FHWA–FPWY–EIS–02–1–F

Final Environmental Impact Statement
Final Section 4(f) Statement

Wyoming Forest Highway 4
U.S. 212 (KP 39.5 to KP 69.4)
Project WY HPP-4-1(0)
The Beartooth Highway
Park County, Wyoming

Beartooth Highway construction
circa 1934
© Flashes, Red Lodge, MT

Beartooth Highway 2001

Visual simulation of the reconstructed road at 8.4 meters (28 feet)

September 2003

United States Department of Transportation
Federal Highway Administration
Central Federal Lands Highway Division

METRIC TO ENGLISH/ENGLISH TO METRIC CONVERSION FACTORS (APPROXIMATE)

When You Know:	Multiply By:	To Find:
meters (m)	3.281	feet
feet (ft.)	0.3048	meters
kilometers (km)	0.621	miles
miles (mi.)	1.609	kilometers
hectares (ha)	2.471	acres
acres (ac.)	0.405	hectares

LIST OF ACRONYMS AND ABBREVIATIONS USED IN THIS DOCUMENT

AASHTO	American Association of State Highway and Transportation Officials	mph	Miles per hour
ADT	Average Daily Traffic	MS	Management Situations
BMPs	Best Management Practices	MSE	Mechanically stabilized earth
BMU	Bear Management Unit	NEPA	National Environmental Policy Act
CEM	Cumulative Effects Model	NPS	National Park Service
CFR	Code of Federal Regulations	NRHP	National Register of Historic Places
CNF	Custer National Forest	PSD	Prevention of Significant Deterioration
Corps	U.S. Army Corps of Engineers	RNA	Research Natural Area
dBA	Decibels	SADT	Seasonal Average Daily Traffic
DHV	Design Hourly Volume	SEE	Social, Environmental, and Economic (Team)
EIS	Environmental Impact Statement	SHPO	State Historic Preservation Office
EO	Executive Order	SNF	Shoshone National Forest
FHWA	Federal Highway Administration	SSD	Stopping Sight Distance
GNF	Gallatin National Forest	USFS	U.S. Forest Service
GYA	Greater Yellowstone Area	USFWS	U.S. Fish and Wildlife Service
km/h	Kilometers per hour	WDEQ	Wyoming Department of Environmental Quality
KP	Kilometer post	WNDD	Wyoming Natural Diversity Database
MA	Management Area	WYDOT	Wyoming Department of Transportation
MDOT	Montana Department of Transportation	YNP	Yellowstone National Park
MNHP	Montana Natural Heritage Program		

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Wyoming Forest Highway 4
U.S. 212 (KP 39.5 to KP 69.4)
Project WY HPP-4-1(0)
The Beartooth Highway
Park County, Wyoming

FINAL ENVIRONMENTAL IMPACT STATEMENT

FINAL SECTION 4(F) STATEMENT

Submitted Pursuant to 42 U.S.C. 4332(2)(c)
and 49 U.S.C. 303 by the
U.S. Department of Transportation
Federal Highway Administration
Central Federal Lands Highway Division

Cooperating Agencies

U.S. Forest Service
National Park Service
U.S. Army Corps of Engineers
U.S. Fish and Wildlife Service

Additional information may be obtained from:

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Larry C. Smith, P.E.
Division Engineer
Central Federal Lands Highway Division

8/13/03
Date

Abstract

The Beartooth Highway is a 108-kilometer (67-mile) route that begins at the northeast entrance to Yellowstone National Park and ends in Red Lodge, Montana. The Federal Highway Administration, in cooperation with the U.S. Forest Service and the National Park Service, proposes to reconstruct a segment of the road that begins at kilometer post 39.5 (mile post 24.5), just west of the Clay Butte Lookout turnoff, traverses over Beartooth Pass, and ends at the Montana/Wyoming state line at kilometer post 69.4 (mile post 43.1).

The segment proposed for reconstruction has not been rebuilt since its original construction in the 1930s. The road has deteriorated significantly and does not accommodate current or future vehicle types or volumes. The majority of the reconstruction would be along the existing road corridor with an improved alignment, grade, and width to guidelines adopted by the Federal Highway Administration and the Wyoming Department of Transportation. The reconstruction would support management of National Forest lands adjacent to the road, including maintaining the Scenic Byway/All-American Road qualities, maintain an efficient transportation link between Red Lodge, Montana and Yellowstone National Park that safely accommodates projected 2025 traffic; and provide a roadway that could be reasonably maintained in a sustainable manner by a maintaining agency. Construction would begin in 2005 and last 6 years, until 2010.

This Final Environmental Impact Statement and Section 4(f) Statement for the Beartooth Highway Reconstruction Project document is an analysis of the potential environmental consequences of the proposed road reconstruction project. In addition to the No Action Alternative, five build alternatives have been developed and analyzed. All build alternatives would follow the existing alignment closely in most locations. Options for realignment or road construction in six areas are considered. Some build alternatives have alignment options designed to avoid wetlands, to reduce visual impacts, or to provide a more consistent alignment. A workcamp at the Shoshone National Forest's Fox Creek Campground is proposed for use by employees during the 6-year construction period and a materials source is proposed near the western end of the project.

The build alternatives would disturb between 70 to 78 ha (173 to 194 ac.) of previously undisturbed areas. Anticipated effects would include disturbance of about 3 ha (6 to 8 ac.) of wetlands, and the permanent loss of 7 to 8 ha (17 to 22 ac.) of alpine meadows and 7 to 10 ha (17 to 24 ac.) of grizzly bear habitat. All build alternatives would alter the footprint and location of the historic roadway, and all build alternatives except Alternative 2 would remove four historic bridges, adversely affecting the resources. One bridge would not be dismantled in Alternative 2, but its loss of function would adversely affect it. All build alternatives would be in compliance with the Shoshone National Forest Land and Resource Management Plan. The Federal Highway Administration has developed plans to mitigate all unavoidable wetland impacts and landscape and revegetate all areas disturbed by the project, and would mitigate adverse effects on historic resources. The Federal Highway Administration, in cooperation with the U.S. Forest Service and the National Park Service, identified Alternative 6–Blended Emphasis as the preferred alternative.

The Final Environmental Impact Statement is available for review at http://www.cflhd.gov/projects/wy/beartooth/index.htm. The Federal Highway Administration will issue a Record of Decision on the project no sooner than October 12, 2003, 30 days after the Notice of Availability for the Final Environmental Impact Statement is published in the *Federal Register.* Comments concerning this Final Environmental Impact Statement should be sent to:

Mr. Richard J. Cushing (HFHD-16)
Federal Highway Administration
555 Zang Street, Room 259
Lakewood, CO 80228
Phone: (303) 716-2138

This Final EIS is divided into two volumes. One volume contains the body of the Final EIS, including the purpose and need, the alternatives considered, the affected environment, environmental consequences, and a final Section 4(f) Statement. The second volume contains appendices to the Final EIS.

The Final EIS was modified considerably from the Draft EIS in response to public and agency comments. To assist the reader, additions are shown with a vertical line. The line is on the outside border (on the left side on even-numbered pages and the right side on odd-numbered pages) where the new information is presented, regardless of the column in which the information is located. Deleted text is not shown, but is also marked with a vertical line.

The Federal Highway Administration completed numerous engineering and environmental studies for the proposed project. These studies are documented in the technical reports listed on page 103. To receive copies of these reports, please send a written request to the address provided on the previous page. Copies of the Final Environmental Impact Statement can be reviewed at the following locations:

Federal Highway Administration
Central Federal Lands Highway Division
555 Zang Street, Room 259
Lakewood, Colorado

Shoshone National Forest
203A Yellowstone Avenue
Cody, Wyoming

Shoshone National Forest
808 Meadow Lane
Cody, Wyoming

Park County Library
1057 Sheridan Avenue
Cody, Wyoming

Custer National Forest
6811 Highway 212 South
Red Lodge, Montana

Carnegie Library
3 West 8th Street
Red Lodge, Montana

Wyoming Dept. of Transportation
218 West C
Basin, Wyoming

Wyoming Dept. of Transportation
5300 Bishop Boulevard
Cheyenne, Wyoming

Yellowstone National Park
Park Headquarters
Mammoth, Wyoming

Federal Highway Administration
2880 Skyway Drive
Helena, Montana

Federal Highway Administration
1916 Evans Avenue
Cheyenne, Wyoming

Cooke City Chamber of Commerce
Cooke City, Montana

The Final Environmental Impact Statement also is available for review at the Top of the World Store along the Beartooth Highway.

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Tables

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Appendices
(all appendices are bound separately)

Summary

THIS Final Environmental Impact Statement for the Beartooth Highway Reconstruction Project documents an analysis of the potential environmental consequences of a proposed road reconstruction project. This summary briefly describes the proposed project, its purpose and need, and potential environmental effects. In addition to the No Action Alternative, five build alternatives have been developed and analyzed. The Federal Highway Administration is the lead agency for the project and is responsible for project development, environmental evaluation, preparation of this document and a Record of Decision, and construction contract management.

SEE Team and Cooperating Agencies

When the Federal Highway Administration starts an environmental review process for a major road project, it convenes a Social, Economic and Environmental (SEE) study team consisting of federal, state and local agencies with project involvement. The SEE team assists in identifying major issues associated with the proposed project, developing project alternatives, and assessing environmental impacts.

The Beartooth Highway is one of the most scenic routes in America.

The SEE team for this project is comprised of representatives from the following six agencies:

- Federal Highway Administration
- U.S. Forest Service
  (Shoshone National Forest)
- National Park Service
  (Yellowstone National Park)
- U.S. Fish and Wildlife Service
- U.S. Army Corps of Engineers
- Wyoming Department of Transportation

Under the National Environmental Policy Act, the Federal Highway Administration can request assistance from other federal and state agencies via cooperating agency status in preparing the Environmental Impact Statement. The U.S. Forest Service, National Park Service, U.S. Army Corps of Engineers, and U.S. Fish and Wildlife Service have agreed to become cooperating agencies for the project.

Proposed Project

The Federal Highway Administration, in cooperation with the U.S. Forest Service and the National Park Service, proposes to reconstruct a 30-km (18-mi.) segment of the Beartooth Highway in Park County, Wyoming in accordance with guidelines adopted by the Federal Highway Administration and the Wyoming Department of Transportation. The proposed project would begin at kilometer post 39.5 (MP 24.5), just west of the Clay Butte Lookout turnoff, traverse over Beartooth Pass, and end at the Montana/Wyoming state line at kilometer post 69.4 (MP 43.1). This segment of the road is referred to as Segment 4 (Figure S-1). Kilometer post 39.5 and kilometer post 69.4 are logical ends or termini for the project because the Beartooth Highway has been reconstructed previously by other agencies up to both ends of the proposed project. Construction would begin in 2005 and last 6 years, until 2010.

Location and History

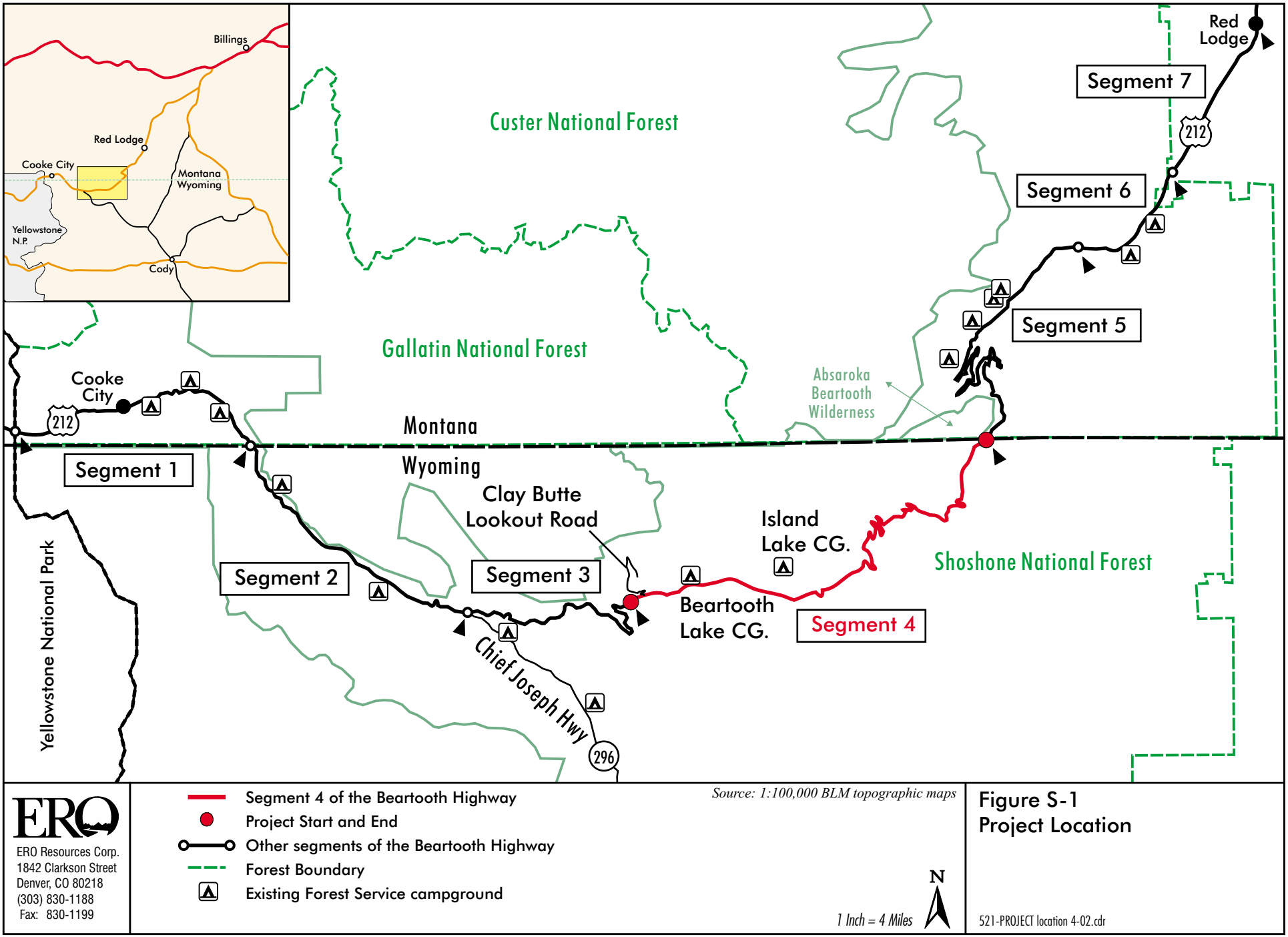
The Beartooth Highway is a 108-km (67-mi.) route that begins at the northeast entrance to Yellowstone National Park and ends in Red Lodge, Montana. The Beartooth Highway also is known as the Red Lodge-Cooke City Highway and is designated as U.S. 212 over its entire length. The section of the road in Wyoming is designated as Wyoming Forest Highway 4. In addition to being a Forest Highway, the road also is a National Park Approach Road.

The Beartooth Highway was built between 1931 and 1936 as an access road to Yellowstone National Park, and opened to traffic in 1936. In 1968, Segment 4 was resurfaced, and many paved ditches were added. Segment 4 currently consists of two 2.75-m (9-ft.) wide travel lanes for a total width of about 5.5 m (18 ft.). In most locations, there is little or no shoulder. In 1994, a Federal Highway Administration needs assessment was completed for the Beartooth Highway in cooperation with the Forest Service and the National Park Service. It concluded that many road components of Segment 4 were inadequate and substandard, and the segment should be reconstructed.

The pavement preservation project that the Federal Highway Administration completed in 2000 temporarily repaired the roadway surface. The project was designed to provide a driveable surface on Segment 4 for about 5 to 10 years while the environmental review process for the reconstruction project progressed.

Existing Road Use and Traffic Conditions

The Beartooth Highway connects the northeast entrance of Yellowstone National Park to Red Lodge, Montana and Cody, Wyoming. The Beartooth Highway connects with WY 296, the Chief Joseph Scenic Byway, which provides a link to Cody, Wyoming. The road also provides access between the communities of Silver Gate, Cooke City, and Red Lodge. The road provides access to campgrounds, trailheads, vista points, pullouts, and recreation facilities in the Shoshone National Forest, the Custer National Forest, and the Gallatin National Forest. The road has been designated a



ERO
ERO Resources Corp.
1842 Clarkson Street
Denver, CO 80218
(303) 830-1188
Fax: 830-1199

Figure S-1
Project Location

521-PROJECT location 4-02.cdr

U.S. Forest Service Scenic Byway, a Wyoming State Scenic Byway, and sections of the road, including Segment 4, are designated an All-American Road under Federal Highway Administration's Scenic Byway Program. Segment 4 opens by Memorial Day and closes about October 15 each year. The road sometimes is accessible by car up to the road closure gate east of Long Lake (approximately KP 51.5; MP 32.0) before Memorial Day, depending on snow conditions.

The existing Seasonal Average Daily Traffic, the average number of vehicles that travel the road each day over a set period of time or season, is 942 vehicles. During peak travel times in August, existing daily traffic averages 1,150 vehicles. Based on existing traffic, the Seasonal Average Daily Traffic in 2025 is estimated to be 1,972 vehicles.

Purpose and Need

The three reasons to reconstruct Segment 4 are:

- Support management of National Forest lands adjacent to the road, including maintaining the Scenic Byway/All-American Road qualities
- Maintain an efficient transportation link between Red Lodge, Montana and Yellowstone National Park that safely accommodates projected traffic in 2025
- Provide a roadway that can be reasonably maintained in a sustainable manner by a maintaining agency

Needs Associated With Land Management Goals

Segment 4 of the Beartooth Highway traverses Forest System lands managed by the Shoshone National Forest. The Shoshone National Forest's Land and Resource Management Plan established a forest-wide goal of managing activities along travel routes to maintain and enhance recreation and scenic values (Shoshone National Forest 1986). The Forest Plan also established Management Areas. The Beartooth Highway corridor is in a Management Area that emphasizes rural and roaded natural recreation opportunities. Motorized and non-motorized recreation activities such as driving for pleasure, viewing scenery, picnicking, fishing, camping, hiking, snowmobiling, and cross-country skiing are emphasized.

Although the entire road corridor is in the same Management Area, the Shoshone National Forest manages Segment 4 for two distinct types of road use. Many travelers come to the Beartooth Highway to experience the drive and continue on to destination communities or Yellowstone National Park. Other travelers come to the Beartooth Plateau as a recreation destination and either stay overnight or engage in day use of the area, with short trips to and from local roadside and off-road destinations. Winter use, from October through early June, is concentrated primarily on groomed snowmobile routes between Top of the World Store and Long Lake.

The Shoshone National Forest manages the section west of Long Lake for more intensive recreational activity.

The Shoshone National Forest manages the section west of Long Lake as a recreation complex, with more intensive recreational activity, including pedestrian and bicycle use. All of the developed recreation sites along the road are found west of Long Lake. Two campgrounds found west of Long Lake, Beartooth Lake and Island Lake, are popular camping locations and provide access to area lakes. Wilderness trails originate at both campgrounds. Because of their proximity to the road, Beartooth Lake and Long Lake are frequent stopping spots for tourists. Top of the World Store, the only location offering supplies between Red Lodge and Cooke City, is between Island Lake and Beartooth Lake. Several jeep trails, such as the Morrison Jeep trail and the Sawtooth Lake trail, originate between Long Lake and Island Lake.

Travelers are more likely to stop along the road shoulder, use bicycles, motorcycles and all-terrain vehicles in family groups, and engage in roadside viewing and related activities west of Long Lake. These activities involve frequent stops, slow-moving motorized and non-motorized vehicles and a variety of user ages. To minimize environmental impact, the SNF, in cooperation with the FHWA and other SEE team members, agreed a 0.9-m (3-ft.) shoulder would meet the recreation use needs and adequately provide for safety from the Clay Butte Lookout turnoff to the road closure gate. Winter recreational use also is important because the highway from Cooke City to Long Lake is a popular snowmobile destination. Low snow years and the "shoulder" seasons (early June and early October) of snowmobiling cause a mix of snow craft adjacent to the road and full-size vehicles on the road. A wider shoulder width would address the potential safety hazards of this vehicle mix.

The existing road width does not safely accommodate bicyclists.

East of Long Lake, the road enters the alpine zone where the dominant recreational activity is scenic driving and viewing. No campgrounds are present east of Long Lake, and the Forest Plan either prohibits or discourages off-road motorized activity.

The incidence of family group activities, bicycles and road-side stops, and other day-use activities diminishes significantly east of Long Lake. The steep terrain, lack of trees for shelter, steep road grade, lack of camping facilities, and severe and cold weather at all times of the year, limit road use primarily to driving and viewing. The Shoshone National Forest discourages over-snow recreation east of Long Lake due to frequent hazardous snowstorms. Because of the more limited roadside activities in the eastern section of the project, there is less need for a wider shoulder width.

The designation of sections of the road including Segment 4 as an All-American Road under Federal Highway Administration's Scenic Byway Program indicates the road has one-of-a-kind features that do not exist elsewhere. As an All-American Road, it provides an exceptional traveling experience so recognized by travelers that they would make a drive along the highway a primary reason for their trip. A Corridor Management Plan has been prepared for the All-American Road section of the

Sections of the road are an All-American Scenic Byway because of its scenic and natural qualities.

road. The plan describes management and protection strategies, and provides recommendations for interpretation.

Agency and public comment on the Draft EIS expressed concern about maintaining the road's All-American Scenic Byway qualities. The following attributes define these qualities:

- The curvilinear nature of the road, particularly the switchbacks in the alpine area
- The opportunity to stop and enjoy the spectacular scenery, pristine lakes and streams, and uncommon alpine vegetation and wildlife in a safe manner
- The proximity of the vegetation to the roadway, particularly in the alpine area

These attributes were considered in identifying the preferred alternative and would be central in developing final road design. Reconstructing the road would improve its deteriorating condition, safely accommodate current and projected recreational use, allow the Shoshone National Forest to continue to manage activities along the road, and enhance recreation and scenic values in accordance with the Forest Plan.

Needs Associated With Accommodating Projected Traffic

Segment 4 is an important transportation route between Red Lodge, Montana and YNP. The Beartooth Highway was initially constructed as a National Park Approach Road in the 1930s to provide access to YNP from Red Lodge. Since the road's opening in the 1930s, tourism associated with the Beartooth Highway has provided significant economic benefits to Red Lodge and Cooke City, Montana, as well as Cody, Wyoming. By safely accommodating projected traffic types and volumes, the tourism associated with the highway will continue to play a major role in sustaining these towns' economies.

Since Segment 4 was constructed in the 1930s, the type and volume of traffic on the road has changed substantially. It does not safely accommodate current vehicle types, such as recreational vehicles or pickup trucks with trailers that access the National Forest and Yellowstone National Park. Projected higher traffic volumes in the future will exacerbate the current situation. Without reconstruction, the road will continue to deteriorate. Reconstruction would address seven primary deteriorating or deficient elements that contribute to safety concerns of the existing road: roadway surface, road alignment; travel lane width, shoulder width; bridges, drainage facilities, parking areas, pullouts, and access road intersections.

Needs Associated with Maintenance

Because no agency has assumed ownership of the Wyoming segments of the Beartooth Highway, including Segment 4, and maintenance funding has been inconsistent, maintenance of the Beartooth Highway has been a problematic issue for several decades. In its deteriorated condition, Segment 4 has high maintenance requirements. The National Park Service has maintained the road historically,

The four bridges are structurally deteriorated and too narrow, and do not meet current safety standards or hydraulic requirements.

but has only been allocated funding for snowplowing from the Forest Service through 2006 or 2007. Although the Forest Service has short-term funding for snowplowing, it is not prepared to assume long-term maintenance. Currently, the average annual maintenance budget is about $200,000 per year. Annual maintenance costs include about $60,000 to open the road in the spring, and $40,000 for snowplowing after the road is open, with the rest of the budget spent on other road maintenance needs such as materials, personnel, equipment, and maintenance facilities. The maintenance budget does not provide for all of the maintenance activities needed to adequately maintain the road each year.

The proposed project needs to provide a roadway with design features compatible with current maintenance equipment and techniques, affording safe and efficient maintenance practices, as required by law for the use of federal highway funds. Specifically, the proposed project needs to provide for easier and safer snowplowing, a more durable pavement surface, improved drainage features, and future sustainable maintenance that is less expensive and will have little to no impacts from future maintenance needs on the surrounding environment.

Sustainable maintenance refers to the ability to provide complete pavement surface rehabilitation in 20 years with minimal or no environmental impacts and at minimal cost. The proposed project needs to provide roadway elements that would accommodate a future surfacing overlay with minimal environmental impact and cost, while providing a safe roadway for future traffic volumes. These issues were considered in the identification of the preferred alternative.

The Beartooth Highway was built as an approach road from Red Lodge, Montana to Yellowstone National Park under the National Park Approaches Act of 1931. The National Park Approaches Act allowed the Secretary of the Interior to construct, reconstruct, and improve national park approach roads, and to enter into agreements for the maintenance of the roads by State or County authorities, or to maintain them when otherwise necessary. Since the road was built, the Secretary of the Interior has been unable to interest either Montana or Wyoming in a maintenance agreement for the section of the road from Yellowstone National Park to the Montana/Wyoming state line at KP 69.4.

In its current condition, Segment 4 is very difficult to maintain. Consequently, neither Montana nor Wyoming has put the section of the road from Yellowstone National Park to the Montana/ Wyoming state line on its State Transportation Plan. When a road is on a State Transportation Plan, the state assumes responsibility for the road's jurisdiction and maintenance. If the Wyoming section of the Beartooth Highway was on Wyoming's State Transportation Plan, it would be maintained in a similar manner as other area roads, such as WY 296 or WY 120.

The narrow travel lanes, lack of shoulders, and substandard guardrails present a safety hazard to motorists, pedestrians, and bicyclists.

The National Park Service has maintained Segment 4 historically. In light of the current road condition, road maintenance costs are high. Under 16 USC Section 17j-2(a), appropriations for the National Park Service are authorized for "maintenance of the roads in the national forests leading out of Yellowstone National Park." Although Congress is authorized to appropriate funds for maintenance, the National Park Service is not allocated such funding. Because the National Park Service is not allocated regular funding for snowplowing or maintenance, the road occasionally is not adequately snowplowed or maintained. For example, in the mid-1990s, the National Park Service did not open the road by Memorial Day because of a lack of funding.

Consultation and Coordination

Public, Agency, and Tribal Contacts

The Federal Highway Administration held several meetings with the cooperating agencies to solicit their issues and concerns about the proposed project. The Federal Highway Administration held a meeting in May 1998 to discuss a proposed rehabilitation project for Segment 4. Later in 1998 after Congress authorized reconstruction of Segment 4, the Federal Highway Administration developed the current proposal to reconstruct the road. The Federal Highway Administration held a meeting in September 1998 to discuss the proposed reconstruction project. Immediately after the September 1998 meeting, the agencies reviewed the road corridor in the field. The Federal Highway Administration held a wetlands field review in September 1999 with representatives from the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, National Park Service, and the Shoshone National Forest. A SEE team meeting also was held in September 1999. The SEE team reviewed possible realignments and the Corps of Engineers reviewed the wetland delineation. In 2000, 2001 and 2002, alternative development continued and the SEE team met usually twice a year to review the alternative plans and preliminary designs. The Federal Highway Administration also met with individual agencies in 2002 and 2003 to discuss specific issues and concerns.

The Draft Environmental Impact Statement was issued for a 45-day public comment period on June 13, 2002. The FHWA also held public hearings on the Draft EIS in July 2002 in Cody, Wyoming, Cooke City, Montana, and Red Lodge, Montana. In total, 2,137 comments were identified from 351 letters, comment sheets, and transcripts. Appendix A contains comments and responses to them. A meeting was held with the SEE team in September 2002 to discuss public comments and the preferred alternative. Another SEE team meeting was held in July 2003 to discuss the preliminary Final Environmental Impact Statement.

The Wyoming State Historic Preservation Office reviewed the cultural resources survey reports and the Draft Environmental Impact Statement. The Federal Highway Administration held a site visit

with the Wyoming State Historic Preservation Office in July 2000 to discuss the proposed project and alternatives under consideration. Another meeting was held in November 2001 to discuss the effects determination and comments on the preliminary Draft Environmental Impact Statement. The State Historic Preservation Office attended several SEE team meetings to discuss the preliminary Draft Environmental Impact Statement, avoidance alternatives, and possible mitigation. The Federal Highway Administration met with the State Historic Preservation Office in November 2002 to discuss the Memorandum of Agreement for mitigation of cultural resource impacts. The Memorandum of Agreement is finalized and will be included in the Record of Decision.

In June 2003, the Federal Highway Administration submitted a Biological Assessment to the U.S. Fish and Wildlife Service and a Biological Evaluation in August 2003 to the SNF. The Federal Highway Administration anticipates the U.S. Fish and Wildlife Service will issue a Biological Opinion before the Record of Decision is issued.

The Federal Highway Administration contacted several Native American tribes in 1998 and 1999 to solicit their concerns about Traditional Cultural Properties associated with the project. Tribes and groups notified were the Medicine Wheel Coalition for Sacred Sites in North America, Crow, Northern Arapaho, Confederated Tribes of the Umatilla, Northern Cheyenne, Shoshone-Bannock, and Eastern Shoshone. Response to these contacts indicated that there were no Traditional Cultural Property issues associated with the proposed project if the work is conducted within the area surveyed for cultural resources, and work is halted immediately if any potential sacred sites are located during construction-related activities.

Major Issues

Based on comments received during the public scoping meetings and in consultation with the cooperating agencies, the Federal Highway Administration identified ten major issues that were used to develop alternatives. The cooperating agencies reviewed these issues in June 1999. The issues are:

1. Changes in amount, function, and value of waters of the U.S., including wetlands
2. Changes in cultural resources along the road that are eligible for listing in the National Register of Historic Places
3. Changes in wildlife habitat and population, particularly the grizzly bear and lynx, both listed as threatened with extinction
4. Changes in vegetation along the road, and the ability to revegetate alpine areas
5. Compliance with Forest Service land management plan
6. Changes in the road's visual quality
7. Changes in the recreation experiences along the road corridor
8. Changes in the area's economy
9. Changes in safety and traffic operations of Segment 4
10. Changes in maintenance costs and responsibilities of Segment 4

Each of these issues is described briefly in the following sections. The Federal Highway Administration used these issues as the focus of the analysis in the Environmental Impact Statement.

Changes in Amount, Function, and Value of Waters of the U.S., Including Wetlands. Along the road corridor, waters of the U.S. consist of large perennial streams with riffle and pool complexes; small perennial drainages commonly supported by ground water seeps; springs; seeps

and ephemeral drainages; small ponds; and jurisdictional wetlands. Wetlands are found throughout the area. A particular type of wetland with soils high in organic matter, called a fen, is found in some locations along the road. There is a concern that road reconstruction activities may affect wetlands and their functions. In locations where the road was built in wetlands, there is an opportunity to restore wetlands by moving the road away from wetlands.

Changes in Cultural Resources. The road and the four associated bridges were constructed in the early 1930s and are considered eligible for listing in the National Register of Historic Places. There is a concern that the reconstruction project may affect historic properties, including the road itself, by widening and realigning the road, and replacing the bridges.

Changes in Wildlife Habitat and Population. The area surrounding the road provides suitable habitat for four threatened or endangered species—the grizzly bear, gray wolf, lynx, and bald eagle. All gray wolves within Wyoming are currently considered part of a nonessential experimental population. Although such wolves remain listed and protected under the Endangered Species Act, additional flexibility is provided for their management under provisions of the final rule and special regulations promulgated for the nonessential experimental population on November 22, 1994 (59 FR 60252). Requirements for interagency consultation under section 7 of the Act differ based on the land ownership and/or management responsibility where the wolf occurs. All lands along Section 4 of the Beartooth Highway are National Forest System lands managed by the Shoshone National Forest. Therefore, all gray wolves present in the project area are treated as a nonessential experimental population under the Act. Road reconstruction would remove and modify habitat for the grizzly bear, lynx, and other species. There is concern that road improvements may fragment habitat, reduce

Area wetlands provide important wildlife habitat.

The road and the four associated bridges were constructed in the early 1930s and are considered eligible for listing in the National Register of Historic Places.

wildlife habitat use, and increase mortality of wildlife prey. There also is a concern that recreational use may increase, which could displace wildlife or increase mortality. Another concern is increased loss of habitat connectivity.

Changes in Vegetation. Expanses of alpine vegetation, with rare plant species in some locations, are found along the road corridor. There is a concern that road reconstruction may affect large areas of alpine vegetation, and the populations of the rare species. Another concern is that the revegetation of the road's sideslopes and abandoned sections in areas proposed for realignment, particularly in alpine areas, may not be successful.

Compliance with Forest Service Land Management Plan. The road corridor is located on National Forest lands managed by the Shoshone National Forest. The Shoshone National Forest has a land management plan that provides guidance on managing the road corridor and resources adjacent to it. There is a concern that the proposed project may not comply with the land management goals and objectives for the road corridor.

Changes in the Road's Visual Quality. The road is part of the scenic Beartooth Plateau, with several peaks above 3,660 m (12,000 ft.) elevation and numerous alpine lakes. The road corridor is visible from area lakes and streams used for recreation. The road also can be seen from the Absaroka-Beartooth Wilderness. There is a concern that a wider road may alter the scenic quality along the road, and cuts and fills may be visible from key viewing locations. Another concern is the visual effect of revegetation of the abandoned road and bridges in realignment areas.

Changes in Recreation Experience. The Beartooth Highway is considered one of the most beautiful drives in the country and is a popular

Trails into the Absaroka-Beartooth Wilderness and other adjacent National Forest lands originate from the corridor

"driving for pleasure" destination. Trails into the Absaroka-Beartooth Wilderness and other adjacent National Forest lands originate from the corridor. There is concern that during road reconstruction activities, access to recreational facilities may decrease and noise may increase.

Changes in the Area's Economy. The road is a nationally significant destination and transportation artery serving the adjacent communities in Wyoming and Montana. There is concern that the road's continued deterioration may decrease recreation and tourism in the area, affecting the area's economy. A similar concern is that reconstruction activities may create difficult or uncomfortable driving conditions, delays, and closures that may affect the economic livelihood of businesses in the area during construction.

Changes in Safety and Traffic Operations of Segment 4. The reported accident rate along Segment 4 is lower than that of similar rural roads in Wyoming. Because of the area's remoteness, however, minor accidents, such as side-swipe accidents or single vehicle run-off-the-road, may not be reported. Evidence along the road, such as damaged guardrail and broken mirror parts,

indicates that numerous accidents of these types occur. There is a concern that the road's safety may deteriorate further if improvements are not made. Another concern is that road improvements may accommodate or encourage an increased speed of the typical road user, and increase the accident rate or severity along the road.

The road is used by tourists enjoying the road's scenery and by people traveling to Beartooth Plateau destinations between Yellowstone National Park and Red Lodge. Because of conflicting uses (sightseeing versus destination-oriented traffic use), there are safety and traffic operation concerns that could be addressed by reconstruction. For example, recreational users may drive slower and stop more frequently than destination-oriented traffic. Increased traffic may increase the possibility of accidents between the two user types. Unless the road is properly designed with a consistent alignment, shoulders, and pullouts, there is a safety and liability concern associated with the ownership of the road by a potential maintaining agency.

Changes in Maintenance Costs and Responsibilities of Segment 4. No federal or state agency has assumed ownership of the section of the Beartooth Highway in Wyoming, including Segment 4. The road was constructed under the National Park Approaches Act, which authorized the Secretary of the Interior to construct and reconstruct such roads, and to enter into agreements for the maintenance by State or county authorities, or to maintain them when otherwise necessary. The National Park Service has maintained the road historically, but has been allocated funding for snowplowing from the Forest Service through 2007. Although the Forest Service has short-term funding for snowplowing, it is not prepared to assume long-term maintenance. There is a concern that unless the road is reconstructed to a condition that can be reasonably maintained in a sustainable manner, the present uncertainty about jurisdiction and maintenance may continue.

Alternatives Analyzed in the Environmental Impact Statement

The National Environmental Policy Act and other laws and regulations require agencies to reduce or avoid environmental effects where possible. This entails developing and evaluating a range of reasonable alternatives that address the project's purpose and need while minimizing environmental effects. There are various issues and concerns (often competing or conflicting) that the various alternatives would address to a differing degree. The No Action Alternative also must be evaluated to provide an environmental baseline and give the decision maker a full range of options to consider. In accordance with 23 CFR 771.105, the Federal Highway Administration has the responsibility to select an alternative that balances providing safe and efficient transportation with social, economic, and environmental impacts of the project.

Under the proposed action, the Federal Highway Administration would reconstruct Segment 4 of the Beartooth Highway, improving alignment, grade, and width to guidelines adopted by the Federal Highway Administration and the Wyoming Department of Transportation, as required in Federal Highway Administration's regulations (23 CFR 625). Appendix C contains detailed information on guidance for design standards. The proposed project needs to support management of National Forest lands adjacent to the Beartooth Highway, including maintaining the Scenic Byway/All-American Road qualities to maintain an efficient transportation link between Red Lodge, Montana and Yellowstone National Park that safely accommodates projected 2025 traffic, and to

provide a roadway that can be reasonably maintained in a sustainable manner by a maintaining agency.

To meet these needs, the project would include:

- Constructing a new road surface composed of crushed aggregate base and asphalt concrete pavement
- Installing adequate drainage structures
- Installing sub-surface drainage features and subgrade stabilization measures
- Widening the road to accommodate current and projected vehicular and recreational use and necessary maintenance activities
- Removing existing historic bridges where necessary and building new bridges
- Improving parking areas, pullouts, and access road intersections adjacent to the road
- Upgrading signs, striping, guardrails, and other safety-related features
- Implementing environmental commitments to reduce or mitigate environmental impacts

Five build alternatives and the No Action Alternative are analyzed in detail in this Final Environmental Impact Statement. The alternatives are:

- Alternative 1–No Action (No Road Reconstruction)
- Alternative 2–Recreation and Cultural Resource Emphasis
- Alternative 3–Wildlife Resource Emphasis
- Alternative 4–Highway Operations, Safety, and Maintenance Emphasis
- Alternative 5–Biological Resource Emphasis
- Alternative 6–Blended Emphasis (preferred)

The Federal Highway Administration, in cooperation with the U.S. Forest Service and the National Park Service, developed the alternatives to provide a full range of alternatives and a clear distinction between alternatives. All build alternatives would include reconstructing and widening the entire road, and, except for Alternative 2, removing four historic bridges and building new ones. Alternative 2 would remove three of the four bridges, leaving Little Bear Creek bridge #2 in place. The new alignments in all build alternatives would closely follow the existing alignment throughout most of the route. Realignments are being considered in five locations: Beartooth Ravine, Top of the World Store, Frozen Lake, Bar Drift, and Albright Curve (Figure S-2). Three different roadway widths are proposed for the project—8.4 m (28 ft.), 9.0 m (30 ft.), and 9.6 m (32 ft.).

Fox Creek Campground, located 11 km (7 mi.) southeast of Cooke City, is the preferred workcamp location in all build alternatives. The campground would be closed to the public during the 6-year construction period. To be available for construction crews starting in 2005, the campground would be rebuilt to current SNF campground standards during 2004.

In Alternative 1, No Action, the Federal Highway Administration would not reconstruct Segment 4 of the Beartooth Highway, and road funds would not be expended on this project. The road would remain 5.5 m (18 ft.) wide and in its existing alignment. The historic bridges would not be dismantled. The maintenance needed on the bridges is unlikely to be completed. Existing pullouts would remain in their same location and condition. Maintenance responsibilities would remain with the Department of the Interior. The Department of the Interior would be left with a deteriorating road that is increasingly difficult to maintain. Alternative 1 would not fulfill the needs for the project.

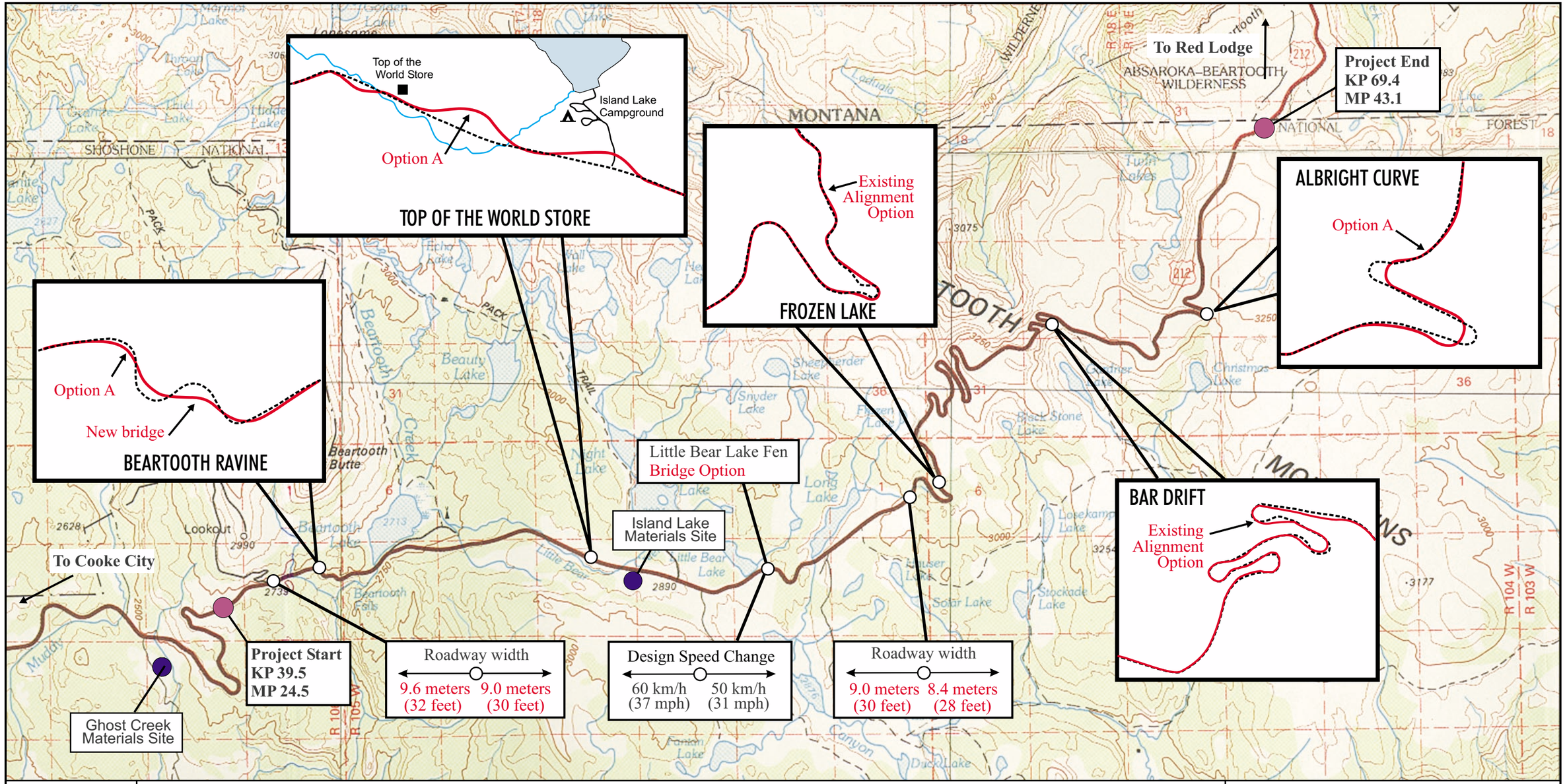
Alternative 2 has a recreation and cultural resource emphasis; the roadway width would be 9.6 m (32 ft.) to accommodate larger recreation vehicles, pedestrians and bicyclists. With Alternative 2, the road would deviate from the existing alignment in the Top of the World Store area and preserve Little Bear Creek bridge #2. Alternative 3 has a wildlife emphasis; the new alignment would closely follow the existing alignment. The roadway width would be 8.4 m (28 ft.). Alternative 4 has a highway operations, safety, and maintenance emphasis. The roadway width would be 9.6 m (32 ft.). The alignment options selected would have the highest design speeds. Alternative 5, with a biological resource emphasis, would have a road width of 8.4 m (28 ft.), and the alignment options would minimize disturbance to wetlands, riparian areas, sensitive plants, and wildlife species that depend on these habitats. Alternative 6, the preferred alternative, balances highway operations, safety and maintenance needs with minimization of environmental impacts. The roadway width would be 9.6 m (32 ft.) from the project start to the Clay Butte Lookout turnoff, 9.0 m (30 ft.) from the Clay Butte Lookout turnoff to the road closure gate, and 8.4 m (28 ft.) from the road closure gate to the project end. Estimated construction cost of the build alternatives would range from $44.4 million for Alternative 3 to $50.8 million for Alternative 4, with the preferred alternative estimated at $47.8 million. Estimated construction costs for all alternatives are shown in Table S-2 (at the end of this summary). The preferred alternative is shown in Figure S-2.

The *Purpose and Need* identified three needs that should be addressed by Segment 4 reconstruction:

- Support management of National Forest lands adjacent to the road, including maintaining the Scenic Byway/All-American Road qualities
- Maintain an efficient transportation link between Red Lodge, Montana and Yellowstone National Park that safely accommodates projected 2025 traffic
- Provide a roadway that could be reasonably maintained in a sustainable manner by a maintaining agency

The No Action Alternative (Alternative 1) would not address any of the three project needs, and would not be a practicable alternative. As required by NEPA, however, it is included in the analysis of alternatives for comparison purposes.

The build alternatives carried forward for detailed analyses were considered initially to meet all of these needs based on preliminary studies. However, subsequent analyses revealed that some of the alternatives would meet these needs better than others, and that two of the alternatives did not adequately address one or more of these needs. A 9.0-m (30-ft.) or a 9.6-m (32-ft.) wide road in the western section of the project in Alternatives 2, 4, and 6 would accommodate the existing and future recreational uses of the road and would support the Shoshone National Forest's management goals for the area. Alternatives 3 and 5, which have a narrower roadway in the western section of the project, would not support the Shoshone National Forest's management goals in this area and are not practicable alternatives. Specifically, the narrow shoulders proposed under Alternatives 3 and 5 would not adequately accommodate the existing and future mix of motorized and non-motorized uses of the roadway west of the road closure gate, would not adequately accommodate non-motorized uses, including bicycle and pedestrian use west of the road closure gate, and would not support the safe enjoyment of All-American Scenic Byway amenities.



ERO Resources Corp.
1842 Clarkson Street
Denver, CO 80218
(303) 830-1188
Fax: 830-1199

Existing road

Proposed alignment

Materials source

Project start and end

The existing alignment option is the option that most closely follows the existing road alignment.

NORTH

Scale: 1:100,000

½ mile 0 1 mile

½ km 0 1 kilometer

Figure S-2
Major Components of
Alternative 6
Blended Emphasis (Preferred)

EIS\Figures-02\521-Alternatives.cdr

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All build alternatives would maintain an efficient transportation link between Red Lodge, Montana and Yellowstone National Park that would accommodate projected 2025 traffic. Three of the build alternatives, Alternatives 2, 4, and 6, would safely accommodate the mix of local recreational users, such as sightseers, pedestrians, and bicyclists, and through trip purposes between Red Lodge, Montana and Yellowstone National Park. Alternatives 3 and 5, which have a narrower roadway in the western section of the project, would not accommodate this traffic mix safely. Appendix C contains a detailed discussion of design elements for the roadway, including safe and adequate travel lane and shoulder widths recommended by the American Association of State Highway and Transportation Officials.

Alternatives 2, 4, and 6 would provide a roadway that could be reasonably maintained in a sustainable manner by a maintaining agency. Alternatives 2, 4 and sections of Alternative 6 also could be maintained in a more cost effective and safe manner (maneuverability of equipment, snow storage, reduced traffic conflicts, etc) because they would have a wider roadway.

Permits or Approvals

The Federal Highway Administration, in cooperation with the U.S. Forest Service and the National Park Service, has issued the Final Environmental Impact Statement, identifying Alternative 6– Blended Emphasis as the preferred alternative. No sooner than 30 days after the Final Environmental Impact Statement is issued, the Federal Highway Administration, in cooperation with the U.S. Forest Service and the National Park Service, will select one or a combination of the build alternatives studied in detail in this Final Environmental Impact Statement, or the No Action Alternative. The Federal Highway Administration will document the final selection in a Record of Decision.

The Federal Highway Administration would need to obtain permits or approvals (Table S-1) from federal and state agencies before implementing a build alternative. Additional permits associated with refinements in final design and construction techniques also may be needed.

Reasonably Foreseeable Activities

Reasonably foreseeable future activities analyzed in the Final Environmental Impact Statement are those actions and activities, independent of the proposed project, that could result in cumulative effects when combined with the effects of the proposed project. These activities are anticipated to occur regardless of which alternative is selected. The effects of these activities are described in the *Cumulative Effects* section under each resource in Chapter 3. The Federal Highway Administration identified four categories of reasonably foreseeable future activities:

- Future road projects
- On-going New World Mine District cleanup
- Future Shoshone National Forest projects
- Future area growth

Some of these projects, such as future road projects, would involve decisions by federal agencies. A decision on these projects would be made separate from the decision on the Beartooth Highway Reconstruction Project.

-

Table S-1. Permits, stipulations, or approvals required for the Beartooth Highway Reconstruction Project.

Permits, Stipulations, or Approvals	Purpose
	U.S. Forest Service
Letter of Consent (Interstate and Defense Highway System Act 23 CFR 710)	To allow the FHWA to use National Forest lands for road purposes.
Special Use Permit	To allow activities, such as a workcamp, on National Forest lands outside an approved corridor.
Mineral Material Permit	To allow the FHWA to take construction material, such as gravel, from National Forest lands.
Timber Settlement Agreement	To allow the FHWA to harvest commercial timber on National Forest lands before disturbance. Harvesting would be conducted only to clear the area necessary for road construction or materials sources.
	U.S. Fish and Wildlife Service
Section 7 Consultation (Endangered Species Act 50 CFR 402)	To ensure that the proposed project would not jeopardize the continued existence of threatened or endangered species, or result in the destruction or modification of critical habitat.
	U.S. Army Corps of Engineers
404 Permit (Clean Water Act 33 CFR 320)	To allow the FHWA to discharge dredged or fill material into waters of the U.S., including wetlands.
	Wyoming Department of Environmental Quality
401 Certification (Clean Water Act 40 CFR 121)	To certify that any activity requiring a federal license or permit that may result in any discharge into waters of the U.S. would not cause or contribute to a violation of state surface water quality standards.
National Pollutant Discharge Elimination System Permit	To allow FHWA to discharge pollutants from a point source into a water of the U.S, such as storm water or construction dewatering.
Authorization for temporary increase in turbidity	To allow FHWA to temporarily increase surface water turbidity due to road work, including road and bridge construction.
	Wyoming State Engineer's Office
Permit to temporarily divert water for construction	To allow FHWA to temporarily reduce stream flow for road construction, including dust suppression activities and cofferdam installation.
	Advisory Council on Historic Preservation
Section 106 Review (National Historic Preservation Act 36 CFR 800)	To consult with the Wyoming State Historic Preservation Office, Native American tribes, and the Advisory Council on Historic Preservation.

Future Road Projects

Yellowstone National Park Road Improvements

For the past 5 years, the National Park Service has been implementing a 20-year road improvement plan for Yellowstone National Park. The plan calls for rehabilitation and/or reconstruction of all park roads over a 20-year period. Either an environmental assessment or an environmental impact statement will be prepared on each project before it starts. The east entrance road in Yellowstone National Park, which begins at the western end of U.S. 14/16/20 leading from Cody, Wyoming, has been under construction for the past 5 years. The fourth phase of reconstructing the road is scheduled to be awarded in 2004, and the final phase is planned to be awarded in 2008. The road is expected to be reconstructed completely by 2010. The northeast entrance road from the northeast entrance of Yellowstone National Park to Tower Junction was rehabilitated in the late 1990s.

U.S. 212 Reconstruction

The Federal Highway Administration is proposing to reconstruct a 13.5-km (8.4-mi) segment of U.S. 212 from Yellowstone National Park to the Montana/Wyoming state line east of Cooke City, Montana. This segment of the road in Montana remains in much the same condition since its original construction in the 1930s. The Federal Highway Administration completed an environmental assessment of the proposed project, which resulted in a Finding of No Significant Impact. The construction will begin in 2004 and is expected to last up to 4 years, through 2007.

On-going New World Mine District Cleanup

The New World Mine District is a historical mining district about 1.6 km (1 mi.) north of U.S. 212 near Colter Pass. Mining disturbances have affected water quality in a tributary of the Clarks Fork Yellowstone River. The mine district is undergoing cleanup by the U.S. Forest Service. The cleanup is expected to continue until 2006. Heavy equipment and materials are brought to the site using WY 296 and U.S. 212. During peak construction periods, up to 15 loads per day may use U.S. 212 west of WY 296.

Future Shoshone National Forest Projects

The Shoshone National Forest has planned several projects in the vicinity of the road over the next 5 years. Proposed projects include trail reconstruction of short trail segments, minor campground maintenance and facility replacement, special use permit authorizations for recreation-related activities for a period of 5 years or less, maintenance of the access road to Clay Butte Lookout, and renewal of the Red Lodge Race Camp ski permit.

Future Area Growth

Growth in the project area has increased over the past 20 years, and growth is expected to continue over the next 25 years. Population and employment, especially in the retail and service sectors of the economy, is expected to increase. The demand for housing and government services will likely parallel the population increase.

The Shoshone National Forest anticipates that recreational uses on the forest will continue to grow. Over the past decade, for instance, campground receipts for National Forests surrounding Yellowstone National Park have doubled. Recreational

uses in Yellowstone National Park also are anticipated to grow.

Future transportation growth is expected to continue. The amount of growth on area roads varies depending on the particular road. Traffic volumes on area roads (U.S. 212 and WY 296) are expected to increase at a 3 percent annual rate or double over the next 20 years. The traffic volume on Segment 4 is projected to be 1,972 vehicles (Seasonal Average Daily Traffic) in 2025.

Affected Environment and Environmental Effects

Wetlands and Other Waters of the U.S.

Several types of wetlands, including grass, sedge, and rush-dominated wetlands, willow dominated wetlands, and fens (wetlands with peat-like soils) occur in the project area. Wetlands provide a variety of functions including: general wildlife habitat; general fish/aquatic habitat; production export/food chain support; ground water discharge/recharge; uniqueness; recreation/education potential; and dynamic surface water storage.

Temporary and permanent wetland impacts would range from 2.5 to 3.2 ha (6.2 to 7.8 ac.). Direct impacts on fens would be avoided in all build alternatives except Alternative 4. Impacts on lakes and ponds would be about 0.1 ha (0.25 ac.) to 0.2 ha (0.45 ac.) in all build alternatives. Permanent wetland impacts would be mitigated through restoration, creation, and/or protection.

Cultural Resources

Five resources determined to be eligible for listing in the National Register of Historic Places are found along Segment 4. Segment 4 of the Beartooth Highway and four bridges are historic resources found in the project area. In addition, the original Lake Creek bridge, west of Segment 4, would be used as a cultural resource mitigation site and is also eligible. No other known historic or prehistoric resources determined eligible for listing in the National Register of Historic Places were identified within the project area. Consultation with seven tribes and tribal groups indicated no known Traditional Cultural Properties occur in the project area.

Impacts on historic resources would occur with all alternatives, including the No Action Alternative. In the No Action Alternative, there would be long-term deterioration of the road and historic bridges. Deterioration could result in design elements and details being compromised, and loss of existing stone masonry. Such deterioration would be an adverse effect. All build alternatives would adversely affect the road and bridges by altering the footprint and location of the roadway, and, except for Alternative 2, removing four historic bridges. One bridge, Little Bear Creek bridge #2, would not be removed in Alternative 2. However, once it is removed from the highway alignment, it would no longer serve the function for which it was originally built, thereby creating an adverse effect. The overall character of the bridges and culvert headwalls would be retained by salvage and reuse of original materials. In some locations, stone form liner may be used in lieu of stone masonry if the volume or quality of the existing masonry and nearby rocks are not adequate. The characteristics of setting, feeling, association, and location of the switchbacks would be preserved in all build alternatives except Alternative 4. Alternative 4 would eliminate one of the switchbacks in the Bar Drift area and the switchbacks at Albright Curve. Mitigation of effects on Segment 4 would include preparing a formal nomination package for the Beartooth Highway for listing to the National Register, documenting any section of the original

alignment selected for realignment, and developing interpretative sites along the highway. The Federal Highway Administration, in cooperation with the Wyoming State Historic Preservation Office, would ensure that use of the Lake Creek bridge as a mitigation site would not adversely affect it.

Wildlife

The road transects several habitat types including alpine meadows, forests, mountain meadows, wet meadows, and shrubby grasslands. Each type provides shelter, forage, denning, and breeding habitat for a diversity of wildlife including federally threatened, endangered, and candidate species. Habitat for the grizzly bear and lynx is found in the project area. One gray wolf pack uses habitat along the road.

The No Action Alternative would not directly affect wildlife or wildlife habitat. Higher traffic volume in the future would slightly increase the risk of vehicle/bear collisions. In all build alternatives, road widening and realignments would disturb between 71 ha (176 ac.) and 78 ha (194 ac.) of wildlife habitat. Permanent habitat loss would be 15 ha (37 ac.) to 18 ha (45 ac.), with an additional 56 ha (139 ac.) to 70 ha (149 ac.) of temporary disturbance. A wider road would increase habitat fragmentation slightly and could increase road kills because of longer travel distances for wildlife crossing the road. Increased noise and activity during construction may lead to temporary wildlife displacement and avoidance of construction areas. Site-specific landscape plans for wildlife crossings, signage and interpretive areas, and special construction scheduling would mitigate most impacts.

All of the build alternatives may affect the grizzly bear. The primary impact to the grizzly bear would be a slight increase in the risk of vehicle/bear collisions due to road widening. Other impacts, including the loss of grizzly bear habitat adjacent to the road, conversion of some whitebark pine habitat to mountain meadow habitat and increased potential for bear/human conflicts, would be eliminated or reduced by mitigation efforts. Bears likely would be temporarily displaced during construction.

All build alternatives may affect the lynx. The primary lynx impact would be a slightly increased risk of vehicle/lynx collisions. A widened roadway and clear zone would increase the crossing distance for lynx, and may present a barrier to lynx movement. The connectivity of suitable lynx habitat north and south of the road would not change substantially with proposed road improvements because of site-specific revegetation and landscaping at wildlife crossings. Most traffic would continue to occur during daylight hours when lynx are less active. In addition, projected traffic volumes and speeds are relatively low and would unlikely be a significant risk for lynx that potentially cross the road.

The gray wolf pack probably would avoid the road corridor during construction. Other wildlife species would not be adversely affected by road reconstruction activities. The Federal Highway Administration, the Shoshone National Forest, the U.S. Fish and Wildlife Service, and the Wyoming Game and Fish Department would develop a wildlife mitigation plan during final project design.

Vegetation, Timber, and Old Growth Forest

The project area includes alpine meadows above timberline on the eastern section of the road corridor, and mountain meadows and subalpine and montane forests throughout the western section of the road corridor. Most of the forests along the

Pink agoseris is a Forest Service sensitive species found extensively near Top of the World Store.

road are old growth. Wet meadows are present along drainages and below snowfields and seeps throughout the project area. Upland mountain meadows are found along the Little Bear Creek drainage and in scattered pockets within the forest. Shrub grasslands are found at lower elevations on the western end of the project area.

The No Action Alternative would not affect any vegetation communities. All build alternatives would have short-term and long-term impacts. A long-term loss of vegetation would occur within the footprint of the widened, surfaced road, shoulder, and pullouts. A temporary vegetation loss would occur within roadway cuts and fills. Unpaved disturbed areas would be revegetated. The alpine meadow community would be most affected, with 24 to 28 ha (60 to 68 ac.) disturbed during construction. Long-term loss of vegetation communities from road widening range from 7 to 8 ha (17 to 22 ac.) All build alternatives would affect about 0.7 ha (1.8 ac.) of riparian areas. Most of the affected riparian areas would be along Little Bear Creek near the Top of the World Store.

The Federal Highway Administration would implement a landscaping and revegetation plan to mitigate effects on vegetation. Temporary disturbances would be topsoiled and reseeded with native species. Abandoned roadway sections would be revegetated with native species.

No plant species listed as threatened or endangered by the U.S. Fish and Wildlife Service are known to occur in the project area. Three U.S. Forest Service Region 2 sensitive species of concern, twelve Wyoming species of concern, two species on the Wyoming plant watch list, and one species with uncertain status were identified in the project area. Only one species listed as sensitive by the Shoshone National Forest, pink agoseris, would be affected by the build alternatives. None of the build alternatives would cause a trend toward federal listing or result in a loss of rangewide species viability for pink agoseris.

The project area includes areas of spruce/fir, lodgepole pine, and whitebark pine old growth forests. All build alternatives would affect old growth forest, ranging from 11 to 15 ha (27 to 37 ac.). All disturbances to old growth forest would

Research is being conducted using native plant materials and collected seed to assist in revegetation planning.

be considered long term because of the time required for old growth forest to develop.

Land Use

The project area is located in and managed by the Shoshone National Forest. Recreation, wildlife habitat, and grazing are the primary land uses. No private land is found in the project area.

The No Action Alternative would not affect existing land uses along the road. In all build alternatives, construction activities along the road would temporarily disrupt recreation, grazing, and wildlife habitat. Some wildlife habitat would be lost permanently. All build alternatives would comply with the Shoshone National Forest Land and Resource Management Plan.

Visual Resources

Sections of the Beartooth Highway, including Segment 4, are a designated All-American Road and a U.S. Forest Service Scenic Byway, offering rare opportunities to view high mountain environments. Four distinct visual regions, montane forests, mountain meadows, subalpine forests, and alpine meadows, are present in the project area. Rock outcrops, lakes, and unobstructed views add to the visual interest. Generally, forested areas have the lowest scenic quality and visual sensitivity to disturbance, and alpine areas have the highest scenic quality and visual sensitivity. Short sections of the road are visible from area lakes, trails, and the Absaroka-Beartooth Wilderness. The Shoshone National Forest's Visual Quality Objective for the area is Retention, meaning that activities must not be visually evident to the average observer traveling on the road.

The No Action Alternative would not affect the road's visual character. The build alternatives would have both long- and short-term effects on visual resources. During construction, visual quality would be adversely affected by dust, disturbed areas adjacent to the road, the presence of construction equipment, and nighttime lighting. All build alternatives would permanently alter the visual landscape because of a wider road and larger cuts and fills. Disturbed areas would be revegetated, but would have different lines, colors, and textures than the adjacent landscape. Areas disturbed by the project would be confined primarily to areas immediately adjacent to the highway. The casual forest visitor would not be able to discern the effect of construction in the long term after revegetation is achieved. The highway is the primary viewing point and is considered neutral in assessing Visual Quality Objectives. The areas adjacent to the road would meet the Visual Quality Objective of Retention after construction.

Recreation Resources

Developed recreation sites along Segment 4 include two campgrounds, picnic areas, trailheads

The road offers a rare opportunity to view high alpine environments.

with parking, a downhill ski racing camp, the Top of the World Store, and scenic driving on the road itself. In addition to developed recreation sites, the project area is used for dispersed recreation, including driving for pleasure, hiking, horseback riding, fishing and hunting, camping, mountain biking, cross-county skiing, snowmobiling, snowshoeing, and use by off-road vehicles.

The No Action Alternative would not affect existing recreation opportunities along the road. During construction, activities such as traffic delays and construction noise may inconvenience recreational users, especially bicyclists, hikers, and campground users near the road. Recreational use along the road may decrease during the 6-year construction period. Views of the road from lakes, trails, and other sensitive viewing locations would be altered. The Fox Creek Campground would be closed to the public during the 6-year construction period and used to provide space for workers' living quarters, including trailers and campers.

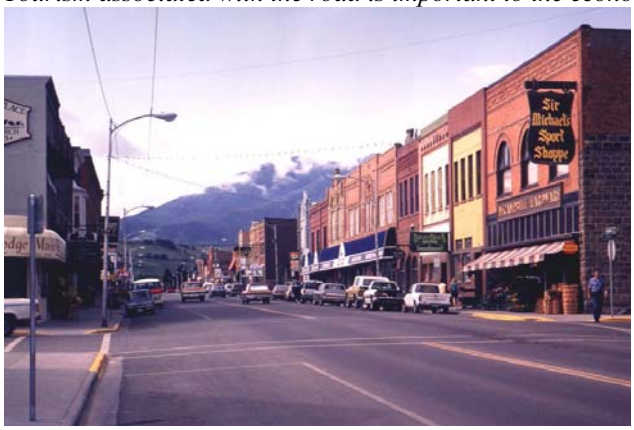
After construction, all build alternatives would enhance recreational opportunities. Alternative 2 would best accommodate recreation uses along the corridor, and would include wider shoulders, more and larger pullouts and parking areas, and the slowest design speeds. Alternatives 4 and 6 would accommodate all recreation uses, but to a lesser degree. Alternatives 3 and 5 would not accommodate all recreation uses west of Long Lake.

Socioeconomic Resources

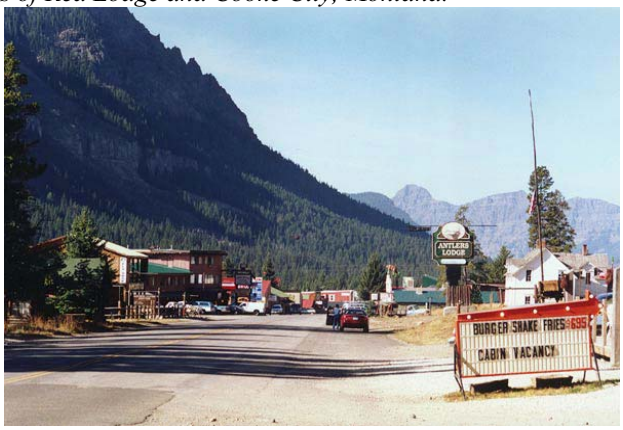
The socioeconomic study area includes Cody and Park County, Wyoming; and Red Lodge, Cooke City, Silver Gate, and Park and Carbon Counties, Montana. Red Lodge's economy depends primarily on the business generated by tourism on the road, while the economies of Cooke City, Silver Gate and Cody are only partly dependent on road-related tourism.

In the No Action Alternative, economies in the project area would risk losing tourism because of the road's continued deterioration. All build alternatives would have long- and short-term economic impacts. The population in Park and Carbon Counties would increase temporarily because of employment of about 80 seasonal construction workers. A workcamp at the Fox Creek Campground would provide a site for workers' trailers. Local businesses providing lodging, meals, equipment, fuel, operating supplies and other consumer goods and services would benefit

Tourism associated with the road is important to the economies of Red Lodge and Cooke City, Montana.



Red Lodge, Montana



Cooke City, Montana

from increased expenditures associated with construction. In the short term, tourists traveling the road would experience delays and limited closures associated with construction. Business at the Top of the World Store may decrease. When combined with the proposed reconstruction of the segment near Cooke City, the proposed project would cause cumulative delays between Red Lodge and Yellowstone National Park between 2005 and 2007. Some motorists may choose an alternative route to avoid the successive delays, potentially affecting Cooke City and Red Lodge businesses.

Impacts would be mitigated by a public information program, which would include ads, signs, and brochures via radio, TV, and the Internet, to inform road users and local business owners about the construction schedule and progress. In the long term, the road would be significantly improved, which would provide a more enjoyable experience for the increasing number of tourists who travel the road each year.

Transportation

Three regional roads, U.S. 212, WY 296, and WY 120, provide access to the project area. The roads would be used to transport personnel, equipment and materials to the material sources sites, staging areas, workcamp and the work site. Currently, the three roads carry between 470 and 1,200 vehicles per day, and about 30 to 120 trucks.

Under the No Action Alternative, deteriorated road conditions would remain. The responsibility for maintenance would remain with the Department of the Interior. All build alternatives would improve the road surface, retaining walls, and bridges. Ease of maintenance would increase. The Wyoming Transportation Commission would consider assuming road ownership. In all build alternatives, operating speeds may increase in some locations by about 8 km/h (5 mph). Future accident rates in all build alternatives are predicted to be about 40 percent less than in the No Action Alternative.

In all build alternatives, road construction would increase congestion and traffic delays during the construction season (April through October) of the 6-year construction period. During certain construction operations, truck traffic could increase to 150 to 200 truck trips per day. Workers traveling between the workcamp and the project area would increase traffic on U.S. 212 during the 6-year construction period.

In 2004, the Federal Highway Administration will begin reconstructing U.S. 212 from Yellowstone National Park to the Montana/Wyoming state line near Cooke City (Segment 1). Construction is expected to continue through 2007, possibly overlapping this proposed project's construction by 3 years. The two projects would cause cumulative delays between Red Lodge and Yellowstone National Park between 2005 and 2007. Travel times between Red Lodge and Yellowstone National Park between 2005 and 2007 may increase by 1 to 2 hours.

Water and Aquatic Resources

Four creeks drain the project area. The streams are generally perennial and most of the flow is from snowmelt runoff. All creeks are in the watershed of the Clarks Fork Yellowstone River. Along the road are numerous lakes, which formed in depressions created by glacial activity. Surface water quality in the project area is generally very high, and the major streams are classified as important trout waters with regional significance.

The No Action Alternative would not directly affect water and aquatic resources. Without construction, bridges and culverts may fail and some sections of the roadway would continue to be

poorly drained, all of which may affect water quality. Potential impacts from all build alternatives on water and aquatic resources include short-term sediment transport and atmospheric deposition of particulates into streams and lakes. Short-term increases in sediments and turbidity would not cause significant water quality degradation or loss of beneficial uses. Best Management Practices would be used to mitigate impacts associated with road and bridge construction, road widening, and realignments. Construction-related runoff and turbidity would decrease when construction is completed and revegetation is successful. There are no long-term impacts.

Air Quality and Visibility

Existing air quality in the project area is excellent. Vehicles (both automobile and snowmobile) are the primary existing sources of emissions in the project area. Background particulate levels in the project area are very low. Dust from unpaved roads and wildfire activity are other sources of air pollution.

The No Action Alternative would not affect short-term existing air quality. All build alternatives would have similar short-term effects on air quality. During the 6-year construction period, construction activity, such as traffic, blasting, excavating, and loading, would increase dispersed dust and mobile exhaust emissions. Asphalt production would generate hydrocarbon emissions.

All alternatives, including the No Action Alternative, would have long-term effects on air quality. Increased emissions from increased traffic would occur, but applicable air quality standards would not be exceeded.

Soils, Geology, and Paleontology

The road is located on the Beartooth uplift, which consists of granite and metamorphic rock overlain in places by sedimentary rock. Soils in the project area typically are very rocky. In most parts of the project area, organic matter levels are high, and pH and fertility are low. Rock outcrops with limited soils are distributed throughout the project area. No paleontologic resources were identified in the project area.

The No Action Alternative would not affect soil, geologic, or paleontologic resources. Disturbance to soil resources from excavation, grading, and construction activities would be similar for all build alternatives. Some loss of soil material from wind and water erosion would occur during construction and until disturbed areas become revegetated. Best Management Practices would be implemented to control sediment and minimize soil erosion. Topsoils disturbed by construction would be salvaged and replaced on the cut and fill slopes after construction. Prompt revegetation of disturbed areas following construction would ensure long-term soil productivity.

Noise

Existing noise levels along the road are low. Sources of existing noise include vehicles using the road, human activity, streams, and wind. Noise from construction activity would not occur in the No Action Alternative. Increased traffic in all alternatives, including the No Action Alternative, would increase existing noise levels slightly. In all build alternatives, construction noise would be higher than existing noise levels at area campgrounds, at the Top of the World Store, and in adjacent wilderness and roadless areas. After the 6-year construction period, construction noise would cease.

Section 4(f) Properties

Section 4(f) properties are publicly owned parks, recreation areas, wildlife and waterfowl refuges of national, state, or local significance, and historic resources eligible for listing in the National Register of Historic Places or are locally significant. Eleven Section 4(f) properties are found along the road: the Beartooth Lake Campground, the Island Lake Campground, three recreation trails, and five resources determined to be eligible for listing in the National Register of Historic Places. The five historic resources are Segment 4 of the road and the four bridges found in the project area. In addition, the Lake Creek bridge, west of Segment 4, would be used as a mitigation site and is also eligible and is a Section 4(f) property.

The two campgrounds would not be affected in the No Action Alternative. Noise from construction would increase in the two campgrounds in all build alternatives. The increased noise would not substantially impair the use of the campgrounds and would not be a constructive use. In Alternatives 2, 5, and 6, the road would be about 100 m (330 ft.) closer to the Island Lake Campground than the existing road. The closer alignment in Alternatives 2, 5, and 6 would not substantially impair the use of the campground and would not be a constructive use. None of the alternatives would result in a Section 4(f) use of the recreation trails.

The use of Fox Creek Campground as a workcamp would not be a Section 4(f) use because:

- Duration would be temporary and there would be no change in ownership of the land
- Scope of the work would be minor
- There would be no anticipated permanent adverse physical impacts, nor would there be interference with the activities or purpose of the resource, on either a temporary or permanent basis
- The land being used would be returned to a condition that would be at least as good as that which existed prior to the project
- There is documented agreement of the Shoshone National Forest with these conditions

In the short term, the No Action Alternative would not affect the five historic Section 4(f) properties. The long-term effects of a lack of maintenance of the properties in the No Action Alternative would lead to their deterioration, adversely affecting their integrity. The five historic properties would be adversely affected in all build alternatives. No feasible and prudent alternatives to avoid adversely affecting the properties were identified. Measures to minimize harm to the properties would be implemented. A mitigation plan for impacts to historic sites would be developed in cooperation with the Shoshone National Forest, the Wyoming State Historic Preservation Office and interested Tribes. The Federal Highway Administration, in cooperation with the Wyoming State Historic Preservation Office, would ensure that use of the Lake Creek bridge as a mitigation site would not adversely affect it.

Comparison of Alternatives

On the following pages, Table S-2 compares the effects of the alternatives relative to the major issues identified in Chapter 2. Summary statements in this table are abbreviated and taken out of context to provide a quick comparison by resource. The reader is encouraged to review the supporting analysis in Chapter 3 of the Environmental Impact Statement.

Table S-2. Comparison of the alternatives.

Resource	Alternative 1 No Action		Alternative 2		Alternative 3		Alternative 4		Alternative 5		Alternative 6 (Preferred)	
	ha	ac.	ha	ac.	ha	ac.	ha	ac.	ha	ac.	ha	ac.
Estimated Construction Cost	$0		$45.7 million		$44.4 million		$50.8 million		$47.6 million		$47.8 million	
Disturbed Area Summary												
Total disturbed area	26	64	103	256	96	240	99	245	95	237	101	249
Existing disturbed area (road, etc.) w/in construction limits	26	64	25	62	26	64	25	62	23	57	25	62
New disturbed area	0	0	78	194	71	176	74	183	73	180	76	187
Abandoned road sections	0	0	6	14	4	9	6	14	7	16	8	19
New disturbed area is the area that would be disturbed that is not already disturbed by the road and material sources. In Alternative 2, 256 – 62 = 194 ac. of new disturbance. In Alternative 2, 14 ac. of existing road sections would be abandoned and subsequently reclaimed.												
Wetlands Impacts												
Jurisdictional wetlands	0.0	0.0	2.4	6.0	2.2	5.4	2.5	6.1	1.9	4.8	2.0	5.0
Non-jurisdictional wetlands	0.0	0.0	0.6	1.6	0.6	1.5	0.7	1.7	0.6	1.4	0.6	1.5
Fens	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	<0.1	0.0	0.0	0.0	0.0
Total	**0.0**	**0.0**	**3.0**	**7.6**	**2.8**	**6.9**	**3.2**	**7.8**	**2.5**	**6.2**	**2.6**	**6.6**
Probable Wetland Mitigation												
High Priority Sites	0.0	0.0	1.4	3.4	0.3	0.7	0.3	0.6	1.4	3.6	1.5	3.6
Low Priority Sites	0.0	0.0	0.6	1.5	0.6	1.4	0.6	1.5	0.6	1.6	0.6	1.6
Total	**0.0**	**0.0**	**2.0**	**4.9**	**0.9**	**2.1**	**0.9**	**2.1**	**2.0**	**5.2**	**2.0**	**5.2**

Table S-2. Comparison of alternatives (continued).

Resource	Alternative 1 No Action		Alternative 2		Alternative 3		Alternative 4		Alternative 5		Alternative 6 (Preferred)	
	ha	ac.	ha	ac.	ha	ac.	ha	ac.	ha	ac.	ha	ac.
Vegetation, Timber, Old Growth Forest												
Vegetation communities disturbed by road construction												
Alpine meadow	0	0	28	68	26	63	26	66	24	60	27	66
Mountain meadow	0	0	15	38	13	34	15	37	16	40	17	42
Wet meadow	0	0	4	10	4	9	4	10	3	8	3	8
Forest	0	0	15	38	12	29	13	31	13	31	13	33
Shrub grassland	0	0	11	28	11	28	11	28	11	28	11	28
Rock outcrop/talus	0	0	4	10	4	9	4	10	4	9	4	10
Total	**0**	**0**	**78**	**194**	**71**	**176**	**74**	**183**	**73**	**180**	**76**	**187**
Vegetation communities permanently affected												
Alpine meadow	0	0	8	20	7	18	8	22	7	18	7	17
Mountain meadow	0	0	4	9	3	6	3	8	4	9	4	10
Wet meadow	0	0	2	4	2	4	2	4	1	3	2	4
Forest	0	0	3	8	2	6	3	7	3	7	3	7
Shrub grassland	0	0	0	0	0	0	0	0	0	0	0	0
Rock outcrop/talus	0	0	1	4	1	3	2	4	1	3	1	3
Total Impact	0	0	18	45	15	37	18	45	16	40	17	41
Rare plants permanently affected												
U.S. Forest Service sensitive species	0.0	0.0	5.0	12.3	3.4	8.5	3.8	9.5	4.3	10.6	4.5	11.1
Wyoming species of concern or watch list species	0.0	0.0	1.3	2.9	0.9	2.6	2.1	4.9	0.9	2.6	1.1	2.8
Old growth forest permanently affected												
Old growth forest	0	0	15	37	11	27	12	30	12	30	13	31

Table S-2. Comparison of alternatives (continued).

Resource		Alternative 1 No Action		Alternative 2		Alternative 3		Alternative 4		Alternative 5		Alternative 6 (Preferred)	
		ha	ac.	ha	ac.	ha	ac.	ha	ac.	ha	ac.	ha	ac.
Wildlife													
Whitebark pine habitat permanently affected													
Total		0	0	10	24	7	16	7	17	7	17	8	19
Grizzly bear habitat permanently affected													
Total (by season is below)		0	0	10	24	7	17	8	20	8	20	8	21
Spring Season (March 1 to May 15)													
Low		0	0	10	23	7	16	7	19	8	20	8	21
Medium		0	0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
High		0	0	0	0	0	0	0	0	0	0	0	0
Estrus (May 16 to July 15)													
Low		0	0	8	20	7	14	6	17	7	17	7	18
Medium		0	0	2	4	1	3	2	3	1	3	1	3
High		0	0	0	0	0	0	0	0	0	0	0	0
Early Hyperphagia (July 16 to August 31)													
Low		0	0	8	20	6	13	6	16	6	16	6	17
Medium		0	0	2	4	2	4	2	4	2	4	2	4
High		0	0	0	0	0	0	0	0	0	0	0	0
Late Hyperphagia (September 1 to November 30)													
Low		0	0	5	12	4	9	4	10	4	12	4	11
Medium		0	0	3	6	2	4	2	5	3	5	2	6
High		0	0	2	4	1	4	2	4	2	4	2	4

Table S-2. Comparison of alternatives (continued).

Resource	Alternative 1 No Action		Alternative 2		Alternative 3		Alternative 4		Alternative 5		Alternative 6 (Preferred)	
Cultural Resources												
Length of new alignment outside areas of existing historic alignment in the five realignment areas												
	m	ft.	m	ft.	m	ft.	m	ft.	m	ft.	m	ft.
Total	0	0	4,371	14,340	1,705	5,594	3,077	10,096	5,150	16,897	4,587	15,048
Total centerline length	0	0	30,014	98,472	29,928	98,189	28,899	94,813	29,430	96,557	29,972	98,333
Other Cultural Resource Effects	Long-term deterioration and degradation of the road, bridges, and culverts could cause a loss of function and integrity, adversely affecting five resources.		All build alternatives would alter the footprint and location of the roadway, and, except for Alternative 2, would remove four historic bridges and three culvert headwalls, adversely affecting the resources. One bridge, Little Bear Creek bridge #2, would not be removed in Alternative 2. However, once it is removed from the highway alignment, it would no longer serve the function for which it was originally built, thereby creating an adverse effect. Although the bridges and culvert headwalls would be reconstructed using salvaged historic materials or using similar materials from the project area, such work would adversely affect them. The characteristics of setting, feeling, association, and location of the road would be preserved in all build alternatives.								
Socioeconomics	Economies in the project area would risk losing tourism because of the road's continued deterioration.		The population in Park County, Wyoming and Carbon County, Montana would increase temporarily because of employment of about 80 seasonal construction workers. Local businesses providing lodging, meals, equipment, fuel, operating supplies, and other consumer goods and services would benefit from increased expenditures by construction workers. Traffic delays associated with construction activities on the road would adversely affect regional tourism in the short term. In the long term, the road would be significantly improved, which would increase a driver's sense of safety for the increasing numbers of tourists who travel the road each year.								
Land Use	No effect.		Construction activities along the road would temporarily disrupt recreation, grazing, and wildlife habitat. Some grazing lands and wildlife habitat would be lost permanently. All build alternatives would comply with the Shoshone National Forest Land and Resource Management Plan.								
Soils, Geology, and Paleontology	No effect.		No paleontologic resources were identified in the project area. All build alternatives would require rock blasting and larger cuts and fills, affecting the area's topography. Soil losses would be higher from wind and water erosion, particularly during construction. Erosion rates would decrease as vegetation on slopes becomes established. Soil productivity would be lower on reclaimed areas than adjacent areas.								

Table S-2. Comparison of alternatives (continued).

Resource	Alternative 1 No Action	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6 (Preferred)
Air Quality	No direct effect. Increased traffic would result in increased vehicular emissions.	During the 6-year construction period, construction activity such as traffic, blasting, excavating, and loading, would increase dispersed dust and mobile exhaust emissions. Asphalt production would generate hydrocarbon emissions. Applicable air quality standards would not be exceeded. Long term, increased traffic would increase vehicular emissions, but would not exceed applicable air quality standards.				
Transportation	Inadequate road conditions would remain. Responsibility for maintenance would remain with the Department of the Interior.	All build alternatives would improve the road surface, retaining walls, and bridges. Ease of maintenance would increase. The Wyoming Transportation Commission would consider assuming road ownership. In all build alternatives, road construction would result in increased congestion and traffic delays during the construction season (April through October) of the 6-year construction period. Truck traffic could increase up to 150 to 200 truck trips per day during peak construction periods. In all build alternatives, operating speeds may increase in some locations by about 8 km/h (5 mph). Future accident rates in the build alternatives are predicted to be about 40 percent less than in the future No Action Alternative.				
Water and Aquatic Resources	No direct effect on water and aquatic resources. Some bridges and culverts may fail, impacting water quality.	Potential impacts from all build alternatives on water and aquatic resources include sediment transport and atmospheric deposition of particulates into streams and lakes. Short-term increases in sediments and turbidity would not result in significant water quality degradation or loss of beneficial uses.				
Visual Resources						
% of sections with high scenic quality	57	60	57	62	61	64
% of sections with high landscape sensitivity	28	28	27	24	26	24
% of sections with high external visibility	8	16	16	15	16	16
General Effects	No effect on the visual character of the road.	During construction, visual quality would be adversely affected by dust, the presence of construction equipment, and nighttime lighting. All build alternatives would permanently alter the visual landscape because of the wider road and larger cuts and fills. Disturbed areas would be revegetated, but would have different lines, colors and textures than the adjacent landscape.				

Table S-2. Comparison of alternatives (continued).

Resource	Alternative 1 No Action	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6 (Preferred)
Recreation						
General Effects	No effect on existing recreation opportunities available along the Beartooth Highway.	During construction of all build alternatives, activities such as temporary road closures and noise from construction equipment along the road may inconvenience recreationists such as bicyclists, hikers, and campers near the road. Alternative 2 would best accommodate recreation uses along the corridor, and would include wider shoulders, more and larger pullouts and parking areas, and the slowest design speeds. Alternatives 4 and 6 would accommodate all recreation uses, but to a lesser degree. Alternatives 3 and 5 would not accommodate all recreation uses west of Long Lake. Reconstruction of U.S. 212 from Yellowstone National Park to the Montana/Wyoming state line near Cooke City combined with the proposed project may displace recreation use along U.S. 212 between 2005 and 2007.				
Shoulder width in m/ft. (wider better accommodates bicyclists and pedestrians)	0 / 0	1.2 / 4	0.6 / 2	1.2 / 4	0.6 / 2	0.9 m (3 ft.) west of Long Lake and 0.6 m (2 ft.) east of Long Lake
Number of pullouts	114	77	36	62	31	66
Noise						
General Effects	Slight increase in traffic noise over the long term.	In all build alternatives, construction noise would be higher than existing noise levels at area campgrounds, at the Top of the World Store, and in adjacent wilderness and roadless areas. After the 6-year construction period, construction noise would cease. Slight increase in traffic noise over the long term.				

Table S-2. Comparison of alternatives (continued).

Resource	Alternative 1 No Action	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6 (Preferred)
Section 4(f)						
Recreation Sites	No effect on campgrounds.	Noise from construction would increase in the two campgrounds in all build alternatives. The increased noise would not substantially impair the use of the campgrounds and would not be a constructive use. In Alternatives 2, 5, and 6, the road would be about 100 m (330 ft.) closer to the Island Lake Campground than the existing road. The closer alignment in Alternatives 2, 5, and 6 would not substantially impair the use of the campground and would not be a constructive use.				
Historic Sites	Long-term deterioration and degradation of the road, bridges and culverts could result in a loss of function and integrity, adversely affecting five resources.	The five historic properties would be adversely affected in all build alternatives. Except for avoiding one bridge in Alternative 2, no feasible and prudent alternatives to avoid adversely affecting the properties were identified. Although one bridge would be avoided in Alternative 2, it would no longer serve the function for which it was originally built, thereby creating an adverse effect. Measures to minimize harm to the properties would be implemented. Fox Creek Campground, located 11 km (7 mi.) southeast of Cooke City, is the preferred workcamp location in all build alternatives. The use of this campground as a workcamp would not be a Section 4(f) use.				