

APPENDICES

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WINTER USE PLANS FINAL ENVIRONMENTAL IMPACT STATEMENT
Yellowstone and Grand Teton National Parks and the John D. Rockefeller, Jr. Memorial Parkway

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APPENDIX A. POLICIES AND MANDATES

1.8.1 The Organic Act

The NPS gets its basic mandate from the NPS Organic Act (16 USC 1, 2–4) and the General Authorities Act (16 USC 1a–1 through 1a–8). The NPS Organic Act provides:

“The Service thus established shall promote and regulate the use of the Federal areas known as National Parks. . .by such means and measures as to conform to the fundamental purposes of the said Parks. . .which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.”

The direction provided by the Organic Act was the subject of many comments on the 1999 Draft Environmental Impact Statement (Draft EIS) and these are discussed in the 2000 Final EIS (NPS 2000b:3).

1.8.2 The General Authorities Act

The General Authorities Act, as amended by the Redwood Act (March 27, 1978, P.L. 95–250, 92 Stat. 163, 16 USC 1a–1) affirms the basic tenets of the Organic Act and provides additional guidance on National Park System management:

“The authorization of activities shall be construed, and the protection, management and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established. . . .”

The restatement of these principles of park management in the Redwood Act is intended to serve as the basis for any judicial resolution of competing private and public values and interests in the National Park System (Senate Report No. 95–528 on S. 1976 pg. 7). The Senate committee report stated that under the Redwood amendment:

“The Secretary of the Interior has an absolute duty, which is not to be compromised, to fulfill the mandate of the 1916 Act to take whatever actions and seek whatever relief as will safeguard the units of the National Park System.”

Consideration of these principles gives rise to the concept of “impairment” discussed on page 3 of the Final EIS, and below under Management Policies 2006.

1.8.3 Park-Specific Legislation

The Yellowstone National Park Act (16 USC 21, et seq.), the Grand Teton National Park Act (16 USC 406d–1 et seq.), and the John D. Rockefeller, Jr., Memorial Parkway Act (P.L. 92–404) provide authority and direction for management of each park. The establishment legislation is included in Appendix C of the 2000 EIS.

1.8.4 Other Laws

Because one of the primary issues about snowmobile use is that of air quality, the Clean Air Act (as amended, P.L. Chapter 360, 69 Stat. 322, 42 U.S.C. 7401 et seq.) is a primary focus in both the 2000 Final EIS and in the 2003 Final SEIS. Other laws that are generally pertinent to national park management are listed on page 3 of the 2000 Final EIS.

The Clean Air Act

The Clean Air Act provides both for the prevention of significant deterioration of areas where air is cleaner than National Ambient Air Quality Standards (NAAQS), and for an affirmative responsibility by the federal land manager to protect air quality-related values, including visibility. The federal land manager, in this case the NPS, has an affirmative responsibility to protect these resources, which is a separate issue from air quality vis-à-vis the NAAQS.

The Prevention of Significant Deterioration (PSD) provisions of the Clean Air Act are intended, in part, to preserve, protect, and enhance the air quality in national parks. The legislative history of the PSD provisions (S. Rep 95–127, 95th Cong., 1st Sess., 1977) indicates that federal land managers are to “assume an aggressive role in protecting the air quality values of land areas under his jurisdiction” and to “err on the side of protecting the air quality-related values for future generations.” The Act also requires the prevention of any future impairment and the remedying of any existing impairment in Class I federal areas, which includes Yellowstone and Grand Teton National Parks. Additionally, the John D. Rockefeller, Jr., Memorial Parkway (a Class II area) abuts Class I federal areas, including the two national parks and the Jedediah Smith and Teton Wilderness Areas.

1.8.5 Executive Orders

EO 11644, Use of Off-Road Vehicles on the Public Lands, issued by President Nixon in 1972, states, “The widespread use of such vehicles on the public lands—often for legitimate purposes but also in frequent conflict with wise land and resource management practices, environmental values, and other types of recreational activity—has demonstrated the need for a unified federal policy. . . that will ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of these lands, to promote the safety of all users of those lands, and to minimize conflicts among the various users of those lands.” Further, the order directs federal land managers that “[a]reas and trails shall be located to minimize harassment of wildlife or significant disruption of wildlife habitats” and “areas and trails shall be located to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands. . . .” Additionally, “Areas and trails shall be located in areas of the National Park System. . . only if the respective agency head determines that off-road vehicle use in such locations will not adversely affect their natural, aesthetic, or scenic values.” Finally, “The respective agency head shall monitor the effects of the use of off-road vehicles on lands under their jurisdictions. On the basis of the information gathered, they shall from time to time amend or rescind designation of areas or other actions taken pursuant to this order as necessary to further the policy of this order.”

Under the Executive Orders, the term "off-road vehicle" specifically excludes "any vehicle whose use is expressly authorized by the respective agency head under a permit, lease, license, or contract." Executive Order No. 11644 § 2(3)(C).

This order is amended by EO 11989, issued by President Carter in 1978, which adds:

“ . . . the respective agency head shall, whenever he determines that the use of off-road vehicles will cause or is causing considerable adverse effects on the soil, vegetation, wildlife, wildlife habitat or cultural or historic resources of particular areas or trails of the public lands, immediately close such areas or trails to the type of off-road vehicle causing such effects, until such time as he determines that such adverse effects have been eliminated and that measures have been implemented to prevent future recurrence.”

EO 13266, Activities to Promote Personal Fitness, issued by President George W. Bush in 2002, promotes health and personal fitness opportunities of the general public. Opportunities for non-motorized recreation in the parks are appropriate; many of these opportunities are only accessible via motorized access.

1.8.6 Regulations

36 CFR 2.18 Snowmobiles

General provisions in NPS regulations address snowmobile use (36 CFR 2.18). Snowmobiling is generally prohibited except on designated routes and water surfaces available for motorized use at other times. In addition, snowmobiles are prohibited except where designated and “only when their use is consistent with the park’s natural, cultural, scenic and aesthetic values, safety considerations, park management objectives, and will not disturb wildlife or damage park resources” (36 CFR 2.18c). Section (d) of this regulation lists additional limitations and prohibitions that apply where snowmobiles are allowed, including noise limits, speed limits, operator requirements, and machine appurtenances.

36 CFR 1.5 Closures and public use limits

“(a) Consistent with applicable legislation and Federal administrative policies, and based upon a determination that such action is necessary for the maintenance of public health and safety, protection of environmental or scenic values, protection of natural or cultural resources, aid to scientific research, implementation of management responsibilities, equitable allocation and use of facilities, or the avoidance of conflict among visitor use activities, the superintendent may:

- (1) Establish, for all or a portion of a park area, a reasonable schedule of visiting hours, impose public use limits, or close all or a portion of a park area to all public use or to a specific use or activity.
- (2) Designate areas for a specific use or activity, or impose conditions or restrictions on a use or activity.
- (3) Terminate a restriction, limit, closure, designation, condition, or visiting hour restriction imposed under paragraph (a)(1) or (2) of this section.”

36 CFR 1.7 Public Notice

“(a) Whenever the authority of §1.5(a) is invoked to restrict or control a public use or activity, to relax or revoke an existing restriction or control, to designate all or a portion of a park area as open or closed, or to require a permit to implement a public use limit, the public shall be notified by one or more . . . methods . . .”

1.8.7 NPS Management Policies

Current policy guidance for the NPS is published in Management Policies 2006 (August 31, 2006; available on the Internet at www.nps.gov/policy/mp/policies.html). The policies interpret the laws, regulations, and Executive Orders governing management of National Park System units. The policies most applicable to this EIS are summarized or abstracted here. The parenthetical numbers below refer to the portions of the Management Policies 2006 that are the sources for the text.

The NPS Obligation to Conserve and Provide for Enjoyment of Park Resources and Values (1.4.3)

“The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. This mandate is independent of the separate prohibition on impairment and applies all the time with respect to all park resources and values, even when there is no risk that any park resources or values may be impaired. NPS managers must always seek ways to avoid, or to minimize to the greatest extent practicable, adverse impacts on park resources and values. However, the laws do give the Service the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, so long as the impact does not constitute impairment of the affected resources and values.

“The fundamental purpose of all parks also includes providing for the enjoyment of park resources and values by the people of the United States. The enjoyment that is contemplated by the statute is broad; it is the enjoyment of all the people of the United States and includes enjoyment both by people who visit parks and by those who appreciate them from afar. It also includes deriving benefit (including scientific knowledge) and inspiration from parks, as well as other forms of enjoyment and inspiration. Congress, recognizing that the enjoyment by future generations of the national parks can be ensured only if the superb quality of park resources and values is left unimpaired, has provided that when there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to be predominant. This is how courts have consistently interpreted the Organic Act.”

The Prohibition on Impairment of Park Resources and Values (1.4.4)

“While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them.

“The impairment of park resources and values may not be allowed by the Service unless directly and specifically provided for by legislation or by the proclamation establishing the park. The relevant legislation or proclamation must provide explicitly (not by implication or inference) for the activity, in terms that keep the Service from having the authority to manage the activity so as to avoid the impairment.”

What Constitutes Impairment of Park Resources and Values (1.4.5)

“The impairment that is prohibited by the Organic Act and the General Authorities Act is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. Whether an impact meets this definition depends on the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts.

“An impact to any park resource or value may, but does not necessarily, constitute an impairment. An impact would be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or
- identified in the park’s general management plan or other relevant NPS planning documents as being of significance.

“An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values and it cannot be further mitigated.

“An impact that may, but would not necessarily, lead to impairment may result from visitor activities; NPS administrative activities; or activities undertaken by concessioners, contractors, and others operating in the park. Impairment may also result from sources or activities outside the park.”

What Constitutes Park Resources and Values (1.4.6)

“The ‘park resources and values’ that are subject to the no-impairment standard include:

- the park’s scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals;
- appropriate opportunities to experience enjoyment of the above resources, to the extent that can be done without impairing them;
- the park’s role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and
- any additional attributes encompassed by the specific values and purposes for which the park was established.”

Decision-making Requirements to Avoid Impairments (1.4.7)

“Before approving a proposed action that could lead to an impairment of park resources and values, an NPS decision-maker must consider the impacts of the proposed action and determine, in writing, that the activity will not lead to an impairment of park resources and values. If there would be an impairment, the action must not be approved.

“In making a determination of whether there would be an impairment, an NPS decision-maker must use his or her professional judgment. This means that the decision-maker must consider any environmental assessments or environmental impact statements required by the National Environmental Policy Act of 1969 (NEPA); consultations required under section 106 of the National Historic Preservation Act (NHPA), relevant scientific and scholarly studies; advice or insights offered by subject matter experts and others who have relevant

knowledge or experience; and the results of civic engagement and public involvement activities relating to the decision. The same application of professional judgment applies when reaching conclusions about “unacceptable impacts.”

“When an NPS decision-maker becomes aware that an ongoing activity might have led or might be leading to an impairment of park resources or values, he or she must investigate and determine if there is or will be an impairment. This investigation and determination may be made independent of, or as part of, a park planning process undertaken for other purposes. If it is determined that there is, or will be, an impairment, the decision-maker must take appropriate action, to the extent possible within the Service’s authorities and available resources, to eliminate the impairment. The action must eliminate the impairment as soon as reasonably possible, taking into consideration the nature, duration, magnitude, and other characteristics of the impacts on park resources and values, as well as the requirements of the National Environmental Policy Act, National Historic Preservation Act, the Administrative Procedure Act, and other applicable laws.”

1.4.7.1 Unacceptable Impacts

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

“Virtually every form of human activity that takes place within a park has some degree of effect on park resources or values, but that does not mean the impact is unacceptable or that a particular use must be disallowed. Therefore, for the purposes of these policies, unacceptable impacts are impacts that, individually or cumulatively, would:

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

Air Quality (4.7.1)

“The National Park Service has a responsibility to protect air quality under both the 1916 Organic Act and the Clean Air Act (CAA). Accordingly, the Service will seek to perpetuate the best possible air quality in parks to (1) preserve natural resources and systems; (2) preserve cultural resources; and (3) sustain visitor enjoyment, human health, and scenic vistas. Vegetation, visibility, water quality, wildlife, historic and prehistoric structures and objects, cultural landscapes, and most other elements of a park environment are sensitive to air pollution and are referred to as “air quality-related values.” The Service will actively

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promote and pursue measures to protect these values from the adverse impacts of air pollution. In cases of doubt as to the impacts of existing or potential air pollution on park resources, the Service will err on the side of protecting air quality and related values for future generations.

“Superintendents will take actions consistent with their affirmative responsibilities under the Clean Air Act to protect air quality-related values in Class I areas. Class I areas are national parks over 6,000 acres and national wilderness areas over 5,000 acres that were in existence on August 7, 1977. The act establishes a national goal of preventing any future and remedying any existing human-made visibility impairment in Class I areas. The Service supports that goal and will take advantage of opportunities created by the act to help achieve it. The federal land manager shares the responsibility to protect air quality-related values in Class I areas. As the federal land manager for the department, the Secretary of the Interior has delegated this responsibility to the Assistant Secretary for Fish and Wildlife and Parks.

“The Clean Air Act also recognizes the importance of integral vistas, which are those views perceived from within Class I areas of a specific landmark or panorama located outside the boundary of the Class I area. Integral vistas have been identified by the Service and are listed in Natural Resources Reference Manual 77. There are no regulations requiring special protection of these integral vistas, but the Service will strive to protect these park-related resources through cooperative means.

“Although the Clean Air Act gives the highest level of air quality protection to Class I areas, it provides many opportunities for the Service to participate in the development of pollution control programs to preserve, protect, and enhance the air quality of all units of the national park system. Regardless of Class I designation, the Service will take advantage of these opportunities.

“Air resource management requirements will be integrated into NPS operations and planning, and all air pollution sources within parks—including prescribed fire management and visitor use activities—will comply with all federal, state, and local air quality regulations and permitting requirements. Superintendents will make reasonable efforts to notify visitors and employees when air pollution concentrations within an area exceed the national or state air quality standards established to protect public health. Furthermore, because the current and future quality of park air resources depends heavily on the actions of others, the Service will acquire the information needed to effectively participate in decision-making that affects park air quality. The Service will:

- inventory the air quality-related values associated with each park;
- monitor and document the condition of air quality and related values;
- evaluate air pollution impacts and identify causes;
- minimize air quality pollution emissions associated with park operations, including the use of prescribed fire and visitor use activities; and
- ensure healthful indoor air quality in NPS facilities.

“External programs needed to remedy existing and prevent future impacts on park resources and values from human-caused air pollution will be aggressively pursued by NPS participation in the development of federal, state, and local air pollution control plans and regulations. Permit applications for major new air pollution sources will be reviewed, and potential impacts will be assessed. If it is determined that any such new source might cause or contribute to an adverse impact on air quality-related values, the Park Service will recommend to the permitting authority that the construction permit be denied or modified to eliminate adverse impacts.

“The public’s understanding of park air quality issues and the positive role and efforts of the Service toward improving the air quality in parks will be promoted through educational and interpretive programs.”

Soundscape Management (4.9)

“Park natural soundscape resources encompass all the natural sounds that occur in parks, including the physical capacity for transmitting those natural sounds and the interrelationships among park natural sounds of different frequencies and volumes. Natural sounds occur within and beyond the range of sounds that humans can perceive, and they can be transmitted through air, water, or solid materials. The National Park Service will preserve, to the greatest extent possible, the natural soundscapes of parks.

“Some natural sounds in the natural soundscape are also part of the biological or other physical resource components of the park. Examples of such natural sounds include:

- sounds produced by birds, frogs, or katydids to define territories or aid in attracting mates
- sounds produced by bats or porpoises to locate prey or navigate
- sounds received by mice or deer to detect and avoid predators or other danger
- sounds produced by physical processes, such as wind in the trees, claps of thunder, or falling water.

“The Service will restore to the natural condition wherever possible those park soundscapes that have become degraded by unnatural sounds (noise), and will protect natural soundscapes from unacceptable impacts.

“Using appropriate management planning, superintendents will identify what levels and types of unnatural sound constitute acceptable impacts on park natural soundscapes. The frequencies, magnitudes, and durations of acceptable levels of unnatural sound will vary throughout a park, being generally greater in developed areas. In and adjacent to parks, the Service will monitor human activities that generate noise that adversely affects park soundscapes, including noise caused by mechanical or electronic devices. The Service will take action to prevent or minimize all noise that through frequency, magnitude, or duration adversely affects the natural soundscape or other park resources or values, or that exceeds levels that have been identified through monitoring as being acceptable to or appropriate for visitor uses at the sites being monitored.”

Visitor Use (8.2)

“Enjoyment of park resources and values by the people of the United States is part of the fundamental purpose of all parks. The Service is committed to providing appropriate, high quality opportunities for visitors to enjoy the parks, and the Service will maintain within the parks an atmosphere that is open, inviting, and accessible to every segment of American society. However, many forms of recreation enjoyed by the public do not require a national park setting and are more appropriate to other venues. The Service will therefore:

- provide opportunities for forms of enjoyment that are uniquely suited and appropriate to the superlative natural and cultural resources found in the parks;
- defer to local, state, tribal, and other federal agencies; private industry; and non-governmental organizations to meet the broader spectrum of recreational needs and demands.

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“To provide for enjoyment of the parks, the National Park Service will encourage visitor activities that:

- are appropriate to the purpose for which the park was established; and
- are inspirational, educational, or healthful, and otherwise appropriate to the park environment; and
- will foster an understanding of and appreciation for park resources and values, or will
- promote enjoyment through a direct association with, interaction with, or relation to park resources; and
- can be sustained without causing unacceptable impacts to park resources or values.

“The primary means by which the Service will actively foster and provide activities that meet these criteria will be through its interpretive and educational programs, which are described in detail in chapter 7. The Service will also welcome the efforts of nongovernmental organizations, tour companies, guides, outfitters, and other private sector entities to provide structured activities that meet these criteria. In addition to structured activities, the Service will, to the extent practicable, afford visitors ample opportunity for inspiration, appreciation, and enjoyment through their own personalized experiences—without the formality of program or structure.

“The Service may allow other visitor uses that do not meet all the above criteria if they are appropriate to the purpose for which the park was established and they can be sustained without causing unacceptable impacts to park resources or values. For the purposes of these policies, unacceptable impacts are impacts that, individually or cumulatively, would:

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

“Management controls and conditions must be established for all park uses to ensure that park resources and values are preserved and protected for the future. If and when a superintendent has a reasonable basis for believing that an ongoing or proposed public use would cause unacceptable impacts to park resources or values, the superintendent must make adjustments to the way the activity is conducted to eliminate the unacceptable impacts. If the adjustments do not succeed in eliminating the unacceptable impacts, the superintendent may (1) temporarily or permanently close a specific area, or (2) place limitations on the use, or (3) prohibit the use. Restrictions placed on recreational uses that have otherwise been found to be appropriate will be limited to the minimum necessary to protect park resources and values and promote visitor safety and enjoyment. Any closures or restrictions—other than those imposed by law—must be consistent with applicable laws,

regulations, and policies, and (except in emergency situations) require a written determination by the superintendent that such measures are needed to:

- protect public health and safety;
- prevent unacceptable impacts to park resources or values;
- carry out scientific research;
- minimize visitor use conflicts; or
- otherwise implement management responsibilities.

“When practicable, restrictions will be based on the results of study or research, including (when appropriate) research in the social sciences. Any restrictions imposed will be fully explained to visitors and the public. Visitors will be given appropriate information on how to keep adverse impacts to a minimum, and how to enjoy the safe and lawful use of the parks.”

Use of Motorized Equipment (8.2.3)

“The variety of motorized equipment—including visitor vehicles, concessioner equipment, and NPS administrative or staff vehicles and equipment—that operates in national parks could adversely impact park resources, including the park’s natural soundscape and the flow of natural chemical information and odors that are important to many living organisms. In addition to their natural values, natural sounds (such as waves breaking on the shore, the roar of a river, and the call of a loon), form a valued part of the visitor experience. Conversely, the sounds of motor vehicle traffic, an electric generator, or loud music can greatly diminish the solemnity of a visit to a national memorial, the effectiveness of a park interpretive program, or the ability of a visitor to hear a bird singing its territorial song. Many parks that appear as they did in historical context no longer sound the way they once did.

“The Service will strive to preserve or restore the natural quiet and natural sounds associated with the physical and biological resources of parks. To do this, superintendents will carefully evaluate and manage how, when, and where motorized equipment is used by all who operate equipment in the parks, including park staff. Uses and impacts associated with the use of motorized equipment will be addressed in park planning processes. Where such use is necessary and appropriate, the least impacting equipment, vehicles, and transportation systems should be used, consistent with public and employee safety. The natural ambient sound level—that is, the environment of sound that exists in the absence of human-caused noise—is the baseline condition, and the standard against which current conditions in a soundscape will be measured and evaluated.

“To meet its responsibilities under Executive Order 13149 (Greening the Government through Federal Fleet and Transportation Efficiency), the Service will develop and implement a strategy to reduce its vehicle fleet’s annual petroleum consumption.”

Motorized Off-road Vehicle Use (8.2.3.1)

“Off-road motor vehicle use in national park units is governed by Executive Order 11644 (Use of Off-road Vehicles on Public Lands, as amended by Executive Order 11989), which defines off-road vehicles as “any motorized vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain” (except any registered motorboat or any vehicle used for emergency purposes). Unless otherwise provided by statute, any time there is a proposal to allow a motor vehicle meeting this description to be used in a park, the provisions of the executive order must be applied.

“In accordance with 36 CFR 4.10(b), routes and areas may be designated only in national recreation areas, national seashores, national lakeshores, and national preserves, and only by special regulation. In accordance with the executive order, they may be allowed only in locations where there will be no adverse impacts on the area’s natural, cultural, scenic, and esthetic values, and in consideration of other existing or proposed recreational uses. The criteria for new uses, appropriate uses, and unacceptable impacts listed in sections 8.1 and 8.2 must also be applied to determine whether off-road vehicle use may be allowed. As required by the executive order and the Organic Act, superintendents must immediately close a designated off-road vehicle route whenever the use is causing or will cause unacceptable impacts on the soil, vegetation, wildlife, wildlife habitat, or cultural and historic resources.

“NPS administrative off-road motor vehicle use will be limited to what is necessary to manage the public use of designated off-road vehicle routes and areas; to conduct emergency operations; and to accomplish essential maintenance, construction, and resource protection activities that cannot be accomplished reasonably by other means.”

Snowmobiles (8.2.3.2)

“Snowmobile use is a form of off-road vehicle use governed by Executive Order 11644 (Use of Off-road Vehicles on Public Lands, as amended by Executive Order 11989), and in Alaska also by provisions of the Alaska National Interest Lands Conservation Act (16 USC 3121 and 3170). Implementing regulations are published at 36 CFR 2.18, 36 CFR Part 13, and 43 CFR Part 36. Outside Alaska, routes and areas may be designated for snowmobile and oversnow vehicle use only by special regulation after it has first been determined through park planning to be an appropriate use that will meet the requirements of 36 CFR 2.18 and not otherwise result in unacceptable impacts. Such designations can occur only on routes and water surfaces that are used by motor vehicles or motorboats during other seasons. In Alaska, the Alaska National Interest Lands Conservation Act provides additional authorities and requirements governing snowmobile use.

“NPS administrative use of snowmobiles will be limited to what is necessary (1) to manage public use of snowmobile or oversnow vehicles routes and areas; (2) to conduct emergency operations; and (3) to accomplish essential maintenance, construction, and resource protection activities that cannot be accomplished reasonably by other means.”

Director’s Orders

DIRECTOR’S ORDER #75A: Civic Engagement and Public Involvement:

“The purpose of this Director’s Order (DO) is to articulate our commitment to civic engagement, and to have all National Park Service units and offices embrace civic engagement as the essential foundation and framework for creating plans and developing programs. Civic engagement is a continuous, dynamic conversation with the public on many levels that reinforces public commitment to the preservation of heritage resources, both cultural and natural, and strengthens public understanding of the full meaning and contemporary relevance of these resources. The foundation of civic engagement is a commitment to building and sustaining relationships with neighbors and communities of interest.

The remainder of the Director’s Order may be viewed at <http://www.nps.gov/policy/DOrders/75A.htm>.

1.8.8 U.S. Department of the Interior Memorandum

February 17, 2004, memorandum from Assistant Secretary, Fish and Wildlife and Parks, to Director, National Park Service, addressing snowmobile use in national parks service wide:

“...it has become clear that a service-wide directive to prohibit all forms of recreational snowmobile use in the National Park System is no longer warranted and that, with requirements for monitoring and increased use of newer technology snowmobiles, recreational uses can continue to be a part of the NPS winter experience. This will also allow decisions to be made on a park-by-park basis, relying on the professional judgment of each parks’ staff. They will be able to consider the lessons from Yellowstone, such as the use of Best Available Technology requirements, guiding requirements, and adaptive management, as well as overall technological improvements and any other new information, and will then be able to determine whether any review or revision of their special regulations is needed.”

“Existing road grooming serves an important and sometimes essential role in guaranteeing winter access for both visitors and park staff. It is necessary not only for the operation of recreational snowmobiles, but also for snowcoaches and for snowmobile use by park staff. In some parks, eliminating road grooming would eliminate motorized access to many popular and developed areas. It would not necessarily serve the needs of most visitors or park staff, if it becomes necessary to walk, snowshoes, or cross-country ski over dozens of miles of ungroomed snow-covered roads or trails to reach such areas. Park staff needs to retain the flexibility to address these issues in their parks and make decisions regarding park resources, visitor needs, and administrative access needs.”

“NPS also needs to lead by example when purchasing and operating snowmobiles for administrative purposes. Only snowmobiles that meet the BAT standards as outlined in the Winter Use SEIS should be used by the NPS for administrative purposes. All purchases of snowmobiles by NPS units must be limited to BAT-compliant models unless a justification for an exception based on operational needs is approved by the respective Regional Director. No approval of a non-BAT machine may be made on the grounds of cost. Parks with employees who reside in the park during the winter months and use snowmobiles as a means of travel on and off duty should also develop a policy that promotes the use of BAT-compliant snowmobiles for these types of uses. Superintendents should encourage their employees, especially new hires, to use BAT-compliant personal snowmobiles as well. Through a deliberate process of converting to cleaner and quieter snowmobiles, the NPS can be the leader in reducing impacts to our national parks.”

“Park superintendents with continued snowmobile use need to do some form of monitoring as outlined in Executive Orders 11644 and 11989. This kind of use must continue to be a part of an active monitoring program and impacts of the use must be assessed from time to time. The appropriate level of monitoring must be tailored to the actual level of use in a park, as determined by the superintendent and park staff. Park officials should use their best professional judgment in determining the level of monitoring that is required.”

1.8.9 Secretarial Order

March 9, 2007 Order 3270 provides policy guidance and procedures for implementing adaptive management and transmits *Adaptive Management: The U.S. Department of the Interior Technical Guide* and website <http://www.doi.gov/initiatives/AdaptiveManagement/>.

APPENDIX B. HISTORY AND TIMELINE

Process Timeline for Winter Use Planning Yellowstone and Grand Teton National Parks and the John D. Rockefeller, Jr. Memorial Parkway

- 1932** Interests in Cody requested that the NPS plow roads into Yellowstone to allow year-round access. Park authorities turn down the request due to poor roads, severe winter conditions, un-winterized buildings, and lack of rotary plows.
- 1938** NPS began plowing Mammoth to Cooke City road year-round. Also, Cody interests again request park authorities to examine feasibility of plowing Yellowstone roads year-round. Park authorities again declined, citing the same reasons.
- 1939** Two residents of Anaconda, Montana demonstrate snowplane use to Yellowstone authorities.
- 1946** From now through 1949, local communities again requested that the NPS plow roads into Yellowstone to allow year-round access. NPS declined citing poor roads, non-winterized facilities, and opinion of Public Roads Administration (predecessor to Federal Highways).
- 1948** First motorized oversnow travel by visitors into Yellowstone occurs via snowplanes. 35 visitors toured Yellowstone that January (more in February). Snowplane use had occurred in Jackson Hole for several years by this time. Up to 150 snowplane visitors toured Yellowstone each of next several winters.
- 1955** Harold Young and Bill Nicholls of West Yellowstone began offering Bombardier snowcoach tours of Yellowstone. Several hundred people took such tours in each of the next several winters.
- 1956** Local communities again requested that the NPS plow its roads year-round. NPS formed “Snow Survey Committee” to investigate feasibility of plowing; committee concluded that it was “feasible but not practical” due to poor roads, severe weather, estimates of low traffic volumes, and cost of necessary developments and road improvements. NPS also began opening East and South Entrances earlier in spring time for summer season.
- 1963** First machines—three, total for the winter—identifiable as snowmobiles enter Yellowstone (that January).
- 1966** Winter visitor use grew to 5,000 people annually. Snowmobile use was especially rapidly growing, numbering 1,500 in 1966-67 and 26,800 by 1972-73.
- 1967** Requests to plow park roads arose again, so the NPS initiated the tri-state commission to discuss them. The debate culminated in a congressional hearing in Jackson, WY, in August 1967 on the issue. The NPS position was that the mode

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of transportation in winter should be that which is most appropriate in the park, and that oversnow transport seemed to best meet that need.

- 1968** From now through 1972, Yellowstone authorities formalized their winter use policy. The policy encouraged oversnow travel instead of plowing roads year-round.
- 1971** Grand Teton authorities began plowing the road from Colter Bay to Flagg Ranch year-round.
- 1972** NPS began grooming roads for oversnow vehicle travel, and the Old Faithful Snow Lodge opened.
- 1973** President Nixon issued Executive Order 11644 establishing a federal policy on off-road vehicle use in relation to resource issues. Yellowstone's Superintendent Anderson designated all the park's interior roads for snowmobile use.
- 1981** Winter use increased to 105,000 visitors annually.
- 1982** NPS reopened the Mammoth Hotel for winter use (it had been open continuously 1966-1970).
- 1989** Superintendent Bob Barbee commissioned the first winter use management guidelines: *Existing Winter Use Management, Guidelines, Inventory, and Needs*.
- 1990** NPS released *Winter Use Plan and Environmental Assessment* for all three park units.
- 1993** Winter visitation exceeded 143,000, which the *Winter Use Plan* had not projected until the year 2000. Also this year, the Continental Divide Snowmobile Trail opened through Grand Teton and the Parkway on an experimental basis. Consequently, NPS and USFS staff began work on a coordinated interagency report on Winter Visitor Use Management.
- 1997** The *Draft Winter Visitor Use Management: A Multi-Agency Assessment* was released for public review. Over 2,000 comment letters were received.

From January through March, near-record snowfall and ice caused many bison to leave Yellowstone. The State of Montana and NPS sent over 1,000 to slaughter amid concerns about brucellosis transmission. Concerned about this action, in May 1997 the Fund for Animals and other organizations and individuals filed suit against the NPS, with three primary complaints. The plaintiffs alleged 1) that the NPS had failed to prepare an environmental impact statement concerning winter use in Yellowstone and Grand Teton national parks and the John D. Rockefeller Parkway; 2) that the NPS had failed to consult with the U.S. Fish and Wildlife Service on the impacts of winter recreation on threatened and endangered species; and 3) that the NPS had failed to evaluate the effects of road grooming on wildlife and other park resources.

On October 27, 1997, the NPS agreed to a settlement in which it would prepare a new winter use plan and corresponding environmental impact statement, and to

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consult with the U.S. Fish and Wildlife Service on the effects of winter use on threatened and endangered species. The NPS also agreed to prepare an environmental assessment evaluating the effects of temporarily closing a segment of road in order to study wildlife movements on groomed roads within the park. The *Environmental Assessment-Temporary Closure of a Winter Road, Yellowstone National Park*, was completed in November 1997 and made available for public review for 45 days. On January 16, 1998, the NPS decided to defer a road closure because further research was necessary before a decision could be made.

- 1998** Between April and July, the NPS accepted scoping comments on the EIS, receiving approximately 2,500 comment letters.

In fall 1998, the NPS signed memorandums of agreement with Montana, Wyoming, Idaho; Teton and Park counties, WY; Gallatin and Park counties, MT; Fremont County, ID, and the U.S. Forest Service to act as cooperating agencies in the development of the EIS.

- 1999** The *Final Winter Visitor Use Management: A Multi-Agency Assessment* was released in June. This document identified the desired and actual conditions for winter use throughout the Greater Yellowstone area, as well as management actions to address discrepancies. However, it was not a decision document.

The NPS released the draft EIS on August 19, and accepted public comment through December 15 (a total of 115 days). The agency received 46,500 comment letters.

- 2000** On October 10, 2000, the *Winter Use Plans and Final Environmental Impact Statement for Yellowstone and Grand Teton National Parks and the John D. Rockefeller, Jr. Memorial Parkway* was released. Comments were accepted until October 31, 2000; the agency received over 11,000 comments on the Final EIS.

On November 22, 2000, Intermountain Regional Director Karen Wade signed the *Record of Decision Winter Use Plan for the Yellowstone and Grand Teton National Parks and the John D. Rockefeller, Jr. Memorial Parkway*. The decision selected alternative G from the FEIS, which would have eliminated snowmobile use from the parks by the winter of 2003-2004 and provided for access via an NPS-managed, mass transit snowcoach system.

On December 6, 2000, the International Snowmobile Manufacturers et.al. sued the Secretary of the Interior, et al., asking that the decision to ban snowmobiles be set aside on the basis of alleged NEPA process infractions and other alleged process flaws.

On December 18, 2000, the NPS published the proposed rule implementing aspects of the decision relating to the designation of routes available for oversnow motorized access. A 30-day comment period followed the publication.

- 2001** The NPS published the final rule in the *Federal Register* on January 22, 2001; the agency received over 5,000 comments during the comment period.

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On January 31, 2001, a notice was published in the *Federal Register* that delayed the effective date of the rule for 60 days from February 21, 2001, to a new effective date of April 22, 2001.

On June 29, 2001, the Department of Interior and the plaintiffs (ISMA, et al.) reached a settlement agreement. The NPS would prepare a supplemental environmental impact statement (SEIS), to further the purposes of NEPA by soliciting more public comment on the earlier decision and examine alternatives to it (particularly examining four-stroke snowmobiles, which were just becoming commercially available at this time) while maintaining protection of park resources. Additional information from the International Snowmobile Manufacturers Association (ISMA) would be considered, as well as any other new or updated substantive information not available at the time of the earlier decision. The same nine governmental bodies became cooperating agencies along with the U.S. Environmental Protection Agency (EPA).

- 2002** On February 19, 2002, the Internet version of the DSEIS became available. The NPS accepted public comment through May 29, 2002, receiving nearly 360,000 comment letters.

Additional time was needed to analyze the large volume of public comment and complete the SEIS. Therefore, on March 29 the NPS published a proposed rule to postpone for one year the implementation of existing regulations (the proposed snowmobile ban) in the *Federal Register*. Accepting public comment through May 29, 2002, the NPS received more than 7,700 comments. On November 18, 2002, the final rule to postpone, for one year, the phase-out of snowmobiles in Yellowstone and Grand Teton national parks, and the Parkway was finalized and published in the *Federal Register*. The rule became effective on December 18, 2002. Although the Fund for Animals challenged this rule, the suit was superseded by later lawsuits.

- 2003** On February 20, the NPS published the *Final Supplemental Environmental Impact Statement*.

On March 25, 2003, Intermountain Regional Director Karen Wade signed the *Record of Decision: Winter Use Plans for Yellowstone and Grand Teton National Parks and the John D. Rockefeller, Jr. Memorial Parkway*.

On December 11, 2003, the NPS published the final rule implementing the Record of Decision in the *Federal Register*. The new decision and rule called for allowing snowmobiles to be used in the parks with limitations: no more than 950 snowmobiles per day in Yellowstone (and up to 150 in Grand Teton/the Parkway), that all machines in Yellowstone (and most of those in Grand Teton) use best available technology (BAT), and that all Yellowstone visitors utilize commercial guides.

The Fund for Animals and the Greater Yellowstone Coalition sued to challenge the March 25 decision in the U.S. District Court for the District of Columbia (hereafter, DC District Court). On December 16, 2003, the court vacated the SEIS and December 2003 rule and effectively reinstated the November 18, 2002 rule, which allowed slightly more than half the historic daily snowmobile entries

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(493 per day in Yellowstone), with requirements that all snowmobiles be led by commercial guides, with the previous snowmobile ban to go into effect in December 2004.

In December, ISMA and the State of Wyoming reopened their lawsuit challenging the snowmobile phase-out in the U.S. District Court of Wyoming (hereafter, Wyoming District Court). The plaintiffs asked the court to issue a temporary restraining order or preliminary injunction against the NPS to stop implementation of the November 18, 2002, rule banning snowmobile use.

2004 On February 10, 2004, the Wyoming District Court issued a preliminary injunction preventing the NPS from continuing to implement the 2001 phase-out rule, and directing the park superintendents to issue winter use rules that would be “fair and equitable” to all parties. Grand Teton and Yellowstone revised their superintendents’ compendia to allow a total of up to 780 snowmobiles per day into Yellowstone and 140 into Grand Teton and the Parkway. In Yellowstone, the requirement that all snowmobilers travel with a commercial guide remained in effect, and the additional 287 snowmobiles allowed by the Superintendent’s Order were required to be best available technology. On October 14, 2004, the Court vacated and remanded the 2000 EIS and ROD and the January 22, 2001, rule to the National Park Service.

With both EISs invalidated, the NPS had no clear rules under which it could operate the parks for the upcoming winter. Consequently, the agency began writing an environmental assessment for temporary winter rules for the parks. The NPS published the draft EA on August 20 and accepted public comment through September 20, receiving a total of 95,007 comment documents. On November 4, 2004, Regional Director Karen Wade signed the “Finding of No Significant Impact” (FONSI), putting into effect winter use plans for the next three winter seasons. On November 10, 2004, the rules to implement the FONSI were published in the *Federal Register*.

Under the FONSI and rule, 720 snowmobiles per day were allowed to enter Yellowstone, all led by commercial guides, and all machines had to be BAT. The 140 snowmobiles allowed in Grand Teton were not required to be guided, but BAT was required with some minor exceptions.

Various litigants filed three different judicial actions against the Temporary Plan or elements of it. First, the Fund for Animals/Bluewater Network and others filed a lawsuit with the DC District Court, asking that the temporary winter use plan be set aside because the NPS failed to answer questions about the effects of groomed trails on animals. The court denied all motions for summary judgment. Second, the Wyoming Lodging and Restaurant Association sued in the Wyoming District Court, charging that a “no action” alternative and non-commercial snowmobile use were not considered in the planning process and that by releasing the draft FONSI with the EA, the process was pre-determined. The court ruled against the WLRA in 2005. Third, the GYC and others filed a motion (not a lawsuit) on November 12, asking the DC District Court, to make the NPS’s monitoring and adaptive management thresholds set forth in the 2003 rule judicially enforceable. The court declined the motion.

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In fall 2004, Congress inserted language in the Omnibus Appropriations Bill that made the November 10, 2004 rules effective for the upcoming winter. Congress repeated this action for the winters of 2005-2006 and 2006-2007.

- 2005** The group “Save Our Snowplanes” sued in the Wyoming District Court (on March 29, 2005) requesting that the decision to ban snowplanes from the frozen surface of Jackson Lake be set aside. The court has not yet ruled on this case.

On May 26, the Judicial Panel on Multi-District Litigation heard arguments to consolidate the cases in the Wyoming and Washington, DC, District Courts. On June 16, the MDL panel denied the motion to consolidate the ongoing lawsuits. As a result, proceedings continue in both the Wyoming and Washington, D.C., District Courts.

In June, the NPS announced the availability of, “The Ecology of Bison Movements and Distribution in and Beyond Yellowstone National Park: A Critical Review with Implications for Winter Use and Transboundary Population Management,” by C. Cormack Gates et al., of the University of Calgary. This report summarized the state of knowledge regarding bison movements in Yellowstone in winter.

On June 24, the NPS formally began the long-term winter use plan and EIS with the beginning of public scoping. Public comments were accepted through September 1, and a total of 33,365 people filed comments.

In spring, the NPS hired a public engagement specialist to produce an assessment of the winter use situation. That firm, Cadence, Inc., of Helena, Mont., recommended an open information sharing effort to more effectively involve the public. Throughout that summer and fall, representatives of the NPS met with cooperating agencies and other stakeholders to share information about the ongoing EIS procedure and about Yellowstone in winter. These efforts continue, with the assistance of Cadence.

- 2006** In January, the NPS held “Bison, Snow, and Winter Use: A Stakeholder Workshop to Identify Potential Winter Use Management Effects Studies for the Road Corridor between Madison Junction and Mammoth Hot Springs.

In March, the NPS held two open houses for interested members of the public, in Bozeman, Mont., and Jackson, Wyo. At these open houses the agency released the tentative alternatives which it would analyze in this EIS.

In September, the Fund for Animals filed another motion for summary judgment in its 2004 case against the NPS.

- 2007** In March, the NPS released a draft EIS. In June, the Wyoming District Court ruled on a suit from Save Our Snowplanes, upholding the validity of the temporary winter use plan and its provision prohibiting snowplane use on Jackson Lake. In September, the NPS released this final EIS.

APPENDIX C. TRAVEL FACTORS

Introduction

The development of a model to distribute use within the parks, based on entrance limits, is necessary in order to understand the impacts of the alternatives on park resources and values. These travel factor models, also called scenarios, were developed in the past for the Temporary Winter Use EA, the SEIS, and the EIS, and were included as appendices to these documents. The scenarios were primarily based on a visitor survey, conducted in the late 1990s, and an oversnow transportation plan. The explanation of the basis for these scenarios may be found on page A-10 of the temporary EA (NPS 2004).

The scenarios attempt to predict the total amount of daily recreational traffic on each road segment within Yellowstone and Grand Teton National Parks, by vehicle type. Thus, by looking at the scenarios, one can get a sense of how much snowmobile or snowcoach traffic to expect in a day on each road segment within the parks.

The purpose of the distribution model is similar to the other models (such as the air quality and natural soundscape models) used in this EIS. The models do their best to reasonably replicate reality, but that is not their fundamental purpose. The purpose of the models is to provide a comparison of the relative differences among the alternatives. This helps the decision-maker better understand the magnitude of differences of the environmental consequences of each alternative. The scenarios are also fundamental to the air quality and soundscapes analysis, as they are inputs to these models.

For the development of this new long-term EIS, the scenarios were updated for two major reasons. First, park managers and partners recognize that commercially guided trips may have different visitation patterns than unguided groups. For example, many snowmobile touring businesses currently offer two main destinations for their tours: Old Faithful or Canyon. By contrast, unguided visitors have less predictable visitation patterns. The previous scenarios were developed with data largely from unguided snowmobilers. Most of the alternatives considered in this document require some portion of snowmobile entries to be commercially guided. Thus, there could be differences in the travel and visitation patterns for guided vs. unguided (or non-commercially guided) groups.

Second, the previous scenarios only included in-bound traffic within Yellowstone National Park. They did not include traffic exiting the park.¹ For example, if a group of snowmobiles entered Yellowstone at the West Entrance, and traveled to Old Faithful, they would be “counted” by the previous scenarios on their in-bound trip to Old Faithful. After enjoying the geyser basin, if the group returned to the West Entrance to complete their visit for the day, they would not have been “counted” by the previous model as traveling on those road segments a second time. This presents a problem, as it potentially excludes a substantial amount of traffic. This factor alone warranted a re-examination of the assumptions.

¹ To illustrate this, note the scenario from the preferred alternative of the EA, on page A-8 of the EA. This scenario shows 428 snowmobiles traveling the West Entrance to Madison road segment, with a daily entry limit for the West Entrance of 400. The scenario (and all others) assumes that the daily entry limit of 400 snowmobiles is reached. A handful of snowmobiles that enter at other entrances, for example the North Entrance, will also traverse the West Entrance to Madison road segment (perhaps to see wildlife along this corridor or visit West Yellowstone), which accounts for the extra 28 snowmobiles beyond 400. However, the majority of those 400 snowmobiles entering through the West Entrance return on this road segment when they leave the park at the end of their tour in Yellowstone. A few will stay overnight in the park or in another gateway community, but the majority returns to their origin at the end of the day. Thus, to account for exit traffic, the figure should be substantially higher than 428 snowmobiles.

Methods Used to Develop the New Scenarios

The primary issue in creating new scenarios for this EIS process is developing factors to distribute traffic along each road segment. For example, of the snowmobiles entering in a single day at the West Entrance, what percent travel to Old Faithful, what percent travel to Canyon, what percent complete the Grand Loop, and what percent go to other destinations in their day of travel in Yellowstone?

To answer these questions, the NPS considered several sources of information. First, the distribution factors in the EA, SEIS, and EIS were reviewed. In addition, several previous winter visitor surveys were reviewed. Two surveys in particular asked visitors where they went on their trip in Yellowstone, and whether or not they were part of a commercially guided tour.² The authors of these surveys were contacted and asked to prepare tabulations of where visitors traveling with commercial guides actually went on their visit to the parks. This data illustrated where visitors stated they went on their tour of Yellowstone. Finally, the NPS discussed with several commercial guiding businesses (both snowmobile and snowcoach) where their tours actually go in the park. In addition, Xanterra Parks and Resorts, Yellowstone's largest concessioner, provided data on the destinations of their Old Faithful-based snowmobile and snowcoach tours. This provided real-world confirmation of the survey data and the previous scenario's distribution factors.

After these sources of information were considered, distribution factors were developed. Assumptions were made (based on the above information) about the destinations for the commercially guided tours. For example, an assumption was made that approximately 75% of tours entering the park at the West Entrance have Old Faithful as their primary destination, while 20% have the Grand Canyon of the Yellowstone as their destination. Roughly 5% of visitors have other destinations – perhaps traveling the Grand Loop in a day, or to another entrance. In addition, assumptions were made about other road segments that might be used by groups given those destinations. Continuing the previous example, an assumption was made about the percent of visitors that might have Old Faithful as their primary destination, but who also travel up to view Gibbon Falls on the Madison to Norris road segment (not along the normal route between the West Entrance and Old Faithful). Similar projections about use on each road segment were made for each of the oversnow entrances. However, in order to be counted on a road segment, traffic was assumed to travel more than 2-3 miles. For example, if a group of snowmobilers visit Kepler Cascades, located approximately 2 miles from Old Faithful, viewed the Cascades and returned to Old Faithful, they would not have been counted as having used the Old Faithful-West Thumb road segment, since they only traveled such a small portion of it.

In addition, an assumption was made in the analysis that the use limits prescribed by each alternative are reached each day of the peak season (January and February). This assumption was used in the previous planning efforts, and is carried over here. This is a critical assumption because it allows the decision-maker to understand the impacts of the alternatives at their full implementation level.

At first, only in-bound traffic was considered, since this was most consistent with scenarios developed for other planning efforts. Updated distribution models were run for Scenario A – Continue the Temporary Plan, and the results were extremely comparable to the previous

² The surveys used were: 1) Mansfield, C., F.R. Johnson, R. Whitmore, and D. Phaneuf, October 2003. Winter 2002-2003 Visitor Survey: Yellowstone and Grand Teton National Parks. Prepared by RTI International et al under contract to the National Park Service. 2) Littlejohn, M. February 1996. Visitor Services Project: Yellowstone National Park Visitor Survey, Report 75. University of Idaho, Moscow, ID.

scenarios used in the EA, SEIS and EIS. This provided an initial validity check of the new scenarios. Next, the distribution factors were updated to include the out-bound traffic. Again, assumptions were made about what percent of visitors from each entrance overnight at Snow Lodge, complete the Grand Loop, or exit at another entrance (generally a relatively small percent do these activities). Finalized travel factors (or scenarios) were utilized to model air quality and soundscapes for each preliminary alternative. Similar methods were followed for Grand Teton travel factors.

General Assumptions, by Entrance:

At the forefront, it is critical to note that the assumptions below are intended to only roughly reflect visitation patterns; it is not necessary that they precisely reflect actual visitation patterns. What is critical is that the same assumptions are used for each alternative's scenarios, which allows comparisons to be made among the alternatives.

West Entrance:

- 75% have Old Faithful as primary destination
- 20% have Canyon as primary destination
- 6% complete the Grand Loop
- 12% overnight at North, South, or East
- 8% overnight at Snow Lodge

South Entrance:

- 75% have Old Faithful as primary destination
- 20% have Canyon as primary destination
- 5% complete the Grand Loop
- 13% overnight at North, West, or East
- 12% overnight at Snow Lodge

East Entrance:

- 20% have Old Faithful as primary destination
- 75% have Canyon as primary destination
- 0% complete the Grand Loop
- 30% overnight at North, South, or West
- 10% overnight at Snow Lodge

North Entrance:

- 70% have Old Faithful as primary destination
- 30% have Canyon as primary destination
- 2% complete the Grand Loop
- 9% overnight at West, South, or East
- 11% overnight at Snow Lodge

Old Faithful:

- 70% of snowmobiles complete the Grand Loop
- 6% of snowcoaches complete the Grand Loop

Distribution factors were entered into a spreadsheet to produce the scenario results.

Results

The oversnow vehicle distribution scenarios follow for each alternative. They are broken out by vehicle type – snowmobile or snowcoach (and wheeled vehicle in the case of scenario I). For each scenario, entrance limits are multiplied by the road segment factor to generate the number of vehicles utilizing that road segment. For example, in Scenario A, 5% of snowmobiles entering the park's West Entrance are presumed to travel along the Mammoth to Norris road segment. Given a limit of 400 snowmobiles per day at the West Entrance, this equates to 20 snowmobiles along this road segment from the West Entrance ($.05 \times 400 = 20$). The modeling scenarios (A-J) led to development of six preliminary alternatives. These preliminary alternatives and several modeling options have been further refined and are reflected as alternatives 1 through 7 in this EIS.

Alternative 1a - Continue Temporary Winter Plan with East Entrance Open to OSV travel

Snowmobiles	West Entrance 400		South Entrance 220		East Entrance 40		North Entrance 30		Old Faithful 30		Totals 720
	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
YELL Road Segment											
Mammoth to Norris	0.05	20	0.03	6.6	0.1	4	1.8	54	0.3	9	93.6
West Entrance to Madison	1.8	720	0.05	11	0.1	4	0.15	4.5	0.15	4.5	744
Madison to Norris	0.59	236	0.08	17.6	0.1	4	1.2	36	1	30	323.6
Norris to Canyon Village	0.44	176	0.05	11	0.2	8	0.56	16.8	0.7	21	232.8
Canyon Village to Fishing Bridge	0.34	136	0.45	99	1.4	56	0.36	10.8	0.7	21	322.8
Fishing Bridge to East Entrance	0.02	8	0.05	11	1.6	64	0.02	0.6	0.02	0.6	84.2
Fishing Bridge to West Thumb	0.08	32	0.46	101.2	0.3	12	0.02	0.6	0.7	21	166.8
Madison to Old Faithful	1.41	564	0.47	103.4	0.1	4	1.15	34.5	1.05	31.5	737.4
Old Faithful to West Thumb	0.27	108	1.35	297	0.2	8	0.05	1.5	0.75	22.5	437
West Thumb to Flagg Ranch	0.05	20	1.75	385	0.1	4	0.05	1.5	0.05	1.5	412

Snowcoaches	West Entrance 34		South Entrance 10		East Entrance 3		North Entrance 13		Old Faithful 18		Totals 78
	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
YELL Road Segment											
Mammoth to Norris	0.05	1.7	0.03	0.3	0.1	0.3	1.8	23.4	0	0	25.7
West Entrance to Madison	1.8	61.2	0.05	0.5	0.1	0.3	0.15	1.95	0.48	8.64	72.59
Madison to Norris	0.59	20.06	0.08	0.8	0.1	0.3	1.2	15.6	0.06	1.08	37.84
Norris to Canyon Village	0.44	14.96	0.05	0.5	0.2	0.6	0.56	7.28	0.06	1.08	24.42
Canyon Village to Fishing Bridge	0.34	11.56	0.45	4.5	1.4	4.2	0.36	4.68	0.06	1.08	26.02
Fishing Bridge to East Entrance	0.02	0.68	0.05	0.5	1.6	4.8	0.02	0.26	0	0	6.24
Fishing Bridge to West Thumb	0.08	2.72	0.46	4.6	0.3	0.9	0.02	0.26	0.06	1.08	9.56
Madison to Old Faithful	1.41	47.94	0.47	4.7	0.1	0.3	1.15	14.95	0.6	10.8	78.69
Old Faithful to West Thumb	0.27	9.18	1.35	13.5	0.2	0.6	0.05	0.65	1.3	23.4	47.33
West Thumb to Flagg Ranch	0.05	1.7	1.75	17.5	0.1	0.3	0.05	0.65	1.18	21.24	41.39

Snowmobiles	CDST 50		Grassy Lake Rd 50		Jackson Lake 40		Totals 140
	Factor	Results	Factor	Results	Factor	Results	
GRTE Road Segment							
Moran Junction to Flagg Ranch	2	100	0	0	0	0	100
Flagg Ranch west to boundary	0	0	1.9	95	0	0	95
Jackson Lake fishing access	0	0	0	0	2	80	80

Note:

YELL group sizes are modeled at 90% 8 snowmobiles/group and 10% at 17 snowmobiles/group.

Alternative 1b - Continue Temporary Winter Plan with East Entrance closed

Snowmobiles	West Entrance 424		South Entrance 256		East Entrance 0		North Entrance 20		Old Faithful 20		Totals 720
YELL Road Segment	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
Mammoth to Norris	0.05	21.2	0.03	7.68	0.1	0	1.8	36	0.3	6	70.88
West Entrance to Madison	1.8	763.2	0.05	12.8	0.1	0	0.15	3	0.15	3	782
Madison to Norris	0.59	250.16	0.08	20.48	0.1	0	1.2	24	1	20	314.64
Norris to Canyon Village	0.44	186.56	0.05	12.8	0.2	0	0.56	11.2	0.7	14	224.56
Canyon Village to Fishing Bridge	0.34	144.16	0.45	115.2	1.4	0	0.36	7.2	0.7	14	280.56
Fishing Bridge to Lake Butte	0.02	8.48	0.05	12.8	1.6	0	0.02	0.4	0.02	0.4	22.08
Fishing Bridge to West Thumb	0.08	33.92	0.46	117.76	0.3	0	0.02	0.4	0.7	14	166.08
Madison to Old Faithful	1.41	597.84	0.47	120.32	0.1	0	1.15	23	1.05	21	762.16
Old Faithful to West Thumb	0.27	114.48	1.35	345.6	0.2	0	0.05	1	0.75	15	476.08
West Thumb to Flagg Ranch	0.05	21.2	1.85	473.6	0.1	0	0.05	1	0.05	1	496.8

Snowcoaches	West Entrance 34		South Entrance 13		East Entrance 0		North Entrance 13		Old Faithful 18		Totals 78
YELL Road Segment	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
Mammoth to Norris	0.05	1.7	0.03	0.39	0.1	0	1.8	23.4	0	0	25.49
West Entrance to Madison	1.8	61.2	0.05	0.65	0.1	0	0.15	1.95	0.48	8.64	72.44
Madison to Norris	0.59	20.06	0.08	1.04	0.1	0	1.2	15.6	0.06	1.08	37.78
Norris to Canyon Village	0.44	14.96	0.05	0.65	0.2	0	0.56	7.28	0.06	1.08	23.97
Canyon Village to Fishing Bridge	0.34	11.56	0.45	5.85	1.4	0	0.36	4.68	0.06	1.08	23.17
Fishing Bridge to Lake Butte	0.02	0.68	0.05	0.65	1.6	0	0.02	0.26	0	0	1.59
Fishing Bridge to West Thumb	0.08	2.72	0.46	5.98	0.3	0	0.02	0.26	0.06	1.08	10.04
Madison to Old Faithful	1.41	47.94	0.47	6.11	0.1	0	1.15	14.95	0.6	10.8	79.8
Old Faithful to West Thumb	0.27	9.18	1.35	17.55	0.2	0	0.05	0.65	1.3	23.4	50.78
West Thumb to Flagg Ranch	0.05	1.7	1.75	22.75	0.1	0	0.05	0.65	1.18	21.24	46.34

Snowmobiles	CDST 50		Grassy Lake Rd 50		Jackson Lake 40		Totals 140
GRTE Road Segment	Factor	Results	Factor	Results	Factor	Results	
Moran Junction to Flagg Ranch	2	100	0	0	0	0	100
Flagg Ranch west to boundary	0	0	1.9	95	0	0	95
Jackson Lake fishing access	0	0	0	0	2	80	80

Note:

For the South Entrance road segment, the travel factor from West Thumb to Flagg Ranch is increased by 0.1 to account for traffic previously modeled as traveling through the East Entrance.

YELL group sizes are modeled at 11 snowmobiles/group

Alternative 1d - Continue Temporary Winter Plan with East Entrance closed - eliminate 40 entries

Snowmobiles	West Entrance 400		South Entrance 220		East Entrance 0		North Entrance 30		Old Faithful 30		Totals 680
YELL Road Segment	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
Mammoth to Norris	0.05	20	0.03	6.6	0.1	0	1.8	54	0.3	9	89.6
West Entrance to Madison	1.8	720	0.05	11	0.1	0	0.15	4.5	0.15	4.5	740
Madison to Norris	0.59	236	0.08	17.6	0.1	0	1.2	36	1	30	319.6
Norris to Canyon Village	0.44	176	0.05	11	0.2	0	0.56	16.8	0.7	21	224.8
Canyon Village to Fishing Bridge	0.34	136	0.45	99	1.4	0	0.36	10.8	0.7	21	266.8
Fishing Bridge to Lake Butte	0.02	8	0.05	11	1.6	0	0.02	0.6	0.02	0.6	20.2
Fishing Bridge to West Thumb	0.08	32	0.46	101.2	0.3	0	0.02	0.6	0.7	21	154.8
Madison to Old Faithful	1.41	564	0.47	103.4	0.1	0	1.15	34.5	1.05	31.5	733.4
Old Faithful to West Thumb	0.27	108	1.35	297	0.2	0	0.05	1.5	0.75	22.5	429
West Thumb to Flagg Ranch	0.05	20	1.85	407	0.1	0	0.05	1.5	0.05	1.5	430

Snowcoaches	West Entrance 34		South Entrance 13		East Entrance 0		North Entrance 13		Old Faithful 18		Totals 78
YELL Road Segment	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
Mammoth to Norris	0.05	1.7	0.03	0.39	0.1	0	1.8	23.4	0	0	25.49
West Entrance to Madison	1.8	61.2	0.05	0.65	0.1	0	0.15	1.95	0.48	8.64	72.44
Madison to Norris	0.59	20.06	0.08	1.04	0.1	0	1.2	15.6	0.06	1.08	37.78
Norris to Canyon Village	0.44	14.96	0.05	0.65	0.2	0	0.56	7.28	0.06	1.08	23.97
Canyon Village to Fishing Bridge	0.34	11.56	0.45	5.85	1.4	0	0.36	4.68	0.06	1.08	23.17
Fishing Bridge to Lake Butte	0.02	0.68	0.05	0.65	1.6	0	0.02	0.26	0	0	1.59
Fishing Bridge to West Thumb	0.08	2.72	0.46	5.98	0.3	0	0.02	0.26	0.06	1.08	10.04
Madison to Old Faithful	1.41	47.94	0.47	6.11	0.1	0	1.15	14.95	0.6	10.8	79.8
Old Faithful to West Thumb	0.27	9.18	1.35	17.55	0.2	0	0.05	0.65	1.3	23.4	50.78
West Thumb to Flagg Ranch	0.05	1.7	1.75	22.75	0.1	0	0.05	0.65	1.18	21.24	46.34

Snowmobiles	CDST 50		Grassy Lake Rd 50		Jackson Lake 40		Totals 140
GRTE Road Segment	Factor	Results	Factor	Results	Factor	Results	
Moran Junction to Flagg Ranch	2	100	0	0	0	0	100
Flagg Ranch west to boundary	0	0	1.9	95	0	0	95
Jackson Lake fishing access	0	0	0	0	2	80	80

Note:

For the South Entrance road segment, the travel factor from West Thumb to Flagg Ranch is increased by 0.1 to account for traffic previously modeled as traveling through the East Entrance.

Alternative 1c will not be modeled because the numbers and operational considerations are adequately modeled by Alternatives 1d and 1e.

YELL group sizes are modeled at 11 snowmobiles/group

Alternative 1e - Experimental road closure in Gibbon Canyon

Snowmobiles	West Entrance 400		South Entrance 220		East Entrance 0		North Entrance 30		Old Faithful 30		Totals 680
YELL Road Segment	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
Mammoth to Norris	0.05	20	0.03	6.6	0.1	0	1.85	55.5	0.15	4.5	86.6
West Entrance to Madison	1.8	720	0.1	22	0.1	0	0.02	0.6	0.3	9	751.6
Madison to Norris	0	0	0	0	0	0	0	0	0	0	0
Norris to Canyon Village	0.05	20	0.03	6.6	0.2	0	1.25	37.5	0.15	4.5	68.6
Canyon Village to Fishing Bridge	0.05	20	0.37	81.4	1.4	0	0.85	25.5	1.25	37.5	164.4
Fishing Bridge to Lake Butte	0.02	8	0.05	11	1.6	0	0.02	0.6	0.02	0.6	20.2
Fishing Bridge to West Thumb	0.15	60	0.43	94.6	0.3	0	0.15	4.5	1.25	37.5	196.6
Madison to Old Faithful	1.8	720	0.5	110	0.1	0	0.02	0.6	0.4	12	842.6
Old Faithful to West Thumb	0.45	180	1.38	303.6	0.2	0	0.13	3.9	1.3	39	526.5
West Thumb to Flagg Ranch	0.1	40	1.75	385	0.1	0	0.02	0.6	0.05	1.5	427.1

Snowcoaches	West Entrance 34		South Entrance 13		East Entrance 0		North Entrance 13		Old Faithful 18		Totals 78
YELL Road Segment	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
Mammoth to Norris	0.05	1.7	0.03	0.39	0.1	0	1.85	24.05	0.15	2.7	28.84
West Entrance to Madison	1.8	61.2	0.1	1.3	0.1	0	0.02	0.26	0.3	5.4	68.16
Madison to Norris	0	0	0	0	0	0	0	0	0	0	0
Norris to Canyon Village	0.05	1.7	0.03	0.39	0.2	0	1.25	16.25	0.15	2.7	21.04
Canyon Village to Fishing Bridge	0.05	1.7	0.37	4.81	1.4	0	0.85	11.05	1.25	22.5	40.06
Fishing Bridge to Lake Butte	0.02	0.68	0.05	0.65	1.6	0	0.02	0.26	0	0	1.59
Fishing Bridge to West Thumb	0.15	5.1	0.43	5.59	0.3	0	0.15	1.95	1.25	22.5	35.14
Madison to Old Faithful	1.8	61.2	0.5	6.5	0.1	0	0.02	0.26	0.4	7.2	75.16
Old Faithful to West Thumb	0.45	15.3	1.38	17.94	0.2	0	0.13	1.69	1.3	23.4	58.33
West Thumb to Flagg Ranch	0.1	3.4	1.75	22.75	0.1	0	0.02	0.26	0.05	0.9	27.31

Snowmobiles	CDST 50		Grassy Lake Rd 50		Jackson Lake 40		Totals 140
GRTE Road Segment	Factor	Results	Factor	Results	Factor	Results	
Moran Junction to Flagg Ranch	2	100	0	0	0	0	100
Flagg Ranch west to boundary	0	0	1.9	95	0	0	95
Jackson Lake fishing access	0	0	0	0	2	80	80

Note:

YELL group sizes are modeled at 11 snowmobiles/group

Alternative 2 - Snowcoach only

Snowmobiles	West Entrance		South Entrance		East Entrance		North Entrance		Old Faithful		Total
	0		0		0		0		0		0
YELL Road Segment	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
Mammoth to Norris	0.05	0	0.03	0	0.1	0	1.8	0	0.3	0	0
West Entrance to Madison	1.8	0	0.05	0	0.1	0	0.15	0	0.15	0	0
Madison to Norris	0.59	0	0.08	0	0.1	0	1.2	0	1	0	0
Norris to Canyon Village	0.44	0	0.05	0	0.2	0	0.56	0	0.7	0	0
Canyon Village to Fishing Bridge	0.34	0	0.45	0	1.4	0	0.36	0	0.7	0	0
Fishing Bridge to Lake Butte	0.02	0	0.05	0	1.6	0	0.02	0	0.02	0	0
Fishing Bridge to West Thumb	0.08	0	0.46	0	0.3	0	0.02	0	0.7	0	0
Madison to Old Faithful	1.41	0	0.47	0	0.1	0	1.15	0	1.05	0	0
Old Faithful to West Thumb	0.27	0	1.35	0	0.2	0	0.05	0	0.75	0	0
West Thumb to Flagg Ranch	0.05	0	1.75	0	0.1	0	0.05	0	0.05	0	0

Snowcoaches	West Entrance		South Entrance		East Entrance		North Entrance		Old Faithful		Total
	55		25		0		17		23		120
YELL Road Segment	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
Mammoth to Norris	0.05	2.75	0.03	0.75	0.1	0	1.8	30.6	0	0	34.1
West Entrance to Madison	1.8	99	0.05	1.25	0.1	0	0.15	2.55	0.48	11.04	113.84
Madison to Norris	0.59	32.45	0.08	2	0.1	0	1.2	20.4	0.06	1.38	56.23
Norris to Canyon Village	0.44	24.2	0.05	1.25	0.2	0	0.56	9.52	0.06	1.38	36.35
Canyon Village to Fishing Bridge	0.34	18.7	0.45	11.25	1.4	0	0.36	6.12	0.06	1.38	37.45
Fishing Bridge to Lake Butte	0.02	1.1	0.05	1.25	1.6	0	0.02	0.34	0	0	2.69
Fishing Bridge to West Thumb	0.08	4.4	0.46	11.5	0.3	0	0.02	0.34	0.06	1.38	17.62
Madison to Old Faithful	1.41	77.55	0.47	11.75	0.1	0	1.15	19.55	0.6	13.8	122.65
Old Faithful to West Thumb	0.27	14.85	1.35	33.75	0.2	0	0.05	0.85	1.3	29.9	79.35
West Thumb to Flagg Ranch	0.05	2.75	1.75	43.75	0.1	0	0.05	0.85	1.18	27.14	74.49

Snowmobiles	CDST		Grassy Lake Rd		Jackson Lake		Totals
	0		0		0		0
GRTE Road Segment	Factor	Results	Factor	Results	Factor	Results	
Moran Junction to Flagg Ranch							
Flagg Ranch west to boundary							
Jackson Lake fishing access							

Note:

For the South Entrance road segment, the travel factor from West Thumb to Flagg Ranch is increased by 0.1 to account for traffic previously modeled as traveling through the East Entrance.

YELL group sizes are modeled at 11 snowmobiles/group

Alternative 3 - Eliminate most road grooming

Snowmobiles	West Entrance		South Entrance		East Entrance		North Entrance		Old Faithful		Total
	0		250		0		0		0		250
YELL Road Segment	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
Mammoth to Norris	0.05	0	0	0	0.1	0	1.8	0	0.3	0	0
West Entrance to Madison	1.8	0	0	0	0.1	0	0.15	0	0.15	0	0
Madison to Norris	0.59	0	0	0	0.1	0	1.2	0	1	0	0
Norris to Canyon Village	0.44	0	0	0	0.2	0	0.56	0	0.7	0	0
Canyon Village to Fishing Bridge	0.34	0	0	0	1.4	0	0.36	0	0.7	0	0
Fishing Bridge to Lake Butte	0.02	0	0	0	1.6	0	0.02	0	0.02	0	0
Fishing Bridge to West Thumb	0.08	0	0	0	0.3	0	0.02	0	0.7	0	0
Madison to Old Faithful	1.41	0	0	0	0.1	0	1.15	0	1.05	0	0
Old Faithful to West Thumb	0.27	0	2	500	0.2	0	0.05	0	0.75	0	500
West Thumb to Flagg Ranch	0.05	0	2	500	0.1	0	0.05	0	0.05	0	500

Snowcoaches	West Entrance		South Entrance		East Entrance		North Entrance		Old Faithful		Total
	0		20		0		0		0		20
YELL Road Segment	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
Mammoth to Norris	0.05	0	0	0	0.1	0	1.8	0	0	0	0
West Entrance to Madison	1.8	0	0	0	0.1	0	0.15	0	0.48	0	0
Madison to Norris	0.59	0	0	0	0.1	0	1.2	0	0.06	0	0
Norris to Canyon Village	0.44	0	0	0	0.2	0	0.56	0	0.06	0	0
Canyon Village to Fishing Bridge	0.34	0	0	0	1.4	0	0.36	0	0.06	0	0
Fishing Bridge to Lake Butte	0.02	0	0	0	1.6	0	0.02	0	0	0	0
Fishing Bridge to West Thumb	0.08	0	0	0	0.3	0	0.02	0	0.06	0	0
Madison to Old Faithful	1.41	0	0	0	0.1	0	1.15	0	0.6	0	0
Old Faithful to West Thumb	0.27	0	2	40	0.2	0	0.05	0	1.3	0	40
West Thumb to Flagg Ranch	0.05	0	2	40	0.1	0	0.05	0	1.18	0	40

Snowmobiles	CDST		Grassy Lake Rd		Jackson Lake		Total
	0		50		0		50
GRTE Road Segment	Factor	Results	Factor	Results	Factor	Results	
Moran Junction to Flagg Ranch	0	0	2	100	0	0	100
Flagg Ranch west to boundary	0	0	0	0	0	0	0
Jackson Lake fishing access	0	0	0	0	0	0	0

Note:

YELL group sizes are modeled at 11 snowmobiles/group

Alternative 4 - Expand Recreational Use

Snowmobiles	West Entrance 600		South Entrance 250		East Entrance 100		North Entrance 25		Old Faithful 50		Total 1025
	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
YELL Road Segment											
Mammoth to Norris	0.05	30	0.03	7.5	0.1	10	1.8	45	0.3	15	107.5
West Entrance to Madison	1.8	1080	0.05	12.5	0.1	10	0.15	3.75	0.15	7.5	1113.75
Madison to Norris	0.59	354	0.08	20	0.1	10	1.2	30	1	50	464
Norris to Canyon Village	0.44	264	0.05	12.5	0.2	20	0.56	14	0.7	35	345.5
Canyon Village to Fishing Bridge	0.34	204	0.45	112.5	1.4	140	0.36	9	0.7	35	500.5
Fishing Bridge to East Entrance	0.02	12	0.05	12.5	1.6	160	0.02	0.5	0.02	1	186
Fishing Bridge to West Thumb	0.08	48	0.46	115	0.3	30	0.02	0.5	0.7	35	228.5
Madison to Old Faithful	1.41	846	0.47	117.5	0.1	10	1.15	28.75	1.05	52.5	1054.75
Old Faithful to West Thumb	0.27	162	1.35	337.5	0.2	20	0.05	1.25	0.75	37.5	558.25
West Thumb to Flagg Ranch	0.05	30	1.75	437.5	0.1	10	0.05	1.25	0.05	2.5	481.25

Snowcoaches	West Entrance 50		South Entrance 19		East Entrance 5		North Entrance 17		Old Faithful 24		Total 115
	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
YELL Road Segment											
Mammoth to Norris	0.05	2.5	0.03	0.57	0.1	0.5	1.8	30.6	0	0	34.17
West Entrance to Madison	1.8	90	0.05	0.95	0.1	0.5	0.15	2.55	0.48	11.52	105.52
Madison to Norris	0.59	29.5	0.08	1.52	0.1	0.5	1.2	20.4	0.06	1.44	53.36
Norris to Canyon Village	0.44	22	0.05	0.95	0.2	1	0.56	9.52	0.06	1.44	34.91
Canyon Village to Fishing Bridge	0.34	17	0.45	8.55	1.4	7	0.36	6.12	0.06	1.44	40.11
Fishing Bridge to East Entrance	0.02	1	0.05	0.95	1.6	8	0.02	0.34	0	0	10.29
Fishing Bridge to West Thumb	0.08	4	0.46	8.74	0.3	1.5	0.02	0.34	0.06	1.44	16.02
Madison to Old Faithful	1.41	70.5	0.47	8.93	0.1	0.5	1.15	19.55	0.6	14.4	113.88
Old Faithful to West Thumb	0.27	13.5	1.35	25.65	0.2	1	0.05	0.85	1.3	31.2	72.2
West Thumb to Flagg Ranch	0.05	2.5	1.75	33.25	0.1	0.5	0.05	0.85	1.18	28.32	65.42

Snowmobiles	CDST 75		Grassy Lake Rd 75		Jackson Lake 100		Totals 250
	Factor	Results	Factor	Results	Factor	Results	
GRTE Road Segment							
Moran Junction to Flagg Ranch	2	150	0	0	0	0	150
Flagg Ranch west to boundary	0	0	1.9	142.5	0	0	142.5
Jackson Lake fishing access	0	0	0	0	2	200	200

Note:

This alternative includes 10 private snowcoaches which are modeled at the following entrances:

- West Entrance 4
- South Entrance 4
- East Entrance 1
- North Entrance 1

For YELL 25% of snowmobile entries modeled for this alternative are either unguided or non-commercially guided.

For GRTE 50 of the 75 snowmobile entries are modeled as guided. This differs from all other GRTE alternatives, where use is 100% unguided.

YELL group sizes are modeled at 11 snowmobiles/group

Alternative 5 - Unguided Access

Snowmobiles	West Entrance 336		South Entrance 168		East Entrance 46		North Entrance 46		Old Faithful 29		Total 625
YELL Road Segment	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
Mammoth to Norris	0.05	16.8	0.03	5.04	0.1	4.6	1.8	82.8	0.3	8.7	117.94
West Entrance to Madison	1.8	604.8	0.05	8.4	0.1	4.6	0.15	6.9	0.15	4.35	629.05
Madison to Norris	0.59	198.24	0.08	13.44	0.1	4.6	1.2	55.2	1	29	300.48
Norris to Canyon Village	0.44	147.84	0.05	8.4	0.2	9.2	0.56	25.76	0.7	20.3	211.5
Canyon Village to Fishing Bridge	0.34	114.24	0.45	75.6	1.4	64.4	0.36	16.56	0.7	20.3	291.1
Fishing Bridge to East Entrance	0.02	6.72	0.05	8.4	1.6	73.6	0.02	0.92	0.02	0.58	90.22
Fishing Bridge to West Thumb	0.08	26.88	0.46	77.28	0.3	13.8	0.02	0.92	0.7	20.3	139.18
Madison to Old Faithful	1.41	473.76	0.47	78.96	0.1	4.6	1.15	52.9	1.05	30.45	640.67
Old Faithful to West Thumb	0.27	90.72	1.35	226.8	0.2	9.2	0.05	2.3	0.75	21.75	350.77
West Thumb to Flagg Ranch	0.05	16.8	1.75	294	0.1	4.6	0.05	2.3	0.05	1.45	319.15

Snowcoaches	West Entrance 44		South Entrance 13		East Entrance 3		North Entrance 17		Old Faithful 23		Total 100
YELL Road Segment	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
Mammoth to Norris	0.05	2.2	0.03	0.39	0.1	0.3	1.8	30.6	0	0	33.49
West Entrance to Madison	1.8	79.2	0.05	0.65	0.1	0.3	0.15	2.55	0.48	11.04	93.74
Madison to Norris	0.59	25.96	0.08	1.04	0.1	0.3	1.2	20.4	0.06	1.38	49.08
Norris to Canyon Village	0.44	19.36	0.05	0.65	0.2	0.6	0.56	9.52	0.06	1.38	31.51
Canyon Village to Fishing Bridge	0.34	14.96	0.45	5.85	1.4	4.2	0.36	6.12	0.06	1.38	32.51
Fishing Bridge to East Entrance	0.02	0.88	0.05	0.65	1.6	4.8	0.02	0.34	0	0	6.67
Fishing Bridge to West Thumb	0.08	3.52	0.46	5.98	0.3	0.9	0.02	0.34	0.06	1.38	12.12
Madison to Old Faithful	1.41	62.04	0.47	6.11	0.1	0.3	1.15	19.55	0.6	13.8	101.8
Old Faithful to West Thumb	0.27	11.88	1.35	17.55	0.2	0.6	0.05	0.85	1.3	29.9	60.78
West Thumb to Flagg Ranch	0.05	2.2	1.75	22.75	0.1	0.3	0.05	0.85	1.18	27.14	53.24

Snowmobiles	CDST 50		Grassy Lake Rd 50		Jackson Lake 40		Totals 140
GRTE Road Segment	Factor	Results	Factor	Results	Factor	Results	
Moran Junction to Flagg Ranch	2	100	0	0	0	0	100
Flagg Ranch west to boundary	0	0	1.9	95	0	0	95
Jackson Lake fishing access	0	0	0	0	2	80	80

Note:

20% of snowmobile entries for this alternative are modeled as unguided, and would be required to enter the park no later than 10:30 a.m. These entries are included in the overall numbers for each entrance.

This alternative also allows up to 626 commercial snowmobiles and 100 snowcoaches per day to account for increased seasonal demand. These increased allowances count against a seasonal limit of 27,540 snowmobiles/5,291 snowcoaches.

YELL group sizes are modeled at 11 snowmobiles/group

Alternative 6 - Mixed Use

Snowmobiles	West Entrance		South Entrance		East Entrance		North Entrance		OF/Norris		Total
	0		250		0		0		100		350
Road Segment	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
Mammoth to Norris	0	0	0	0	0	0	0	0	0	0	0
West Entrance to Madison	0	0	0	0	0	0	0	0	0	0	0
Madison to Norris	0	0	0	0	0	0	0	0	0	0	0
Norris to Canyon Village	1.5	0	0.02	5	0	0	0	0	0.1	10	15
Canyon Village to Fishing Bridge	1.4	0	0.38	95	0	0	0	0	1.7	170	265
Fishing Bridge to Lake Butte	0	0	0	0	0	0	0	0	0	0	0
Fishing Bridge to West Thumb	0.5	0	0.44	110	0	0	0	0	1.7	170	280
Madison to Old Faithful	0	0	0	0	0	0	0	0	0	0	0
Old Faithful to West Thumb	0.48	0	1.42	355	0	0	0	0	1.8	180	535
West Thumb to Flagg Ranch	0.02	0	1.8	450	0	0	0	0	0.1	10	460
GTNP CDST											
GTNP Grassy											
GTNP Jackson Lake											

Snowcoaches	West Entrance		South Entrance		East Entrance		North Entrance		OF/Norris		Total
	0		10		0		0		30		40
YELL Road Segment	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
Mammoth to Norris	0	0	0	0	0	0	0	0	0	0	0
West Entrance to Madison	0	0	0	0	0	0	0	0	0	0	0
Madison to Norris	0	0	0	0	0	0	0	0	0	0	0
Norris to Canyon Village	1.5	0	0.02	0.2	0	0	0	0	0.1	3	3.2
Canyon Village to Fishing Bridge	1.4	0	0.38	3.8	0	0	0	0	1.7	51	54.8
Fishing Bridge to Lake Butte	0	0	0	0	0	0	0	0	0	0	0
Fishing Bridge to West Thumb	0.48	0	0.44	4.4	0	0	0	0	1.7	51	55.4
Madison to Old Faithful	0	0	0	0	0	0	0	0	0	0	0
Old Faithful to West Thumb	0.46	0	1.42	14.2	0	0	0	0	1.8	54	68.2
West Thumb to Flagg Ranch	0.02	0	1.8	18	0	0	0	0	0.1	3	21

Wheeled Vehicles	West Entrance		South Entrance		East Entrance		North Entrance		Old Faithful		Total
	75		0		0		25		0		100
YELL Road Segment	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
Mammoth to Norris	0.3	22.5	0	0	0	0	1.8	45	0.2	0	67.5
West Entrance to Madison	1.7	127.5	0	0	0	0	0.25	6.25	0.8	0	133.75
Madison to Norris	0.4	30	0	0	0	0	1.55	38.75	0.2	0	68.75
Norris to Canyon Village	0	0	0	0	0	0	0	0	0	0	0
Canyon Village to Fishing Bridge	0	0	0	0	0	0	0	0	0	0	0
Fishing Bridge to Lake Butte	0	0	0	0	0	0	0	0	0	0	0
Fishing Bridge to West Thumb	0	0	0	0	0	0	0	0	0	0	0
Madison to Old Faithful	1.5	112.5	0	0	0	0	1.5	37.5	1	0	150
Old Faithful to West Thumb	0	0	0	0	0	0	0	0	0	0	0
West Thumb to Flagg Ranch	0	0	0	0	0	0	0	0	0	0	0

Snowmobiles	CDST		Grassy Lake Rd		Jackson Lake		Totals
	0		50		40		90
GRTE Road Segment	Factor	Results	Factor	Results	Factor	Results	
Moran Junction to Flagg Ranch	0	0	0	0	0	0	0
Flagg Ranch west to boundary	0	0	1.9	95	0	0	95
Jackson Lake fishing access	0	0	0	0	2	80	80

Note:

YELL group sizes are modeled at 90% 8 snowmobiles/group and 10% would be 17 snowmobiles/group.

Alternative 7 (Option Z) - Revised Preferred Alternative

Snowmobiles	West Entrance 300		South Entrance 185		East Entrance 0		North Entrance 35		Old Faithful 20		Totals 540
YELL Road Segment	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
Mammoth to Norris	0.05	15	0.03	5.55	0.1	0	1.85	64.75	0.15	3	88.3
West Entrance to Madison	1.8	540	0.1	18.5	0.1	0	0.02	0.7	0.3	6	565.2
Madison to Norris	0	0	0	0	0	0	0	0	0	0	0
Norris to Canyon Village	0.05	15	0.03	5.55	0.2	0	1.25	43.75	0.15	3	67.3
Canyon Village to Fishing Bridge	0.05	15	0.37	68.45	1.4	0	0.85	29.75	1.25	25	138.2
Fishing Bridge to Lake Butte	0.02	6	0.05	9.25	1.6	0	0.02	0.7	0.02	0.4	16.35
Fishing Bridge to West Thumb	0.15	45	0.43	79.55	0.3	0	0.15	5.25	1.25	25	154.8
Madison to Old Faithful	1.8	540	0.5	92.5	0.1	0	0.02	0.7	0.4	8	641.2
Old Faithful to West Thumb	0.45	135	1.38	255.3	0.2	0	0.13	4.55	1.3	26	420.85
West Thumb to Flagg Ranch	0.1	30	1.75	323.75	0.1	0	0.02	0.7	0.05	1	355.45

Snowcoaches	West Entrance 37		South Entrance 12		East Entrance 0		North Entrance 15		Old Faithful 19		Totals 83
YELL Road Segment	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
Mammoth to Norris	0.05	1.85	0.03	0.36	0.1	0	1.85	27.75	0.15	2.85	32.81
West Entrance to Madison	1.8	66.6	0.1	1.2	0.1	0	0.02	0.3	0.3	5.7	73.8
Madison to Norris	0	0	0	0	0	0	0	0	0	0	0
Norris to Canyon Village	0.05	1.85	0.03	0.36	0.2	0	1.25	18.75	0.15	2.85	23.81
Canyon Village to Fishing Bridge	0.05	1.85	0.37	4.44	1.4	0	0.85	12.75	1.25	23.75	42.79
Fishing Bridge to Lake Butte	0.02	0.74	0.05	0.6	1.6	0	0.02	0.3	0	0	1.64
Fishing Bridge to West Thumb	0.15	5.55	0.43	5.16	0.3	0	0.15	2.25	1.25	23.75	36.71
Madison to Old Faithful	1.8	66.6	0.5	6	0.1	0	0.02	0.3	0.4	7.6	80.5
Old Faithful to West Thumb	0.45	16.65	1.38	16.56	0.2	0	0.13	1.95	1.3	24.7	59.86
West Thumb to Flagg Ranch	0.1	3.7	1.75	21	0.1	0	0.02	0.3	0.05	0.95	25.95

Snowmobiles	CDST 36		Grassy Lake Rd 15		Jackson Lake 35		Totals 86
GRTE Road Segment	Factor	Results	Factor	Results	Factor	Results	
Moran Junction to Flagg Ranch	2	72	0	0	0	0	72
Flagg Ranch west to boundary	0	0	1.9	28.5	0	0	28.5
Jackson Lake fishing access	0	0	0	0	2	70	70

Note:

YELL group sizes are modeled at 90% 8 snowmobiles/group and 10% at 17 snowmobiles/group.

Current Conditions/Actual Use

Snowmobiles	West Entrance 153		South Entrance 89		East Entrance 8		North Entrance 5		Old Faithful 5		Total 260
YELL Road Segment	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
Mammoth to Norris	0.05	7.65	0.03	2.67	0.1	0.8	1.8	9	0.3	1.5	21.62
West Entrance to Madison	1.8	275.4	0.05	4.45	0.1	0.8	0.15	0.75	0.15	0.75	282.15
Madison to Norris	0.59	90.27	0.08	7.12	0.1	0.8	1.2	6	1	5	109.19
Norris to Canyon Village	0.44	67.32	0.05	4.45	0.2	1.6	0.56	2.8	0.7	3.5	79.67
Canyon Village to Fishing Bridge	0.34	52.02	0.45	40.05	1.4	11.2	0.36	1.8	0.7	3.5	108.57
Fishing Bridge to East Entrance	0.02	3.06	0.05	4.45	1.6	12.8	0.02	0.1	0.02	0.1	20.51
Fishing Bridge to West Thumb	0.08	12.24	0.46	40.94	0.3	2.4	0.02	0.1	0.7	3.5	59.18
Madison to Old Faithful	1.41	215.73	0.47	41.83	0.1	0.8	1.15	5.75	1.05	5.25	269.36
Old Faithful to West Thumb	0.27	41.31	1.35	120.15	0.2	1.6	0.05	0.25	0.75	3.75	167.06
West Thumb to Flagg Ranch	0.05	7.65	1.75	155.75	0.1	0.8	0.05	0.25	0.05	0.25	164.7

Snowcoaches	West Entrance 14		South Entrance 5		East Entrance 1		North Entrance 6		Old Faithful 3		Total 29
YELL Road Segment	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
Mammoth to Norris	0.05	0.7	0.03	0.15	0.1	0.1	1.8	10.8	0	0	11.75
West Entrance to Madison	1.8	25.2	0.05	0.25	0.1	0.1	0.15	0.9	0.48	1.44	27.89
Madison to Norris	0.59	8.26	0.08	0.4	0.1	0.1	1.2	7.2	0.06	0.18	16.14
Norris to Canyon Village	0.44	6.16	0.05	0.25	0.2	0.2	0.56	3.36	0.06	0.18	10.15
Canyon Village to Fishing Bridge	0.34	4.76	0.45	2.25	1.4	1.4	0.36	2.16	0.06	0.18	10.75
Fishing Bridge to East Entrance	0.02	0.28	0.05	0.25	1.6	1.6	0.02	0.12	0	0	2.25
Fishing Bridge to West Thumb	0.08	1.12	0.46	2.3	0.3	0.3	0.02	0.12	0.06	0.18	4.02
Madison to Old Faithful	1.41	19.74	0.47	2.35	0.1	0.1	1.15	6.9	0.6	1.8	30.89
Old Faithful to West Thumb	0.27	3.78	1.35	6.75	0.2	0.2	0.05	0.3	1.3	3.9	14.93
West Thumb to Flagg Ranch	0.05	0.7	1.75	8.75	0.1	0.1	0.05	0.3	1.18	3.54	13.39

Snowmobiles	CDST 0		Grassy Lake Rd 20		Jackson Lake 10		Totals 30
GRTE Road Segment	Factor	Results	Factor	Results	Factor	Results	
Moran Junction to Flagg Ranch	0	0	0	0	0	0	0
Flagg Ranch west to boundary	0	0	1.9	38	0	0	38
Jackson Lake fishing access	0	0	0	0	2	20	20

Note:

This alternative models the average numbers of snowmobile and snowcoach daily entries over the following winter seasons:

- 2003-2004
- 2004-2005
- 2005-2006

For snowcoaches, this alternative models emissions of the 2005-2006 fleet.

1 private snowcoaches entered the park on average for the 2003-2006 winters.

YELL group sizes are modeled at 7 snowmobiles/group

Scenario J - Historical Unregulated Conditions

Snowmobiles	West Entrance 947		South Entrance 310		East Entrance 62		North Entrance 28		Old Faithful 53		Total 1400
YELL Road Segment	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
Mammoth to Norris	0.05	47.35	0.03	9.3	0.1	6.2	1.8	50.4	0.3	15.9	129.15
West Entrance to Madison	1.8	1704.6	0.05	15.5	0.1	6.2	0.15	4.2	0.15	7.95	1738.45
Madison to Norris	0.59	558.73	0.08	24.8	0.1	6.2	1.2	33.6	1	53	676.33
Norris to Canyon Village	0.44	416.68	0.05	15.5	0.2	12.4	0.56	15.68	0.7	37.1	497.36
Canyon Village to Fishing Bridge	0.34	321.98	0.45	139.5	1.4	86.8	0.36	10.08	0.7	37.1	595.46
Fishing Bridge to East Entrance	0.02	18.94	0.05	15.5	1.6	99.2	0.02	0.56	0.02	1.06	135.26
Fishing Bridge to West Thumb	0.08	75.76	0.46	142.6	0.3	18.6	0.02	0.56	0.7	37.1	274.62
Madison to Old Faithful	1.41	1335.27	0.47	145.7	0.1	6.2	1.15	32.2	1.05	55.65	1575.02
Old Faithful to West Thumb	0.27	255.69	1.35	418.5	0.2	12.4	0.05	1.4	0.75	39.75	727.74
West Thumb to Flagg Ranch	0.05	47.35	1.75	542.5	0.1	6.2	0.05	1.4	0.05	2.65	600.1

Snowcoaches	West Entrance 20		South Entrance 7		East Entrance 1		North Entrance 5		Old Faithful 7		Total 40
YELL Road Segment	Factor	Results	Factor	Results	Factor	Results	Factor	Results	Factor	Results	
Mammoth to Norris	0.05	1	0.03	0.21	0.1	0.1	1.8	9	0	0	10.31
West Entrance to Madison	1.8	36	0.05	0.35	0.1	0.1	0.15	0.75	0.48	3.36	40.56
Madison to Norris	0.59	11.8	0.08	0.56	0.1	0.1	1.2	6	0.06	0.42	18.88
Norris to Canyon Village	0.44	8.8	0.05	0.35	0.2	0.2	0.56	2.8	0.06	0.42	12.57
Canyon Village to Fishing Bridge	0.34	6.8	0.45	3.15	1.4	1.4	0.36	1.8	0.06	0.42	13.57
Fishing Bridge to East Entrance	0.02	0.4	0.05	0.35	1.6	1.6	0.02	0.1	0	0	2.45
Fishing Bridge to West Thumb	0.08	1.6	0.46	3.22	0.3	0.3	0.02	0.1	0.06	0.42	5.64
Madison to Old Faithful	1.41	28.2	0.47	3.29	0.1	0.1	1.15	5.75	0.6	4.2	41.54
Old Faithful to West Thumb	0.27	5.4	1.35	9.45	0.2	0.2	0.05	0.25	1.3	9.1	24.4
West Thumb to Flagg Ranch	0.05	1	1.75	12.25	0.1	0.1	0.05	0.25	1.18	8.26	21.86

Snowmobiles	CDST 60		Grassy Lake Rd 45		Jackson Lake 60		Totals 165
GRTE Road Segment	Factor	Results	Factor	Results	Factor	Results	
Moran Junction to Flagg Ranch	2	120	0	0	0	0	120
Flagg Ranch west to boundary	0	0	1.9	85.5	0	0	85.5
Jackson Lake fishing access	0	0	0	0	2	120	120

Note:

For snowcoaches, this alternative models the fleet circa 1999.

YELL group sizes are modeled at 5 snowmobiles/group.

Oversnow Vehicle Miles Traveled Per Day, by Scenario and Road Segment (including miles for Jackson Lake OSV travel)

Road Segment	Mileage	Alternative 1a		Alternative 1b		Alternative 1d		Alternative 1e		Alternative 2		Alternative 3		Alternative 4		Alternative 5			Alternative 6			Alternative 7		Current		Historical	
		Snwmb	Coach	Snwmb	Coach	Snwmb	Coach	Snwmb	Coach	Snwmb	Coach	Snwmb	Coach	Snwmb	Coach	Snwmb	Coach	Wheeled	Snwmb	Coach	Snwmb	Coach	Snwmb	Coach	Snwmb	Coach	
Mammoth to Norris	21	1965.60	35.70	1488.48	535.29	1881.60	535.29	1818.60	605.64	0.00	716.10	0.00	0.00	2257.50	717.57	2476.74	703.29	0.00	0.00	1417.50	1854.30	689.01	454.02	246.75	2712.15	216.51	
West Entrance to Madison	14	10416.00	856.80	10948.00	1014.16	10360.00	1014.16	10522.40	954.24	0.00	1593.76	0.00	0.00	15592.50	1477.28	8806.70	1312.36	0.00	0.00	1872.50	7912.80	1033.20	3950.10	390.46	24338.30	567.84	
Madison to Norris	14	4530.40	280.84	4404.96	528.92	4474.40	528.92	0.00	0.00	0.00	787.22	0.00	0.00	6496.00	747.04	4206.72	687.12	0.00	0.00	962.50	0.00	0.00	1528.66	225.96	9468.62	264.32	
Norris to Canyon Village	12	2793.60	179.52	2694.72	287.64	2697.60	287.64	823.20	252.48	0.00	436.20	0.00	0.00	4146.00	418.92	2538.00	378.12	180.00	38.40	0.00	807.60	285.72	956.04	121.80	5968.32	150.84	
Canyon Village to Fishing Bridge	16	5164.80	184.96	4488.96	370.72	4268.80	370.72	2630.40	640.96	0.00	599.20	0.00	0.00	8008.00	641.76	4657.60	520.16	4240.00	876.80	0.00	2211.20	684.64	1737.12	172.00	9527.36	217.12	
Fishing Bridge to East Entrance*	27	2273.40	18.36	220.80	15.90	202.00	15.90	202.00	15.90	0.00	72.63	0.00	0.00	5022.00	277.83	2435.94	180.09	0.00	0.00	0.00	441.45	44.28	553.77	60.75	3652.02	66.15	
Fishing Bridge to West Thumb	21	3502.80	57.12	3487.68	210.84	3250.80	210.84	4128.60	737.94	0.00	370.02	0.00	0.00	4798.50	336.42	2922.78	254.52	5880.00	1163.40	0.00	3250.80	770.91	1242.78	84.42	5767.02	118.44	
Madison to Old Faithful	16	11798.40	767.04	12194.56	1276.80	11734.40	1276.80	13481.60	1202.56	0.00	1962.40	0.00	0.00	16876.00	1822.08	10250.72	1628.80	0.00	0.00	2400.00	10259.20	1288.00	4309.76	494.24	25200.32	664.64	
Old Faithful to West Thumb	17	7429.00	156.06	8093.36	863.26	7293.00	863.26	8950.50	991.61	0.00	1348.95	8500.00	680.00	9490.25	1227.40	5963.09	1033.26	9095.00	1159.40	0.00	7154.45	1017.62	2840.02	253.81	12371.58	414.80	
West Thumb to Flagg Ranch	24	9888.00	40.80	11923.20	1112.16	10320.00	1112.16	10250.40	655.44	0.00	1787.76	12000.00	960.00	11550.00	1570.08	7659.60	1277.76	11040.00	504.00	0.00	8530.80	622.80	3952.80	321.36	14402.40	524.64	
GTNP CDST (Moran to Flagg)	24	2400.00		2400.00		2400.00		2400.00		0.00		2400.00		3600.00		2400.00		0.00			1728.00		0.00		2880.00		
GTNP Grassy (Flagg Ranch/west to ID)	7	665.00		665.00		665.00		665.00		0.00		0.00		997.50		665.00		665.00			199.50		266.00		598.50		
GTNP Jackson Lake (fishing access)	37.3	2984.00		2984.00		2984.00		2984.00		0.00		0.00		7460.00		2984.00		2984.00			2611.00		746.00		4476.00		
Sub Totals		65811.0	2577.2	65993.7	6215.7	62531.6	6215.7	58856.7	6056.8	0.0	9674.2	22900.0	1640.0	96294.3	9236.4	57966.9	7975.5	34084.0	3742.0	6652.5	46961.1	6436.2	22537.1	2371.6	121362.6	3205.3	
Total Alternative Vehicle Miles in a Day		68,388		72,209		68,747		64,913		9,674		24,540		105,531		65,942		44,479		53,397		24,909		124,568			

*For alternatives where East Entrance is closed a mileage of 10 rather than 27 was calculated for this road segment

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APPENDIX D. MODELING SCENARIOS

	Highlights	Road Grooming	Yellowstone Snowmobile Entry Limits	Yellowstone Daily Snowcoach Entry Limits	Grand Teton Snowmobile Entry Limits	Yellowstone Guiding Requirements	BAT Requirements	Side Roads
Scenario A – Continue Temporary Plan	Allows for nearly historic levels of snowmobile use but requires commercial guides. This scenario mimics the temporary winter use plan currently in place.	Continue road grooming	720 snowmobiles per day West: 400 South: 220 North: 30 East: 40 Old Faithful: 30	78 snowcoaches per day West: 34 South: 10 North: 3 East: 2 Old Faithful/Parkwide: 29	Grassy Lake Rd: 50 CDST: 50 Jackson Lake: 40	100% commercially guided	Current BAT for snowmobiles No BAT for snowcoaches	Firehole Canyon Drive open in afternoon to snowmobiles Lake Butte open to snowmobiles All others snowcoach only

	Highlights	Road Grooming	Yellowstone Snowmobile Entry Limits	Yellowstone Daily Snowcoach Entry Limits	Grand Teton Snowmobile Entry Limits	Yellowstone Guiding Requirements	BAT Requirements	Side Roads
Scenario B – Snowcoach Only	Emphasizes snowcoach access; prohibits recreational snowmobiling. Road grooming would continue. This scenario most closely matches the November 2000 decision.	Continue road grooming	Snowmobiles Prohibited	105 snowcoaches per day West: 46 South: 15 North: 5 East: 4 Old Faithful/Parkwide: 35	Snowmobiles Prohibited	All Guided	Snowcoach BAT	All open to snowcoaches only

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	Highlights	Road Grooming	Yellowstone Snowmobile Entry Limits	Yellowstone Daily Snowcoach Entry Limits	Grand Teton Snowmobile Entry Limits	Yellowstone Guiding Requirements	BAT Requirements	Side Roads
Scenario C – Road Grooming	Prohibits road grooming or packing on most road segments in Yellowstone National Park. The road from the South Entrance to Old Faithful would be the only oversnow motorized access route maintained in Yellowstone.	Only groom South to Old Faithful. All other segments ungroomed and closed to oversnow travel	South: 250	South: 20	Grassy Lake Rd: 50 CDST: Closed Jackson Lake: Closed	100% commercially guided	Current BAT or better for snowmobiles. BAT for coaches	All closed

	Highlights	Road Grooming	Yellowstone Snowmobile Entry Limits	Yellowstone Daily Snowcoach Entry Limits	Grand Teton Snowmobile Entry Limits	Yellowstone Guiding Requirements	BAT Requirements	Side Roads
Scenario D – Experimental Road Closure	Emphasizes research on bison movements and ecology. The road segment between Norris and Madison would not be groomed as an experiment to study the effects of road packing on bison. Allows for continued snowmobile and snowcoach use at nearly historic levels, although travel would not be permitted between Norris and Madison	No grooming from Madison to Norris (and no oversnow access) No recreational oversnow access on Sylvan Pass	680 Snowmobiles/day West: 400 South: 220 North: 30 East: 0 Old Faithful: 30	76 snowcoaches per day West: 34 South: 10 North: 3 East: 0 Old Faithful/ Parkwide: 29	Grassy Lake Rd: 50 CDST: Closed Jackson Lake: 40	100% commercially guided	Current BAT or better for snowmobiles. BAT for coaches	

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	Highlights	Road Grooming	Yellowstone Snowmobile Entry Limits	Yellowstone Daily Snowcoach Entry Limits	Grand Teton Snowmobile Entry Limits	Yellowstone Guiding Requirements	BAT Requirements	Side Roads
Scenario E – Enhance Recreational Use	Allows for increased snowmobile use, relative to historic numbers. Commercial guides would be required for most snowmobilers; some could also visit the park after completing a non-commercial guide training course.	Continue road grooming	1,025 snowmobiles/day West: 600 South: 250 North: 25 East: 100 Old Faithful: 50	105 snowcoaches per day West: 46 South: 15 North: 5 East: 4 Old Faithful/ Parkwide: 35	Grassy Lake Rd: No limits CDST: 75 Jackson Lake: 75	70% commercially guided (718) 30% non-commercially guided (307)	Current BAT in Yellowstone BAT for snowcoaches	All side roads to snowmobiles.

	Highlights	Road Grooming	Yellowstone Snowmobile Entry Limits	Yellowstone Daily Snowcoach Entry Limits	Grand Teton Snowmobile Entry Limits	Yellowstone Guiding Requirements	BAT Requirements	Side Roads
Scenario F – Current Conditions/ Actual Use	Allows limited snowmobile and snowcoach use roughly comparable to the winters of 2003-2004 and 2004-2005.	Continue road grooming	315 snowmobiles/day West: 160 South: 100 East: 20 North: 15 Old Faithful: 20	40 snowcoaches per day West: 20 South: 7 North: 4 East: 1 Old Faithful/ Parkwide: 8	Grassy Lake Rd: 20 CDST: Closed Jackson Lake: 10	100% commercially guided	Current BAT for snowmobiles BAT for snowcoaches	Firehole Canyon Drive open in afternoon to snowmobiles Lake Butte open to snowmobiles All others snowcoach only

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	Highlights	Road Grooming	Yellowstone Snowmobile Entry Limits	Yellowstone Daily Snowcoach Entry Limits	Grand Teton Snowmobile Entry Limits	Yellowstone Guiding Requirements	BAT Requirements	Side Roads
Scenario G – Unguided Access	Balances snowmobile and snowcoach access and accommodates visitors who wish to have an unguided snowmobile experience.	Continue road grooming	540 snowmobiles/day – 432 com'l, 108 unguided West: 290, 232 com'l; 58 unguided South: 145, 116 com'l; 29 unguided East: 40, 32 com'l; 8 unguided North: 40, 32 com'l; 8 unguided Old Faithful: 25, 20 com'l, 5 unguided	83 snowcoaches per day West: 34 South: 10 North: 3 East: 2 Old Faithful/ Parkwide: 34	Grassy Lake Rd: 75 CDST: 75 Jackson Lake: 40	80% commercially guided 20% unguided, with brief training	Improved BAT for snowmobiles BAT for snowcoaches	Firehole Canyon Drive open in afternoon to snowmobiles Lake Butte open to snowmobiles All others snowcoach only

	Highlights	Road Grooming	Yellowstone Snowmobile Entry Limits	Yellowstone Daily Snowcoach Entry Limits	Grand Teton Snowmobile Entry Limits	Yellowstone Guiding Requirements	BAT Requirements	Side Roads
Scenario H – Seasonal Allocation	Provides maximum flexibility to businesses to respond to visitors' demand on busy days, with limits on the number of visitors that may enter the park each winter season. Businesses can decide how they want to "spend" their seasonal allocation.	Continue road grooming	50,000 snowmobiles per season. (Park-wide average = 588) West: 27,000 (318 day) South: 15,000 (176/day) North: 2,500 (32/day) East: 2,500 (29/day) Old Faithful: 3,000 (35/day) 800 snowmobiles per day maximum as follows: West: 460 South: 250 North: 30 East: 30 Old Faithful: 30	90 snowcoaches per day West: 39 South: 12 North: 4 East: 2 Old Faithful/ Parkwide: 33	Grassy Lake Rd: 75 CDST: Closed Jackson Lake: 40	100% commercially guided	Current BAT or better for snowmobiles BAT for snowcoaches	Firehole Canyon Drive open in afternoon to snowmobiles Lake Butte open to snowmobiles All others snowcoach only

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	Highlights	Road Grooming	Yellowstone Snowmobile Entry Limits	Yellowstone Daily Snowcoach Entry Limits	Grand Teton Snowmobile Entry Limits	Yellowstone Guiding Requirements	BAT Requirements	Side Roads
Scenario I – Plowing	Emphasizes plowing Yellowstone's west-side roads to promote economically affordable winter visits for all Americans. Continues to allow snowmobile access thru the South Entrance and on the east side of the park.	Plow Mammoth to West to Old Faithful. Groom Old Faithful to South to Lake to Canyon to Norris. Sylvan Pass would be closed to recreational oversnow access.	Snowmobile Entry Limits: South: 250 Old Faithful: 100 No entry limits for wheeled vehicles.	40 snowcoaches parkwide per day Note: Rubber-tracked snowcoaches entering at West Entrance and traveling to Canyon (for example) would be counted against the parkwide allocation.	Grassy Lake Rd: 50 CDST: Closed Jackson Lake: 40	100% commercially guided – both wheeled and oversnow (ie, commercial buses and vans only for wheeled vehicle access)	Current BAT or better for snowmobiles BAT for snowcoaches	Groomed or plowed depending on location

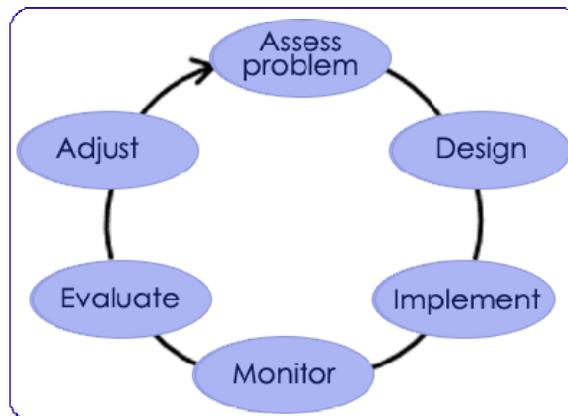
	Highlights	Road Grooming	Yellowstone Snowmobile Entry Limits	Yellowstone Daily Snowcoach Entry Limits	Grand Teton Snowmobile Entry Limits	Yellowstone Guiding Requirements	BAT Requirements	Side Roads
Scenario J – 1983 Regulations	Returns winter use management to the essentially unregulated conditions of the past. These conditions were found to impair park resources and values.	Continue road grooming	Unlimited	Unlimited	Unlimited Snowplanes allowed on Jackson Lake	No requirements for guides	No BAT requirements	All side roads open to snowmobiles

APPENDIX E. MONITORING AND ADAPTIVE MANAGEMENT PROGRAM

Adaptive management helps science managers maintain flexibility in their decisions, knowing that uncertainties exist and provides managers the latitude to change direction. Adaptive management will improve understanding of ecological systems to achieve management objectives and is about taking action to improve progress towards desired outcomes.

The emphasis in an adaptive approach is first and foremost on resource management. The value of understanding, and the monitoring and analysis that produce understanding, is inherited from their contributions to the objectives of resource management. Although the focus is on learning, the ultimate goal of the effort is smart management. It is important to recognize that adaptive management is a complex endeavor that includes much more than simply following a sequence of steps. Properly executed, the process involves ongoing, real-time learning, both in a technical sense and in terms of process itself. Stakeholders need to be engaged at the stage of initial problem formulation and remain engaged throughout implementation. (Williams et al 2007). Williams identifies nine steps in adaptive management:

1. Stakeholder involvement,
2. Objectives,
3. Management actions,
4. Models
5. Monitoring Plans
6. Decision making
7. Follow-up monitoring,
8. Assessment, and
9. Iteration.



Through this and previous winter planning processes, steps 1-5 have been completed. The Record of Decision is step 6.

All alternatives, except 3B, include adaptive management provisions. An adaptive management plan is different from a monitoring plan in that it allows park managers to act when some information exists about a specific resource but conclusive data is currently unavailable. A key step in adaptive management is to develop and implement a management scenario based on the best available information. For example, in this document several alternatives propose a specific limit on the number of winter visitors that can enter the park daily via snowmobile. The next step is to implement an evaluation program to assess the success of the management scenario relative to defined resource thresholds. This evaluation is critical within the framework of adaptive management because of the uncertain results of the initial predictions. Managers then review the results of the evaluation program and may adjust activities or use limits to mitigate unplanned or undesirable outcomes. For example, if the visitor limits set for a park entrance have a greater or lesser effect on resource thresholds than predicted, then the number of visitors allowed to enter the parks could be raised or lowered accordingly.

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Monitoring is also a component of all alternatives considered in this document. General resource monitoring applies when adequate information exists to make informed management decisions based on discrete and accepted thresholds. It is the process of collecting information to evaluate if the objectives of a management plan are being realized. Appropriate monitoring techniques will be used to assess impacts to air quality, natural soundscapes, public and employee health and safety; water quality and snowpack, geothermal features; wildlife; and some aspects of the visitor experience. The table in this appendix describes monitoring and adaptive management indicators, locations/zones, preliminary thresholds, methods, and monitoring intensity. The table also identifies possible management actions that will be implemented if thresholds are violated. Some non-emergency actions, such as the construction of a new facility, may require additional site-specific NEPA analysis, which includes public involvement. Other actions might be administrative in nature or could be implemented through application of a categorical exclusion under NEPA.

The preliminary thresholds are established to help a manager understand the results of monitoring programs and be one of many guides for possibly taking action if a problem is perceived. Exceeding a threshold does not mean that such a level would be unacceptable or result in impairment, but it does provide managers an early warning when conditions may be moving away from those that are desirable long before they reach an unacceptable level. Monitoring and adaptive management, and management action if these thresholds are violated, will ensure the parks' obligation to preserve resources and values in an unimpaired and acceptable condition is achieved, while allowing for winter use of the parks. Many of these thresholds were derived partly from the results of computational models, and they are preliminary in nature. Therefore, they could be adjusted depending on data resulting from monitoring programs.

Changes have been made in the table as compared to earlier winter use planning documents. In particular, soundscapes thresholds have been updated with new information gleaned from four winters of monitoring. When the initial indicators and thresholds for soundscapes adaptive management were developed for the EIS and SEIS, only a limited data set was available. At that time, the data set represented the best available and most current information on soundscapes in the parks, but four additional winters of monitoring information are now available along with modeling analysis for this EIS. In addition, other NPS units and offices have and are collecting sound information and using that data in planning. The natural soundscapes thresholds were adjusted in this EIS to reflect the additional knowledge that has been gained over the past years.

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Monitoring and Adaptive Management Indicators, Thresholds, and Methods

Resource or Value	Indicator	Location/ Management Zone	Preliminary Threshold	Preliminary Method	Initial Monitoring Intensity ¹	Possible Management Options if Threshold is Violated
Air Quality	Park employees and visitors exposure to CO, particulate matter, and volatile organic compounds. For comparison purposes, monitoring data for air quality may be found in section 3.4 of	Developed Area	1-hr maximum CO (w/bkgd): 8 ppm 8-hr maximum CO (w/bkgd): 3 ppm 24-hr maximum PM ₁₀ (w/bkgd): 23 µg/m ³ No observed employee health problems due to air quality ATSDR (Agency for Toxic Substances and Disease Registry) Minimal Risk Levels	Fixed site monitoring or personal sampling for PM and CO Personal samples, cartridges, or canisters for VOCs (air toxics)	High	Require new technologies Adjust number of daily vehicle entries permitted Establish timed-entry requirements Medically monitor employees if necessary
		Road corridor	1-hr maximum CO (w/bkgd): 1 ppm 8-hr maximum CO (w/bkgd): 1 ppm 24-hr maximum PM ₁₀ (w/bkgd): 6 µg/m ³ No observed employee health problems due to air quality ATSDR (Agency for Toxic Substances and Disease Registry) Minimal Risk Levels	Fixed site monitoring or personal sampling for PM and CO Personal samples, cartridges, or canisters for VOCs (air toxics)	Moderate	

¹ High = daily to weekly or in accordance with standard protocol for parameter in question; Moderate = monthly to seasonally and during peak days or use periods; Low = annually during peak use periods or at the end of the season.

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Resource or Value	Indicator	Location/ Management Zone	Preliminary Threshold	Preliminary Method	Initial Monitoring Intensity ¹	Possible Management Options if Threshold is Violated
	the EIS. Modeled air quality impacts for alternatives may be found in section 4.2.3 of the EIS.	Transition and Backcountry	1-hr maximum CO (w/bkgd): 1 ppm 8-hr maximum CO (w/bkgd): 1 ppm 24-hr maximum PM ₁₀ : 5 µg/m ³	Fixed site monitoring or personal sampling for PM and CO	Low	
	Visibility	Development Area and Road corridor	No perceptible localized visibility impacts	Photo Survey, time lapse video and nephelometer	High	
		Transition and Backcountry	No perceptible localized visibility impacts		Low	
	Odor	Developed Area and Road Corridor	Area free of any noticeable odor resulting from motorized recreation at least 90% of the daytime hours of park operation (8 A.M. – 4 P.M.)	Park visitor survey	High	
		Transition and Backcountry	Area free of any noticeable odor resulting from motorized recreation		Low	

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Resource or Value	Indicator(s)	Location/ Management Zone	Preliminary Threshold	Preliminary Method	Initial Monitoring Intensity ¹	Possible Management Options if Threshold is Violated
Natural Soundscapes	Distance and time OSV sound is audible; maximum sound level (dBA) Note: A rare event that exceeds these thresholds may not trigger management action. For comparison purposes, monitoring data for sound may be found in DEIS section 3.7.4. Modeled sound impacts for alternatives may be found in section 4.2.6.	Developed Area	Measured during daytime hours of park operation (8 A.M.– 4 P.M.) and 100 feet from sound sources: Audibility ² : not to exceed (NTE) 75% OSV sound: NTE 70 dB(A)	Audibility logging, digital recordings, and sound pressure level measurement	High	Require new technologies Adjust number of daily vehicle entries permitted
		Road Corridor	Measured during daytime hours of park operation (8 A.M.– 4 P.M.) and 100 feet from sound sources: Audibility: NTE 50% OSV sound: NTE 70 dB(A)		High	Establish timed-entry requirements
		Transition Zone	Measured during daytime hours of park operation (8 A.M.– 4 P.M.) at selected index sites for the zone. Audibility: NTE 25% OSV sound: NTE 65 dB(A)		Moderate	

²Audibility is the percent of time OSV are audible to a person with normal hearing. A NTE 50% threshold means that OSV will not be audible more than 50% of the time during daytime hours of park operation.

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Resource or Value	Indicator(s)	Location/ Management Zone	Preliminary Threshold	Preliminary Method	Initial Monitoring Intensity ¹	Possible Management Options if Threshold is Violated
		Backcountry	<p>Measured during daytime hours of park operation (8 A.M. – 4 P.M.) at selected index sites for the zone. Audibility: NTE 10% OSV sound: NTE Lnat (natural ambient sound levels)</p> <p>Note: Vehicle noise, even at 6 dB(A) less than natural ambient, is usually audible due to the lower frequencies of OSV sound. Additionally, since natural and non-natural sounds tend to be in different frequencies, both can be audible at the same time, even at very low levels.</p>		Moderate	

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Resource or Value	Indicator(s)	Location/ Management Zone	Preliminary Threshold	Preliminary Method	Initial Monitoring Intensity ¹	Possible Management Options if Threshold is Violated
Public and Employee Health and Safety	<p>Motor vehicle accidents</p> <p>Exposure to noise</p> <p>For comparison purposes, monitoring data for noise exposure may be found in section 3.7.4 of the EIS.</p>	<p>Developed Area and Road Corridor</p>	<p>Continual improvement of three-year moving average</p> <p>8-hour time-weighted noise levels exceed 80 dBA and peak noise levels exceed 90 dBA.</p> <p>[See Air Quality for other health and safety thresholds.]</p>	<p>Incident descriptions and GIS mapping</p> <p>Personal exposure monitoring</p>	<p>High</p>	<p>Alter or implement commercial and non-commercial guiding requirements and/or ratio</p> <p>Increase signage and reduce speed limits in areas of recurring incidents</p> <p>Increase law enforcement and educational information</p> <p>Adjust number of daily vehicle entries permitted</p> <p>Require use of personal protection equipment; issue PPE; improve PPE</p>

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Resource or Value	Indicator	Location/ Management Zone	Preliminary Threshold	Preliminary Method	Initial Monitoring Intensity ¹	Possible Management Options if Threshold is Violated
Water/Snowpack	Water quality: VOCs, pH, hydrogen, ammonium, calcium, sulfate, nitrate, and NOx	Developed Area and Road Corridor	Ref: Ingersoll (1999) compared his water quality findings for snowmelt runoff to drinking water standards. Benzene: EPA maximum limit for drinking water 0.005 mg/L. OSHA permissible exposure in workplace (8 hour day, 40 hour weeks) 1 ppm Toluene: EPA maximum limit for drinking water 1 mg/L. OSHA permissible exposure in workplace 200 ppm Ethylbenzene: EPA maximum limit for drinking water .7 mg/L. OSHA permissible exposure in workplace 100 ppm Xylene: EPA maximum limit for drinking water 10 ppm. OSHA permissible exposure in workplace 100 ppm	Snowpack sampling, snowmelt runoff, stream runoff, snowmelt/rain event	Low or as needed by changing conditions	Require new technologies Determination and application of best management practices Adjust number of daily vehicle entries permitted

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Resource or Value	Indicator	Location/ Management Zone	Preliminary Threshold	Preliminary Method	Initial Monitoring Intensity ¹	Possible Management Options if Threshold is Violated
		Backcountry	<p>Benzene: EPA maximum limit for drinking water 0.005 mg/L. OSHA permissible exposure in workplace (8 hour day, 40 hour weeks) 1 ppm</p> <p>Toluene: EPA maximum limit for drinking water 1 mg/L. OSHA permissible exposure in workplace 200 ppm</p> <p>Ethylbenzene: EPA maximum limit for drinking water .7 mg/L. OSHA permissible exposure in workplace 100 ppm</p> <p>Xylene: EPA maximum limit for drinking water 10 ppm. OSHA permissible exposure in workplace 100 ppm</p>	Snowpack sampling, snowmelt runoff, stream runoff, snowmelt/rain event	Low	
Geothermal Features	Human-caused damage to geothermal areas	Developed Area	No degradation of geothermal resources	Remote sensing and visual observation	High	<p>Increase law enforcement and educational information</p> <p>Restrict travel</p>
Visitor Experience	Smoothness of the groomed surface	Travel Corridor	No worse than fair 20% of the daytime hours of park operation (8 A.M. – 4 P.M.)	Visual observation	High	<p>Increase grooming</p> <p>Adjust vehicle numbers when threshold temperature and/or snow conditions are forecasted or reached</p>

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Resource or Value	Indicator	Location/ Management Zone	Preliminary Threshold	Preliminary Method	Initial Monitoring Intensity ¹	Possible Management Options if Threshold is Violated
	Visitor satisfaction levels with opportunities to experience and view wildlife, scenery, and clean air and solitude.	Developed Area, Road Corridor, Transition, and Backcountry	Visitors are highly satisfied (+90%) with their park experience	Visitor Survey	High	Establish carrying capacity/adjust visitor numbers Determine unsatisfactory conditions and rectify
	Visitor perception and assessment of important park resources and values	Developed Area, Road Corridor, Transition, and Backcountry	Visitors are able to see, smell, and hear the natural environment at roadside pullouts and interpretive trails 90% of daytime hours during park operation (8 A.M. – 4 P.M.)	Visitor survey Encounter rates Time lapse photos Travel simulation models Observations	High	Establish carrying capacity/adjust visitor numbers Require new technologies

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Resource or Value	Indicator	Location/ Management Zone	Preliminary Threshold	Preliminary Method	Initial Monitoring Intensity ¹	Possible Management Options if Threshold is Violated
Wildlife	Bird and mammal habituation and effectiveness of garbage facilities	Developed Area	Garbage, human food and other attractants unavailable to wildlife	Observations and monitoring	High	Improve or redesign facilities Alter or implement commercial guiding requirements and allocations
	Ungulate (e.g., bison and elk) movements on plowed roads	Travel Corridor	No unacceptable adverse effects. Unacceptable effects are those considered greater than "adverse moderate."	Continue bison monitoring and flights	High	Evaluate alternative transportation systems Close roads (by road segment or seasonally) Lower speed limits and increase enforcement
	Vehicle caused wildlife mortality	Travel Corridor	No unacceptable adverse effects	Incident reports, roadside surveys, GIS, and visual observations	High	Alter or implement commercial guiding requirements and allocations Evaluate alternative transportation systems Increase law enforcement and educational information Reduce speed limits

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Resource or Value	Indicator	Location/ Management Zone	Preliminary Threshold	Preliminary Method	Initial Monitoring Intensity ¹	Possible Management Options if Threshold is Violated
	Wildlife harassment or displacement due to vehicle sounds or movements	Travel Corridor	No unacceptable adverse effects	Incident reports and visual observations	High	Increase law enforcement and educational information Require new technologies Adjust number of daily vehicle entries permitted Alter or implement commercial guiding requirements and allocations Establish additional no-stopping zones Adjust group size requirements Establish timed-entry requirements Close roads (by road segment or seasonally)
	Wildlife trapped by snow berms in road corridor	Travel Corridor	No unacceptable adverse effects	Incident reports, roadside surveys, and visual observations	High	Increase number of exit berms and re-evaluate location of existing exits Evaluate alternative transportation systems
	Ungulate (e.g., bison and elk) use of groomed surfaces	Travel Corridor	No unacceptable adverse effects	Visual observations, air surveys, and telemetry. Continue bison monitoring	High	Close roads or eliminate grooming operations (by road segment or seasonally) Adjust grooming intensity

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Resource or Value	Indicator	Location/ Management Zone	Preliminary Threshold	Preliminary Method	Initial Monitoring Intensity ¹	Possible Management Options if Threshold is Violated
	Carnivore (e.g., wolves and lynx) displacement and habitat effectiveness	Transition and Backcountry	Insignificant, discountable, or beneficial effects only	Monitoring and air surveys	High	Mitigate effects or close area Increase law enforcement and educational information Require new technologies Adjust number of daily vehicle entries permitted Alter or implement commercial guiding requirements and allocations Establish additional no-stopping zones Adjust group size requirements Establish timed-entry requirements Consult with USFWS for appropriate mitigation strategies
	Wildlife harassment or displacement as a result of visitor activities	Transition and Backcountry	No unacceptable adverse effects	Incident reports and visual observations	High	Increase law enforcement and educational information Require use of designated trails only Close areas to use seasonally
	Human-bear conflicts during pre- and post-denning periods	Transition and Backcountry	No unacceptable adverse effects	Mapping of denning areas and visitor use patterns and trends. Incident Reports	Moderate	

APPENDIX F. GOVERNMENT COSTS PER ALTERNATIVE

The cost of implementing the FEIS Winter Use Alternatives is summarized in this appendix. The illustrated costs are the operational costs that would occur if an alternative were implemented. This information can help the reader see the cost differences among the alternatives. For example, the cost of plowing versus grooming roads is illustrated. Similarly, the cost of conducting avalanche control, or not, is illustrated in the alternatives.

The costs in this appendix are not the total costs of operating the parks in the winter. Other costs related to the overall administration of the park (for example, contracting services, personnel services, safety services, budget and finance, and overall park management) are not included in the cost totals. Winter monitoring costs are also not included, since the program would be similar across most alternatives (with the exception of alternative 3). The initial costs of implementing the alternatives are generally not included, except where there is a specific building or equipment that would need to be built or bought to implement an alternative. Equipment replacement costs are shown on the unit cost table. An example of an on-going equipment replacement cost under all alternatives is replacing the NPS administrative snowmobile fleet. About 20% of the fleet needs to be replaced each year, at a current cost of about \$190,000 per year. The cost of leasing instead of purchasing is also shown on the unit cost table.

Costs were developed using standard life cycle cost spreadsheets used by the NPS to estimate project costs. The life cycle of 25 years and discount rate of 7% are standard factors in the analysis. Although the actual length of the winter season is typically 81 to 85 days, the costs assumptions include preparation time prior to the start of the winter season and are common across all alternatives.

Costs were updated from the Draft EIS, primarily to reflect the dramatic increase in the cost of fuel.

This appendix also includes tables with unit cost assumptions and with the number of visitors accommodated per alternative, as well as life cycle cost spreadsheets.

Alternative 1:

Alternative 1 would cost about \$3,800,000 to implement per winter. With the exception of Sylvan Pass and a portion of the East Entrance Road in Yellowstone, the parks would be operated similar to the temporary plan. About 167 miles of snowroad would be groomed in the winter in Yellowstone. Yellowstone would operate about 130 administrative snowmobiles and 17 other administrative tracked vehicles. Two groomers would be leased. About 88 employees would be duty stationed in the park's interior (including West Entrance) (staffing figures in Section 3.2.2 did not include personnel at West Entrance). About 1,560 visitors per day could be accommodated under alternative 1.

A variation of alternative 1 with the Madison to Norris road closed is also illustrated (implementing the bison-road experiment). The cost of implementing alternative 1 with the closure is about \$3,700,000 per winter. Although 14 miles of road between Madison and Norris would not be groomed (and result in a cost savings), other costs would go up. With the considerably longer access from park headquarters in Mammoth to the major winter destination of Old Faithful, operational savings would be offset by additional administrative travel time.

Alternative 2:

Alternative 2 would convert the parks to snowcoach access only for visitors and would cost about \$3,800,000 to implement per winter. About 960 visitors per day could be accommodated under alternative 2. Most grooming related costs would remain about the same as the temporary plan, but the Yellowstone administrative snowmobile fleet would be reduced to about 110 machines, while the administrative tracked vehicle fleet would be increased to about 23. NPS staffing would remain at about 88 employees duty stationed in Yellowstone's interior (including West Entrance). A one-time cost to implement alternative 2 would be the purchase of additional tracked vehicles (offsetting somewhat the reduction in administrative snowmobiles).

Alternative 3:

There are two variations of alternative 3. The first (3A) would retain oversnow vehicle access from Flagg Ranch in the John D. Rockefeller, Jr., Memorial Parkway to Old Faithful in Yellowstone. There would be no other oversnow access (vehicular or ski/snowshoe) on Yellowstone park roads. The costs for 3A illustrate keeping the one route open, with appropriate grooming and staffing, while providing a minimum caretaker or winter-keeper operation at other Yellowstone locations (Canyon and Lake, for example). Alternative 3A would cost about \$2,000,000 per winter to implement. About 59 NPS employees would be duty stationed in Yellowstone's interior (including West Entrance, even though it would be closed to visitor entry), and they would operate about 50 administrative snowmobiles and 6 other tracked vehicles. About 485 visitors per day could be accommodated under alternative 3A.

Alternative 3B would close Yellowstone's oversnow roads to visitor oversnow vehicle travel (visitor ski and snowshoe travel would be allowed as would administrative oversnow vehicle travel). As a result, only caretaker or winter-keeper operations would occur at interior Yellowstone locations (for historic building protection, safety, and fire protection purposes). A much reduced, typically one-lane grooming operation would be needed to support the winter-keeper operation. About 33 employees would be duty stationed in the park interior (and West Yellowstone). About 30 administrative snowmobiles would operate in Yellowstone, with no administrative tracked vehicles. Alternative 3B would cost about \$1,400,000 per winter to implement.

Alternative 4:

An increase in winter recreation would be expected if Alternative 4 were implemented. About 109 NPS employees would be duty stationed in Yellowstone interior locations (including West Entrance). Alternative 4 would allow for both unguided and non-commercially guided snowmobile access and guided and unguided snowcoach access (along with increased numbers of snowmobiles and snowcoaches). About 2,253 visitors per day could be accommodated under Alternative 4. The increased number of visitors and unguided/non-commercially guided access accounts for the higher staffing figures in this alternative. All snow roads would be open, including Sylvan Pass and East Entrance in Yellowstone. Alternative 4 would cost about \$4,500,000 to implement per winter.

The estimated capital costs of four different options for keeping Sylvan Pass open (see Appendix H) in the winter are presented at the end of this appendix.

Alternative 5:

Alternative 5 would cost about \$4,200,000 to implement per winter. All snowroads would be opened and groomed (including Sylvan and East Entrance). About 82 NPS employees would be duty stationed in Yellowstone's interior (including West Entrance). Although there would be reduced numbers of snowmobiles allowed in alternative 5, a portion of them would be unguided. About 1,366 visitors could be accommodated per day under alternative 5. About 130 administrative snowmobiles and 17 administrative tracked vehicles would be operated by the NPS under this alternative.

The estimated capital costs of four different options for keeping Sylvan Pass open (see Appendix H) in the winter are presented at the end of this appendix.

Alternative 6:

Alternative 6 features a mix of uses in Yellowstone in the winter. It would cost about \$3,800,000 per winter to implement. The roads from West Yellowstone to Old Faithful and from Mammoth to Madison would be plowed, rather than groomed. As the unit cost table illustrates, the cost of the two operations is similar (about \$38.50 per lane-mile per day for grooming and about \$38 per lane-mile per day for plowing). Sanding costs are included in plow costs, but a one-time cost would be the construction of a sand storage shed, probably near the West Entrance. At the end of the winter season, plowing would require sand removal (at a cost of about \$51 per lane-mile), while grooming necessitates spring-opening plowing (at a parkwide average cost of \$1,750 per lane-mile). The balance of Yellowstone's snowroads would be groomed (except for Sylvan Pass and a portion of East Entrance Road) under alternative 6. This alternative would accommodate the greatest number of visitors per day (2,775) due to the higher seating capacity of the commercial wheeled vehicles bringing visitors into Yellowstone. This higher number, combined with the mixed mode of operations would increase some staffing requirements. About 115 employees would be duty stationed in Yellowstone's interior under alternative 6 (including West Entrance).

Alternative 7:

Alternative 7 would cost about \$3,700,000 per winter to implement. With the exception of Sylvan Pass and a portion of the East Entrance Road in Yellowstone, all snow roads would be open in the winter. About 167 miles of snowroad would be groomed in the winter in Yellowstone. With fewer projected visitors and all of them commercially guided, there would be a small reduction in expected staffing and support costs. Yellowstone would operate about 120 administrative snowmobiles and 17 other administrative tracked vehicles. Two groomers would be leased. About 77 employees would be duty stationed in the park's interior (including West Entrance) (staffing figures in Section 3.2.2 did not include personnel at West Entrance). About 1,366 visitors per day could be accommodated under alternative 7.

Depending on the result of the bison-road experiment in the Gibbon Canyon area, that 14-mile road segment between Madison and Norris may be closed in the winter, reducing grooming and patrol costs, but increasing winter wildlife monitoring to help determine if the closure is having any effect on bison movement. Also if the Madison-Norris road is closed, other costs would go up. With the considerably longer access from park headquarters in Mammoth to the major winter destination of Old Faithful, operational savings would be offset by additional administrative travel time and costs.

WINTER USE PLANS FINAL ENVIRONMENTAL IMPACT STATEMENT
Yellowstone and Grand Teton National Parks and the John D. Rockefeller, Jr. Memorial Parkway

Summary Table of Alternative Costs

Alternative	1 Continue Temporary Plan	1 (Madison to Norris Closed)	2 Snowcoach Only	3A Eliminate Most Road Grooming	3B No Oversnow Vehicles	4 Enhanced Recreational Use	5 New Mgmt Tools and Improved BAT	6 Mixed Use	7 Revised Preferred Alternative
Cost to Implement (per winter)	\$3,800,000	\$3,700,000	\$3,800,000	\$2,000,000	\$1,400,000	\$4,500,000	\$4,200,000	\$3,800,000	\$3,700,000

Unit Costs for Winter Use Plans

Costs are based on FY 2005 and 2006, with July 2007 updates primarily related to fuel.

Units	Unit Cost
Grooming snow road / lane-mile	\$38.50 per lane-mile per day for 105-day season; includes P/M, labor and fuel.
Spring opening / lane-mile	\$1,760 per lane-mile; includes P/M, labor, fuel, and housing/per diem.
Plowing / lane-mile	\$38 per lane-mile per day for 105-day season; includes P/M, labor, fuel, and road sand.
Sand removal in spring (lane-mile)	\$51/lane-mile; includes P/M, labor and fuel
Groomer purchase Replacement cycle (years)	\$236,000 7 years
Push Plow purchase Replacement cycle (years)	\$168,000 12 years
Rotary Plow purchase Replacement cycle (years)	\$500,000 18 years
Snowmobile purchase Replacement cycle (years)	\$8,600 5 years
Snowcoach purchase (includes tracks) Replacement cycle (years)	\$190,000 10 years
Snowmobile maintenance	\$1,500 per vehicle per year
Snowcoach maintenance	\$4,500 per vehicle per year
Sylvan Pass avalanche management	\$200,000 per year
Sand shed (sand storage for plowing)	\$150,000 per building
Snowmobile lease	\$3,600 per season per snowmobile
Groomer lease	\$80,000 per season per groomer (for 2 groomers)
Employee cost per year (average salary and benefits)	\$60,500 / FTE

Other Factors:

184 miles of snowroad (includes side roads) (368 lane-miles)

65 miles of plowed road for Alternative 6 (130 lane-miles)

East Entrance Closed: subtract 17 miles of snowroad from total (34 lane-miles) (Lake Butte to East Entrance); 10 miles from Fishing Bridge to Lake Butte Overlook (20 lane-miles)

Flagg Ranch to Old Faithful: 41 miles of snowroad (82 lane-miles)

Madison to Norris: 14 miles of snowroad (28 lane-miles).

WINTER USE PLANS FINAL ENVIRONMENTAL IMPACT STATEMENT
Yellowstone and Grand Teton National Parks and the John D. Rockefeller, Jr. Memorial Parkway

Estimated Maximum Number of Visitors Accommodated by Alternative

	Alternative 1: Current Plan	Alternative 2: Snowcoaches Only	Alternative 3: 3A: Eliminate Most Road Grooming 3B: No Oversnow Vehicles (no action)	Alternative 4: Enhanced Recreational Use	Alternative 5: New Management Tools and Improved BAT	Alternative 6: Mixed Use	Alternative 7: Revised Preferred Alternative
Estimated maximum number of daily vehicle passengers	Snowmobile passengers: 936 Snowcoach passengers: 624 Total: 1560	Snowmobile passengers: 0 Snowcoach passengers: 960 Total: 960	Snowmobile passengers: 325 Snowcoach passengers: 160 Total: 485	Snowmobile passengers: 1333 Snowcoach passengers: 920 Total: 2253	Snowmobile passengers: 702 Snowcoach passengers: 664 Total: 1366	Snowmobile passengers: 455 Snowcoach passengers: 320 Wheeled vehicle passengers: 2000 Total: 2775	Snowmobile passengers - 702 Snowcoach passengers - 664 Total: 1366

Notes: Currently (winters 2004-2005 and 2005-2006), about 570 visitors enter Yellowstone each day in oversnow vehicles.

Historically in the 1990s, about 2,140 visitors entered Yellowstone each day in oversnow vehicles.

Winter Use Plans Final Environmental Impact Statement
 Yellowstone and Grand Teton National Parks and the John D. Rockefeller, Jr. Memorial Parkway

Project/Location: Yellowstone National Park

Subject: Winter Use

Description: Cost of Winter Use Planning Alternatives for Final EIS

Project Life Cycle = 25 Years
 Discount Rate = 7.00%
 Present Time = Jul-07

			Alternative 1	Alternative 1 (Implement Experiment)	Alternative 2	Alternative 3A
			Continue Temporary Plan	Continue Temporary Plan (Madison to Norris Road Closed)	Snowcoaches Only	Eliminate Most Road Grooming
ANNUAL COSTS						
			Present Worth		Present Worth	
Description	Escl. %	PWA	Annual Cost	Cost	Annual Cost	Cost
A. Groom Snow Roads	0.000%	11.654	1,350,195	15,734,610	1,350,195	15,734,610
B. Plow Roads	0.000%	11.654		0		0
C. Spring Opening	0.000%	11.654	647,680	7,547,793	647,680	7,547,793
D. Snowmobile Maintenance	0.000%	11.654	135,000	1,573,234	135,000	1,573,234
E. Snowcoach Maintenance	0.000%	11.654	76,500	891,499	76,500	891,499
F. Sylvan Pass Avalanche Management	0.000%	11.654		0		0
G. Snowmobile Lease	0.000%	11.654	144,000	1,678,116	72,000	839,058
H. Groomer Lease	0.000%	11.654	160,000	1,864,573	160,000	1,864,573
I. Ranger Staff	0.000%	11.654	468,875	5,464,074	468,875	5,464,074
J. Interpretive Staff	0.000%	11.654	242,000	2,820,167	242,000	2,820,167
K. Maintenance Staff	0.000%	11.654	620,125	7,226,678	620,125	7,226,678
L. Sand Removal	0.000%	11.654	0	0	0	0
Sum of Annual Costs			3,844,375		3,731,185	
Total Annual Costs (Present Worth)				44,800,744		43,926,725
						23,138,656

Winter Use Plans Final Environmental Impact Statement
Yellowstone and Grand Teton National Parks and the John D. Rockefeller, Jr. Memorial Parkway

Project/Location: Yellowstone National Park

Subject: Winter Use

Description: Cost of Winter Use Planning Alternatives for Final EIS

Project Life Cycle = **25** **Years**
Discount Rate = **7.00%**
Present Time = **Jul-07**

			Alternative 3B		Alternative 4		Alternative 5		Alternative 6		Alternative 7	
			No Oversnow Vehicles (No Action)		Enhanced Recreational Use		New Management Tools and Improved BAT		Mixed Use		Revised Preferred Alternative	
ANNUAL COSTS												
Description	Escl.	PWA	Present Worth		Present Worth		Present Worth		Present Worth		Present Worth	
			Annual Cost	Cost	Annual Cost	Cost	Annual Cost	Cost	Annual Cost	Cost	Annual Cost	Cost
A. Groom Snow Roads	0.000%	11.654	233,772	2,724,281	1,487,640	17,336,336	1,487,640	17,336,336	824,670	9,610,360	1,350,195	15,734,610
B. Plow Roads	0.000%	11.654		0		0		0	518,700	6,044,714		0
C. Spring Opening	0.000%	11.654	647,680	7,547,793	647,680	7,547,793	647,680	7,547,793	411,840	4,799,412	647,680	7,547,793
D. Snowmobile Maintenance	0.000%	11.654	45,000	524,411	135,000	1,573,234	135,000	1,573,234	60,000	699,215	120,000	1,398,430
E. Snowcoach Maintenance	0.000%	11.654	0	0	76,500	891,499	76,500	891,499	54,000	629,293	76,500	891,499
F. Sylvan Pass Avalanche Manager	0.000%	11.654	0	0	200,000	2,330,717	200,000	2,330,717	0	0	0	0
G. Snowmobile Lease	0.000%	11.654	0	0	144,000	1,678,116	144,000	1,678,116	144,000	1,678,116	144,000	1,678,116
H. Groomer Lease	0.000%	11.654	0	0	160,000	1,864,573	160,000	1,864,573	80,000	932,287	160,000	1,864,573
I. Ranger Staff	0.000%	11.654	211,750	2,467,646	605,000	7,050,418	529,375	6,169,116	620,125	7,226,678	453,750	5,287,813
J. Interpretive Staff	0.000%	11.654	60,500	705,042	317,625	3,701,469	242,000	2,820,167	363,000	4,230,251	181,500	2,115,125
K. Maintenance Staff	0.000%	11.654	226,875	2,643,907	726,000	8,460,501	620,125	7,226,678	756,250	8,813,022	529,375	6,169,116
L. Sand Removal	0.000%	11.654	0	0	0	0	0	0	6,630	77,263	0	0
Sum of Annual Costs			1,425,577		4,499,445		4,242,320		3,832,585		3,663,000	
Total Annual Costs (Present Worth)				16,613,080		52,434,657		49,438,229		44,740,611		42,687,075

Cost of Options for Avalanche Mitigation on Sylvan Pass

A number of options are identified for avalanche mitigation at Sylvan Pass in past and current avalanche analysis (NPS 2004b, Comey 2007, NPS 2007a) (See Appendix H). Estimated capital and annual operating costs of four of those options are presented below.

Snowsheds

Snowsheds are structures built over a roadway or railroad, intended to divert avalanches over the roadway without harming travelers who may be in the shed at the time. At Sylvan, about one mile of snowshed would be needed if it were the sole protection used for the 18-20 avalanche chutes. This estimate assumes a continuous structure. Detailed investigation and design might identify opportunities for multiple shorter structures.

Construction cost estimate:

Length: 5,100 linear feet

Unit Cost (Net Construction): \$25,000 per liner foot

Design, construction management, contingencies: 35% of net costs

Total one-time costs: \$172,000,000

Other one-time costs include detailed geotechnical investigations and additional NEPA (perhaps a Supplemental EIS) are not included in the above cost. The annual operating cost for a snowsheds: \$20,000, to lay wood chips or rubber mats inside the snowshed and to remove them in spring (snowmobiles and non-rubber tracked coaches cannot steer on bare pavement). Avalanche forecasting would be reduced as would the need for other control methods, reducing operating costs.

Non-cost issues for a snowshed include:

- The road is on deep talus as it crosses the avalanche paths. FHWA engineers report there may be no bedrock to anchor a large concrete structure at Sylvan Pass.
- The snowshed will block the spectacular view of the pass for the 98% of the visitors that use the pass in the summer, when the snowshed is not needed.
- The snowshed could have a long service life (50 years), but repairs to a reinforced concrete structure could be expensive.
- The current howitzer and helicopter programs would not be needed.

Gazex (or equivalent system)

The 18-20 avalanche start zones at Sylvan Pass would be controlled by a Gazex (or equivalent) system. The system consists of large, downward facing pipes that direct hot gases (usually propane) to the avalanche start zone. Consisting of a propane and oxygen tank located at a distance from the Gazex tube, the gases are piped to an expansion chamber located at the base of the tube, mixed and ignited. The impact of the explosion causes unstable snow to slide. The Gazex system requires the permanent installation of gas delivery and pipe structures next to the avalanche start zones. Depending on the siting of the Gazex pipes, a fuel tank may serve from one to all pipes. In the latter case, a propane / oxygen distribution network would be buried across the slope. A Gazex unit is designed to provide up to 20-starts (propane-oxygen blasts) per winter. Each unit can be triggered remotely.

Construction cost estimate:

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Yellowstone and Grand Teton National Parks and the John D. Rockefeller, Jr. Memorial Parkway

Number of Units: 18 at a net cost of \$110,000 each

Concrete pads: \$120,000

Design, construction management, contingencies: 35% of net costs

Installation cost: \$100,000

Other one-time costs:

Weather Station: \$20,000

Snowcat: \$250,000

Total one-time costs: \$3,025,000

Other one-time costs include geotechnical investigations at each installation site and NEPA (a Supplemental EIS) are not included in the above cost.

Annual operating costs for the Gazex system itself would cost about \$150,000, including replenishing propane / oxygen supplies and doing routine maintenance. All other avalanche forecasting and snow road management would continue (\$200,000 per year). An enhanced forecasting system would be implemented and the helicopter would be used as a standby in the event of failure of the Gazex, so current operational costs would not diminish.

Non-Cost Issues:

- Gazex would replace the current helicopter / howitzer control system, thus the avalanche forecasting and implementation would be similar. When the forecast indicates the pass is unsafe, the road would be closed, a mission would be conducted, the debris would be cleaned up, and the road re-opened. Closures would occur for ½ to 1½ day periods. The danger of a natural release after control would remain.
- About 18 twenty-foot tall towers would be installed, each tied to a large concrete piling.
- Each site (and access route) would be checked for UXOs.
- Each tower would require at least annual helicopter-supported missions to replenish the propane and oxygen and conduct routine maintenance.
- In the event of a unit failure during the winter, the helicopter-dropped explosives system would be the back-up.

Avalhex (or equivalent) system

Another fixed gas system is Avelhex. Avalhex uses the shock wave from bursting a helium-filled balloon to trigger avalanches. Similar to the Gazex system, the Avalhex system requires the permanent installation of gas delivery and balloon filling structures next to the avalanche start zones. An Avalhex unit is designed to provide up to 20-starts (helium-balloon blasts) per winter. Each unit can be triggered remotely. The Avelhex system costs about \$20,000 more per unit (net construction). All other costs would be about the same as Gazex, for a construction cost of \$3,691,000.

Other one-time and operating costs would be similar, as would most non-cost issues. However, with the substitution of helium for propane, some risk of fire or explosion would be reduced. Avelhex does not require propane tanks or a farm and the tower/boxes are removable for the summer.

Enhanced Howitzer Program

Accessing current howitzer site requires crossing eight avalanche paths. An enhanced howitzer program would use a fixed gas system (Gazex or Avelhex) to mitigate avalanche issues on those eight paths and the howitzer to control the remaining 10-12 start zones. The howitzer itself would be replaced with a newer weapon, the gun site would be protected from shrapnel and rockfall/avalanches from behind the platform, and enhanced avalanche forecasting, and enhanced staffing and support.

Construction Cost Estimate:

Avelhex Units at 8 start zones: 8 units at \$130,000 per unit

Pads and Installation: \$12,000 per unit

Howitzer Protection: \$300,000 for shrapnel shield and wall/bunker

Security Gate and howitzer storage: \$25,000

Design, construction management, contingencies: 35% of net costs

Other One-time costs:

New howitzer: \$5,000

Weather Station: \$20,000

Snowcat: \$250,000

Total one time costs: \$2,230,000

In addition, other one-time costs include geotechnical investigations at each installation site and NEPA (a Supplemental EIS) are not included in the above cost.

Annual operating costs for the enhanced howitzer program would be: \$275,000, for replenishing helium supplies, doing routine maintenance, and conducting full avalanche forecasting and snow road management.

Non-Cost Issues:

- Avalanche forecasting and implementation would continue. When the forecast indicates the pass is unsafe, the road would be closed, a mission would be conducted, the debris would be cleaned up, and the road re-opened. Closures would occur for ½ to 1½ day periods. The danger of a natural release after control would remain.
- About 8 twenty-foot tall towers would be installed, each tied to a large concrete piling.
- Each site (and access route) would be checked for UXOs.
- Each tower would require at least annual helicopter-supported missions to replenish the helium and conduct routine maintenance.

APPENDIX G. BISON, SNOW and WINTER USE



A Stakeholder Workshop to Identify Potential Winter Use Management Effects Studies for the Road Corridor from Madison Junction to Mammoth Hot Springs

**January 18-19, 2006
Yellowstone National Park
Heritage Research Center
Gardiner, Montana**

Big Sky Institute
106 AJM Johnson Hall
P.O. Box 173490
Bozeman, MT 59717-3490
<http://bsi.montana.edu>

Tel (406) 994-2374
Fax (406) 994-5122

Mountains & Minds

Bison, Snow and Winter Use: A Stakeholder Workshop to Identify Potential Winter Use Management Effects Studies for the Road Corridor Between Madison Junction to Mammoth Hot Springs, January 18-19, 2006

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1.0 BACKGROUND

1.1 Overview of Winter Use Planning

Winter use in Yellowstone and Grand Teton National Parks and the John D. Rockefeller, Jr., Memorial Parkway (JDR) has been the subject of controversy for many years. From its beginnings in the 1940s, winter use grew slowly until people began touring Yellowstone via snowmobile beginning in 1963. Not long after, snowmobiling caught on and began a long period of rapid growth in popularity. By the 1980s, so many snowmobiles were entering Yellowstone that the National Park Service grew concerned about air and noise pollution issues, wildlife impacts, crowding, and degradation of the visitor experience. In 1990, the agency released a Winter Use Plan Environmental Assessment, which guided winter use for several more years without making any major changes (Yochim 1999).

Concerned about the effects of groomed snowmobile routes on park bison (since the late 1970s, bison have learned to walk upon the hard-packed routes, with uncertain effects on themselves and their population), the Fund for Animals filed suit against the NPS in 1997, alleging that the activity violated several federal laws. The NPS agreed to prepare a new winter use plan and environmental impact statement (EIS). In late 2000, the National Park Service finalized the EIS and issued a Record of Decision that proposed to eliminate both snowmobile and snowplane use from the parks by the winter of 2003-2004, and provide visitor access via a mass-transit snowcoach system. That decision was based on a finding that the snowmobile and snowplane use existing at that time, and the snowmobile use analyzed in the EIS alternatives, impaired park resources and values, thus violating the statutory mandate of the NPS. These changes were completed with a final rule published in the *Federal Register* on January 22, 2001 (Yochim 2004).

That decision was contested in Wyoming District Court, and in 2001 the National Park Service began a Supplemental Environmental Impact Statement focusing on the cleaner and quieter snowmobiles just becoming commercially available at that time. In February 2003, the NPS made a decision to continue allowing snowmobile use under three strict conditions: 1) winter visitation was to be limited to no more than 950 snowmobiles daily in Yellowstone; 2) all snowmobiles would have to use best available technology; and 3) snowmobilers would have to be led by trained guides. That decision was finalized in December 2003 with a new regulation governing winter use in the parks, but was shortly thereafter overturned by the Washington, D.C. District Court, ruling upon another lawsuit. That court ordered the NPS to implement the January 22, 2001 regulation phasing out recreational snowmobiling (the first EIS) (Yochim 2004).

On October 14, 2004, the Wyoming Federal District Court vacated and remanded the first EIS to the NPS, thereby preventing the agency from implementing the snowmobile ban. With no clear rules under which to allow continued winter use, the National Park Service

issued an environmental assessment on winter use rules for an interim period, through the winter of 2006-07. The rules allow 720 snowmobiles per day into Yellowstone and 140 per day into Grand Teton National Park. Within Yellowstone, all snowmobiles must be commercially guided, and all must be Best Available Technology (BAT) machines. Preparation of this plan will also allow the NPS to complete a long-term analysis of the environmental impacts of winter use in the parks. The NPS hopes that this long-term analysis will culminate in a long-term decision about winter use in the parks (NPS 2006).

Throughout this complicated legal history, the question of bison use of groomed roadways has played a crucial role. Some have asserted that the corridor between the Firehole Valley (part of the Central bison range) and Mammoth Hot Springs (part of the Northern bison range) could have historically or might still serve as a barrier to bison movements between the Central and Northern winter ranges if the oversnow vehicle roads in this area were not groomed. However, because systematic research has not been carried out on the ability of bison to move through snow under the variety of circumstances present in Yellowstone National Park, this assertion remains subject to several key uncertainties including: a) the threshold depth/density of snow at which low and high density forage-limited bison cannot move through corridors in search of better foraging conditions, b) terrain characteristics (slope, ruggedness) that affect the snow depth/density threshold preventing movements, c) the relationship between winter forage availability and probability of bison movement, and d) the relationship between winter forage availability, bison density and bison over-winter mortality.

Such questions, and the underlying concern about alteration of bison habits and distribution in Yellowstone, were the prompt for the first lawsuit. The NPS's failure to comprehensively address the questions was one of the reasons that the Washington, D.C. federal court struck down the second EIS in 2003. As the agency goes about preparing the new long-term plan and environmental impact statement (EIS) for winter use, the agency will be carefully examining the state of knowledge on whether groomed snowmobile routes have altered bison behavior and distribution.

1.2 Overview of Wildlife - Winter Use Monitoring

To address these uncertainties, the National Park Service in Yellowstone has both monitored bison movements in winter and commissioned an extensive review of the available data on bison movement ecology in Yellowstone. This section discusses the winter monitoring, while the next section discusses the report by Cormack Gates, Ph.D.

Since 1999, Yellowstone National Park (YNP) has monitored the behavioral responses of bison (*Bison bison*), elk (*Cervus elaphus*), and trumpeter swans (*Olor buccinator*) to motorized winter recreation by repeatedly surveying seven groomed or plowed road segments in Yellowstone National Park. During December 2004 through March 2005, >2,100 interactions between vehicles and wildlife groups were sampled, and multinomial

logits models were used to identify conditions leading to behavioral responses (White et al. 2005). Responses by these wildlife species to over-snow vehicles were short in duration, and of minor to moderate intensity, with >81% categorized as no apparent response or look/resume activities, 9% attention/alarm, 7% travel, and 3% flight or defense. Analyses of similar data collected during 1999-2004 indicated the likelihood of active responses by wildlife increased significantly if (1) wildlife were on or near roads, (2) more vehicles were in a group, (3) wildlife groups were smaller, (4) ungulates were in meadows instead of forest or geothermal habitats, (5) interaction times increased, (6) wildlife were traveling instead of resting, and (7) humans dismounted vehicles and/or approached wildlife. The likelihood of an active response by bison or elk decreased as cumulative visitation increased, suggesting that these ungulates habituated somewhat to motorized recreation. There was no evidence of population-level effects to ungulates from motorized winter use because estimates of abundance either increased or remained relatively stable during three decades of motorized recreation prior to wolf colonization in 1998. Thus, White et al. (2005) suggest that the likelihood of active responses by wildlife can be diminished by (1) restricting travel to predictable routes and times, (2) reducing the number of vehicles in groups, (3) reducing the number and length of stops to observe wildlife, (4) stopping vehicles at distances >100 meters, and (5) preventing human activities away from vehicles.

1.3 Overview of the Gates Report

Yellowstone National Park also commissioned an extensive analysis of the available data on bison movement ecology at the park. To ensure that the analysis was removed from the local politics surrounding the park, Yellowstone National Park appointed as principal investigators respected Canadian wildlife biologists Drs. Cormack Gates and Brad Stelfox. Together with several of their colleagues from the University of Calgary, Gates and Stelfox conducted the study resulting in the April 2005 report “The Ecology of Bison Movements and Distribution in and Beyond Yellowstone National Park: A Critical Review with Implications for Winter Use and Transboundary Population Management” (Gates 2005, colloquially referred to as “the Gates Report”).

The Gates Report represents an interdisciplinary approach combining a review of published and unpublished literature on ungulate movement ecology at Yellowstone National Park and elsewhere, interviews with “key informants” versed in the ecological and social aspects of the controversy, and development of a systems model to simulate the effects of various mid-winter scenarios upon bison distribution.

As the Gates Report notes:

“Yellowstone National Park is the only area in the lower 48 states where bison have existed in a wild state since prehistoric times. Bison occupied the region encompassing the park from shortly after recession of the last glaciers 10,000 to

12,000 years ago, until they were nearly extirpated by market and subsistence hunting, and poaching by 1900. Yellowstone National Park is not a self contained ecosystem, covering only 8,983 km² or slightly more than 10% of the Greater Yellowstone Ecosystem (80,503 km²). Distribution, movements and population dynamics of large mammal populations need to be viewed at spatial scales significantly larger than Yellowstone National Park itself in the context of historic spatial patterns, habitat composition, and landscape configuration and connectivity. Also, ecological processes play out over many decades so the consequences of some management actions may not be fully comprehended at shorter time scales.”

The report concludes that bison in Yellowstone National Park attempt to compensate for declining per capita food resources with range expansion, thereby maintaining a relatively stable instantaneous density. These range expansions emanate from the Park’s five key bison winter ranges:

“...The central bison herd uses Pelican Valley (55 km²), Mary Mountain (e.g. Hayden/Madison-Firehole, 152 km²), and West Yellowstone (80 km²). The northern herd occupies Lamar Valley (234 km²), and Gardiner basin (98 km²). These ranges are connected by five primary movement corridors including Firehole-to-Mammoth (59 km), Firehole to West Yellowstone (21 km), Gardiner basin to Lamar (river route 15.2 km; road route 11.4 km), Mirror Plateau (Pelican to Lamar, 30 km), and the shortest corridor Pelican to Hayden (8 km). Range expansion at Yellowstone National Park has been gradual, rather than pulsed as described for another erupting bison population in northern Canada. Learning the presence of destination habitat (familiar areas) has likely played a significant role in the development of calculated migration and increasingly fluid movements of bison between ranges.

Since the early 1990s Central Range bison have migrated in increasing numbers north to Blacktail Deer Plateau and the Gardiner basin in winter using a new route associated with the road allowance between Madison Junction and Mammoth. Inter-range movements of bison should not generally be constrained by winter snowpack in non-road grooming scenarios during most winters. The notable exception to this rule is thought to be the Firehole-Mammoth corridor that may serve as a barrier during all non-road grooming scenarios.” (Gates et al. 2005)

The Gates Report also notes that the population dynamics of many of the Park’s ungulate species entail spatial use across its boundaries. Although a majority of historical migration routes for bison, elk, and pronghorn have been eradicated by increasing anthropogenic impacts in the last century (Berger 2004), ungulate migrations continue to persist in response to seasonal variability in forage quality and availability. A combination of factors is believed to affect limitations in forage which drive density-dependent range

expansion and transboundary movements by bison in the winter. These include previous summer precipitation, snowpack conditions, and herbivore density (i.e., forage demand). The report also explains that bison at Yellowstone National Park occur in two subpopulations – the northern and central herds – each defined and named by their primary wintering grounds. Both the Northern and Central Ranges are characterized by large areas of continuous habitat connected by movement corridors through forested areas with patches of suitable forage. However, the northern range contains a significant amount of lower elevation winter range. The snowpack on the northern range is generally shallower at similar elevations to central interior ranges. Also, the central ranges are generally flatter, so the northern range has a greater amount of south facing slopes that reduce snow accumulations even further. Conversely, the Central ranges receive much deeper and more persistent snowpacks, and contain a higher proportion of geothermally-influenced areas that also act as winter refuge/foraging areas.

Bison from the Central ranges began to establish a pattern of movement to the Gardiner Basin winter range beginning in the late 1980's and early 1990's (Taper and Meagher 2000 as presented in the Gates report). The Gates Report states that bison appear to travel on roads during winter where they coincide with natural corridors defined primarily by terrain, and to some degree by habitat features. Bison appear to make calculated migratory movements to boundary winter ranges based on acquired knowledge of the landscape. Some individuals consistently use the same winter ranges while others change from year to year. It was suggested by Gates et al that the Madison Junction to Mammoth Hot Springs corridor does *not* align with a pre-existing, natural corridor for bison: “The calculated migration of Central Range bison to the Northern Range would likely not have developed in the absence of the groomed road between Madison Junction and Mammoth” (Gates 2005:ix).

The systems model used in the Gates Report simulates the effects of different ecological scenarios and management actions upon bison population size and movements in mid-winter. To serve as a basis for the model's development, the authors outlined the postulated drivers of the system in a graphical representation called an Impact Hypothesis Diagram (IHD). The authors then organized a series of workshops, employing the Delphi process, in which key informants ranked the importance of each variable in the IHD. These weights were then combined into indices of corridor permeability that were determined for both road grooming and non-grooming scenarios over a 100-year simulation period. Three models from the workshops were used to compose a “majority average model”.

Although the majority average model predicted that winter bison movements would be maintained in three of the four primary corridors in the absence of road grooming, it suggested the corridor from Madison Junction to Mammoth to be effectively impermeable in many winters without road grooming. This reflects a majority opinion among the key informants that bison would be unable to penetrate accumulated snowpack

on an ungroomed road along the 6-km length of Gibbon Canyon. As the Gates Report states, “The road segment through the Gibbon Canyon is the single area in the park where snow cover in combination with steep terrain may deter bison movements in the absence of grooming and snow compaction by over snow vehicles” (Gates 2005:253). Given that the herd now has knowledge of the northern range as a destination, however, not all are convinced that the canyon represents an absolute barrier in non-grooming scenarios. Some key informants to the Gates Report (2005) believed that if bison began packing a trail through the canyon in early winter, they could maintain the passage through the season without grooming and in spite of increasing snowpack. Other informants speculated that bison may be able to pass through the canyon along areas where geothermal activity reduces snow accumulation. A third contention is that a power line running 1-km east of the road may provide bison with a viable, alternative passage through the canyon.

Given this uncertainty, the extensive northward movements of bison from the central herd in certain years, and the likelihood of lethal management actions for individuals that cross the northern boundary, the Gates Report recommends that “An adaptive management experiment should be designed to test permeability of the Firehole-to-Mammoth corridor under variable [*sic*] snow conditions, with a specific focus on the road section between the Madison Administrative Area and Norris Junction.” More specifically, the experiment should “... test the hypothesis that the Central population’s movement to the Northern Range is possible only with grooming of the snow pack on the road, in particularly in the Gibbon Canyon.” Such an experiment should be designed to “test the effectiveness of unaltered snow pack as a barrier to winter movements between the Central and Northern Ranges in relation to varying environmental conditions including forage production, winter severity, and population size” (all quotes from Gates 2005:253).

1.4 Workshop Rationale

Acting upon the recommendation described above, the National Park Service invited the Big Sky Institute at Montana State University to organize a two-day workshop to evaluate the assertion that the Firehole-Mammoth corridor serves as a barrier to bison movements between the Central and Northern winter ranges during non-road grooming scenarios. The workshop had the objective of identifying, through a coarse-filter analysis, a focal suite of hypothesis-driven questions to serve as a foundation for research and management experiments that can be practicably implemented. Held January 18-19, 2006 at the YNP Heritage Research Center in Gardiner, Montana, the workshop involved a wide array of bison researchers and biologists (see Appendix B). The outcomes of the workshop will be used to inform the development of alternatives being considered by the ongoing winter use planning effort for Yellowstone NP, Grand Teton NP, and John D. Rockefeller, Jr. Memorial Parkway, and may subsequently serve as the basis for a “Re-

quest For Proposals” to conduct research and management experiments addressing this issue.

2.0 IMPACT HYPOTHESIS DIAGRAM

2.1 Heuristic Problem Statement

During day one of the workshop, participants identified three initial heuristic uncertainty statements including:

- ❖ There is uncertainty about the role of mechanical snow compaction on the maintenance of established winter migration in the Madison to Mammoth movement corridor.
- ❖ There is uncertainty about the role of mechanical snow compaction on movement pathway selection by bison.
- ❖ There is uncertainty about the mechanisms underlying winter movements of bison, including late winter/early spring initiation of forage growth.

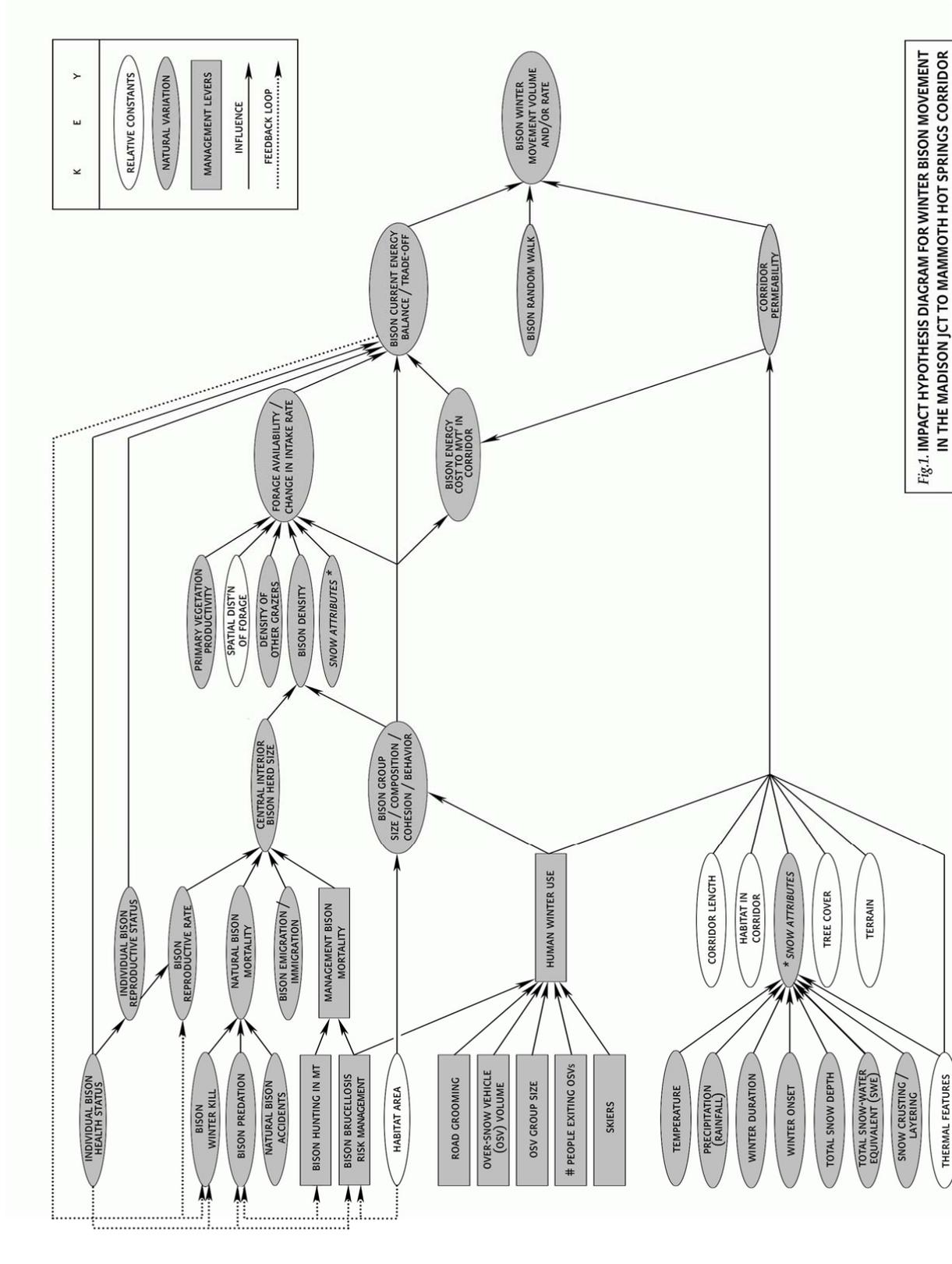
The majority of workshop participants concluded that the key Gates Report adaptive management experiment recommendation (see Section 1.3 above) should underpin the following overarching heuristic problem statement to guide the remainder of the workshop:

There is uncertainty about the role of mechanical snow compaction on the maintenance of established bison winter migration in the Madison to Mammoth movement corridor.

2.2 What is an Impact Hypothesis Diagram?

An Impact Hypothesis Diagram (IHD) is a conceptual graphical model that illustrates how the physiographic, ecological, and/or anthropogenic factors in a system interact and influence the likelihood of a resulting environmental action (in this case inter-range winter bison movements in Yellowstone). The IHD developed during this workshop includes 43 ecosystem variables classified as Relative Constraints, Natural Variation, and Management Levers. Connecting linkages between variables are represented as arrows and were classified as Direct Influences or Feedback Loops. To translate an IHD into a quantitative model, each arrow between variables in the IHD would be defined mathematically through weighting and/or as based on empirical relationships acquired from the relevant literature (see Gates 2005). This workshop did not attempt to translate the conceptual IHD into a quantitative model.

WINTER USE PLANS FINAL ENVIRONMENTAL IMPACT STATEMENT
 Yellowstone and Grand Teton National Parks and the John D. Rockefeller, Jr. Memorial Parkway



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2.3 Impact Hypothesis Diagram for the Madison Junction to Mammoth Corridor

The IHD for winter bison movement in the Madison Junction to Mammoth Hot Springs Corridor is shown in Figure 1. This IHD shows the many factors that workshop participants believe underpin movement by bison from Yellowstone's Central Interior to other winter ranges. The scoping of IHD variables was begun on the first day of the workshop, and the graphical IHD was developed with the input of all participants in the second day of the workshop.

In general, there are four primary clusters of IHD elements that underpin winter bison movement from the Central Interior winter ranges:

- 1) *Central Interior Bison Herd Size* - In the upper left section of the IHD are those biophysical factors and managerial actions which affect the herd's size. The biophysical factors primarily cascade to the balance between reproduction and natural mortality, with emigration and immigration playing an important role as well. The primary management action (i.e. human action) affecting this herd's size at present is brucellosis risk management at the park boundary.
- 2) *Bison Energetics* - Central herd size is in turn one of many factors influencing the second grouping, the various energetic components in the upper right section of the IHD. When bison decide to undertake winter movement, they are effectively deciding that the cost of movement—not an inconsequential cost, given the depths of snow in Yellowstone in winter—will be balanced by the returns. That balance depends on a host of other factors: the individual animal's health and reproductive status; forage availability (which is a function of the herd's size and several other factors, including primary production); bison group size, cohesion, and behavior; and the cost of actual movement in a snow-covered landscape. Simply put, when the animal perceives that a distant foraging area offers greater energy returns than its current situation combined with the cost of moving, it is likely to undertake the movement.
- 3) *Human Use* - The next cluster of movement factors comprise the various human uses of the Madison to Mammoth area, shown in the middle left portion of the diagram. Winter human use includes the various forms of recreation which people enjoy in the Yellowstone area, along with the supporting activities for such recreation (such as snowmobile trail grooming), and characteristics of such activities (such as the size of snowmobile and/or skier groups). Winter human use can affect both bison group characteristics as well as the permeability (to bison) of the movement corridor.
- 4) *Edaphic Variables* - Finally, a number of physical and geographic factors influence bison movement, and are shown in the bottom left portion of the IHD.

Such things as snow attributes (themselves a factor of many different winter weather phenomena) and relative geographical constants like tree cover, thermal feature distribution, and corridor length are all factors influencing the corridor's permeability to bison movement.

Winter bison movement, then, is a function of many different human and biophysical factors. Workshop participants also recommended inclusion of a variable called "random walk." This is a placeholder to account for the unpredictable, such as the natural bison tendency to explore, as well as other unaccountable factors. As suggested by the IHD, human activities are factors in two of the four primary clusters of drivers of bison movement. However, human activities dominate only one of those clusters. Moreover, road grooming for oversnow vehicle travel, the specific subject of much litigation, is only one of many human activities influencing bison movement. The relative importance of grooming within the context of the many human activities taking place in and around Yellowstone is, at this time, extremely difficult to quantify, as is the relative importance of all other such human activities compared to the importance of ecological or physiographic influences.

3.0 HYPOTHESIS DRIVEN QUESTIONS

3.1 Overarching Working Hypothesis Statement

An established tenet of modern science is that a good hypothesis must include:

- ❖ *A response variable* (a variable that may alter in response to a changing situation),
- ❖ *An action* (causing the variable to change),
- ❖ *A mechanism* (an explanation of why the change will cause a response), and
- ❖ *The actual response* (the change in behavior one expects to see if the variable is changed).

Utilizing the overarching problem statement presented in Section 2.1 above, the majority of workshop participants suggested the following overarching working hypothesis:

With termination of a groomed over snow road surface, the cumulative ecological costs of bison movement from the Central Range to the Northern Range would exceed the advantage of doing so and winter movements along the Madison to Mammoth road corridor would significantly decline.

In this overarching working hypothesis:

- ❖ The *response variable(s)* can be one or more of the elements displayed in the IHD that yield the cumulative ecological costs of bison movement (do they, or do they not, underpin bison movement from the Central Range to the Northern Range?)
- ❖ The *action* to be studied is the termination of road grooming, and whether that causes a response among bison.
- ❖ The *mechanism* to explain the change in behavior is that the cumulative ecological costs of movement would then become too high relative to the gains to be acquired.
- ❖ Finally, the *actual response* is that bison movements along this road corridor would vary (continue without change, increase, decrease, or cease altogether).

3.2 Hypothesis Driven Questions

Workshop participants also developed the following list of questions driven by the above overarching working hypothesis:

- ❖ Will instantaneous bison movement volume and rates increase as per capita forage intake rate declines?
- ❖ If road grooming were stopped, would the energetic costs of bison movement exceed its benefits, bison nutritional condition decline, bison fecundity decline, and/or the rate of bison population growth decline?
- ❖ If road grooming were stopped, would bison select alternate pathways to the same destination?
- ❖ If bison do not move to the north, will their movement rates to the west change, resulting in either an increase in the Central Yellowstone bison population density or an increase in management control operations on the west boundary?
- ❖ If the Mammoth to Madison (or Madison to Norris) roads are closed to public travel, would over-snow vehicle travel shift to other road sections, and, if so, would there be increased visitor-wildlife interactions in those areas (assuming the same level of permitted use)?
- ❖ In the absence of road grooming, will bison movement rates be proportional to snow conditions, and is there a maximum depth of snow (or snow water equivalent) that will stop movement?

- ❖ If road grooming stopped, would bison continue to use the same pathway, maintaining it at their own energetic expense?
- ❖ In years with early forage senescence and constant population size, will more bison move because senescence results in a drop in the energy available to bison from the forage?
- ❖ Does bison nutritional status before winter influence their movement during winter?
- ❖ During years with lower water supplies due to drought, will bison physiological condition be reduced, making more individuals likely to move north along the road corridor?
- ❖ Will heavy snow crusting reduce forage availability and also drive bison movement?
- ❖ Could physical barriers increase the energetic cost of bison movement from the Central Interior to the Northern Range during periods with high snow?

4.0 MANAGEMENT EFFECTS STUDIES

4.1 Majority Report

Workshop participants reached a consensus that management effects studies are warranted to address the overarching working hypothesis presented in Section 3.1 above. Indeed, this action was previously proposed. Readers are referred to a settlement agreement approved on October 27, 1997 in Washington D.C. federal court that called for the NPS to prepare an environmental assessment evaluating the closure of groomed road segments in YNP to study the effects of groomed roads on bison movements. The agency completed an environmental assessment in November 1997 evaluating options for temporary closures of sections of the road system in winter including the section identified here (NPS 1997).

4.1.1 Adaptive Management Experiments

A passive adaptive management experiment¹ herein could evaluate the effectiveness of unaltered snow as a barrier to winter movements between the Central and Northern

¹ As used here, a *passive* adaptive management experiment is one whereby conclusions could not be made regarding mechanisms for changes in state, in contrast to an *active* management experiment in studies are designed to interpret mechanisms that underlie changes and evaluate their outcomes against objectives.

Ranges in relation to known and varying environmental conditions including forage production, winter severity, and population size. The workshop group felt that the primary prediction is that in the absence of grooming, bison movement rates will be proportional to snow conditions, and there exists a snow water equivalent (SWE) maximum that would completely stop bison movement.

The majority of workshop participants agreed that the most effective approach would be to cease grooming on part or all of Madison to Mammoth corridor (“part” could be the road section from Madison Housing Area to Norris Junction; workshop participants did not reach resolution over whether the entire Mammoth to Madison road segment should be closed or just the section from Madison Housing Area to Norris Junction) and to measure bison responses and predictor variables (e.g., snow conditions).

In summary, the majority report included the following key recommendations:

1. The proposed adaptive management experiment should include cessation or modification of over snow grooming on part or all of Madison Junction to Mammoth corridor and measure response variables and actual responses to increase understanding of management effects that may underpin bison movement.
2. The proposed adaptive management experiment should utilize historic data on bison movement to account for a pre-treatment baseline.
3. Potential modifications of current road grooming practices could include delayed onset of over-snow grooming to test if bison will push through un-groomed snow, novel grooming patterns or techniques of new routes to test if bison will follow an alternative groomed surface, and/or alternative grooming from Norris to Mammoth to permit limited administrative travel only.
4. Multi-year research is required to encompass variability in the system and provide replications. There is no one-year management experiment solution.
5. The proposed adaptive management experiment should be paired with new research to determine what un-groomed snow attributes (e.g. depth, SWE, crusting, layering) may limit or prevent bison movement. Possible directions for new research could include manipulative experiments, observational research, analysis of existing data, simulation modeling (including energetics), passive adaptive management, and active adaptive management. This new research should include long-term studies to evaluate what size of winter storm imposes limits on bison movement, artificial snow treatment (to allow replicates), and backtracking studies (e.g. across variable snow conditions, forage availability, group size and type, physical conditions).

6. The park should utilize existing data (including pending research publications on bison movement ecology from Dr. Robert Garrott's team at Montana State University—note that these publications were not available for consideration at this workshop) and new research recommended herein, to translate the conceptual IHD developed at the workshop (e.g. developed specifically for the Madison Junction to Mammoth Corridor) into a quantitative model.

The proposed adaptive management experiment does not have a control area against which observational data can be compared. Consequently, the temporal change of terminating grooming can only provide observational data of a weak inferential nature to tell managers whether the advent of road grooming in the early 1970s has indeed altered bison distributions and migrations in Yellowstone (Green 1979).

4.1.2 Control Experiments

A second proposed set of experiments could use controlled environments to determine the maximum snow threshold for bison movements—that depth and density of snow that turns bison away from a desired path. It would then be possible to determine whether the Madison-Mammoth corridor ever receives such snow thresholds. If this corridor does, these controlled experiments would suggest that, once these snow conditions are reached and assuming the bison do not already have trail systems in place through the corridor, they would not be able to use this movement corridor in the absence of grooming. Conversely, if this corridor rarely or never receives such thresholds, such experiments would suggest that the termination of road grooming would not result in a decline in bison movements on this pathway—that bison would be able to pack and maintain their own trails on or parallel to this road corridor. In either case, actual termination of road grooming would be necessary for assessment of the impact of snow thresholds on the permeability of this corridor to bison movement.

The majority report included the following proposals for the design of a control experiment:

1. One study design could include a two-phased study. In the first phase, an artificial snow treatment would be employed (to allow replicates) along this road corridor or elsewhere to determine the depth and/or density of snow (SWE) at which bison movement is deterred. The second phase would then examine historical data on snow conditions and their variability, forage availability, group size and type, and physical condition to see if conditions resembling the artificial snow treatments have occurred in the past on this road section.
2. An alternative study design may be possible given current and impending road construction in the Gibbon Canyon. The National Park Service rebuilt the road from Madison Junction to Norris Junction a few years ago, except for a small

portion around Gibbon Falls. There, the NPS plans to build a new road parallel to the old one, but on the canyon rim. The old road will be removed. Currently, part of the new, 1.5-mile-long road is in place (a section about a mile long, beginning north of Gibbon Falls), but a bridge over the Gibbon River remains to be constructed, along with about a half-mile of new road around Gibbon Falls itself. It may be possible, depending on the schedule of road construction, to erect a temporary gate at the new bridge to make the new road alignment more difficult for bison to access from the south. The old road alignment, familiar to bison, would not be groomed, while the new one would be. If such a gate is possible, it could test whether bison would maintain their familiar route on the old road alignment (un-groomed by people, but familiar to bison), would stop using the canyon altogether (because a snow threshold precludes such movement and the gate prevents them from learning that a new route is available), or whether they would merely go around the gate (such as by fording the river and climbing the bluffs on either side of the north bridge abutment) and on to the new groomed route (hypothetically more attractive to them, but not familiar to them). For this design to be effective, a snow pack (preferably near normal) would need to be present when the gate was closed.

Note that while there could be other controlled experiments, only the above two were recommended by the majority of workshop participants.

4.2 Minority Report

One member of the workshop presented a considerably different management experiment that was generally acknowledged as infeasible. That member suggested that the NPS strongly reduce the combined Northern and Central Range Yellowstone bison population with concomitant termination of over-snow road grooming on the Madison to Norris road section (but preferably throughout the park, with the possible exception of the road from Old Faithful to the South Entrance only). Once these actions were accomplished, it was predicted that the bison population size and distribution would fluctuate naturally in the absence of human perturbation. It was predicted by that workshop participant that these actions would erase the bison memory of the groomed road corridors and allow bison to forage, move, and reproduce as naturally as possible, without the presumed artificiality of the Madison to Mammoth groomed road corridor.

5.0 LITERATURE CITED

- Berger, J. 2004. The last mile: how to sustain long-distance migration in mammals. *Conservation Biology* 18(2):320-331.
- Gates, C.C., B. Stelfox, T. Muhly, T. Chowns, and R.J. Hudson. 2005. The ecology of bison movements and distribution in and beyond Yellowstone National Park: A critical review with implications for winter use and transboundary population management. Final Report to Yellowstone National Park, April 2005. Faculty of Environmental Design, University of Calgary, Calgary, Alberta, Canada. Report available online at: <www.nps.gov/yell/technical/planning/gates/index.htm>
- Green, Roger H. 1979. *Sampling Design and Statistical Methods for Environmental Biologists*. New York: John Wiley & Sons.
- National Park Service. 1997. Environmental Assessment: Temporary Closure of a Winter Road. On file at the Yellowstone National Park Management Assistant Office, Mammoth Hot Springs, WY, 82190.
- National Park Service. 2006. Yellowstone Resource and Issues. On file at the Division of Interpretation, Yellowstone National Park, Mammoth Hot Springs, WY, 82190.
- White, P.J., T. Davis, J. Borkowski, D. Reinhart, C. McClure, and P. Perotti. 2005. Wildlife responses to motorized winter recreation in Yellowstone: 2005 Annual Report. Unpublished Report on File at Yellowstone Center for Resources, Yellowstone National Park, Mammoth Hot Springs, WY, 82190.
- Yochim, Michael J. 1999. "The Development of Snowmobile Policy in Yellowstone National Park." *Yellowstone Science* 7 (Spring 1999): 2-10.
- Yochim, Michael J. 2004. "Compromising Yellowstone: The Interest Group-National Park Service Relationship in Modern Policy-making." Ph.D. dissertation, Univ. of Wisconsin-Madison.

Appendix A: Workshop Agenda (as planned; the actual proceedings varied in sequence but not in content.)

January 18 - Wednesday

8:30AM Welcome – Glenn Plumb

8:40-9:00 Winter Use Planning Overview – Mike Yochim

9:00-9:30 Overview of 2005 “Gates” Report – Cormack Gates

9:30-10:00 Overview of recent GPS bison movement data – Rick Wallen

10:00 – Noon Group Discussion: Develop an Impact Hypothesis Diagram scaled to the Firehole to Mammoth corridor with a specific focus on the road section between the Madison Administrative Area and Norris Junction - Facilitated by Cormack Gates

Noon – 1PM Catered Lunch at HRC and informal discussion

1:00-2:00 Group Discussion (Continued): Impact Hypothesis Diagram - Facilitated by Cormack Gates

2:00-4:30 Group Discussion: Identify Hypothesis Driven Questions - Facilitated by P.J. White

January 19 - Thursday

8:30AM Welcome – Glenn Plumb

8:40-10:00 Group Discussion (Continued): Hypothesis Driven Questions - Facilitated by P.J. White

10:00-Noon Group Discussion: Identify Potential Research and Management Experiments - Facilitated by Kathy Tonnessen

Noon – 1PM Catered lunch at HRC and informal discussion

1PM-4PM Group Discussion: Finalize and Recommend Hypotheses, Research, and Management Experiments - Facilitated by Glenn Plumb

Appendix B: Workshop Attendees and Email Contact

Workshop Organizing Committee:

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Invited individuals unable to attend:

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Dave Klein (University of Alaska); ffdrk@uaf.edu
Tim Reid (Yellowstone National Park); tim_reid@nps.gov

Appendix C. List of Workshop Administrative Record Resources.

- Nelson, J. 2006. Written transcript of “Bison, Snow and Winter Use: A Stakeholder Workshop to Identify Potential Winter Use Management Experiments for the Road Corridor Between Madison Junction to Mammoth Hot Springs, January 18-19, 2006.” 35 pp. On file at the Yellowstone National Park Management Assistant Office, Mammoth Hot Springs, WY, 82190.
- NPS. 2006. Rocky Mountain Cooperative Ecosystem Studies Unit Task Agreement entitled “Winter Use Management – Bison Workshop.” On file at the Yellowstone National Park Management Assistant Office, Mammoth Hot Springs, WY, 82190.
- Gates, C. 2006. PowerPoint presentation entitled “The ecology of bison movements and distribution in and beyond Yellowstone National Park: A critical review with implications for winter use and transboundary population management.” Presented at “Bison, Snow and Winter Use: A Stakeholder Workshop to Identify Potential Winter Use Management Experiments for the Road Corridor Between Madison Junction to Mammoth Hot Springs, January 18-19, 2006.” On file at the Yellowstone National Park Management Assistant Office, Mammoth Hot Springs, WY, 82190.
- Gates, C. 2006. PowerPoint presentation entitled “Hypotheses, Recommendations, and Predictions.” Presented at “Bison, Snow and Winter Use: A Stakeholder Workshop to Identify Potential Winter Use Management Experiments for the Road Corridor Between Madison Junction to Mammoth Hot Springs, January 18-19, 2006.” On file at the Yellowstone National Park Management Assistant Office, Mammoth Hot Springs, WY, 82190.
- Gates, C. 2006. PowerPoint presentation entitled “Review of Day 1.” Presented at “Bison, Snow and Winter Use: A Stakeholder Workshop to Identify Potential Winter Use Management Experiments for the Road Corridor Between Madison Junction to Mammoth Hot Springs, January 18-19, 2006.” On file at the Yellowstone National Park Management Assistant Office, Mammoth Hot Springs, WY, 82190.
- Yochim, M. 2006. PowerPoint presentation entitled “Winter Use Planning at Yellowstone and Grand Teton National Parks.” Presented at “Bison, Snow and Winter Use: A Stakeholder Workshop to Identify Potential Winter Use Management Experiments for the Road Corridor Between Madison Junction to Mammoth Hot Springs, January 18-19, 2006.” On file at the Yellowstone National Park Management Assistant Office, Mammoth Hot Springs, WY, 82190.

APPENDIX H. AVALANCHE HAZARD MITIGATION IN YNP

As described in Chapter III, Section 3.5.4, avalanche hazard mitigation is a unique challenge in Yellowstone, particularly so at Sylvan Pass. Previous winter use planning also addressed avalanche mitigation at Sylvan Pass (NPS 2004b; NPS 2003a; NPS 2000b). These and other documents provided the basis for much of the analysis in this EIS, including the initial formulation of alternatives. This current planning process included exhaustive efforts to better understand past and present mitigation procedures, as well as exploring future options.

Avalanche hazard mitigation options at Sylvan Pass fall into three categories: alternative road management options, various explosive delivery possibilities, and engineering solutions. These different options are described in the March 2007 report “Avalanche Hazard Assessment and Mitigation” which is available on the winter use website at: <http://www.nps.gov/yell/parkmgmt/winterusetechnicaldocuments.htm>. Various combinations of these options are possible, but only complete road closure, snow sheds, a tunnel, and/or a road reroute over other, less avalanche-prone passes would completely eliminate exposure to the avalanche dangers at Sylvan Pass.

In August 2007, seven technical experts convened to participate in an Operational Risk Management (ORM) Assessment which reviewed NPS winter operations at Sylvan Pass, Talus Slope and other avalanche zones in Yellowstone. Additionally, the ORM compared the severity, probability and exposure to risk at both sites and analyzed risk vs. gain. Potential gains included:

- decreased risk
- potential program effectiveness relative to both eliminating exposure and to days the pass would be accessible
- resource impacts
- implementation costs.

The NPS has utilized the ORM process to evaluate other high risk operations throughout the service. Initial results of an August 2007 Operational Risk Management workshop are available on the winter use website mentioned above.

Appendix F contains cost estimates for implementing four of the avalanche mitigation options.

APPENDIX I. COMMENT ANALYSIS

Background

This appendix summarizes all comments received for the Winter Use Plans Draft Environmental Impact Statement for Yellowstone and Grand Teton National Parks and the John D. Rockefeller, Jr. Memorial Parkway (DEIS). It also contains responses to comments as necessary under CEQ regulations. In preparing an FEIS, an agency is required to assess and consider comments both individually and collectively. The agency is required to respond by one or more of the following means, while stating its response in the FEIS (40 CFR 1503.4):

Modify alternatives including the proposed action.

Develop and evaluate alternatives not given serious consideration by the agency.

Supplement, improve, or modify analyses.

Make factual corrections.

Explain why comments do not warrant further agency response.

All substantive comments received on a DEIS (or summaries thereof where the response has been exceptionally voluminous), should be attached to the FEIS whether or not the comment is thought to merit individual discussion by the agency in the text of the statement (40 CFR 1503.4[5][b]). A substantive comment is one that is specific in addressing the adequacy of the DEIS or the merits of the alternatives discussed, or both (40 CFR 1503.3 Specificity of comment). Substantive comments relate to material or issues that have been deemed deserving of study when defining the scope of the analysis (40 CFR 1500.4 Reducing paperwork).

Public comments on the DEIS consisted of a variety of form letters, letters not subscribing to a form, and other letters that examined the DEIS in some detail. Substantive comments may be found among all types of letters. However, letters examining the DEIS in detail may contain a higher percentage of comments that are regarded as substantive. Therefore, the entire body of comment is summarized in this appendix and all comments are responded to, however briefly. For the most part, responses consist of explanations. Where a response also consists of some action reflected in the FEIS, it is so noted. Comment letters from Cooperating Agencies are reproduced in their entirety and are located after the response to comments table in alphabetical order.

Although many comments shown in this summary are not substantive, they are included in an attempt to portray public opinion. The content of form letters and non-form letters is overall very similar. Non-form letters are in many cases distinguished by the personal remarks, expressions of concern, or other comments that are demonstrably individual in nature.

The NPS wishes to emphasize that because a comment or comment category does not warrant a formal response under CEQ regulations, its importance to the process is not reduced. NEPA is a decision making process designed to provide decision makers with a breadth of information on which to base a well-reasoned decision. Public opinion, although not directly relevant to most analyses, is a key element to be considered by the decision makers.

The NPS would like to thank all the commentors who took the time to share their thoughts and concerns in the many letters received during the comment period. While the volume of comments received is notable, so is the high level of passion and conviction communicated by commentors and their great concern for the well being of and access to the three park areas.

Overview of the Public Comment Process

On March 27, 2007, the National Park Service announced (via both a press release and a newsletter) the availability of the DEIS on the winter use website. The DEIS was made available in anticipation of publication of the EPA Notice of Availability (NOA) of the DEIS for public review and comment. The March 2007 newsletter included a discussion of how to comment and, specifically, how to provide useful comments. On April 5, 2007, the EPA NOA itself was published in the *Federal Register*, thereby initiating the formal public comment period. A May 1, 2007 press release announced four public comment meetings and advised stakeholders that the comment period would end on June 5, 2007 (rather than May 31, 2007 as had been initially printed on the DEIS). The June 5 date corresponds to 60 days after publication of the EPA NOA. A May 16, 2007 press release announced the availability of the Proposed Rule and its comment period; it also reminded interested parties that the DEIS comment period would end on June 5, 2007. For additional information about the public engagement process for this planning effort, see Chapter V, Sections 5.1-5.2.

In all, about 120,000 individuals, organizations, government agencies and businesses chose to submit comments.¹ Comments included written letters submitted by via surface mail and in person, verbal comments given and recorded during public meetings, and electronic comments submitted through the NPS Planning, Environment and Public Comment (PEPC) system.

Comments were sorted to identify potential substantive comments, i.e., those that request the agency to modify alternatives; to develop and evaluate alternatives not previously given serious consideration by the agency; to supplement, improve, or modify its analyses; or to make factual corrections.

Following the identification of the comments initially identified as substantive, remaining comments were sorted by general support for an alternative or action. The content of all letters was recorded using a coding system; North Wind, Inc. compiled and coded all comments. Each comment was also reviewed by the NPS planning team. Many comment letters contained recollections of personal experiences in the parks. For the most part, comments fell into two categories, those that supported elements of the preferred alternative, and those that supported elements of other alternatives. Those who commented primarily are from the United States, although the NPS received comments from persons in other nations. The following table identifies the numerical results of the comment process.

Number of Commentors	Form Letters	Non-form Letters	Total comments
122,190	116,179	5,974	1,276,154

CEQ regulations require the agency to respond to all comments, as a minimum, by explaining why those comments do not warrant further agency response, citing the sources, authorities, or reasons that support the agency's position and, if appropriate, indicating those circumstances that would trigger agency reappraisal or further response.

Organization of Comments and Responses

Form Letter Content

The majority of comments received on the DEIS were form letters. A form letter is defined as a letter whose content is essentially duplicated by several commentors. These comments

¹ This amount may not account for all duplicates, e.g., those letters that were submitted both via PEPC and the U.S. Postal System; commentors who submitted multiple comment letters were not specifically identified.

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convey political sentiments and personal support for an alternative and the various provisions therein. Many commentors who sent in form letters also took the time to write additional thoughts or concerns. These additional expressions are also summarized in the comments listed below.

In general the tenor of these expressions of support and opposition relate to the decision that the commentor would like the NPS to make. While all comments will be considered in making the final decision, there is nothing in those opinions that would substantially alter the range of alternative features to be considered in the FEIS. For example, if the features that are not supported were to be deleted from the range of alternatives, then the analysis would only include features that the commentor agrees with. Accordingly, the commentor concludes that there is only one alternative that warrants consideration. From the NEPA standpoint the analysis cannot be limited in this fashion.

Non-Form Letter Content

Nearly 6,000 non-form letters were received during the public comment period. Letters in this category are different from form letters in that the thoughts expressed were not part of a mass-produced letter. Most non-form letters generally expressed individual thoughts, concerns, and experiences and for the most part did not contain relevant new information or scientific data that would necessitate changes in the FEIS. Many comments, though, were substantive and presented useful concerns, suggestions or recommendations.

Substance is gauged by NEPA criteria (40 CFR 1503.3) as follows: comments should be as specific as possible, and address the merits of the alternatives or the adequacy of the statement, or both. Additional information that is within the scope of analysis is also regarded as substantive. Substantive comments can potentially be responded to by modifying alternatives, evaluating alternatives not previously considered or supplementing, improving, or modifying the analyses. Comments that are editorial in nature, provided along with other more substantive comments, will not be included in the summary or be responded to directly, although the suggested changes will probably be made in the body of the document. It should be noted that in the NEPA context, there should be no special significance attached to any comment or letter, or the order in which they are listed in this appendix.

NPS Responses

The following table lists the comment code assigned by North Wind, Inc. to each comment and groups comments by topic. The NPS responses follow each comment or group of comments. Changes made to the EIS in response to a particular comment are so noted.

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Code	Code Description	Total Comments
D-AE3.0	AFFECTED ENVIRONMENT	
D-AE3.4.1	Commentors state that summer visitors have greater impacts to resources than do winter visitors. Some state: * The large number of automobiles entering the park during summer months contributes more pollutants than do snowmobiles. * Summer visitors have negative impacts to wildlife and can travel without guides.	102
RESPONSE	The impacts of individual snowmobiles are, in fact, greater than those associated with an automobile due to a number of factors discussed in the EIS, including the lack of catalytic converters on snowmobiles. Additionally, different oversnow vehicles emit different levels of different pollutants just as different makes and models of wheeled vehicles do. For example, some older snowcoaches lack modern emission control equipment. An additional factor that can contribute to poor air quality in the winter is atmospheric inversions (See 3.4.3). The commenter is referred to the discussion of air quality in Chapter IV of the FEIS (Tables 4-34 and 4-35).	No change.
D-AE3.5	Public and Employee Health and Safety	
D-AE3.5.1	Commentors state NPS should continue avalanche control on Sylvan Pass. Some add: * The howitzer is safe and should continue. * Risk of injury is low. * Controlled slides prevent road closures/repairs. * Other areas are hazardous, too. * The park needs avalanche control capability. * Closure is really a budget, not a safety, issue. * DEIS overstates health and safety issues related to this concern. * Cody needs consistent avalanche management, not a hit-and-miss program.	562
D-AE3.5.1.1	Commentors state that there are alternative ways to manage the avalanche issue and/or other viable explosive delivery methods for Sylvan Pass, such as sound wave guns or fixed propane detonation devices on the mountain. Some commentors support: * Multiple delivery methods of avalanche control identified in the DEIS * Future best available technologies * Contracting avalanche control to private companies that are more willing to take risks.	14
D-AE3.5.1.2	Commentors make statements about continuing avalanche control. * Based on the Comey report NPS can't claim the risk on Sylvan Pass is unacceptable or can't be managed. * A specialized remote weather station should be put in place to provide real time data. * Helicopters increase costs yet make avalanche mitigation unpredictable and inconsistent and should only be used as a supplement to a primary artillery program. * NPS should act on mitigations recommended by NoHow Inc and Comey.	7
D-AE3.5.2	Commentors oppose continued avalanche control operations on Sylvan Pass because: * It is dangerous to staff. * It is unique in NPS - no other discretionary oversnow road in the US uses active avalanche control measures. * No other national parks use artillery for controlled avalanches. * It sets a dangerous precedent for other parks.	13,627
RESPONSE	The EIS fully considers both continued and discontinued avalanche hazard mitigation at Sylvan Pass (See 3.5.4, 4.2.4, and Appendix H). NPS has implemented many of the mitigations recommended by NoHow and Comey, as explained in section 3.5.4.	Revised indicated sections

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Code	Code Description	Total Comments
D-AE3.9.1	Commentors state that NPS needs to educate the public about the need for and process of protecting an environmentally sensitive park. Some state they should use partnerships with the surrounding communities, counties and states to expand educational opportunities regarding rules, user ethics, visitor safety, and appreciation of the resources. Some commentors add that allowing too many off-road vehicles in national parks sends the wrong message about park protection.	910
RESPONSE	NPS has many excellent and on-going educational and interpretive programs. Partnerships include those with the Yellowstone Association Institute, Xanterra Parks and Resorts, the training NPS provides to winter guides, and NPS staffing at the West Yellowstone Visitor Center. No vehicles are allowed to travel off-road in the parks.	No change.
D-AL2.0	ALTERNATIVES	
D-AL2.1	Alternative Management Techniques	
D-AL2.1.1.1	Commentors support Best Available Technology (BAT) requirements for snowmobiles used in the parks. Some commentors add that: * The snowmobile industry opposed the introduction of BAT machines, but they have reduced the negative impacts of snowmobiling.	18,830
D-AL2.1.1.2	Commentors oppose snowmobile BAT requirements in the parks, or in certain areas. Some add: * Associated costs are too high. * Areas in GTNP, the parkway, Flagg Ranch west on Grassy Lake Rd., Jackson Lake and/or CDST should be BAT exempt. * EPA Compliant (2007 or newer) models should be allowed on CDST and/or Jackson Lake. * A percentage of daily entries from Grand Junction to Flagg Ranch/Grassy Lake Road should be a 2006 or newer model.	1,226
D-AL2.1.1.2.1	Commentors state that 25 non-BAT EPA compliant and 25 BAT snowmobiles per day should be allowed on the CDST, with a group size limit of 10.	5
RESPONSE	The EIS fully considers both continued and discontinued use of BAT snowmobiles as well as requirements for improved BAT. In Yellowstone, all alternatives do call for BAT requirements to address previous impacts. Alternative 7 does not require BAT on the Grassy Lake Road.	Clarified how improved BAT could be used in adaptive management.
D-AL2.1.1.3	Commentors support BAT requirements for snowcoaches used in the parks.	76
RESPONSE	The EIS includes BAT (both sound and emissions) requirements for snowcoaches under all alternatives, as well as a discussion of how future improvements could be used in an adaptive management program.	No change.
D-AL2.1.1.4	Commentors state concerns about the cost of purchasing BAT machines for winter fishing in Grand Teton Park without some guarantee that they can be used for multiple years. They suggest that NPS guarantee that approved BAT snowmobiles can be used for 5 to 10 years.	3

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Code	Code Description	Total Comments
RESPONSE	Once certified, BAT snowmobiles remain approved for use on Jackson Lake for either 10 years or 6,000 miles, whichever is greater, and not to exceed 10 years regardless of mileage (See 2.5.3).	Section 2.5.3. changed accordingly.
D-AL2.1.1.5	Commentors state various reasons that NPS should not rely on BAT to reduce air pollution from mobile sources: *It does not establish progressive emission standards that snowmobile makers must meet. * Predicted BAT emissions are likely to be lower than actual levels during typical operation.	10
D-AL2.1.2.1	Commentors support guide requirements for snowmobiles used in the parks. Some make suggestions for modifying the program, such as allowing guides to train in the park prior to opening.	85,914
D-AL2.1.2.1.1	Commentors state that previous NEPA analyses and three years of required guiding have clearly established that guided access is essential to control inappropriate behavior and protect resources; allowing unguided access would be illegal.	2
D-AL2.1.2.2	Commentors object to guide requirements for snowmobiles used in the parks. Some commentors add that: * High guide fees reduce winter visitation. * Guide requirements eliminate many potential visitors to accommodate a few who prefer solitude, at taxpayer expense. * The requirements displace local "real snowmobilers" in favor of tourists.	142
RESPONSE	The EIS fully considers various access options (unguided, non-commercially guided, all-guided, certified group leaders) including the economic and visitor experience components of each. Under the preferred alternative, visitors could also tour Yellowstone via snowcoach. The NPS believes that guiding is a critical component of a successful managed winter use program. Finally, surrounding lands have ample snowmobile opportunities for those who wish to have an unguided experience.	No change.
D-AL2.1.2.3	Commentors support limiting guided groups to 11 (10 snowmachines plus one guide). Some add that lower numbers increase costs, reduce flexibility, harm wildlife, increase congestion at attractions thus affecting visitor experience, and/or increase negative sound impacts. Some commentors add that larger groups are unproven and could cause negative impacts.	1,030
RESPONSE	The EIS fully considers various group sizes (6, 8, 11, 17; no size requirement).	No change.
D-AL2.1.2.4	Commentors support some level of unguided access with trained/certified leaders. Some add: * Visitors could qualify to snowmobile without a commercial guide using their own machines * Trained visitors could lead their own groups * Unguided snowmobilers can use the park without impacts to others * Unguided access should be available through the East Entrance * Unguided groups should be smaller * All groups should be maximized in size * This addresses need for affordable access.	1,221

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Code	Code Description	Total Comments
RESPONSE	The EIS fully considers various access options (unguided, non-commercially guided, all-guided, certified group leaders). The EIS fully considers various group sizes (6, 8, 11, 17; no size requirement). See alternatives 4 and 5, sections 2.6.4 and 2.6.5. Affordable access would also be provided by snowcoach and/or bus access (in alternative 6).	No change.
D-AL2.1.2.4.1	Commentors suggest requirements for certified guides: snowmobile experience, safety certificate, annual renewal, advance park reservations, BAT equipment, advance communication with park staff on current hazards and conditions, FRS radios for intra-group communication.	10
D-AL2.1.2.4.2	Commentors recommend requirements for snowmobile operators who are part of groups led by certified leaders: a valid driver's license and a certificate of completion of a safety course. Those who do not meet these requirements would need to be riders or go with a guided group.	5
D-AL2.1.2.5	Commentors request that NPS allow up to 50% of daily snowmobiles entries on the CDST and Grassy Lake Road to be used by commercial snowmobile outfitters.	83
RESPONSE	Alternatives 1, 3, 5, and 6 provide for commercial guiding opportunities on the CDST and Grassy Lake Road; Alternative 7 allows this on the Grassy Lake Road. Alternative 4 specifically calls for 67% commercially guided snowmobiles on the CDST.	No change.
D-AL2.1.3.1	Commentors support route restrictions for snowmobiles and/or snowcoaches used in the parks. Some commentors add that they favor closure of the CDST.	95
D-AL2.1.3.2	Commentors object to various snowmobile route restrictions and/or management of route restrictions. Some commentors add : * They object to closure of Sylvan Pass (East Entrance of the Park). Some state this restricts public access to the Park, impairs a cultural resource, and may diminish future opportunities. * If routes are closed, post notice signs in gateway communities. * NPS should provide better notice of grooming schedules for routes in the park so they will know what to expect.	4,560
D-AL2.1.3.2.1	Commentors state Sylvan Pass should stay open to oversnow motorized vehicles in the winter and be named the Craig Thomas Memorial Trail.	1
D-AL2.1.3.3	Commentors state support for closing Sylvan Pass/East Entrance in the winter. Some commentors add that: * Closure is consistent with NPS law and policy. * The costs of plowing [commentors may have meant road grooming] do not justify the small visitor numbers. * Funds spent on plowing [again, commentors may have meant road grooming] could be put to better use (hiring additional winter staff for enforcement and services). * The East Entrance has always had low visitor numbers.	13,658

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Code	Code Description	Total Comments
RESPONSE	<p>The reader is referred to route descriptions in Sections 2.5.5, 2.5.6, and 2.6 as well as Section 3.8.3 (Park Roadways, Trails and Winter Facilities). The EIS fully considers access options – including the opening or closure of various routes. In particular, Sylvan Pass would remain open under alternatives 4 and 5 and closed under the remaining alternatives. The CDST would remain open under alternatives 1, 4, and 5, would be closed under alternatives 2, 3, and 6, and would convert to a trailered route under alternative 7. Many other national parks close entirely in the winter to motorized access and under most alternatives visitors would have ample motorized access to Yellowstone through the south, west, and north entrances. Effects on cultural resources in the parks were addressed in Section 1.5.2, Impact Topics Dismissed from Detailed Analysis.</p> <p>The U.S. Congress honored the late Senator Thomas in naming the new visitor center at Moose in Grand Teton National Park for him. The NPS will always strive to provide up-to-date information on park road conditions.</p>	Alternative 7 allows for a one year transition period at Sylvan Pass
D-AL2.1.3.4	Commentors request that the road from West Yellowstone to Seven-mile Bridge be opened to snowcoach operators only for preseason testing of vehicles.	5
RESPONSE	Pre-season administrative use is outside of the scope of this EIS.	No change.
D-AL2.1.3.5	Commentors state that the winter use decision should include continued and reliable grooming of the first 6 miles of the East Entrance Road for cross-country skiing and they request that NPS coordinate with Park County Nordic Ski Association to connect skiing opportunities available on the East Entrance Road with those available on Shoshone National Forest.	1
RESPONSE	Under the preferred alternative, the NPS would coordinate with the Park County Nordic Ski Association and others to ensure continued non-motorized access through the East Entrance and to explore shuttle and tour opportunities.	See alternative 7.
D-AL2.1.4.1	Commentors support limits and/or low limits on snowmobiles allowed daily in the parks. Some commentors add that: * They favor daily over seasonal limits to manage winter use. * They object to flexible daily limits. * Low limits enable the park to recover from visitors during the winter. * Snowcoaches provide full access. * Some state the focus should be on monitoring the number of visitors, not on the number of machines.	46,916
D-AL2.1.4.2	Commentors object to limits on the number of snowmobiles allowed in the parks daily and/or low limits for specific park entrances, routes, or features.	52
RESPONSE	The EIS fully considers a range of daily snowmobile limits, including snowcoach-only access (alternative 2) and daily and seasonal limits (alternative 5). The variety of issues in the winter use debate are addressed by many different management tools considered in the EIS alternatives.	No change.
D-AL2.1.4.2.1	Commentors state that limits on the number of snowmobiles allowed in the parks are responsible for low visitor numbers through the East Entrance; thus, it is not fair to use low visitor use to justify closing this entrance. Some add that justifying the closure of Sylvan Pass because there is not enough traffic to justify the expense of grooming is a self inflicted and premeditated situation.	3,249

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Code	Code Description	Total Comments
RESPONSE	Yellowstone's East Entrance has always been, and remains, its least-used winter entrance, averaging less than 5,000 visitors per winter even before the recent drop in visitation. Alternatives 1, 2, 6, and 7 propose to close Sylvan Pass due to a combination of reasons, including unacceptable avalanche risks to park employees and visitors.	No change.
D-AL2.1.4.2.2	Commentors state that snowmobiles operating on the CDST between the east boundary of GTNP and Moran Junction should be exempt from daily limits, or a percentage should be allowed for through snowmobilers on the CDST or those headed west on Grassy Lake Rd. Some recommend setting a daily limit of 15 BAT and 25 non-BAT EPA compliant snowmobiles on the Grassy Lake Rd.-CDST corridor and allowing those snowmobiles to travel either east or west.	887
RESPONSE	Snowmobiles operating on the CDST between the east boundary of GTNP and Moran Junction are exempt from daily entry limits. Additionally, alternative 7 would allow non-BAT travel for both east- and west-bound traffic on the Grassy Lake Road (see 2.6.7).	Added alternative 7.
D-AL2.1.4.2.3	Commentors state that the lower numbers of snowmobiles in the parks over the last four years have resulted in improvements in park air quality, soundscapes, and/or visitor experience. Some commentors commend the Park Service for these improvements.	81,184
D-AL2.1.5.1	Commentors state that rules relating to oversnow travel should be strictly enforced if snowmobiles are allowed in the parks. Some state that NPS law enforcement, rather than guides, be used to enforce rules. Some suggest those who break the rules should not be allowed to return to the park.	69
D-AL2.1.5.2	Commentors suggest that NPS take advantage of "fast pass," GPS speed tracking, and other new technologies to reduce staff requirements and/or improve enforcement.	5
D-AL2.1.5.3	Commentors discuss various potential snowcoach improvements, including small group size, less polluting vehicles operated only when full, more comfort, better handicap access, better reliability, and larger windows. Some commentors recommend scheduled shuttle service to accommodate longer stays or custom, non-motorized recreation once inside the park.	18
D-AL2.1.6	Commentors make general statements in favor of snowmobile access to the parks, such as: * NPS should continue to allow snowmobiles in the parks (or, should not close the parks to snowmobiles). * NPS should not place any restrictions on snowmobiles. * Individual snowmobile travel provides the best way to experience the parks in winter.	1,192
D-AL2.1.6.1	Commentors state reasons for eliminating snowmobiles from the parks. * Legal and policy mandates including Interior Secretary Kempthorne's management direction and strategic plan. * Scientific findings. * The will of the people. * Philosophical considerations, including that YNP was the first national park established in the world. * The nation and the world look to Yellowstone for guidance in stewardship of resources.	1

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Code	Code Description	Total Comments
RESPONSE	The EIS fully considers access options and limits. Air quality improvements have been the result of both lower snowmobile numbers and also BAT requirements for snowmobiles. NPS has required pre-sold passes through the West Entrance and provided an express lane for several years. NPS will continue to evaluate new technologies for potential uses in the parks. Both NPS and private industry have improved snowcoach comfort and reliability. Xanterra has provided handicap snowcoach access for several years.	No change.
D-AL2.1.7	Commentors express concern about one contractor having control of oversnow access to the park and state that NPS should consider issuing more than one concessions contract.	2
RESPONSE	Comment is outside of the scope of this EIS.	No change.
D-AL2.1.8	Commentors recommend that YNP, as the oldest national park, should be a leader in ecological management and/or sustainable recreation. Some state that given the scope of its responsibility for the resources and values entrusted to its care, NPS has an obligation to demonstrate and work with others to promote leadership in environmental stewardship.	36
RESPONSE	NPS has a strong track record of environmental stewardship, including several initiatives targeting all facets of park management and environmental stewardship. See section 1.5.2 for more detail.	More detail added to section. 1.5.2.
D-AL2.1.9	Commentors support setting winter usage fees to offset the costs of keeping the park accessible to winter visitors	7
RESPONSE	NPS has charged entrance fees for decades, partially offsetting the costs of park management.	No change.
D-AL2.3	Alternatives Dismissed from Further Consideration	
D-AL2.3.1	Commentors state that NPS should designate an area inside or outside Yellowstone for snowmobiling, including off-trail or extreme snowmobiling.	33
RESPONSE	As described in Section 2.3, off-trail use of snowmobiles in national parks is prohibited by Executive Order 11644 and its implementing regulations. Such use would violate the purpose of this EIS because it would constitute an unacceptable impact and/or impairment of park resources. It would also violate the need for this EIS, because such usage would incur greater impacts than the historic use which necessitates this EIS. Finally, although the NPS does not have management authority outside of national parks, many off-trail areas already exist in other areas near the parks.	No change.
D-AL2.3.2	Commentors ask NPS to reconsider the issue of snowplane operation on Jackson Lake.	3

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Code	Code Description	Total Comments
RESPONSE	NPS has been clear from the beginning of this process that the scope of analysis for the EIS does not include consideration of the use of snowplanes. The data and analysis in previous environmental analyses remain valid along with the conclusion that the use of snowplanes on Jackson Lake would result in impairment of the natural soundscape. The NPS is not aware of any new or additional information regarding snowplanes that would suggest any different conclusion. Therefore, the NPS would be in violation of the NPS Organic Act if it were to allow the recreational use of snowplanes on Jackson Lake. In addition, with their unguarded propellers and high travel speeds, snowplanes present unacceptable safety risks, even on the surface of Jackson Lake. Finally, the June 27, 2007 ruling by the Wyoming District Court upheld these conclusions. That ruling has been appealed; the court has not yet ruled upon the appeal.	Updated Section 1.1.1 to reflect the June ruling and subsequent appeal.
D-AL2.3.3	Commentors ask NPS to consider these management techniques: * Percentage of commercially guided snowmobile does not exceed 70% of daily total. * Percentage of non-commercially guided snowmobiles ranges from 25% to 50% of daily total; leader must complete certification course. * Increase percentage of non-commercially guided snowmobiles in exchange for lower daily limits. * Manage CDST as a through trail with group and group size limits. * Manage snowmobile use by daily group limit.	4
RESPONSE	The EIS fully considers various access options (unguided, non-commercially guided, all-guided, certified group leaders). See Sections 2.6.4 and 2.6.5 and alternatives 4 and 5.	No change.
D-AL2.3.4	Commentors recommend allowing snowmobile access during alternative periods (days or weeks), and/or varying periods of motorized/non-motorized use.	2
RESPONSE	These ideas were considered but dismissed during previous winter use planning efforts and during the scoping process for this EIS because they would be impractical to implement.	No change.
D-AL2.5	Description of Alternatives	
D-AL2.5.3	Monitoring and Mitigation	
D-AL2.5.3.1	Commentors recommend that NPS work with and or subsidize local concessioners regarding replacement of older snowmobiles or snowcoaches and inform them about updated emissions requirements and/or newer models.	6
D-AL2.5.3.2	Commentors ask NPS to communicate clearly with gateway communities and the public regarding its decision, any changes required by adaptive management strategies, and the transition. NPS should also provide adequate lead-time to adjust to new actions.	22
RESPONSE	NPS concession contracts and BAT certification procedures clearly indicate that once certified, a snowmobile is typically authorized to operate in the parks for six years. As specified in Section 2.5.3 of the DEIS, most non-emergency changes in park management implemented under the adaptive management program would be implemented only after a 6- to 12-month notification and waiting period. This provides ample opportunity for stakeholder communication and the lead time necessary for operational adjustments.	No change.

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Code	Code Description	Total Comments
D-AL2.5.3.3	Commentors state that ongoing NPS monitoring and evaluation is vital for managing parks to achieve the NPS mission. Some add that superintendents must continually monitor and examine all park uses to ensure that unanticipated and unacceptable impacts do not occur. Some suggest NPS re-evaluate the impact of snowmobile use every 3-5 years.	10
RESPONSE	Scientific studies and monitoring of winter visitor use and park resources (including air quality, natural soundscapes, wildlife, employee health and safety, water quality, and visitor experience) will continue under all alternatives. NPS continually evaluates impacts to park resources.	No change.
D-AL2.5.3.4	Commentors state that NPS should continue to analyze the costs of keeping the East Entrance open during the winter. Some state NPS should continue to consider safe and cost-effective mitigation measures to keep the pass open, as well as alternatives that meet the criteria presented by the community and commercial operations that access this entrance.	36
RESPONSE	The NPS will continue to evaluate new avalanche control technologies for their possible application on Sylvan Pass and whether the pass could be reopened for oversnow vehicle travel in the future.	Alternative 7, with a similar provision, added.
D-AL2.5.3.5	Commentors state that NPS should convert oversnow vehicles to biodegradable lubricants that are better for the environment.	2
RESPONSE	NPS already uses biodegradable lubricants and recommends their use for all motorized winter vehicles used in the parks, as discussed in 2.5.2.	No change.
D-AL2.5.3.6	Commentors state that NPS should have constant opening and closing dates.	16
RESPONSE	Alternative 7 would implement a winter season extending from Dec. 15 to March 15 each year, with some exceptions. See 2.6.7.	Alternative 7 added, with this provision.
D-AL2.5.3.7	Commentors suggest that adaptive management be used to manage winter use. Some state that adaptive management thresholds for oversnow vehicles be flexible within 20%, plus or minus. Some who support flexible daily entry limits state adaptive management could be used to address unwanted outcomes. Some add that keeping the East Entrance open will provide greater flexibility if daily entries need to be redistributed among entrances. Some question management options for soundscape protections.	11
RESPONSE	Adaptive management is an action common to all alternatives. See Appendix E. Additionally, audibility is only one measure used to monitor OSV soundscape impacts; maximum sound level is also used.	No change.
D-AL2.5.3.8	Commentors state that suggested mitigation measures in the PDEIS (such as a snowmobile license issued by the NPS) should be implemented to reverse recent declines in visitation at the East Entrance. They cite the requirement for 100% commercial guides as the cause.	5

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Code	Code Description	Total Comments
RESPONSE	As described in sections 2.6.4 and 2.6.5 and chapter 4, the concept of a certified group leader or other non-commercially guided group is analyzed. As specified in section 2.6.7, NPS would enter into a marketing partnership with Wyoming to address changes in access to the East Entrance.	No change.
D-AL2.5.3.9	Commentors state that NPS is inappropriately applying the adaptive management concept, using monitoring data to increase oversnow travel levels but not to provide greater resource protection.	1
RESPONSE	NPS disagrees. As specified in Appendix E, possible management options include adjustments to daily vehicle entry numbers upwards or downwards.	No change.
D-AL2.6	Action Alternatives (See consolidated response after Alternative 6 below)	
D-AL2.6.1	Alternative 1: Continue Current Plan (Preferred Alternative)	
D-AL2.6.1.1	Commentors express support for Alternative 1 and/or continuing the current Temporary Plan with some modifications. Some commentors add that this provides a balance and public choice with respect to transportation.	212
D-AL2.6.1.2	Commentors state that they oppose Alternative 1, the Preferred Alternative. Some commentors add reasons for opposing it, such as: * It will reduce winter visitation as it has under the Temporary Rule * Snowmobile limits are too low to sustain winter visitation * A group size of 17 snowmobiles is too large. * It favors the south and west gates, where the wealthy are.	998
D-AL2.6.1.3	Commentors object to allowing 720 snowmobiles per day (Alternative 1/ Preferred Alternative). Some commentors add that this would: * Equate to an increase in the daily limit over current levels. * Adversely impact visitor enjoyment of peace and quiet. * Conflict with recommendations of park biologists. * Reverse progress made to air quality and increase emissions. * Adversely impact wildlife, such as bison, who use groomed trails to leave the protection of the park.	96,102
D-AL2.6.1.4	Commentors object to the preferred alternative because it: * Disregards aspects of the Comey report and impacts on structures listed on the National Register of Historic Places * Manipulates cost/visitor data * Lacks an alternative based on the current management plan * Would concentrate traffic where most animals live * Would close a federal highway * Would deprive individuals of motorized access * Violates the Americans with Disability Act by restricting East Entrance access	3,160
D-AL2.6.1.5	Commentors object to the preferred alternative because there has been no new information to persuasively reject the 2000 EIS and its impairment finding, or the 2001 rulemaking to ban all recreational snowmobiling in the park. They state the DEIS contains no new information that warrants selection of any alternative other than Alternative 2.	10
D-AL2.6.2	Alternative 2: Snowcoaches only	

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Code	Code Description	Total Comments
D-AL2.6.2.1	Commentors support Alt. 2 and/or eliminating recreational snowmobiling. Some add: * Fewer snowmobiles have improved park conditions * Seven former NPS directors support it. * Snowcoaches are practical, efficient, safer, environmentally responsible, adaptable to low snow levels, and they benefit gateway communities and provide the best air quality of all alternatives. * Some snowmobilers violate rules. * Only handicapped individuals should be able to use them.	89,006
D-AL2.6.2.1.1	Commentors state that NPS should expedite implementation of Alternative 2. Some commentors add that: * Alternative 2 balances public access with resource preservation. * Strict limits on snowmobiles should remain in place during transition.	72,293
D-AL2.6.2.1.2	Commentors state NPS should eliminate recreational snowmobiling in the parks because it takes the focus away from the parks and puts it on high-performance machines. Some commentors add that managing snowmobile operations with tight budgets takes staff away from important visitor education and park operations.	289
D-AL2.6.2.2	Commentors oppose Alternative 2 for a variety of reasons: * It does not provide an adequate winter experience for the visitor. * Snowcoaches are not reliable and cannot provide access to the whole park. * Snowcoaches negatively impact groomed roads. * Snowcoaches alone cannot sustain winter visitation.	305
D-AL2.6.3.1	Commentors oppose Alternative 3 for a variety of reasons: * It does not provide an adequate winter experience for the visitor. * Grooming is essential for park management and protection.	275
D-AL2.6.3A	Alternative 3a: Eliminate Most Oversnow Roads / Road Grooming	
D-AL2.6.3A.1	Commentors express support for Alternative 3a and/or eliminating most oversnow roads in the parks.	31
D-AL2.6.3B	Alternative 3b: Close Oversnow Roads - No Action	
D-AL2.6.3B.1	Commentors express support for Alternative 3b and/or banning of recreational snowmobiles and snowcoaches in the parks. Some commentors add that: * This is the only alternative that would treat all visitors fairly, not just those who can afford the high cost of snowmobile, snowcoach, or commercial transport. * Continuing to allow snowmobile use in the parks inhibits the development of snowmobiling alternatives elsewhere.	69
D-AL2.6.3B.2	Commentors state that they oppose Alternative 3B. Some commentors add that: * It is too restrictive. * It should not be the environmentally preferred alternative because it does not provide access without resource degradation.	10
D-AL2.6.3B.3	Commentors object to Alternative 3B as the environmentally preferred alternative. They state the DEIS acknowledges Alt. 3B "is not as effective in sharing life's amenities as the other alternatives because of the lack of oversnow vehicle access..." They state Alt. 2 would yield lower impacts to YNP's air quality, soundscapes, and wildlife than continued snowmobile use while providing motorized public access.	1
D-AL2.6.4	Alternative 4: Expand recreational use	

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Code	Code Description	Total Comments
D-AL2.6.4.1	Commentors express support for Alternative 4 and/or elements of it, including some or all of the following: * Expanding recreational use by raising daily snowmobile limits * Allowing 25 percent unguided or noncommercial entries. * Reopening all Yellowstone side roads to snowmobile visitors. * Allowing 100 snowmobiles per day on Jackson Lake, which is consistent with past use levels. Some commentors add that it balances resource protection with sufficient access.	3,244
D-AL2.6.4.2	Commentors recommend unlimited snowmobile operation in the parks, reducing impacts by asking the snowmobile industry to produce a battery-powered machine.	4
D-AL2.6.4.3	Commentors state that they oppose Alternative 4. Some commentors state reasons why they oppose it: * It does not balance park protection with visitor access. * It includes an option for private snowcoaches. There should be no preferential treatment for those who own their own snowcoaches.	3
D-AL2.6.5	Alternative 5: Provide for Unguided Access	1
D-AL2.6.5.1	Commentors express support for Alternative 5 and/or allowing 20 percent of daily snowmobile entries to be unguided.	52
D-AL2.6.5.2	Commentors state that they oppose Alternative 5. Some commentors add that the limits are too low.	1
D-AL2.6.6	Alternative 6: Mixed Use	
D-AL2.6.6.1	Commentors express support for Alternative 6 and/or allowing wheeled vehicle access to Yellowstone's interior in addition to snowmobiles and snowcoaches.	10
D-AL2.6.6.2	Commentors oppose Alternative 6 for a variety of reasons: * It does not provide an adequate winter experience for the visitor. * It would be detrimental to effective management of the park interior. * It is too expensive. * It would be logistically unrealistic because visitors could not cross the park in one type of vehicle. * It would cause air quality impairment at West Yellowstone. * No plowing of roads should occur in the Park.	271
D-AL2.6.6.3	Commentors state that they support use of alternative fuels on commercial wheeled vehicles to reduce air impacts in the parks.	7
RESPONSE (for all D-AL2.6 comments)	In general, these expressions of support and opposition relate to the decision that the commenter would like to see the NPS make. The comments will be considered in making the final decision but there is nothing in those opinions that would substantially alter the range of alternative features considered in the EIS. The Council on Environmental Quality (CEQ) mandates that EISs consider a range of alternatives, as done in this EIS. NPS understands that some alternatives will attract more support than others. Therefore, these expressions of support or objection will not be responded to; they are listed here for the readers' information. NPS must base its decision upon consideration of all the impacts caused by the seven different alternatives in this EIS. No one impact, such as socioeconomics, is considered any more carefully than others. The comment about selection of alternative 3B as the environmentally preferred alternative is responded to below in the separate response to other comments received after the close of the public comment period.	No change.

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Code	Code Description	Total Comments
D-EC4	ENVIRONMENTAL CONSEQUENCES	
D-EC4AQ	Effects on Air Quality and Air Quality-Related Values	
D-EC4AQ.1	Commentors state that snowmobiles have negative impacts on air quality, and/or object to their negative impacts. Some commentors add that snowmobiles pollute because they lack the emission controls that automobiles have. Other commentors state that the DEIS omits the fact that BAT snowmobiles have lower emissions per person than snowcoaches.	96,686
D-EC4AQ.2	Commentors state that snowcoaches have negative impacts on air quality, and/or object to their negative impacts. Some commentors add that snowcoach tailpipe emissions are unregulated.	30
D-EC4AQ.3	Commentors state that Sec. 3.4 of the DEIS shows that National Ambient Air Quality Standards were not violated even by older snowmobiles and that BAT has reduced pollution even more.	2
RESPONSE	The EIS fully considers the effects to air quality from oversnow vehicle use in the parks. A range of alternatives that includes limits on numbers of vehicles, BAT for both snowmobiles and snowcoaches, monitoring, and adaptive management, and that addresses these effects is in the EIS. The reader is referred to Sections 1.7.4, 3.4 and 4.2.3. The reader is also referred to the two Bishop et al. reports (2006 and 2007), both of which are incorporated by reference (see section 1.3) and which compare the emissions of four-stroke snowmobiles, two-stroke snowmobiles, and snowcoaches.	Figure 3-5 revised to accurately depict 2 nd -hr. maximum CO at West Entrance vs. visitation there.
D-EC4G	General Impacts	
D-EC4G.1	Commentors state that snowmobile use has negative impacts on park resources.	19,675
D-EC4G.2	Commentors state that snowmobile use contributes to global warming and worldwide climate change due to carbon emissions.	196
D-EC4G.3	Commentors state that snowmobiling does not result in negative environmental impacts. Some commentors state that there is not proof that regulated winter activity harms anything in the parks.	76
D-EC4G.4	Commentors state that snowcoach use has negative impacts on protected park values.	7
RESPONSE	The EIS fully considers the effects to park resources from oversnow vehicle use in the parks. As disclosed in section 3.2.3, snowmobiles that currently meet the NPS' BAT requirements are more fuel efficient than two-stroke snowmobiles and, therefore, contribute less to climate change. The reader is referred to Sections 3.2.3 (Visitor Fuel Consumption by Alternative), 3.8.3 (Snowpack Variability), and 4.2.3 (Air Quality). Climate change is discussed in Section 1.5.2.	Added Section 3.2.3.
D-EC4SE	Effects on the Socioeconomic Environment	

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Code	Code Description	Total Comments
D-EC4SE.1	Commentors state that closure of the East Entrance in winter as described in the preferred alternative would have negative socioeconomic impacts on east side gateway communities and/or: * Eventually end visitor use through this entrance * Threaten winter businesses and uses on the North Fork of the Shoshone River * Impede growth in the Cody area.	3,318
RESPONSE	The EIS acknowledges the impacts on the economics of nearby communities, including specifically businesses along the North Fork of the Shoshone River. For the Final EIS, the economic analysis includes the Wapiti, WY zip code (which incorporates the North Fork area).	Additional economic modeling and analysis completed.
D-EC4SE.3	Commentors state that keeping the park open to snowmobiles could make it lose its natural appeal and/or have negative socioeconomic impacts (i.e., decreased tourist dollars) through decreased visitation while positive socioeconomic impacts could result from snowmobile restrictions (less pollution will attract more visitors). Some commentors add that gateway communities have already or will benefit from snowcoach operations and/or diversifying winter use.	118
RESPONSE	The economic benefits of the different modes of transportation are illustrated through the economic analyses and the underlying visitor surveys referenced in the EIS.	No change.
D-EC4SE.4	Commentors state that managing snowmobile use is extremely costly on a per capita basis and is a waste of tax dollars.	35
RESPONSE	The cost of operating the park under each alternative in the winter is estimated in Appendix F of the EIS.	No change.
D-EC4SE.5	Commentors state that the parks are important economically to surrounding counties and citizens expect reasonable access to the parks.	94
RESPONSE	The EIS acknowledges the impacts on the economics of nearby communities. The sections on Visitor Access and Circulation (3.8 and 4.2.7) discuss and analyze the effects of the alternatives on visitor ability to use the parks via different modes of transportation.	No change.
D-EC4SE.6	Commentors state that negative socioeconomic impacts on gateway communities, concessioners and guided snowmobile outfitters/users have resulted from snowmobile restrictions and/or Park Service/Federal Government misinformation and other actions. Some commentors add that these actions have given a false impression that visitors do not want to use the East Entrance in winter.	123
RESPONSE	The cumulative effects discussion recognizes that longer-term trends have also affected businesses near the park. Therefore, most tables and charts regarding visitor use illustrate ten or more years of use so that the reader can see trends (See Section 3.8.5).	No change.

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Code	Code Description	Total Comments
D-EC4SE.7	Commentors state that there has been a decline in snowmobile use under the temporary rule, reducing entrance revenues by at least \$500,000 annually.	4
D-EC4SE.8	Commentors state that revenue from snowmobilers provides capital required to maintain the Park so that it may be enjoyed by all users in all seasons.	12
RESPONSE	The issue of visitor fees and revenues was not raised in scoping and is, therefore, not an impact topic in this EIS. Also, since the early days of national parks, few (if any) parks have paid their operating costs solely through visitor fees. Most parks do the same today and are generally required to operate regardless of fees collected; such is true of Yellowstone, which collects the majority of its visitor fees in summer.	No change.
D-EC4SE.9	Commentors state that despite the drop in East Entrance visitors, the Cody economy continues to grow; Sylvan Pass closure would not have serious negative impacts.	1
D-EC4SE.10	Commentors state that evidence contradicts the claim that banning snowmobiles will have negative socioeconomic impacts on gateway communities. They state recent tax data indicates snowmobile use and overall winter use have declined but it has not detectably impacted economies of surrounding counties.	2
RESPONSE	The EIS acknowledges the impacts on the economics of nearby communities, including specifically the Cody area economy. For the Final EIS, the economic analysis includes the Wapiti, WY zip code (which incorporates the North Fork area).	No change.
D-EC4SE.11	Commentors state that snowmobile use has increased for the past few years, even faster than snowcoaches have.	2
RESPONSE	Visitation trends are provided in Section 3.8.5.	Section 3.8.5 updated to include winter of 2006-07.
D-EC4SS	Effects on the Natural Soundscape	
D-EC4SS1	Commentors state that snowmobiles in the parks destroy the natural winter soundscape.	115,028
D-EC4SS2	Commentors state that snowcoaches in the parks have negative impacts on the natural winter soundscape.	18
D-EC4SS2.1	Commentors state that with snowcoaches only (Alternative 2) the natural soundscape will be present over more acres a greater percentage of the time, thereby removing this impairment to park resources in the shortest possible time.	1
D-EC4SS3	Commentors state that the DEIS conclusively demonstrates that continued snowmobile use with BAT has no adverse impacts on soundscapes; with BAT machines, sounds are not intrusive, and the backcountry offers a natural soundscape.	7

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Code	Code Description	Total Comments
D-EC4SS3.1	Commentors state that most visitors traveling along park roads or visiting developed areas expect to hear OSV noise and so that noise will not be a significant deterrent to their visit. They state NPS should include Management Policy 8.2.2 in Section 3.7.1 which states park visitors expect to hear " sounds associated with people visiting their parks....."	5
RESPONSE	The EIS fully considers the effects to soundscapes from snowmobile, snowcoach, and wheeled vehicle use in the parks. BAT requirements for snowmobiles will continue under all alternatives and BAT requirements for snowcoaches will be implemented under all alternatives. The reader is referred to Sections 1.7.5, 3.7, 4.2.6, and Appendix E.	Section 3.7.1 reviewed and revised; Management Policy 8.2.2 included.
D-EC4VE	Effects on Visitor Experience	1
D-EC4VE.1	Commentors state that snowmobile use has negative impacts on visitor experience.	47,456
D-EC4VE.2	Commentors state that closure of the East Entrance would have negative impacts on visitor experience because it provides the widest range of winter use options. Some add that closure would not provide park visitors, local communities, and others an assurance that winter use management will remain fairly stable and predictable over the long-term and would not facilitate an environment in which visitors can make informed decisions about visiting the parks.	126
D-EC4VE.3	Commentors state that requiring snowcoach travel has negative impacts on visitor experience, and visitors do not like them. Some commentors add that improvements such as providing more wildlife stops could help. Some state they do not provide access to same areas of the park that snowmobiles do.	7
D-EC4VE.4	Commentors state that snowcoaches enhance visitor experience and/or are consistent with tour industry reports that groups prefer interpretive services and low environmental impacts. Some question the basis for stating in the DEIS that under Alternative 2, "... opportunities to view wildlife and scenery may decrease."	19
RESPONSE	The EIS fully considers impacts to the visitor experience. The reader is referred to Sections 3.3, 3.9, 4.28.	Section 4.2.8 revised regarding wildlife viewing from snowcoaches.
D-EC4VS	Effects on Public and Employee Health and Safety	
D-EC4VS.1	Commentors state that snowmobile use has negative impacts on safe working conditions for park employees and/or the health and safety of employees and visitors.	72,822

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Code	Code Description	Total Comments
D-EC4VS.1.1	Commentors state that safety is one of the arguments NPS uses in favor of requiring commercial guides for all snowmobiles, but there is no directly comparable basis to conclude unguided access will be unsafe because it has not been allowed or tried on an experimental basis since implementation of managed winter use in 2003.	5
D-EC4VS.2	Commentors state that it would be irresponsible to allow skiers and snowshoers to use Sylvan Pass if it is closed and not groomed for winter use, due to the health and safety risks and liability to the park.	265
D-ECVS.3	Commentors state that snowmobile use does not have negative impacts on safe working conditions for park employees and/or the health and safety of employees and visitors.	7
RESPONSE	The EIS fully considers impacts to public and employee health and safety. The reader is referred to Sections 3.5 and 4.2.4. Commercial guiding has not only resulted in a substantial drop in OSV law enforcement cases, but has also resulted in more orderly visitation and fewer incidents involving wildlife on groomed roadways. As discussed in section 2.6 under each of the alternatives that would close Sylvan Pass to motorized travel, Sylvan Pass would be treated as backcountry, with snowshoers and skiers traversing it assuming the risks of traveling through the avalanche zones.	The preferred alternative was revised to allow skier drop-offs and road grooming only to within four miles of the avalanche zone, not six. Section 3.5.3 clarified regarding law enforcement statistics.
D-EC4WH	Effects on Wildlife	
D-EC4WH1	Commentors state that snowmobiles have negative impacts on park wildlife. Some commentors add that animals are already under stress trying to survive the harsh winter.	43,074
D-EC4WH1.1	Commentors state that snowmobiles do not have negative impacts on park wildlife, including bison. Some state that possible adverse effects from oversnow vehicle use will always be insignificant compared to other variables.	87

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Code	Code Description	Total Comments
RESPONSE	The EIS fully considers impacts to wildlife. NPS intends to implement the research proposal "Evaluating Key Uncertainties Regarding Road Grooming and Bison Movements" under any alternative chosen. The reader is referred to Sections 2.5.5, 3.6, and 4.2.5.	Included discussion of research proposal in sections 2.5.5 and 3.6.3.
D-ED	EDITORIAL COMMENTS	
D-ED1	Commentors recommend a change in Sec. 2.5.4, page 30, by replacing bullet 1 with the following text: "Beginning in the 2011-2012 season, all snowcoaches must meet ... having EPA Tier 11 emissions control equipment."	1
RESPONSE	Discussions with EPA and guides and outfitters indicated that Tier I standards would be effective in achieving BAT air quality goals for snowcoaches. However, the NPS also recognizes that Tier II requirements are coming into effect and can achieve a higher level of emission controls. Through concession contracts, the NPS intends to encourage snowcoach guides and operators to use Tier II emission controls and to employ quieter coaches than the BAT requirement (as discussed in section 2.5.3).	Section 2.5.3 revised to include incentives to use quieter technologies.
D-ED2	Commentors ask NPS to clarify the process used to determine the overall seasonal entry limit for commercial snowmobiles (p. 51 of the DEIS).	1
RESPONSE	EISs must examine a broad range of alternatives. This EIS does that in part by examining alternatives with a broad range of allowable daily snowmobile and snowcoach entries. The number of seasonal snowmobiles allowed under Alternative 5 falls approximately midway between that allowed by Alternative 4 (which would allow 1025 daily, every day of the winter use season) and the no-action alternative (in which oversnow vehicle use of the parks would cease). Alternatives 1, 2, 3a, 6, and 7 reflect other daily and/or seasonal allocations, and modes of winter travel, falling somewhere between the same two extremes.	No change.
D-ED3	Commentors ask NPS to clarify why snowmobiles would still be allowed "from the east boundary of GTNP to Buffalo Fork River" in the alternatives whereby the CDST is eliminated (2 and 5). It is unclear what the purpose for this continued access would be in the absence of the balance of the CDST.	1
RESPONSE	NPS would provide this access because it would allow access to points east on the CDST to private landowners in the Buffalo Fork area.	No change.
D-ED4	Commentors question data on pp. 79-81 of the DEIS that, they say, gives the false impression that visitation at some locations is up over the years depicted by the table. They add that the NPS manipulated these data to reach a misleading conclusion. Commentors also request that Sec. 3.8.5 be clarified to clarify that there has been a net decrease of over 47 percent in Yellowstone's visitation.	1

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Code	Code Description	Total Comments
RESPONSE	Data in section 3.3.3.3 were the best available. Table 3-20 and Figures 3-18 and 3-19 present comprehensive visitation data and trends.	No change.
D-ED5	Commentors request the following change on p. 191: Revise "new standards will begin to take effect with the 2006 model year" to clarify that EPA- regulated snowmobiles have already been in the marketplace for two full years, and are now entering their third year of sales.	1
D-ED6	Commentors submit identical list of 65 editorial comments on specific pages in the DEIS.	2
RESPONSE	Document reviewed; many comments were statements of opinion or preference rather than editorial. Many of the suggested changes were not made because the language existed elsewhere in the document.	Comments included as appropriate.
D-ED7	Commentors request that NPS do a better job of explaining park budgets and priorities to help the public understand the reasons for identifying Alt. 1 as the Preferred Alternative.	1
RESPONSE	Park budgets are outside the scope of this EIS, and consequently, are not included in the analysis and/or reasoning for selection of the preferred alternative.	No change.
D-ED8	Commentors request that the NPS Policy on Air Quality be included in the "Regulatory and Policy Overview" on air in the Final EIS.	1
RESPONSE	Section 3.4.1 contains a regulatory and policy overview for air quality, and Management Policy 4.7.1 is included in Appendix A.	No change.
D-ED9	Commentors recommend that the desired condition for Health and Safety in the DEIS P. S-4, Table S-1, which states "The safety and health of persons, and protection of property, are ensured by identifying and preventing potential injuries from recognizable threats" be rewritten to state something like, "The safety and health of persons will be provided to the extent possible by...."	5
RESPONSE	Reviewed desired condition definition for Health and Safety.	Revised desired condition definition for Health and Safety.
D-ED11	Commentors ask NPS to clarify if an "episode" is an avalanche control mission in the discussion of avalanche hazard mitigation on page 97, and if the average includes spring avalanche control missions.	6
RESPONSE	Section 3.5.4 reviewed.	Section 3.5.4 revised and clarified.
D-ED12	Commentors ask NPS to provide definitions of terms in Table 4-40, p. 207, to explain what they mean in relation to avalanche hazards.	5

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Code	Code Description	Total Comments
RESPONSE	This is now table 4-46. These definitions apply directly to avalanche hazards. Specifically, alternatives that keep Sylvan Pass open to OSV travel are rated as having major impacts because "extensive mitigation measures would be needed and their success would not be guaranteed. ... High potential exists for serious accidents or hazards," as specified in the definition for major impacts in table 4-46.	Definition of ATSDR MRL added at bottom of table 4-46.
D-ED13	Commentors state that the 2006 NPS Policy on Air Quality is omitted in the DEIS from the "Regulatory and Policy Overview" on Air Quality (DEIS at p. 82) and NPS should ensure that the Final EIS includes the policy.	1
RESPONSE	Section 3.4.1 contains a regulatory and policy overview for air quality, and Management Policy 4.7.1 is included in Appendix A.	No change.
D-ED14	Commentors state that the Final EIS should disclose that of the six alternatives analyzed, Alternative 2 would "perpetuate the best possible air quality" in Yellowstone. The Final EIS should also disclose in non-technical language readily understandable by decision makers and the public that Alternative 1, because of its emphasis on continued snowmobile use, would result in five times greater carbon monoxide emissions and 17 times greater hydrocarbon emissions than Alternative 2.	1
RESPONSE	Alternative 3B would perpetuate the best possible air quality, as described in section 4.2.3 (see for example tables 4-29 and 4-33).	No change.
D-PN1	PURPOSE AND NEED	
D-PN1.1	Commentors describe what they consider to be NEPA process violations during preparation of the EIS: * It did not follow federal NEPA guidelines because all reasonable alternatives were not explored and objectively evaluated. * The preferred alternative fails to consider multiple factors. * NPS did not adequately consider the impacts to the Cody community during scoping.	3,142
D-PN1.1.1	Commentors state that selection of the preferred alternative violates NEPA because it will result in unacceptable impacts and significant impairment of the Parks' resources. They add that allowing 720 snowmobiles into the Park per day is arbitrary and capricious.	2
D-PN1.1.1.1	Commentors state that there are NEPA deficiencies and flaws that do not support selection of the Preferred Alternative, including: * the Preferred Alternative appears to be predetermined * a lack of decision criteria * a cumulative effects analysis that provides inadequate treatment of climate change.	5
D-PN1.1.1.2	Commentors state that implementation of the proposed preferred alternative would be in violation of laws and policies. They state these violations apply to potential impacts, inadequately acknowledged and considered in the preferred alternative, to three primary and critical resources in the parks - air quality, natural soundscapes or natural quiet, and wildlife.	1
D-PN1.1.2	Commentors state that NPS has no choice but to complete the DEIS and previous NEPA actions because they are ordered by the courts as the result of litigation by parties on all sides.	1

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Code	Code Description	Total Comments
D-PN1.1.3	Commentors point out concerns with the way NPS has proceeded with the NEPA process since 1997. * They have not followed an informed process, nor considered all factual data provided, nor properly included cooperating agencies in the process. * Many of the decisions and pending decisions have not followed law.	1
RESPONSE	A wide range of alternatives was considered in this EIS process. The EIS fully considers all alternatives presented, although some are dismissed from further consideration in Section 2.3. The alternatives in the EIS process were informed by past winter planning efforts, court decisions, cooperating agency comments, and public comments. Identification of a preferred alternative in the DEIS is not a decision; NPS may choose and/or combine elements of any alternative in its record of decision. None of the alternatives would result in unacceptable impacts or impairment of park resources. NPS fully considered impacts to the Cody community in the EIS process. NPS fully involved cooperating agencies in the EIS process, as detailed in chapter 5. NPS also developed and implemented the "Public and Agency Participation Plan" and Memoranda of Understanding with ten cooperating agencies, as also described in Chapter 5.	Alternative 7 added. Added new concepts to section 2.3 or incorporated them into other alternatives for analysis. Added table 5.2.
D-PN1.2	Purpose and Need for Action	
D-PN1.2.1	Commentors state that previous studies have already evaluated the impacts of snowmobiles and/or the public has previously expressed their opinion against snowmobiles and for a transition to snowcoaches. Some commentors add that: * A snowmobile phase-out is consistent with federal law and NPS policy. * The EIS is unneeded and/or wastes money.	114,595
RESPONSE	As described in Section 1.5.1, unless a new decision and rule are promulgated, areas of the parks that have been accessible by recreational snowmobiles and snowcoaches in the past would only be accessible by non-motorized means because recreational motorized use is not authorized beyond March 2007. The EIS is consistent with federal law and NPS policy.	No change.
D-PN1.2.2	Commentors state that visitors have already given up their cars to ride in coaches in some western parks such as Yosemite and should be willing to give up some level of access to protect Yellowstone in the winter.	34
RESPONSE	The EIS fully considers access by snowcoaches in all alternatives 1-7; access by snowcoaches only is considered in alternative 2 and buses and other wheeled commercial vehicle transit is considered in alternative 6.	No change.
D-PN1.4	Scope of Analysis: Range of Alternatives Considered	
D-PN1.4.1	Off scope/no comments: Commentors make statements that are off scope relating to topics such as: * The NPS Newsletter * Areas outside the park jurisdiction or boundary * Concessioner breach-of-contract issues * Surreptitious planning to plow Cooke Pass to Cooke City.	134

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Code	Code Description	Total Comments
RESPONSE	No response needed; comments are beyond the scope of this EIS.	No change needed.
D-PN1.5.2	Commentors make statements about impact topics dismissed from detailed analysis, including soils and vegetation.	11
RESPONSE	These topics were not raised as impact topics during scoping or are dismissed as impact topics in section 1.5.2.	No change.
D-PN1.5.2.1	Commentors state that snowmobiling wastes scarce petroleum resources. Some commentors add that eliminating recreational snowmobiling would set an example of how to conserve nonrenewable energy.	141
RESPONSE	The EIS fully considers the fuel consumption of each alternative.	Added section 3.2.3.
D-PN1.6	Public Involvement	
D-PN1.6.1	Commentors request that their names not be added to NPS mailing lists.	18,744
RESPONSE	Names will not be added (names are only added in response to specific requests).	No change.
D-PN1.6.2	Commentors state that NPS should consider the comments of all park stakeholders, not just the vocal minority or commercial interests. Some commentors add that: * NPS should not take actions that benefit the few to the detriment of others. * Snowmobiles impact the ability of the majority to enjoy the park without pollution, noise, and other associated negative impacts.	14,100
D-PN1.6.3	Commentors state that NPS should consider the comments of all park stakeholders, including those who support snowmobiles access to Yellowstone. Some commentors add that the debate is not about preservation, but about an elitist group that wants to eliminate a behavior they do not like.	97
D-PN1.6.4	Commentors, who object to closure of Sylvan Pass, state that they support a confrontational approach to influence decision-making if NPS does not honor their request. This would include actions such as a local picket or camp-out on the East Entrance with complete media involved, with participants risking jail time if needed.	1
D-PN1.6.5	Commentors make statements about the public comment process and/or NPS messages. * Stakeholders appreciate the process. * The initial decision to limit public meetings to Cody and West was flawed; it diminished the value of comments from other meetings. * NPS says NEPA is not a vote, but the message is that public preferences don't count. * NPS statements convey form letters aren't as important as non-forms. * The DEIS did not adequately address agency comments on the PDEIS.	11

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Code	Code Description	Total Comments
RESPONSE	The NPS appreciates the level of stakeholder interest in the issues of managed winter use in the parks. All comments have been reviewed and considered. Regardless of the decision reached during this process, the NPS understands that many stakeholders will not be satisfied, in part due to the conflicting values that most stakeholders have, discussed in section 3.9.2. NPS carefully reviewed and considered PDEIS comments from the cooperating agencies and made changes as appropriate. A detailed analysis of PDEIS comments and their use by NPS was provided to the cooperating agencies in a meeting with NPS technical representatives in December 2006.	No change.
D-PN1.7	Major Issues	
D-PN1.7.1	Commentors state that Yellowstone and Grand Teton are unique and, therefore, people should snowmobile on other public lands. Some state that snowmobile use is not "uniquely suited and appropriate" to the parks and given that there are thousands of miles of trails and acres on public lands adjacent to the parks, snowmobilers can use these lands, consistent with the 2006 Management Policies.	685
RESPONSE	The NPS believes that carefully regulated and monitored oversnow vehicle use is part of an appropriate range of winter park access to these parks where OSVs have been operated for over 50 years. Section 2.3 acknowledges that many snowmobile opportunities exist outside the parks.	No change.
D-PN1.7.2	Commentors recommend that NPS promote or groom more trails for non-motorized activities. Some commentors add that they: * Have fewer negative impacts on the experiences of other visitors * Promote fitness in accordance with compliance with Executive Order 13266 * Are better for the environment * Can also generate revenue for area communities.	53,679
RESPONSE	The NPS does encourage appropriate non-motorized activities as subject to a winter severity index or the provisions of alternative 3, depending on which alternative is chosen. The reader is referred to Sections 2.5.4-2.5.6 as well as the "Promote cross-country skiing and snowshoeing" part of Section 2.3.	No change.
D-PN1.7.3	Commentors state that the DEIS needs to consider the closure of Sylvan Pass as a major issue. Some commentors add that NPS: * Depends on its concessioners and surrounding communities for visitor support and access. * Should ensure that its policy actions consider the interests of these parties and should do a better job of communicating with concessioners about research and new technologies.	48
D-PN1.7.4	Commentors state that it is not the responsibility of the National Park Service to maintain the economies of gateway communities.	75
D-PN1.7.5	Commentors state that NPS should manage visitor use and access in a way that is fair to all parties and/or meets the needs of local stakeholders as well as visitors from other areas.	54

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Code	Code Description	Total Comments
RESPONSE	The potential closure of Sylvan Pass was analyzed as a major issue under Public and Employee Health and Safety, sections 3.5 and 4.2.4. Through management of its concession contracts, the NPS meets formally two times per year and informally several times per year with guides, outfitters, and concessionaires regarding park conditions, operations, and policies, striving to ensure good communication with the affected parties. As noted above, the NPS reviewed and considered all comments, and understands that regardless of the decision reached during this process, many stakeholders will not be satisfied, in part due to the conflicting values that most stakeholders have, discussed in section 3.9.2. Impacts upon local and regional economies were analyzed in the socioeconomic analysis, sections 3.3 and 4.2.2. The reader is also referred to Sections 1.7.1 and 3.3.1.	Section 3.5.4 and 4.2.4 revised.
D-PN1.8	NPS Mandates	
D-PN1.8.1	Commentors state that the mission of NPS is to conserve the parks and their associated values (e.g., wilderness, wildlife, pristine nature, peace and quiet, solitude) and leave them unimpaired for future generations. Some commentors add that * Snowmobile use in national parks conflicts with this mission. * Multiple mandates require NPS to fulfill this mission: public laws, executive orders and directives.	69,316
RESPONSE	The EIS fully considers and conforms to NPS laws, policies and regulations. The reader is referred to Section 1.8 and Appendix A.	No change.
D-PN1.8.1.1	Commentors state that NPS has no responsibility to provide access to a range of appropriate activities. Some commentors add that the statement in Table S-1 (Desired Conditions/Visitor Access) is without legal or policy basis and/or is a false assumption upon which to base the DEIS.	12
RESPONSE	Desired conditions have remained the same throughout the several recent planning efforts, including the 2000, 2003, 2004, and current planning processes. The concept of a range of appropriate activities is fully supported in NPS 2006 Management Policies, policy 8.2 (visitor use).	No change.
D-PN1.8.1.2	Commentors state that the decision on winter use is especially important because it will establish a precedent for how the 2006 NPS Management Policies will be implemented throughout the Park Service system.	17
D-PN1.8.2	Commentors state that the mission of NPS is to provide opportunities for the public to enjoy the parks. Some commentors add that: * The parks belong to the public. * It is a public park, not a pristine wilderness and should not be treated as such (i.e., snowmobile access should continue). * Visitors should have access without using commercial businesses.	256
D-PN1.8.3	Commentors state that a balance between all users should be the goal and/or is needed to protect the resources. Some state that snowcoaches represent the best compromise because they allow motorized access while protecting the park's resources.	28,292
D-PN1.8.3.1	Commentors state that conservation is to be predominant when the choice is to be made between use and protection of the resources.	31

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Code	Code Description	Total Comments
D-PN1.8.4	Commentors state objections to perceived efforts by the Administration and/or the NPS to rewrite basic park policy to promote recreation over park protection. They cite examples such as: * Defining impact levels in ways that depart from decades of NPS policy. * Disregarding the YNP enabling act and existing NPS snowmobile regulations.	833
D-PN1.8.5	Commentors state that NPS guidelines on resource protection require park managers to select forms of transportation that have the fewest impacts.	683
D-PN1.8.6	Commentors note that new Clean Air Act Management Policies require the National Park Service to maintain the best possible air quality in the parks.	27,516
D-PN1.8.7	Commentors state that historical use of snowmobiles has indicated this use was acceptable because park managers must not allow uses that would cause unacceptable impacts; therefore, Alternative 1 will not result in unacceptable impacts or impairment of Park's resources.	1
RESPONSE	The EIS fully considers and conforms to NPS laws, policies and regulations. The reader is referred to Section 1.8 and Appendix A.	No change.
D-PN1.8.7.1	Commentors state that the unacceptable impacts standard is a misstatement of law and recreational uses can only be prohibited if the use causes impairment of Park resources.	1
RESPONSE	Under the 2006 NPS Management Policies (section 8.2) and 36 CFR 1.5, the NPS does have authority to manage uses.	No change.
D-PN1.8.8	Commentors state that the 2001 ban on snowmobiles was forced through by political considerations without studies or information to justify the change from previous policy.	2
RESPONSE	Off scope/no response necessary.	No change.
D-PN1.8.9	Commentors state allowing limited unguided and/or non-commercially guided access will better meet the NPS Policy for Visitor Use that states, the Service will, to the extent practicable, afford visitors ample opportunity for inspiration, appreciation, and enjoyment through their own personalized experiences... They add that under the Preferred Alternative there is no opportunity for snowmobile visitors to enjoy YNP through their own personalized experience.	5
RESPONSE	As noted in the visitor experience section (section 4.2.8), the NPS acknowledges that the guiding requirement diminishes the opportunity to travel independently through the park, but believes that this requirement is necessary to mitigate the impacts of snowmobile use. The EIS fully considers and conforms to NPS laws, policies and regulations. The reader is referred to Section 1.8 and Appendix A.	No change.
D-PN1.9.1	Commentors recommend that NPS coordinate the EIS with the Grand Teton Transportation Plan EIS and consider both together.	2

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Code	Code Description	Total Comments
RESPONSE	These are separate issues and the transportation plan is already complete. Management of winter activities, such as grooming of pathways proposed in the Grand Teton NP Transportation Plan, was considered to be outside of the scope of that planning effort. In the Final EIS for the Transportation Plan, the NPS stated that it does not intend to groom the proposed pathways for cross country skiing; this EIS does not reconsider that decision.	No change.
D-RVC4	CUMULATIVE IMPACTS ON PARK RESOURCES AND VALUES	
D-RVC4.4	Commentors state that the DEIS failed to evaluate the cumulative impacts of all federal actions on the economy of the Cody community and other surrounding areas and on visitor access and circulation if the East Entrance is closed.	6
D-RVC4.4.1	Commentors state the cumulative analysis section is insufficient because: * Scoping did not properly cover concerns about the Cody gateway community * Admissions from Section 4.5 note the futility of visitation trend data * There are outstanding criticisms of the economic data * There is no analysis of future scenarios for Cody and Park County * It neglects to specifically discuss cumulative effects from ongoing changes in NPS policy including the temporary ruling in 2003.	5
RESPONSE	Cumulative socioeconomic impacts of the seven alternatives were fully considered in section 4.2.2 and 4.4. Effects of the different alternatives on visitor access and circulation, including the effects of closing the East Entrance, were fully considered in section 4.2.7. NPS fully considered all scoping comments and specifically examined the direct, indirect, and cumulative impacts upon Cody, Wapiti, and North Fork businesses. Economic analysis for alternative 7 included an additional historical baseline (a higher level of use) for comparison. Economic analysis revised to include information from David Taylor, Yellowstone Business Partnership, and a discussion of impacts on nearby small businesses.	Sections 3.3.3. and 4.2.2 revised as noted.
D-SC1	NEW INFORMATION THAT COULD CHANGE THE PROPOSAL	
D-SC1.1	Commentors state that NPS should use the data from Dr. Bishop's 2006 "In Use Emissions" for modeling in the Final EIS.	1
RESPONSE	Data from Bishop's 2005 and 2006 reports were used in air quality modeling for this EIS. See section 3.4.2.	No change.
D-SC2	ADEQUACY OF ENVIRONMENTAL ANALYSIS	
D-SC2.1	Commentors state that the EIS analysis does not consider sustainability of the alternatives/plan in terms of factors such as increasing population and energy consumption. One commentor states that NPS needs to complete a supplement to the DEIS to comply with 40 CFR 1502.16 (e)(f), which requires an energy evaluation for the proposed action.	5
RESPONSE	The EIS fully considers the fuel consumption of each alternative.	Added section 3.2.3.

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Code	Code Description	Total Comments
D-SC2.2	Commentors state the soundscape analysis is flawed. It calculates impacts based on total park area rather than the area to which visitors have access, moving the emphasis on noise impacts away from the most visited areas, where snowmobile noise has exceeded the previous definition of major adverse impacts even with an average of 250/day, where noise problems would increase with 720 snowmobiles and where NPS models show, attractions would be quieter with a greater emphasis on snowcoaches.	10
RESPONSE	The soundscapes analysis considers impacts to all park areas (developed areas, road corridors, transition zones, and backcountry areas).	No change.
D-SC2.3	Commentors state that the analysis of air quality in the EIS is incomplete because it is based on modeling rather than the real-time data NPS collected over the three-year period of the Temporary Winter Use Plan. This data collection was a cited reason for adopting the Temporary Plan. Commentors add that the EIS failed to disclose conflicting scientific data.	10
RESPONSE	Monitoring data was used as the background concentrations in the modeling and the analysis included a comparison of modeled to monitored results. See sections 3.4 and 4.2.3. The EIS analysis was based on all known available data.	No change.
D-SC2.4	Commentors commend NPS for producing a document that is well written and based to a much greater degree on facts than previous documents. They add that NPS now has the best information available and should use it to proceed with a decision.	10
D-SC2.4.1	Commentors state that analysis in the DEIS is flawed because it fails to use the best available science to drive the development of the preferred alternative.	10
RESPONSE	EIS analysis was based on all known available data.	No change.
D-SC2.5	Commentors state that the DEIS fails to consider the danger of avalanches on Talus Slope, which demonstrates an inconsistent, park-wide analysis.	6
D-SC2.5.1	Commentors question whether the DEIS meets its legal mandate to disclose cumulative impacts by not including discussions on either the Talus Slope avalanche hazard or possible avalanche mitigation operations or both as "past, present, or reasonably foreseeable future actions...."	5
RESPONSE	Avalanche risk management at Talus Slope was fully discussed in section 3.5.4, and NPS completed an Operational Risk Management Assessment (ORMA) using the expertise of several avalanche experts. The ORMA analyzed all avalanche hazards in Yellowstone and concluded that Talus Slope does not warrant the same level of avalanche mitigation as does Sylvan Pass.	Section 3.5.4 and Appendix H revised to include discussion of Talus Slope.
D-SC2.6	Commentors state that the DEIS fails to analyze properly the impacts of snowmobile restrictions on the sustainability of winter visitation.	8

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Code	Code Description	Total Comments
RESPONSE	Effects on visitor access and circulation are analyzed for every alternative in section 4.2.7. Further, visitation and its sustainability depend on a variety of factors, most of which are beyond the scope of this EIS.	No change.
D-SC2.7	Commentors state that the analysis in the DEIS fails to fully consider Big Sky as a gateway community.	1
RESPONSE	A discussion regarding Big Sky and other gateway communities is found in section 3.3.3.1.	No change.
D-SC2.8	Commentors suggest that the DEIS lacks a discussion of the parks' weather reporting capability and how it could be improved to reduce operating and maintenance costs.	1
RESPONSE	NPS evaluated long-term precipitation and temperature trends through work by Philip Farnes (section 3.8.3.1). Weather data gathering from park weather stations is part of routine winter operations and such data is utilized by the NPS and National Weather Service for day-to-day park operations and weather forecasts specific to the parks.	No change.
D-SC2.9	Commentors state that no clear and significant data was provided to justify the decision to close the East Entrance.	9
RESPONSE	The decision on whether to close the East Entrance will not be made until a Record of Decision is signed, after the completion of this Final EIS. If the decision is to close the pass, sufficient data and analysis are provided in sections 3.5.4 and 4.2.4.	Section 3.5.4 and Appendix H revised.
D-SC2.9.1	Commentors state closure of East Entrance is a major action and warrants a more focused look at the communities/counties that will be directly impacted. Some add that the DEIS does not fully capture economic impacts to Park County and Wyoming and the NPS did not sufficiently modify the economic analysis by Duffield and Neher (2006) or consider new economic analyses using unbiased data in the DEIS.	5
RESPONSE	The potential closure of Sylvan Pass was analyzed as a major issue under Public and Employee Health and Safety, sections 3.5 and 4.2.4. NPS specifically examined the direct, indirect, and cumulative socioeconomic impacts upon Park County. Economic analysis for alternative 7 included an additional historical baseline (a higher level of use) for comparison. Economic analysis also revised to include information from David Taylor, Yellowstone Business Partnership, and a discussion of impacts on nearby small businesses.	Additional historic baseline added to socioeconomic analysis for Alternative 7 (section 4.2.2).
D-SC2.10	Commentors state that the analysis of cumulative impacts in the DEIS is inadequate because it fails to clarify the disparity of cumulative effects among alternatives.	9
RESPONSE	Reviewed cumulative impact discussions throughout document.	Revised as appropriate.
D-SC2.11	Commentors state that the Final EIS needs to consider non-impairment to park wildlife, especially with respect to avalanche control on Sylvan Pass.	2

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Code	Code Description	Total Comments
RESPONSE	EIS fully considers effects on wildlife. See section 4.2.5.	No change.
D-SC2.12	Commentors express concern about inconsistencies in the health and safety analysis for alternatives that would allow non-motorized travel over Sylvan Pass. They question the lack of safety analysis and cumulative effects analysis for alternatives that continue to allow ski and snowshoe use of the South Entrance and East Entrance Roads after the balance of the park's roads close to winter operations.	5
RESPONSE	Health and safety impacts for all alternatives were analyzed in section 4.2.4. Under alternatives 1, 2, 3B, 6, and 7, Sylvan Pass would be treated like the great majority of Yellowstone—as backcountry. At Sylvan as elsewhere in the backcountry, backcountry users would assume the risks of traveling across the pass themselves.	Reviewed and revised 4.2.4 as appropriate. Alternative 7 added.
D-SC2.13	Commentors state that the DEIS fails to provide data to substantiate the statement that there is "less idling by guided groups." They state that it is a rationalization to justify requiring commercial guides for all snowmobiles and add that if NPS has quantifiable scientific data to justify the statement they should include it in the final EIS.	5
RESPONSE	Reviewed section 3.4.3.	Revised section 3.4.3.
D-SC2.14	Commentors question how NPS can frame law enforcement statistics on page 95, specifically decreases in the number of citations issued to snowmobiles, as supportive of guided vs. unguided snowmobilers.	5
RESPONSE	As noted in section 3.5.3, even after adjusting for reduced visitor numbers in the last four winters, moving violations decreased 78%, with total OSV cases down 48%, largely due to the enforcement presence provided by commercial guides.	Reviewed and revised section 3.5.3.
D-SC2.15	Commentors state that the cumulative impact of each parameter of health and safety (listed on page 207) should be assessed separately for employees versus the public (as was done in the 2000 FEIS).	5
RESPONSE	NPS disagrees because the effects to both the public and NPS employees are analyzed. Additionally, the definition of impacts to employee and public health and safety account for the differences in exposure between employees and members of the public.	No change.
D-SC2.16	Commentors state the lack of analysis concerning climate change is a serious flaw in the NEPA document. They add that: * In dismissing climate change from the detailed analysis, NPS contradicts thinking of leadership within its own agency. * Without an assessment of global climate change and its related reduced snowfall and accumulation, the DEIS falls short of taking a hard look at one of the foundation environmental impacts.	5
RESPONSE	Climate change and the question of long-term snowpack variability was addressed early in this process by Philip Farnes and Katherine Hansen, and is addressed in section 1.5.2 and 3.8.3.1.	Reviewed and revised 1.5.2.
D-SC3	ACCURACY OF INFORMATION IN THE EIS	

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Code	Code Description	Total Comments
D-SC3.1	Commentors state that the EIS figures for historic snowmobile use on Jackson Lake should consider past use of snowplanes and that combining snowplane and snowmobile numbers into a general motorized use category would be more accurate.	3
RESPONSE	The reader may easily derive an estimate for total historic motorized use on Jackson Lake by adding the snowplane figures to "GTNP Snowmobile" figures in Table 3-25, section 3.8 (such figures included the Potholes use before 2001, but such use was a small portion of the overall Grand Teton snowmobile use).	No change.
D-SC3.2	Commentors question adequacy of technical analysis related to population dynamics models of the Yellowstone bison (Borkowski 2006, Borkowski et al. 2006, Bruggeman 2006, Fuller 2006, Wagner et al. 2006, Gates et al. 2005).	1
RESPONSE	These reports have all been subjected to extensive peer review and provide the basis for the analysis in this EIS (sections 3.6 and 4.2.5). Additionally, an action common to all alternatives is the implementation of the research proposal "Evaluating Key Uncertainties Regarding Road Grooming and Bison Movements," which may provide still more information on population dynamics of the Yellowstone bison.	Section 3.6 revised.
D-SC3.3	Commentors state that information in the DEIS about CDST visitation (Table 2-15) conflicts with data provided by the NPS Public Use Statistics Office.	2
RESPONSE	Information in EIS is taken directly taken by park staff, while NPS Public Use Statistics Office figures are raw data taken from traffic counters.	Table 2-15 is now Table 2-19.
D-SC3.4	Commentors question the accuracy of the sound analysis in the DEIS: * The sound analysis needs to be updated to use the procedure revised in 2003 by the Society of Automotive Engineering. * The noise impact differences between Alternatives 1 & 2 appear to be underestimated. * There is no compelling data to support the contention that 100% commercial guiding decreases percent time audible.	16
RESPONSE	The NPS recognizes that the SAE procedures have changed and are continuing to change; thus the 2003 procedures may be supplanted in the near future. The NPS intends to continue to work with industry to update the BAT sound procedures as they continue to be modified by SAE. The NPS has reviewed the modeled results and disagrees with the comment about differences between alternatives 1 and 2; noise impacts are provided in section 4.2.6 and were part of the reason NPS chose a revised preferred alternative. Modeling and monitoring point to the increase in noise free intervals under 100% commercial guiding (thus a decrease in percent time audible of oversnow vehicles). See also section 4.2.3, which includes specifies traffic activity data.	Revised section 2.5.5.
D-SC3.5	Commentors state that the DEIS underestimates the effect of snowmobile emissions on air quality because it assumes that all snowmobiles in the Parks will be four-stroke.	1

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Code	Code Description	Total Comments
RESPONSE	Air quality modeling assumed that all snowmobiles used in Yellowstone were either BAT (if the alternative provided for snowmobile use) or improved BAT (alternative 5). For Grand Teton, modeling assumed that snowmobiles were whatever was provided for by the given alternative (in the case of alternative 2, no snowmobiles).	No change.
D-SC3.6	Commentors question the analysis of impacts on wildlife because it appears they are the same for Alternatives 1 and 2.	1
RESPONSE	The predicted effects of alternatives 1 and 2 are somewhat different, as discussed in section 4.2.5 and shown in table S-4.	No change.
D-SC3.7	Commentors question the analysis of socioeconomic impacts. * They state that NPS used recent winter visitation data to result in smaller socioeconomic impacts but they should be using historic levels before management reduced visitation. * They state the use of IMPLAN is inappropriate.	6
RESPONSE	Economic analysis for alternative 7 included an additional historical baseline (a higher level of use) for comparison. Economic analysis also revised to include information from David Taylor and Yellowstone Business Partnership. No other methods of examining socioeconomic impacts were suggested by any cooperating agencies or other commentors. The IMPLAN model is widely accepted by federal agencies and the academic community as one of the best methods for assessing the potential economic impacts of changes in policy. Section 4.2.2 explains its limitations, discussing, for example, impacts upon local area businesses caused by various alternatives—impacts that IMPLAN may overlook.	Reviewed and revised section 4.2.2.
D-SC3.8	Commentors state that considering Sylvan Pass as backcountry in these alternatives is inconsistent with NPS policy.	5
RESPONSE	36 CFR 1.5 authorizes NPS to close areas of parks for a variety of reasons, including public health and safety. Additionally, many other national parks, including Yellowstone at Dunraven Pass and much of Glacier National Park, close roads to all motorized use in winter.	No change.
D-SC3.9	Commentors state that the description of OSV visitation trends for the South Entrance is incorrect. In the last 3 winters, snowmobile use has increased from 70% to 74%, not declined from 87% to 72.3% as stated in the DEIS, p. 143. They state that the Winter Visitation Data section clearly shows that snowmobiles remain the most popular means among the visiting public to access YNP.	5
RESPONSE	Section 3.8.5 revised to state that the percentage of South Entrance OSV visitors on snowmobiles has fallen from 82% to 72.7% in the last five winters, but remains the most popular form of visitation there.	Section 3.8.5 revised.
D-SC3.10	Commentors state the DEIS purposely overstates the safety effects for Alternatives 4 and 5 compared to previous analyses to justify closing Sylvan Pass in the preferred alternative. They question what conditions have changed since 2004 to warrant avalanche hazards being considered a "major, adverse" impact, especially to visitors. In the previous analysis, they were described as "moderate, adverse."	5

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RESPONSE	Analysis in section 4.2.4 is based on impacts described in Table 4-46, which were revised from earlier NEPA documents in this EIS. Also, as described in sections 3.5.1 and 3.5.4 (with associated references) the NPS approach to safe work environments has become more cautious in the last three years for a variety of reasons.	No change.
D-SC3.11	Commentors question the inclusion of wildlife as a selection criterion and suggest NPS not consider wildlife effects in its determination of appropriate OSV effects. They state that the DEIS assumes since the protection of wildlife is an emotional public issue, it automatically warrants inclusion as a selection criteria. They add that they find no logical connection to wildlife effects and OSV use.	5
RESPONSE	Effects upon wildlife were identified by numerous commentors in scoping as a major issue to be considered. This topic has been a key issue throughout winter use planning.	No change.
D-SC3.12	Commentors express concern about wildlife analysis * They object to the statement that there is no difference in wildlife impacts between alt. 1 and allowing 120 snowcoaches per day even though the latter would involve 1/6 as much traffic * They state NPS modified the wildlife Desired Condition and Definition of Impacts to Wildlife and now link the desired condition to whole population consequences although the 2003 SEIS stated NPS' responsibility to minimize adverse impacts to individuals.	1
RESPONSE	As discussed in section 4.2.5, the larger visual profile of snowcoaches may elicit a higher level of behavioral response from wildlife, which would reduce the benefits of lower OSV numbers that alternative 2 would provide. NPS reviewed and revised as necessary, based on new information and monitoring data, both Desired Conditions and Definition of Impacts to all impact topics for this analysis.	Section 4.2.5. reviewed and revised as needed.
D-SC3.13	Commentors disagree with accuracy of NPS assertions in the "Summary and Comparison of Impacts by Resource" that there is no difference in impacts to YNP's soundscapes between 720 snowmobiles/day and the snowcoach alternative. They add these statements are misleading because in reality the former would result in 40 additional square miles in the park's most visited areas where visitors would hear engine noise more than half of each day.	1
RESPONSE	As defined in table 4-48 and shown in table 4-66, both alternatives 1 and 2 would result in moderate impacts to park-wide audibility.	No change.
D-SC4	OTHER REASONABLE ALTERNATIVES	
D-SC4.1	Commentors ask NPS to consider an alternative that combines elements of Alternatives 1, 4, and 5: * 20% of daily entries led by trained, non-commercial guides * EPA compliant snowmobiles allowed on the CDST * All entrances remain open * Daily, rather than seasonal limits * Reduce daily limits if needed to meet planning goals while allowing more visitor flexibility.	258
RESPONSE	The decision maker may select elements of any alternative for consideration; the EIS fully considers these elements.	No change.

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Code	Code Description	Total Comments
D-SC4.2	Commentors ask NPS to consider an alternative that would eliminate all snowmobiles and provide access by commercial wheeled vehicles only.	6
RESPONSE	Alternatives 2 and 6 consider elimination of snowmobiles and access via commercial wheeled vehicles, respectively; the decision maker may select elements of any alternative.	No change.
D-SC4.3	Commentors ask NPS to consider an alternative that would plow most roads in Yellowstone and allow visitors to tour the park in privately owned vehicles, with reduced winter speed limits and requirements for tires with winter treads.	7
RESPONSE	Alternative 6 considers access via commercial wheeled vehicles rather than privately owned vehicles because of the inherently difficult nature of winter travel in the park interior. Commercial drivers would also provide benefits such as knowledge of current travel conditions or restrictions and the likely location of wildlife—many of the same benefits provided by guiding in other alternatives. The decision maker may select elements of any alternative. Additionally, all alternatives allow privately owned vehicles on the plowed road between Mammoth and Cooke City.	Added to section 2.3.
D-SC4.4	Commentors suggest expanding groomed trails for non-motorized activity in certain areas including Canyon, Lake, and Old Faithful in YNP; the road from Cottonwood to Signal Mt. in GTNP; and future multi-purpose pathways to be constructed in Grand Teton.	25
RESPONSE	The plan does not preclude grooming additional roads for skiing (nor does it preclude management action such as cessation of grooming on current roads when issues arise).	No change.
D-SC4.5	Commentors ask NPS to consider an alternative that includes the following components: * Allow non-BAT snowmobiles on the CDST, Jackson Lake (for Wyoming Game and Fish Department and fishing access), and from Flagg Ranch west to provide access to national forest trails. * Allow up to 50% of daily snowmobile entries on the CDST and Grassy Lake Road to be used by commercial snowmobile outfitters.	92
RESPONSE	Commercial use is permitted on the CDST and Grassy Lake Road under various alternatives. Alternative 7 allows non-BAT snowmobiles to/from Flagg Ranch to provide access to national forest trails. As specified in section 2.5.2, all of the alternatives allow the non-recreational, administrative use of snowmobiles by park personnel or parties duly permitted under the provisions of 36 CFR 1.5 and 1.6 (such as Wyoming Game and Fish), and non-BAT machines necessary for a particular project (access for management purposes to Jackson Lake) would be allowed if approved in advance of use by the NPS.	No change.
D-SC4.6	Commentors ask NPS to consider an alternative that would transport winter visitors via horse-drawn sleds.	7

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Code	Code Description	Total Comments
RESPONSE	Horse-drawn sleds were used a number of years ago in the winter, especially around the Mammoth area in Yellowstone. This method of transportation was discontinued for various reasons, including inconsistent snow and low use along with the challenges of caring for stock in the winter. The concept could be reconsidered under the bounds of this plan.	No change.
D-SC4.7	Commentors suggest cycling be included as an acceptable form of non-motorized winter travel. They state * Just like cross-country skiing, cycling is an appropriate, low-impact, muscle-powered activity that provides visitors a safe, healthy way to enjoy the parks. * Winter cycling, or snow biking, using 4" -wide tires is a growing aspect of cycling that is suited to groomed snow surfaces.	10
RESPONSE	NPS believes that such use could conflict with existing snowcoach, snowmobile, skier, and snowshoe use of the snowroads and create safety hazards.	Added to section 2.3.
D-SC4.8	Commentors state that the DEIS fails to analyze a four-year snowmobile average of 250 as a component of any alternative and recommend that NPS do so. This would illustrate how impacts under the current status quo compare to the proposed alternatives.	10
RESPONSE	Although this alternative would meet the purpose and need for this EIS, it is approximated by alternatives 3A and 6, which would allow 250 or 350 snowmobiles daily into Yellowstone. Additionally, this concept was included in one of the early modeling scenarios and provides a baseline against which all alternatives are compared under each impact topic.	No change.
D-SC4.9	Commentors state that the Final EIS should analyze an alternative that includes phasing in a fleet of updated, multi-season yellow bus/snowcoaches as part of a regional transportation plan.	9
RESPONSE	Alternatives 2 and 6 consider snowcoach-only transportation and access via commercial wheeled vehicles, respectively; the decision maker may select elements of any alternative. The regional transportation plan comment is off-scope because the area of analysis for this plan is the parks, as discussed in section 1.5.1.	No change.
D-SC4.10	Commentors recommend the final alternative should: * keep all 4 entrances open * allow snowcoach and snowmobile access with daily entry limits of 60 snowmobiles through East Entrance and flexible daily limits for special occasions * accommodate unguided/non-commercially guided access * allow limited non-BAT (EPA compliant) on CDST and non-BAT on Jackson Lake. They state this would better meet dual mandate of providing for public enjoyment of the parks while conserving resources and values.	5
RESPONSE	All of these elements were considered in the various alternatives in this EIS; the decision maker may select elements of any alternative.	Alternative 7 added.
D-VN100	STAKEHOLDER VALUES	
D-VN101	Commentors describe positive personal experiences in the national parks and/or out of doors.	698

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Code	Code Description	Total Comments
D-VN102	Commentors describe negative personal experiences in the national parks or out of doors. Some commentors state that most park employees did not make them welcome, but gave the impression that YNP belonged to them instead of the visitors.	204
D-VN103	Commentors state objections to the values of society, the current Administration and/or federal government. Some commentors add that: * The Administration values money and/or business interests more than conservation and/or environmental protection. * We should encourage reasonable and considerate public use of the wild country.	403
D-VN104	Commentors state that they value motorized access to Yellowstone and/or that limits on use of federal parks and lands infringe on their right to access them. Some commentors add that their values are as legitimate as those who choose non-motorized activities.	69
D-VN105	Commentors state that national parks are one of the last great legacies to the public. Some commentors add that: * The government should provide more funding for national parks. * It is an inexcusable dereliction of duty and honor to limit access, to limit funding and to allow the park system to deteriorate.	35
D-VN106	Commentors state that the residents of Cody value winter access through the East Entrance so deeply that they are willing to work with the NPS to keep it open.	8
D-VN107	Commentors remind NPS that visitors are opposed to management options that reduce access (Freimund and Borrie 2001). They state that closing Gibbon Canyon Road would adversely impact visitor access and circulation and that closing both Gibbon Canyon Road and East Entrance would decrease opportunities for oversnow travel in the park and concentrate use into smaller areas, which is contrary to the desired condition for visitor access and experience.	5
RESPONSE	The EIS fully considers visitor access and values (under visitor experience), as well as changes to visitor access incurred by the potential closure of the East Entrance and/or Gibbon Canyon (See Sections 3.8, 3.9.2, 4.2.7, 4.2.8).	No change.
D-WQ4001	Commentors state that snowmobiles adversely impact water quality and/or express concerns about spills of gasoline and other toxic substances that may cause negative impacts on water quality.	47
RESPONSE	Existing regulations, policy and response plans regarding this issue are in place in all seasons in the parks.	No change.
	OTHER COMMENTS (not coded because they were received after the close of the comment period)	
NO CODE	Revise Desired Conditions to ensure best available protection appropriate to Class I airshed.	

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Code	Code Description	Total Comments
RESPONSE	Desired Conditions for this EIS are consistent with those of the previous NEPA documents on this issue.	Desired Conditions were reviewed and revised as appropriate.
NO CODE	Modify the preferred alternative or select a different alternative that meets resource protections previously identified by NPS.	
RESPONSE	The preferred alternative meets the purpose and need for this document and would allow the NPS to meet the desired conditions as identified in this document.	No change.
NO CODE	Review and revise adaptive management program and thresholds; specifically implement soundscape and air quality thresholds from 2003 SEIS to reflect those resource protections now achievable with best available technology snowcoaches.	
RESPONSE	The natural soundscapes and health and safety thresholds were adjusted in this EIS to reflect additional knowledge gained over the past several years.	Appendix E reviewed and revised.
NO CODE	Review and revise the definition and wording of EPA compliant snowmobiles. Clarify where and how this restriction would limit emissions and noise.	
RESPONSE	If EPA compliant snowmobiles are an element of the Record of Decision, NPS would confer with EPA to clarify "EPA compliant snowmobiles."	Revised 2.5.2
NO CODE	Substantiate or delete inferred snowcoach impacts (p. 65 and p. 306).	
RESPONSE	While it remains true that snowcoaches travel at slower speeds, the negative connotations to that fact have been removed.	Revised Section 4.2.7
NO CODE	Air Quality: *Revise a sentence on p. 88 of the DEIS to reflect the effects of temperature inversion.	Revised sentence on p. 88 and section 4.2.8.
RESPONSE	Both sections reviewed.	Both sections were clarified.

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Code	Code Description	Total Comments
NO CODE	<p>Soundscapes:</p> <ul style="list-style-type: none"> *Review impact definition thresholds *Mitigate effects of alternative 2 with timed entry requirements, group size restrictions, technology improvements and remodel prior to FEIS. *Current conditions were apparently modeled with BAT snowcoaches: this would underestimate modeling results and DEIS analysis. Recommend re-modeling/analysis with current fleet rather than BAT. 	
RESPONSE	<p>BAT requirements and adaptive management provisions address impacts of alternative 2. The NPS verified that current conditions were modeled without coach BAT.</p>	No change.
NO CODE	<p>*Review and revise p.304 of the DEIS in light of an apparent contradiction between the analysis and the statement that " Compared to current conditions, [alternative 1] would slightly improve the visitor experience because all snowcoaches would be required to use BAT."</p>	
RESPONSE	<p>Reviewed section.</p>	Revised section.
NO CODE	<p>Human Health and Safety:</p> <ul style="list-style-type: none"> *Review the framework for assessing visitor access and circulation (p. 132 of the DEIS) which cites several environmental, human health and safety issues to be addressed against the conclusions – which do not consistently refer to those issues. Summarize these impacts in the conclusions for each alternative. *Include the 8-hour NAAQS standard of 9 ppm for CO (p. 88 of the DEIS) *Review and revise the summary of Spear, Hart, and Stephenson study (p. 89 of the DEIS); specify that only 180-200 BAT snowmobiles were present on the days of sampled benzene chronic exposure MRL. Also, consider a discussion of the intermediate exposure MRL. *Consider the need to medically monitor employees for benzene and formaldehyde. *Clarify location of personal noise exposure and measurements thereof at West Entrance station. *Visitor access and circulation (p. 132) cites several environmental, human health and safety issues to be assessed. These are not summarized in the conclusions for each alternative. 	
RESPONSE	<p>*Included 8-hour NAAQS standard for CO. *Added medical monitoring of employees to adaptive management provisions. *Summarized several environmental, human health, and safety issues related to visitor access and circulation in the conclusions for each alternative. *Revised 3.5.3.</p>	Reviewed and revised as indicated.
NO CODE	<p>The NPS should have extended the comment deadline until June 29, 2007 as requested.</p>	

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Code	Code Description	Total Comments
RESPONSE	Although the NPS did not extend the DEIS public comment period, the comment period ran for a total of 65 days, more than is required by the Council on Environmental Quality. Between the preliminary draft EIS comment period, the DEIS comment period, the four public comment meetings held on the issue, and the proposed rule public comment period, the public had ample opportunity to submit comments on winter use planning in the parks.	No change.
NO CODE	The outcome of the EIS was predetermined as evidenced by premature publication of the proposed rule. The NPS should not have initiated the rulemaking process until after an FEIS and ROD were completed.	
RESPONSE	An overlap in the comment periods for the DEIS and proposed rule was necessary and appropriate given the schedule of this process. The NPS discussed this overlapping timeframe throughout the process and leading up to release of both the preliminary and draft EIS; it should not have been a surprise to engaged stakeholders. Finally, the preferred alternative is not a decision; rather, the Record of Decision is the final decision.	No change.
NO CODE	The NPS should not cite "in press" articles or reports in the DEIS.	
RESPONSE	The publication dates of articles or reports submitted for publication (by authors employed by NPS) is generally unknown. Articles or reports cited in the DEIS were reasonably expected to be available for public review prior to publication of the DEIS. Draft or earlier articles or reports have been cited as appropriate.	Reviewed and revised as indicated.
NO CODE	The NPS relied on incomplete and/or biased data and analysis in its discussions of the impact of snow-packed roads on bison.	
RESPONSE	The NPS reviewed suggested works, all of which were considered in its DEIS analysis. The NPS completed an additional literature review and confirmed earlier data reviews.	Revised Sections 3.6.2-3.6.3.
NO CODE	The NPS must immediately implement a long-term road closure experiment on the Madison to Mammoth road segments to determine if and/or how bison may compensate for no longer having access to a packed snow road to move from the central portion of the park to the northern boundary.	
RESPONSE	As referenced in Section 3.6.2.2, the NPS contracted with Dr. Robert Garrott of Montana State University-Bozeman to prepare a research proposal entitled "Evaluating Key Uncertainties about Road Grooming and Bison Movements" that: 1) identifies the types of research and analyses that could be conducted to address these uncertainties and the strength of inference that would likely be attained with each approach; 2) provides testable predictions that address these uncertainties; and 3) provides study designs that can be implemented to reduce these uncertainties. As discussed in 3.6.3, the NPS will implement this proposal.	Revised Section 2.5.5.

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Code	Code Description	Total Comments
NO CODE	The EIS does not adequately evaluate the legal basis for each alternative. *Current winter use practices in Yellowstone illegally disturb park bison and other wildlife. *Road packing violates the NPS impairment standard. *OSV use of Yellowstone constitutes impairment.	
RESPONSE	The EIS fully considers and conforms to NPS Mandates.	No change.
NO CODE	The NPS failed to analyze the impacts to bison and other park attributes associated with early winter and spring plowing operations.	
RESPONSE	Plowing operations (other than for alternative 6) are outside the scope of this analysis. The reader is referred to Section 1.5.1.	No change.
NO CODE	Alternative 3A should not provide for administrative snowmobile access. The DEIS is deficient in the amount of information disclosed and evaluated relative to administrative snowmobile use requirements and the required maintenance of existing YNP structures under alternative 3A/B. *The DEIS does not disclose how many NPS officials resided in interior locations within the park. *The DEIS does not disclose the number or location of structures that require winter maintenance for preservation. *The NPS must consider options other than administrative snowmobile use for park needs under alternative 3.	
RESPONSE	Alternative 3A does not provide for administrative snowmobile access, other than from South Entrance to Old Faithful. Although winter employee numbers have decreased since the implementation of managed winter use, approximately 75 NPS and 150 concessions employees over-winter in the interior of YNP (See Section 3.2.2). The reader is also referred to the discussion of this alternative in Section 4.2.1.	No change.
NO CODE	"Historical conditions" in the EIS should be defined as pre-road packing and pre-OSV use (1950s-1960s); the NPS should explain why it defined "historic conditions" in the way it did.	
RESPONSE	Section 1.2 explains and defines "historic conditions" for this EIS.	No change.
NO CODE	Socioeconomics is overemphasized in the DEIS and naturalness is undervalued economically in the DEIS. The NPS failed to quantify the value of the intrinsic and intangible attributes of Yellowstone, e.g. contingent valuation.	
RESPONSE	NPS disagrees; the EIS fully examines the impacts of alternatives on seven major impact topics; socioeconomics is but one of these.	No change.
NO CODE	The NPS failed to critically evaluate wildlife reports upon which it based its analysis.	
RESPONSE	The NPS disagrees. The majority of these reports have been subjected to extensive peer review.	No change.

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Code	Code Description	Total Comments
NO CODE	The NPS failed to assess, model, or otherwise disclose and discuss the energetic implications to bison, elk and other wildlife associated with winter use activities in YNP.	
RESPONSE	While it is important to avoid wildlife impacts that have consequence to the population, it is also important to minimize wildlife harassment to individual animals. Some forms of wildlife harassment do not result in population-level effects, but still constitute unnecessary harassment that is bothersome to both wildlife and park visitors. NPS believes that guiding and other requirements under the preferred alternative will minimize and mitigate such impacts. The reader is referred to 'Physiological Responses' in Section 4.2.5 and the energetics discussion in sections 3.6.2.1 and 3.6.3.	No change.
NO CODE	The desired future conditions identified in the DEIS were not subject to public input or review.	
RESPONSE	The DEIS was subject to public review and comment; therefore, the desired future conditions were also.	No change.
NO CODE	For a variety of reasons, YNP must rescind the DEIS and promulgate a temporary rule prohibiting road packing/grooming and oversnow motorized vehicle access into all or most of YNP to prevent the continued escalation of environmental impacts associated with this activity, engage in an open general management planning process to establish desired conditions, and reevaluate winter use management in relationship to the newly established desired conditions.	
RESPONSE	The NPS will implement the research proposal by Robert A. Garrott and P.J. White entitled "Evaluating Key Uncertainties Regarding Road Grooming and Bison Movements" (draft dated May 23, 2007, as posted on the Yellowstone Park website http://www.nps.gov/yell/parkmgmt/winterusetechicaldocuments.htm).	Revised Section 2.5.5
NO CODE	Alternative 3B is downplayed as an environmental baseline against which the impacts of all other alternatives could be compared or measured; the benefits of this alternative are downplayed in the environmental consequences section.	
RESPONSE	The EIS fully considers alternative 3A/B.	No change
NO CODE	The NPS is obliged to provide details about the contractual language for concessionaires and to analyze options to terminate those contracts with implementation of alternative 3.	
RESPONSE	All concession, guide and outfitter, and other commercial services contracts include a clause that allows the contract to be modified due to changing laws or regulations.	No change.
NO CODE	The EIS should include an analysis and description of the legality and governmental interpretation of the statutes, regulations, policies, court rulings and precedent in related cases, for OSV use in YNP. Doing so might discourage lawsuits challenging the outcome of this process.	
RESPONSE	The EIS does describe and analyze the legality and governmental interpretation of the statutes, regulations, policies, court rulings and precedent in related cases, for OSV use in YNP.	No change.

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Code	Code Description	Total Comments
NO CODE	The EIS must include a rational explanation for why its proposed action would significantly increase snowmobile numbers above those recommended to reduce wildlife impacts and how it will mitigate wildlife impacts.	
RESPONSE	NPS wildlife reports recommend setting OSV allocations at or below the numbers authorized by the Temporary EA; the proposed action does so—it does not increase numbers above those recommended. Wildlife mitigation is discussed in Section 4.2.5.	No change.
NO CODE	BAT standards for snowcoaches should be implemented immediately rather than delayed until the winter of 2011-2012, or the EIS should explain the reason for the delayed implementation.	
RESPONSE	Snowcoach modifications would require a reasonable lead-time to implement.	No change.
NO CODE	Alternative 2 would increase the amount of time that wildlife can access and use the packed/groomed road system without interference or harassment by oversnow motorized vehicles, potentially resulting in an increase in the number of animals using the packed roads as travel corridors and the frequency of such use. These substantial and adverse impacts are not analyzed in the DEIS.	
RESPONSE	The EIS fully analyzes the impacts of Alternative 2.	No change.
NO CODE	For alternative 3A the DEIS provides no explanation of why daily snowmobile numbers are set at 250 or why the alternative does not consider snowcoach access only.	
RESPONSE	The alternatives provide for a range of use levels and variety of modes of access. The decision maker may combine elements of various alternatives, including alternative 2.	No change.