic Memorandum of Agreement among the NPS, Advisory Council on Historic Preservation, and the National Council of State Historic Preservation Officers (1995); NPS Management Policies, National Environmental Policy Act

PREFERRED ALTERNATIVE IMPACTS (ALTERNATIVE B)

The sites located within the road corridors have been documented and evaluated for eligibility to the National Register. One NR-eligible site (48YE637 – a historic trash scatter associated with the Canyon Lodge) will be avoided and monitored to insure no site disturbance. All other archeological sites within the area of potential effect of the undertaking are not eligible for listing on the National Register. Therefore, the impact of the road repairs is minor with no adverse impact to archeological sites.

CUMULATIVE IMPACTS

Archeological inventory and sub-surface testing of roadside areas once occupied by stores, hotels, ranger station, tourist camps, and maintenance operations indicate the ruins of these structures have been adversely impacted through clean-up operations prior to the enactment of the Historic Preservation Act of 1966. Material evidence of the sites have been so completely removed that they no longer retain information of value. Previous modernization of the South Rim Road also adversely impacted its integrity for National Register listing. Current road repairs would not add adverse impact to the sites. There is no future planned development for the Rim Drives, although increased visitor use and ongoing exposure to the elements will impact the sites to some extent.

CONCLUSION

Implementation of the preferred alternative would not constitute an impairment to historic structures within the park.

NO-ACTION ALTERNATIVE IMPACTS (ALTERNATIVE A)

The no-action alternative would have a negligible impact on surface or buried archeological remains. Artifacts in historic trash scatters are always subject to unauthorized collection regardless of road repairs and improvements.

CUMULATIVE IMPACTS

Ongoing annual maintenance and repairs of the rim drive roads would not add adverse impact to the sites along these roads.

CONCLUSION

The no-action alternative would not constitute an impairment to historic structures within the park.

SOCIOECONOMIC RESOURCES

(Including Park Operations, Economics, Public Health and Safety, and Visitor Use and Experience)

Yellowstone National Park extends into five counties in three different states including Teton and Park counties in Wyoming, Gallatin and Park counties in Montana, and Fremont County in Idaho. The U.S. Forest Service, the states of Montana, Wyoming and Idaho and a few private landowners manage most of the property surrounding the park. Yellowstone National 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's five entrances - Cody, Dubois, and Jackson in Wyoming; Cooke City/Silvergate, Gardiner, and West Yellowstone in Montana; and Island Park, Idaho. The Montana gateway communities are on the immediate border of the park or within a few miles; the Wyoming gateway communities are an hour's drive or more from the park boundary. Island Park is about a half-hour drive south of West Yellowstone, Montana. The Canyon developed area is centrally located within the park, and does not border any park boundary. The nearest gateway community is Gardiner, MT, 37 road miles to the north; West Yellowstone, MT is located 40 road miles west, and Cody, WY is a 96-mile drive from Canyon.

Economics. Concession businesses at the Canyon developed area would likely see some temporary minor reduction of revenues during the times of construction activities. Economic impacts to these park concessioners would likely be localized to the Canyon based businesses only. It is not envisioned that visitors would stop coming to this area because of the proposed construction, though visitation to the rims drives would likely decrease during these activities. Changing the traffic flow direction would likely show a minor increase in revenues as many visitors would end their rim drive experience at Canyon Village. Further, changes to the orientation of the parking area could improve visitor use at Canyon Village and Concession sales.

Visitor use and experience. Visitor use and experience of the Canyon Rim Drives would be improved by:

- Reducing traffic congestion;
- Providing parking spaces for oversized vehicles (recreation vehicles, buses);
- Making pedestrian crossing safer at Artist point; and
- Adding rustic elements to blend with the natural and cultural landscape through various aspects of the proposal.

Traffic congestion is currently caused by visitors starting the North Rim Drive where the parking lots, such as Inspiration point are much smaller. Then visitors proceed along the

drive where the lot sizes are larger. If the traffic direction was reversed, as suggested by the preferred alternative, then traffic congestion would likely be reduced. Visitors would begin the drive where parking is much more adequate and filter back toward Canyon Village, where the parking is also adequate – often only at 60-70% capacity. On the flip side, visitors currently start further away from views of the water falls and gradually get closer. If the traffic flow direction was reversed along the North Rim Drive, then visitors would start close to the water falls and get further away from them, which would change visitor experience, but not necessarily adversely.

METHODOLOGY AND INTENSITY THRESHOLDS

Analyses of the potential intensity of impacts to social and economic conditions and visitor use and experience were derived from all available information and surveys staff and community meetings. The thresholds of change for the intensity of impacts to social and economic conditions and visitor use and experience may be adverse or beneficial and are defined as follows:

- Negligible:** Social economic conditions, park operations, and visitor use and experience would not be affected or would be at low levels of detection. The change would be so small that it would not be of any measurable or perceptible consequence.
- Minor:** The effect on social economic conditions, park operations, and visitor use and experience would be small but measurable and would affect a small portion of the population. The change would be small and localized and of little consequence to the community.
- Moderate:** The effect on social economic conditions, park operations, and visitor use and experience would be readily apparent, likely long-term, and widespread in the vicinity. The change would be measurable and of consequence to the community.
- Major:** The effect of the social economic conditions, park operations, and visitor use and experience would be readily apparent, long-term, and would cause substantial changes to the social economic conditions and park operations in the vicinity. The change would be measurable and result in a severely adverse or major beneficial impact and possible permanent consequence to the community.

REGULATIONS AND POLICIES

Current laws and policies require that the following conditions be achieved in the park:

DESIRED CONDITION	SOURCE
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DESIRED CONDITION	SOURCE
Public participation in planning and decision-making will ensure that the Park Service fully understands and considers the public's interests in the parks, which are part of their national heritage, cultural traditions, and community surroundings. The Service will actively seek out and consult with existing and potential visitors, neighbors, people with traditional cultural ties to park lands, scientists and scholars, concessioners, cooperating associations, gateway communities, other partners, and government agencies. The Service will work cooperatively with others to improve the condition of parks; to enhance public service; and to integrate parks into sustainable ecological, cultural, and socioeconomic systems.	NPS Management Policies, National Environmental Policy Act
In the spirit of partnership, the Service will also seek opportunities for cooperative management agreements with state or local agencies that will allow for more effective and efficient management of the parks, as authorized by §802 of the National Parks Omnibus Management Act of 1998.	NPS Management Policies
Possible conflicts between the proposed action and land use plans, policies, or controls for the area concerned (including local, state or Indian tribe, and the extent to which the park will reconcile the conflict are identified in NPS environmental documents.	National Environmental Policy Act
Visitor and employee safety and health are protected.	NPS Management Policies, National Environmental Policy Act
Visitors understand and appreciate park values and resources and have the information necessary to adapt to park environments; visitors have opportunities to enjoy the parks in ways that leave park resources unimpaired for future generations.	NPS Organic Act; Monuments' enabling legislation; NPS Management Policies

DESIRED CONDITION	SOURCE
Park recreational uses are promoted and regulated and basic visitor needs are met in keeping with park purposes.	NPS Organic Act; Monuments' enabling legislation; Title 36 of the Code of Federal Regulations; NPS Management Policies
All reasonable efforts will be made to make NPS facilities, programs, and services accessible to and usable by all people, including those with disabilities.	Americans with Disabilities Act; Architectural Barriers Act; Rehabilitation Act; NPS Management Policies
Visitors who use federal facilities and services for outdoor recreation may be required to pay a greater share of the cost of providing those opportunities than the population as a whole.	NPS Management Policies; 1998 Executive Summary to Congress, Recreational Fee Demonstration Program, Progress Report to Congress, Volume I -- Overview and Summary (U.S. Department of the Interior, National Park Service, U.S. Fish and Wildlife Service, Bureau of Land Management; U.S. Department of Agriculture, Forest Service)
The park has identified implementation commitments for visitor carrying capacities for all areas of the unit.	1978 National Parks and Recreation Act (P.L. 95-625); NPS Management Policies

PREFERRED ALTERNATIVE IMPACTS (ALTERNATIVE B)

Some short-term temporary minor reductions in revenues may occur during some construction phases at Canyon Village. Improvements to wayfinding and orientation at the Canyon Village parking lot, may have the effect of improving sales for concessioners in this area after construction is completed.

CUMULATIVE IMPACTSS

The construction of the newly rehabilitated visitor center, the future addition of a ranger station/ESB, and the rehabilitation of the Canyon Rim area roads will ultimately give park visitors a more enjoyable experience in this portion of the park.

CONCLUSION

It is not anticipated that visitation to the Canyon Village area would change due to this project. Visitor services will still be provided during and after construction that the public will make use of. These services include gasoline sales, camping, food and beverage sales, necessity and souvenir sales, and overnight lodging.

NO-ACTION ALTERNATIVE IMPACTS (ALTERNATIVE A)

Concessioner business sales in the Canyon area would not be expected to change due to continuing maintenance of the Canyon Rim area roads as they have been in the past.

CUMULATIVE IMPACTS

The construction of the newly rehabilitated visitor center may have the effect of holding visitors in the area for a longer period of time due to the increased exhibits within the building.

CONCLUSION

Social and economic impacts would be negligible under this alternative. Most change would come due to upgraded facilities such as the newly renovated visitor center. Ongoing road maintenance activities may have very short-term impacts of only a day or two.

CONSULTATION/COORDINATION

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 (16 U.S.C.A. § 1531 et seq.), 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 undertakings described in this document are 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. Native American tribes traditionally associated with Yellowstone National Park will be contacted for input and comment on this project.

YELLOWSTONE NATIONAL PARK ROAD TEAM

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Jennifer Whipple, Botanist

AGENCIES/TRIBES/ORGANIZATION/INDIVIDUALS CONTACTED

The following is a list of agencies, tribes, and organizations to which this Environmental Assessment will be sent:

Wyoming State Historic Preservation Office
US Fish and Wildlife Service – Cheyenne, WY
Wyoming Department of Environmental Quality
Army Corps of Engineers

AMERICAN INDIAN TRIBES

Contacts will be made for consultation with Yellowstone's twenty six (26) associated tribes:

- (1) Assiniboine & Sioux Tribes
- (2) Blackfeet Tribe
- (3) Cheyenne River Sioux Tribe
- (4) Coeur d'Alene Tribe
- (5) Comanche Tribe of Oklahoma
- (6) Confederated Tribes of the Colville Reservation
- (7) Confederated Tribes of the Umatilla Reservation
- (8) Confederated Salish & Kootenai Tribes
- (9) Crow Tribe
- (10) Crow Creek Sioux Tribe
- (11) Eastern Shoshone Tribe
- (12) Flandreau Santee Sioux Tribe
- (13) Gros Ventre and Assiniboine Tribes
- (14) Kiowa Tribe of Oklahoma
- (15) Lower Brule Sioux Tribe
- (16) Nez Perce Tribe
- (17) Northern Arapaho Tribe
- (18) Northern Cheyenne Tribe
- (19) Oglala Sioux Tribe
- (20) Rosebud Sioux Tribe
- (21) Shoshone-Bannock Tribes
- (22) Sisseton-Wahpeton Sioux Tribe
- (23) Spirit Lake Sioux Tribe
- (24) Standing Rock Sioux Tribe
- (25) Turtle Mountain Band of the Chippewa Indians
- (26) Yankton Sioux Tribe

Both a news release and a newsletter were prepared describing upcoming road projects, including this project, and were issued in July 2003. Yellowstone National Park's twenty-six (26) affiliated American Indian tribes, with whom the staff regularly consults, were also apprised by newsletter.

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APPENDIX A: YELLOWSTONE REVEGETATION GUIDELINES

Revegetation efforts within the park have focused on careful management of topsoil as the only available growing medium and seed source. This is based on a park policy that seed obtained from sources outside the park would contaminate the park gene pools. Although it is a conservative method, the topsoil management approach has worked well. The park has an interagency agreement with the Bridger Plant Material Center to assist in the formation of a park seed bank. The park has also tested mulches and can make this information available upon request. All construction work within the park involving ground disturbance will meet the following criteria for revegetation accepted by the park:

1. All construction will be limited to that area necessary to complete required work. No activity, including vehicle or material use or storage, will be allowed outside the predetermined zone. If vehicles are to be traveling through an area numerous times, the same tracks will be used to prevent compaction in other areas. Compacted zones will be treated (raking, aerating, and replacement of topsoil) to assist revegetation. No one will drive up topsoil at any time.
2. Excavation and improvement will be handled in manageable sections that reflect changes in the soil and vegetation. Trenching routes and disturbance zones will be flagged and approved by the park. All flagging and debris will be removed from the area after work is completed.
3. Sections will be rehabilitated as soon as possible. Topsoil will not be stockpiled over the winter or for longer than three months in sagebrush/rabbitbrush zones or longer than six months in grass- dominated zones. Any deviation must be approved by the NPS.
4. Topsoil refers to the uppermost soil horizon; it is usually found in the top 5 to 15 centimeters (2 to 6 inches). Topsoil will be removed and replaced from the same area. Care will be taken to ensure that topsoil and fill material are not mixed and are stockpiled in separate areas (e.g., topsoil to the right of the trench and fill to the left).
5. Vegetation over 0.9 meters (three feet) in height will be removed before the removal of topsoil and in a manner that least disturbs the topsoil. No one will drive upon, gouge, or compact topsoil as vegetation is removed. Topsoil will be removed before stumps are pushed. The park must approve any deviation from this process.
6. After large trees are removed, topsoil will be removed from an area in a single cut, including any vegetation that is 0.9 meters (three feet) tall and under. Grubbing is not permitted.
7. Irregular land surfaces are recommended for a natural effect. Some rock outcropping and boulders may be left in place to create natural pockets for revegetation (see item 11). Deadfall snags may be stockpiled for later use on slopes that are very steep to provide catch points for soil.
8. Topsoil will not be used as bedding material. Separate bedding material will be obtained from sources approved by the park.
9. Topsoil will be replaced on- site in a mixture of topsoil and vegetation associated with the topsoil and will be reworked over the site in a manner that preserves the seed source while spreading the soil over the area.

10. No topsoil will be imported from outside the park or moved internally within the park unless approved by the NPS. Any imported fill will be checked for exotic plants.
11. Trees and shrubs will be avoided if possible during trenching or excavation. Any trees removed during construction will be removed from the site unless specified by the park.
12. If replacement seed is required for revegetation in an area, the park will provide seed at cost to the contractor. Advance notice of six months to one year is required on projects exceeding 93 square meters (1,000 square feet).
13. Boulders unearthed during construction may be reburied or left exposed (with lower third buried) depending upon the location and extent of rock naturally occurring in the area.
14. If a trench is required, the surface of the trench will be left mounded to allow for settling along the line.
15. If mulch is required in sensitive areas due to visibility or exotic plant infestation, the park will specify the type and depth of mulch to be used. Nitrogen may be added in small quantities to any wood product used on slopes to balance nitrogen lost through decomposition.
16. No fertilizer will be used in any revegetation work unless requested by the park.
17. If relocated due to road reconstruction, junction boxes or cans will be placed in the field and approved by the park. Locations should be well screened by vegetation, topography, or large boulders.
18. All access to the site and stockpiling or staging areas will be identified by the contractor and approved by the park. These areas will be revegetated using approved techniques upon completion of the project.
19. All debris will be removed from the site to an approved pit or hauled away as approved by the park.
20. Final review and inspection will be made by the park before the work is accepted.

APPENDIX B: YELLOWSTONE PARKWIDE ROAD IMPROVEMENT PROGRAMMATIC AGREEMENT

PROGRAMMATIC AGREEMENT
AMONG
NATIONAL PARK SERVICE,
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION,
WYOMING STATE HISTORIC PRESERVATION OFFICER,
MONTANA STATE HISTORIC PRESERVATION OFFICER,
FOR PRINCIPAL PARK ROAD SYSTEM IMPROVEMENT,
YELLOWSTONE NATIONAL PARK

WHEREAS, the National Park Service (NPS) has determined that proposed improvements to the principal park road system at Yellowstone National Park (Yellowstone NP) may affect properties included in or eligible for inclusion in the National Register of Historic Places, and has requested the comments of the Advisory Council on Historic Preservation (Council) pursuant to Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470 [f]), and its implementing regulations, “Protection of Historic and Cultural Properties” (36 CFR Part 800); and,

WHEREAS, this AGREEMENT seeks to provide the mechanism to complete any and all requirements of Section 106 of the National Historic Preservation Act of 1966 and its implementing regulations, 36 CFR Part 800, with regard to work related to any specific route on the principal park road system at Yellowstone NP; and,

WHEREAS, the NPS, through the Rocky Mountain Regional Office, has delegated responsibility for complying with Section 106 of the National Historic Preservation Act and the Council’s implementing regulations, 36 CFR Part 800, to Yellowstone NP; and,

WHEREAS, this AGREEMENT seeks to strengthen and foster the partnership amount the NPS, Wyoming State Historic Preservation Office (WYSHPO), Montana State Historic Preservation Office (MTSHPO), and the Council in execution of all organizations’ responsibilities under Section 110 and Section 106 of the National Historic Preservation Act of 1966, amended; and,

NOW, THEREFORE, the NPS, WYSHPO, MTSHPO, and the Council agree that the work undertaken on Yellowstone principal road system, including material obtained from sources outside of Yellowstone NP, shall be administered in accordance with the following stipulations in order to satisfy the NPS’s Section 106 responsibilities for work related to each specific route on Yellowstone NP principal road system.

STIPULATIONS:

I. Applicability

This AGREEMENT outlines procedures that will substitute for the Section 106 review process outlined in the 1990 Nationwide Programmatic Agreement and Council's regulations in 36 CFR Part 800 for all work completed for road improvement, reconstruction, and road material acquisition on the principal park road system. This work will be identified in the Parkwide Road Improvement Plan, Environmental Assessment (Finding of No Significant Impact signed June 10, 1992) and any subsequent route specific Environmental Assessments (EAs) that are developed out of the Parkwide Road Improvement Plan, EA.

As identified in the Parkwide Road Improvement Plan, Yellowstone NP will ensure that consultation with appropriate SHPOs, Council, Native American tribes, and other interested persons is completed on all identification, evaluation, and mitigation efforts for each specific route prior to any work being initiated on that route.

II. Consultation with Native American Tribes

Yellowstone NP will consult with appropriate tribe(s) and Native American individuals regarding identification, effects, and treatment of cultural resources that may be affected by this undertaking. The consultations will be in accordance with 36 CFR Part 800.1(c)(2)(iii), National Register Bulletin 38: Guidelines for Evaluating and Documenting Traditional Cultural Properties, and the Council's Public Participation in Section 106 Review: A Guide for Agency Officials. Consultation will include, but not be limited to, the following tribes:

Crow
Arapahoe and Shoshone at Fort Washakie
Blackfeet
Nez Perce
Shoshone and Bannock Tribes at Fort Hall Indian Reservation

III. Identification and Evaluation Standards

Yellowstone NP will ensure that historic properties, which may be affected, are identified and evaluated in a manner consistent with National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation, National Register Bulletin 38: Guidelines for Evaluating and Documenting Traditional Cultural Properties, Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines, applicable SHPO guidance, and the following procedures:

A. Locating Historic Properties

Yellowstone NP will determine the level and type of investigation needed to identify historic properties in accordance with the Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines and appropriate State Historic Preservation Office guidelines.

B. Historic Properties – Evaluation Strategy

1. Historic Structures and Features. The National Register of Historic Places Multiple Property Documentation Form, which is currently being prepared for historic features and structures associated with the Yellowstone road system will serve as an historic context for historic-era road-related properties that may be affected.
2. Traditional Cultural Properties. Native American individuals and tribes, as identified in Stipulation II above, will be consulted regarding potential traditional cultural properties (TCP). Any potential TCPs identified in the Area of Potential Effects (APE) will be evaluated for National Register eligibility. Yellowstone NP will seek to evaluate TCPs through the development of ethnographic or ethnohistoric contexts, when funding becomes available to complete this evaluation.

C. Evaluating Historic Significance

Yellowstone NP shall ensure that potential historic properties which may be affected by any phase of the work are evaluated in accordance with 36 CFR Part 800.4 (c), to determine their eligibility for inclusion on the National Register of Historic Places. The evaluation will be consistent with the Secretary of the Interior's Standards and Guidelines for Evaluation (48 Federal Register 190: 44738), 36 CFR 63, and the following stipulation:

When requesting the SHPOs comments on a route specific EA, Yellowstone NP shall provide the SHPO with sufficient information in order to review Yellowstone NP's recommendations on the eligibility of the properties, including the Wyoming or Montana state site form, as appropriate and the Rocky Mountain Region Site Status Evaluation Form, used for prehistoric or historic archeological sites.

Isolated finds, defined as a single artifact, will not be considered eligible for inclusion on the National Register of Historic Places. Descriptive information regarding isolated finds will be included in a report format acceptable to the appropriate SHPO.

IV. Mitigation and Documentation Standards

Yellowstone NP will apply the Criteria of Effect and Adverse Effect in 39 CFR Part 800.9 to properties identified in the APE. Whenever possible, Yellowstone NP will

avoid adverse effects to historic properties that are identified in the APE through project redesign or implementation of protective measures. However, if avoidance is not possible, Yellowstone NP will minimize or mitigate effects. The specific means of avoidance, minimization, or mitigation of effects will be identified in the route specific EAs, subject to review by the appropriate SHPO and the Council as provided in Stipulation IV. Whenever possible, the following standards will be followed for this undertaking:

- A. If historic structures determined to be contributing resources to the overall eligibility of the road are to be demolished and the appropriate SHPO and the Council agree that there is no other feasible alternative, Yellowstone NP will complete documentation according to the standards of the Historic American Building Survey/Historic American Engineering Record (HABS/HAER). Representative features, including headwalls and culverts, will also be documented according to the HABS/HAER standards.
- B. Contributing historic structures that will be affected, but not demolished by the undertaking will be treated in accordance with the Secretary of Interior's Standards for Rehabilitation and Guidelines for Rehabilitation of Historic Buildings.
- C. The stone headwalls that retain physical integrity and are visible from the road, other visitor areas, or that are determined to be architecturally significant will be documented, dismantled, and later reassembled over the new culvert pipes. The other headwalls will be documented dismantled, and the stone salvaged for rehabilitation of other stone structures in the park. The specifics of this activity will be discussed in the route-specific EAs.
- D. The final choice of guardrail will be based on meeting federal safety standards and historical compatibility of railing material.
- E. New turnouts as well as turnouts proposed for rehabilitation will be designed and rebuilt to retain scale with the natural and historic setting. Use of native materials such as log, wood, and stone will maintain continuity and historic character. The addition of safety islands will be an addition of non-historic design features but will be constructed of comparable materials to blend with the historic landscape.

V. Treatment of Archaeological Properties

Yellowstone NP will ensure that a comprehensive Treatment Plan is developed for the mitigation of anticipated effects to archaeological properties resulting from improvements to the principal road system. Yellowstone NP will also ensure the development of location and property specific Data Recovery Plans (DRPs) for each individual phase or segment of the project. DRPs will be considered as supplements to the Treatment Plan. The appropriate SHPO and the Council will be afforded an opportunity to review and comment on the Treatment Plan and all subsequent DRPs in accordance with Stipulation VI.

- A. Treatment Plan. The Treatment Plan shall be prepared in accordance with the guidance found in the Council's Treatment of Archeological Properties: A Handbook, and Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines (Secretary's Standards).

The Treatment Plan shall specify, at a minimum:

- (1) A brief description of the cultural areas with which Yellowstone NP is associated, and a discussion of previous research and existing information on archeological properties within Yellowstone NP;
- (2) A Research Design that will contain the research questions and goals that are applicable to the Project Area as a whole and that will be addressed through data recovery, along with an explanation of their relevance and importance;
- (3) Fieldwork and analytical methods and strategies applicable to the Project Area as a whole, along with an explanation of their relevance to the research questions. Such treatment methods will be developed for each class of archaeological property identified to date in the Project Area;
- (4) Proposed procedures for dealing with discovery situations;
- (5) Provisions for the curation and disposition of all recovered cultural materials, samples, and records.
- (6) Proposed contents of a comprehensive synthesis and final report concerning mitigation activities, meeting the guidelines provided in the Secretary's Standards, providing for its submission to the SHPOs for review within two (2) years after completion of all fieldwork conducted under the terms of this agreement.

B. Data Recovery Plans

Each phase or segment specific DRP shall represent a dependent plan and document supplement to the Treatment Plan, providing specific direction for the conduct of data recovery associated with any given route specific EA. DRPs shall conform to the general requirements of the Treatment Plan, and shall incorporate information from the Plan. The DRPs shall specify, at a minimum:

- (1) The historic properties to be affected and the nature of the effects;
- (2) The research questions identified in the Treatment Plan that will be appropriate for the specific project segment and that will be addressed through data recovery, along with any additional research questions compatible with the Treatment Plan and an explanation of

their relevance to the overall research goals as established in the Treatment Plan.

- (3) The specific fieldwork and analytical strategies identified in the Treatment Plan, as well as any other strategies that will be employed in the specified project segment; and
- (4) A schedule for the submission to the appropriate SHPO(s) of a field report of work completed for the specified project segment.

The Annual Report required in Stipulation XIII will contain a progress report on data recovery activities carried out during the reporting period, including the status of fieldwork, analysis, and final report preparation.

VI. SHPO/Council Consultation

Reviews completed by the SHPOs and the Council of identification efforts, eligibility, and effects to historic properties resulting from actions related to this undertaking shall be phased. Route specific EAs and supporting documentation will contain sufficient information for review of Yellowstone NP's identification efforts, and determinations of eligibility and effect for each route and will contain proposals for treatment or mitigation of adverse effects.

The route specific EAs will be submitted to the SHPO or SHPOs with jurisdiction and the Council with a cover letter requesting comments under the terms of this AGREEMENT. Review of the route specific will constitute SHPOs and Council's opportunity to comment on all work proposed for specific routes. Where the proposed treatment calls for archaeological data recovery, Yellowstone NP may submit the research design/data recovery plan as a separate document.

Unless otherwise specified in this AGREEMENT, the SHPO and Council shall be afforded thirty (30) calendar days from receipt of appropriate documents to any Yellowstone NP communication regarding identification, evaluation, eligibility, effect determination, or treatment of effects. These reviews may be carried out concurrently. Should SHPO or Council not respond within this time limit, Yellowstone NP may assume SHPO or Council concurrence and can proceed with Yellowstone NP's proposed course of action. Yellowstone NP will document non-response by the SHPOs or Council in the case file.

VII. Avoidance

If direct or indirect effects on historic properties within the APE are identified subsequent to the review of the EA, but prior to implementation of the proposed work, Yellowstone NP will seek to avoid effects to those properties through project redesign or implementation of protective measures. Yellowstone NP will notify the appropriate SHPO of proposed avoidance measures. Documentation submitted to the SHPO shall include Wyoming and Montana site forms. Depending on the scope and

magnitude of the project, a suitable reporting format will be used. If, within fifteen (15) days of receipt of documentation, SHPO concurs with adequacy of avoidance measures, the project may proceed without further consultation. If Yellowstone NP determines avoidance is not possible or if, within fifteen (15) days of receipt of documentation, the SHPO objects to the adequacy of avoidance measures, consultation shall proceed in accordance with 36 CFT Part 800.4-6.

VIII. Dispute Resolution

A. Should any party to this AGREEMENT object within thirty (30) days, or within other time frames provided in this AGREEMENT after receipt of any plans, specifications, contracts, or other documents provided for review pursuant to this AGREEMENT, or to the manner in which this AGREEMENT is being implemented, Yellowstone NP shall consult with the objecting party to resolve the objection. If Yellowstone NP determines that the objection cannot be resolved, Yellowstone NP shall forward all documentation relevant to the dispute to the Council. Within thirty (30) days after receipt of all pertinent documentation, the Council will either:

- (1) Provide Yellowstone NP with recommendations, which Yellowstone NP will take into account in reaching a final decision regarding the dispute;
- (2) Notify Yellowstone NP that it will comment pursuant to 36 CFR Part 800.6(b) and proceed to comment. Any Council comment provided in response to such a request will be taken into account by Yellowstone NP in accordance with 36 CFR Part 800.6 (c) (2) with reference to the subject of the dispute.

Any recommendation or comment provided by the Council will be understood to pertain only to the subject of the dispute; Yellowstone NP's responsibility to carry out all actions under this AGREEMENT that are not the subjects of the dispute will remain unchanged.

B. At any time during the implementation of the measures stipulated in this AGREEMENT, should an objection be raised by a member of the public, Yellowstone NP shall take into account and consult as needed with the objecting party, the SHPO, and the Council to resolve the objection.

IX. Discovery Situations

Should Yellowstone NP find previously unidentified historic properties during the course of an undertaking, the procedures stipulated in 36 CFR Part 800.11 will be followed.

X. Human Remains

If human remains are encountered on federal lands, Yellowstone NP will consult with Native Americans, or other appropriate groups, to determine treatment and disposition measures consistent with applicable federal laws (such as the Native American Graves Protection and Repatriation Act [25 U.S.C. 3002]). If human remains are encountered on state or private lands, Yellowstone NP will ensure that they are treated according to appropriate state laws.

XI. Public Participation

Yellowstone NP will undertake public participation pursuant to 36 CFR Part 800.1 (c) (2) (iv) as well as the National Park Service's Management Policies, NPS-12, National Environmental Policy Act Guidelines and NPS-2, National Park Service Planning Guidelines.

XII. Monitoring

The Council, The WYSHPO, and MTSHPO may monitor activities carried out pursuant to this AGREEMENT, and the Council will review such activities if so requested. Yellowstone NP will cooperate with the Council and the SHPOs in carrying out their monitoring and review responsibilities.

XIII. Annual Report and Review

A. Annual Report

On or before December 30 of each year, Yellowstone NP shall prepare and provide to the appropriate SHPO and the Council an annual report addressing but not limited to the following topics in relation to the principal park road system:

1. Description of work completed under this AGREEMENT, including the progress report required under Stipulation V.
2. Number of historic properties listed on or determined eligible for the National Register of Historic Places.
3. Number of historic properties determined ineligible for listing on the National Register of Historic Places.
4. Number of historic properties for which the Criteria of Effect was applied.
5. Copies of correspondence initiating consultation with Native American tribes or other interested parties.
6. Actions taken to implement the terms of this AGREEMENT.

7. Recommendations for implementation during the coming year, including any suggestions to amend the AGREEMENT.

B. Annual Review

The SHPO and Council will review the annual report and provide comments to Yellowstone NP. At the request of any party to this AGREEMENT, a meeting or meetings will be held to facilitate review and comment, to resolve questions, or to resolve comments that are adverse.

XIV. Amendments

Any party to this AGREEMENT may request that it be amended, whereupon the parties will consult in accordance with 36 CFR Part 800.13 to consider such amendment.

XV. Termination

Any party to this AGREEMENT may terminate it by providing thirty (30) days notice to the other parties, provided that the parties will consult during the period prior to termination to seek agreement on amendments to other actions that would avoid termination. In the event of termination, Yellowstone NP will comply with 36 CFR Part 800.4 through 800.6 with regard to individual undertaking covered by this AGREEMENT.

XVI. Failure to Implement AGREEMENT Terms

In the event that Yellowstone NP does not carry out the terms of this AGREEMENT, Yellowstone NP will comply with 36 CFR Part 800.4 through 800.6 with regard to individual undertakings covered by the AGREEMENT.

Execution and implementation of this AGREEMENT evidences that the National Park Service has satisfied its Section 106 responsibilities for all work related to each specific route of the park roads, Yellowstone National Park.

ADVISORY COUNCIL ON HISTORIC PRESERVATION

BY: Robert O. BushDate 1/22/93

NATIONAL PARK SERVICE, ROCKY MOUNTAIN REGION

BY: Homer L. BrownDate 10-27-92

YELLOWSTONE NATIONAL PARK

BY: Robert O. BushDate 12/15/92

WYOMING STATE HISTORIC PRESERVATION OFFICER

BY: John I. KeckDate 12/28/92

MONTANA STATE HISTORIC PRESERVATION OFFICER

BY: Maureen ShufDate 1-14-93