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Forest
Service

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Wild and Scenic
Snake River Headwaters
Forest Plan Amendment
Environmental Assessment

Bridger-Teton National Forest
Supervisors Office
Jackson, Wyoming

EXECUTIVE SUMMARY
Wild and Scenic Snake River Headwaters

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Environmental Assessment
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On March 30, 2009, passage of the *Craig Thomas Snake Headwaters Legacy Act* added all or segments of 13 rivers and streams in the Snake River Headwaters to the National Wild and Scenic Rivers System. The purpose of this designation is to protect the free-flowing condition, water quality, and 'outstandingly remarkable' values of the Headwaters for the benefit and enjoyment of present and future generations.

The Snake River Headwaters is unique in that it encompasses a connected watershed, rather than just one river or isolated rivers across a region. These rivers flow across lands administered by the U.S. Forest Service, National Park Service and U.S. Fish and Wildlife Service, as well as a small portion of state and private lands. It includes 13 rivers and 25 separate river segments totaling 414 miles, with 315 miles within the Bridger-Teton National Forest. These rivers flow through an iconic landscape of stunning canyons, open meadows, broad vistas, striking mountains, glacial lakes, and sage flats. These landscapes provide spectacular undeveloped settings that create a distinctive sense of place and offer world-class recreational opportunities within the largest intact ecosystem in the contiguous United States.

Due to the sheer size of this wild and scenic river designation, the Bridger-Teton National Forest and the National Park Service and Fish and Wildlife Service have developed separate, but concurrent Comprehensive River Management Plans (CRMP) for river segments within or along their respective administrative boundaries.

Several management elements in the *Wild and Scenic Rivers Act* (WSRA 1968) became legal direction when the Snake River Headwaters legislation was signed. These will be shown as Elements Common to Both Alternatives: 1) Any future federally-assisted or federally-permitted development or activities within bed and banks of designated stretches, including along private lands, are subject to analysis under Section 7 of the *Wild and Scenic Rivers Act*; 2) All Federal Energy Regulatory Commission hydropower projects within or directly affecting designated segments are prohibited; and 3) All mining resources in segments classified as wild are withdrawn from exploration or development. These elements are therefore common to both alternatives and will not be presented nor compared in the alternatives.

Table 1. Summary of Proposed Action

The Forest is guided by the 1968 Wild and Scenic Rivers Act (WSRA) and is now adding direction to incorporate the 2009 Craig Thomas Snake Headwaters Legacy Act for newly designated river segments. The purpose of this Forest Plan Amendment is to bring the 1990 Forest Plan into compliance with the 2009 Act. The need is to update the goals, objectives, desired future conditions, standards and guides and monitoring components of the Forest Plan, as well as to establish corridor boundaries as required.

- Add new Forest Plan ***Goal 4.1***—Managing Designated Rivers
  - and add Forest Plan ***Objective 4.11***—Implementing the CRMP

- Add new ***Management Emphasis*** regarding:
  - Hydrologic function
  - Biological integrity
  - Cultural resources
  - Visitor connections with natural resources
  - Land uses and developments

- Create 3 new subcategories within former River Management ***Desired Future Condition (DFC 3)*** "zone"
  - ***DFCs 3B, 3C and 3D***

- Replace former S***tandards and Guidelines*** for proposals and projects along rivers now Congressionally designated as Wild and Scenic that address:
  - *Ecological and wildlife integrity*
  - *Aquatic function*
  - *Roads and Facilities*
  - *Scenery*
  - *Recreation opportunities*
  - *Minerals development*

- Add new river-specific ***monitoring*** program
  - *Visitor experiences and impacts*
  - *Ecological and hydrological function*

- Establish ***river corridor boundaries*** that encompass Outstandingly Remarkable Values

The Bridger-Teton National Forest proposes to amend the *Bridger-Teton National Forest Land and Resource Management Plan* (Forest Plan 1990) by providing specific management direction where needed to protect or enhance the designated river segments and their values or to address issues related to river management. This new direction would then be incorporated into the *Comprehensive River Management Plan* (CRMP), required by Section 3(b)(1) of the 1968 *Wild and Scenic Rivers Act*.

The Environmental Assessment (EA) will compare two alternatives for managing these connected waterways by describing differences in Management Emphasis, Desired Future Conditions, Standards and Guidelines, environmental consequences and monitoring requirements.

Two Forest Plan amendment alternatives are analyzed: No Action (Alternative 1) and the Proposed Action (Alternative 2). No specific projects are proposed or analyzed. Future actions or projects would require appropriate *National Environmental Policy Act* (NEPA) analysis and public involvement. Chapter II of this EA describes these two options and explicitly compares the elements above. Chapter IV describes the expected effects of the Proposed Action relative to the No Action alternative.

Alternative 1 – No Action
Under the No Action Alternative, current management, including Amendment Two of the 1990 Forest Plan which provided guidance for rivers determined 'eligible for wild and scenic river designation', would remain in effect for both designated rivers and eligible rivers. This includes general standards assigned on the basis of each river's classification. Those existing standards are specifically compared to the proposed changes in Chapter IV of this document.

Future development and activities on federal land within river corridors would continue to be directed by the Forest Plan, as amended, along with any landscape-scale assessments, Wilderness Action Plans and the *2002 Snake River Recreation Plan*.

The area managed for both eligible and designated wild and scenic rivers would continue to be as mapped in the 1990 Forest Plan, or for rivers determined eligible under Amendment Two of that Plan, within the ¼ mile distance from normal high water on each bank.

Alternative 2 – The Proposed Action
The action proposed by the Forest Service, fully described in Chapter II, is to amend the Forest Plan to meet WSRA requirements. The amendment would establish river corridor boundaries and incorporate river-specific goals, objectives, desired future conditions, standards and guidelines, and monitoring.

The Forest Plan amendment would also include a new Designated Wild and Scenic Rivers Management Emphasis, coordinated with the National Park Service's Snake River Headwaters 'Goals', that would guide federal actions in these corridors, as follows:

> All designated river segments would be managed to protect and enhance their outstandingly remarkable values (described in detail in the required *Comprehensive River Management Plan*), free-flowing condition, and water

quality for future generations. This protection, or non-degradation standard, is based on a 2009 baseline of existing developments, conditions and ecosystem functions. More specifically, management would:

1. Promote the rivers' natural hydrological processes, channel form and function, and ability to shape the landscape. Reduce impediments to free flow, ensure sufficient flows to protect and enhance outstandingly remarkable values, and ensure the maintenance of water quality.

2. Protect and enhance the natural biodiversity, complexity, and resiliency of riparian areas, wetlands, floodplains and adjacent uplands.

3. Protect and enhance cultural resources as important links to the human history of the river corridors, including historical and archeological sites, cultural landscapes, and ethnographic resources.

4. Provide a diversity of settings and opportunities for visitors of varying abilities to experience, learn about, and have a direct connection with the rivers and their special values. Such opportunities must be consistent with the values that caused the rivers to be designated.

5. Allow for legal and permitted multiple uses and associated developments, consistent with each river segment's classification, while supporting the protection and enhancement of river values.

Decision to be Made: The Forest Supervisor will decide whether to amend the Forest Plan as proposed in this document, or make adjustments based on input that emerges from the environmental analysis and public comment. The Forest Plan amendment (see Chapter II, Alternative 2) would include:

- New Goal and Objective
- New Management Emphasis
- New Desired Future Condition subcategories
- New and Revised Standards and Guidelines
- New Monitoring Requirements
- New Corridor Boundaries Map

Summary of Effects: The No Action Alternative provides a baseline for comparison of effects but would not meet the full legal requirements of the *Wild and Scenic Rivers Act* designating the Snake River Headwaters because the full complement of river values are not specifically protected relative to new trends or using currently available science. The Proposed Action (Alternative 2) would meet legal requirements of Congressional designation by clearly providing protection for the free-flowing character, high water quality, and six identified river values—scenery, recreation, cultural resources, ecological and wildlife resources, fisheries resources, and geological features. The Proposed Action would create overall beneficial effects for these river values, while having minimal effects on commodity outputs.

Next Steps: After distribution of the Environmental Assessment, a public review and comment period will run through midnight on June 30. The Forest Service planning team will then evaluate any comments from other federal, state, and local agencies; tribes; organizations; businesses; and individuals regarding the proposed amendment. If appropriate, changes would then be incorporated into a draft decision document, clarifying the Forest Service selected alternative for implementation. Persons or entities having submitted comments during the planning process may, within 45 days of the publication of that draft decision, utilize the objection process of the 2012 Planning Rule found in 36 CFR 219, Subpart B. A final Decision Notice would be issued following that objection period.

Headwaters of Crystal Creek, Wild River

HOW TO COMMENT ON THIS AMENDMENT PROPOSAL

Comments are welcome and will be accepted through June 30. Comments may be submitted by any one of the following methods:

Mail:
Forest Supervisor
Bridger-Teton National Forest
PO Box 1889
Jackson, WY 83001

Online:
http://www.fs.usda.gov/projects/btnf/landmanagement/projects

Scroll down to select **Snake River Headwaters Wild and Scenic Comprehensive River Management Plan (CRMP)** and then select the Comment button on the right hand side.

Hand Delivery:
Written comments may also be submitted at public meetings or delivered to the Bridger-Teton Supervisor's Office at 340 North Cache, Jackson, WY 83001.

The dates, times, and locations of public meetings will be announced in the media, and via email (swoods@fs.fed.us) following release of this document.

Those who wish to comment are encouraged to use the internet, if possible.

Comments received in response to this document, including names and addresses of those who comment, will be considered part of the public record on this proposed action and will be available for public inspection. Comments submitted anonymously will be accepted and considered; however, those who submit anonymous comments will not have standing to formally object to the subsequent decision under 36 CFR Part 219. Additionally, pursuant to 7 CFR 1.27(d), any person may request the agency to withhold a submission from the public record by showing how the *Freedom of Information Act* (FOIA) permits such confidentiality. Persons requesting such confidentiality should be aware that, under the FOIA, confidentiality may be granted in only very limited circumstances, such as to protect trade secrets. The Forest Service will inform the requester of the agency's decision regarding the request for confidentiality, and where the request is denied, the agency will return the submission and notify the requester that the comments may be resubmitted with or without name and address within 15 days.

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Bigtooth maple, Snake River Canyon

Chapter 1: Introduction

Wild and Scenic Rivers Defined

In 1968, Congress passed the *National Wild and Scenic Rivers Act*, establishing a nationwide system of outstanding free-flowing rivers. The primary purpose of the Act is to complement national river development with river protection and conservation. The Act specifically protects rivers from future hydroelectric power development and requires administering agencies to protect and enhance those values for which the river was designated. The current Forest Plan lists rivers on the Bridger-Teton National Forest that are considered 'eligible' for designation and offers some protections to retain their eligibility until such time that Congress chooses to add specific segments to the National System.

As defined by the Act, a National Wild and Scenic River must be maintained in a free-flowing condition and must have its water quality protected. In addition, the river must have at least one 'outstandingly remarkable' scenic, recreational, geologic, fish, wildlife, historic, cultural, or other similar value. Outstandingly remarkable values are those values that are river related and owe their existence or location to the river, and that are rare, unique, or exemplary in character.

The *Wild and Scenic Rivers Act* requires that the agency charged with administration of each designated river establish a detailed river corridor boundary that encompasses the identified river-related values, while not exceeding an average of 320 acres of land per river mile. Please refer to Chapter II for a complete description of proposed corridor boundaries.

Additionally, the Act requires designated rivers be classified as wild, scenic or recreational, depending on the level of development and access present along the river at the time of designation. Wild river segments are the most natural appearing and the least accessible. Little or no developments, such as roads or campgrounds, are present. Scenic river segments have shorelines that are largely undeveloped with few access points. More types of land uses and developments are compatible with management goals on a scenic river than on a wild river. On river segments with a recreational classification, the shoreline is more developed and roads may parallel the river. There may be some development along its banks, and some existing impoundments or diversions. With the designation of the Snake River Headwaters, Congress established the classification level for each segment. The 'protect and enhance' mandate of the 1968 WSRA (Section 10) is the same for all designated rivers regardless of development level classification, and requires a standard of non-degradation relative to the time of designation.

Craig Thomas Snake River Headwaters Legacy Act

The *Craig Thomas Snake Headwaters Legacy Act* was passed by Congress in 2009 as part of a larger 'omnibus' bill (Public Law 111-11). It established as Wild, Scenic, or Recreational all or parts of 13 rivers across three National Park Service units, the National Elk Refuge, and the Bridger-Teton National Forest. A summary of designated river segments within the Bridger-Teton National Forest follows. While the 2009 Act estimated mileages using the National Rivers Inventory, the lengths listed below have been corrected by using more accurate Geographic Information System (GIS) review. Segment descriptions are consistent with the intent of the 2009 Act.

Bailey Creek. The 6.9-mile segment of Bailey Creek from the divide with the Little Greys River north to its confluence with the Snake River: **wild river**.

Blackrock Creek. The 21.7-mile segment from source to the confluence with Buffalo Fork River: **scenic river**.

Buffalo Fork of the Snake River (2 segments). The 70.3-mile* segment consisting of the North Fork, the Soda Fork, and the South Fork, upstream from Turpin Meadows: **wild river**. The 14.1-mile segment from Turpin Meadows to the upstream boundary of Grand Teton National Park: **scenic river**.

Crystal Creek (2 segments). The 14.2-mile segment from the source to the Gros Ventre Wilderness boundary: **wild river**. The 5-mile segment from the Gros Ventre Wilderness boundary to the confluence with the Gros Ventre River: **scenic river**.

Granite Creek (2 segments). The 12.5-mile segment from its source to the Wilderness boundary: **wild river**. The 9.7-mile segment from Wilderness Boundary to the point one mile upstream of its confluence with the Hoback: **scenic river**.

Gros Ventre River (2 segments). The 16.5-mile segment from its source to Darwin Ranch: **wild river**. The 40.1-mile segment from Darwin Ranch to the upstream boundary of Grand Teton National Park, *excluding Lower Slide Lake*: **scenic river**.

Hoback River. The segment from its confluence with the Snake River to 10.7 miles upstream: **recreational river**.

Pacific Creek (2 segments). The 22.5-mile segment from its source to the Teton Wilderness boundary: **wild river**. The 6.8-mile segment from the Wilderness boundary to the National Park Service boundary: **scenic river**.

Shoal Creek. The 8.5-mile segment from its source to the point 8.5 miles downstream of the source: **wild river**.

Snake River (3 segments). The 6.9-mile segment from its source to the Yellowstone National Park (YNP) boundary and a 2.7 mile segment below the YNP boundary along the east bank only: **wild river**. The 23.1-mile segment from the mouth of the Hoback River to the point one mile upstream from the Highway 89 Bridge at Alpine Junction: **recreational river**.

Willow Creek. The 16.2-mile segment from the point 16.2 miles upstream from its confluence with the Hoback River to its confluence with the Hoback River: **wild river**.

Wolf Creek. The 7-mile segment from its source to its confluence with the Snake River: **wild river**.

*The upper sections of all three forks of the Buffalo Fork (the North Fork, Soda Fork and South Fork) exhibit considerable amounts of sinuosity, and the combined length of the river was underestimated by approximately 15 miles.

Table 1.1 below displays total Bridger-Teton National Forest river miles by classification,

Table 1.1: Summary of Designated River Miles by Classification, Bridger-Teton National Forest

Miles designated	Classification
33.8	Recreational
97.1	Scenic
184.0	Wild
314.9	Total within the B-TNF

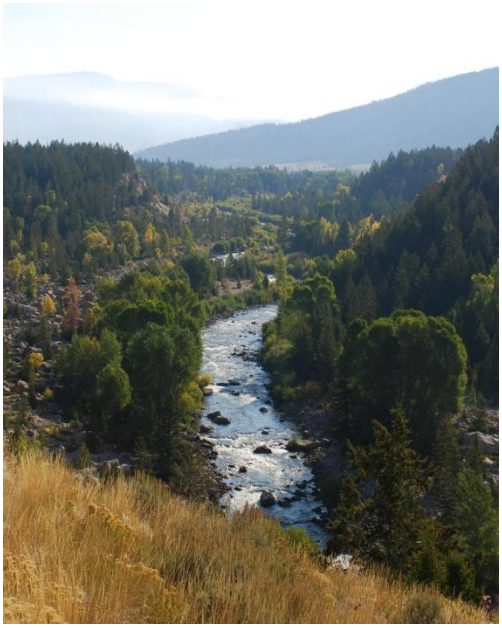
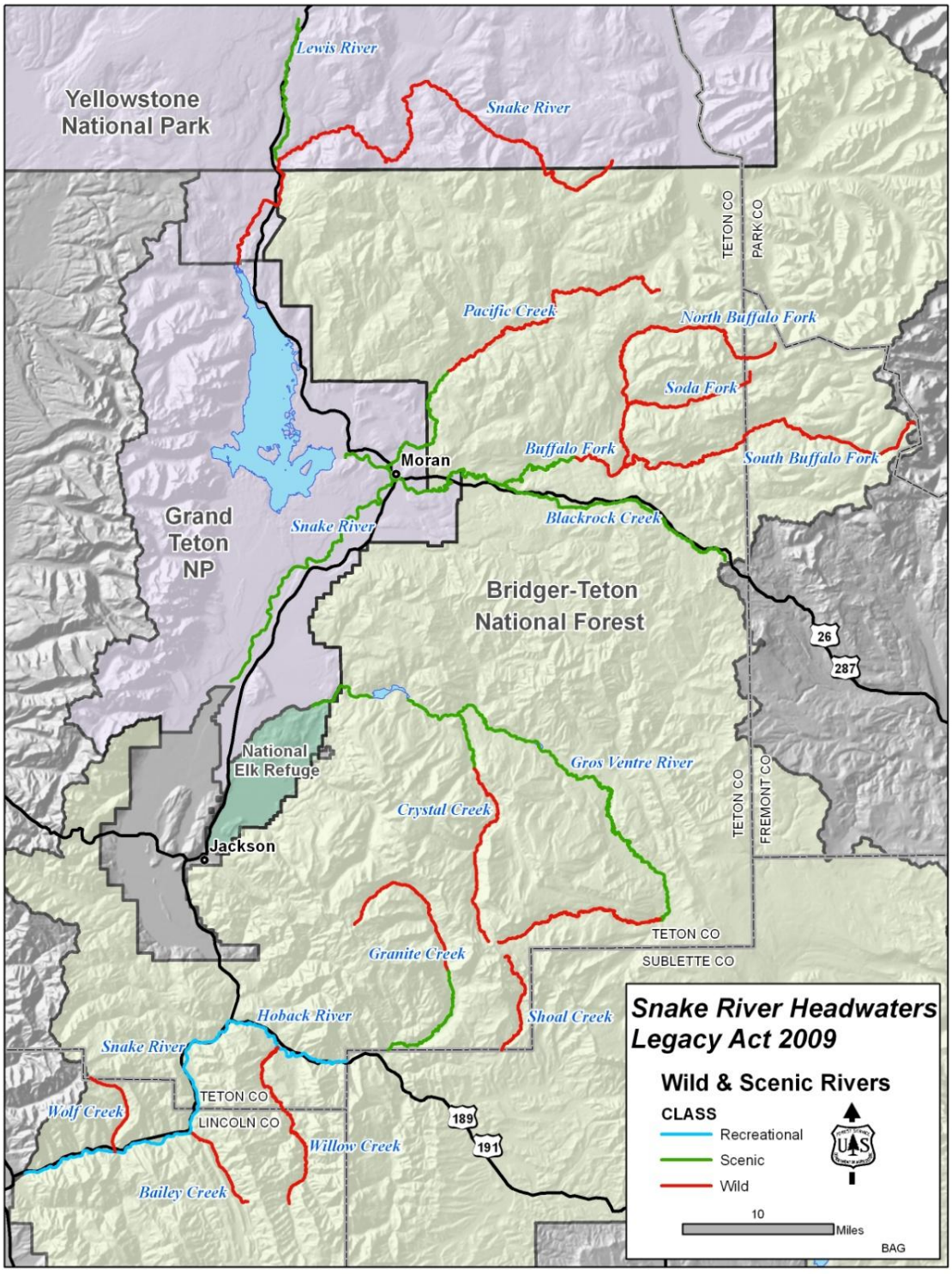


Figure 1.1: Wild, Scenic and Recreation Segments of the Snake River Headwaters



Purpose and Need

The *Bridger-Teton National Forest Land and Resource Management Plan* (Forest Plan) was signed in 1990, identifying rivers that met the minimum requirements to be considered 'eligible' for Wild and Scenic Rivers designation. Amendment Two of the Forest Plan, adding more eligible rivers and further addressing eligible rivers management, was signed in 1992, over twenty years ago. Forest Plan direction addresses only the management of eligible, but not designated, Wild and Scenic Rivers, and that direction was intended to provide only interim guidance, pending any actual designations. Section 10(a) of the *Wild and Scenic Rivers Act of 1968* states that river management should protect and enhance the values for which rivers were included in the system. According to the Interagency Wild and Scenic Rivers Coordinating Council, this mandate translates as a non-degradation standard, measured against conditions and functions at the time of designation. The proposed action described in this document fulfills the legal requirement by amending the Forest Plan to incorporate updated guidance that will specifically 'protect and enhance' the rivers designated in March 2009 by Public Law 111-11 as the Snake River Headwaters.

Public Involvement

In developing a proposal for managing the designated corridors, the Interdisciplinary Team reviewed existing direction, existing conditions, current trends, plus input and comments gathered at early public meetings and through online requests.

Questions asked by the public and employees to assess the ability of management to protect and enhance the river corridors into the future include the following:

1. How will the Forest Service ensure these rivers and creeks remain free-flowing and capable of their full hydrologic function?
2. How will the Forest Service protect the biological integrity of plant and animal ecosystems reliant on these corridors?
3. Will forestry or grazing management need to change? How might any changes impact forest management and/or permittees and contractors?
4. What measures will keep high-value aquatic resources, especially native populations of cutthroat trout and sensitive amphibians, from being degraded over time?
5. Are cultural resources, including traditional uses by indigenous groups, sufficiently understood and protected along these corridors?
6. As recreation amounts increase or types of recreation change are adjustments necessary in visitor management to keep people from negatively altering the scenery or recreational opportunities that have yielded such strong stewardship and connection to these places over the years? How might these changes impact tourism businesses?
7. What can be done to prevent potential negative impacts from roads and facilities, based on existing trends in uses and proposals? How would any new requirements impact the Forest Service engineering program?
8. How will rivers be protected from negative impacts of mineral resources development? How will this amendment affect mineral resources development within the river corridors?

In April, 2011, Bridger-Teton National Forest resource specialists and managers, along with partners from state agencies, the National Park Service and the National Elk Refuge, reviewed the public input from early sensing efforts and the outstandingly remarkable values to consider management visions for the Forest Service portion of the Snake River Headwaters. In considering the various planning issues and opportunities identified by both publics and resource staffs, a series of potential desired futures were depicted. Topic areas included visitor experiences and developments, non-recreational land uses and developments, free-flow/water quality, cultural resources, and natural resources. Similar or related ideas were consolidated, until three concept categories emerged for possible management falling within the mandates of the *Wild and Scenic Rivers Act*.

As released to the public through email and website updates, those three concepts were as follows:

1. Highlighting Ecological Integrity
2. Retaining Management Flexibility
3. Connecting People to Diverse Recreational Opportunities

Finally, because the connected Snake River Headwaters corridors managed by the Forest Service include approximately 315 river miles, two Wilderness areas, two Wilderness Study Areas, a popular paved scenic byway, a bustling whitewater corridor and some of the region's favorite roaded and rustic backcountry, it became clear that all three of these concepts are currently represented. Rather than create alternatives that would force certain areas of the system to become more like other areas, the proposed action encompasses all of the management concepts in different places.

While the proposed action would not create much immediate change on the ground, it would create the management framework to retain this desired variety of conditions, uses and experiences into the future.

Significance of Proposed Forest Plan Amendment

In accordance with the *National Forest Management Act of 1976* (NFMA), Section 6 (f) (4), "Plans developed in accordance with this section shall be amended in any manner whatsoever after final adoption after public notice, and if such amendment would result in a significant change in such plan, …" the plan would be revised consistent with the procedure required for development and approval of a forest plan. The significance of a change to a forest plan is not the same as significance of the environmental impacts of the proposed action as defined in NEPA regulations.

The NFMA implementing policy provided in Forest Service Manual 1926.51 states several reasons why land management changes may be considered 'not significant'. The amendment is considered not significant if (1) multiple-use goals and objectives for long-term land and resource management are only minimally altered, (2) if changes in standards and guidelines can be considered minor, and (3) if changes contribute to achievement of management prescriptions. The following discussion generally describes the relative extent of these proposed changes.

Location and Size

Although this amendment concerns management of an area with values considered worthy of congressional designation under the Wild and Scenic Rivers program, it affects only a limited portion of the total area covered by the Forest Plan. On the Bridger-Teton, this amendment would cover about 99,000 acres out of approximately 3.465 million proclaimed acres. Therefore, this amendment covers less than 3 percent of the total planning area on the national forest.

The 1990 Forest Plan approaches the multiple-use mission of the agency by creating zoned areas, called Desired Future Condition (DFC) categories, which highlight different uses or combinations of uses in different areas. Most of the acres affected by this proposal were already being managed as Eligible Wild and Scenic Rivers with the intent to protect river values, although in most cases that management direction was provided with an 'overlay' of additional standards beyond what was given in pre-defined DFCs. In the 1990 Forest Plan, DFC 3 is managed for River Recreation, and includes rivers still eligible for designation as well as several which were designated with the 2009 Act. Most of the designated rivers in this category would be fall into the new management area sub-categories. The proposal would narrow some originally-mapped DFC 3 areas, such as along the lower Gros Ventre River. Those boundaries were not clearly related to river resources protection, a requirement for inclusion. In the following table, these areas are depicted as 'River Management Redistributed' acres.

In the 1992 Amendment Two, new eligible rivers were drawn with a default ¼ mile corridor from normal high water on both banks, but management in those river corridors was with *additional* standards, rather than by grouping them into a separate DFC with its own standards. These are depicted in the Table 1.2 as 'Eligible to Designated Management'. The acreage listed as changed for 'Management effectiveness' are limited areas where the other proposed changes left small zones 'orphaned' around other zones, and therefore helps with future projects. Some corridor expansions beyond the default ¼ mile corridor are proposed, and Congress included a new portion of Shoal Creek, but actual total management acres effected are still slightly less under the proposal than with existing management boundaries. Because designated rivers in Wilderness or Wilderness Study Areas would still be managed under their existing DFC 6 zone, with additional direction given as an overlay, those acres do not show on the following table.

Table 1.2 summarizes the proposed changes to Desired Future Condition (DFC) categories. Descriptions of these DFC categories can be found beginning on page 174 in the 1990 Forest Plan.

Table 1.2: Acres in Existing and Proposed Desired Future Condition

DFC Changes	ACRES
River management sub-categorized	
3 to 3A *	1,658
3 to 3B	7,966
3 to 3C	11,970
3 to 3D	343
	20,278

Eligible to Designated management	
2A to 3C	290
2A to 3D	1
7A to 3C	1,619
7A to 3D	3
7B to 3C	4,369
8 to 3C	160
9A to 3C	2,125
9B to 3C	148
10 to 3C	1,170
10 to 3D **	2,244
12 to 3B	1,649
12 to 3C	12,315
12 to 3D	5,020
	31,114

DFC Changes	ACRES
River management redistributed	
3 to 12	6,145
3 to 2A	28
3 to 7A	280
3 to 8	11
3 to 9A	1
3 to 9B	2
	6,467

Management effectiveness changes	
7A to 2A	8
7B to 2A	50
9A to 12	78
9A to 2A	79
9A to 7B	17
12 to 7A	1
10 to 12	84
12 to 2A	3
	318

* no management change

** 204 acres on Shoal, designated but not listed as eligible in Amendment 2

Goals, Objectives, and Outputs

The amendment strengthens protection and enhancement of the river values. Eligible Rivers are managed in three categories, based strictly on classification. The new amendment would manage one river with recreation classification in a category with scenic classified rivers, and it splits the wild classified rivers into two categories, with minor differences based on allowable activities outside wilderness areas. This changes three river segments out of 18 from existing management categories.

Although the existing Forest Plan recognizes amenity outputs associated with the Wild and Scenic Rivers, the amendment would place increased value on those non-commodity or service values. This Environmental Assessment (EA) identifies a potential decrease in silvicultural activity in some areas, although others become slightly less restrictive. This

change may minimally affect timber outputs. Mining interests may also be affected by the proposed No Surface Occupancy stipulation, but within the primary project area, these commodity outputs do not constitute a large percentage of economic activity. This amendment therefore results in only a minor change to the forests' goals, objectives, and outputs.

Management Prescriptions

The Outstandingly Remarkable Values identified in the proposal for the new Desired Future Condition subcategories explicitly include the management emphases of the areas they will be replacing, especially the wildlife and river recreation emphases of DFC 12 and DFC 3. Actual management prescription changes effect a total of 58,177 acres, or less than 2% of the Bridger-Teton National Forest. The Forest Plan amendment to meet the intent of the 2009 *Craig Thomas Snake Headwaters Legacy Act* will change management prescriptions, to varying degrees, for the project area only. It will apply standards to future decisions throughout the project area. The 1990 Forest Plan, as amended, already provided basic protections for eligible rivers. The table below compares acreage within the project area only; DFC 3 that is not within the designation would become DFC 3A.

Table 1.3 Comparison of total acreage by DFC, existing and proposed

DFC	1990 acreage	Proposed acreage	% decrease
1B	3	3	
2A	56,604	56,447	0.3%
2B	9,684	9,684	
3(A)	28,469	1,658	94%
3B	0	9,648	
3C	0	34,167	
3D	0	7,611	
6A	201,238	201,238	
6B	327,385	327,385	
6C	85,406	85,406	
6D	11,454	11,454	
6S	90,681	90,681	
7A	29,213	27,864	5%
7B	39,245	34,842	11%
8	22,171	22,023	0.6%
9A	5,319	3,022	43%
9B	6,693	6,547	2%
10	111,016	107,518	3%
12	206,948	194,268	6%
Total:	1,231,466	1,231,466	

In summary, the above considerations suggest that this action is "not a significant amendment" to the Forest Plan, especially when the relative size of the area is compared with the total size of the national forest involved and that the primary purpose of the amendment is to comply with the 1968 *Wild and Scenic Rivers Act*, providing more explicit direction for the congressionally designated area and additional protections for management prescriptions previously identified. A separate Finding of No Significant Impact for Forest resources as defined in NEPA regulations must still be proven, following the analysis provided in this EA, before a Decision Notice can be issued.

Elements Common to Both Alternatives

Under the *Wild and Scenic Rivers Act*, the law now replaces several aspects of existing direction in designated corridors. These legal limitations apply whether or not a Forest Plan Amendment is signed and are therefore not included in the proposed action.

- FERC-licensed hydropower projects are prohibited.

- Any federally-assisted or -permitted development and activities within bed and banks of designated stretches, or directly affecting those stretches, regardless of ownership, are subject to 1968 *Wild and Scenic River Act* Section 7 analysis.

- Areas within the corridors along wild classified river segments are withdrawn from mineral entry, subject to valid existing rights.

- Subject to valid existing rights, new mining claims in available areas can be patented only as to the mineral estate and not the surface estate.

- Classifications of river segments as described in the *Snake River Headwaters Legacy Act* must be retained, limiting development and roaded access on National Forest System lands to that which would not exceed the following descriptions:
    - "**Wild River Areas –** Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.
    - **Scenic River Areas –** Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
    - **Recreational River Areas –** Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past."

Mapping Adjustments

Segment lengths identified in the legislation (as approximate) were based on the eligibility study completed as part of the analysis for Amendment Two of the Forest Plan. In some

cases, the legislation was also imprecise about starting or ending points. The descriptions of each segment below have been clarified and made more consistent (e.g. wild segments typically end at Wilderness boundaries, where applicable).Where classifications change along contiguous segments, the corridor is considered to end at a straight line (except as noted). Between the time when initial inventory of eligible river segments was completed and the publication of this document, more accurate information became available on the length of river segments. Based on current Geographic Information System analysis, the following corrections have been made (Table 1.3). The upper headwaters of all three forks of the Buffalo Fork River were underestimated due to substantial amounts of river sinuosity. Contiguous Grand Teton National Park (GTNP) and Yellowstone National Park (YNP) segments are not included in this analysis, but are being discussed in a separate management proposal from those agencies.

Table 1.4: Corrected Segment Lengths, Snake River Headwaters

RIVER	REACH and CLASSIFICATION		LENGTH (miles)		
			Legislated	Corrected	Difference
Bailey Creek	Source to Snake River	WILD	7	6.9	- 0.1
Blackrock Creek	Source to Buffalo Fork confluence	SCENIC	22	21.7	- 0.3
Buffalo Fork	Source to Wilderness boundary	WILD	55	70.3	+ 15.3
	Wilderness boundary to GTNP boundary	SCENIC	14	14.1	+ 0.1
Crystal Creek	Source to Wilderness boundary	WILD	14	14.2	+ 0.2
	Wilderness boundary to Gros Ventre	SCENIC	5	4.7	-0.3
Granite Creek	Source to Wilderness boundary	WILD	12	12.3	+ 0.3
	Wilderness to Teton County boundary	SCENIC	9.5	9.7	+ 0.2
Gros Ventre River	Source to Darwin Ranch	WILD	16.5	16.5	0
	Darwin Ranch to Forest Boundary	SCENIC *	39	40.1	1.1
Hoback River	Teton County to Snake River	RECREA-TIONAL	10	10.7	0.7
Pacific Creek	Source to Wilderness boundary	WILD	22.5	22.5	0
	Wilderness boundary to Forest boundary	SCENIC	7	6.8	-0.2
Shoal Creek	Source to Riling Trailhead	WILD	8	8.5	0.5
Snake River	Source to YNP boundary	WILD	7	6.9	-0.1
	YNP boundary to	WILD **	0	2.7	2.7

RIVER	REACH and CLASSIFICATION		LENGTH (miles)		
			Legislated	Corrected	Difference
	Sheffield				
	Hoback to one mile upstream of Alpine	RECREA-TIONAL	19	23.1	4.1
Willow Creek	16.2 miles to Hoback River	WILD	16.2	16.2	0
Wolf Creek	Source to Snake River	WILD	7	7	0
	Total		290.7	314.9	24.2

*excluding full pool level of Lower Slide Lake **east bank only

The mileage listed implies management of both banks with one exception: on the upper Snake River, one short section will be managed under the National Park Service CRMP on the west bank and the Forest Service CRMP on its east bank.

Corridor Boundaries

Private lands within the corridors continue to fall under the regulatory authority of the local jurisdiction, unless actions are proposed within the bed and banks of designated rivers that require a federal permit or funding. In that case, the Army Corps of Engineers must receive a Section 7 certification from the River Administering Agency in order for their permit to be valid. The Act permits easement acquisition on any private land within the boundary from willing landowners. It does not provide the federal administering agency the authority to regulate nonfederal lands.

Proposed Action

The Bridger-Teton National Forest proposes a Forest Plan Amendment to manage designated Wild and Scenic Rivers under Forest Service administration. Because citizens have largely expressed that they want to see overall current conditions on the ground retained, the proposal reflects the present diversity of recreation settings and other values within the Snake River Headwaters by creating subcategories within the Wild and Scenic River segments. Details of this proposed Forest Plan amendment can be found in Chapter 2 under the description of Alternative 2.

This proposed action applies only to those rivers located on the Bridger-Teton National Forest which were designated as part of the *2009 Snake River Headwaters Legacy Act*. It would include the following changes to the Forest Plan:

- New Goal and Objective
- New Management Emphasis
- New Desired Future Conditions subcategories
- New and Revised Standards and Guidelines
- New Monitoring Indicators and Thresholds
- Established River Corridor Boundaries

Other rivers on the Forest that are eligible for designation, but not included in the 2009 Act, would continue to be managed under existing Forest Plan direction.

Decision to Be Made

The Forest Supervisor will decide whether to amend the Forest Plan as proposed in this document, not to amend, or to amend with an alternative that emerges from the environmental analysis and public input.

This decision does not authorize any ground-disturbing actions. The *Wild and Scenic Snake River Headwaters Comprehensive River Management Plan* (CRMP), a guidance document required by Section 3(b) of the 1968 *Wild and Scenic Rivers Act*, will be published alongside the decision document that follows this Environmental Assessment. Potential future site-specific activities to implement the CRMP, such as ground-disturbing projects or recreation use restrictions would be evaluated when they are proposed.

Issues

This assessment will evaluate the potential effects of the proposal. The following is a summary of issues that will be addressed in this Environmental Assessment and Forest Plan Amendment.

a) The effect of new management direction on free-flowing character and hydrologic function;
b) The effect of new management direction on the biological integrity of plant and animal ecosystems;
c) The effect of new management direction on silvicultural practices and range administration, and/or on livestock permittees and timber contractors;
d) The effect of new management direction on aquatic resources, especially native populations of cutthroat trout and sensitive amphibians;
e) The effect of new management direction on cultural resources, including traditional uses by indigenous groups;
f) The effect of new management direction on visitor opportunities, stewardship and connection, as well as to tourism businesses;
g) The effect of new management direction on roads and facilities;
h) The effect of new management direction on mineral resources development.

Shoal Creek

Chapter II: Alternatives Including the Proposed Action

Introduction

The *1990 Bridger-Teton National Forest Land and Resource Management Plan* (Forest Plan) and subsequent Amendment Two provided temporary direction to manage values on rivers determined eligible, but pending Congressional inclusion into, the national Wild and Scenic Rivers system. After designation of the Snake River Headwaters, an Interdisciplinary Team was tasked with evaluating whether that direction was still sufficient to meet the requirements of the 1968 *Wild and Scenic Rivers Act* to 'protect and enhance' river values.

Several alternatives for managing these designated rivers, described below, were considered but later dismissed and are not analyzed in detail.

1. One alternative would have mapped the boundaries of the management corridors for the designated segments in a way that would maximize the allowable acreage under the Wild and Scenic Rivers Act, attempting to fully utilize the 320 acres per river mile across the entire designation. Congressional direction regarding the primary basis for determining boundaries is to protect identified river values "without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values" (Sec. 10(a)); this alternative would likely have exceeded that direction.

2. The team also considered whether to propose alternatives based on different mapped boundaries. However, because the basis for establishing boundaries must be the protection of identified river values, one version of corridor mapping would appear to be most correct, while others would appear to be either inadequate or inappropriately overreaching.

3. An additional 'Desired Future Condition' category was initially explored, further segregating the rivers in the 'scenic' classification, primarily by roadway type (Forest Service- or state-maintained). As relevant resource standards were drafted, no substantive differences were realized, and thus the 2 potential DFC subcategories were combined into the proposed DFC 3C.

The No Action Alternative, as required by the Council on Environmental Quality (CEQ), provides a baseline for comparison with the Proposed Action. What follows in this chapter is a description and comparison of the No Action (existing direction) and the Proposed Action being considered for managing the Wild and Scenic Snake River Headwaters.

Alternative 1 – No Action

Under the No Action Alternative, current management including Amendment Two of the Forest Plan would remain in effect with no differences between designated rivers and eligible rivers, and standards assigned on the basis of each river's classification or potential classification (see Figure 1.1 on pg. 1-4). Those standards will be specifically compared to any proposed changes in this chapter.

The 1990 Forest Plan is the primary document setting direction for managing lands and rivers within the Bridger-Teton National Forest. It does so by describing settings and uses for the various land allocations that are called 'Desired Future Conditions' or DFCs. Currently, rivers eligible for inclusion in the Wild and Scenic Rivers System are addressed in various places in the Forest Plan: as part of DFC 3 (river-related recreation, see Appendix D), in Wilderness/Wilderness Study Areas under DFC 6 (Appendix E), and in Forest Plan Amendment Two (Appendix F).

Future development and activities within river corridors would continue to be directed by the Forest Plan as amended, along with any landscape-scale assessments, Wilderness plans, and the 1997, 1998 and 2000 *Snake River Recreation Plans*, that have been completed since the 1990 Forest Plan was signed.

Forest Plan monitoring would continue but no river-specific monitoring would be added. Relevant to existing aspects of the designated corridors, monitoring would continue regarding developed recreation facilities, wilderness campsite conditions, vegetative habitats and sensitive plant and animal species, rangeland proper use criteria, reforestation practices, minerals operations and reclamation monitoring, riparian evaluations, watershed condition trends, and road maintenance.

The interim ¼ mile corridor width established in Amendment Two would continue to apply for both eligible and designated segments, and all corridors mapped in the 1990 Forest Plan DFC 3would also continue to apply.

Alternative 2 – Proposed Action

Changes are proposed to update two-decade-old direction to better encompass an ecosystem management approach and address new challenges and trends. ***The elements of this alternative would be incorporated into the subsequent final CRMP under its Management Direction section.*** All elements of the alternative are entirely programmatic in nature. Future site-specific actions described in the CRMP would require appropriate National Environmental Policy Act (NEPA) analysis and documentation when they are proposed. Elements of the Plan Amendment would include:

- Proposed Forest Plan Goal and Objective statements
- Proposed Management Emphasis
- Proposed Desired Future Conditions categories
- Proposed Standards and Guidelines
- Proposed boundary delineation
- Proposed monitoring requirements, including Indicators and Thresholds

In the pages which follow, proposed language being incorporated in the Forest Plan is identified by text box, with discussion and explanation outside the boxed areas.

Forest-wide Plan Elements

The current Forest Plan is structured to include goals and objectives as well as Forest-wide prescriptions, standards and guidelines.

The Forest Service proposes to add the following goal and objective to Chapter 4 of the Forest Plan to reflect the newly designated Wild and Scenic River segments.

- **Goal 4.11:** Waterways designated by Congress as part of the National Wild and Scenic Rivers System will be managed to protect and enhance their outstandingly remarkable values, free-flow condition, and water quality for future generations.
- **Objective 4.11(a):** Implement applicable Comprehensive River Management Plan(s) and monitor the resource and social indicators identified.

The Forest Service proposes to amend the existing Forest-wide Wild and Scenic Rivers Standard, which currently does not distinguish between eligible and designated rivers. It reads: "Wild and Scenic Rivers Prescription - River segments that have been found eligible for inclusion in the Wild and Scenic Rivers System are managed to protect or enhance their wild, scenic, and recreational values." (Forest Plan, page 174.) This language would change to the following:

- **Eligible Wild and Scenic Rivers Standard:** River segments, and the default corridor of at least ¼ mile on either side, that have been determined eligible for inclusion in the Wild and Scenic Rivers System will be managed to protect or enhance their outstanding river values.

Designated Wild and Scenic Rivers Management Emphasis

The Forest Service proposes to amend its Forest Plan with the addition of the following overall Management Emphasis for designated rivers.

All designated river segments would be managed to protect and enhance their outstandingly remarkable values (described in detail in the required Comprehensive River Management Plan), free-flowing condition, and water quality for future generations. This protection, defined as a non-degradation standard, derives from a baseline of developments, conditions and ecosystem functions present at the time of designation.

Management would:

1. Promote the rivers' natural hydrological processes, channel form and function, and ability to shape the landscape. Reduce impediments to free flow, ensure sufficient flows to protect and enhance outstandingly remarkable values, and ensure the maintenance of water quality.
2. Protect and enhance the natural biodiversity, complexity, and resiliency of riparian areas, wetlands, floodplains and adjacent uplands.
3. Protect and enhance cultural resources as important links to the human history of the river corridors, including historical and archeological sites, cultural landscapes, and ethnographic resources.
4. Provide a diversity of settings for visitors of varying abilities to experience, learn about, and have a direct connection with the rivers and their special values. Such opportunities must be consistent with the values that caused the rivers to be designated.
5. Allow for legal and permitted multiple uses and associated developments, consistent with each river segment's classification, while supporting the protection and enhancement of river values.

Desired Future Conditions

Desired Future Condition (DFC) 3: The Forest Service proposes to change the title of DFC 3 from 'River Recreation' to 'Wild and Scenic Rivers,' and to divide it into four subcategories, similar to the structure of Wilderness direction in the Forest Plan (DFC 6A – 6D).

Proposed subcategory descriptions are as follows:

DFC 3A—Eligible, but non-designated rivers outside Wilderness and Wilderness Study Areas

These river segments, as previously identified in the 1990 Forest Plan, would simply be re-categorized from DFC 3 to DFC 3A, and would continue to be managed as at present, in accordance with existing DFC 3 and Forest Plan Amendment Two direction.

River corridors not designated but determined eligible under Amendment Two will continue to be managed in existing DFCs with the additional standards given in that amendment, and are depicted on the proposal map with cross-hatching (see Figure 2.1 on page 2-8). No changes to underlying DFCs in these corridors are currently proposed.

For designated rivers in DFC 3 (everything outside Wilderness and Wilderness Study Areas), proposed new subcategories DFC 3B, 3C, and 3D would better reflect the current variety of management options, landscape settings and visitor opportunities available across the many areas within the Snake River Headwaters. Because this variety has specifically been identified as part of the outstanding values, clarifying and preserving these subcategory differences helps to meet the purpose and need of the project.

DFC 3B

Snake River, recreational segment (Confluence with the Hoback River to one mile east of Alpine Junction): This is the most heavily developed recreational corridor within the Bridger-Teton National Forest, with frequent, ready access from U.S. 26/89 and developed boating and camping facilities. With its unique level of development and high use, including large groups, this river segment would be managed to accommodate that visitation style. It would continue to be managed under the existing Snake River Recreation Plan, which contains specific direction to manage high numbers of visitors, including commercial outfitted publics, to protect the desired recreational experience and other identified values of the corridor. Season-long water flows sufficient to support river rafting and fishing experiences would be maintained. Visitor opportunities would be accessible and relevant to diverse populations, promoting understanding and enjoyment of the environment, preservation of natural settings, and encouragement of healthy river-related activities to invigorate the human spirit and create lasting memories, especially among the large groups that frequent this corridor.

DFC 3C

Hoback River, recreational segment; Blackrock Creek, scenic class; scenic river segments of Pacific, Crystal, and Granite Creeks; Buffalo Fork River and the Gros Ventre River scenic sections:

These segments are accessible via paved roads and highways, some of which are scenic byways, and/or high-standard Forest roads. However, the level of development is lower, and the use is primarily by small groups and individuals. Boat launches are primitive, campgrounds are few, and there are many opportunities for dispersed camping and day use. The corridors would continue to provide for day-use and overnight camping in developed or dispersed settings. A wide range of recreational and educational experiences, including fishing, hunting and wildlife viewing, would be encouraged. Information would describe opportunities to explore the full Headwaters system. Interpretation of both natural and cultural resources would educate the public about river values and how activities in the Headwaters system help protect and enhance these values. Resource adaptation and resilience would be promoted through retention of management flexibility, especially regarding fish and wildlife habitat projects.

DFC 3D

Bailey and Willow Creeks, wild segments: These segments are classified as wild rivers, yet are located outside of designated Wilderness or Wilderness Study Areas (WSA). They are accessed by non-motorized trail and have no facilities other than trails and trail bridges, food storage poles, and undeveloped campsites. Fishing, hunting and wildlife viewing continue to be key activities. Visitors would adapt to changing natural conditions, with new recreation activities allowed only if they are consistent with the protection and enhancement of river values. Activities that might result in a more developed classification would not be allowed, but management to restore natural conditions or functions would be supported. Interpretation and education would primarily occur off-site.

Note: Approximately two miles each of Shoal Creek and Buffalo Fork wild segments are also outside Wilderness/Wilderness Study Area boundaries and would be managed under DFC 3D, as would any WSA portions of this designation that may be released from Wilderness management in the future.

These subcategories would be accompanied by separate management direction (standards and guidelines). The development and access levels outlined in the 1968 WSRA per classification and assigned by the 2009 Snake River Headwaters Legacy Act remain in effect; eg. no change in classification is included in the proposed action.

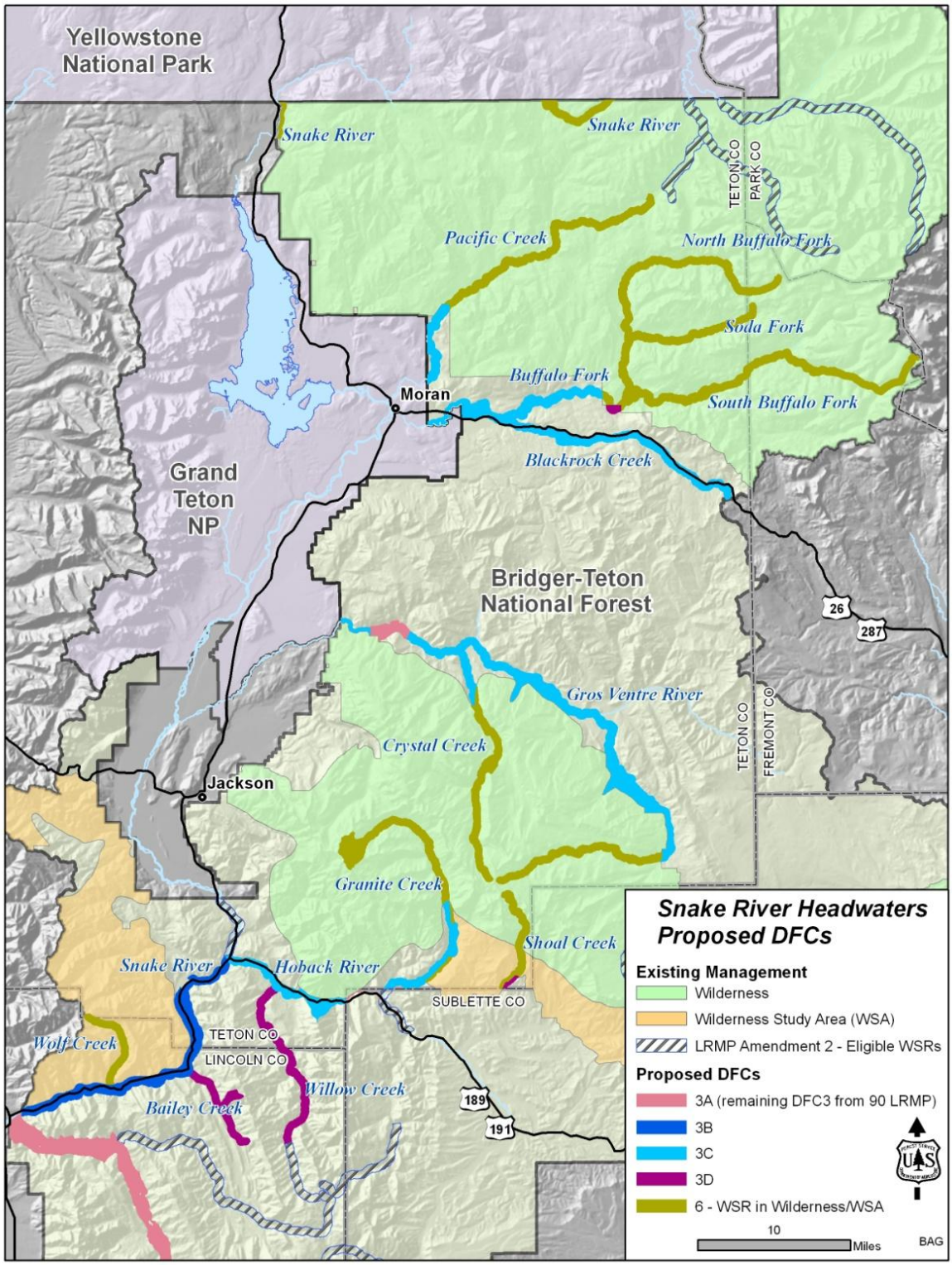
DFC 6

Wilderness and Wilderness Study Areas (WSA): Designated Rivers located within Wilderness or Wilderness Study Areas would continue to be managed under Desired Future Condition 6. New Standards and Guidelines would be added, but no existing guidance would be removed. Therefore no discussion of current DFC 6 subcategories, nor existing standards and guidelines is included. To see existing guidance for all DFC 6 subcategories, see Appendix E.

Applicable wild river segments include the upper portions of Crystal, Granite, Pacific, and Shoal Creeks, all of Wolf Creek and the upper portions of Snake, Gros Ventre, and Buffalo Fork Rivers, generally from the source to Wilderness or Wilderness Study Area boundary (or as mapped). Proposed additional standards would apply only to these river corridors, which exist in all five Wilderness/WSA subcategories (DFC 6A-D and DFC 6S). The Forest Geographic Information System data would depict these corridors as an overlay within DFC 6.

Subcategories of DFC 3, as proposed, including 3A (Eligible Rivers defined prior to Amendment 2) and the Amendment 2 Eligible rivers overlay, along with the DFC 6 designated Wild and Scenic Rivers overlay corridors are shown below in Figure 2.1.

Figure 2.1: Proposed Desired Future Conditions by River Segment
Alternative 2



Resource Standards and Guidelines

Standards and guidelines provide direction to ensure that the proposed desired conditions and Management Emphasis for designated rivers is achieved. Standards are constraints upon project and activity decision-making and are explicitly identified in a plan as 'standards.' (36 CFR 219.7(a)(3)) A standard differs from a guideline in that a standard is a strict design criteria, allowing no variation, whereas a guideline allows variation if the result would be equally effective. Guidelines are stated as flexible limits on project proposals, while standards are stated as requirements. New overall standards and guidelines applicable to all segments (described below) would be adopted that better protect the resources identified as outstanding in the *Snake River Headwaters Act*. Within DFCs 3B, 3C and 3D, additional standards and guidelines that vary across the subcategories better protect the current variety of management options, landscape settings and visitor opportunities available across the Snake River Headwaters. Because this variety has specifically been identified as part of the outstanding values, these additional protections also help to meet the purpose and need of the amendment.

The standards and guidelines in Table 2.1 would replace current DFC direction for all subcategories of designated river segments outside Wilderness/WSAs.

Table 2.1: Proposed Overall Standards/Guidelines DFC 3B, 3C, 3D Designated Rivers outside Wilderness and Wilderness Study Areas

ECOLOGICAL AND WILDLIFE RESOURCES
Wildlife and Vegetative Habitat Guideline: The composition, structure and function of native plant and animal habitats should be maintained or restored by promoting natural ecological processes to the extent practical throughout mapped corridors (riverine, riparian and upland habitats).
Forest Health Guideline: Insects and disease should be managed only as necessary to protect human life and critical infrastructure.
Fencing and Safe Road Crossings Guideline: Fences should be modified to meet Wyoming Game and Fish Department wildlife-friendly guidelines or removed. Wildlife-impermeable fences, overpasses and underpasses may be used to facilitate safe passage for wildlife across roads.
Biodiversity Guideline: To the fullest practical extent, management should maintain genetic integrity of native plant and animal species, and maintain native populations at all trophic levels. **
Migration Corridors Guideline: Management actions should be designed so that timing, location and duration of activities allow for successful use of historic and new fish and wildlife migration routes.
AQUATIC RESOURCES
Fisheries Habitat Guideline: Fisheries habitat management should give preference to maintenance of self-sustaining native fish populations in their native range.

Aquatic Habitat Guidelines: Managers should maintain and/or restore self-perpetuating floodplain and riparian conditions. Natural stream habitat conditions as reflected by channel dimensions, shape, gradient, and presence of hydric vegetation and large woody debris should be sustained. Direct restoration of spawning, rearing, and adult fish habitats in designated corridors may also occur. Landscapes affected by restoration projects should be natural-appearing and compatible with other identified river values.
ROADS AND FACILITIES
Road Maintenance Guideline: Existing roads should be managed to protect or enhance water quality, conditions of free-flow and the outstandingly remarkable values of each river segment. Best Management Practices should be utilized to improve drainage and reduce erosion and sedimentation.
Road Density Guideline: A transportation system should be provided that is the minimum necessary for adequate access to popular recreation sites, private lands, and to meet resource management needs. Where appropriate to protect or enhance river values within the corridor, roads should be decommissioned, which includes restoring natural contours, drainage, and vegetation.
Administrative Structures and Facilities Guideline: New facilities should be located within existing developed areas. Facilities and structures should be designed or redesigned, located and maintained to protect identified values.
Stream Crossings Standard: Wherever occurring on designated segments and adjacent tributaries, crossing structures must be designed to accommodate the bankfull channel and flows, sediment and debris from 100-year return interval floods. Existing non-compliant structures will be modified as funding permits. Temporary crossings must be removed and rehabilitated upon completion of use.
Road Improvement and New Road Building Standard: Service level of permanent new or reconstructed roads must be consistent with the Recreation Opportunity Spectrum for the project area.
SCENERY
Scenery Management Guideline: Management practices should maintain a high level of scenic integrity for identified foreground features and middle-ground or background scenic vistas. Changes in visual character resulting from natural processes such as fire (including smoke), flooding, wind events, insects and disease, landslides and naturally-impounded ponds should only be modified where necessary to provide for public safety or to the degree necessary to maintain critical infrastructure.
Scenery Perspective Standard: River facilities and management activities will be designed to be compatible with the river scenery as viewed, in priority order, first from the waterways and second from travel routes within corridors.

******Biodiversity guideline is not intended to limit planting disease-resistant whitebark pine seedlings

Desired Future Condition DFC 6 Wilderness and Wilderness Study Areas

In Wilderness and Wilderness Study Areas, existing direction is quite protective and currently meets much of the intent of Wild and Scenic Rivers designation. Without removing those protections, the following new requirements shown in Table 2.2 would be added to existing DFC 6 direction within designated corridors across all DFC 6 subcategories, including 6S (Wilderness Study Areas).

Table 2.2: Additional DFC 6 Standards and Guidelines for Designated Rivers inside Wilderness and Wilderness Study Areas

ECOLOGICAL AND WILDLIFE RESOURCES
Biodiversity Guideline: Genetic integrity of native plant and animal species and native populations at all trophic levels should be maintained, within the context of Wilderness character. **
Forest Health Projects Standard: Only hazard tree removal at designated facilities allowed.
RECREATION RESOURCES
Recreation Permits Standards: Proposed outfitter-guide special uses must help enhance identified river values. No recreation events allowed.

****Biodiversity guideline is not intended to limit planting disease-resistant whitebark pine seedlings

Standards that vary by Desired Future Condition Subcategory

DFC Subcategories

In addition to the standards and guidelines listed in Tables 2.1 and 2.2, the standards in Table 2.3 would apply to specific DFC sub-categories in the designated river segments, replacing current Amendment Two direction. In DFC 3A, Eligible but not Designated rivers, standards from the Amendment Two overlay would still apply.

Table 2.3: DFC-specific Standards, Replacing Current Amendment Two Direction

Resource Area	DFC 3B	DFC 3C	DFC 3D	DFC 6/6S
Water Resource Projects	Subject to valid existing rights, existing diversions and impoundments may be maintained, utilizing methods that are protective of current free-flow and identified river values. All proposed federally-assisted or –permitted (non-FERC hydropower) water resources projects within or adjacent to designated segments are subject to Section 7 evaluation for potential effects on the values for which the river was added to the National System. New (non-FERC hydropower) water resources projects may be permitted only if river values are protected.		All flood control or irrigation structures, impoundments and diversions are prohibited, subject to valid existing rights.	
Forest Health Projects	Only selective hazard removal or facility enhancements allowed.	Silvicultural activities are allowed only to enhance ecological function or visual quality, or if necessary for selective hazard removal or reduction of fuels risks in WUI, must maintain ecological function and visual quality.	Only WUI fuels treatments, habitat restoration, or hazard tree removal allowed.	Only hazard tree removal at designated facilities allowed.
Dispersed Camping	None allowed in corridor during the high use season, between May 1 and Labor Day.	Allowed except where seasonally (May 1-Labor Day) prohibited. All vehicles at dispersed campsites shall remain outside a 100’ setback from waterways; Hitching, tethering or picketing	Hitching, tethering or picketing pack and saddle stock shall remain outside 200’ lake and 100’ stream setbacks.	

Resource Area	DFC 3B	DFC 3C	DFC 3D	DFC 6/6S
		pack and saddle stock shall remain outside 200' lake and 100' stream setbacks		
Recreation Facilities	No new campgrounds; other facilities may be approved, appropriate to setting; enhancements of existing facilities are allowed.	New and existing developed sites, river access, trailhead facilities, interpretive sites are allowed appropriate to setting. Facilities that might result in a more developed classification would not be allowed.	No facilities allowed, although minimal structures such as bear poles may be installed to protect identified values.	
River-related Recreation Permits	Current limits on commercial permits are incorporated. Group (>15) permit required. Recreation events allowed. *Same as No Action Alternative here.*	Proposed outfitter-guide or recreation event permits must enhance identified river values and river stewardship.	No events allowed; New outfitter-guide permits must enhance wild river character, identified river values and stewardship.	
Visual Quality	The Visual Quality Objectives are Retention in the foreground or Partial Retention beyond the foreground.		The Visual Quality Objectives are Preservation in the foreground or Retention beyond the foreground.	The Visual Quality Objective is Preservation.
Non-recreation Developments	New structures on NFS lands may not have exterior lights, signals or illumination, except for specific safety needs. Height of any new structures		New structures are not allowed in river corridors.	

Resource Area	DFC 3B	DFC 3C	DFC 3D	DFC 6/6S
	should be consistent with county Land Development Regulations. New structures must be evaluated as to appropriateness for character of immediate vicinity, river classification, and according to Visual Quality Standards.			
Bank Stabilization	Stabilization projects are allowed, subject to approval through the Section 7 review process, for safety or protection of river values. Materials used must be natural or natural-appearing, consistent with site characteristics.		Stabilization projects are allowed only to correct human-caused resource damage. Materials used must be natural, consistent with site characteristics.	
Road and Trail Fords	No developed or improved road or trail stream fords are allowed.	No new developed or improved road or trail stream fords shall be allowed, unless an existing crossing must be re-located or re-designed to minimize impacts on river values or water quality.		
Common Variety Minerals	Visual screening from waterway and roadway of new or existing in-use pits is required. Pits must be outside the bed or banks of designated segments and must apply established Best Management Practices to protect river values. Unused pits will be rehabilitated.		*Withdrawn by law from mining entry, subject to valid existing rights.*	
Leasable Minerals	Available (except where subject to other No Lease or withdrawal decisions) with No Surface Occupancy stipulation on any new oil and gas leases. All leasing operations shall minimize surface disturbance and visual impairment, and avoid impacts to water quality.		*Withdrawn by law from mineral leasing, subject to valid existing rights.* Existing valid claims in wild corridors will be managed to minimize surface disturbance and visual impairment, and avoid impacts to water quality.	

Resource Area	DFC 3B	DFC 3C	DFC 3D	DFC 6/6S
Locatable Minerals	Areas available except where subject to other withdrawals. All operations shall minimize surface disturbance and visual impairment, and avoid impacts to water quality.		*Withdrawn by law from mining entry, subject to valid existing rights.* Existing valid claims in wild corridors will be managed to minimize surface disturbance and visual impairment, and avoid impacts to water quality.	

Definitions of Terms Used in Proposed Standards and Guidelines

Critical Infrastructure: This includes administrative and visitor facilities such as buildings and trails and resource features such as whitebark pine 'plus' trees that can serve as vital resilient seed stock.

Designated Facilities: In wilderness, this includes defined outfitter-guide or livestock camps and cabins under permit, as well as administrative facilities such as cabins, fences and trails.

Dispersed Camping: Campsites chosen by visitors, without Forest Service developments such as picnic tables and rest rooms. Bear poles and bear boxes may be provided in high use dispersed campsite locations.

Non-Recreation Facilities and Structures: This includes but is not limited to cell towers, grazing structures, wildlife management structures, administrative sites, communications sites, transmission lines and pipelines.

Recreation Facilities and Structures: Facilities include developments and areas associated with campgrounds, picnic areas and major boat launches; structures include bear boxes or poles, hitch rails, corrals, etc. associated with recreation sites. Designated facilities in wilderness include Forest System trailways, outfitter-guide camp locations, and guard stations.

Recreation Opportunity Spectrum (ROS): A conceptual tool for managing recreation and integrating recreation with other land uses by assessing physical, social and managerial attributes of various settings and how settings combine with activities to create a variety of recreation opportunities.

Road Decommissioning: Closing a road and restoring the natural contours, drainage, and vegetation to the area impacted by the road or trail (see p. 104-5 Forest Plan—Road Elimination Condition 4—Restoration)

Visual Quality Objectives: Defined protocol for determining the allowable amount of visual alterations to the natural landscape. *Retention/Partial Retention*: natural-appearing scenic quality with few alterations evident to the viewer beyond recreational facilities, roads and bridges. Alterations beyond the corridor are subordinate and compatible with the natural setting. *Preservation*: preserve natural scenery in the corridor and retain a natural-appearing backdrop with no evident alterations in the foreground relative to the river. Few structures other than trail bridges or primitive camps are evident.

Wildland Urban Interface (WUI): The zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. On the Bridger-Teton National Forest, these zones are spatially identified by local community wildfire protection plans (CWPP's).

Monitoring

In order to evaluate whether the proposed standards are effectively protecting the identified resources and river values, a new monitoring program is included in the Proposed Action. The Forest Plan monitoring program does not include river-specific elements, nor any designated rivers guidance. Table 2.4 on the following page describes the proposed additions to that program. These indicators have been selected as the minimum necessary to ascertain the earliest likely changes across the system that could lead to negative impacts. Other additions to the monitoring plan may take place as the opportunity arises and when funding allows. For example, new reference reaches using all of the applicable Multiple Indicator Monitoring indices have also been collected on streams within the designation and will provide comparison data for the future if necessary. The intent is to provide long-term trend analysis rather than simply offering snapshots of conditions.

In order to meet 36 CFR 219.12 requirements, the agency must determine what questions will be answered by the proposed monitoring program. Firstly, the visitor use indicators will help answer the question: Is visitor use and management consistent with protection of the identified resources of the designation? Secondly, ecological and water quality indicators will help answer the question: Are the ecological functions of the designated corridors being maintained or enhanced?

Indicators are the resource or experience element to be measured; thresholds proposed for specific locations across the headwaters would be **the point at which managers need to assess and potentially implement other strategies to protect the resources of the designation.**

None of these thresholds are limits, except in the recreational segment of the Snake River, where limits on commercial use were established through a prior Recreation Plan decision document (2000). In public workshops in March and June of 2012, the proposed monitoring program was reviewed with interested stakeholders.

Definitions of Terms Used in Proposed Indicators:

Watercraft: any contrivance used or designed primarily for navigation on the water that is designed to be propelled by hands, arms, paddles, oars, sails or motors; to include devices considered water sport toys—any aid to swimming or fishing on the water.

Campsite Condition Class: Frissel rating system that classifies the degree of human-caused change that a campsite has undergone.

Stock Impact Rating (SIR): Evaluates the combined impacts of all recreation stock use areas associated with an individual recreation site. The SIR is a numerical score based on the sum of the numerical rating of three categories of stock related impacts: **Size, Vegetation Impact, and Tree Damage.**

Multiple Indicator Monitoring (MIM):

Statistically-significant protocols developed to evaluate short- and long-term indicators of riparian and stream channel conditions are used to determine if resource objectives are being met for these areas**. Selected indicators are:**

- Streambank stability
- Cumulative Bankfull Width distribution
- Greenline composition: Foliar cover, percent by species
- Woody species age class

Live/Dead (L/D) Index:
Protocol developed by Keigley et al (2002) that assesses regeneration potential in browsed shrub habitats.

The above ecological indicators are to be monitored every five years, except Greenline composition, which will be monitored every ten years. No current baseline exists for Greenline composition, but the agency would commit to establishing a baseline for the selected sections at a minimum. Thresholds are considered to be any statistically significant downward trend, not attributed to natural causes. Downward trends in the ecological indicators or exceedances of criteria would be determined considering a confidence interval around the measurement or metric's mean. This helps address variability due to site complexity, observer variation, and other variables.

If new monitoring methods are deemed more scientifically accurate or would likely provide better answers to the questions listed in the introduction to this section, those may be substituted for the ones listed here.

Table 2.4: Proposed Additions to Forest Monitoring Program

	Indicator	Thresholds: point at which managers need to assess new strategies for protection			
		DFC 3B	DFC 3C	DFC 3D	DFC 6
Recreation	Total number of watercraft passing by a selected location per day.	145 noncommercial craft daily @ Sheep Gulch; 170 commercial craft daily	Hoback: 40 craft per day, more than 10% of times sampled; Buffalo, Gros Ventre, Granite: 30 craft per day more than 10% of times sampled	Willow: 20 craft per day more than 10% of times sampled	Presence of watercraft in collective corridors more than 60% of monitoring days
	Occupancy of total mapped dispersed campsites in defined areas	*Not monitoring this indicator in DFC 3B*	Buffalo: Exceeding 80% more than 5 days per month ; Exceeding 80% more than 10 days per month per segment (Granite, Gros Ventre, Pacific)	*Not monitoring this indicator in DFC 3D*	*Not monitoring this indicator in DFC 6*

	Indicator	Thresholds: point at which managers need to assess new strategies for protection			
		DFC 3B	DFC 3C	DFC 3D	DFC 6
	Number of days existing vehicle access areas at selected locations reach facility design capacity (are full) per season	Boat Ramps: 10 days per season	Hoback fishing pullout: 10 days; Crystal fishing pullout: 10	*Not monitoring this indicator in DFC 3D*	Wolf Creek Trailhead: 10 monitored both winter and summer
	Number of campsite and stock holding areas per specified reach exceeding listed Class & Impact Ratings	*Not monitoring this indicator in DFC 3B*	8 areas with Condition Class Ratings ≥3 or 8 areas with Stock Impact Rating ≥ 10; *Not monitoring this indicator in the Hoback segment*	5 areas with Condition Class Ratings ≥3 or 3 areas with Stock Impact Rating ≥ 10	4 areas with Condition Class Ratings ≥3 or 2 areas with Stock Impact Rating ≥ 10
Ecological Water Quality	% Stream bank Stability; Greenline Composition (% Foliar Cover by species); Cumulative Bankfull Width; Live/Dead Index; Woody Species Age Class	*Not monitoring these indicators in DFC 3B*	Gros Ventre River @ Fish Creek, and reference stretch upstream of Fish Creek; Monitor every 5 years except Greenline Composition, every 10 years. Threshold is any statistically significant downward trend.	*Not monitoring these indicators in DFC 3D*	*Not monitoring these indicators in DFC 6*

River Corridors

Corridor Boundaries

Establishing a boundary for a newly designated wild and scenic river is an important step and required by the 1968 *Wild and Scenic Rivers Act*. The Act states that a river corridor cannot exceed an average of 320 acres/mile, or an average of ¼-mile from the ordinary high water mark on each side of the river. Land below the ordinary high water (banks and streambeds during low water, including islands) does not count against the acreage limitation. The default boundary for all segments other than those in the 1990 Forest Plan is ¼ mile from normal high water on both banks. In the project area, the Hoback below Cliff Creek, the lower Gros Ventre below Fish Creek, and the Buffalo Fork (outside Wilderness) were included in the 1990 DFC 3 and have mapped boundaries that are often greater and sometimes less than the ¼ mile default.

As a practical matter in delineating the boundary, some form of on-the-ground identification—either physical features (canyon rims, roads) or legally identifiable lines (survey or property lines)—may be used so that the boundary can be more easily identified on the landscape or accurately described legally. These must conform closely to the identified river values for each river segment.

The river corridor boundaries for the Snake River Headwaters were mapped using GIS technology, delineating the active river channel based on 2009 aerial imagery. To establish the river corridor boundary, the active channel was then buffered to ¼-mile. The buffer was subsequently modified to follow the ordinary high water mark only if that mark was clear on high-resolution aerial imagery.

Most of the designated river corridors would begin at normal high water mark on both banks of the stream and extend for ¼ mile. Proposed corridor boundaries for the designation also include some minor adjustments for management efficiencies, such as to match other special area or administrative boundaries. For example, on the north bank in the recreation segment of the Hoback River, this proposal uses the Gros Ventre Wilderness Area boundary, creating a narrower wild and scenic corridor. Such minor adjustments would be drafted onto the Bridger-Teton National Forest corporate database layers to create logical and effective planning areas. Adjustment to underlying DFC areas is proposed to avoid the creation of small, isolated slivers where the designated river corridors differ from pre-existing zones. In the 1990 Forest Plan, some DFC 3 boundaries were fairly broad, such as on the lower Gros Ventre River, and those have also been narrowed to meet the criteria specified in the Act for inclusion. No changes in boundaries along remaining eligible rivers are included in this proposal.

The additional adjustments described below in Table 2.5 are proposed to incorporate features that exemplify river values and for management practicality. Due to the sinuosity of the rivers and the changes described above, the Bridger-Teton National Forest overall average is 314 acres/mile, well within the 320 acres/mile maximum established in the 1968 WSRA.

Table 2.5: Proposed Boundary Adjustments to River Segments

River Segment	Rationale	Quad Map(s)	Change in Acreage
Bailey Creek (wild)	Expanded to include the landslide that created Bailey Lake (geological value). Recreational classification of the Snake River applied within ¼-mile of the confluence; old placer mine and developments influence this setting.	Bailey Lake, Pine Creek	+ 2,643
Buffalo Fork (scenic)	Expanded to include river movement floodplain and important amphibian habitat (geological and ecological values).	Rosie's Ridge	+ 65
Crystal Creek (wild)	Expanded to include the Crystal Peak landslide that created Crystal Lake (geological value).	Grizzly Lake	+ 209
Granite Creek (wild)	Included Turquoise Lake (recreation value) and multiple headwaters.	Granite Falls	+ 1,300
Gros Ventre River (scenic)	Included Upper Slide that created Upper Slide Lake (geological value). Adjusted the corridor to follow the Gros Ventre Wilderness boundary (already legally described) from Big Cow Creek valley to the wild segment of the river to avoid isolated DFCs and make more manageable.	Upper Slide Lake Ouzel Falls	+ 2,100
Hoback River	Extended to include the Beaver Mountain landslide and exposed bedrock (geological value). Narrowed the corridor to follow the Gros Ventre Wilderness boundary on north side of corridor from upper end of designated segment to Stinking Springs because the *Wild and Scenic Rivers Act* A requires the more limited management of Wilderness to take precedence.	Bull Creek Camp Davis	+ 648 (cumulative)
Pacific Creek (wild)	Included the Two Ocean Creek alluvial fan that occurs on the Continental Divide (geological value).	Buffalo Headwaters	+ 58
Willow	Recreational classification of the Hoback River applied within ¼-mile of the confluence; private land and developments influence this setting.	Camp Davis	n/a

The maps that follow are scaled to enable readers to better see where these proposed changes occur. More detailed maps are provided online at www.fs.usda.gov/btnf under the Wild and Scenic Rivers Management link.

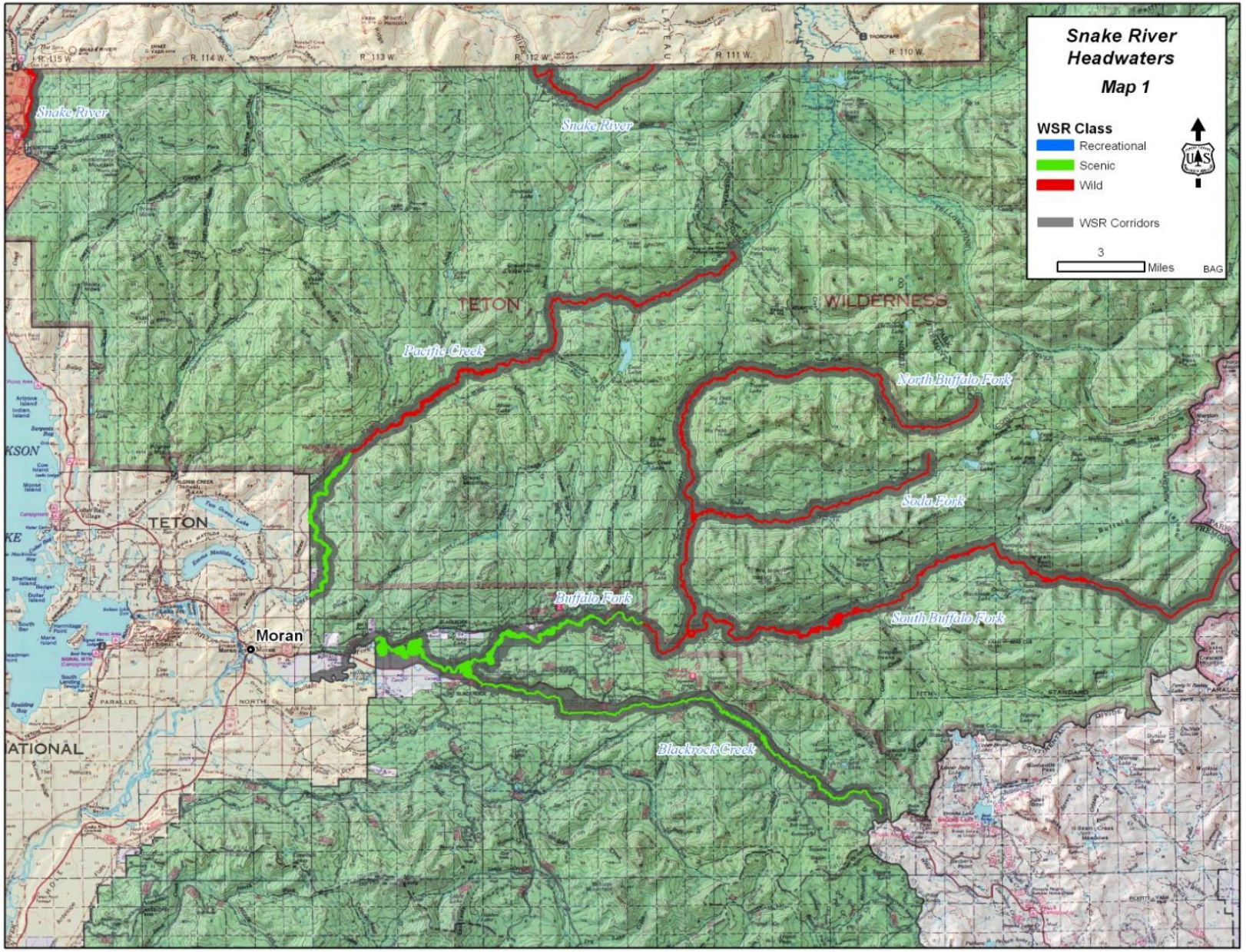


Figure 2.2: Northern Headwaters

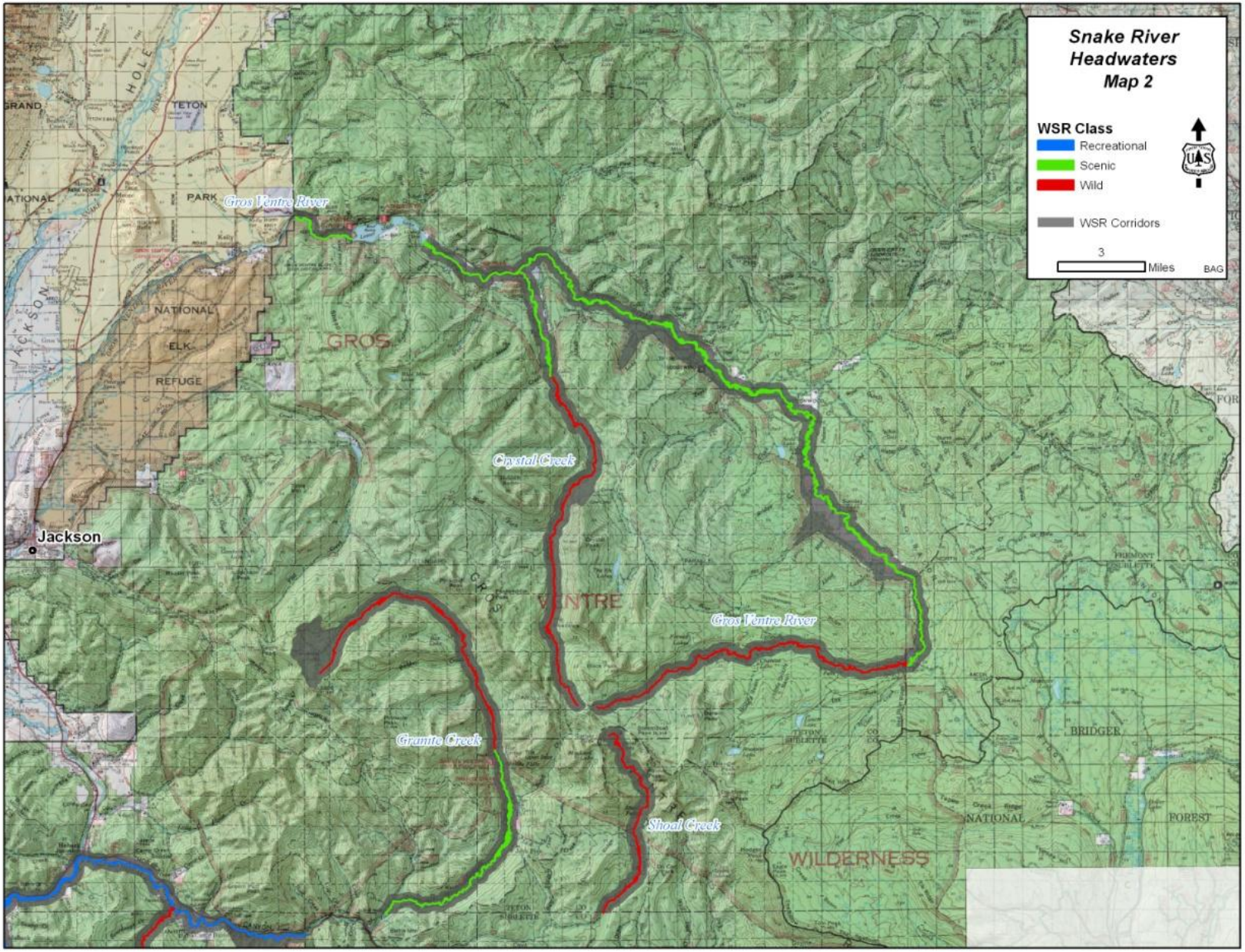


Figure 2.3: Central Headwaters

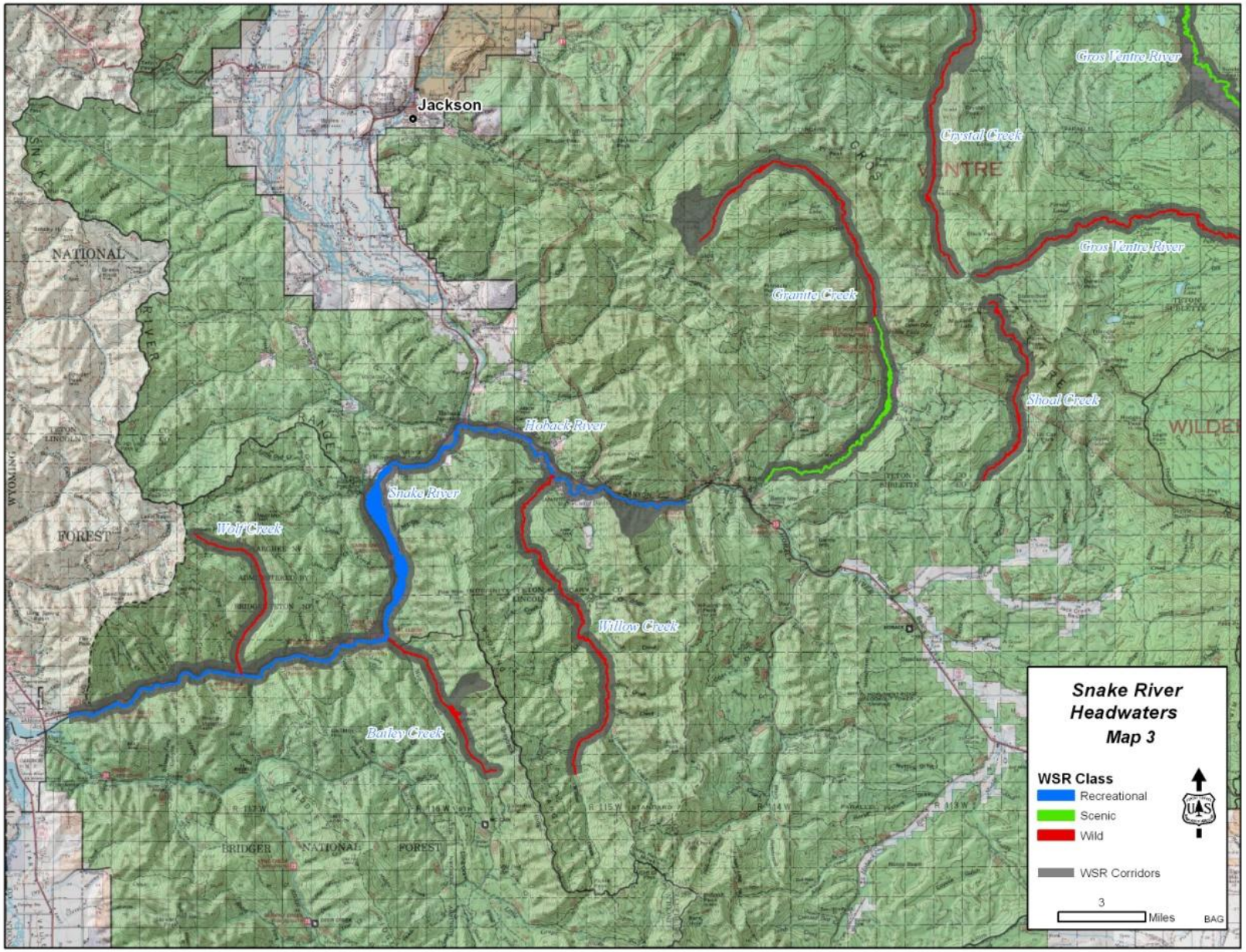


Figure 2.4: Southern Headwaters

Comparison of Alternatives

While the current Forest Plan, shown here as the No-Action Alternative, protected river values for the past 20 years sufficiently for Congress to formally designate the waterways of the Snake River Headwaters, it contains more generalized guidance that was intended to be temporary. The Proposed Action Alternative addresses new trends and current concerns that were not necessarily evident at the time previous guidance was created. It also incorporates more current scientific understanding for managing the various resources of the national forest. Table 2.6 compares current standards and guidelines from DFC 3 with those which would replace them (in designated corridors only), the proposed **overall** standards and guidelines for DFCs 3B, 3C, and 3D. Following Table 2.6 below, readers will find additional tables which compare management under each of the proposed subcategories with current direction created under Amendment Two, which varies standards by the three Wild and Scenic Rivers' development classifications.

Rivers determined to be Eligible in the Forest Plan under DFC 3 but not designated would be categorized as DFC 3A and retain existing DFC 3 and Amendment Two direction. Additional eligible river segments, added in Amendment Two but not designated, would retain underlying DFC and Amendment Two standards. Forest-wide standards would remain in effect for both alternatives, and are therefore not included in these comparisons.

The following tables show existing direction on the left and proposed direction on the right. Discussion of a topic will be shown in italics, while actual Forest Plan language will not be italicized.

Table 2.6: Comparison of Management Direction for Designated Rivers outside Wilderness/Wilderness Study Area

	Alternative 1 No Action DFC 3 Current Management	Alternative 2 Proposed Action Overall DFCs 3B, 3C and 3D
Facilities	Facilities Guidelines: Where roads and developed recreation exist, facilities should be provided to enhance existing opportunities. These may include launch ramps, interpretive facilities, campsites and picnic areas, toilets, and parking areas. Developments should be confined to launch and fishing access points, to allow a natural appearing setting for recreationists on the river.	Administrative Structures and Recreation Facilities Guideline: New facilities should be located within existing developed areas. New and existing facilities and structures should be designed or redesigned, located and maintained to protect identified river values.
	Facilities Standard: Where facilities exist in eligible corridors, improvements to roads, trails, facilities and structures will be designed to protect and enhance scenic and recreation value.	Road Improvement and New Road Building Standard: Service level of new or reconstructed roads must be consistent with the Recreation Opportunity Spectrum for the project area.
Scenery	Visual Quality Prescription: The VQOs for this area are Retention and Partial Retention. Partial Retention is generally applied to recreation developments that are visually evident but subordinate to the natural landscape.	Scenery Management Guideline: Management practices should maintain a high level of scenic integrity for identified foreground features and middle-ground or background scenic vistas. Changes in visual character resulting from natural processes such as fire (including smoke), flooding, wind events, insects and disease, landslides and naturally-impounded ponds should only be modified where necessary to provide for public safety or to the degree necessary to maintain critical infrastructure.
	Scenery perspective priority is not specifically addressed in DFC 3.	Scenery Management Perspective Standard: Recreation facilities and management activities will be designed to maintain and protect river scenery as viewed, in priority order, first from waterways and second from travel routes within corridors.

	Alternative 1 No Action DFC 3 Current Management	Alternative 2 Proposed Action Overall DFCs 3B, 3C and 3D
Recreation	Permits Standard: On rivers where permits are allowed but not currently issued, only annual permits will be issued for commercial recreation services until intensity and frequency have been determined. On the same rivers, no permits will be issued for outfitted recreational floating until intensity and frequency have been determined and decisions made about allocations among commercial and non-commercial users.	*The permits standard is not included in the proposed action*.
	Trail System Guideline: Hiking trails of easiest difficulty should be developed that access points of interest along rivers and streams.	*The trail system guideline is not included in the proposed action.*
Recreation, continued	Standard Maintenance Level Guideline: The standard maintenance level should be that needed to protect soil and water values and to provide for user safety and user convenience appropriate to the trail's difficulty level.	*The standard maintenance level guideline is not included in the proposed action.*
	Trail Density Guideline: Over the life of the plan, an average of no more than 1 mile of trail per square mile of area should be attained.	*The trail density guideline is not included in the proposed action.*
	Encounters per Day Guideline: Parties encountered per day during peak recreational use seasons should average 12 per day, varying from 6 to 15 depending on conditions.	*The encounters guideline is not included in the proposed action.*

	Alternative 1 No Action DFC 3 Current Management	Alternative 2 Proposed Action Overall DFCs 3B, 3C and 3D
Ecological/Wildlife & Fish	Diversity of Wildlife Habitat Guideline: Diverse wildlife habitat types should be maintained within each watershed. Sufficient habitat should be provided to maintain WGFD population objectives and distribution of native wildlife including non-game, small game, big-game, fish, threatened, endangered and sensitive species. Big-Game Habitat Guideline: Sufficient habitat should be provided to maintain desired populations and distribution of big-game species, with examples given for elk calving areas; mule deer, moose, elk and bighorn sheep winter ranges.	Fisheries Habitat Guideline: Fisheries habitat management should give preference to maintenance of self-sustaining native fish populations in their native range. Wildlife and Vegetative Habitat Guideline: The composition, structure and function of native plant and animal habitats should be maintained or restored by promoting natural ecological processes to the extent practical throughout mapped corridors (riverine, riparian and upland habitats).
	Aquatic habitat is not addressed separately under existing management.	Aquatic Habitat Guidelines: Managers should maintain and/or restore self-perpetuating floodplain and riparian conditions. Natural stream habitat conditions as reflected by channel dimensions, shape, gradient, and presence of hydric vegetation and large woody debris should be sustained. Direct restoration of spawning, rearing, and adult fish habitats in designated corridors may also occur. Landscapes affected by restoration projects should be natural-appearing and compatible with other identified river values.
	Silvicultural System Guideline: Single-tree selection and group selection methods should be applied to forest conifer types favoring	*The silvicultural system guideline is not included in the proposed action.*

	Alternative 1 No Action DFC 3 Current Management	Alternative 2 Proposed Action Overall DFCs 3B, 3C and 3D
	development of all-aged stands to meet specific wildlife habitat and river-oriented recreation objectives.	
	Intermediate Treatment Guideline: Improvement cuts should be applied only to meet specific wildlife and river-oriented recreation objectives. Sanitation should be applied when epidemic conditions are present or imminent and threaten meeting resource objectives within or adjacent to the management area.	*The intermediate treatment guideline is not included in the proposed action.*
	Site Preparation Guideline: Preparations are permitted subject to other surface management requirements.	*The site preparation guideline is not included in the proposed action.*
Ecological/Wildlife & Fish, continued	Aspen Guideline: Aspen should be managed for its value as wildlife habitat and for its fall colors and scenic values.	*The aspen guideline is not included in the proposed action.*
	Forest health not included in DFC 3.	Forest Health Guideline: Insects and disease should be managed only as necessary to protect human life and critical infrastructure.
	Fencing and road crossings not included in DFC 3.	Fencing and Safe Road Crossings Guideline: Fences should be modified to meet Wyoming Game and Fish Department wildlife-friendly guidelines or removed. Subject to Visual Quality Objectives, wildlife- impermeable fences may be used to facilitate safe passage for wildlife across highways.
	Biodiversity not included in DFC 3.	Biodiversity Guideline: To the fullest practical extent, management should maintain genetic integrity of native plant and animal species, and maintain native populations at all trophic levels. Some short-term negative impacts to

	Alternative 1 No Action DFC 3 Current Management	Alternative 2 Proposed Action Overall DFCs 3B, 3C and 3D
		individual native species may be realized in the process of conducting long-term restoration efforts.
	Migration corridors not included in DFC 3.	Migration Corridors Guideline: Management actions should be designed so that timing, location and duration of activities allow for successful use of historic and new fish and wildlife migration routes.
Roads	*Stream crossings not included in DFC 3.*	Stream Crossings Standard: On designated segments and adjacent tributaries, crossing structures must be designed to safely pass water flows, sediment, and debris associated with the bank-full flow. Temporary crossings must be removed and rehabilitated upon completion of use.
	Road maintenance not included in DFC 3.	Road Maintenance Guideline: Existing roads should be managed to protect or enhance water quality, conditions of free-flow and the Outstandingly Remarkable Values of each river segment. Established Best Management Practices should be utilized to improve drainage and reduce erosion and sedimentation.
	Road Management Standard: Over the life of the Forest Plan, the average open road density will be 1 mile per square mile of standard or equivalent road with 1-year to 5-year variations of .25 miles per square mile. Temporary roads will be returned to Elimination Class 3 or 4 standards.	Road Density Guideline: A transportation system should be provided that is the minimum necessary for adequate access to popular recreation sites, private lands, and to meet resource management needs. Where appropriate to protect or enhance river values within the corridor, roads should be decommissioned, which includes restoring natural contours, drainage and vegetation.

	Alternative 1 No Action DFC 3 Current Management	Alternative 2 Proposed Action Overall DFCs 3B, 3C and 3D
Roads, cont'd	Motorized Vehicle Standard: Motorized vehicles will be allowed in parking lots and on designated roads and trails only.	*Existing standard has been formalized in the required Motor Vehicle Use Map process*.
Minerals	Minerals Availability Standard: Area available for mineral or energy exploration and development, subject to surface management requirements.	*Minerals availability would be addressed in sub-categories*
	Leasing Standard: No-Surface-Occupancy stipulation required. *(superseded by Amendment Two; see following tables for comparisons by category)*	*Leasing standards would be addressed in sub-categories.*
	Subject to valid existing rights, all eligible segments may be recommended for withdrawal from mineral entry.	*No recommendation for mineral entry withdrawal is proposed at this time.*

Tables 2.7 through 2.10 display current subcategory standards from Forest Plan Amendment Two and those which would replace them as proposed for DFC 3B (Table 2.7), DFC 3C (Table 2.8), DFC 3D (Table 2.9) and DFC 6 (Table 2.10). Forest-wide standards would continue to apply in both alternatives.

Table 2.7: Comparison of Current Management to Proposed DFC 3B

	Current Standards on *Recreation* Class Segments (Amendment Two, Forest Plan)	**Proposed Standards for DFC 3B, Snake River Recreation segment**
Water Resource Projects	Minor diversions and impoundments are acceptable, as long as river is left largely natural-appearing and riverine. Existing structures may be maintained.	Subject to valid existing rights, existing diversions and impoundments may be maintained, subject to methods that are protective of current free-flow and identified river values. All proposed federally-assisted or –permitted (non-FERC hydropower) water resources projects are subject to Section 7 evaluation for potential direct and adverse effects on the values for which the river was added to the National System. New (non-FERC hydropower) water resources projects may be permitted only if river values are protected.
	Bank Stabilization not included in Amendment 2.	Bank stabilization projects are allowed, subject to approval through the Section 7 review process, for safety or protection of Outstandingly Remarkable Values. Materials used must be natural or natural-appearing, consistent with site characteristics.
Facilities and Scenery	Campgrounds, boat launch and swimming sites and private developments are common, subject to visual quality standards.	No new campgrounds. Other new facilities and recreation structures may be approved and enhancements of existing facilities are allowed.
	Visual Quality Objective (VQO) is Retention in corridor.	The Visual Quality Objectives are Retention in the foreground or Partial Retention beyond the foreground.
	VQO of Retention or Partial Retention within 3 miles of river or access road or trail, depending on variety class. More restrictive VQO applies in Class A, but does not preclude construction of visitor facilities in viewing zones.	*Landscape classes not referenced in proposed action.*

	Current Standards on *Recreation* Class Segments	**Proposed Standards for DFC 3B, Snake River Recreation Segment**
Facilities/Scenery, cont'd	Structures may occur along entire segment, subject to visual quality standards.	New structures on NFS lands may not be constructed with exterior lights, signals or illumination, except for specific safety needs. Height of any new structures should be consistent with county Land Development Regulations. New structures must be evaluated as to appropriateness for character of immediate vicinity and according to Visual Quality Objective Standards.
Recreation	*Dispersed camping not addressed in Amendment 2; current Special Order prohibits during high-use season.*	No dispersed camping allowed in corridor during high-use season (May 1-Labor Day).
	Use limits not included in Amendment 2; addressed in 2002 Snake River Recreation Plan.	Outfitter-guide and public use is directed in accordance with 2000 *Snake River Recreation Plan*. Limited new temporary guided use and recreation events are allowed.
	Trail stream fords not specifically addressed in Amendment 2.	No developed or improved trail stream fords are allowed.
Ecological/ Wildlife	Timber management: Allowed as long as no substantial adverse impacts to the river or its immediate environment are caused. Timber is managed to emphasize visual quality.	Only selective hazard removal or facility enhancement projects are allowed.
Grazing	Allowed, subject to riparian area and utilization standards in the Forest Plan.	*Not applicable in this river corridor, though some trailing takes place.*
Roads	Roads are allowed in corridor; river access points and bridges may be numerous.	*Roads are located and maintained to meet overall guidelines above (Table 12).*

	Current Standards on *Recreation* Class Segments	**Proposed Standards for DFC 3B, Snake River Recreation Segment**
Minerals	Energy leasing with surface-occupancy allowed, subject to visual quality standards.	Areas available (except where subject to other No Lease or withdrawal decisions) with No Surface Occupancy stipulation on any new leases. All leasing operations shall minimize surface disturbance and visual impairment, and avoid impacts to water quality.
	No disturbance in corridor that does not meet VQO Retention, subject to existing rights.	Salable Minerals: Visual screening from waterway and roadway of new or existing in-use pits is required. Pits must be outside the bed or banks of designated segments and must apply Best Management Practices to protect river values. Unused pits will be rehabilitated. Locatable Minerals: Areas available except where subject to other withdrawals. All operations shall minimize surface disturbance and visual impairment, and avoid impacts to water quality.

Table 2.8: Comparison of Current Management to Proposed DFC 3C

	Current Standards on Scenic Class Segments (Amendment Two, Forest Plan)	**Proposed Standards for DFC 3C, all Scenic Segments and Hoback Recreation Segment**
Water Resource Projects	Water developments are prohibited. No flood control, irrigation, or hydroelectric structures or diversions (*note: this applies here to scenic class)*	Subject to valid existing rights, existing diversions and impoundments may be maintained, subject to methods that are protective of current free-flow and identified river values. All proposed federally-assisted or –permitted (non-FERC hydropower) water resources projects are subject to Section 7 evaluation for potential direct and adverse effects on the values for which the river was added to the National System. New (non-FERC hydropower) water resources projects may be permitted only if river values are protected.
	Minor diversions and impoundments are acceptable, as long as river is left largely natural-appearing and riverine. Existing structures may be maintained (*note: this applies here to Hoback River, recreational class*).	
	Bank stabilization projects not included in Amendment 2.	Bank stabilization projects are allowed, subject to approval through the Section 7 review process, for safety or protection of Outstandingly Remarkable Values. Materials used must be natural or natural-appearing, consistent with site characteristics.
Facilities and Scenery	Developed facilities for public recreation use are allowed, screened from river, except boat ramps and occasional river access points.	New and existing developed sites, river access, trailhead facilities, interpretive sites are allowed appropriate to setting.
	The Visual Quality Objective is Retention in corridor.	The Visual Quality Objectives are Retention in the foreground or Partial Retention beyond the foreground.
	Retention/Partial Retention within 3 miles of river or access road or trail, depending on variety class. More restrictive VQO applies in Class A, but does not preclude construction of visitor facilities in viewing zones.	*Variety Class is not referenced in Proposed Action.*
	Short segments may have concentrations of structures. New ones must meet VQO.	New structures on NFS lands may not be constructed with exterior lights, signals or illumination. Height of any new structures must be consistent with county Land Development Regulations. New structures must be evaluated as to appropriateness for character of immediate vicinity and according to Visual Quality Objective Standards.

	Current Standards on Scenic Class Segments (Amendment Two, Forest Plan)	**Proposed Standards for DFC 3C, all Scenic Segments and Hoback Recreation Segment**
Recreation	*Dispersed camping standards not included in Amendment 2.*	Dispersed camping allowed except where seasonally prohibited. All vehicles in dispersed campsites shall remain outside a 100' setback from waterways; Hitching, tethering or picketing pack and saddle stock shall remain outside 200' lake and 100' stream setbacks.
	See overall DFC 3 river permits language above	Proposed outfitter-guide or recreation event permits must help enhance identified river values and river stewardship.
Ecological	Timber management: Allowed as long as no substantial adverse impacts to the river or its immediate environment are caused. Timber is managed to emphasize visual quality.	Silvicultural activities are allowed only to enhance ecological function or visual quality or if necessary for selective hazard removal or reduction of fuels risks in WUI, must maintain ecological function and visual quality.
Roads	*Ford crossings not included in Amendment 2.*	No new developed or improved road or trail stream fords shall be allowed, unless an existing crossing must be re-located to minimize impacts on river values or water quality.
	Roads may be located in the corridor, as long as they are not conspicuous for a long segment of the eligible river; Recreation roads are allowed in corridor; river access points and bridges may be numerous.	*Roads are located and maintained to meet overall guidelines above (Table 12).*
Minerals	Energy leasing with surface occupancy allowed, subject to visual quality standards and existing rights.	Areas available (except where subject to other No Lease or withdrawal decisions) with No Surface Occupancy stipulation on any new leases. All leasing operations shall minimize surface disturbance and visual impairment, and avoid impacts to water quality.
	Surface disturbance must meet VQO of Retention.	Salable Minerals: Visual screening from waterway and roadway of new or existing in-use pits is required. Pits must be outside the bed or banks of designated segments and must apply Best Management Practices to protect river values. Unused pits will be rehabilitated. Locatable Minerals: Areas available except where subject to other withdrawals. All operations shall minimize surface disturbance and visual impairment, and avoid impacts to water quality.

Table 2.9: Comparison of Current Management to Proposed DFC 3D Non-Wilderness Wild Segments

	Current Standards on Wild Class River Segments (Amendment Two of the Forest Plan)	Proposed Standards for DFC 3D Wild Rivers outside Wilderness Bailey Creek, Willow Creek
Water Resource Projects	Water developments are prohibited. No flood control, irrigation, or hydroelectric structures or diversions.	All flood control or irrigation structures, impoundments and diversions are prohibited, subject to existing rights.
	Bank stabilization projects not included in Amendment 2.	Bank stabilization projects allowed only if necessary to correct human-caused resource damage, using natural materials consistent with site characteristics.
Facilities and Scenery	Simple facilities of native materials allowed for primitive recreation.	No non-recreation developments/structures are allowed.
		No recreation facilities, but minimal structures such as bear poles may be installed.
	Preservation in river corridor.	The Visual Quality Objectives are Preservation in the foreground or Retention beyond the foreground.
	Retention/Partial Retention within 3 miles of river or access road or trail, depending on variety class. More restrictive VQO applies in Class A.	*Variety classes are not referenced in the Proposed Action.*
Recreation	*Setbacks not included in Amendment 2, but restricted by Special Order.*	Hitching, tethering or picketing pack and saddle stock shall remain outside 200' lake and 100' stream setbacks
	See overall DFC 3 river permits language above	No events allowed; New outfitter-guide permits must enhance wild river character, river values and stewardship.
Ecological	No timber management allowed within ¼ mile of river, except as hazard removal.	Only WUI fuels treatments, habitat restoration, or hazard tree removal allowed.

	Current Standards on Wild Class River Segments (Amendment Two of the Forest Plan)	**Proposed Standards for DFC 3D Wild Rivers outside Wilderness Bailey Creek, Willow Creek**
Trails	Trail bridges allowed. *(No guidance on fords included in Amendment 2)*	No new developed or improved trail stream fords shall be allowed, unless an existing crossing must be re-located or re-designed to minimize impacts on river values or water quality.
Mining	*Valid claim management not included in Amendment 2.*	Existing valid claims in wild corridors will be managed to minimize surface disturbance and visual impairment, and avoid impacts to water quality.

Table 2.10: Comparison of Current Standards and Guidelines to Proposed additional DFC 6 Standards and Guidelines in Wilderness

(Note: All other current DFC 6 Standards and Guidelines remain unchanged; proposed standards would be added to DFC 6, and replace Amendment Two direction, for designated segments)

	Current Standards on Wild Class River Segments (Amendment Two, Forest Plan)	**Proposed DFC 6 Standards (all Wilderness and Wilderness Study Area designated river segments)**
Water Resource Projects	Water developments are prohibited. No flood control, irrigation, or hydroelectric structures or diversions.	All flood control or irrigation structures, impoundments and diversions are prohibited, subject to valid existing rights.
Scenery	Preservation in river corridor.	Visual Quality Objective is preservation throughout the river corridor.
	Retention/Partial Retention within 3 miles of river or access road or trail, depending on variety class. More restrictive VQO applies in Class A.	*Larger view-shed addressed by change shown above.*
Recreation	*Recreation permits are not included in Amendment 2.*	Proposed outfitter-guide special uses must help enhance Wilderness Character, identified river values. No recreation events allowed.
	Trail bridges allowed; *fords not included in Amendment 2.*	No new developed or improved trail stream fords shall be allowed, unless an existing crossing must be re-located or re-designed to minimize impacts on river values or water

	Current Standards on Wild Class River Segments (Amendment Two, Forest Plan)	Proposed DFC 6 Standards (all Wilderness and Wilderness Study Area designated river segments)
		quality.
	No timber management allowed within ¼ mile of river, except as hazard removal.	Hazard tree removal at designated facilities and sites allowed.
Minerals	No-Surface-Occupancy required, subject to existing rights.	*Rivers designated as wild are withdrawn by law from further mineral entry.*
	Existing valid claim management not included in Amendment 2.	Existing valid claims in wild corridors will be managed to minimize surface disturbance and visual impairment, and avoid impacts to water quality.

Table 2.11 summarizes the effects of changes in resource-specific management under the proposed action, if standards and guidelines in the tables above are implemented.

Table 2.11: Summary of Effects on River Management, No Action Alternative and Proposed Action Alternative

ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 PROPOSED ACTION
WATER RESOURCES PROJECTS	
In some cases, existing direction is more restrictive than legally required, and doesn't address maintenance requirements.	Proposed management clarifies the legal requirements in all classes for both existing and proposed new activities and structures, and establishes maintenance guidance.
SCENERY RESOURCES	
Visual Quality Objectives are specified to retain scenic resources, but clarity regarding visual effects of natural processes is lacking, and an emphasis on roadside perspectives would remain.	Visual Quality Objectives are specified to retain scenic resources; Scenery is newly evaluated from a river-first viewing perspective; visual evidence of natural processes is considered part of the scenic resource, enriching the experience of a dynamic landscape for many visitors.

ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 PROPOSED ACTION
RECREATION RESOURCES	
River recreation is primary goal for management, but little direction is specified except for access and developments. Without thresholds, increasing population and use trends would be expected to negatively impact streams and visitor experiences over time, especially in the more primitive areas, and the variety of recreation opportunities would likely narrow to only the more social end of the spectrum. This could decrease the attractiveness of the Snake River Headwaters for tourism and area amenity values for real estate.	The existing spectrum of opportunities is clearly identified and protected with management direction tied to the ROS. New specifications for where and how much facilities development, and for vehicle setbacks at dispersed campsites, will better protect the variety of recreation and resource values identified. This should improve stewardship connections and provide increased security for tourism and real estate values related to the variety of opportunities across the Headwaters.
CULTURAL RESOURCES	
Cultural resources would continue to be managed, but primarily on a project-specific basis, with little incentive for enhancement.	Cultural resources and traditional uses are specified in Management Emphasis as a goal for protection and enhancement, providing additional incentive for collaboration,surveys and interpretation.
ECOLOGICAL/WILDLIFE RESOURCES	
Big-Game habitat is prioritized, and specifications for timber harvest are outlined; livestock grazingallowed in current Forest Plan is subject to riparian area and range utilization standards. Though these are important components of achieving natural resource goals, biodiversity and functioning ecosystems are not prioritized.	Natural processes, biodiversity, and functioning ecosystems are prioritized, with additional protections proposed for safe road crossings and fencing, and migration corridors. These should better protect habitats and ecosystem integrity from potential negative impacts of various human activities, with minimal negative consequences on consumptive uses.
AQUATIC/FISHERIES RESOURCES	
Fishing population objectives and distribution of fish species are included within the Diversity of Wildlife Habitat Guideline, but needs of aquatic species are not highlighted.	Both Fisheries and Aquatic Habitat guidelines are specified for maintenance of self-sustaining indigenous species through self-perpetuating floodplain and riparian conditions. Additional standards are proposed for streambank stability projects and stream crossings which better protect water quality and spawning areas.

ALTERNATIVE 1 NO ACTION	ALTERNATIVE 2 PROPOSED ACTION
ROADS AND FACILITIES	
Average open-road density standards are provided, but crossings are not included, leaving waterways vulnerable to negative impacts.	A minimum necessary open road guideline provides consistency with other current road management directives. Standards are added for crossing structures and temporary crossings which provide certainty, but some additional maintenance cost.
ROADS AND FACILITIES, cont'd.	
Facilities are listed as common or primitive, but direction for future facilities or structures is unclear.	Facilities are limited by desired future condition, which better protects natural resources and better maintains a wide spectrum of recreation opportunities into the future.
MINERALS RESOURCES	
Availability for mineral or energy exploration and development is provided, varying by classification. No surface occupancy restrictions nor operational specifications are given. This creates a risk of water quality degradation and impairment not acceptable for designated wild and scenic rivers.	Surface occupancy stipulations and operational specifications are provided, that will better protect all of the identified values across the river systems. Rehabilitation planning must be provided with applications to ensure applicant funds will be sufficient to meet requirements. These may result in potential decreased future economic output from acreage included in the designation.

Chapter III: Affected Environment

Introduction

Regional River Setting: The Snake River Headwaters flow through an iconic landscape dominated by dramatic mountains. The river and its tributaries create unparalleled scenery, support an abundance of native wildlife, and provide a range of outdoor recreation on a scale that draws visitors from all over the world. The Snake River watershed is surrounded by mountains which hold the headwaters of the Snake and its tributaries. The major branches of the upper Snake River and many of their tributaries combine to create a region known for blue-ribbon trout fisheries, whitewater floating, and camping or traveling beside a river, all within a region of great natural beauty.

As the largest-ever watershed designation in the National Wild and Scenic Rivers System, one of the unique features of the Snake River Headwaters is the connectedness of the whole designation. This has been recognized in the development of the statements of Outstandingly Remarkable Values, which can be seen in the Comprehensive River Management Plan (CRMP). This sense of connectedness, and the specific value of that for particular resources, will be expressed below in the discussion of Affected Environment. For some resources discussed, such as Hydrology and Ecology, an overall picture will be given that portrays the resource as a whole across the connection of the Headwaters system. For other resources, the value is expressed in specific features, such as can be found in the Scenery and Geologic Resources sections, and the discussion will be broken down into the river segments where those features can be found.

Hydrologic and Geologic Resources

Free-Flowing Condition

The Snake River Headwaters are high quality snowmelt-dominated streams. The headwaters contain several U.S. Geological Survey stream gauges which provide flow data for monitoring their free-flow conditions. Peak flows generally occur in late May and early June. Low flows generally occur in October below Jackson Lake and in September above the dam and on tributary streams. The majority of the river segments contain an unaltered hydrograph (except as noted below). These natural flow regimes are a feature no longer commonly found on the majority of stream miles in much of the Intermountain West, and contribute substantially to the river values found in the Snake River Headwaters. Observed national and regional trends toward increased demands for consumptive water uses and hydropower production highlight the positive effect of current action to maintain existing low-use conditions into the future.

The Snake River below Jackson Lake is influenced by Jackson Lake Dam, originally constructed in 1907 and raised in 1917. The dam is operated by the Bureau of Reclamation to provide water to contract holders in Idaho. While the primary driver of releases from the lake is to meet Idaho water rights, the Bureau of Reclamation cooperatively works with the

National Park Service to provide spring-release flushing flows in May/June. Constant flows between 1,500-2,100 cubic feet per second (cfs) are released from July to September. USGS records for the Kelly gage on the Gros Ventre state that flows are altered to an unknown degree upstream from the gage by irrigation diversions.

The middle reach of the Snake River (south of the boundary with Grand Teton National Park), which is not within the Wild and Scenic River designation, has been modified by a levee system, which does have some influence on the lower 19-mile recreational section. Because the term "free-flowing" means "flowing in a natural condition without…straightening, rip-rapping, or other modification of the waterway", these levees are a noteworthy influence on this reach of the river. They confine the channel and partially keep it from accessing its natural floodplain, thus reducing its ability to perform the natural functions it would have if it were in a natural, free-flowing condition through this reach (e.g., water table recharge, overbank sediment deposition, flood flow attenuation). The alteration of channel and floodplain function has had impact on riparian vegetation—e.g., cottonwoods not regenerating due to lack of floodwater access.

The Snake River and its tributaries contain a number of other minor channel modifications (such as boat ramps, stream bank stabilizations, bridges, and culverts). The Buffalo, Gros Ventre and Hoback Rivers all have diversions. These man-made features generally do not impede the free-flowing character of the river system. The highways in both the Hoback and the lower Snake River have cut off the rivers' access to their floodplains, and highway fills affect the river, as well. For most of the tributaries, the nearly unaltered flow regimes of the designated waterways are rare among large rivers in the nation.

Water Quality

Water quality of streams and rivers is a combination of the chemical and physical properties of the water, stream bed and channel, and associated riparian areas and wetlands, and the biological community which inhabits these waters. Water quality varies naturally due to geology, terrain and flow regimes, but is also influenced by human activities such as land uses or point source discharges. Water column parameters such as water temperature, turbidity, suspended sediment, dissolved oxygen, human-introduced pollutants, and acidity can vary over time. Another indicator of overall water quality is measurement of the biological communities which live in these streams, since they are continually exposed to changes and extremes in other water quality parameters. These data, combined with water column data and physical and geomorphological properties of the stream can be used to make an overall determination of stream health.

The state of Wyoming classifies water quality in terms of suitable uses and divides the uses into four major classes. The Snake River Headwaters WSR segments fall into the two following classifications:

Class 1, Outstanding Waters. Class 1 waters are those surface waters in which no water quality degradation by point source discharges other than from dams are allowed according to state law. Class 1 waters include all waters in National Parks and Wilderness Areas and other waters specifically designated by the Wyoming Environmental Quality Council.

Class 2, Fisheries and Drinking Water. Class 2 waters are waters, other than those designated as Class 1, that are known to support fish or drinking water supplies or where those uses are attainable. There are five subcategories of Class 2 waters, only one of which (Class 2AB) applies to the Snake River Headwaters. Class 2AB waters are those known to support game fish populations or spawning and nursery areas at least seasonally and all their perennial tributaries and adjacent wetlands and where a game fishery and drinking water use is otherwise attainable. Unless it is shown otherwise, these waters are presumed to have sufficient water quality and quantity to support drinking water supplies and are protected for that use. Class 2AB waters are also protected for nongame fisheries, fish consumption, aquatic life other than fish, recreation, wildlife, industry, agriculture and scenic value uses. Table 3.1 displays the state water quality rating for each stream in the Snake River Headwaters.

Table 3.1. State Water Quality Classifications, Snake River Headwaters

Recreational Rivers	
Hoback River	Class 2AB
Snake River Canyon	Class 2AB
Scenic Rivers	
Blackrock Creek	Class 2AB
Buffalo Fork	Class 2AB
Crystal Creek	Class 2AB
Granite Creek	Class 1
Gros Ventre River	Class 2AB
Pacific Creek	Class 2AB
Wild Rivers	
Bailey Creek	Class 2AB
Buffalo Fork	Class 1
Crystal Creek	Class 1
Granite Creek	Class 1
Gros Ventre River	Class 1
Pacific Creek	Class 1
Shoal Creek	Class 1 and 2AB
Snake River	Class 1
Willow Creek	Class 2AB
Wolf Creek	Class 2AB

All the rivers and streams within the Snake River Headwaters have excellent water quality. Impacts tend to be minor and of limited intensity and duration. A sample of water quality impacts includes:

- Sources of human-caused sediment to selected streams such as roads (Blackrock Creek, Granite Creek Gros Ventre River, Snake River, Hoback River,);; and construction of a gas pipeline (Hoback River). Naturally-ignited fires (Pacific Creek, Gros Ventre River, Granite Creek) and natural landslides (Crystal Creek) also impact sediment loads. No documented violations of turbidity standards have occurred.
- One high temperature reading on the Snake River at the Flat Creek gage. Overall, however, water quality standards for temperature have been met.
- Specific conductance at a given discharge is higher at Alpine than at Flat Creek on the Snake River, which may indicate natural introduction of dissolved solids between the two sites, possibly from the Hoback River. There is no state standard for this constituent.

All of the rivers and streams within the Snake River Headwaters have excellent water quality. Natural geologic and geothermal forces, as well as artificial changes in stream flow (due to the Jackson Lake Dam), can affect the water quality of the Snake River Headwaters. These and other natural and human influences can cause changes in temperature, sediment, dissolved oxygen, and other water quality characteristics. Ongoing monitoring provides opportunities to study these influences on the natural features, systems, and processes of the Snake River Headwaters.

There are no streams where Wyoming Department of Environmental Quality (WDEQ) has determined that water quality is either impaired or threatened within or immediately downstream from waterways in the project area. The list is updated every two years as required by Section 303(d) and 305(b) of the federal *Clean Water Act*.

Geologic Resources

The Snake River Headwaters lie within the Middle Rocky Mountains physiographic province, a seismically and geomorphically active zone where geologic processes continue to shape the landscape. This part of the Middle Rockies includes pre-Cambrian metamorphic rocks overlain by a sequence of Paleozoic, Mesozoic and Cenozoic sedimentary layers, most of which have been extensively deformed by faulting and folding. Volcanics from the Yellowstone Plateau overlay sedimentary rocks in the northern reaches of the Snake Headwaters. In post-glacial times, rivers and their tributaries contribute to erosion and deposition, though in this area, major landslides and active faults also form the landscape. The portion of the Snake River that flows through Grand Teton National Park and lower Pacific Creek are textbook examples of a naturally braided river system. The main stem and nearly all of the tributaries transport high sediment loads, creating a diverse landscape and supporting vegetative communities critical to the ecological health of the river. Natural processes are largely unaffected by human uses of the rivers; those within the Teton and Gros Ventre Wildernesses contain stretches that can serve as reference reaches for future monitoring. Reference measurements for pattern, profile, and dimension also provide valuable templates for restoration projects on other rivers that have similar characteristics. The Gros Ventre Wilderness designation indicated that the area was one of the most geologically active in the lower 48 in terms of landslides.

The following narratives provide a more specific geological features description for each river segment in the Snake River Headwaters.

Recreational segments

Hoback River

The Hoback River includes a cross-sectional view of the Wyoming Thrust Belt where the river has cut through the strata. This thrust belt is a 65-million year old feature, formed by compressional geologic forces, that runs from the Arctic to Mexico. The visually prominent Camp Davis geologic formation is a conglomerate consisting of debris shed during the advance of the thrust sheet. Other notable geologic features within the river corridor include the dramatic Hoback Canyon, and active landslides and debris flows along the corridor. Stinking Springs is a geothermal feature along the river associated with tectonic activity on the Wyoming Thrust Belt.

Snake River (lower segment)

The Snake River Canyon is a spectacular landscape feature eroded by the river. Active landslides and debris flows along the canyon add to the stream's sediment load and change the river and canyon character. There is one geothermal feature, Astoria Hot Springs, in the designated reach. It is no longer accessible to the general public, but steam from the springs can still be seen along the river where the springs empty into the Snake.

Scenic segments

Buffalo Fork

The Buffalo Fork is a classic braided stream, especially downstream from Turpin Meadows, with features that include oxbows, multiple channels, active lateral point bars, and mid-channel bars.

Crystal Creek

Crystal Creek is a high-bedload stream with braided and meandering reaches. There is a scenic canyon above the parking area and spectacular exposed sedimentary geology throughout the watershed.

Granite Creek

Granite Hot Springs is a natural geothermal feature along the stream. Granite Falls lies downstream of the hot springs, accessible via the Granite Creek road. Spectacular examples of glacial erratics can be seen on sagebrush terraces along the lower section of the creek valley.

Gros Ventre River

The Gros Ventre River corridor has a number of noteworthy geologic features. The Gros Ventre Slide is possibly the largest landslide in the United States that has slid within historical times. Lower Slide Lake (formed by the Gros Ventre Slide) is outside the river corridor, but the lake and the slide are both prominent features seen from the river and roadway. Upper Slide Lake was also formed when a slow-moving naturally-triggered landslide partially dammed the Gros Ventre River. Sedimentary rock beds exposed by the

river provide outstanding scenery; the Lavender Hills, Grey Hills, and Red Hills are noteworthy examples.

Wild segments

Bailey Creek
Bailey Lake was formed when a large landslide blocked the valley and dammed the creek. Grayback Ridge, on the east side of the valley, is the northern extension of the Wyoming Range.

Buffalo Fork River
The Buffalo Fork valley was the route of a major ice sheet that flowed into Jackson Hole, joining another ice sheet that flowed south from Yellowstone during multiple glacial events within the past 150,000 years (Pleistocene geologic epoch). This ice sheet was important in creating current landscape features in Jackson Hole, and in creating east-west trending lakes such as Two Ocean and Emma Matilda Lakes in Grand Teton National Park. Relict glacial valley features are evident in both the Wild and Scenic segments of the Buffalo Fork. There are also noteworthy waterfalls along South Buffalo Fork, in the Wild segment.

Crystal Creek
The Crystal Creek slide is one of the larger landslides in Wyoming and is a textbook example of a large rock landslide. It is an active mass movement along the lower portion of the Wild segment of Crystal Creek and deposits sediment into the stream. The landslide was a pre-existing mass movement feature that had stabilized and had forest cover on it when it reactivated after 2002, based on aerial photography.

Granite Creek
Granite Creek flows through a classic U-shaped glacial valley. The basement rocks through which the valley was carved are hard enough to retain the shape left by the glacier, and evidence of modern periglacial features are also seen here. The stream corridor contains a number of outstanding cliff erosion features, including the Open Door and a natural bridge, and Turquoise Lake, a tarn at the head of the creek.

Gros Ventre River
The upper Gros Ventre River is a fine example of a meandering stream, with abundant oxbows (cut-off, abandoned meanders that become isolated ponds). Ouzel and Upper Falls are among the water features created by the river flowing over hard, resistant rock layers.

Pacific Creek
Features of interest include Parting of the Waters, a National Natural Landmark along the Continental Divide, where the waters of Two Ocean Creek split and flow west down Pacific Creek or east down Atlantic Creek. Pacific Creek is an excellent example of a braided stream channel. The Pinyon Conglomerate, exposed along the creek, contains unique erosional features, including small natural arches.
Like the Buffalo Fork, the Pacific Creek valley was the route of a major ice sheet that flowed into Jackson Hole during the Pleistocene Epoch. Fossil remains are present in the Pacific

Creek corridor. They include 65 million-year old remains of flora and fauna that are remnants of a time when the area had a much warmer climate.

Shoal Creek
Points of geologic interest along Shoal Creek include Shoal Falls, Shoal Peak, and Shoal Lake (a classic glacial lake, or tarn). Shoal Peak, composed largely of limestone and dolomite, has several springs near its base, where underground water emerges from the rock in spring and early summer.

Willow Creek
The Hoback Normal Fault forms the Willow Creek Anticline (Ann's Ridge)—an actively forming anticline—east of Willow Creek. Exposed strata in tributaries Halfturn and Fullturn Creek show the anticlinal folds for which those creeks were named.

Wolf Creek
Wolf Creek is distinguished by the impressive change in elevation and landform from its head to its confluence with the Snake River, from a high-elevation subalpine lake basin to an incised canyon with massive talus slopes and cliff bands visible on both sides of the creek.

Scenic Resources

Scenic elements combine to offer a landscape character throughout the Snake River Headwaters that is unforgettable, on a scale that draws visitors from all over the world. Fourteen of the 18 river segments include scenic values that have been determined outstanding, influenced by special features, dramatic mountain views, seasonal colors and other changes in the landscape, as well as the focal scenic value offered by the rivers themselves.

The river corridors lie within diverse landscapes with a high degree of variety. Few places fail to meet Forest Plan standards for visual quality. Some disturbed areas no longer in use have not been reclaimed. Informal access roads to campsites are having negative effects on scenic resources. New trends in communications towers and other similar uses have little Forest Plan direction.

The following narrative addresses specific scenic features and qualities for each of the river segments.

Recreational segments

Hoback River
Views of diverse terrain, vegetation, water features and steep mountains contribute to the scenic values. The scenic Hoback Canyon is dominated on the south by steep, densely forested terrain with occasional cliff bands and exposed folded rock. On the north side of the canyon cliffs and talus slopes dominate. Mature spruce and cottonwoods add interest to the valley bottom. Rare among rivers with highway access is the outstanding opportunity for wildlife viewing. Bald eagles, ospreys, and waterfowl can be seen along the river; in winter

bighorn sheep often congregate next to the highway. Wintering elk, moose, and mule deer are also seen in the corridor.

Snake River (lower segment)

The Snake River is a brilliant ribbon of blue, green and white cascading ripples surrounded by a canyon with towering spruce, pine, and fir trees. Contributing to the enjoyment of the scenery is the outstanding opportunity to see wildlife in the canyon, including Bald Eagles, and American Osprey. In fall, the bigtooth maple and aspen puts on a spectacular color display, drawing visitors from around the region. In winter, ungulates, including moose, deer, elk, and non-native but beautiful Rocky Mountain goats, are seen in the canyon.

Scenic segments

Blackrock Creek

Blackrock Creek has distinctive scenic values, including the landscape in which it is located, with views of the Teton Range, Breccia Cliffs, and other nearby mountains. This segment is characterized by interspersed confined canyons with conifers, and meandering sections through sub-alpine moist meadows. The lower sections afford spectacular views of the Teton Range. This is one of the few areas on the forest where gnarled whitebark pine can be viewed from a paved, readily accessible road, and diversity of subalpine vegetation is high. The meandering reaches and confined canyons offer distinctive four-season water features and colors.

Buffalo Fork

The Buffalo Fork Valley is rich with picturesque working ranches, dude ranches and haylands to the south. The Tetons are visible to the west, and predominant mountain plateaus of the Teton Wilderness form the northern backdrop. The lower segment is well known for its spectacular views of the Teton Range and the pastoral ranch land setting of the Buffalo Valley. The river corridor is lush with vegetated meadows, providing migration routes for elk, wintering moose, grizzly bears and wolves.

Crystal Creek

The outstanding scenery in the lower section of Crystal Creek includes the pastoral ranch setting, stream meanders, and views of the surrounding landscape from the stream, including the looming Gros Ventre Wilderness and the distant Teton Range. Across the Gros Ventre River lie the Red Hills, and views into Slate Creek and Mt. Leidy Highlands contribute to the scenic setting of this river segment.

Granite Creek
Views of the meandering creek and its whitewater sections, the clear blue-green water of deep pools, even when other streams are chocolate brown in the early summer, cascades such as Granite Falls, surrounding cliffs and mountain peaks of the southern Gros Ventre Range all contribute to the scenic values of Granite Creek. The scenery changes seasonally with a brilliant display of wildflowers in summer and fall colors among the aspens, bog birches and other deciduous plants along the creek, and the winter landscape that is available to skiers, snowmobilers, and dogsled tour participants.

Gros Ventre River
This section contains expansive open terrain with exposed sedimentary rock layers of many colors, cliff banks, dense forest, and narrow canyons. The river alternates between broad willow-dominated bottoms, spruce forest and narrow incised canyons. Excellent foreground views of classic river meanders are highlights of the broader bottoms. Distant views of the Teton Range are spectacular as are features within the middle ground of the river corridor, including the colorful Red, Lavender, and Gray Hills.

Wild segments

Bailey Creek
A remote setting in a canyon with very diverse scenic values; including a fire burned landscape, geologic landslide, thickets of riparian willows, and a turquoise lake rimmed by forest. Moose and bald eagles are common. Bailey Lake, originally a small glacial pond, was greatly enlarged by a massive landslide that continues to build a natural dam at the lake's outlet.

Buffalo Fork
Outstanding scenic features in the upper segment include views of imposing peaks of layered volcanic rocks, many spectacular water features (South Fork Falls is an example), and wide wet meadows that provide outstanding opportunities to see wildlife in a wild setting.

Crystal Creek
Scenic features include multi-colored cliffs, landslides, deep pools and riffles in the creek, and views of the surrounding high peaks of the Gros Ventre Range. Near the headwaters, in the alpine zone, are fine examples of limestone topography, wildflower fields, and views to distant mountain ranges.

Granite Creek
Upper Granite Creek occupies a classic U-shaped glaciated valley, evident throughout the length of this segment. Imposing cliffs and high peaks loom above the clear creek with deep pools, short cascades and waterfalls, and spring areas that feed the creek from the base on the mountains above. Extensive willow flats alternate with narrow canyon sections, adding to the variety.

Gros Ventre River
Cascades and waterfalls, views to the highest peaks in the Gros Ventre Wilderness, rockscapes of cliffs, talus and tarns, as well as an outstanding example of subalpine parklands, exist in the uppermost reaches of the river.

Shoal Creek
Views of diverse terrain and vegetation, large ponds created by beavers, and steep mountains contribute to the scenic values. Views of Palmer Peak and cliffs surrounding Doubletop Peak dominate the view to the north; more distant views of the Hoback Range are seen to the south. Shoal Falls and geologic structures in the upper canyon contribute to variety and outstanding scenery; tilted cliff bands, narrow sections of cascading water, and open views distinguish the lower segment. The undeveloped wilderness character of the Shoal Creek Wilderness Study Area is rare on a national scale and qualifies this stretch for a scenic outstandingly remarkable value.

Snake River (upper segment)
The upper segment of the Snake flows in wide meanders through willow flats surrounded by volcanic mountains and ridges. Much of the corridor was burned in 1988 and the area provides opportunities to see forest revegetation in a natural area. Some sections of the river carve through bedrock in rapids and narrow gorges. The opportunity to see moose, elk, grizzly bears, waterfowl and other wildlife is outstanding.

Willow Creek

Scenic integrity is high and landscape variety is enhanced by the alternating sections of wide and narrow canyon, seasonally changing vegetation, and views of nearby mountain peaks, cliffs, and contorted, folded sedimentary rocks. Aspen stands add to seasonal color, as do the variety of understory shrubs. A few remnant cottonwoods remain in the creek bottom; a natural flood in the mid 1960s changed the character of the creek considerably. Scenic interest and variety is provided by the changing geomorphology of the creek from headwaters to mouth; there are narrow gorge sections with a bedrock streambed (lower section), wide braided channels (near Adams and Lick Creeks), and extensive willow/riparian complexes (Shepard to Phosphate Creek). Cold, clear water throughout the season contributes to the beauty of deep turquoise pools and shallow riffles with multi-colored gravel.

Wolf Creek
Small cascades on the creek, limestone cliff bands along the sides of the lower canyon, seasonal colors in the understory shrubs and deciduous trees, wildflower parks in previously burned areas and colorful tilted strata in the upper reaches of the creek all contribute to its scenic value.

Recreation Resources

The Snake River Headwaters offer world-class opportunities for recreation within a largely pristine ecosystem of clean air, clear water, natural soundscapes, spectacular landscapes, and high quality wildlife and fish habitat. Due to the number of river miles and their distribution across a natural landscape largely comprised of public lands, the system offers a unique opportunity for recreationists to participate in a diverse spectrum of year-round, river-related activities within a variety of settings, ranging from easily accessible social opportunities to rustic peaceful settings along low volume gravel roads to wild quiet settings accessible by horse or foot trails, where solitude is a primary value. The diversity of landscapes and waters ranging from small fast moving streams to meandering rivers and challenging whitewater also provides recreationists opportunities for skill development progression whether the activity is bank fishing, float fishing, kayaking, rafting, or hiking, horseback riding, hunting and backcountry camping along the waterways.

The narratives that follow describe the outstanding recreation settings offered by each river segment, and the contribution of each setting to the diversity of the connected system.

Recreational Segments

Hoback River
The Hoback River provides opportunities for a scenic drive with interpretive pull-offs and places to stop along the way, an exceptional intermediate learning environment for those running non-technical whitewater in a variety of crafts, fishing, camping, and wildlife viewing. Though accessed by U.S. 189/191, it is a lower development level than the lower Snake River, offering a chance to enjoy the river without large crowds.

Snake River
This corridor is by far the most developed and heavily used area within the Bridger-Teton National Forest. Rafting, kayaking, fishing, camping at one of several campgrounds, and taking in the scenery from one of many viewpoints are among the activities offered in this section of the Snake River. This is the only river in the Snake River Headwaters with large developed boat launches and group campsites that accommodate large parties.

Easy access from the highway to world-class rapids, along with a native cutthroat trout fishery, make this section ideal for learning river-related skills (fishing, rafting and kayaking). The river offers many roadside locations to observe or photograph whitewater boating activities and "park and play" kayak spots. The proximity to a busy summer tourist destination, high demand, existing capacity of the river and facilities (70,000-120,000 client trips per summer), along with ready access to a length of river suitable for a two-hour float has allowed for outfitters to charge a much lower price than for a comparable river trip elsewhere. This makes the mainstem Snake unique in its ability to serve more people regardless of economic stratum. Because paddling is typically a low-impact activity, many visitors can participate without impact to natural resources. The current prevalence of non-motorized use contributes to the river's ability to engage so many.

During the 'off-season' the river offers a quieter experience for floaters and fishermen, and the lower canyon is a destination for those seeking fall colors.

Scenic Segments

Blackrock Creek
Flowing alongside the Wyoming Centennial Scenic Byway (U.S. Highway 26/287), this scenic tributary provides opportunities for driving for pleasure. Interpretive sites, photographic pullouts, year-round resorts and seasonal campgrounds are among the facilities enjoyed by many. The "Togwotee Trail" gives the traveler from the east a spectacular first look at the Teton Range, made possible by the way the creek has created alternating wide valleys and meadows with narrow forested canyons. The interpretive sites along the scenic byway focus on the rich human history of the area. In winter, resorts and trailheads in the area become hubs for snowmobiling and skiing activity along the Continental Divide Snowmobile Trail and other groomed, marked trails.

Buffalo Fork
The river is served by the Buffalo Valley Road, along which there are numerous river and fishing access points, resorts, visitor services, and trailheads. Resorts offer float trips, horseback rides, and other front-country activities, as well as snowmobiling in winter. This section of the river corridor is a gateway to the Teton Wilderness, with the most heavily used campgrounds and trailheads near its boundary.

Crystal Creek
Lush bottomland meadows and rural ranchlands provide the backdrop for fishing or trailhead camping. Nearby rustic campgrounds give this segment a lightly developed setting.

Granite Creek
Soaking and swimming in hot springs, fishing, kayaking, camping, dog sledding, snowmobiling, streamside hiking, backpacking, hunting, horse packing are all available and accessible in this stunning valley with spectacular summer wildflowers and abundant wildlife. During early summer runoff, Class III-V whitewater attracts kayakers; backcountry travelers find many trails to attract them. Granite Creek Campground is a popular destination and base for people spending several days in the drainage. Granite Hot Springs, open most of the year, is served by a high-standard gravel road which becomes a groomed trail in winter

for guided snowmobile and dogsled excursions to the spring. Such easy access to an outdoor hot spring pool with spectacular views and the chance for soaking or swimming is rare in the region. This tributary of the Hoback River is one of the most recreationally diverse sections in the Headwaters, with many activities available within a small area.

Gros Ventre River
Recreation is a year-round affair in the river corridor from spring kayaking to fall hunting, summer camping to winter sports, easily accessible via the Gros Ventre Road, which runs for most of the Scenic River segment. With the current travel regulations in effect the road is closed beyond Slate Creek until June 1, offering a unique opportunity to experience the valley via foot, horseback, or mountain bike while the spring wildlife migrations are going on.

The scenic section is particularly notable for its rustic yet accessible recreation. This long river corridor offers a remote feel and is highly valued by people whether the activity is scenic driving on a primitive road, viewing wildlife, photography, fishing, hunting, kayaking, camping, ATV riding or snowmobiling. The most technical whitewater experience in the system is to be found on the Gros Ventre's lower reaches.

This river exemplifies the overall extraordinary value identified for the Snake River Headwaters system. A remarkable diversity of recreational experiences is available, tied together within a single waterway, and made more distinctive by the wealth of other resource values that contribute to this experience.

Pacific Creek
Recreation includes day use and dispersed camping, hunting and fishing from undeveloped camps or the Pacific Creek Campground, and winter sports. This segment of Pacific Creek provides opportunities for viewing wildlife as well as hunting, and for nature photography.

Wild Segments

Bailey Creek

This segment is unique within the Snake River Headwaters with Bailey Lake midway between its source and its confluence with the Snake River. The visible and still active landslide and the effects of the East Table Fire offer glimpses into landscape-scale natural processes. This is also the only reach in the system that can be accessed either by a short float across the main stem Snake or from the remote Little Greys River Road, and its relatively easy terrain allows families with young members or people with little backcountry experience to connect with this intimate stream as they travel, fish, or camp near the lake. Though geographically close to the Snake River and U.S. 26/89, the narrow canyon of Bailey Creek, running between steep parallel ridges, has a remote backcountry feel.

Buffalo Fork

Horsepacking, hunting, fishing, day rides and other wilderness activities are centered on this river and its forks. The river is accessed by trails for most of its length and numerous outfitter-guides are available to lead people into the area. Wildlife resources are superlative, with the full complement of native species represented, and little in the way of invasive plants or animals. Over 80% of the Buffalo Fork is in the Wilderness; its forks penetrate the Teton Wilderness and head in the alpine country of the Continental Divide. Because of the size and remoteness of the Teton Wilderness, as well as the adjacent wilderness lands in Yellowstone National Park and the Shoshone National Forest, this river is exemplary in providing recreation visitors with a true wilderness experience.

Crystal Creek

Increasingly popular for its wild fishery and for hunting, this segment attracts people with steep, boldly-colored cliffs. The upper reaches epitomize backcountry explorations, following the waterway's path into an open and untamed past, with few signs or sounds of the modern world. A large, active landslide highlights the dynamic nature of these wild landscapes. Crystal Creek contributes to the overall spectrum of recreation activities within the Headwaters with excellent opportunities to view wildlife and active geologic processes.

Granite Creek

For streamside hiking, backpacking, hunting, horse packing, or camping, the first few miles of Granite Creek Trail in the Gros Ventre Wilderness offer a low-gradient trail in a primitive environment. Turquoise Lake is one of the two alpine tarns within the Snake River Headwaters system. This piece of the Snake River Headwaters provides access to many other trails throughout the Gros Ventre Wilderness, dispersing visitors for few encounters even during the summer tourist season.

Gros Ventre River

The upper Gros Ventre River Trail serves as primary access to this segment of the river, following its course from Darwin Ranch to the headwaters at the Gros Ventre Divide. Ouzel Falls is a scenic cascade where the river rushes over terraced bedrock, and Upper Falls offers the rare opportunity for wilderness camping at its base. Fishing and hunting during multi-day trips are popular pursuits in this section of the river, and the area is well served by outfitters operating in summer and fall.

Pacific Creek
The trail along Pacific Creek gives access to some of the more popular destinations in the Teton Wilderness and offers a variety of fishing, camping and scenic viewing opportunities in its wide willow flats, meadows, incised canyons and forested uplands. Big-game hunting and wilderness travel are the primary attractions; the Teton Wilderness is well known as one of the largest and most undisturbed of wild lands in the lower 48 states, offering opportunities for extended pack trips. The area is well served by outfitter-guides who offer summer and fall trips.

Shoal Creek
Outstanding opportunities for primitive recreation in a wild and highly scenic setting are accessible from the trail to Shoal Falls. The creekside trail is gentle, while offering views of the steep face of the southern Gros Ventre Range. This trail connects with several others that access overnight destinations and loop trails. The Wild River section of Shoal Creek lies entirely within the Gros Ventre Wilderness or Shoal Creek Wilderness Study Area. The primary recreation activities in the river corridor include hiking, horseback riding, day use from the dispersed camp area at the trailhead as well as longer trips, big game hunting, fishing, photography and wildlife viewing. The alpine tarn and fishing/camping destination of Shoal Lake lies at the creek's headwaters.

Snake River
The upper segments of the Snake within the Bridger-Teton National Forest are entirely within the Teton Wilderness. A small stream in its early headwaters, it flows in wide meanders through scenic Fox Park before entering Yellowstone National Park. This section of the river is rich in wildlife of all kinds, including nesting waterfowl. The opportunity to see moose, elk, grizzly bears, and other wildlife is outstanding.

Recreation in this very remote area includes bank fishing, horsepacking and backpacking. Outfitters offer horseback trips into the area during the summer and in hunting season. Trails and campsites are nearby for part of its length, with little intrusion into the wild character of the river segment, and the final few miles are accessed only by cross-country travel. There is a high opportunity for solitude in a primitive setting.

Willow Creek
Willow Creek penetrates the heart of the Grayback roadless area. At 313,000 acres, it is the largest backcountry area within the Bridger-Teton National Forest outside of wilderness. It is easily accessed via Bryan Flat trailhead. Outstanding opportunities for backcountry recreation exist here, and the area is known for abundant big game. Primary activities include traditional horse-based camping and hunting, fishing, hiking and backpacking, as well as mountain biking and winter sports.

Bryan Flat serves as the northern access to the Wyoming Range National Recreation Trail. After crossing Elk Ridge and descending to Willow Creek the rest of the trail follows the

creek closely to its head near Pickle Pass before continuing south along the crest of the Wyoming Range. In addition to the Wyoming Range Trail, Willow Creek is served by a network of forest trails, some of which offer loop opportunities and are increasingly enjoyed by day use hikers, mountain bikers, and guided horseback riders. Fishing, hunting, and day rides are among the activities offered by the several commercial outfitters that operate in the area.

Wolf Creek
Access into the Palisades Wilderness Study Area directly from a paved highway is a valuable option to some visitors, especially those traveling from outside the region. The creek with its water music, talus slopes, and the trail with its many rocky fords, provide a primitive opportunity within minutes of the social experience provided by the highly developed Snake River.

Wolf Creek is one of the longer creeks draining the Palisades Wilderness Study Area, with good trail access that links to other drainages and allows for extended trips by foot or horseback. It is most popular during the fall hunting season, though the lower two miles of the trail offer the chance for a fine summer day hike, where wildflowers grow chin-high and the calls of pikas can be heard from the talus above. There is a good chance here for seeing other wildlife, including mountain goats.

Cultural Resources

The continuum of human use along the Snake River Headwaters encompasses thousands of years of diverse people, cultures, and uses. American Indians and early historic settlers flourished along these rivers because they provided a corridor for travel through inaccessible terrain and sustenance for travelers. Evidence of Native American travel and settlement, fur trapping, exploration, early European-American settlement, tourism, dude ranching, public lands management, and conservation activities is reflected in archeological sites, historic buildings, and cultural landscapes along the river corridors. Natural and cultural resources continue to carry cultural significance to American Indian Tribes and others to the present day.

The descriptions below outline specific elements present on the five rivers or tributary streams in the Snake River Headwaters that have been identified as having outstanding cultural resources.

Blackrock Creek
Togwotee Pass, named after a Sheepeater Indian Chief, was an important travel corridor over the continental divide during prehistoric times. The economy of prehistoric groups, and the Wind River Shoshone in particular, was based on the hunting, fishing, and plant gathering opportunities that were found in abundance along the creek corridor. The Blackrock Creek corridor continued as a major travel route for the Euro-American trappers and traders in the early 1800’ and Jackson Hole quickly became a cross roads for the early trappers.

In 1904 the Old Blackrock Office was constructed and was used by Rudolph Rosencrans, the first forest ranger on the Teton National Forest. This one room log cabin, which is the oldest administrative structure on the Bridger-Teton National Forest, is located adjacent to the current Buffalo District Ranger's Office on Blackrock Creek.

Buffalo Fork

Rosencrans Cabin Historic District is located on the south bank of the Buffalo Fork River and is on the National register of historic Places. Constructed around 1915, the cabins are particularly well built and are representative of early Forest Service administrative buildings. The structures are also associated with Rudolf "Rosie" Rosencrans, one of the first rangers on the Forest who played a vital role in the early history of the Forest Service. Rosie's grave is also located at the site.

Granite Creek

The Granite Hot Springs Pool and Bath House are located on the east bank of Granite Creek at the end of the Granite Creek Road. The site consists of a concrete swimming pool and log bathhouse, both of which were built by the Civilian Conservation Corp (CCC's) during the 1930's. The Granite Hot Springs Pool and Bathhouse are historically significant not only because of their association with the Civilian Conservation Corp, but also because these facilities enhanced recreation opportunities on the forest during and immediately following the WWII.

Gros Ventre River

A number of significant prehistoric sites are located all along the Gros Ventre River corridor and include stone circle sites, the only known petroglyph site on the BTNF, and artifacts dating to at least 10,000 years before present. Prehistoric sites have been found at critical "bottle necks" along pronghorn migration route into Jackson Hole and may provide information of prehistoric hunting activities related to this migration corridor. The river corridor also served as one of the main transportation routes into Jackson Hole during historic times. The President Chester Arthur expedition of 1883 traveled down the valley on its way to Yellowstone National Park. The early 1900s saw the establishment of a number of homesteads in the valley and include the Darwin Ranch and the Dew Homestead, the remains of which can still be seen on the banks of the Gros Ventre River just upstream from the confluence of Fish Creek.

Hoback River

The Hoback River is named after trapper and explorer John Hoback who guided members of John Jacob Astor's American Fur Company through the Hoback Canyon in 1811. A recently discovered prehistoric site has been investigated and reveals over 2 meters of intact archeological deposits dating to over (BCE)7,000. Floral and faunal remains from this site may provide scientific data related to changes in ecological conditions in the region over time. Battle Mountain, at the confluence of Granite Creek and the Hoback River, was the scene of a confrontation between a hunting party of Bannock Indians and local residents over hunting rights. The skirmish left one Bannock Indian dead and led to the Indian scare of 1895 as Jackson homesteaders feared they would be attacked in retaliation.

Ecological Resources

Wildlife Resources

The Snake River Headwaters complex is a particularly pristine and unique component of the Greater Yellowstone Ecosystem, the largest intact ecological unit in the lower 48 states. Natural processes such as fire, flooding, landslides, plant succession, wildlife migration, and predator-prey dynamics profoundly affect the Snake River Headwaters landscape and its biota. Beaver in all of these stretches build and sustain wetlands, and are successfully contributing to management efforts where they raise streamside water tables, increase late season flows, and provide holding areas for trout, waterfowl and other wildlife.

A full complement of native plant and wildlife species is present. Exotic flora, although often present on sites with a history of anthropogenic influence (e.g., along roads, trails, and in developed areas) have minimal influence on the ecological function of the extensive backcountry and wilderness areas. Plant species diversity is high. Species assemblages include numerous distinct riparian plant communities that are unique to the region. All native wildlife species are self-sustaining, and the river courses and associated habitats are critical to their viability. Nationally important wildlife populations include the Jackson elk herd (the largest in the world), the Yellowstone grizzly bear and gray wolf populations (the southern-most in North America), Tri-state trumpeter swans (the largest native resident population in the lower 48 states), the only nesting common loons in Wyoming and substantial recovered nesting populations of bald eagles and peregrine falcons. With only one exception (the northern leopard frog), all native wildlife are present, and (with two exceptions, mountain goats in the lower Snake and European starlings, which are widespread) only native birds, mammals, reptiles, or amphibians are known to use the rivers and creek corridors designated under the *Wild and Scenic Rivers Act*. The American Bullfrog occurs at Kelly Warm Springs and the Eurasian Collared Dove occurs in Jackson, Wyoming, but not within designated river corridors. Beavers are common on most of the river segments. They act as a keystone species by building dams that create and sustain wetlands that provide habitat for nesting and migrating waterfowl, including sensitive species such as trumpeter swans. Four of North America's largest carnivores—grizzly and black bears, wolves, and cougars—occur along with 7 native ungulates, including moose, mule and white-tailed deer, bison, elk, pronghorn, and bighorn sheep, in an ecologically dynamic system rivaled in few places on earth. The diversity and abundance of wildlife in this assemblage is recognized world-wide and is the primary reason people visit Grand Teton National Park, the Bridger-Teton National Forest, and the National Elk Refuge, the primary federal land units in the

Snake River Headwaters. Threatened, Endangered, Sensitive and Management Indicator Species (wildlife, plants, fish and amphibians) are discussed in Chapter IV.

The interconnectivity of river segments in the Snake River Headwaters is what allows wildlife and habitats to function within the full range of dynamic natural processes required for ecological integrity at the landscape scale. Because wildlife is largely able to migrate across these interconnected headwaters landscapes, no separate discussion by river segment is included here.

Botanical Resources and Sensitive Plant Species

Species Evaluated

There are nine species with analysis requirements which are known to be present in the analysis area; two Management Indicator Species and seven Sensitive species. In addition, 11 other species with analysis requirements have potential habitat present but no known occurrences. Appendix C displays the list of all species considered and the likelihood of effects from changes in management. All show a low likelihood of effects, except for two species—Payson's milkvetch and Payson's bladderpod, which show a moderate likelihood—and two species, whitebark pine and aspen, which show a high likelihood of some effect from management changes.

Range Resources

Rangelands are managed under permit to ranches, associations, and individuals, with permit conditions designed for long-term maintenance of the forage resource for both livestock and wildlife. Range and watershed conditions must be maintained through this partnership between permittees and the administering agency. Currently, fifteen cattle, horse, or horse and cattle range allotments are at least partially within the designation (one in non-use status). The designation also includes five sheep range allotments, although most sheep range is in the uplands. Four of those are managed by the Caribou-Targhee National Forest on the southwest side of the lower Snake River corridor and primarily the sheep are trailed across the designated corridors into the main portion of their allotment areas. Additionally, six other allotments in the project area are vacant or closed or being used as Forage Reserves—areas reserved for short-term resolution of resource concerns, such as fire, on occupied allotments. Some additional smaller livestock areas or pastures are also under permit. (More details regarding river-specific permits and activities can be found in Chapters 2 and 3 of the Comprehensive River Management Plan.)

Range management is currently directed by Forest-wide standards. Current Forest Plan standards limit utilization levels to no more than60% in upland areas or 65% in riparian areas, under rotational grazing systems, for range in satisfactory condition. Site-specific utilization levels will be prescribed during Allotment Management Plan (AMP) revision. Revisions have yet to occur in all areas subject to this designation, with many Allotment Management Plans being over 10 years old at time of designation.

During monitoring and evaluation a Utilization Guideline may be changed if the prescribed level is not accomplishing planned objectives. Throughout much of the designation within the Jackson Ranger District, utilization rates have been lowered to 50% in permittee's Annual Operating Instructions. River values such as stream banks, wildlife and fish habitat, and migration routes are all specifically mentioned in a November 5, 2008 white paper clarifying how to establish the bank stability measure. Until then, analysis of stream bank conditions was not formalized; now, bank shearing measurement protocols have begun to be used. Annual monitoring and evaluation of allotments within the project area is expected to provide information necessary to change utilization guidelines as necessary to address future site-specific resource concerns related to forage utilization.

Silvicultural Resources

Tree removal in the river corridors has been limited to developed sites where insect activity and fuel build-up threatens the setting and facility (for example, campground and boat launches along the lower Snake River). Commercial timber sales, firewood areas, and stewardship contracts have been used to remove the trees. Fuels management activities in Wildland Urban Interface (WUI) are ongoing in several of the river corridors.

Protection from bark beetle mortality and removal of hazard trees is ongoing at Hoback, Granite Creek, Hatchet and Turpin Meadows Campgrounds, Granite Hot Springs and the Buffalo Ranger District Administrative Site. In the Snake River Canyon, eight campgrounds and boat launches have ongoing protection from bark beetle mortality and removal of hazard trees. Protection either by application of Carbaryl insecticide to the bark, or stapling of Verbanone pheromone pouches, has protected enough trees to maintain an overstory of trees at these sites.

Wildland Urban Interface occurs at Hoback Junction, the Bryan Flat/Camp Creek area (Hoback River), the Gros Ventre River, Crystal Creek, Granite Creek, Buffalo Fork, Pacific Creek, and Astoria on the Snake River. The Forest defines WUI by the County's Community Wildfire Protection Plan (CWPP). Along the Snake, WUI occurs essentially from the Forest Boundary south of Jackson down along both sides of the river to an inholding approximately 1 mile north of West Elbow campground.

Prescribed burning activities for wildlife habitat enhancement have occurred on the lower Gros Ventre River and are planned for the upper Gros Ventre River.

Fisheries Resources

The Snake River Headwaters provides a unique fishery in its historic native range for the Snake River fine-spotted and Yellowstone cutthroat trout, which are both Management Indicator Species on the Bridger-Teton National Forest. While these two fish are not at present different genetically, and Wyoming Game and Fish manages them as one species, they tend to be spatially separated, and are generally different visually. The Headwaters contain a diverse

community of other native species including regionally significant populations of northern leatherside chub and bluehead sucker, for which the Forest and the state have signed Conservation Agreements. The community of native fish also includes whitefish, suckers, dace, and sculpins, and tiger salamanders are relatively common across the system. Spawning, rearing, and adult habitats are characterized by excellent water quality, few natural or man-made barriers, and a diverse and abundant macro invertebrate community supporting naturally reproducing and genetically pure populations of native fish and amphibians.

Two Forest Service Region 4 Sensitive Species, the Columbia spotted frog and the boreal toad are found within the Snake River Headwaters, as are boreal chorus frogs, a Management Indicator Species on the Bridger-Teton. Non-native rainbow trout are listed and considered a negative indicator where present. Bonneville cutthroat trout, also not native to this watershed, have been planted in Shoal Lake, but are not known to be present in Shoal Creek.

The interconnectivity of the associated segments in this designation allows fish and other aquatic species to function within the full range of dynamic natural processes with which they have evolved, and it is this aspect of the system that most needs future protection.

Sensitive aquatic species known in the Snake River Headwaters

- Columbia Spotted Frog: Blackrock Creek, Buffalo Fork (scenic)
- Boreal Toad: Blackrock Creek, Buffalo Fork (scenic)
- Northern Leatherside Chub: Buffalo Fork (scenic), Pacific Creek (scenic)

Management Indicator Species in the Snake River Headwaters.

Yellowstone cutthroat trout and Snake River fine-spotted trout: in all designated rivers and streams
Boreal Chorus Frog: in all of the designated segments except for the wild segments of Buffalo Fork and Pacific Creek.

Roads and Facilities

Roads, utility corridors, agricultural activities, private homes, resorts, gravel removal, irrigation diversions, and recreation facilities, have all created lasting imprints on the landscape.

Along Blackrock Creek and the Hoback River, WYDOT manages busy portal routes into Jackson Hole along U.S.189/191, part of the Wyoming Centennial Scenic Byway. U.S. 26/89 runs along the Snake River.

Developments within river corridors are largely associated with public use of the rivers. These include campgrounds, scenic overlooks, boat launches, and day use sites. Forest administrative sites exist within river corridors at Dog Creek on the Snake River, Goosewing Guard Station on the Gros Ventre River, and the Buffalo Ranger District compound at the confluence of Blackrock Creek and the Buffalo Fork.

Monitoring of construction zones and site restoration success is inconsistent along the U.S. highways. Scenic River segments are served by gravel forest roads, sometimes within the corridor and sometimes beyond it. Eroding and undersized culverts on these roads are not always given priority for maintenance or upgrade.

Minerals Resources

Minerals and Energy

Introduction

This section is divided into four sub-sections. The first sub-section is an overview of the legal structure and land deposition affecting the availability of minerals and energy sources on the forest with a focus on the river corridors. The next sections divide the types of minerals by legal authorities: mineral and geothermal leasing (i.e. oil, gas, coal and geothermal); locatable minerals (i.e. gold and silver); and salable minerals (i.e. sand and gravel).

Legal Structure and Land Deposition

This section is tiered from the 1990 Bridger-Teton National Forest Land and Resource Management Plan (Forest Plan) and Record of Decision (ROD), as amended and corrected, except for updates and new legislation that has not been previously noted. The most substantial change since the publication of the Forest Plan is the passage of the Wyoming Range Legacy Act (WRLA), as part of the Omnibus Public Land Management Act of 2009. This act withdrew (i.e. closed) approximately 1.2 million acres of public land – entirely within the forest boundary – from future mineral and geothermal leasing under the U.S. mineral leasing laws, and mineral entry and location under the U.S. mining laws.

The boundary of the Wyoming Range Withdrawal Area is based upon a map produced in 2007. The northern boundary generally follows the Snake and Hoback rivers, though it does irregularly alternate from river side to river side. The boundary then generally follows the Gros Ventre Wilderness and Shoal Creek Wilderness Study Area boundaries in the vicinity of Granite Creek and Hoback River. Other streams within the scope of this EA are located within the boundary of the Wyoming Range Withdrawal Area and were also closed to mineral and geothermal leasing and mineral entry and location. Table 3.2 summarizes the designated streams that were closed to mineral leasing, and mineral entry and location by the Wyoming Range Legacy Act. The corridor sections identified in Table 3.2 and the river segments that were designated wild in the Craig Thomas Snake Headwaters Legacy Act were permanently closed by the U.S. Congress to mineral and geothermal leasing, and mineral entry and location, and will not be analyzed in this EA (with the exception of the lower wild designated portion of Pacific Creek).

Table 3.2: Streams Permanently Closed to Mineral Entry

River Corridor	Class	Affected Portion	Legislation
Hoback River	Recreation	Generally, left side of river[1]	WRLA[2]
Snake River	Recreation	Generally, left side of river	WRLA
Granite Creek	Scenic	Majority of scenic river	WRLA
Willow Creek	Wild	Entire Corridor	WRLA & WSRA[3]
Baily Creek	Wild	Entire Corridor	WRLA & WSRA
Wolf Creek	Wild	Entire Corridor	WSRA
Granite Creek	Wild	Entire Corridor	WSRA
Shoal Creek	Wild	Entire Corridor	WSRA
Crystal Creek	Wild	Entire Corridor	WA[4] & WSRA
Gros Ventre River	Wild	Entire Corridor	WA & WSRA
South Buffalo Fork	Wild	Entire Corridor	WA & WSRA
Soda Fork	Wild	Entire Corridor	WA & WSRA
North Buffalo Fork	Wild	Entire Corridor	WA & WSRA
Pacific Creek	Wild	Entire Corridor	WA & WSRA
Upper Snake River	Wild	Entire Corridor	WA & WSRA

What is meant by the statement, "withdrawn from mineral and geothermal leasing, and mineral entry and location" is that these mineral and energy sources may not be explored for, assessed, developed, or disposed of in any manner without a change in law by the Federal government; a person may not remove a leasable or locatable mineral (ie. gold, silver or other valuable minerals) from these areas.

This analysis will be focused on the remaining river corridors that are not closed to minerals (see Table 3.3 for a summary).

Table 3.3: Streams and Acreage Analyzed within Project Area

River Corridor	Class	Affected Portion	Acres
Snake River	Recreation	Generally, right side of river	4, 483
Hoback River	Recreation	Generally, right side of river	728
Gros Ventre River	Scenic	Entire corridor that is Federal property	9,944
Crystal Creek	Scenic	Entire corridor that is Federal property	626
Blackrock Creek	Scenic	Entire corridor that is Federal	6,160

[1] Because of the variability of the Wyoming Range Withdrawal Area northern boundary, any person interested in mineral uses and activities in this area should consult with the USFS for information as to the specific boundary location in any given location.
[2] Wyoming Range Legacy Act of 2009 (P.L. 111-11; 123 Stat. 991)
[3] Wild & Scenic Rivers Act, as amended (16 USC 1271-1287)
[4] Wilderness Act of 1984 (P.L. 98-550)

River Corridor	Class	Affected Portion	Acres
		property	
Buffalo Fork	Scenic	Entire corridor that is Federal property	3,511
Pacific Creek	Scenic	Entire corridor that is Federal property	1,745
Pacific Creek	Wild	Lower corridor (~3.5 miles)	1,083

Leasable Minerals & Geothermal

The forest has a long history – almost 100-years – of leasing Federal minerals, including phosphate, geothermal exploration, sodium (i.e. salt), coal development, and oil and natural gas development. Today there is no longer any phosphate, geothermal, or coal development on the forest. There is one sodium mine and a limited number of oil and natural gas development, generally located on the southern portion of the forest.

Over the past 30-years, lands within the forest have become increasingly closed to mineral leasing. By the early 1990s, approximately 1.3 million acres of the forest had been closed to mineral leasing. With the passage of the Omnibus Public Land Management Act of 2009 that included the Wyoming Range Legacy Act and the Craig Thomas Snake Headwaters Legacy Act, approximately 2.5 million acres, or approximately 74%, of the forest had been closed[5] to mineral and geothermal leasing. Approximately 900,000 acres or 26% of the forest remain open[6] to mineral and geothermal leasing. Of the remaining open acreage, no National Forest System (NFS) lands may be leased with the Standard Lease Terms administered by the U.S. Bureau of Land Management. Any lease must be accompanied with Conditional Surface Use (CSO)) or No Surface Occupancy (NSO) stipulations. Approximately 65% of the NFS lands open to leasing would be administered with no less than a Conditional Surface Use stipulation[7] at this time.[8] The remaining 35% of open NFS lands in the forest must be accompanied with a No Surface Occupancy stipulation[9] (see Table 3.4).

[5] **Areas closed** to mineral entry, location, and/or leasing under the U.S. mining and leasing laws include wilderness, wilderness study areas, wild rivers, special legislation areas, Secretarial Order, and Land & Resource Management Plan by Desired Future Condition 6A-D, and S.

[6] **Areas open** to mineral entry, location, and/or leasing under the U.S. mining and leasing laws include the Land & Resource Management Plan by Desired Future Conditions 1B, 2AB, 3, 4, 7AB, 8, 9AB, 10, and 12.

[7] **Conditional Surface Use** – includes Technical No Surface Occupancy (unsuitable soils and landslides), timing-limitation stipulations for large-game, coordinated area exploration stipulation, specific area stipulations, inventoried roadless areas, specific resource protections, and Desired Future Condition 12 Road Density.

[8] Additional National Environmental Policy Act (NEPA) analysis must be conducted prior to issuance of a Federal mineral lease. It is possible at the leasing analysis stage that additional stipulations be placed on any given parcel of NFS land up for a lease.

[9] **No Surface Occupancy** – includes No Surface Occupancy, Conditional No Surface Occupancy and Technical No Surface Occupancy (slopes >40%) stipulations, Big Horn Sheep Habitat No Surface Occupancy, Desired Future Condition 2A, 9AB, 3, and 4.

Table 3.4: Existing Acres and Stipulations of Leasable Minerals, BTNF

Mineral & Geothermal Leasing Status with Stipulation	Acres	Percentage
Forest Total[10]	3,465,200	100%
Closed (surface and subsurface estates)	2,565,356	74%
Open (surface estate only)	899,844	26%
Standard Lease Terms	0	0%
Conditional Surface Use	**586,665**	**65%**
No Surface Occupancy	**313,179**	**35%**

Of the NFS lands within the project area, approximately 77% are closed to leasing (see Table 3.2). The remaining 23% of the NFS lands within the project area are open to leasing with stipulations (see Figure 3.1). Of this 23%, all NFS lands leased must be done with a Conditional Surface Use or No Surface Occupancy stipulation. Table 3.5 breaks down the acres and percentage of open NFS lands by stream and designated class. Most of the NFS lands open to leasing with a Conditional Surface Use stipulation are located within scenic portions of the Gros Ventre River and Blackrock Creek. Lands administered under the Conditional Surface Use stipulation in the Snake and Hoback rivers corridors are located within a few river miles of the Snake and Hoback rivers confluence. The Snake River recreation segment is currently administered under the No Surface Occupancy stipulation.

Table 3.5: Existing Acres and Stipulations of Leasable Minerals within Wild and Scenic River Corridors by Class

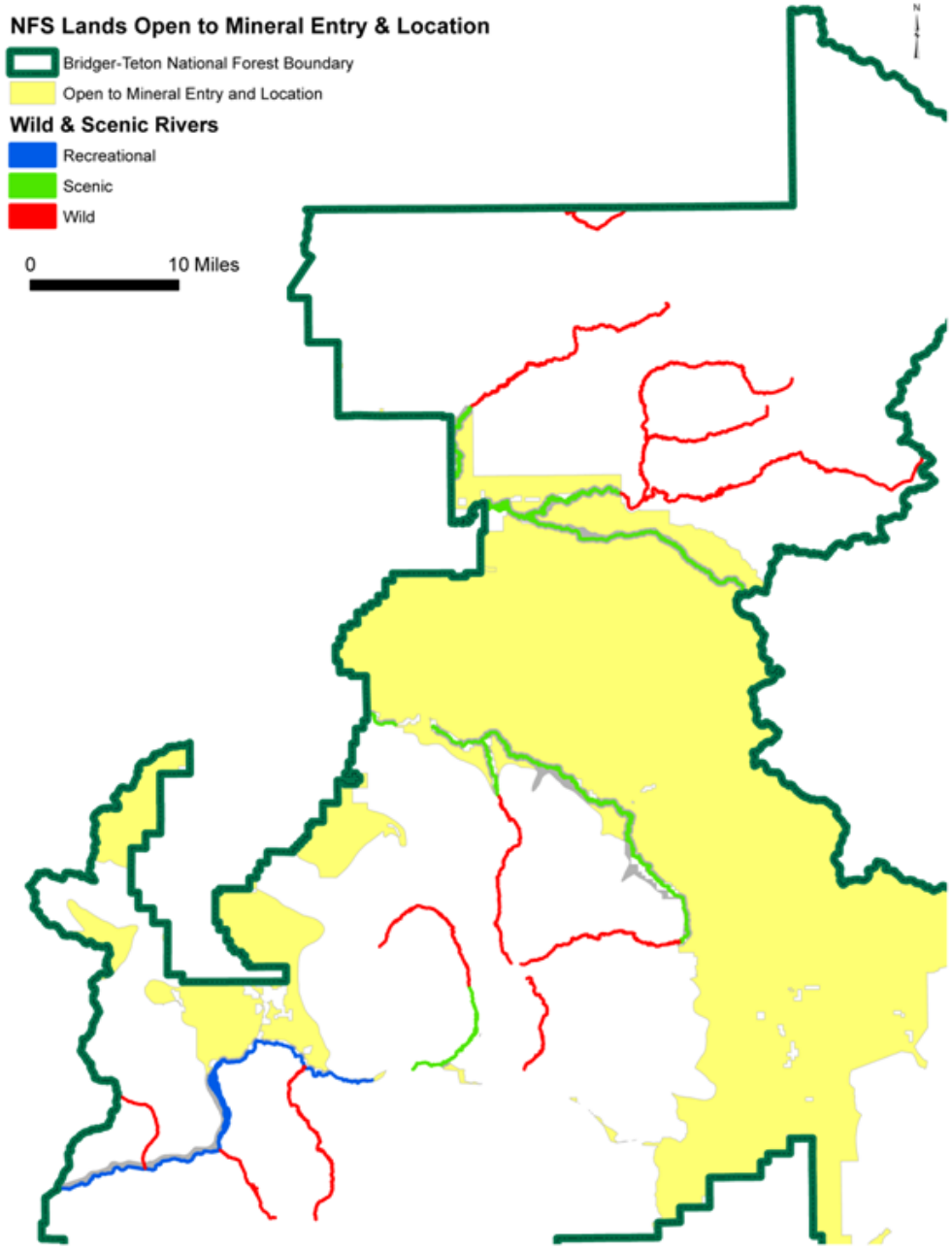
Mineral & Geothermal Leasing Status with Stipulation	Acres	Percentage
Total[11]	93,577	100%
Closed (surface and sub-surface estates)	72,016	77%
Open (surface estate only)	21,561	23%
Standard Lease Terms	0	0%
Conditional Surface Use	**9,826**	**46%**
Recreation Sections	*503*	*2%*
Hoback River	225	1%
Snake River	279	1%
Scenic Sections	*9,323*	*43%*
Granite Creek	52	<1%
Gros Ventre River	5,648	26%
Blackrock River	3,623	17%
No Surface Occupancy	**11,736**	**54%**
Recreation Sections	*4,708*	*22%*

[10] Total acreage includes all National Forest System (surface estate) lands within the forest boundary with Federal sub-surface estate.

[11] Total acreage includes all National Forest Service (surface estate) lands within the designated Wild & Scenic Rivers boundaries with Federal sub-surface estate.

Hoback River	503	2%
Snake River	4,204	20%
Scenic Sections	*7,028*	*33%*
Granite Creek	19	<1%
Gros Ventre River	6,297	29%
Blackrock River	712	3%

Figure 3.1: Lands Open to Mineral & Geothermal Leasing, Project Area



Approximately 52 acres within the Granite Creek scenic river corridor are located outside the exterior boundary of the Wyoming Range Withdrawal Area (WRWA). This small area lies between the WRWA and Shoal Creek Wilderness Study Area boundaries, and only has surface resource protections afforded Eligible scenic rivers under Amendment 2 of the 1990 Forest Plan.

As the example in Figure 3.2 indicates, the areas administered by a Conditional Surface Use stipulation versus a No Surface Occupancy stipulation appear to be randomly mixed with little to no continuity. There are continuous areas within the river corridors that are administered under the No Surface Occupancy stipulation that are designed to protect specific resources, such as Bighorn Sheep habitat in Figure 3.1. However, the requirement on slopes greater than 40% creates numerous small areas with No Surface Occupancy stipulations. The lack of continuity of lease stipulations to protect and/or conserve surface resources within the river corridors may create an administrative problem if leases were issued. There are currently no mineral and/or geothermal leases within the river corridors.

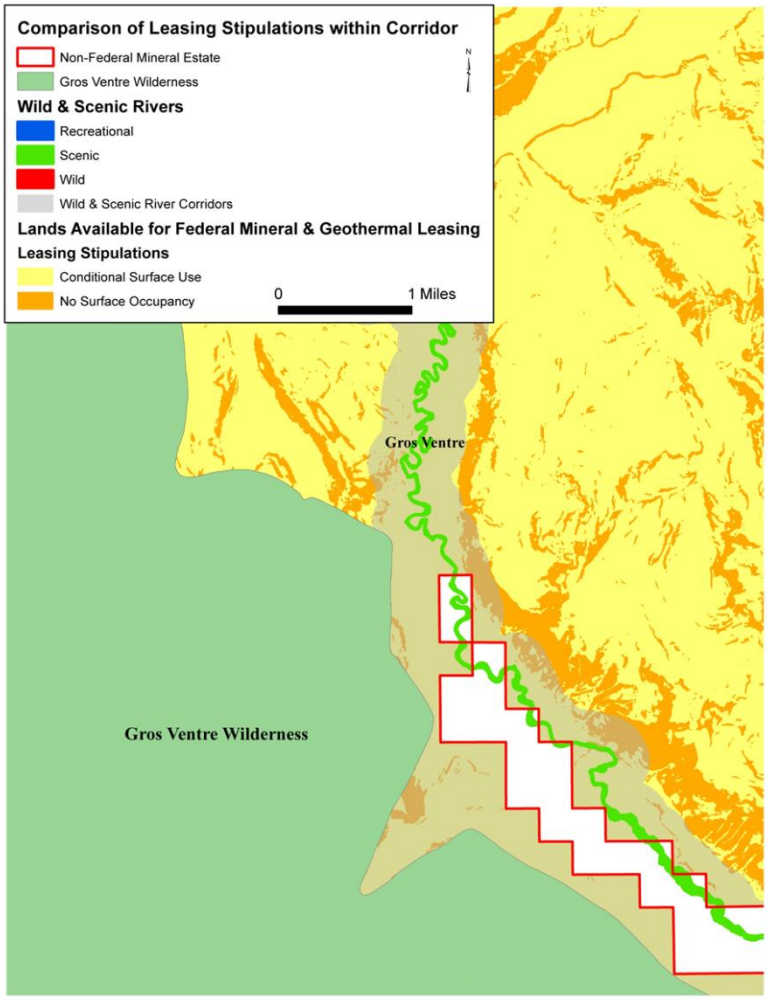


Figure 3.2
Comparison of Leasing Stipulations

Locatable Minerals

Prior to World War II, the forest experienced mining in the Wyoming and Salt River ranges, the Gros Ventre mountains, the Gros Ventre River, Blackrock Creek, Pacific Creek, and of course the Snake River (U.S. Forest Service, 2003). Mining operations consisted of placer mining in the river bottoms, and load mining in the mountains either by trenching, excavation

holes, or tunneling. After World War II, mining activities did not return to levels experienced prior to the war. Placer mining continued in the Pacific and Blackrock creeks area, the upper Gros Ventre River and tributaries, and the Snake River Canyon. It has only been in times of high gold prices has the forest experienced an increase in mining interest. The latest gold price surge has not resulted in an increase in mining interests as it has previously.

Another factor in the limited number of gold mining operations on the forest is the source and type of gold. Primarily due to the glacial activity in the area and subsequent geomorphological processes, the gold on the forest is considered flour gold. Flour gold is flaky, small, light in weight, with a large surface area. This type of gold is easily lost in a gold pan or in large or fast mining operations.

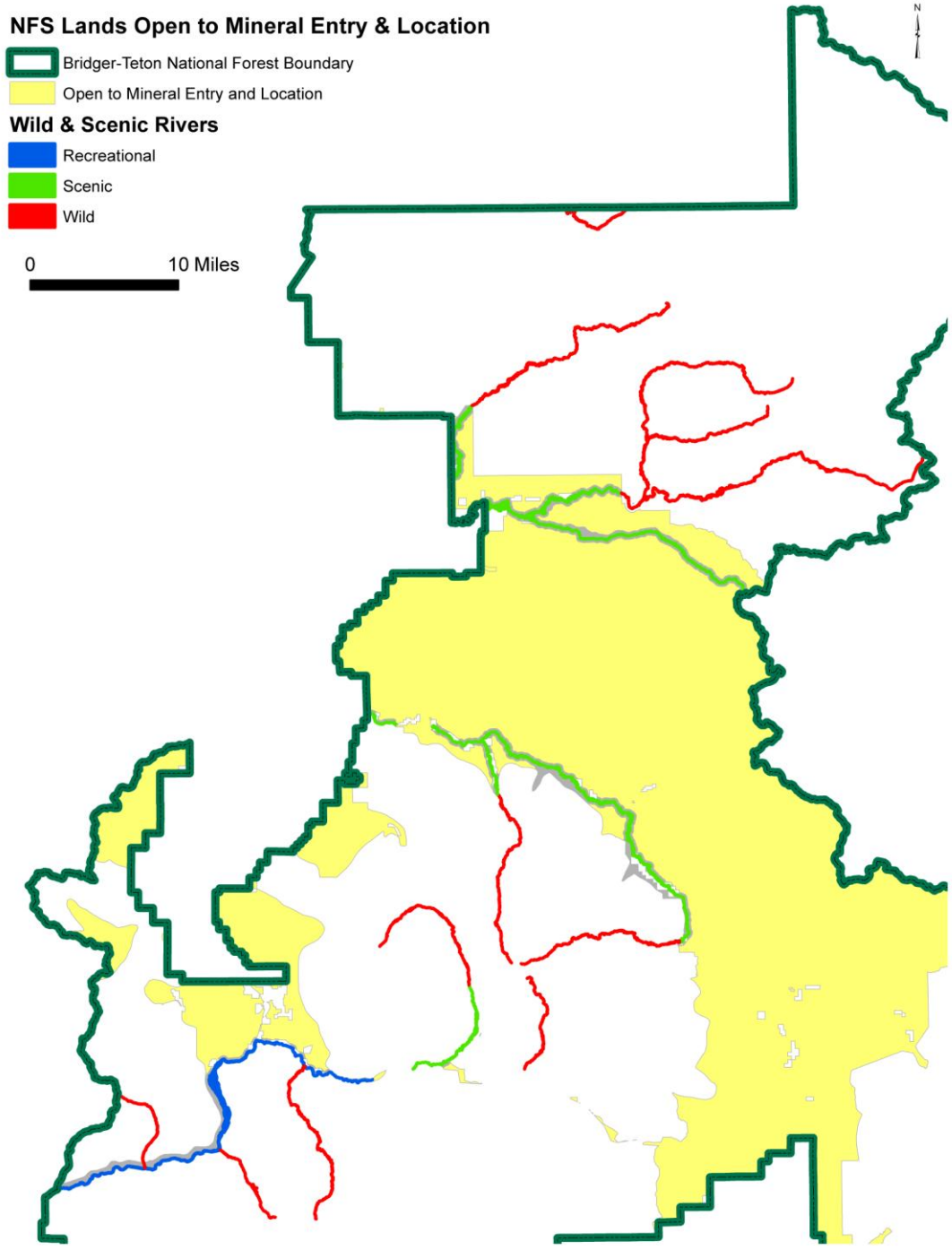
Table 3.6: Existing Acres of Locatable Minerals, BTNF & Project Area

Locatable Mineral Status	Acres	Percentage
Total B-T NF	3,465,200	100%
Closed	2,637,327	76%
Open	827,869	24%
Designated Wild & Scenic Rivers Total	93,577	3% of BTNF
Closed in the designated rivers	65,734	3% of BTNF
Open in the designated rivers	27,843	3% of BTNF

Numerous withdrawals have been enacted on the forest during the past century. For example, in the early 1900s, large areas across the American West were withdrawn for coal. Over the years this coal withdrawal has been lifted in various places in the west. To date, it is uncertain if the withdrawal was lifted on the forest, or only in specific areas. The majority of the area in question covers the Gros Ventre River, Blackrock Creek, and Pacific Creek areas. Research into the location and legal history of numerous withdrawals continues and may affect future interests in mining uses and activities on the forest.

While there have been a variety of administrative withdrawals across the forest for administrative sites, a large portion of the forest was open to locatable mineral (i.e. mining) until the 1980s when the wilderness areas were designated and closed to minerals extraction by the U.S. Congress. By the 1990s, additional areas such as the Shoal Creek Wilderness Study Area were administratively closed. With the passage of the Omnibus Public Land Management Act of 2009 that included the Wyoming Range Legacy Act and the Craig Thomas Snake Headwaters Legacy Act, approximately 2.5 million acres, or approximately 76%, of the forest had been closed to mineral entry and location (subject to valid existing rights). Approximately 24% of the forest remains open to mineral entry and location within the guidelines of the Bridger-Teton National Forest Land and Resource Management Plan, as amended and corrected.

Figure 3.3: Lands Open to Mineral Entry and Location



Approximately 60% of the newly designated Wild & Scenic River corridors are closed to mineral entry and location, as these corridors are designated wild rivers. The majority of the wild rivers are located in areas previously closed by the area being wilderness or a wilderness

study area. Bailey and Willow creeks are located outside wilderness areas, but they are located within the Wyoming Range Withdrawal Area, so the entire area is closed to mineral entry and location. The only stream to be designated wild and not located within a previously closed area is Wolf Creek. Wolf Creek is located within the Palisades Wilderness Study Area, which is open to mineral entry and location. See Figure 3.3 for project area map showing area open to mineral entry and location.

There are a total of 9 gold-placer mining claims that intersect the Wild & Scenic River corridor boundaries (see Table 3.7). All 9 mining claims are located on Pacific Creek, with 7 of the 9 located within the scenic river section and 2 of the 9 located within the wild river section. The 7 mining claims within the scenic river section are located along the river where the forest boundary is adjacent to the Grand Teton National Park boundary and up the river approximately 8-river miles. At least 3 mining claims have western boundaries that share the boundary between the forest and the Grand Teton National Park. The mining claims were located in 1976 and have been maintained ever since. The claimant has conducted a variety of exploratory and assessments work on the claims over the years. There are currently no mining operations on the claims.

Table 3.1: Existing Mining Claims within Wild & Scenic River Corridors

	Acres	Percentage
Total of 9 Mining Claims	1,475	100%
Pacific Creek Scenic River Section (7 Mining Claims)	878	60%
Pacific Creek Wild River Section (2 Mining Claims)	597	40%

The 2 mining claims that are bisected by the lower wild river section of Pacific Creek are located approximately 2 river miles up Pacific Creek within the Teton Wilderness boundary. The mining claims were located in 1976 prior to the establishment of the wilderness area, and have been maintained ever since. There are currently no mining operations on the claims.

There are a few known small, seasonal mining operations that operate on several rivers within the project area. These mining operations are limited in number, small in size, and sporadic in time and space. The typical mining operation consists of prospecting and sampling uses and activities that include removing small mineral samples or specimens, gold panning, metal detecting, non-motorized hand sluicing and small suction dredging. The actual volume of people who gold pan or conduct similar activities on the rivers within the project area is unknown because such uses are exempted from filing a Notice of Intent or Plan of Operations with the USFS per 36 CFR 228.4(a)(1), unless those operations otherwise might cause a significant disturbance of surface resources.

Salable Minerals

Salable minerals such as gravel, sand, rock, and other common variety of mineral materials are used by the forest, neighboring national parks, state departments, and local communities for the development and maintenance of roads, highways, general construction, and numerous development projects. The majority of sites on the forest are gravel pits. Only a

few of the gravel pits, such as Fisherman's Creek and Blackrock gravel pits are greater than 15-acres. The remaining gravel pits are considered small in size and use.

Table 3.8 is a summary of gravel pits located within the scope of this EA. There are approximately 130 acres of NFS lands within the Wild & Scenic Rivers corridors that are currently disturbed and used as a gravel pit source. The Wyoming Department of Transportation is using the four main gravel sites for the construction, reconstruction, and maintenance of highways in the area. These sites are typically located within the Right-of-Way for the highway. The Forest Service has several gravel pits in the Gros Ventre River corridor. These sites are sporadically used for maintenance and construction of the Gros Ventre Road. Only the Slate Creek pit still experiences regular use and the rest are reclaimed.

The Forest Service has discretionary authority to approve or deny salable mineral projects on a case-by-case basis. It is the policy of the USFS to make materials available where reasonable protection of other resources is assured and where removal is not prohibited. Removal of such materials is prohibited within the boundaries of designated wilderness areas and designated wild rivers.

Table 3.2: Existing Acres of Salable Minerals in Wild & Scenic River Corridors

	Acres	User
Recreation		
Snake River		
Wolf Creek Staging Area	9	Federal Highway Administration
Astoria Borrow Pit and Staging Area	15	Federal Highway Administration
Scenic		
Gros Ventre River		
Slate Creek Pit	8	USFS
Devil's Dip	<1	USFS
Cottonwood Creek	<1	USFS
Fish Creek Feed Grounds	<1	USFS
Blackrock Creek		
Blackrock Pit	85	Federal Highway Administration
MP 19.25 Pit	10	Federal Highway Administration

Chapter IV: Environmental Effects

Introduction

The National Environmental Policy Act (40 CFR 1500-1508) mandates that environmental assessments disclose the environmental impacts of proposed federal actions. In this case, the proposed federal action is an amendment to the Bridger-Teton National Forest Land and Resource Management Plan (Forest Plan) with the addition of a goal, an objective, a new Management Emphasis statement, redefined Desired Future Condition 3, revised Standards and Guidelines, and an additional monitoring program as proposed in Chapter 2.

Along with considering the direct and indirect effects of this proposal, a description of the cumulative effects is required; e.g. how will these proposed Forest Plan Amendment elements add to or ameliorate effects of other past, present and reasonably foreseeable changes and actions. Below is the list of actions considered in that discussion.

Programmatic Changes:

- Wildland Fire Amendment
- Lynx Forest Plan Amendment
- Bighorn Sheep Viability Analysis
- Aquatic Invasive Species Special Order
- Wolf Delisting
- Travel Planning (Subpart A)
- Sage Grouse Amendment

From Schedule of Proposed Actions: (site-specific actions)

- Alkali Creek Elk Feedground reauthorization
- Gaffney Irrigation Ditch Management—Buffalo Fork
- Reissuance of rights-of-way, water lines, pipelines, pasture permits, communication sites—Jackson and Blackrock Ranger Districts
- Gros Ventre and Granite Creek Allotment Management Plan Revisions
- Pritchard boat ramp
- Travel Planning (Subpart B implementation)
- Hoback and Bryan Flats Fuels project implementation
- Stream restoration projects on private lands along the Gros Ventre River and Crystal Creek

Overall: Climate and Hydrologic change

This chapter summarizes the potential changes to the physical, biological, and social environments of the affected project area due to implementation of the proposed action.

Hydrologic/Geologic Resources

Environmental Consequences

The issue addressed is in regard to the effect of new management direction on free-flowing character and hydrologic function, including water quality. Because the geologic resources referenced in Chapter 3 above are water-related, such as springs, waterfalls, thermal areas and river-eroded landforms, those resources are considered in tandem with these hydrological effects.

Effects of the Alternative 1 (No Action)

The following Goals and Standards are Forest-wide, rather than specific to DFC 3 or 6. While these have not been shown elsewhere in this document, they direct current management and would continue as management direction under both alternatives.

Goal 4.3(c): Protect and rehabilitate riparian areas to retain and improve their value for fisheries, aquatic habitat, wildlife, and water quality.

Goal 4.7(b): Retain or enhance riparian vegetation, stream-channel stability, sensitive soils, and water quality where livestock are present.

Goal 4.1(b): Design roads and structures to retain soil, visual resources, and water-quality values.

Natural Drainage Channel Standard: The natural drainage channels of any stream will be protected during building activities. Following building activities, stream channel will be returned to the original width, depth, gradient, and curvature. Culverts will be installed to minimize stream transition and, where needed, retain natural flow characteristics. (page 133 of the Forest Plan)

Water Development Standard: Channel condition will be determined and instream flows will be measured along with other measurements on selected second- or higher-order streams in response to hydropower development, reservoir construction, anticipated adjudications, or other proposals which have the potential of affecting water quantity, quality, or flow regimes. [Also see R-4 Supp. to Watershed Supp., FSM 2531]

Reserved Water Right Standard: A federal reserved water right will be asserted for water needed for programs of watershed management, timber management, fisheries habitat, and fire protection. A reserved right will also be used to acquire water needed in the form of instream flow sufficient to maintain stability of the stream channel for the purposes of securing favorable conditions of water flow and protecting against the loss of productive timber lands (page 136 of the Forest Plan).

"Federal reserved water rights or water rights reserved under federal law are for water absolutely necessary for the purposes of a federal reservation. It is based on the premise that when congress establishes a reservation of federal land it also reserves the water necessary to accomplish the purposes for which the land was reserved. Federal reserved water rights are not

subject to state law or state administration. For example, most National Forest System land in Region 4 was reserved by Presidential Proclamation under the Organic Act (2541.01(5), 2541.21). The U.S. Supreme Court has interpreted the primary purpose of the forest reservations under the Organic Act to be timber production and favorable conditions of water flow. Federal reserved water rights can be based on present and future uses (2541.1). Claims for these water rights must be accurate and with documentation supporting the claim. Claim water for purposes listed in the manual which includes administrative sites, fire protection and control, road construction and maintenance, irrigation of tree nurseries and seed orchards, pack and saddle stock, and instream flows. Remember, water associated with these claims must be for, or directly tied to, the purposes of the Organic Act."

State Water Right Standard: The State of Wyoming will be applied to for water rights in the name of the federal government for those uses of water needed to maintain the multiple uses of the [B-T NF] (page 136 of the Forest Plan).

The effect of these existing Water Rights standards with the congressional designation will be that, for both alternatives, a quantification process for state water rights application will ensue following the completion of the CRMPs and the collection of a sufficient amount of data to make that application.

Water Quality

Under the No Action Alternative, state water quality standards would be required to be met per the Forest Plan Water Quality Standard. According to Wyoming's Anti-degradation Implementation Policy, *(a) Water uses in existence on or after November 28, 1975 and the level of water quality necessary to protect those uses shall be maintained and protected. Those surface waters not designated as Class 1, but whose quality is better than the standards contained in these regulations, shall be maintained at that higher quality. However, after full intergovernmental coordination and public participation, the Wyoming Department of Environmental Quality may issue a permit for or allow any project or development which would constitute a new source of pollution, or an increased source of pollution, to these waters as long as the following conditions are met:*

(i) The quality is not lowered below these standards;

(ii) All existing water uses are fully maintained and protected;

(iii) The highest statutory and regulatory requirements for all new and existing point sources and all cost effective and reasonable best management practices for nonpoint sources have been achieved; and

(iv) The lowered water quality is necessary to accommodate important economic or social development in the area in which the waters are located. (WDEQ, 2007)

With the passage of the Act, the Forest Service is responsible for assuring anti-degradation of water quality even though the State would allow it under their regulations. This is also true for both alternatives.

Stream Channel and Riparian Conditions

Road and trail crossings would usually be constructed to pass design flows, but Forest Plan direction does not require it. Nor does it require sizing crossing structures to accommodate bank-full channel dimensions so that sediment and debris may be passed. Aquatic organism passage is being incorporated as required National Direction for design standards in the Bridges and Drainage Structures Handbook (Dan Duffield, pers. comm., January 30, 2012).

Riparian area conditions would be protected and maintained as a Forest Plan Goal [Goal 4.3(c)] and per mandatory adherence to state BMPs (as a minimum) under the Memorandum of Understanding between the Wyoming Department of Environmental Quality and the USDA, Forest Service Rocky Mountain Region and Intermountain Region.

Wetlands would be protected under Executive Order 11990, and floodplains would be managed in accordance with Executive Order (E.O.) 11988.

Corridor boundaries would continue as mapped in Forest Plan DFC 3, and for rivers determined eligible under Amendment Two, with ¼ mile on each side of the river.

Water Quantity

Existing diversion structures and impoundments on Recreational Class rivers are allowed to be maintained as long as rivers are left largely natural-looking and riverine. Valid existing water rights are honored. Mining is allowed, subject to Forest Service permitting requirements and mineral entry availability. On Wild and Scenic Class rivers, water developments, flood control, irrigation, or hydroelectric structures are prohibited under existing direction. Developments are also prohibited on river segments within Wilderness areas.

All existing water rights are protected. New diversions or structures described above are not allowed on Scenic or Wild Class rivers. This preserves the "free-flowing condition" of these streams by which they were determined eligible for designation. This ensures adequate water is left in eligible segments to support outstandingly remarkable values, and stream channels would not be disturbed by facilities associated with diversions or flood control works.

Cumulative Effects

Among the listed past, present and reasonably foreseeable actions, Travel Planning, Allotment Management Plan revisions, and stream restoration projects will all have some bearing on hydrological resources. Travel Planning efforts currently underway require an analysis of the existing roaded travel system relative to the resources needed and resources available for maintaining that system. Recommendations will likely include a number of right-sizing proposals to highlight the routes deemed necessary to providing for the Forest mission. Once that is finished, remaining routes will also more likely receive the maintenance and deferred maintenance attention that will provide better resource protection, especially relative to erosion and culverts. The No Action alternative would rely on the expected hydrological benefit of this work to create any new protections against the known impacts of roads on waterways.

Allotment Management Plan revisions for both the Gros Ventre and Granite Creek allotments provide opportunities for analyzing the ability of existing management to move range and forage

toward desired condition. The No Action alternative would rely on existing allotment-wide monitoring to provide understanding of needs along designated segments. Since allotments typically extend far beyond the ¼ mile corridor, data can be diluted.

Because the water resources project standard in the No Action alternative is the same in scenic classified segments as in wild segments, restrictions may continue to be too stringent for habitat improvement projects such as those proposed along the Gros Ventre or Crystal to be permitted.

Climate change effects that are already apparent can be expected to have continued influence on hydrologic resources. More extreme heavy rainfall events and floods will change channel morphologies, especially in downstream 'response' reaches. Longer and more severe droughts between rains will create additional stress on wetland and riparian areas. Less winter snowfall and earlier peak runoff will affect water quality and quantity.

Effects of Alternative 2 (Proposed Action)

New standards, guidelines and monitoring would create a beneficial effect for the free-flowing characteristics and water quality of designated segments. New standards that might protect identified geomorphic features such as braided channels are included in the discussion below. Scenery standards would also apply to geomorphic features that are identified as outstanding, but are analyzed in the Scenery section. The proposed boundary changes better describe landslides and spring sources as well as a hydrologically-connected lake to ensure the protections of designation apply to the dynamic interactions between waterways and their surrounding geology.

Overall Designated River Standards (DFC 3B, 3C, 3D)

Administrative Structures and Facilities Guideline: Limiting the footprint of developments to existing developed areas would reduce the amount of new adverse impacts to riparian hydrology, soils, and vegetation, thus protecting more riparian function (eg., sediment transport and deposition, floodwater storage, riparian vegetation maintenance, water table maintenance), as well as the associated stream channel.

Aquatic Habitat Guidelines: Because of the connection between riparian areas and their adjacent streams, the Aquatic Habitat Guidelines include direction for maintenance and/or restoration of riparian and floodplain areas. Healthy riparian areas and floodplains provide prolonged water supplies to streams and riparian areas during summer, stabilize channels that depend on vegetation for bank stability, moderate changes in stream temperatures, filter sediment, and provide other benefits to aquatic and riparian ecosystems. They are also more resilient in the face of climate change. This would not change grazing management direction compared with the No Action Alternative.

Stream Crossings Standard: Road and trail crossings would be required to adequately pass aquatic organisms, stream flows, large wood, and sediment without adversely impacting bank-full channel characteristics under the Stream Crossings Standard. This not only benefits streams and aquatic organisms by allowing streams to function properly, but also prolongs the life of crossing structures; when they are adequately designed, they last longer and require less

maintenance. Adequate sizing would also accommodate landslides, which are a common occurrence in the Headwaters.

DFC 3B

Water Resources Projects: Existing diversion structures and impoundments would be allowed to be maintained as long as they are protective of free-flow and outstandingly remarkable values. New projects may be considered and existing water rights would be honored. Mining would be allowed, subject to Forest Service permitting requirements, including environmental analysis. There would be the potential for new developments, but DFC 3B and Overall Standards and Guidelines meet the purpose of the Act by emphasizing channel shape and function, as well as free-flowing conditions to prevent any adverse impacts to desired and healthy aquatic functioning.

DFC 3C

Water Resources Projects: Valid existing diversion structures and impoundments on Recreational and Scenic rivers would be allowed to be maintained using methods protective of remaining free-flow, water quality and outstandingly remarkable values. New projects may be considered and valid existing water rights would be honored. There would be the potential for new developments and activities, but DFC 3C and Overall Standards and Guidelines meet the purpose of the Act by emphasizing channel shape and function, as well as free-flowing conditions to prevent any adverse impacts to healthy aquatic functioning and ecosystem resilience.

DFC 3D

Water Resources Projects: No new projects may be considered but valid existing water rights would be honored. Valid existing claims and leases would be honored, subject to strengthened Forest Service permitting requirements, including operational requirements. No new developments would be allowed on these river segments, which is a beneficial effect for hydrology as it precludes potential activities such as vegetation removal, soil compaction and road building which could otherwise adversely impact hydrologic resources and functions.

DFC 6

No new projects may be considered, and valid existing water rights would have new specifications regarding maintenance that will protect identified river values, including hydrological function. Valid existing claims and leases would be subject to additional Forest Service permitting requirements. No new developments would be allowed on these river segments, which is a beneficial effect for hydrology as it precludes potential activities such as vegetation removal, soil compaction and road building which could otherwise adversely impact hydrologic resources and functions.

Monitoring

Stream Bank Stability: Along with other MIM indicators (e.g., stream bank stability,, cumulative bankfull width distribution, woody species use, woody species age class)), changes over time may be assessed with repeat sampling. With some indicators—specifically woody

species use—short-term impacts may be assessed to adjust management, or to see if short-term impacts could be leading to long-term degradation. These MIM indicators would help in assessing for maintenance of floodplain access by overbank flows; channel dimensions/shape (width, depth, and the ratio between the two); presence, species, condition, and continued recruitment of hydric vegetation, including sources of large wood. Because water quality is tied to riparian area conditions, as described above, these indicators will also tie to water quality from nonpoint sources in riparian areas along the Wild and Scenic Rivers. With this proposed additional monitoring, detecting and correcting riparian and stream channel issues and, in turn, water quality issues, would more readily occur under the Proposed Action as compared to the No Action Alternative.

Corridor Boundary

Several proposed additions in Alternative 2 would include geologic/hydrologic values, and therefore offer better protections to those resources under the proposed Management Emphasis and standards. Four large landslides are included, at Bailey Lake, Beaver Mountain, Upper Slide (Gros Ventre) and Crystal Creek, which provide visible evidence of the active nature of this landscape. The multiple sources of both Pacific Creek and Granite Creek are better represented with the proposed boundary than under the No Action Alternative. For Granite Creek, this allows for inclusion of Turquoise Lake, a high elevation tarn geologic feature. For Pacific, this includes the National Geologic Landmark of Two Ocean Divide.

Cumulative Effects

Among the listed past, present and reasonably foreseeable actions, the Wildland Fire Amendment, Travel Planning, Allotment Management Plan revisions, and stream restoration projects will all have some bearing on hydrological resources. Because the fire amendment allows more Wildland fire to play its natural ecological role across national forest system lands, it theoretically creates more resilience in the system as current high fuel loads begin to return to fuel loads that might create more frequent but less intense fires. By allowing for more fires to burn rather than requiring management suppression, the amendment also provides for less potential damage from suppression activities such as the use of heavy equipment near or in sensitive ecological areas. The proposed action would add to the potential hydrological benefit of that amendment.

Travel Planning efforts currently underway require an analysis of the existing roaded travel system relative to the resources needed and resources available for maintaining that system. Recommendations will likely include a number of right-sizing proposals to highlight the routes deemed necessary to providing for the Forest mission. Once that is finished, remaining routes will also more likely receive the maintenance and deferred maintenance attention that will provide better resource protection, especially relative to erosion and culverts. The proposed action would add to the expected hydrological benefit of this work.

Allotment Management Plan revisions for both the Gros Ventre and Granite Creek allotments provide opportunities for analyzing the ability of existing management to move range and forage toward desired condition. Because the desired conditions (and ecological functions) of the designated river corridors would be more clearly described under the proposed action, these revisions would also be expected to provide a positive cumulative effect.

Stream restoration projects along the Gros Ventre River and Crystal Creek will need to undergo a Section 7 analysis under the WSRA. Because the water resources project standard in the proposed action acknowledges the potential for these kinds of actions to correct historical deviations from the desired ability of waterways to provide their natural system benefits, the amendment would create the basis for analysis of such restoration proposals. Hydrological resources would be, however, only one of the values analyzed, and all identified river values must be protected in order for those projects to move forward.

It is unknown at this time what effects the Forest Plan Revision could have, so it cannot be said whether or not this proposal will add to hydrological outputs or aquatic system benefits that may be provided in that revision.

Climate change effects that are already apparent can be expected to have continued influence on hydrologic resources. More extreme heavy rainfall events and floods will change channel morphologies, especially in downstream 'response' reaches. Longer and more severe droughts between rains will create additional stress on wetland and riparian areas. Less winter snowfall and earlier peak runoff will effect water quality and quantity. The specifications and management direction in the proposed action are intended to offset some of these accelerated impacts in order to allow natural systems to adjust.

Scenic Resources

Environmental Consequences

Issues addressed by the analysis in this section include the effect of proposed management direction on:

- Silvicultural practices—fuels and harvest projects
- Aquatic resources—bank stabilization projects
- Visitor opportunities—recreation and non-recreation facilities, scenic feature protections
- Roads and facilities—maintenance materials, locations

Effects of Alternative 1 (No Action)

Current DFC 3 direction does not specifically account for natural variability in landscapes over time, leading to some inconsistency in interpretation of the scenic value of natural landscape processes such as fires and landslides. Visual Quality Prescriptions by classification have generally provided sufficient guidance for developments in the past, but may not cover current trends, especially for external requests. Both existing and proposed visual management would be according to (but not limited to) the *Bridger-Teton National Forest Land and Resource Management Plan*, *National Forest Landscape Management Handbook Vol 2 Chapter 1,* and *The Visual Management System USDA #462.* For both alternatives, Visual Management would be changing to an updated protocol under Scenery Management System before or during Forest Plan Revision.

Cumulative Effects

Other foreseeable projects that might affect scenery resources in the project area include Pritchard boat ramp improvements, stream restoration project proposals along the Gros Ventre, and fuels reduction projects along the Hoback. Existing Visual Quality Prescriptions should protect identified features, but allowance for ecological functions such as fire could be interpreted inconsistently by different specialists or decision-makers. If bank stabilization projects were determined acceptable under a Section 7 review, materials would need to be protective of scenery in segments where that was identified as having a scenic Outstandingly Remarkable Value.

Effects of Alternative 2 (Proposed Action)

Scenery Management Guideline: The proposed language for all designated rivers includes specific guidance regarding the dynamic nature of scenic conditions across the landscape which is not clearly allowed, or consistently applied, in the existing direction. Management actions such as prescribed burns which may be initiated to enhance ecological function or decrease high fuel loadings would be understood to increase scenic diversity and interest.

Scenery Management Perspective Guideline: The proposed guideline prioritizes scenery first as experienced from waterways. While adding a new requirement for recreation facilities projects along the rivers, or for road maintenance or timber projects in the river corridors, this creates an appropriate scenic benefit to river recreationists as they visit rivers and streams designated as part of the National Wild and Scenic Rivers system.

Visual Quality Standards: Proposed standards would remain the same for foreground features for all segments in each of the new DFC 3 subcategories as they are in current direction. Existing direction beyond the foreground is given as 3 miles beyond the river or access road or trail. Three miles is arbitrary given variation in viewshed; the proposed language varies the standard so it becomes slightly less restrictive beyond the foreground. This would allow management to be more flexible in treating middle-ground and background viewscapes, relative to actual landscape form, whether a stretch of river is hemmed in by cliffs or nestled in a broad valley. This increased flexibility would not negatively affect scenic resources, however, because the objective is related directly to how the viewshed is perceived. In DFC 6, Preservation would be maintained throughout the mapped corridor, without variation, which is slightly more restrictive, but because few projects would be proposed within wilderness, this change is not expected to have any impact.

Non-Recreation Developments and Structures Standards for DFC 3B and 3C: These structures were not clearly covered in Amendment #2 of the Forest Plan, other than to describe existing relative amounts of ‘structures’, and require any new structures to meet VQO standards. The proposed standard gives direction regarding illumination and height, as well as requiring an assessment of area character alongside VQO evaluation prior to permitting new structures. These additions should address current trends in non-recreation special uses permit requests for technology enhancements such as cell towers and offer stronger protection for the identified scenic values.

Non-Recreation Developments and Structures Standards for DFC 3D: The proposed standard is the same as in Amendment #2 of the Forest Plan and therefore the effect would be the same as in the No Action Alternative.

Monitoring

Scenery can be affected by numbers of recreationists, especially camping vehicles along corridors that create many straight lines and sharp color contrasts, and watercraft within the waterways. Proposed new monitoring protocols for recreation use numbers should effectively protect desired scenic conditions across the categories of designated rivers by providing evidence of any trends toward larger numbers of recreationists in specific areas, and by requiring management action at specific threshold numbers.

Corridor Boundary

Where corridors have been extended to include actual features identified as outstandingly remarkable values, stronger visual protection would be more secure. This applies to the viewsheds at the headwaters of Granite and Pacific Creeks, and to landslide features and exposed points of geographic interest along Crystal and Bailey Creeks and Hoback River.

Cumulative Effects

The effects of this proposal would add scenic resource benefits to other projects in the designation area. The Wildland Fire Amendment would provide additive scenic opportunities for the public to witness natural processes (even when management actions mimic those processes). When—or before—the Forest Plan is revised, scenery guidance will need to be presented using the newer Scenery Management System, with an explicit evaluation of scenic character. This system would be expected to add to the scenic protections in the current proposal.

Site-specific projects such as the proposed stream restoration activities on the Gros Ventre River and Crystal Creek will provide additional opportunities to combine the scenery requirements proposed in this amendment with other resource-benefitting projects. In the same way, the new overall guidelines for scenery proposed in this amendment will add clarity to current management direction for projects such as the Hoback and Bryan Flats fuels reduction activities.

More extreme droughts and warmer winter temperatures have stressed the native landscapes, creating areas where beetle-killed trees have reached epidemic levels and changing the visual landscape. The guidance and direction for scenery in the proposed action should add to the management flexibility required to respond to these accelerated changes while recognizing landscape variability as part of the natural system we are directed to protect.

Recreation Resources

Environmental Consequences

The issues addressed in the following analysis include the effect of new management direction on:

- visitor opportunities, stewardship and connection
- tourism businesses
- fisheries and aquatic resources
- roads and facilities

Effects of Alternative 1 (No Action)

Forest Plan standards and guidelines have thus far protected the rivers recently designated, yielding outstanding recreation opportunities. Existing standards and guidelines might not be sufficient to preserve the current diversity of recreational experiences into the future. The effects of the No Action Alternative could be negative if the current trend toward increasing regional populations combines with increasing outdoor activity participation (partly as the result of new initiatives like Get Outdoors America). These expected increases could easily push the more rustic and primitive settings toward more developed or social settings, limiting variety and removing some kinds of opportunities entirely. No current Forest Plan requirement exists to remove roads deemed unnecessary, thus unmaintained routes could also persist, resulting in continued negative resource impacts and further recreationist conflicts.

No river-specific monitoring is included in Forest Plan direction. This would dilute any information managers do collect about visitor use and trends, making it difficult to assess the need for changes along the river corridors in the designation.

Corridor boundaries would continue as mapped in Forest Plan DFC 3 and for rivers determined eligible under Amendment Two, with the ¼ mile on each side of the river.

Cumulative Effects

The Aquatic Invasive Species Special Order will help keep recreationists from degrading the fishing experience. Travel Planning requirements may result in some road mileage changes, without respect to the Recreation Opportunity Spectrum or the current diversity of recreation settings. Existing visual standards for recreation facilities would explicitly allow for the proposed boat ramp improvement project at Pritchard. Climate change modeling shows decreased future water levels across the region coupled with increased aridity, which—given typical attraction of recreation visitors to bodies of water--could funnel more people into those headwaters areas where water remains (Fishwick and Vining, 1992; Burmil, et.al., 1999). Should that happen, a leveling of the opportunity spectrum could occur, favoring the more social environments over opportunities for solitude, especially outside wilderness.

Effects of Alternative 2 (Proposed Action)

The new standards and guidelines are intended to address both current increasing population trends and the potential challenges in maintaining the diverse spectrum of year-round, river-related activities within a variety of settings. Separation of the designated segments into subcategories would help managers better protect the full range of that spectrum.

Overall Direction for Designated Rivers in DFC 3B, 3C, 3D

Below is a discussion of the effects of overall proposed new or changed standards and guidelines:

Fisheries Habitat Guideline: Generally, protections for the special cutthroat fishery would be beneficial for the recreational experience, providing ongoing areas where anglers may seek these native fish. The cutthroat fishing 'niche' offers a competitive advantage for some commercial guiding activity and an attraction for a particular segment of the recreating public which also invests in other visitor services provided in the local economy.

Aquatic Habitat Guidelines: Pertinent to recreation in this guideline is language regarding large woody debris in the channel. Current Forest Plan guidance does not speak to large woody debris at all. Specifying its importance is beneficial for those types of recreation reliant on ecological integrity, such as angling.

Road Density Guideline: A primary benefit of the new guideline is to replace a standard that is not realistic in a long, narrow DFC (DFC 3 in the Forest Plan). The revised guideline includes both access to sites and the recreational value of travel itself; this benefits recreationists. This guideline would also encourage removal of unnecessary and illegal roads from the corridors, helping remove confusion and potential conflicts.

Non-Recreation Structures and Facilities Guideline: Current guidance applies only to roads, utilities, structures and recreation facilities. Recreation facilities are addressed separately for the new DFC areas, giving a larger range of options for recreation settings. New guidance for administrative facilities would help protect the recreation experience by limiting development locations, avoiding potential spread into or along river corridors.

Road Improvement and New Road Building Standard: Under current management direction, no requirement exists to coordinate road improvement projects with the Recreation Opportunity Spectrum mapped for an area. The existing direction is too general to be consistently applied. This new standard would protect the desired setting, and the range of settings, helping to avoid development creep. This is a primary objective of wild and scenic designation, as designed into the tripartite classification system given by Congress. The range of opportunities and settings is also the primary criterion for considering recreation as an outstanding value across the Headwaters system, so preserving this diversity creates a beneficial effect.

Scenery Management Perspective Standard: The on-river recreational experience will be given priority over the scenery from a road. This is a benefit to river recreation in designated corridors; the viewshed as seen from roadways and other viewpoints will continue to be a primary perspective for non-designated waters and will provide plenty of options for those who drive for pleasure. Scenery from trails and roadways along designated segments will still be protected by the Visual Quality requirements listed in the DFC subcategories.

Current overall DFC 3 guidance that would no longer be included in DFC 3B, 3C and 3D

Trail system guideline: This is sufficiently addressed in overall Forest Plan direction; redundant. Removal will have no effect.

Standard Maintenance level Guideline: This is sufficiently addressed in *Trail Maintenance Handbook* and tracked clearly with Trail Management Objectives. Removal will have no effect.

Trail Density Guideline: It has been unclear what this information tells us about recreation impacts on wildlife or the recreation experience; other resource indicators specified in the monitoring plan will provide information about when recreation use would be creating impacts within the river corridors. Removal will have no effect.

Encounters per Day Guideline: This guideline was developed for land-based application; on rivers, visitors typically move in same direction at same speed. There is no need to aim for a minimum of 6 parties in any segments; in the lower Snake River, 15 parties may readily be encountered. This proposal will instead use indicators to determine impacts, such as a sense of crowding. Removal will have no effect.

Effects by DFC Subcategory

Below is a discussion of effects of standards proposed for specific desired future condition subcategories:

DFC 3B: Snake River (Recreational):

Dispersed Camping: The proposal would not change current management, as expressed in Special Orders 04-03-317 and 04-03-319, restricting dispersed camping between May 1 and Labor Day, and prohibiting camping in boat launch areas. It does not include new vehicle setbacks because river banks in this segment are often quite distant vertically from the road, highway guardrails limit the ability to pull off the road, and the limited amount of off-season use is not expected to create negative impacts.

Recreation Facilities and Structures: This standard in Amendment #2 of the Forest Plan does not give clear direction about future management. Under Alternative 2 new campgrounds would not be placed in this particular segment. This restriction recognizes existing terrain limitations, and the need to protect riparian areas and Bald Eagle habitat from additional disturbance. By focusing recreation funding on the existing facilities, this also provides recreationists the benefit of retaining high-quality opportunities.

Improved Fords: No improved fords (ie. developed by Forest managers with gravel placement or other bank stabilizing efforts) currently exist and no current guidance is provided regarding new ones. This standard would better protect river channel and stream bank integrity and avoid conflicts between land-based and on-water recreation experiences.

River Permits: The new standard would follow the 2002 Snake River Recreation Plan, limiting both outfitter-guide uses and public group sizesto protect all of the identified river values from potential impacts. No difference in effect would be seen with the Proposed Action.

DFC 3C: All Scenic Classified segments, plus Hoback, Recreational segment

Dispersed Camping: Current Special Orders 04-03-317 and 319 include the designated segment of the Hoback River, prohibiting dispersed camping within ½ mile of the waterway from May 1

through Labor Day annually. Special Order GYCC-6 requires the same recreational livestock setback proposed in this Amendment. The proposed new 100-foot vehicle setback would likely curtail potential future impacts, and potentially heal current compaction of soil, loss of vegetation, and increased sedimentation and pollution into water from vehicle use associated with dispersed camping. This includes both full size camping and highway vehicles and motorized recreational trail vehicles that are increasingly brought by campers. By requiring vehicles to stay 100 feet from riverbanks, managers expect that tents and fire rings will typically remain closer to the primary camp vehicle than to the water, yielding both resource and scenery benefits along the rivers and streams. Another benefit is a decrease in potential conflicts where campers tend to use the same places necessary for river floaters as launch or take-out sites. Implementation of this standard could be done through annual evaluation and production of district Motor Vehicle Use Maps. On-the-ground implementation would require yearly attention to visitor contacts, public information, signing, and design solutions. The visitor contacts and public information would also provide opportunities for learning more about rivers within the entire Snake River Headwaters system. In a baseline survey done in 2012, while some popular sites in these corridors would need to be moved back, only 3 currently acceptable sites out of 80+ surveyed would be lost due to landscape restrictions, resulting in a minor negative effect to recreationists. That impact could readily be compensated for simply by camping in a more suitable location.

Recreation Developments: The requirements of the Wild and Scenic Rivers Act that were reiterated in Amendment #2 of the Forest Plan for rivers with Scenic classification would remain in effect for most segments in this category. The new standard requires a direct tie to the desired setting, which includes the DFC description and the Recreation Opportunity Spectrum map review. For the recreational Hoback River, inclusion in DFC 3C mirrors its current condition. Most respondents throughout the early public sensing phase of this planning effort expressed a desire to keep things as they are. However, new recreation developments are allowed in this category, and may be appropriate on the Hoback to facilitate publicly-expressed desire for improved access while protecting ecological resource values. This standard creates a potential positive impact on the recreation resource and for recreationists visiting the area.

River Permits: The Bridger-Teton National Forest 2012 Outfitter-Guide Needs Assessment addresses the existing permits standard for DFC 3 by providing an assessment of current uses and needs across the Forest. The proposed new standard adds Wild and Scenic Rivers-specific screening criteria beyond the standard special uses checklist for new permits and would ensure that only proposals with high potential to enhance the recreation experience or other identified values of the designated segments would receive further consideration. This additional requirement would benefit recreationists by raising the standard for commercial providers. No numeric limits are created by this proposal, therefore no loss of economic opportunity is expected.

Fords: No current guidance exists regarding new fords. This standard will assist managers in protecting the water quality and river values while planning for the minimum transportation plan or proposing re-routes. This offers a beneficial effect, especially for water-based recreation.

DFC 3D: Willow and Bailey Creeks (Wild):

Dispersed Camping: The stock setbacks are consistent with current direction in Special Order GYCC-6 so no new effects on dispersed camping are expected.

Recreation Facilities: No current facilities, other than trails, exist within the corridors. Trailheads and parking for both of these areas are outside the wild segments. The mouth of Willow Creek (lowest ¼ mile) is included in DFC 3C, along with the Hoback River. The new standard clarifies the difference between facilities and structures. Where simple structures can provide protections for other identified values, they will be allowed and would also offer a beneficial effect for recreationists. For example, bear poles facilitate separation of food attractants from potentially dangerous wildlife.

River Permits: The 2012 Outfitter-Guide Needs Assessment addresses the existing permits standard for DFC 3. The proposed new standard adds a Wild and Scenic Rivers-specific screening criteria beyond the standard Special Uses checklist for new permits and would ensure that only proposals with high potential to enhance the recreation experience or other identified values of the designated segments would receive further consideration. Recreation event proposals would be redirected to more suitable locations to retain the sense of solitude and self-reliance important to the portion of the recreation spectrum identified as desirable in these corridors.

Fords: Amendment #2 of the Forest Plan only addressed bridges, which would continue to be allowed for resource protection. While ford design is covered in the Forest Service trail management handbook, no current guidance exists regarding whether new fords are allowed. A number of fords currently exist on designated trails and would need to be inventoried to provide the baseline to meet the intent of this new standard. This standard would assist future managers in protecting the water quality and river values while allowing for continued trail use.

DFC 6: Wild Sections within Wilderness & Wilderness Study Areas

River Permits: The 2012 Outfitter-Guide Needs Assessment addresses the existing permits standard for DFC 3. The proposed new standard adds a Wild and Scenic Rivers-specific screening criteria beyond the standard Special Uses checklist and would ensure that only proposals with high potential to enhance the identified values of the designated segments would receive further consideration. Recreational event proposals would be redirected to more suitable locations to comply with existing policy and retain the sense of solitude and self-reliance important to the portion of the recreation spectrum identified as desirable in these corridors.

Fords: Amendment #2 of the Forest Plan only addressed bridges, which would continue to be allowed for resource protection. No current guidance exists regarding new fords. A number of fords currently exist on designated trails and would need to be inventoried to provide the baseline to meet the intent of this new standard. This standard would assist future managers in protecting the water quality and river values while allowing for continued trail use.

Monitoring

The proposed indicators below will help assess potential impacts to or from recreationist behavior or numbers, and the thresholds are expected to prevent any degradation (below 2009 levels) of conditions or functions (refer to Indicators and Thresholds shown in Chapter II; baseline conditions are described in Chapter III). This section discusses specific potential effects of the new proposed monitoring.

DFC 3B

Watercraft per Day: This indicator is already being monitored here as per the 2002 Snake River Recreation Plan. The proposed threshold is the same. This threshold has been adequately protecting the identified outstandingly remarkable values for recreation in this river segment.

Parking Area Capacity: This is a new indicator to monitor, allowing for high-use season and holiday/weekend numbers to occur without triggering more restrictive management actions. It will help determine when actions may be needed to avoid negatively impacting the experience, due either to frustration over the ability to access a desired area or to increased conflicts in an area due to crowding. It is readily collected as long as seasonal staffing remains at current levels.

To avoid adverse impacts to identified river values associated with recreation and ecological/wildlife values, monitoring should focus on the following locations.

- Total number of watercraft passing by selected locations – Pritchard boat ramp (with emphasis on number of watercraft observed prior to 10 am), Lunch Counter/Kahuna rapid, Sheep Gulch boat ramp
- Number of days existing vehicle access areas at selected locations are full – Pritchard ramp parking area, Lunch Counter parking area, West Table parking area

DFC 3C

Watercraft per Day: This has not previously been monitored on any of the four rivers listed. The Hoback threshold is based on the number of currently authorized commercial watercraft plus an equal number of private craft. It is expected to offer future managers an early warning sign of potential other resource impacts that might be happening where limited developed launch or take-out sites exist.

Dispersed Campsite Occupancy: A map and tally sheet of existing traditional-use dispersed sites would become part of the regular patrol-day workload in these segments. The threshold is set at 80% to establish when visitors may become frustrated at the lack of potential camping choices in these corridors. The threshold for the Buffalo segment is lower because of its more limited opportunities; managers may need to take action sooner. Access routes longer than 300 feet were added to the transportation system under the North Zone Travel Management process that created the current Motorized Vehicle Trail Map; shorter routes will still be evaluated and this indicator will help with that assessment.

Parking Area Capacity: Hoback River and Crystal Creek fishing pullouts are frequented by bank anglers and this indicator will provide similar information to the watercraft indicator above. Bank anglers can create resource impacts by trampling willows and other riparian vegetation or

by breaking down stream banks as they access the water. Monitoring these small pullouts will provide an early sign of increased use in these areas that may warrant further attention.

Campsite and Stock Impact Ratings: Impacts at dispersed sites along roaded corridors have been infrequently monitored, but were identified in the planning process as potential problem areas. Group sizes and vehicle sizes have increased over time, leading to the proposal for a vehicle setback in dispersed sites to relieve direct soil and vegetation impacts and protect water quality. This indicator will help monitor the effectiveness of the new standard. Blackrock Creek and the Hoback River are less likely to see impacts than the other corridors in this category, so the focus will be on monitoring in Pacific, Buffalo, Granite and Crystal creeks, and the Gros Ventre River. It is important to note that the baseline for the non-degradation standard is the condition at the time of designation (or as near to that time as we can collect data).

DFC 3D:

Watercraft per Day: New pack rafting technology has found its way to Willow Creek, and monitoring this indicator here will give managers a chance to track potential increases in this activity and determine if a closer look at other impacts may be needed in the future. This creek is also mentioned in a recently released online guide to area pack rafting opportunities.

Campsite and Stock Impact Ratings: The limited number of suitable campsites in the two corridors increases the aesthetic effect and ecological importance of any sites in less-than-ideal condition, which is why the threshold is so close to the wilderness threshold.

DFC 6:

Watercraft per Day: The indicator will allow managers to assess whether the fairly new pack rafting technology takes off as a wilderness mode of travel. The threshold is set to allow for an overall monitoring effort that will first help pinpoint where this activity might be occurring most. If the threshold is met in the future, managers can establish stronger monitoring protocol just in those specific locations.

Parking Area Capacity: Although technically the Wolf Creek trailhead is within a DFC 3B management corridor, it is the primary access into a DFC 6 corridor and is readily monitored. This trailhead area is now plowed by WYDOT and some public concern has been expressed about the impact of increased winter motorized use on wilderness character within the Palisades Wilderness Study Area accessed along this creek. This site will be monitored so that the threshold can be assessed in the winter as well as during the snow-free seasons. Again, this indicator alerts managers regarding amounts of use and when further investigation into potential impacts should be considered.

Corridor Boundary:

Because these corridors have been protected with an interim boundary of ¼ mile from ordinary high water on both sides of the waterway since the 1992 Amendment #2 (or earlier, in some cases), the basic proposed corridor boundary would be the same, with expected effects described above. DFC 3 with a theme of River Recreation is already established to protect the recreation resource, as understood twenty years ago. Today's recreationists and scientists better understand the connection between intact natural resources that can sustain the settings and opportunities to protect and enhance a variety of recreation experiences into the future. The changes proposed better address that more holistic vision of recreation within a sustainable National Forest context.

In some places the corridor boundary has been expanded slightly to encompass identified recreation-related features. At the Granite Creek headwaters, the major destination of Turquoise Lake has been included. This will allow any additional monitoring features of the Comprehensive River Management Plan to be employed in this location in the future to determine the effectiveness of the Forest Plan Amendment to meet its intent. A geologic/hydrologic feature which is also a recreational attraction, the Parting of the Waters at the Pacific Creek headwaters, has been included as well. Again, the additional monitoring provisions of the Forest Plan Amendment will keep managers in closer contact with the conditions of this important site.

In some locations the corridor boundary has been modified to match a wilderness boundary. This ensures that the stricter management requirements of a wilderness area would not (illegally) be compromised by falling into a DFC 3 area such as along the Hoback. These modifications also keep narrow management islands from occurring between the two similar management areas of DFC 3 and 6. In a small number of locations, along the Gros Ventre and Snake Rivers, the original DFC 3 corridor was wider than the quarter mile, and some of that acreage has been combined with neighboring management areas. This is not expected to cause any loss of recreation opportunity nor loss of protection for the river areas. By law, where any conflict between Wilderness management and Wild and Scenic direction occurs, the more protective requirements must be followed.

Cumulative Effects

Travel Planning (Subparts A and B)-- While current management under DFC 3 'River Recreation' and Amendment #2 for Eligible Wild and Scenic Rivers protects these waterways in terms of development levels and access, the proposal also guards against potential impacts from current trends toward larger party sizes and more motorized vehicles. The proposed standards and monitoring in this Forest Plan Amendment would add to the work included in the Travel Planning requirements to ensure existing settings do not change toward higher development levels. Direction in the proposal would also combine with the Travel Planning effort to provide higher-quality recreation opportunities for visitors who use motorized vehicles as well as those who choose to access settings away from the sounds and smells of motor vehicles.

Potential future actions identified throughout the planning effort have included suggestions such as removing old bridge structures and upgrading river access and developed sites along the Hoback, improving winter trailhead parking at Granite, and increasing interpretive opportunities along Blackrock Creek (and other segments), all of which would be allowed and encouraged

under the proposed standards and guidelines. The Pritchard Boat Ramp project has already been proposed for improvements in the Snake River recreation segment. The cumulative effects of the proposal are not expected to adversely affect the ability of the Forest Service to meet desires for new or improved recreational experiences along these river ways.

The recreation portions of this proposal would provide an additive effect with the Aquatic Invasive Species Special Order, a past action, by creating increased visitor monitoring. Climate change modeling shows decreased future water levels across the region coupled with increased aridity, which—given typical attraction of recreation visitors to bodies of water--could funnel more people into those headwaters areas where water remains (Fishwick and Vining, 1992; Burmil, et.al., 1999). The proposal includes a number of new indicators to assess impacts that potential increased visitation might have on both resources and visitor experiences, and determines a level of change in visitation that would require certain management changes in order to protect the range of visitor experiences that has been identified as an important part of the Outstandingly Remarkable Value for recreation.

Cultural Resources

Environmental Consequences

The issue addressed by this section include the effect of new management direction on cultural resources, including traditional uses by indigenous groups.

Effects of Alternative 1 (No Action)

Direct, Indirect and Cumulative Effects: Cultural Resources are not specifically cited in the Forest Plan either under DFC 3 or Amendment #2 standards, and therefore fall under Forest-wide standards for management guidance.

The BTNF Wild and Scenic Rivers Eligibility Study described cultural resources in a general sense and these values were not specifically referenced in Amendment #2 of the Forest Plan. River-related evidence of Native American travel and settlement, fur trapping, exploration, early European-American settlement, tourism, dude ranching, public lands management, and conservation activities is reflected in archeological sites, historic buildings, and cultural landscapes along the river corridors. Natural and cultural resources continue to carry cultural significance to American Indian Tribes and others to the present day. The No Action Alternative would continue to utilize guidance in the Forest Plan which has been sufficient thus far for protecting cultural resources in the Snake River Headwaters.

Effects of Alternative 2 (Proposed Action)

Direct and Indirect Effects: DFC 3B, 3C and 3D's overall direction and the DFC 6 Wild and Scenic Rivers overlay both include cultural resources within the stated list of Management Emphasis items: "Protect and enhance cultural resources as important links to the human history

of the river corridor including historical and archeological sites, cultural landscapes, and ethnographic resources."

Section 106 and Section 110 of the National Historic Preservation Act will remain the overarching legislation that will protect cultural resources or mitigate them in the case of adverse effect. The effects of Alternative 2 (Proposed Action) on cultural resources would be positive because this proposal would afford further protections to cultural resources within the Wild and Scenic River corridor. With cultural resources specified as 'outstandingly remarkable', protection or enhancement, not mitigation, are the only allowable management options. Limits would be placed on management actions and permitted uses that could cause surface disturbances. Without this protection, activities on National Forest lands could inadvertently damage or destroy previously undetected cultural resources, and some could be negatively impacted with off-site mitigation.

Monitoring

Monitoring the condition of cultural resources occurs both on a site-specific basis and on a project-specific basis. Previously recorded historic properties within the river corridors are monitored to check on the overall condition of the site, to assess any changes in site integrity, to identify possible vandalism, and to identify any natural erosional processes that may be affecting cultural resources. Project specific monitoring assesses the adequacy of protection or mitigation treatments to cultural resources affected by Forest Service and Forest Service-authorized undertakings. Given the proposed management emphasis, cultural resource surveys within the designated river corridors may receive higher priority, which will help in identifying cultural resources and establishing monitoring schedules as appropriate. Past monitoring efforts within the Wild and Scenic River corridors have not identified situations which would require corrective actions to protect cultural resources. In some cases, monitoring has shown an upward trend in the condition and/or integrity of specific cultural resources.

New monitoring proposals under Alternative 2 will help assess impacts on other resources being caused by activities that might also impact cultural resources, and therefore could indirectly add protections.

Cumulative Effects

Section 106 of the National Historic Preservation Act requires federal agencies to take into account the effects of their undertakings on historic properties. Regulations 36 CFR 800, which implements Section 106, outlines the procedures for the identification of historic properties and for consulting with the State Historic Preservation Office on the affects the undertaking may have on historic properties. With these regulations in place adding to the implementation of proposed changes, there would be a positive cumulative effect to cultural resources.

Ecological and Wildlife Resources

Environmental Consequences

The issues addressed in the following sections (Wildlife, Botanical, Range, and Silvicultural Resources) include the effect of proposed management direction on:

- Biological integrity of plant and animal ecosystems, including Threatened, Endangered, Sensitive and Management Indicator Species and their habitats
- Silvicultural practices and/or timber contractors
- Range administration and/or Livestock permittees

Wildlife

Alternative 1 (No Action)

While current management under the Forest Plan offers protection for wildlife, this alternative provides insufficient direction and protection to meet the intent of the Wild and Scenic Rivers Act, especially in regard to the wildlife river values found present during the river inventory. The focus of current direction is on game species and selected Threatened Species and would not effectively protect the full functionality of habitat for all species, large and small. Botanical resources are not fully described nor protected. Effects of the No Action Alternative on specific species and habitats are listed below.

Effects Common to All Species

The Aspen, Diversity of Wildlife Habitat, and Livestock-Riparian Grazing Standards have positive effects on almost all species' habitats and food sources. The 60-65% Forest-wide Utilization Standards limits negative effects of domestic herbivores on forage and/or cover for many wild ungulates, grizzly bears, carnivore prey, amphibians, and migratory birds.

Silvicultural practices are allowed, subject to restrictions on location (Wild Rivers—outside river corridor only), contingent upon avoiding adverse ecological or visual effects (Recreational or Scenic Rivers)... These offer some protection for most species, primarily through limiting roads and therefore increasing security and protecting water quality.

Threatened, Endangered and Sensitive Species

Canada Lynx. Silvicultural practices that may negatively affect horizontal cover for snowshoe hares are limited—a positive effect for lynx. Big game habitat guidelines promote forests that are in early stages of succession, and reduce horizontal cover, often to the detriment of lynx foraging, an effect constrained by standards in the Northern Rockies Lynx Management Direction. **Grizzly Bear.** Silvicultural practices that temporarily or permanently reduce secure habitat for grizzly bears are constrained, a positive effect. Big game habitat guidelines enhance

prey and carrion numbers for bears, and associated vegetation treatments promote forbs and grasses (spring and summer bear foods) in plant communities in early stages of succession.

Gray Wolf. Big game habitat guidelines enhance habitat of wolf prey, a positive effect.

Other Species and Habitats

Species of riparian, aquatic, forested, and meadow habitats. These include a subset of species also listed as U.S. Forest Service Region 4 Sensitive, Management Indicators on the Bridger-Teton National Forest, or identified as migratory birds of conservation concern that use the above community types: Common Loon, Trumpeter Swan, Harlequin Duck, Peregrine Falcon, Willow Flycatcher, Yellow-billed cuckoo; Long-billed Curlew, Lewis's Woodpecker, Boreal toad, Boreal chorus frog, Columbia spotted frog, and Spotted bat. These species are also excellent indicators of natural diversity and community health.

Restrictions on silvicultural activities near riparian areas and waterways help maintain water quality, riparian and hydrologic function, and woody debris; and reduce sedimentation, contaminants and incidental mortality, all positive effects for these species and/or their prey. Restrictions on human and machine disturbance associated with silvicultural activities are favorable.

Species of mature montane and subalpine forests. These include Northern Goshawk, Great Gray Owl, Flammulated Owl, Boreal Owl, Bald Eagle, Northern Three-toed Woodpecker; Townsend's big-eared bat, Pine marten, and Wolverine; these are all Sensitive or Management Indicators that reflect natural community health and diversity.

Restrictions on silvicultural activities reduce human and machinery disturbance, preserve large nest trees, day-roots, snags, and dense mature forests for raptors, bats, pine marten, and three-toed woodpeckers. Some of these species also use cottonwood riparian habitats in transitional and winter seasons and so benefit from the existing Forest-wide riparian management guidelines as well.

Big Game. These include Bighorn sheep, Rocky Mountain elk, Moose, Bison, Pronghorn, and Mule deer.

Big game habitat guidelines generally benefit these species. Restrictions on silvicultural activities in this alternative limit some opportunities for habitat enhancements, but restrictions also help to maintain habitat effectiveness and maintain habitat security for ungulates. The 60-65% Forest-wide Utilization Standards limits competition between wild ungulates and livestock for forage.

Habitats in early stages of succession. Patches of early successional habitat provide increased foraging for some insect eaters, including Cassin's Finch, Williamson's Sapsucker and Olive-sided Flycatcher. Calliope Hummingbird also utilizes these habitats.

Selective logging treatments may benefit birds, such as Cassin's finch, that use open forests, but more literature research is needed to identify which species on the BTNF may benefit from some silvicultural treatments.

Shrubland-steppe habitats. Species associated with these habitats include Pronghorn, Greater Sage Grouse, Brewer's Sparrow, and Swainson's Hawk. These Sensitive, Management Indicator, and migratory bird species are good indicators of natural diversity and health:

Grazing limits are generally beneficial to cover, forage, or prey of these species, a positive effect. Light or moderate grazing is neutral or even beneficial for pronghorn, a species that forages extensively on forbs that may respond positively to grazing (Loeser et. 2005).Fencing associated with livestock grazing may affect local movements of doe pronghorn mothers, potentially increasing coyote predation on fawns (Byers 2003), a negative effect.

Cumulative Effects

While the Lynx Forest Plan Amendment and Bighorn Sheep Viability analysis may provide some new protections that would help the Bridger-Teton National Forest better meet the intent of the Wild and Scenic Rivers Act, wolf delisting in Wyoming may lessen the ecological integrity that has been cited as part of the reason for designation of the Snake River Headwaters. Feedground reauthorizations and allotment management plan reauthorizations would provide for continuation of existing activities that may benefit some species or negatively affect others, as discussed above. Annual Operating Instructions for these permitted activities provide regular review of monitoring information and opportunities for adjustments in operations. The permit reauthorization process also offers opportunities to examine monitoring data and provide for management changes that could create an improvement over existing condition. Travel planning efforts may decrease some current levels of habitat fragmentation or human disturbances and thus provide a benefit for wildlife.

Climate change is expected to increase the intensity and distribution of large fires and may decrease the juxtaposition of old-age and young-age forests at large spatial scales which could be a negative affect for lynx. Climate change, currently producing reductions in the distribution of whitebark pine, may reduce the availability of an important seasonal food source for grizzly bears. More extreme and frequent drought and changes in peak flow timing decrease habitat suitability for moisture-dependent species such as amphibians and waterfowl. Increased ambient late spring and summer temperatures is detrimental to snowpack needed for wolverine denning and thermal regulation for Boreal Owl during the summer.

Alternative 2 (Proposed Action)

Effects Common to All Species

This alternative would provide additional emphasis on maintaining or enhancing biodiversity within designated river corridors. Changed and additional direction and protection in the overall guidance for designated segments includes the proposed Wildlife-Vegetative Habitat, Forest Health, Fencing and Crossings, Biodiversity, and Migration Corridors guidelines. Collectively, these measures would have overall positive effects on species' habitats and travel corridors. Ecological integrity and natural processes would be emphasized over the no action alternative. Under existing standards and guidelines, forestry practices are allowed unless they are expected to create adverse impacts. Under Alternative 2, the burden in analysis of future projects would lie on the proposed purpose clearly being of benefit to the ecological integrity of the linked corridors, which has been cited as Outstandingly Remarkable. Alternative 2 is designed to

enhance the resiliency of the ecosystem to better absorb climate change impacts and allow species and habitats more time to adapt, which offers a positive benefit.

Threatened, Endangered and Sensitive Species

Canada Lynx. Silvicultural practices that may negatively affect horizontal cover for snowshoe hares are more limited than in the no-action alternative, due to additional restrictions on the allowable locations, methodologies, and objectives of silviculture; that is restrictions in DFC 3A, 3B or 3C beyond those provided by the Northern Rockies Lynx Management Direction (see effects common to all species). This is a positive effect.

Grizzly Bear. Silvicultural practices that temporarily or permanently reduce secure habitat for grizzly bears are more limited, a positive effect.

Gray Wolf. The Biodiversity Guideline places a greater emphasis on biodiversity, and managing habitat to maintain native species populations and their genetic integrity at all trophic levels. Managing habitat for both predator and prey species may benefit gray wolves.

Other Species and Habitats

Species of riparian, aquatic, forested, and meadow habitats. Silvicultural activities are generally more limited than in the no action alternative, a benefit for species such as common loon, trumpeter swan, harlequin duck, peregrine falcon, and amphibians. Restrictions on silvicultural activities near riparian areas and waterways help maintain water quality, riparian and hydrologic function, and wood debris; and reduce sedimentation, contaminants and incidental mortality—all positive effects. Restrictions on human and machine disturbance associated with silvicultural activities are favorable. Silvicultural activities in DFC 3D, not allowed under existing management, would be allowed in the proposed action, but primarily for wildlife habitat improvement. Roads would still not be permitted.

Species of mature montane and subalpine forests. Versus the no action alternative, greater restrictions on silvicultural activities would improve habitat and reduce human-caused disturbance for these species. Forest species such as goshawks, boreal owls, pine marten, and northern three-toed woodpecker require mature forests and snags (often reduced by logging) for nests, nesting cavities and day-roosts.

Big Game. Versus the no action alternative, the Wildlife and Vegetative Habitat Guideline (DFC 3B-D) has less emphasis on managing river corridors for big game. Additional limits on silvicultural activities might reduce opportunities for habitat enhancements for these species, except in 3D, where habitat enhancements are not allowed in the existing standards, but would be allowed in the proposed action. Limits on silvicultural activities would also maintain ungulate security and habitat effectiveness.

Habitats in early stages of succession. Effects would be similar to the No Action Alternative.

Shrubland-steppe habitats. Existing Forest Plan utilization rate direction allows for changes whenever monitoring shows negative trends for forage and cover. No difference in effect between alternatives.

Monitoring

Ability of the proposed indicators to assess effects on wildlife and ecological resources. The proposed indicators focus almost exclusively on measures of riparian and aquatic community health, and gauge effects of forest management activities such as livestock grazing (bank alteration and forage utilization) that potentially affect these systems. All the indicators effectively accomplish this purpose—they are ecologically-based and use standardized metrics and methodology in the Multiple Indicator Monitoring System (MIMS) protocols.

The existing monitoring program for wildlife and ecological resources identified in the Land and Resource Management Plan is broader both topically and geographically in scope. Most of this monitoring is now being accomplished by Forest staff or partners. The monitoring identified in the proposed amendment is more targeted topically and geographically, and would yield specific information relative to meeting the objectives of the designation.

DFC 3C:
Campsite condition: At small spatial scales (ft^2), this indicator gauges effects of campsite use on ecological condition and habitat of species that use riparian zones and adjacent uplands such as amphibians, moose and some migratory birds.

Cumulative Bankfull Width: This metric represents the maximum width the stream attains and is typically marked by a change in vegetation, topography, or texture of sediment. It is used in combination with other measures to assess channel stability, sediment transport, potential for erosion and other stream characteristics that affect vegetation used as cover and forage for wildlife.

% Streambank Stability: Measures long-term trends in bank erosion, channel widening, sediment supply, and capability for sediment transport. Similarly to current- year bank alteration, this metric reflects cover, foraging, and humidity conditions at streamside for wildlife species that use riparian habitats.

Greenline Composition--% Foliar Cover by Species: This indicator measures the per cent coverage of live plant parts by species, leaves, twigs, stems and branches. With respect to wildlife, foliar cover indicates the amount and quality of cover and forage available to species (and their prey) that use riparian habitats. It may also reflect the long trend in the condition and diversity of the plant and animal communities as a whole, and thus is useful tool to detect the degradation of wildlife habitat.

Live-Dead Index: This index indicates whether new stems of shrubs are capable of growing through the browse zone of ungulates such as moose. A positive index indicates that shrub growth is relatively uninhibited, that is, that leaders can grow beyond the reach of browsers. A negative index indicates that shrubs are being browsed below their annual growth and their coverage (height and breadth) may be in decline due to ungulate herbivory.

Woody Species Age Class: This indicator measures the age structure of woody plants in a riparian zone. A diversity of age classes is desired. A good representation of young shrubs indicate recruitment of young and persistence of the species in the plant community.

Corridor Boundary

For several reaches of designated rivers, the proposed corridor width was increased for the protection of geological resources, ecological-wildlife resources, and recreational sites. These increases, totaling approximately 7,060 total acres at ten locations, strengthened protections (contingent upon proposed DFC), for ecological and wildlife resources. For example, extensions for geological resources such as landslides benefit amphibians that commonly dwell in sag ponds created by slumping topography. Such sites also support aspen and riparian communities with high faunal and floral diversity. The corridor along the Buffalo Fork River was broadened near the base of Rosie's Ridge to extend protections to amphibians, including the boreal toad.

Changes in DFC coverages

New DFCs 3B, 3C, 3D, and 6 were created from portions of other DFCs that emphasized management for a variety of forest uses, including recreation, resource development and extraction, public education, and wildlife conservation. Owing to the effects of their proposed standards and guidelines, the new DFCs will carry a stronger emphasis (excepting DFC 7A—grizzly bear habitat recovery) on the protection and integrity of ecological and wildlife resources than afforded by the existing DFC areas.

Cumulative Effects

Programmatic effects and the effects of ongoing or planned projects are listed according to the species or groups of species they influence. Climate change is mentioned for all species.

Threatened, Endangered and Sensitive Species:

Common to all species:

Alternative 2 is designed to enhance the resiliency of the ecosystem to better absorb climate change impacts and allow species and habitats more time to adapt, which offers a positive benefit.

Canada Lynx. The Northern Rockies Lynx Management Direction and Designated Critical Canada Lynx Habitat Areas provide protections for primary constituent elements of lynx habitat. Climate change is expected to increase the intensity and distribution of large fires and may decrease the juxtaposition of old-age and young-age forests at large spatial scales.

Grizzly Bear. Big game and trophy game management by Wyoming Game and Fish Department and Feedground re-authorizations collectively foster a consistent supply of prey and carrion for grizzly bears, a positive effect. The Gros Ventre Livestock Allotment Management Plan (AMP) revision would have the potential benefit of proposing additional ways to reduce predation by bears on livestock, such as increased supervision of herds or changes in livestock distribution that reduce bear-cattle conflicts . The new AMP therefore would be expected to provide a positive impact relative to current conditions. Climate change, producing reductions in the distribution of whitebark pine, may reduce the availability of an important seasonal food source for grizzly bears (Koteen 2002). Cumulatively, these actions will produce a positive effect on bear habitat and populations.

Gray Wolf. The Forest Plan Amendment for Wildland Fire increases the coverage of vegetation communities in early stages of succession, typically benefiting habitat of large ungulate wolf prey. On the other hand, large, high-intensity fires may reduce summer and winter thermal cover needed by moose, another prey species. The Wildland Fire Amendment, in the long-term, however, would be expected to decrease the number of high-intensity fires as fuel loads return to more natural levels. Annual Operating Instructions for permitted livestock grazing activities provide regular review of monitoring information and opportunities for adjustments in operations. The permit reauthorization process also offers opportunities to examine monitoring data and provide for management changes that could create an improvement over existing condition. The new AMPs would identify ways of reducing identified or potential conflicts through management actions, which could create a positive affect relative to existing conditions. Wolf delisting from Endangered Species Act protections will likely lead to individual losses from the area population. The WGFD will continue to manage and sustain a population of wolves as trophy game animals in this project area. Overall the combined effects of the actions above and the proposed action (biodiversity guideline) will have a positive effect on wolf populations.

Other Species and Habitats:

Species of riparian, aquatic, forested, and meadow habitats. The Forest Plan Amendment for Wildland Fire allows for sustained, large woody debris at ground level, herbaceous and shrub cover, and improved sunlight to small ponds, a benefit to amphibians and riparian birds. The Aquatic Invasive Species Special Order maintains and safeguards the integrity of aquatic and riparian systems. Travel planning, Parts A and B, indirectly limits human-caused disturbance that is particularly adverse to these species. Forest-wide, reauthorization of Elk Feedground Management retains feedgrounds in and near river corridors, which can negatively affect local shrub cover and woody debris to the detriment of amphibians. Shrubs and woody debris appear to be important sources of moist microsites and shade for boreal toads (Bartelt et al. 2004; Keinath and McGee 2005). Feedgrounds are established on or adjacent to historic crucial winter ranges, and even in the absence of feedgrounds, localized impacts would occur in these areas as a result of the natural browsing pressure of wintering elk. Localized impacts are, however, different from the watershed-scale impacts that would be considered detrimental to the ecological integrity cited as the outstanding value for the designation. Overall, the cumulative effect of the actions above and the proposed action (biodiversity guideline) will have a positive effect on these species.

The Gaffney Ditch Water Management Structure restores natural hydrology and reduces impacts on a wetland. The current Gros Ventre and Granite Creek Livestock Allotment Management Plans allows for grazing; hoof action may reduce vegetation cover and bank stability, contributing to on-site and down-stream reductions in water quality, a detriment to these species. The AMP revision process provides an opportunity to make any needed improvements identified through existing monitoring requirements, thus creating a potential positive impact. Climate change such as drought, and changes in peak flows decrease habitat suitability for moisture-dependent species such as amphibians and waterfowl.

Species of mature montane and subalpine forests. The Forest Plan Amendment for Fire allows for high-intensity wildfire at large spatial scales, which may eliminate active and potential nest or roost sites for raptors and bats, and some old-growth and mature forest habitat of the pine

marten. The Northern Rockies Lynx Management Direction (Forest Plan Amendment) includes protections for lynx habitat that restricts the application of prescribed fires, except at very fine scales, a benefit for raptor nesting, In the Wildland-Urban Interface some exceptions to the direction apply. Climate change resulting in increased ambient, late spring and summer temperatures is detrimental to snowpack needed for wolverine denning and thermal regulation for Boreal Owl during the summer.

Big Game. The Forest Plan Amendment for Fire allows wildland and prescribed fires to enhance ungulate winter range. Travel planning limits human-caused disturbance that is adverse to these species. Feedground reauthorization provides opportunities to enhance protections against potential ungulate diseases. Overall, the combined effects of these actions and the proposed action will be a positive effect on these species.

Habitats in early stages of succession. The Forest Plan Amendment for Fire allows wildland and prescribed fires to enhance some bird habitats. Potential fuels reduction projects would selectively convert forest stands to early successional stages and enhance aspen, an important species for many birds.

Shrubland-steppe habitats. The Pronghorn migration corridor in the Gros Ventre protects an important migration route between the Upper Green River Basin and Jackson Hole, maintaining demographic and genetic exchange among these species. The Forest Plan Amendment for Fire provides for wild and prescribed fires that can reduce conifer growth in habitats of these species, but risks large scale reductions in sagebrush coverage.

Table 4.1 on the following page summarizes the programmatic actions and projects included in the cumulative effects analysis.

Table 4.1. Cumulative Effects Summary, Wildlife

	PAST	PRESENT	FUTURE	EFFECTS
Forest Plan Amendment for Fire	X	X	X	Allows the use of fire management tools, including wildfires, to achieve resource management objectives, including habitat improvements for critical species.
Forest Plan Amendment for Pronghorn Migration Corridor	X	X	X	Provides protection for a historic pronghorn migration route through the Upper Green River and Gros Ventre watersheds.
Northern Rockies Lynx Management Direction (Forest Plan Amendment)	X	X	X	Provides standards and guidelines for vegetation management and other activities that affect lynx habitat.
Designated Critical Canada Lynx Habitat	X	X	X	Identifies and protects the primary constituent elements and the distribution of lynx critical habitat.
Aquatic Invasive Species Special Order	X	X	X	By prohibiting the possession, storage, or transport of aquatic

	PAST	PRESENT	FUTURE	EFFECTS
				invasive species and plants, protects the ecological integrity of aquatic habitats.
Bridger-Teton Forest Plan revision			X	Provides programmatic guidance for forest management, including protections for wildlife habitat and protections against animal disturbance.
Travel planning; Part A and B	X	X	X	Provides programmatic travel management for forest roads, with protections for wildlife habitat.
Big game and trophy game management	X	X	X	Management of big game and trophy populations affects population sizes of big game and trophy game species, and may increase competition with non-target wildlife.
Gray wolf delisting; state management	X	X	X	Removal of threatened species protections and initiation of state management as a trophy and predatory species. Management may impact wolf populations statewide but numbers will also be influenced by prey numbers and wolf diseases such as mange.
Winter Recreation Management	X	X	X	Through disturbance effects, motorized and non-motorized recreation may decrease the effectiveness of habitat used by wintering wildlife.
Livestock Grazing Management	X	X	X	Annual Operating Instructions are reviewed with permittees and provide regular opportunities to address potential conflicts among herbivores or between herbivores and predators.
Projects				
Forest-wide Reauthorization of Feedground Management	X	X	X	Feedgrounds (like historic natural wintering areas) affect vegetation composition and structure locally, not on landscape scale, improve the availability of prey for carnivores, and decrease forage competition among ungulates .
Gaffney Ditch Water Management Structure			X	Restores water passage through a natural oxbow and improves a water intake structure for a drainage ditch, potentially enhancing conditions for aquatic

	PAST	PRESENT	FUTURE	EFFECTS
				and wetland species.
Permit reauthorizations--water lines; pipelines, etc.	X	X	X	May negatively affect habitat conditions for amphibians and riparian-dwelling species at small spatial scales.
Livestock Allotment Management Plan Revision	X	X	X	Opportunity to address potential habitat conflicts or changing trends.
Togwotee Pass highway reconstruction	X	X		Improvement of Highway 26/287, Togwotee Pass to Blackrock. Decreases connectivity and habitat effectiveness (human disturbance) for upland species.
Broad-scale Effects				
Climate change	X	X	X	For Western Wyoming, increases in ambient temperature, precipitation as spring rain, stream sedimentation, extreme weather, drought, and increased fire frequency may have negative effects on many TES species.

Botanical Resources and Sensitive Plant Species

Alternative 1 –No Action

The no action alternative would maintain the management of the analysis area as it is currently. This management comes from the Forest Plan as well as Amendment Two of that plan. Under Desired Future Condition 3 (DFC3) there are silvicultural, forest treatment and aspen guidelines. Amendment Two adds class standards for different classes of river (Recreation, Scenic or Wild). The standards from Amendment Two which are germane to the present analysis focus on timber management. Where river classes are listed as Recreational or Scenic, timber management is allowed, while no management is allowed in Wild class rivers.

Direct and indirect effects

Species with known individuals present in the analysis area

Species which occupy meadow or riparian habitat

Pink agoseris (Agoseris lackschewitzii) – Sensitive

The current management of the analysis area is unlikely to have any major direct or indirect effects to pink agoseris. The riparian meadow habitat of this species is unlikely to have any direct or indirect interaction with a change in silvicultural management.

Black and purple sedge (*Carex luzulina* var. *atropurpurea*) – Sensitive

The current management of the analysis area is unlikely to have any major direct or indirect effects to black and purple sedge. The alpine meadow habitat of this species is not forested and does not interact with a change in silvicultural management.

Boreal draba (*Draba borealis*) – MIS

Boreal draba occupies both rocky and riparian meadow habitat. The former habitat type is unlikely to have any impacts (direct or indirect) from the current management of the analysis area and the riparian habitat of this species is unlikely to have any direct or indirect interaction with a change in silvicultural management.

Rockcress draba *(Draba globosa*) – Sensitive

Rockcress draba is known from alpine meadows in the analysis area. The alpine meadow habitat of this species is not forested and does not interact with a change in silvicultural management.

Based on the analysis and information available a determination of **No Impact** is made for pink agoseris, black and purple sedge, and rockcress draba. These determinations are supported by the following rationale:

- Pink agoseris grows in riparian meadows which do not have timber to manage. As such the change in the management of timber will not interact with this species.
- Black and purple sedge and rockcress draba grow in high altitude alpine meadows which do not have timber to manage. As such the change in the management of timber will not interact with this species.

Boreal draba is an MIS species which was formerly listed as sensitive but has since been delisted; it is mentioned by name as an MIS in the Forest Plan. Neither the riparian portion of this species habitat nor the rocky portion of this species habitat contains trees. As a result the present timber management does not interact with this species, so there will be no impacts to the species.

Species which occupy barren and rocky habitat at middle elevations

Payson's milkvetch (*Astragalus paysonii*) – Sensitive

This species is known from multiple small occurrences throughout the analysis area. The disturbed and open habitat of this species is unlikely to have any major direct effects from the current management of forests. The current timber management in the analysis area is likely creating habitat for this species which is often observed after fires and timber management activities. The disturbance that creates habitat for this species may also create habitat for invasive plants.

Payson's bladderpod (*Lesquerella paysonii*) – Sensitive

Payson’s bladderpod is known from two different segments in the analysis area. This species grows on naturally and artificially barren habitats. It is unknown if this species is truly disturbance adapted or is just a generalist. The disturbance from current timber management

could directly affect this species and habitat for this species could be created. However, disturbance could provide invasive plants the opportunity to establish.

Creeping twinpod (*Physaria integrifolia* var. *monticola*) – Sensitive

The barren hillside habitat of this species is unlikely to directly or indirectly interact with the current management since there are no trees to manage. Indirect impacts from the current management may include the creation of habitat for invasive plants.

Based on the analysis and information available a determination of **May impact individuals but is not likely to cause a trend to federal listing or loss of viability** is made for Payson's milkvetch and Payson's bladderpod. A determination of **No Impact** is made for creeping twinpod. These determinations are based on the following rationale:

- Both Payson's milkvetch and bladderpod grow in open areas which may be created or sustained by the current management. The direct impacts to both of these species may include the loss of individuals from timber management. Indirect effects include the creation or maintenance of their habitat but also include the creation of such habitat for noxious or invasive plants. The potential direct and indirect effects to both of these species (both beneficial and detrimental) are not significant enough to push this species towards listing.
- The rocky and barren habitat of creeping twinpod does not interact with the current management of the analysis area. No direct or indirect effects are expected to this species from current management.

Species which occupy forested habitats

Whitebark pine (*Pinus albicaulis*) – Sensitive

The current timber management in the analysis area has direct and indirect impacts to whitebark pine. Whitebark pine is in decline due, in part, to previous fire suppression which has allowed shade tolerant trees to establish and competitively exclude whitebark pine in some areas as well as allowing native beetle populations to become agents of mortality for whitebark pine. The current timber management allows for treatments to alleviate these problems but only with wildlife and recreation specific objectives. Epidemic insect outbreaks can be treated to meet resource objectives outside those of wildlife and recreation. Indirect impacts from the current timber management may arise from the restrictive nature of the objectives required for most treatments in the analysis area under this alternative.

Aspen (*Populus tremuloides*) – MIS

There is a specific guideline in the current management of the analysis area that specifically directs the management of aspen. The aspen guideline directs that management of aspen should focus on aspens' value as wildlife habitat and for its fall colors and scenic value. The current management is likely benefitting aspen as an MIS since it is the indicator for the aspen habitat type and that habitat type is valued for its wildlife and aesthetic values.

Based on the analysis and information available a determination of **May impact individuals but is not likely to cause a trend to federal listing or loss of viability** is made for whitebark pine. This determination is based on the following rationale:

- Whitebark pine is in decline as a result of fire suppression and successional replacement by shade tolerant conifer species as well as mortality caused by native beetles. The current management of the analysis area allows for treatment of some of these agents of mortality in some areas, but prohibits them in others. As a result, direct mortality of whitebark pine may occur and its habitat may change due to successional dynamics. However, treatments are allowed in some areas which may alleviate these agents of mortality under the current management. Neither the beneficial or detrimental direct or indirect effects are significant enough to push this species towards listing as threatened.

Aspen is an Ecological MIS species. The current management of the analysis area has a specific Aspen Guideline which directs that aspen be maintained or restored to benefit wildlife and recreational viewing. This guideline is in compliance with the Forest Plan Aspen Management Guideline.

Species which have <u>no</u> known individuals present in the analysis area but have potential habitat present

<u>Species which occupy barren and rocky habitat at high elevations</u>

Sweet-flowered rock jasmine (*Androsace chamaejasme* ssp. *carinata*) – Sensitive

The high altitude rocky and barren habitat of this species is unlikely to interact in any meaningful way with the current management of the analysis area. The edaphic factors that directly influence the survival of the individuals and the creation or maintenance of their habitat are well outside the sphere of influence of the current management. The high altitude portions of the headwaters of many of the streams and rivers in the analysis area begin in this species' habitat, but the management of that water has little or no influence on this species or its habitat.

Shultz's milkvetch (*Astragalus shultziorum*) – MIS

The high altitude rocky and barren habitat of this species is unlikely to interact in any meaningful way with the current management of the analysis area. The edaphic factors that directly influence the survival of the individuals and the creation or maintenance of their habitat are well outside the sphere of influence of the current management. The high altitude portions of the headwaters of many of the streams and rivers in the analysis area begin in this species' habitat, but the management of that water has little or no influence on this species or its habitat.

Seaside sedge (*Carex incurviformis*) – Sensitive

The high altitude rocky and barren habitat of this species is unlikely to interact in any meaningful way with the current management of the analysis area. The edaphic factors that directly influence the survival of the individuals and the creation or maintenance of their habitat are well outside the sphere of influence of the current management. The high altitude portions of the headwaters

of many of the streams and rivers in the analysis area begin in this species' habitat, but the management of that water has little or no influence on this species or its habitat.

Woolly daisy (*Erigeron lanatus*) – Sensitive

The high altitude rocky and barren habitat of this species is unlikely to interact in any meaningful way with the current management of the analysis area. The edaphic factors that directly influence the survival of the individuals and the creation or maintenance of their habitat are well outside the sphere of influence of the current management. The high altitude portions of the headwaters of many of the streams and rivers in the analysis area begin in this species' habitat, but the management of that water has little or no influence on this species or its habitat.

Naked-stemmed parrya (*Parrya nudicaulis*) – Sensitive

The high altitude rocky and barren habitat of this species is unlikely to interact in any meaningful way with the current management of the analysis area. The edaphic factors that directly influence the survival of the individuals and the creation or maintenance of their habitat are well outside the sphere of influence of the current management. The high altitude portions of the headwaters of many of the streams and rivers in the analysis area begin in this species' habitat, but the management of that water has little or no influence on this species or its habitat.

Weber's saussurea (*Saussurea weberi*) – Sensitive

The high altitude rocky and barren habitat of this species is unlikely to interact in any meaningful way with the current management of the analysis area. The edaphic factors that directly influence the survival of the individuals and the creation or maintenance of their habitat are well outside the sphere of influence of the current management. The high altitude portions of the headwaters of many of streams and rivers in the analysis area begin in this species' habitat but the management of that water has little or no influence on this species or its habitat.

Based on the analysis and information available a determination of **No Impact** is made for sweet-flowered rock jasmine, seaside sedge, woolly daisy, naked-stemmed parrya and Weber's saussurea. These determinations are based on the following rationale:

- All of these species occupy habitat which is barren and rocky at high altitude in the analysis area. This habitat type has no interaction with the current management of the analysis area because there are no trees to manage and livestock do not graze in these areas because of a lack of forage. As a result the current management has no impact to these species

Shultz's milkvetch is an MIS species which was listed as sensitive when the forest plan was written but has since been delisted. It grows in habitat which is barren and rocky at high altitude in the analysis area. This habitat type has no interaction with the current management of the analysis area because there are no trees to manage. As a result, the current management has no impact to this species and will not move it towards listing as a sensitive species.

Species which occupy barren and rocky habitat at middle elevations

Starveling milkvetch (*Astragalus jejunus* var. *jejunus*) – Sensitive

This species grows in mid-elevation habitats which are barren and rocky. This habitat is unlikely to interact in any meaningful way with the current management of the analysis area. The edaphic factors that directly influence the survival of the individuals and the creation or maintenance of their habitat are well outside the sphere of influence of the current management.

Wyoming tansymustard (*Descurainia torulosa*) – Sensitive

This species grows in mid-elevation habitats which are barren and rocky. This habitat is unlikely to interact in any meaningful way with the current management of the analysis area. The edaphic factors that directly influence the survival of the individuals and the creation or maintenance of their habitat are well outside the sphere of influence of the current management.

Narrowleaf goldenweed (*Ericameria discoidea* var. *linearis*) – Sensitive

This species grows in mid-elevation habitats which are barren and rocky. This habitat is unlikely to interact in any meaningful way with the current management of the analysis area. The edaphic factors that directly influence the survival of the individuals and the creation or maintenance of their habitat are well outside the sphere of influence of the current management.

Based on the analysis and information available a determination of **No Impact** is made for starveling milkvetch, Wyoming tansymustard and narrowleaf goldenweed. These determinations are made based on the following rationale:

- These three species occupy habitat which is barren and rocky at middle elevations in the analysis area. This habitat has no direct interaction with the current management of the analysis area because there is no timber to manage. As a result the current management has no impact to these species.

Species which occupy meadow or sagebrush habitat

Greenland primrose (*Primula egalikensis*) – Sensitive

The boggy and marshy habitat of this species is unlikely to interact with the current management of the analysis area in any meaningful way since there is no timber to manage in these areas. Since there is no influence of the current management no direct or indirect impacts are expected.

Soft aster (*Symphyotrichum molle*) – Sensitive

The sagebrush habitat of this species is unlikely to interact with the changes in timber management since there are no trees to manage in this habitat. Since there is no influence of the current management no direct or indirect impacts are expected.

Based on the analysis and information available a determination of **No Impact** is made for Greenland primrose and soft aster. These determinations are made based on the following rationale:

- The boggy and swampy habitat of Greenland primrose does not interact with the current management because there are no trees to manage. As a result the current management has no impact to this species.
- The sagebrush habitat of soft aster does not interact with the current management because there are no trees to manage. As a result the current management has no impact to this species.

Alternative 2 – Proposed Action

The proposed Forest Plan Amendment proposes changes to comply with various Acts of Congress with regard to Wild and Scenic Rivers. The proposed changes in management center on where silvicultural and restoration activities can and cannot take place, with differing standards depending on the river class designation (Recreational –DFC-3B, Scenic – DFC-3C, or Wild – DFC-3D or DFC 6). The major difference between Alternatives 1 and 2 is the number of acres that are ineligible for silvicultural treatment under Alternative 2, where around 6650 acres of forested land would be under DFC-3B which only allows hazard or facility tree removal (**Error! Reference source not found.**). The genetic diversity of the ecosystem is preserved, as are the structure and function of plant and animal habitats.

Direct and indirect effects

Species with known individuals present in the analysis area

Species which occupy meadow or riparian habitat

Pink agoseris (Agoseris lackschewitzii) – Sensitive

The proposed management of the analysis area is unlikely to have any major direct or indirect effects to pink agoseris. The riparian meadow habitat of this species is unlikely to have any direct or indirect interaction with a change in silvicultural management because there are no trees to manage.

Black and purple sedge (*Carex luzulina* var. *atropurpurea*) – Sensitive

The impacts for black and purple sedge from the proposed action are the same as they are for the no action alternative. The habitat of this species does not contain trees and as such does not interact with a change in timber management.

Boreal draba (*Draba borealis*) – MIS

The potential impacts to this species from the proposed action are the same as Alternative 1, neither the riparian portion of this species habitat nor the rocky portion of this species habitat contains trees. As a result the changes in timber management do not interact with this species.

Rockcress draba *(Draba globosa*) – Sensitive

The impacts for rockcress draba from the proposed action are the same as they are for the no action alternative. The habitat of this species does not contain trees so the changes in timber management will not interact with this species.

Based on the analysis and information available a determination of **No Impact** is made for pink agoseris, black and purple sedge, and rockcress draba. These determinations are supported by the following rationale:

- Pink agoseris grows in riparian meadows which have no timber to manage. As such, the change in that management will not impact this species.
- Black and purple sedge and rockcress draba grow in high altitude alpine meadows which are not forested and the proposed changes in timber management will not affect this species.

Boreal draba is an MIS species which was formerly listed as sensitive but has since been delisted; it is mentioned by name as an MIS in the Forest Plan. Neither the riparian portion of this species habitat nor the rocky portion of this species habitat contains trees. As a result the proposed changes in timber management do not interact with this species, so there will be no impacts to the species.

Species which occupy barren and rocky habitat at middle elevations

Payson's milkvetch (*Astragalus paysonii*) – Sensitive

Payson's milkvetch is a disturbance adapted species which likely benefits and suffers from timber management. Timber management activities generally creates habitat for this species. The proposed changes in silvicultural management in the proposed action would differ by about 6650 acres not being eligible for some form of timber treatment. DFC-3B (Recreational) is the only proposed class which has a restrictive timber management standard. All other proposed non-wilderness DFC's allow for silvicultural management. As a result, around 6650 acres of forested habitat are not eligible for silvicultural treatment under this alternative. As such, this alternative removes the possibility that potential habitat for Payson's milkvetch would be created on those acres.

Payson's bladderpod (*Lesquerella paysonii*) – Sensitive

Payson's bladderpod occupies rocky and barren habitat in the analysis area. The species occupies disturbed areas around roads and other barren areas. Silvicultural actions create some of this habitat. The restrictions on silvicultural activities in certain areas in this alternative would reduce the likelihood that habitat for Payson's bladderpod would be created.

Creeping twinpod (*Physaria integrifolia* var. *monticola*) - Sensitive

The possible direct and indirect effects to creeping twinpod do not differ greatly between Alternatives 1 and 2. The change in silvicultural management would not affect this species.

Based on the analysis and information available a determination of **May impact individuals but is not likely to cause a trend to federal listing or loss of viability** is made for Payson's milkvetch and Payson's bladderpod. A determination of **No Impact** is made for creeping twinpod. These determinations are based on the following rationale:

- Both Payson's milkvetch and bladderpod grow in open areas which could be created or sustained by the proposed management. The reduced acres of forested area eligible for silvicultural treatment under this alternative reduce the possibility that habitat would be created for these species. However, the reduction in potential timber management activities in this alternative also reduces the possibility that individual plants would be lost to such activity. The potential direct and indirect effects to both of these species (both beneficial and detrimental) are not significant enough to push this species towards listing.
- The rocky and barren habitat of creeping twinpod does not interact with the proposed management of the analysis area. No direct or indirect effects are expected to this species from proposed management.

Species which occupy forested habitats

Whitebark pine (*Pinus albicaulis*) – Sensitive

The proposed changes in silvicultural management and a guideline which seeks to preserve the genetic integrity of native plant and animal species are parts of the proposed action which will directly and indirectly impact whitebark pine. In the proposed action more known habitat of whitebark pine is eligible for restoration treatments than in Alternative 1 because the majority of the whitebark pine in the analysis area is in areas designated as Wild. Wild class streams in Alternative 1 have a hazard tree removal only guideline, whereas in Alternative 2 habitat restoration is allowed. Alternative 2 also has a guideline which stipulates that the genetic integrity of native plant and animal species should be maintained. This could indirectly impact whitebark pine because this seems to prohibit the planting of genetically selected whitebark pine trees which are bred to be resistant to whitepine blister rust, a major agent of mortality for whitebark pine. Breeding and eventually planting so-called 'plus trees' are a key component of the recovery of whitebark pine across its range, but planting them (should they become available in the future) would represent an intentional disruption of the genetic integrity of whitebark pine at any one place. This is because out-planting plus trees would alter the ratio of resistant to non-resistant genotypes present at the site. While this seeming prohibition of planting plus trees would be a detriment to whitebark pine in the 3600 or so acres of whitebark pine in the analysis area, this is a small percentage of the species' range and the benefit of the addition of restoration in the non-wilderness Wild segments makes this Alternative basically neutral for whitebark pine.

Aspen (*Populus tremuloides*) – MIS

Alternative 2 has no specific Aspen guideline which Alternative 1 has. Still, the Aspen Management Guideline remains in place and two of the three proposed DFC's allow for restoration treatments. Only DFC 3B has restriction on timber treatments. This is important because aspen, like whitebark pine, is in decline due to previous fire suppression resulting in competitive exclusion of aspen by conifer species in the absence of fire. Timber treatments and prescribed fire are generally needed to maintain or restore aspen stands. As such, the direct and indirect effects to aspen from the proposed Forest Plan Amendment focus on ceasing the death of individual ramets or genets (direct) or ceasing successional replacement (indirect). The number of acres of aspen in DFC-3B (which does not allow for timber treatments) is the smallest of the proposed DFC's, but is not insubstantial (782 acres). Still the majority of aspen acres are in DFC's that allow or even promote habitat restoration.

Based on the analysis and information available a determination of **May impact individuals but is not likely to cause a trend to federal listing or loss of viability** is made for whitebark pine. This determination is based on the following rationale:

- Whitebark pine is in decline as a result of fire suppression and successional replacement by shade tolerant conifer species as well as mortality caused by native beetles. The proposed management of the analysis area allows for treatment of some of these agents of mortality in some areas, but prohibits them in others. In addition whitepine blister rust is another major agent of mortality for whitebark pine. In the proposed management of the analysis area, a guideline exists which seems to prohibit the out-planting of whitebark pine trees which are genetically resistant to whitepine blister rust (plus trees). As a result of the proposed management, direct mortality of whitebark pine may occur and its habitat may change due to successional dynamics; a major tool in the range-wide restoration of whitebark pine is prohibited. However, treatments are allowed and even promoted in some areas which may alleviate these agents of mortality under the proposed management. Neither the beneficial or detrimental direct or indirect effects are substantial enough to push this species towards listing as threatened.

Aspen is an Ecological MIS species. While the proposed management of the analysis area does not have a specific Aspen Guideline, the Forest Plan Aspen Management Guideline remains in effect.

Species which have <u>no</u> known individuals present in the analysis area but have potential habitat present

<u>Species which occupy barren and rocky habitat at high elevations</u>

Sweet-flowered rock jasmine (*Androsace chamaejasme* ssp. *carinata*) – Sensitive

The high altitude rocky and barren habitat of this species is unlikely to interact in any meaningful way with the proposed changes in management (under the proposed Forest Plan Amendment) of

the analysis area. The edaphic factors that directly influence the survival of the individuals and the creation or maintenance of their habitat are well outside the sphere of influence of the proposed changes in management. The high altitude portions of the headwaters of many of streams and rivers in the analysis area begin in this species' habitat but the management of that water has little or no influence on this species or its habitat.

Shultz's milkvetch (*Astragalus shultziorum*) – MIS

The high altitude rocky and barren habitat of this species is unlikely to interact in any meaningful way with the proposed changes in management (under the proposed Forest Plan Amendment) of the analysis area. The edaphic factors that directly influence the survival of the individuals and the creation or maintenance of their habitat are well outside the sphere of influence of the proposed changes in management. The high altitude portions of the headwaters of many of streams and rivers in the analysis area begin in this species' habitat but the management of that water has little or no influence on this species or its habitat.

Seaside sedge (*Carex incurviformis*) – Sensitive

The high altitude rocky and barren habitat of this species is unlikely to interact in any meaningful way with the proposed changes in management (under the proposed Forest Plan Amendment) of the analysis area. The edaphic factors that directly influence the survival of the individuals and the creation or maintenance of their habitat are well outside the sphere of influence of the proposed changes in management. The high altitude portions of the headwaters of many of streams and rivers in the analysis area begin in this species' habitat but the management of that water has little or no influence on this species or its habitat.

Woolly daisy (*Erigeron lanatus*) – Sensitive

The high altitude rocky and barren habitat of this species is unlikely to interact in any meaningful way with the proposed changes in management (under the proposed Forest Plan Amendment) of the analysis area. The edaphic factors that directly influence the survival of the individuals and the creation or maintenance of their habitat are well outside the sphere of influence of the proposed changes in management. The high altitude portions of the headwaters of many of streams and rivers in the analysis area begin in this species' habitat but the management of that water has little or no influence on this species or its habitat.

Naked-stemmed parrya (*Parrya nudicaulis*) – Sensitive

The high altitude rocky and barren habitat of this species is unlikely to interact in any meaningful way with the proposed changes in management (under the proposed Forest Plan Amendment) of the analysis area. The edaphic factors that directly influence the survival of the individuals and the creation or maintenance of their habitat are well outside the sphere of influence of the proposed changes in management. The high altitude portions of the headwaters of many of streams and rivers in the analysis area begin in this species' habitat but the management of that water has little or no influence on this species or its habitat.

Weber's saussurea (*Saussurea weberi*) – Sensitive

The high altitude rocky and barren habitat of this species is unlikely to interact in any meaningful way with the proposed changes in management (under the proposed Forest Plan Amendment) of the analysis area. The edaphic factors that directly influence the survival of the individuals and the creation or maintenance of their habitat are well outside the sphere of influence of the proposed changes in management. The high altitude portions of the headwaters of many of streams and rivers in the analysis area begin in this species' habitat but the management of that water has little or no influence on this species or its habitat.

Based on the analysis and information available a determination of **No Impact** is made for Sweet-flowered rock jasmine, seaside sedge, woolly daisy, naked-stemmed parrya and Weber's saussurea. These determinations are based on the following rationale:

- All of these species occupy habitat which is barren and rocky at high altitude in the analysis area. This habitat type has no interaction with the proposed management of the analysis area because there are no trees to manage in these areas. As a result, the proposed management has no impact to these species

Shultz's milkvetch is an MIS species which was listed as sensitive when the forest plan was written but has since been delisted. It grows in habitat which is barren and rocky at high altitude in the analysis area. This habitat type has no interaction with the proposed management of the analysis area because there are no trees to manage. As a result, the proposed management has no impact to this species and will not move it towards listing as a sensitive species.

Species which occupy barren and rocky habitat at middle elevations

Starveling milkvetch (*Astragalus jejunus* var. *jejunus*) – Sensitive

This species grows in mid-elevation habitats which are barren and rocky. This habitat is unlikely to interact in any meaningful way with the proposed changes in management of the analysis area under Alternative 2. The edaphic factors that directly influence the survival of the individuals and the creation or maintenance of their habitat are well outside the sphere of influence of the proposed changes in management.

Wyoming tansymustard (*Descurainia torulosa*) – Sensitive

This species grows in mid-elevation habitats which are barren and rocky. This habitat is unlikely to interact in any meaningful way with the proposed changes in management of the analysis area under Alternative 2. The edaphic factors that directly influence the survival of the individuals and the creation or maintenance of their habitat are well outside the sphere of influence of the proposed changes in management.

Narrowleaf goldenweed (*Ericameria discoidea* var. *linearis*) – Sensitive

This species grows in mid-elevation habitats which are barren and rocky. This habitat is unlikely to interact in any meaningful way with the proposed changes in management of the analysis area under Alternative 2. The edaphic factors that directly influence the survival of the individuals

and the creation or maintenance of their habitat are well outside the sphere of influence of the proposed changes in management.

Based on the analysis and information available a determination of **No Impact** is made for starveling milkvetch, Wyoming tansymustard and narrowleaf goldenweed. These determinations are made based on the following rationale:

- These three species occupy habitat which is barren and rocky at middle elevations in the analysis area. This habitat has no direct interaction with the proposed management of the analysis area because there is no timber to manage. As a result the current management has no impact to these species.

Species which occupy meadow or sagebrush habitat

Greenland primrose (*Primula egalikensis*) – Sensitive

The boggy and marshy habitat of this species is unlikely to interact with the proposed changes in management of the analysis area in any meaningful way since there is no timber to manage in these areas. Since there is no influence of the proposed changed management no direct or indirect impacts are expected.

Soft aster (*Symphyotrichum molle*) – Sensitive

The sagebrush habitat of this species is does not have timber to manage so the change in that management will not interact with this species.
Based on the analysis and information available a determination of **No Impact** is made for Greenland primrose and soft aster. These determinations are made based on the following rationale:

- The boggy and swampy habitat of Greenland primrose does not interact with the proposed management because there are no trees to manage. As a result the proposed management has no impact to this species.
- The sagebrush habitat of soft aster does not have trees to manage so the changes in that management do not impact this species.

Monitoring

No changes to monitoring protocols involving sensitive species are proposed, therefore the action has no expected effect on botanical resources.

Summary of Effects

Table 4.2 Effects Summary Comparison, Botanical Resources

Species	Species Type	Alternative 1 – No Action		Alternative 2 – Amend Plan	
		Likelihood of effects	Determination	Likelihood of effects	Determination
Agoseris lackschewitzii pink agoseris	Sensitive	Low	**NI***	Low	**NI**
Androsace chamaejasme ssp. carinata sweet-flowered rock jasmine	Sensitive	Low	**NI**	Low	**NI**
Astragalus jejunus var. jejunus starveling milkvetch	Sensitive	Low	**NI**	Low	**NI**
Astragalus paysonii Payson's milkvetch	Sensitive	Moderate	**MII****	Moderate	**MII**
Carex incurviformis seaside sedge	Sensitive	Low	**NI**	Low	**NI**
Carex luzulina var. atropurpurea black and purple sedge	Sensitive	Low	**NI**	Low	**NI**
Descurainia torulosa Wyoming tansymustard	Sensitive	Low	**NI**	Low	**NI**
Draba globosa rockcress draba	Sensitive	Low	**NI**	Low	**NI**
Ericameria discoidea var. linearis narrowleaf goldenweed	Sensitive	Low	**NI**	Low	**NI**
Erigeron lanatus woolly daisy	Sensitive	Low	**NI**	Low	**NI**
Lesquerella paysonii Payson's bladderpod	Sensitive	Moderate	**MII**	Moderate	**MII**
Parrya nudicaulis naked-stemmed parrya	Sensitive	Low	**NI**	Low	**NI**
Physaria integrifolia var. monticola creeping twinpod	Sensitive	Low	**NI**	Low	**NI**
Pinus albicaulis whitebark pine	Sensitive	High	**MII**	High	**MII**
Primula egalikensis Greenland primrose	Sensitive	Low	**NI**	Low	**NI**
Saussurea weberi Weber's saussurea	Sensitive	Low	**NI**	Low	**NI**

Species	Species Type	Alternative 1 – No Action		Alternative 2 – Amend Plan	
Symphyotrichum molle soft aster	Sensitive	Low	**NI**	Low	**NI**
Not Region 4 Sensitive – MIS Only					
Astragalus shultziorum Shultz's milkvetch	Plan MIS	Low	No Impact	Low	No Impact
Draba borealis boreal draba	Plan MIS	Low	No Impact	Low	No Impact
Populus tremuloides aspen	Ecological MIS	High	Forest Plan aspen guideline is met	High	Forest Plan aspen guideline is met

*NI – No Impact **MII- May impact individuals but is not likely to cause a trend to federal listing or loss of viability

Cumulative Effects All Alternatives:

Under the National Environmental Policy Act, "cumulative impacts" are the incremental impacts of the proposed action when added to other past, present, and reasonably foreseeable future federal, state, and private activities (40 CFR 1508.7). The cumulative effects analysis areas are bounded both in space and time. The cumulative effects analysis area for this project are the areas of potential habitat for any of the sensitive or MIS species *which have effects* in the present analysis within the analysis area. Payson's milkvetch, Payson's bladderpod, and whitebark pine are the only sensitive species with potential effects from the proposed action. This potential habitat includes areas identified as barren / rock, grassland / forbland, mountain big sagebrush, mountain shrubland, riparian herbland, sparse vegetation, spiked big sagebrush, tall forbland and all forest types with the exception of willow and cottonwood in the forest-wide vegetation GIS data. The temporal boundary for this analysis is 20 years into the past and future. Within this analysis area past, present and reasonably foreseeable future activities that have the potential to impact the plants in this analysis include cattle and sheep grazing, invasive plant control, timber harvest and fuels reduction projects, wildfire suppression, previous wildfire, insect and disease management and road maintenance.

For sensitive species, policies and mitigation measures are in place that reduce or eliminate impacts from these management activities. Because of these policies, the cumulative effects expected from the alternative proposed for this project, when combined with the effects from the other management activities, are not expected to contribute to any change in status or viability of sensitive plants. Nor are the cumulative effects under the proposed action expected to contribute to an increase in any current or predicted downward trend in population numbers or habitat capability that would reduce the existing distribution of any of the other R4 sensitive plant species discussed in this analysis,. This conclusion was reached by using the indicators for direct and indirect effects (the potential for changed management to impede or accelerate restoration

treatments for sensitive and MIS tree species and the potential for changed management to limit threats from grazing) from the proposed activities and adding them to the following expected effects from other management activities:

- Cattle and sheep grazing in the general area may directly and indirectly impact sensitive or MIS plants. Direct effects from grazing include the loss of above- and below-ground biomass through grazing and trampling. Indirect effects include the alteration, deterioration or creation of potential sensitive or MIS plant habitat through disturbance.
- Road maintenance can create or alter potential habitat for sensitive or MIS species. Road maintenance can remove or kill individual sensitive or MIS plants.
- Herbicide, grazing or bio-control efforts to control invasive plants can have direct and indirect effects to sensitive and MIS plants. Herbicide application can be misapplied, bio-control agents can move to non-target species and grazing animals can damage non-target species. Removal or control of invasive plants can also alter the habitat away from or towards the potential habitat of a sensitive or MIS species.
- Natural and prescribed fire can directly affect sensitive species by burning individual plants. The same fires can indirectly affect sensitive plants by changing the habitat type (which is sometimes the goal of the project). In addition, fire suppression has led to increased fuel loading, canopy closure, and higher intensity wildfire. Fire is a natural disturbance in the ecosystem. In some areas, habitat succession and fire could possibly create or improve habitat for select plant species by opening up meadows or reducing the litter accumulation and competition from other plants. In other areas, wildfires or controlled fires would create high ground temperatures that could sterilize the soil and eliminate fungal species that are necessary for the survival of others. Fire also tends to favor post-fire germination of non-native species in environments where non-natives are abundant and/or native species are stressed.
- The prevalence of insect and disease outbreaks in the area has altered the forest character, which has indirect effects to the potential habitat of some sensitive species. The loss of canopy species changes the biotic and abiotic character of the habitat by increasing the amount and duration of sunlight and increasing the amount of fine and coarse woody debris.
- Accelerated rates of climate change may continue to stress sensitive plant species and alter habitat types.

The actions and effects described above can be both additive and interactive to each other and to the direct and indirect effects described for all alternatives. As stated earlier, because both current management and the proposed action are designed to eliminate or reduce negative cumulative impacts by protecting sensitive and MIS plants from direct and indirect impacts, the cumulative effects to all species discussed in this analysis, under both alternatives, are expected to be minimal.

Range Resources

Effects of Alternative 1 (No Action)

Currently, the BTNF Forest Plan has maintained range resources, providing forage for livestock and wildlife and income to local communities.

Forest Plan direction requires that range improvements, management activities, and trailing be coordinated with and designed to help meet fish and wildlife habitat needs, especially on key habitat areas such as crucial winter range, seasonal calving areas, riparian areas, sage grouse leks, and nesting sites. Stream bank shearing (current year bank alteration) monitoring will allow for protection of designated river and stream channels.

Though there is concern that current Forest Plan forage utilization standards may reduce prevalence of key forage species (those most vulnerable to effects of overutilization) during drought years, this concern is addressed by the following Forest Plan provision: "*During monitoring and evaluation a Utilization Guideline may be changed if the prescribed level is not accomplishing planned objectives*."

Annual monitoring and evaluation of allotments within the project area is expected to provide information required to change utilization guidelines as necessary to address site-specific resource concerns related to forage utilization.

Implementation of the no action alternative is not expected to result in effects to forage species beyond those already addressed by existing Forest Plan and (where applicable) Allotment Management Plan provisions. With regard to achievement of Forest Plan objective 1.1(h) "*Provide Forage for about 260,000 Animal Unit Months (AUMs) of livestock grazing annually"* implementation of the no action alternative would not be expected to result in changes to authorized livestock numbers or season of use.

Without designation-specific monitoring, data gathered on allotment-wide basis may not yield information sufficient to determine effectiveness of existing management at meeting the purpose of the Wild and Scenic Rivers Act.

Cumulative Effects:

Other existing and reasonably foreseeable activities and impacts along the designated segments include those associated with dispersed recreation, elk feed-ground permitting, roads, and limited timber management. Elk feedgrounds are established on or adjacent to historic crucial winter range and their localized effects would likely occur to some degree even without human management. Although all of these activities have the potential to impact vegetation communities, the elk feedground is most likely to show localized measureable impacts similar to those of livestock grazing. Considerable overlap (as much as 80%) exists between the composition of elk and cattle diets. Annual utilization of key livestock / elk forage species in and around elk feedgrounds would be expected to reach or exceed Forest Plan standards on occasion. It should be noted that impacts associated with dispersed recreation, elk feedgrounds and roads typically involve small total acreage. As such, none of these cumulative effects would be expected to reach levels measurably affecting vegetation resource health at the corridor scale.

Hazard tree removal and emergency response measures to natural disturbance events are the primary timber management activities likely to occur within the project area. These would typically be of limited scale, and of beneficial or moderating impact to the vegetation resource. Anticipated climate change effects such as increased summer temperatures, decreased summer precipitation, and earlier run-off would all be expected to negatively impact the rangeland resource.

Effects of Alternative 2 (Proposed Action)

For the purposes of determining impacts to forage vegetation and to sustained forage production, there are no apparent differences between the proposed action and the no action alternative, other than additional monitoring requirements as addressed below..

There are no management changes in the proposed action that would be expected to impact forage species of vegetation when compared to the No action Alternative. Similarly, nothing in the proposed action would be expected to affect achievement of Forest Plan objective 1.1(h) "*Provide Forage for about 260,000 Animal Unit Months (AUMs) of livestock grazing annually"* when compared to the No Action alternative. Therefore, direct and indirect effects of the proposed action are expected to be identical to those of the No Action alternative with regard to the forage vegetation resource and AUM production.

Monitoring

The proposed indicators below will help assess potential impacts and the thresholds are expected to prevent any degradation (below 2009 levels, at time of designation) of corridor conditions or functions. By focusing on the area first likely to experience a downward trend, limited staff resources can best be utilized. Repeatable photo-point assessments will also be collected along designated segments across the Headwaters to alert managers should impacts begin affecting other areas.

This section discusses specific potential effects of the new Multiple Indicator Monitoring indices that have been proposed.

DFC 3C: Monitoring of the existing indicator, annual Utilization of Key Vegetation Forage Species, coupled with movement of livestock from areas or pastures where recommended thresholds have been reached, is expected to preclude substantive adverse impacts to the health and native character of vegetation communities along designated reaches. This type of monitoring can take the form of stubble height measurements (primarily for riparian vegetation), direct estimation of percent utilization of current annual growth (primarily for upland vegetation), or other methods (e.g. landscape appearance method) as appropriate.

Direct monitoring of the new long-term Greenline composition indicator, Percent Foliar Cover by Species (rooted nested frequency), at appropriate intervals is expected to confirm whether thresholds for the annual indicator Utilization of Key Vegetation Forage Species are effective at achieving, or supporting a trend toward achieving, desired vegetation species composition relevant to the health and native character of vegetation communities. This form of monitoring should be implemented on a schedule appropriate to the level of concern over health and native character of vegetation communities along a given stream reach. Ten to fifteen year intervals for

data collection may be appropriate where concerns are moderate, whereas five years may be a more appropriate interval in areas of substantive concern.

Monitoring of the Live/Dead index, coupled with movement of livestock from areas or pastures where recommended thresholds have been reached, is expected to preclude substantive adverse impacts to the health of woody plant species along designated reaches. This form of monitoring should be reserved for reaches where less intensive forms of monitoring, such as stubble-height, have proven inadequate as indicators for the purposes of moving livestock prior to the occurrence of substantive adverse impacts to the health of woody plant species. Such monitoring data would also be useful to wildlife managers in areas where wildlife browsing impacts to woody species are of concern.

Direct monitoring of the long-term indicator Woody Species Age Class at appropriate intervals is expected to confirm whether thresholds for annual indicators are effective at achieving, or supporting a trend toward achieving, the desired health of woody plant species. This form of monitoring should be implemented on a schedule appropriate to the level of concern over health of woody species along a given stream reach. Ten to fifteen year intervals for data collection may be appropriate where concerns are moderate, whereas five years may be a more appropriate interval in areas of substantive concern. It is recognized that levels of concern could be determined by impacts other than livestock grazing, such as high levels of wild ungulate browsing.

Cumulative Effects:

Other existing and reasonably foreseeable activities and range resource impacts along the designated segments are identical to what was listed under Alternative 1 above. The potential adverse effects identified from recreation and recreation livestock, concentrated wild ungulate populations at permitted feedgrounds, and climate change would be better understood by the monitoring additions proposed in Alternative 2. Specifying thresholds as ‘any negative trend’ would also provide clear direction for changing management should impacts not be meeting the intent of the WSRA.

Silvicultural Resources

Effects of Alternative 1 (No Action)

Direct, Indirect and Cumulative Effects: The overall and class-specific guidelines have been sufficient to protect the identified outstanding ecological value up to this point in time, but have highlighted recreation and scenery values. The Hoback and Bryan Flats Fuels reduction projects, along with the Wildland Fire Amendment, would affect silvicultural resources by reducing large fuel build-ups largely caused by historic forest management practices, and by promoting more diversity in forest composition and structure. Wildland fires also provide for younger seral stages. Current and projected climate changes and their expected effects on forest stand composition and both native and non-native insect episodes may not be sufficiently addressed under existing direction to protect river values for the long-term.

Effects of Alternative 2 (Proposed Alternative)

Direct and Indirect Effects: Beneficial effects to forest health of allowing endemic levels of insect and disease would include the promotion of natural stand development and succession of forest species. However, removal of the ability to treat insect and disease on a stand level could allow the development of foci from which outbreaks could become established, especially in the case of non-native insects and disease, which may have no natural controls. These conditions could affect the Wild and Scenic River corridor and spread to adjacent management areas. This would have short-term negative effects on scenic values within the corridor, and other resource values in other management areas. In the case of non-native insects and disease, or native agents that may be exacerbated by climatic changes, long term changes in vegetative cover and species composition could result.

In DFC 3B areas, natural processes, along with non-native agents or native agents exacerbated by changing climatic conditions, would define future stand conditions. This could preclude some restoration efforts within this DFC, including aspen management. Based on location, no cumulative effects due to management restrictions would be expected.

In DFC 3C areas, the Proposed Action would preclude harvest for commercial and timber management objectives, but would represent little or no change from current practices in these areas. In DFC 3D areas, the proposed change in management direction would enhance opportunities for fuels management and ecosystem restoration, but temporary roads or other developments would not be allowed along wild class streams, so no diminishment of wild character would be expected.

In DFC 6, the slightly expanded corridors along specific wilderness segments (Granite and Pacific Creeks) would experience no change in silvicultural management and therefore no direct, indirect or cumulative effects.

Monitoring

There is no change in monitoring silvicultural resources, and therefore the proposed additional monitoring plan would have no effect on silvicultural resources.

Cumulative Effects:

As in Alternative 1, the Hoback and Bryan Flats Fuels reduction projects, along with the Wildland Fire Amendment, would affect silvicultural resources by reducing large fuel build-ups largely caused by historic forest management practices, and by promoting more diversity in forest composition and structure. Wildland fires also provide for younger seral stages. New direction to promote natural ecological processes in order to maintain or restore composition, structure and function of native habitats would add to the beneficial system effects of those actions. If, on the other hand, the proposed action leads to an increase in native insects and disease becoming epidemic within the corridors, the potential fuel loads could again promote large, high-intensity fires from which ecological processes recover much more slowly.

Fisheries Resources

Environmental Consequences

The fisheries resource analysis addresses the potential effect of new management direction on aquatic resources, especially native populations of cutthroat trout and sensitive amphibians.

Effects of Alternative 1 (No Action Alternative)

Direct, Indirect and Cumulative Effects: Existing guidance in the Forest Plan has been sufficient for the Snake River Headwaters to provide a unique fishery in the historic native range of the Snake River finespotted and Yellowstone cutthroat trout, which are both considered Management Indicator Species on the Bridger-Teton National Forest. In some areas, recreational fisheries would continue to receive management emphasis, with direction to maintain harvest levels, success rates and recreation-day objectives set by the Wyoming Game and Fish Department.

The Aquatic Invasive Species Special Order creates protections to avoid infestations that could be detrimental to aquatic functions and special species. Stream restoration projects proposed along the Gros Ventre and Crystal Creeks would be subject to current scenic class water resources project restrictions and unlikely to be approved.

Rainbow trout are listed as a Management Indicator Species and considered a negative indicator where present. Given most climate change models, rainbow trout are expected to be increasing. Brook trout can also be considered a negative indicator.

Effects of Alternative 2 (Proposed Action)

Overall Direction

Below is a discussion of the effects of standards and guidelines that are proposed to be implemented for the Wild and Scenic designation:

Migration Corridors: Existing guidance does not require consideration of migration corridors in project design. This proposed standard would prevent habitat fragmentation and de-watering of stream segments. This would improve long-term survival of native fish and other aquatic organisms that rely on migration to complete their life cycle, typically by providing spawning and rearing areas in lower-volume waters, and adult habitats in connected larger streams. This standard would also require consideration of seasonal water level fluctuations and species needs. In the face of expected climate-related changes, this would positively affect the fisheries in these corridors. The Forest Service will be seeking instream flow rights, which will benefit aquatic species for the long term.

Fish and Aquatic Habitat: Large woody debris (LWD) would intentionally be retained, which would have a beneficial effect on fisheries. LWD is a critical component of fish habitat, providing slack water pockets for resting and shade and for maintenance of optimal

temperatures. Retention of LWD is not specifically used in the BTNF Forest Plan standard for Sensitive Species Management (pg. 126) or Fish Habitat guideline (pg. 126).

Effects by DFC Subcategory

Below is a discussion of effects of standards and guidelines proposed for specific desired future condition subcategories

DFC 3B

Water Resources Projects: Current direction in Amendment #2 of the Forest Plan subjectively describes an existing condition but is not written as management direction regarding new developments or maintenance of existing development projects. The proposed standard clarifies how these projects would be reviewed in the future in accordance with the Wild and Scenic Rivers Act. Such reviews must consider each outstandingly remarkable value, and therefore would provide a positive benefit for fisheries.

Bank Stabilization: While these sorts of projects have no specific guidance under current Forest Plan, the proposal directs managers to reference the Wild and Scenic Rivers Act in reviewing new proposals. This requirement would better protect the free-flowing nature of the waterway with which aquatic species have evolved, therefore providing a positive benefit to fisheries.

DFC 3C

Water Resources Projects: The proposed standard clarifies how these projects would be reviewed in the future in accordance with the Wild and Scenic Rivers Act. Such reviews must consider each outstandingly remarkable value, and therefore would provide a positive benefit for fisheries.

Bank Stabilization: While these sorts of projects have no specific guidance under current Forest Plan, the proposal directs managers to reference the Wild and Scenic Rivers Act in reviewing new proposals. This requirement would better protect the free-flowing nature of the waterway with which aquatic species have evolved.

DFC 3D

Water Resources Projects: There is no change in direction from Amendment #2 of the Forest Plan.

Bank Stabilization: While these sorts of projects have no specific guidance under current Forest Plan, the proposal recognizes stream movement as critical to natural function. The standard allows for correction of human-caused resource damage only. If trails are eroded by natural high-water events, the trail would need to be moved rather than protected by rock work or other hardening techniques that could separate the stream from its floodplain. This requirement would better protect the free-flowing nature of the waterway with which aquatic species have evolved.

DFC 6

Biodiversity Guideline: This is not directly referenced in the current Forest Plan; this guideline would instruct managers to maintain native plants and animals, including the microfauna that are foundational throughout the aquatic ecosystem.

Monitoring

The proposed indicators below will help assess potential impacts from recreation or other management or permitted activities, and the thresholds are expected to prevent any degradation (below 2009 levels) of conditions or functions. This section discusses specific potential effects of the new proposed monitoring.

DFC 3B

Parking Area Capacity: Utilizing recreationist thresholds would likely protect population levels of aquatic species from overharvesting and from any indirect effects on soils and vegetation in this corridor. This also protects the necessary water quality, creating a positive impact for fisheries.

DFC 3C

Dispersed campsite occupancy: Monitoring recreationist levels would likely offer early notice of trends that may affect streamside conditions and aquatic habitat, providing a benefit for fisheries resources.

Campsite Condition: Campsite compaction can lead to sediment moving into waterways. Monitoring conditions at sites would allow for continued maintenance of suitable water quality for fish and other aquatic plants and animals.

Multiple Indicator Monitoring--

Streambank Stability: Stability monitoring would assist in identifying problem areas from wildlife or livestock grazing before large amounts of sediment would be contributed to waterways. Sediment could otherwise have a negative impact on fish and aquatic organisms. This additional monitoring proposal would positively affect fisheries.

Foliar Cover: Cold-water dependent fisheries rely heavily on the maintenance of shade species along waterways, so tracking the condition of these plants would protect the water quality for cutthroats and other aquatic organisms.

DFC 3D and DFC 6

Campsite Condition: Campsite compaction can lead to sediment moving into waterways. Monitoring conditions at sites would allow for continued maintenance of suitable water quality for fish and other aquatic plants and animals.

Corridor Boundary

The proposed changes for the corridor boundaries in DFC3 and DFC6 will not appreciably change fisheries program management direction or project support functions, so there would be no effect on this resource area.

Cumulative Effects

The Aquatic Invasive Species Special Order creates protections to avoid infestations that could be detrimental to aquatic functions and special species. The proposal would add to this protection by emphasizing visitor impacts monitoring. Stream restoration projects proposed along the Gros Ventre and Crystal Creeks would be evaluated by their ability to protect or enhance identified values. Rainbow trout are listed as a Management Indicator Species and considered a negative indicator where present. Given most climate change models, rainbow trout are expected to be increasing. The Foliar Cover monitoring would provide an early indicator to protect streambank shade species that may provide a counterbalance to increased temperatures predicted by climate modeling.

Roads and Facilities

Environmental Consequences

This section provides an analysis regarding the potential effect of new management direction on roads and facilities within designated wild and scenic river corridors.

Effects of Alternative 1 (No Action)

The current BTNF Land and Resource Management Plan provides outdated direction concerning Wild and Scenic Rivers. The current DFC 3 road management standard refers to amount of roads but does not specify maintenance guidelines beyond riparian areas and may not adequately address road stream crossings. Best Management Practices that would now be used for all new construction are not required with existing roads maintenance. Drainage, erosion and sedimentation issues could negatively impact water quality in some designated segments.

Current Forest Plan direction, not specific to DFC 3 but applicable to the entire Bridger-Teton National Forest, would continue to apply under either alternative. These instructions include retention of soil and natural flow characteristics, along with water-quality values.

Cumulative Effects

Future actions considered for analysis include the Forest-wide Transportation Analysis Process (TAP). As part of the current and future TAP, the Forest is tasked with identification of the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands.

Effects of Alternative 2 (Proposed Action)

Road Maintenance Guideline: The new guideline calls for roads to be managed to protect the river segments. Previous standards for road maintenance in riparian areas would still apply, as these standards are Forest-wide. No major changes in road maintenance would occur within riparian areas. The new guideline proposes that established Best Management Practices should be utilized to improve drainage, erosion, and sedimentation, which would provide benefit to those roaded upland areas that are outside riparian zones yet still within the designated corridors.

Road Density Guideline: Existing Forest Plan direction calls for an average open road density of 1 mile per square mile. The new guideline is consistent with current Travel Analysis regulations, and calls for the minimum road system necessary without using the miles/square mile formula which doesn't work well in narrow management area corridors. By clarifying what access should be provided, the proposed standard is less arbitrary, and in different locations the average density may vary by desired condition and identified values. This would constitute a benefit for the overall system. The new guideline includes decommissioning roads where appropriate to protect or enhance river values, which would specifically include consideration of identified values in the decommissioning evaluation. The new standard specifies several aspects of completed decommissioning such as re-contouring and re-vegetating, that would provide stronger protections for water quality, scenery and ecological integrity.

Road Improvement Standard: The existing standard does not require examination of the Recreation Opportunity Spectrum for road re-construction or road construction. The new standard would require the traffic service level of the road to match the identified Recreation Opportunity Spectrum of the area. This standard would help ensure that the character of roads within the Wild and Scenic corridor will match the characteristics of the surrounding area, and help retain the existing variety of settings.

Crossings Guideline: The current Forest Plan guideline does not address temporary crossings; the new standard requires removal and rehabilitation upon completion of use. This new standard would ensure proper rehabilitation of temporary structures in riparian areas, decreasing potential negative impacts on waterways and better retaining the desired settings. The new standards also assure that channel hydrology and aquatic corridors are maintained or restored.

Overall Direction Not Included or Changed in the Proposal

Motorized Vehicle Standard: This direction is now formalized in the Motor Vehicle Use Map requirements, so would be redundant if included here.

Effects by Subcategory of management:

Bank Stabilization:

In DFC 3B, bank stabilization projects would be allowed only for safety or to protect river values. The default engineering response when a river erodes a roadway is to add material and rip-rap. Because the road itself provides key access and is specified as part of the recreational value of the segment, closure would not be expected here, even should material and rip-rap be needed. If that became the case, the standard specifies aesthetics protections. Wyoming Department of Transportation has a proven record of accommodating the protection of river

values in their maintenance, reconstruction and construction activities. River protection would be assured by WSRA Section 7 requirements.

In DFC 3C, bank stabilization projects would be allowed only for safety or to protect river values. Roads compromised by water flow where geoengineering methods are not applicable may need to be closed or relocated. Some channels provide physical limitations that could make relocation costly or impossible. If standard engineering responses (application of rip-rap and other materials) were determined necessary and approved as having no adverse impacts through a Section 7 analysis, aesthetics standards regarding natural materials are specified.

In DFC 3D, bank stabilization projects would be allowed only to correct human-caused resource damage. Trails compromised by water flow where geoengineering methods are not applicable may need to be closed or relocated. A higher standard for stabilization materials would protect the experienced naturalness of these trailways.

In DFC 6, there will be no change in engineering practices.

Monitoring

No additional monitoring related to roads or facilities has been proposed, therefore there would be no effect.

Corridor Boundary

Typically, where roads exist in the corridor at all, they follow the waterway. Since Amendment #2 of the Forest Plan already protects the corridor at ¼ mile width from high-water, no additional effects from this proposal are expected. The boundary changes that are proposed would protect ORVs, but have no specific effect on roads and facilities.

Cumulative Effects

Past and current regulations governing Forest Service infrastructure are generally supported by the Proposed Action. Future actions considered for analysis include the Forest-wide Transportation Analysis Process (TAP). As part of the current and future TAP, the Forest is tasked with identification of the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands. This theme is echoed in the road density guideline in the Proposed Action which stresses a minimum necessary transportation system for adequate access to popular recreation sites, private lands, and to meet resource management needs. WSRA Section 7 requirements for activities within the bed and banks of designated rivers would assure that river values are not impacted.

Minerals Resources

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Environmental Consequences

This section depicts the likely effects of new management direction on mineral resources development.

Effects of Alternative 1: No Action

Leasable Minerals & Geothermal

The No Action alternative will not change the availability or conditions of leasing minerals and geothermal resources within the designated scenic and recreation river corridors.

The administration of surface operations, if leases were ever issued, may be difficult given the intermingling of existing Conditional Surface Use and No Surface Occupancy stipulations within the relatively narrow river corridors for specific areas. Avoidance of No Surface Occupancy areas (see Figure 3.1) within or near the river corridors has the potential to move surface operations either closer to the stream or farther away from the stream. Moving surface operations closer to streams to avoid No Surface Occupancy areas may place additional pressures on the identified river resources. Timing and spatial restrictions on surface disturbances may occur and result in a substantial reclamation bond requirement prior to the approval of a Plan of Operations. Per 36 CFR 228.104, an operator submitting a surface use plan of operations may request the authorized Forest officer to authorize the Bureau of Land Management to modify (permanently change), waive (permanently remove), or grant an exception (case-by-case exemption) to a stipulation included in a lease at the direction of the Forest Service. The person making the request is encouraged to submit any information which might assist the authorized Forest officer in making a decision.

Locatable Minerals

The No Action alternative will not change availability of locatable minerals within the river corridors. Valid and existing mining claims within the river boundary remain in effect per 16 U.S.C § 1280(a). All mining operations and other activities under a mineral authorization subject to a new decision for modification, extension, or renewal shall be subject to regulations that minimize surface disturbance, water sedimentation, pollution and visual impairment per 16 U.S.C § 1280(a)(i), 36 C.F.R. 228, and the LRMP. Timing and spatial restrictions on surface disturbances may occur and result in a substantial reclamation bond requirement prior to the approval of a Plan of Operations.

Salable Minerals

The No Action Alternative would affect salable mineral sites and projects within the designated scenic and recreation corridors in the same way as the Proposed Action Alternative. New mineral permits, licenses, and sales may be issued for salable minerals within a designated scenic or recreation river at the discretion of the Forest Service per 36 C.F.R. 228. Existing mineral permits, license, and sales contracts within the river boundary remain in effect per 16 U.S.C § 1280(a). All mining operations and other activities under a mineral permit subject to a new decision for modification, extension, or renewal shall be subject to regulations that minimize surface disturbance, water sedimentation, pollution and visual impairment per 16 U.S.C § 1280(a)(i), 36 C.F.R. 228, the LRMP, and the 1968 WSR Act. Timing and spatial restrictions on surface disturbances may occur and result in a substantial reclamation bond requirement prior to the approval of a Plan of Operations. Mineral permits, license, and sales contracts may be renewed depending on the type of authorization and renewal authority and process per 36 C.F.R. 228.

Effects of Alternative 2: Proposed Action

Leasable Minerals & Geothermal

The Proposed Action would not change the acreage of lands open (i.e. available) to mineral or geothermal leasing in the river corridors at 23%. The Proposed Action would change how surface operations on those leases are administered by changing areas covered by the Conditional Surface Use stipulation to coverage by the No Surface Occupancy stipulation. The Proposed Action would require 100% of available acreage in the recreational and scenic river corridors to be administered under a No Surface Occupancy stipulation, or a change of +1% forest-wide to 36%. (see Table 4.3). Such a change would simplify the administration of the river corridors in relation to leasable mineral and geothermal surface operations, if the lands were ever leased.

Table 4.3: Effects of Proposed Action on Leasable Minerals

Mineral & Geothermal Leasing Status with Stipulation	Existing Acres	Proposed Acres
Total	93,577	93,577
Closed	72,016	72,016
Open	21,561	21,561
Standard Lease Terms	0	0
Conditional Surface Use	**9,826**	**0**
Recreation Sections	*503*	*0*
Hoback River	225	0
Snake River	279	0
Scenic Sections	*9,323*	*0*
Granite Creek	52	0
Gros Ventre River	5,648	0
Blackrock River	3,623	0
No Surface Occupancy	**11,736**	**21,561**
Recreation Sections	*4,708*	*5,211*
Hoback River	503	728
Snake River	4,204	4,483
Scenic Sections	*7,028*	*16,351*
Granite Creek	19	70
Gros Ventre River	6,297	11,945
Blackrock River	712	4,335

A No Surface Occupancy stipulation throughout the designated recreational and scenic river corridors will require lease surface operations to be located outside the designated river corridors. This action would most affect the Gros Ventre River outside the Gros Ventre Wilderness and Blackrock Creek as approximately 94% of lands within these corridors are currently administered under the Conditional Surface Use stipulation (see Table 4). The

remaining 6% of lands within the designation administered under the Conditional Surface Use stipulation are sporadically spread among the Snake and Hoback rivers and Granite Creek.

A buffer zone between potential surface operations and the Gros Ventre Wilderness would be created along a large portion of the Gros Ventre River where the No Surface Occupancy stipulation did not occur previously. However, potential projects would have to travel further away from the Gros Ventre Road where the road is located within the river corridor. At Blackrock Creek, the Proposed Action would push the existing buffer zones with the southern boundary of the Teton Wilderness further south. Potential projects would have to travel further away from Highway 22/287 where the highway is located within the river corridor. While the displacement of potential projects to lands outside the designated river corridors is expected to help protect identified river values, it is possible that additional surface disturbances would occur outside the designated river corridors. Therefore, a potential project's cumulative potential impacts to surface resources may not necessarily decrease but rather would be displaced outside the designated river corridor.

The Proposed Action would not change the total percent of acreage of lands open (i.e. available) to mineral or geothermal leasing in the forest at 26%. The Proposed Action would change how surface operations on those leases are administered by changing areas covered by the Conditional Surface Use stipulation to coverage by the No Surface Occupancy stipulation. The Proposed Action will result in 36% of available NFS lands in the forest to be administered under a No Surface Occupancy stipulation (see Table 4.4). The Proposed Action results in a change of land administration affecting 1% of available NFS lands in the forest (see Table 4.5).

Table 4.4: Effects to Leasable Minerals, BTNF

Mineral & Geothermal Leasing Status with Stipulation	Acres	Percentage
Total	3,465,200	100%
Closed (surface and subsurface estates)	2,565,356	74%
Open (surface estate only)	899,844	26%
Standard Lease Terms	0	0%
Conditional Surface Use	**576,839**	**64%**
No Surface Occupancy	**323,005**	**36%**

Table 3.5: Change in Mineral Leasing Stipulations, BTNF

	Acres	% Change
Closed (surface and subsurface estates)	0	0%
Open (surface estate only)	0	0%
Standard Lease Terms	0	0%
Conditional Surface Use	**-9,826**	**-1%**
No Surface Occupancy	**+9,826**	**+1%**

Locatable Minerals

The Proposed Action includes local resource standards and guidelines designed to institute regulations that minimize surface disturbance, water sedimentation, pollution, and visual impairment per 16 U.S.C. § 1280(a)(i). Such regulations may restrict the ability of a mining operation depending upon the level and degree of a proposed operation. The proposed action may result in a greater number of mining operators submitting Notices of Intent until the operators have a greater understanding of the restricts resulting from the new standards and guidelines. The possible volume increase of Notice of Intent submittals is expected to be small. It is possible that small suction dredging operations that were not required to submit a plan of operations, may be required to submit a plan of operations. This will be handled on a case-by-case basis.

Valid existing mining claims will be affected by the Proposed Action. Existing mining claims would be affected by the proposed standards and guidelines to avoid and minimize negative impacts to identified river resources. Timing and spatial restrictions on surface disturbances are expected, and may result in a substantial reclamation bond requirement prior to the approval of a Plan of Operations. Sediment discharge is anticipated to be strictly regulated and enforced. Regulating visual impacts to river users will most likely disrupt operations. While the Proposed Action would result in greater regulation on valid and existing claims in accordance of the U.S. mining laws, the Wild & Scenic River Act, 36 CFR 228, and the LRMP, the Proposed Action would not infringe upon a miner's rights for: reasonable access for prospecting, mining, and processing; occupancy and use of the surface for mining and processing purposes; and use of timber from claims for mining purposes.

Salable Minerals

Existing mineral permits, license, and sales contracts within the river boundary remain in effect per 16 U.S.C § 1280(a). All mining operations and other activities under a mineral authorization subject to a new decision for modification, extension, or renewal shall be subject to regulations that minimize surface disturbance, water sedimentation, pollution and visual impairment per 16 U.S.C § 1280(a)(i), 36 C.F.R. 228, and the 1968 WSR Act. Mineral permits, license, and sales contracts may be renewed depending on the type of authorization and renewal authority and process per 36 C.F.R. 228. Timing and spatial restrictions on surface disturbances are expected, and may result in a substantial reclamation bond requirement prior to the approval of a Plan of Operations.

New mineral permits, licenses, and sales may be issued for salable minerals within a designated scenic or recreation river corridor at the discretion of the USFS per 36 C.F.R. 228. All mining operations and other activities under mineral permits, license, and sales contracts shall be subject to regulations that minimize surface disturbance, water sedimentation, pollution and visual impairment per 16 U.S.C § 1280(a)(i), 36 C.F.R. 228, and the applicable Forest Plan. Timing and spatial restrictions on surface disturbances are expected, and may result in a substantial reclamation bond requirement prior to the approval of a Plan of Operations.

Other Required Disclosures

Socio-economic Resources

No new restrictions are proposed in the Forest Plan Amendment that would endanger the economic well-being of the communities involved. The designation of the Snake River Headwaters WSR's placed certain legal limits, especially within stream segments classified as wild, for minerals development and water resources projects. Those limits are not reflected in this analysis, because no change in management is expected between the No Action and Proposed Action in these instances.

Population growth in Wyoming has been substantially higher than the national average, fueled largely by the outdoor and community characteristic amenities of small towns and large open spaces, and in Sublette County, also by short-term gas field employment opportunity. The U.S. rate of change between 1990 and 2010 was 13.2%, with Wyoming's almost double that at 24%. All three of the counties in the project area have also grown in population much faster than Wyoming's average (U.S. Census Bureau 2011). Table 4.6 provides a summary of Wyoming and local county population data.

Table 4.6 Wyoming Population Data

	1990	2010	% change
Wyoming	453,588	563,626	24 %
Teton	11,172	21,294	90%
Lincoln	12,625	18,106	43%
Sublette	4,843	10,247	116%

U.S. Census Bureau: State and County QuickFacts from 2011

This increasing population trend is referenced in the resource analyses that follow in Chapter IV. The only numeric limits to commercial recreation in this Proposed Action are those which currently exist in the 2002 Snake River Recreation Plan, so again, while these existing limits are incorporated as thresholds in the proposal under new monitoring requirements, there is no difference between the No Action and Proposed Action alternatives. The limits put in place are expected to protect the desired recreation experience and human safety in that corridor, thus providing a beneficial effect for local tourism businesses.

Environmental Justice: Executive Order (EO) 12898 (February 11, 1994) directs federal agencies to focus attention on the human health and environmental conditions in minority communities and low-income communities. The purpose of EO 12898 is to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects on minority and low-income populations. The Executive Order clarifies: Low-income populations exist if 20 percent or more of the total population is at or below the poverty level, and a minority population exists if 50 percent or more of the total population is considered minority.

Because none of the counties in the project area contain low-income or minority populations as defined by EO 12898, no additional outreach or analysis has been completed. Table 4.7 shows the minority characteristics of the three counties compared to Wyoming state statistics. Table 4.8 shows county and state poverty statistics, percentage of individuals living below the poverty level, as defined by the U.S. Census Bureau. Any management actions taken on the Forest will affect the surrounding population in a similar way – the potential impact would be felt proportionally by the total population surrounding the Forest.

Table 4.7. Percent Racial Component of Population by County, 2011 (U.S. Census Bureau)

County/ State	Total Population	White	Black	American Indian	Asian or Pacific Islander	Other/ Multi-Race	Hispanic Any Race
Teton	21,548	95.8	0.4	1.1	1.3	1.3	15.4
Lincoln	18,071	97.1	0.4	1.0	0.4	1.1	4.1
Sublette	10,146	96.1	0.7	1.3	0.7	1.3	7.3
Wyoming	568,158	93.5	1.1	2.6	1.0	1.8	9.1

Table 4.8. Percent of population living below poverty level by county, 2011 (U.S. Census Bureau)

	Teton	Lincoln	Sublette	Wyoming	U.S.
Poverty Level	8.2	8.1	4.2	9.8	13.8

Given that no minority or low-income populations meet executive order thresholds in the affected area, there would be no disproportionate effect from this proposal on such populations regarding environmental justice concerns or factors.

Chapter V– Consultation & Coordination

Public Involvement

The public has been involved in creating this proposal, beginning with public meetings focused on adjoining landowners to explain the implications of the wild and scenic designation and to review corridor boundaries. In December of 2010, joint National Park Service/U.S. Fish and Wildlife Service/U.S. Forest Service public meetings were held in Jackson, Wyoming and Bozeman, Montana. The BTNF created two newsletters which were distributed at public locations from visitor centers to outdoor shops, and has maintained a web site and an email list with steady updates on the process and continual access for input.

Appendix G includes a *representative* summary of initial public comments following those public meetings and Volume Two of the Forest's newsletters. Many comments helped refine the description of the identified river values. Some comments suggested potential protective actions for those river values. Commenters gave the Forest a sense of what concerns they had about existing conditions in specific places across the designation. A few comments related to defining the extent of the corridor boundary. A number of letters suggested process ideas to promote success across the several jurisdictions involved, and others included specific actions that might serve to implement the goals of the Wild and Scenic Rivers Act.

Formal scoping of management subcategories under Desired Future Conditions began on January 3, 2012 and ended on February 3, 2012. Scoping letters were sent via the U.S. Postal Service to approximately 400 individuals, organizations, tribes and federal agencies, including the U.S. Fish and Wildlife Service. Over 600 agencies, tribes, organizations and individuals, including Teton, Sublette, Lincoln and Fremont Counties, received scoping letters via email. A copy of the scoping letter was also sent to the Wyoming State Clearinghouse that coordinates NEPA responses for all state agencies, and a press release informed the public of the availability of the proposal online or through contacting the Forest for a hard-copy version.

Included in the scoping were current grazing permittees and special use permittees. The project was listed on the Forest quarterly schedule of proposed actions. Congressional field representatives for Senators Enzi and Barasso, and Representative Lummis were briefed, as were the Teton, Sublette and Lincoln County Commissioners.

Fifty-two responses were received from fourteen individuals and organizations by February 2012. Comments varied by the respondent's interests; a summary is listed under "Issues" in Chapter II.

A summary of written comments and responses can be viewed in Appendix B.

Additionally, invitations were extended to the electronic contact list, those requesting hard copies of ongoing information and meetings and through public news releases for a public workshop on March 16, 2012 regarding Phase Two of the proposal, the development of standards and thresholds. Approximately twenty individuals, representing agencies, organizations, and

businesses, as well as private landowners, participated in this session. Consolidated proposals were created following that workshop and posted online as a draft Amendment 11, with an announcement of document availability for those unable to attend.

At the workshop, participants were most concerned by the following:

- The relationship between the new Forest Planning Rule and the Forest Plan Amendment being created
- The relationship between the Forest Plan Amendment and the Comprehensive River Management Plan
- Balancing useful protective standards with the need for flexibly addressing proposals for activities within the diversity of corridors
- How indicators and thresholds would influence capacity judgments in the future

Input received in all of the outreach efforts described above has been incorporated, as appropriate in the current Forest Plan Amendment proposal. Additionally, the Forest Service invited stakeholders to participate in a final June 4, 2012 public workshop to experiment with the draft proposal standards developed after the March session, using a series of scenarios to explore whether their concerns were being adequately addressed. Participants were then invited to help determine potential future courses of action should monitoring determine that the proposed planning standards are not sufficiently protecting identified river values. These suggested activities are described in Chapter V, part E. of this combined document.

Collaboration with National Park Service (Grand Teton National Park, Yellowstone National Park, John D. Rockefeller, Jr. Memorial Parkway) and National Fish and Wildlife Service (National Elk Refuge)

The National Elk Refuge of the US Fish and Wildlife Service administers land along a small portion of the Snake River Headwaters. Representing their interests during the early stages of the interagency process was Marty Meyer, Refuge Officer. After his retirement, Bryan Yetter stepped in to fill his position and his role in developing the CRMP. Steve Kallin, Refuge Director, has been involved throughout.

Approximately 100 miles of the designated streams and rivers of the Snake River Headwaters are within the administrative boundaries of three units of the National Park Service. Staff from these units invited their Forest Service colleagues to deliberate on management options, and participated in Forest Service workshops and public meetings as well. Joint participation in other regional activities, often through the Greater Yellowstone Coordinating Committee, also created helpful networks of expertise.

The partnerships developed during the drafting of the Comprehensive River Management Plans are expected to be carried forward into implementation efforts as well. Future collaborative projects among resource and recreation specialists are identified in the opportunities section. The first among these is likely to be the quantification of water needs and development of water rights applications to the State of Wyoming.

Cooperation with State of Wyoming Agencies

Because the Forest Service recognizes the State's role in managing wildlife, which is identified as an integral part of the outstandingly remarkable values in this designation, the Wyoming Game and Fish Department has been fully involved in the creation of this document. The State and the Forest Service share a common interest in ensuring protection and enhancement of the lands and waters designated under the WSRA. Habitat Protection Program Staff Biologist, Amanda Withroder, and Jackson Region Fisheries Biologist, Tracy Stephens, worked closely with the interdisciplinary team throughout the entire process to connect Forest specialists and planners with the resources and data that would ensure a strong analysis and effective future direction to meet the purposes of the WSRA. With their assistance, various draft documents were circulated among relevant staff and additional specialists were brought into specific meetings. They also arranged virtual meetings to include the state's Habitat Protection Program Coordinator, Mary Flanderka and Water Management Coordinator Tom Annear, and involved NEPA staff from Wyoming Department of Environmental Quality, Mark Conrad, and members of the State Engineers Office as well as Rebekah Fitzgerald, Natural Resources Policy Analyst for Governor Mead's office and Jerimiah Rieman, the Governor's Natural Resources Policy Advisor.

As the CRMP grew closer to completion, a managers' meeting was scheduled to include Tim Fuchs, Jackson Region Wildlife Supervisor and the Acting Bridger-Teton National Forest Supervisor, Brent Larson, along with Forest Deputy Jose' Castro, Resources Program Manager Pam Bode, and Jackson District Ranger Dale Deiter to review such planning topics as corridor boundaries, elk feedground management, and water quality data collection.

Consultation with Fish and Wildlife Service

Bridger-Teton staff are consulting with the U.S. Fish and Wildlife Service concerning the effects of the proposed Forest Plan Amendment on listed and proposed species, as required by Section 7 of the Endangered Species Act. Consultation will be completed before a Forest Plan Amendment is signed.

Consultation with Traditionally-Associated Tribes

The Shoshone Bannock Tribes at Fort Hall and the two Wind River tribes, the Eastern Shoshone and Northern Arapaho, were all invited to share their perspectives and historical knowledge related to the rivers in this designation beginning in spring of 2010.

In March 2010, Bridger-Teton planning staff met with Land Use Department Staff of the Shoshone-Bannock Tribes at Fort Hall, Idaho. They expressed interest in the project as downstream beneficiaries of potential water quality protections, and wanted to consider their ability to share tribal expertise regarding water uses and impacts, depending on staff workloads. Randy Thompson, Tribal Liaison for the Caribou-Targhee, also passed along contact information for Yvette Tuell, the Environmental Coordinator at Fort Hall, and all three contacts were subsequently included in all outreach emails and updates.

Formal scoping letters were mailed to both the Arapaho and Shoshone Business Council Chairmen at the Wind River Reservation at the same time as the email release of formal scoping, which included the above contacts at the Shoshone-Bannock Tribes in Idaho.

No requests for meetings or consultations were received from either of the Wind River Tribes, which are presently located outside the Snake River Headwaters watershed but who retain traditional use access rights in the upper areas of the headwaters.

List of Agencies, Organizations and Individuals Sent Notice of this Document

Federal Agencies

U.S. Department of the Interior
- Grand Teton National Park
- U.S. Fish & Wildlife Service
- U.S. Geologic Service
- U.S. Bureau of Reclamation

U. S. Army Corps of Engineers

U.S. Senators and Represenatives
- Honorable John Barrasso, Senator
- Honorable Michael B. Enzi, Senator
- Honorabel Cynthia Lummis, Represnative

State Agencies

- Wyoming Game and Fish Department
- Wyoming Department of Agriculture
- Wyoming Department of Environmental Quality
- Wyoming State Historic Preservation Officer
- Wyoming Department of Transportation
- Wyoming State Engineers Office
- Wyoming State Outfitter Board
- Wyoming State Trails

State Officials

- Honorable Matt Mead, Governer
- Dan Dockstader
- Keith Gingery
- Stan Cooper
- Kathy Davison
- Robert McKim

Local Governments

Teton County
Lincoln County
Sublette County
Town of Alpine
Town of Afton
Town of Jackson
Town of Thayne
Teton Conservation District
Sublette Conservation District
Star Valley Conservation District

American Indian Tribes

Eastern Shoshone
Northern Arapaho
Shoshone-Bannock

Organizations and Businesses

Jackson Hole Chamber of Commerce
American Rivers
Jackson Hole Conservation Alliance
American Whitewater
Greater Yellowstone Coalition
Wyoming Stockgrowers Association
Snake River Fund
Wyoming Wilderness Association
Winter Wildlands Alliance
Sierra Club
Teton Science School
Jackson Hole Wildlife Foundation
Trout Unlimited
Wyoming Outdoor Council
The Nature conservancy
Western Watersheds
Wyoming Wetlands
Girl Scouts of Wyoming
Biota Research
The Meridian Group
Jackson Hole News & Guide
Sportsmen for Fish and Wildlife
Hatchet Ranch
Barker-Ewing Whitewater, Inc
Charlie Sands Wild Water River Trips, Inc.
Dave Hansen Whitewater
Jackson Hole Whitewater, Inc.

Lewis and Clark Expeditions
Mad River Boat Trips, Inc.
Snake River Park, Inc.
Teton Whitewater
On the Fly
High Country Flies
Mangis Guide Service
Jackson Hole Anglers
Snake River Angler
Snake River Fishing Trips
Fish the Fly
Grand Fishing Adventures
Spotted Horse Ranch
South Fork Fly Fishing
Teton Troutfitters
Westbank Anglers
World Cast Anglers
Rendezvous River Sports/JH Kayak School/Snake River Kayak and Canoe
Snake River Whitewater Photos and Video
Float-o-Graphs
Wilderness Ventures
Flat Creek Ranch
Teton Youth and Family Services
Barlow Outfitting
University of Michigan, Camp Davis
Western Wyoming Outfitters
Jackson Hole Ski Club
American Avalanche Institute
Togwotee Properties
Paddle On, Inc.
A-OK Corral
Trophy Mountain Day Use Adventures, LLC
Horse Creek Outfitters, LLC
River Shuttles
High Country Flies
Goosewing Ranch/Two Bears, Inc.
Sleeping Indian Outfitters
NOLS
Jackson Area Shuttle Service
Spread Creek Outfitters, LLC
Highline Trail Llamas
Turpin Meadows Ranch, Inc.
Teton County Parks and Recreation
Jackson Hole Snowmobile Tours
Long Draw Outfitters
Exum Mountain Guides

Thunder Mountain Outfitters at Triangle C
Lost Creek Ranch
Safari Club International Foundation
Heart Six Ranch
Elk Antler, LTD
Snake River Sporting Club
Jackson Hole Llamas
Teton Valley Ranch Camp
Teton Mountain Bike Tours
Wyoming Angling Company
Jensen Hunting Camp
High Country Outfitters
Scenic Snow Safaris
High Mountain Helicopter Skiing, Inc.
Linn Brothers Outfitting, Inc.
Camp Creek Outfitters, Inc.
Teton Science Schools
Grand View Recreation, LLC
Rocky Mountain Snowmobile Tours, Inc.
High Country Snowmobile Tours,
Red Rock Ranch
Yellowstone Horse Rentals
Yellowstone Outfitters
Circle S Outfitters
Upper Hoback Adventures, LLC
Trail Creek Ranch
Great Salt Lake Council Boy Scouts
Black Diamond Outfitting
Fat Tire Tours/Hoback Sports
Wild West Jeep Tours
NL Wilson
Elevation Imaging, Inc.
Prescott College
Jackson Hole Mountain Guides
Grand Fishing Adventure
4U Outfitters
Jackson Hole Ski Corp.
Granite Management, Inc.
Hole Hiking Experience
Wyoming Girl Scout Council
Bear Basin Outfitters
Gros Venter Wilderness Outfitters
Jackson Hole Iditarod
Double T Outfitters
T Lazy T Outfitters
Old Faithful Snowmobile Tours, Inc.

City Kids Wilderness Project
Triangle X Ranch
Bar-T-5
Spotted Horse Ranch
Green River Outfitters, Inc.
Gros Ventre River Ranch
Mill Iron Ranch
Hidden Basin Outfitters
Wyoming Country Outfitters, Inc.
Big Wild Adventures
Darwin Ranch, Inc.
Double Y Outfitters
Brooks Lake Lodge
Castagno Outfitters
Aramark Togwotee
Wilderness Trails
JHL Outfitting
Teton Mountain Bike Tours
Absaroka Ranch
Wyoming Expeditions
Two Ocean Pass Outfitters
Hidden Creek Outfitters
Moosehead Ranch
Teton Horseback Adventures
Ishawooa Outfitters
North Star Outfitters
Trefren Outfitters
Teton Country Outfitters
Pass Creek Outfitters

Individuals

The list of individuals is available from the Forest Supervisors office.

\VI. References and List of Preparers

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