1 Introduction

The Greater Yellowstone Area is the headwaters to several of America's most prominent rivers including the Missouri, Yellowstone, Snake and Green. Waters of the Greater Yellowstone Area are renowned for their excellent fishing in superlative settings. Legendary rivers such as the Henrys Fork, the Firehole, the Madison, the Yellowstone, and the Snake attract anglers from around the world. Not only are these headwaters important for fish, wildlife and recreation in the upper reaches, but communities downstream depend upon the clean, abundant flows for domestic, agriculture and industrial use. From an economic standpoint, water may very well be the most valuable resource produced in the Greater Yellowstone area. A vital function of the Greater Yellowstone Area administrative units is to ensure, at their sources, the integrity of these important waters.

Federal land managers have identified watershed management as one of the top management priorities for the Greater Yellowstone Coordinating Committee (GYCC). This management is directed and guided by numerous laws, rules, regulations and policy. One guiding document of recent significance is the *Unified Federal Policy for a Watershed Approach to Federal Land and Resource Management*, published in the Federal Register October 18, 2000. This policy is one outcome of the *Clean Water Action Plan: Restoring and Protecting America's Waters*, which was released in 1998 to "provide a blueprint for restoring and protecting the nation's precious water resources."

The Unified Federal Policy provides a framework for a watershed approach to federal land and resource management activities by:

- using a consistent and scientific approach to manage federal lands and resources and to assess, protect, and restore watersheds
- identifying specific watersheds in which to focus funding and personnel for accelerating improvements in water quality, aquatic habitat, and watershed conditions
- using the results of watershed assessments to guide planning and management activities in accordance with applicable authorities and procedures
- working closely with states, tribes, local governments, private landowners, and stakeholders to implement this policy
- meeting Clean Water Act responsibility to comply with applicable federal, state, tribal, interstate, and local water quality requirements to the same extent as non-governmental entities
- taking steps to ensure that federal land and resource management actions are consistent with applicable federal, state, tribal, and local government water quality management programs

In adoption of the Unified Federal Policy, members of the GYCC are collaborating to produce a watershed management strategy for the Greater Yellowstone Area. This document represents that strategy. It is being prepared to better position the Committee to provide effective stewardship of watersheds and aquatic systems into the 21st century.

The strategy is consistent with the Forest Service Natural Resource Agenda and Park Service Natural Resource Challenge, as well as strategic plans recently developed by both agencies in response to the Government Performance and Results Act (GPRA). The strategy utilizes information available from the Inland West Water Initiative, which is described below.

2 Inland West Water Initiative

Background

A few years prior to the release of the Unified Federal Policy, national forests in the interior west states of Montana, Idaho, Utah, Nevada, Arizona, New Mexico, Colorado, Wyoming and South Dakota completed a project that parallels the framework of the Unified Federal Policy. Dubbed the Inland West Water Initiative, the project was created as a proactive strategic step to protect vital water-related resources on national forest lands. A primary initial task was completion of a rapid watershed reconnaissance that, through the use of existing information, resulted in a database that identifies the:

- inherent risk of conducting activities within a watershed (watershed vulnerability)
- locations of critical water-dependent resource values at risk that need priority protection (crucial stream segments)
- locations of damaged soil, riparian and aquatic resource values that need to be restored (damaged stream segments)
- probable condition of watersheds and aquatic systems (geomorphic integrity and water quality integrity, respectively) at a consistent scale of resolution

This initial task was completed in 1998 and 1999. In 2000, National Forest staff in the Greater Yellowstone Area worked cooperatively with staff from Yellowstone National Park to produce comparable information for the Park. Similar efforts are presently being pursued by the GYCC for Grand Teton National Park and the National Elk Refuge, Red Rock Lakes Refuge, and Grey's Lake Refuge.

Reconnaissance Basics

The database is structured by 6th-field hydrologic unit code (HUC), which are watersheds that generally range in size from 5,000 to 50,000 acres. A common stream network layer is also utilized.

Watershed vulnerability data reflect the inherent risk of conditions within a watershed becoming degraded if certain sensitive lands are disturbed. Sensitive lands are defined as having highly-dissected slopes, highly erodible soils, or landslide deposits and potential for landslides. Watersheds rated as high vulnerability have more than 50% of their area in sensitive lands; watersheds rated moderate vulnerability have 20 to 50 % of their area in sensitive lands; and watersheds rated low vulnerability have less than 20% of their area in sensitive lands.

Stream segments identified as crucial have especially high resource values. They can include reaches with any of the following:

- classified as an outstanding fishery
- having an instream flow water right
- having a public water supply diversion
- providing outstanding recreation value
- having a water-based cultural use
- being in a water-based Research Natural or Special Interest Area
- having a self-propagating population of or potential to support any designated endangered, threatened, or sensitive species

Stream segments identified as damaged are those in which physical, chemical, or biological impacts have caused any water-related resource value to be seriously degraded. They can include segments exhibiting any of these impacts:

- bank damage
- sediment loading
- channel modification
- flow disruption
- thermal change
- chemical contamination
- biological stress

Geomorphic integrity data provides information on soil-hydrologic function as a sponge-and-filter system to absorb and store water, and on geomorphic resilience of streams. Watersheds with high integrity are those where these criteria occur:

- soil-hydrologic function is judged to be excellent or good throughout the watershed
- all streams are judged to be in dynamic equilibrium relative to their potential
- all riparian areas are judged to be in properly functioning condition

Watersheds with moderate integrity are those where any of the following are apparent:

- soil-hydrologic function is judged to be degraded in isolated areas (less than 20%) of the watershed

- a minor part of stream miles (less than 20%) is judged not to be in dynamic equilibrium
- a minor part of riparian miles (less than 20%) is judged to be functioning at-risk or non-functioning

Watersheds with low integrity are those with any of the following:

- soil-hydrologic function is judged to be degraded over much (more than 20%) of the watershed
- a major part of stream miles (more than 20%) is judged not to be in dynamic equilibrium
- a major part of riparian miles (more than 20%) is judged to be functioning at-risk or non-functioning

Water quality integrity data provide information on whether designated beneficial uses are being supported or water-related resource values are being protected. Watersheds with high integrity are those where no stream segment is damaged by physical, chemical, or biological impacts. Watersheds with moderate integrity are those where only a minor part (less than 20%) of segment miles is damaged. Watersheds with low integrity are those where a major part (more than 20%) of segment miles is damaged.

For both the geomorphic and water quality integrity data sets, the premise is watersheds of high integrity are relatively pristine; watersheds of moderate integrity can recover in the short-term either naturally or through revised management with minimal capital investment; and watersheds of low integrity cannot recover without major capital investment and revised management that complements the recovery.

Reconnaissance Limitations

The initial IWWI work was conducted in a very short timeframe to provide a reconnaissance-level *estimate* of geomorphic and water quality conditions. Protocols for conducting the assessment were developed, however they were imprecise. Thus, the ratings are subjective and should be recognized by the user as such. To that end:

- It is assumed the protocols were applied consistently within an administrative unit; it is probable they were applied inconsistently across units.
- The ratings apply to vast areas of land; they were determined using existing, readily available information that varied in detail both within and across administrative units. Therefore, comparison between units may be tenuous at best.

3 Inland West Water Initiative Summary of Ratings for GYA

The IWWI maps of geomorphic integrity, watershed vulnerability, water quality integrity, crucial segments, and damaged segments are shown in Appendix A. The GYA

ratings for the national forests were originally completed in the spring of 1998 and updated at a Greater Yellowstone Hydrologists (GYH) meeting in November 2000. The Yellowstone NP ratings were completed during April of 2000. Additional updates, particularly the watershed vulnerability layer, will be completed in FY 2001.

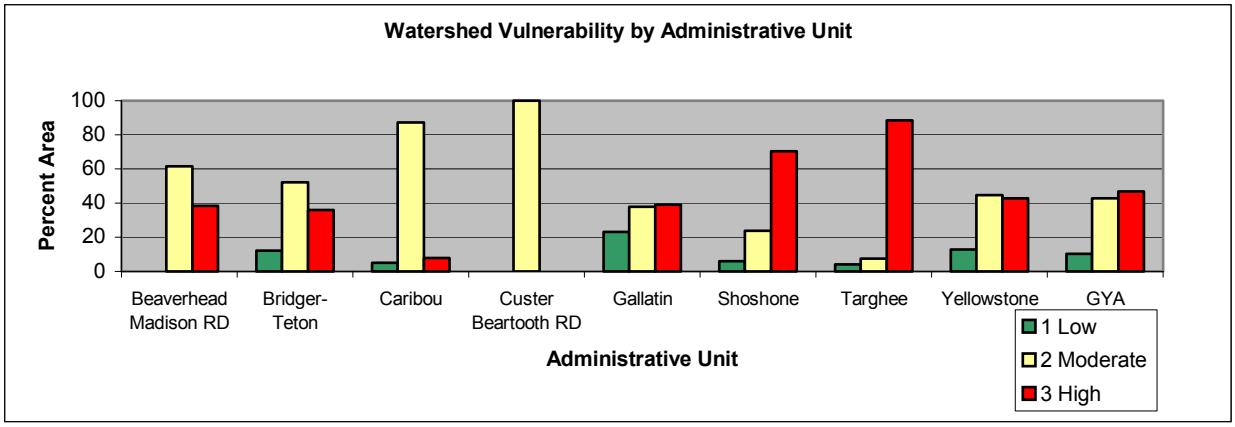

Figure 1. Watershed Vulnerability by Administrative Unit

Watershed vulnerability ratings are based on inherent risk of watershed degradation due to watershed sensitivity variables including dissected slope, erosive soils, and landslide potential.

Watershed Vulnerability	Beaverhead Madison RD	Bridger-Teton	Caribou	Custer Beartooth RD	Gallatin	Shoshone	Targhee	Yellowstone	GYA
1 Low	0	12	5	0	23	6	4	13	10
2 Moderate	61	52	87	100	38	24	7	45	43
3 High	39	36	8	0	39	70	89	43	47

Figure 2. Watershed Vulnerability Comparison

The above table also demonstrates the wide range of vulnerability ratings by GYA units. Most of the GYA rates as moderate or high vulnerability, which is appropriate considering the highly dissected nature of much of the GYA. The Greater Yellowstone Hydrologists evaluated and updated the watershed vulnerability map shown in Appendix A in November 2000 and concluded that the IWWI watershed vulnerability criteria were not uniformly applied between units. Hence, the Interagency Spatial Analysis Center (ISAC) is presently implementing a project (approved by the GYCC in 12/2000) to build a model of watershed vulnerability for the entire GYA. The ISAC model will be applied to both the existing watershed layer and to new watershed layers being built by the States as they become available. This project should be completed before the end of Fiscal Year 2001.

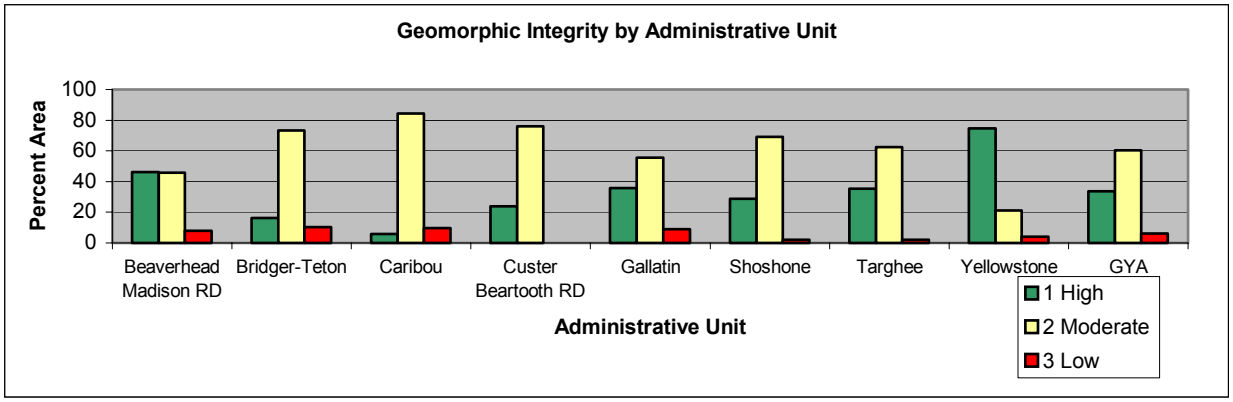

Figure 3. Geomorphic Integrity by Administrative Unit

Only 34% of the watersheds in the GYA have a high geomorphic integrity rating. The low percentage of high geomorphic watersheds is primarily a function of the stringent high geomorphic integrity rating criteria that requires excellent soil-hydrologic function throughout a watershed as well as all streams in dynamic equilibrium and all riparian areas in properly functioning condition. Most watersheds which have multiple use activities will have at least some soil-hydrologic function degradation, some stream segments not in dynamic equilibrium, and some riparian areas not properly functioning – hence the preponderance of moderate geomorphic integrity ratings.

Geomorphic IntegrityRating	Beaverhead Madison RD	Bridger-Teton	Caribou	Custer Beartooth RD	Gallatin	Shoshone	Targhee	Yellowstone	GYA
1 High	46	16	6	24	36	29	36	75	34
2 Moderate	46	73	84	76	55	69	63	21	60
3 Low	8	10	10	0	9	2	2	4	6

Figure 4. Geomorphic Integrity Comparison

Yellowstone NP has a high percentage (75%) of high geomorphic integrity watersheds due to the relatively undeveloped and undisturbed nature of the Park. The 6% of GYA watersheds with low geomorphic integrity ratings are areas with considerable watershed disturbance and/or function disruption and comprise some of the highest priority areas for watershed rehabilitation and management improvement. Moderate geomorphic integrity rated watersheds also have considerable potential for watershed rehabilitation.

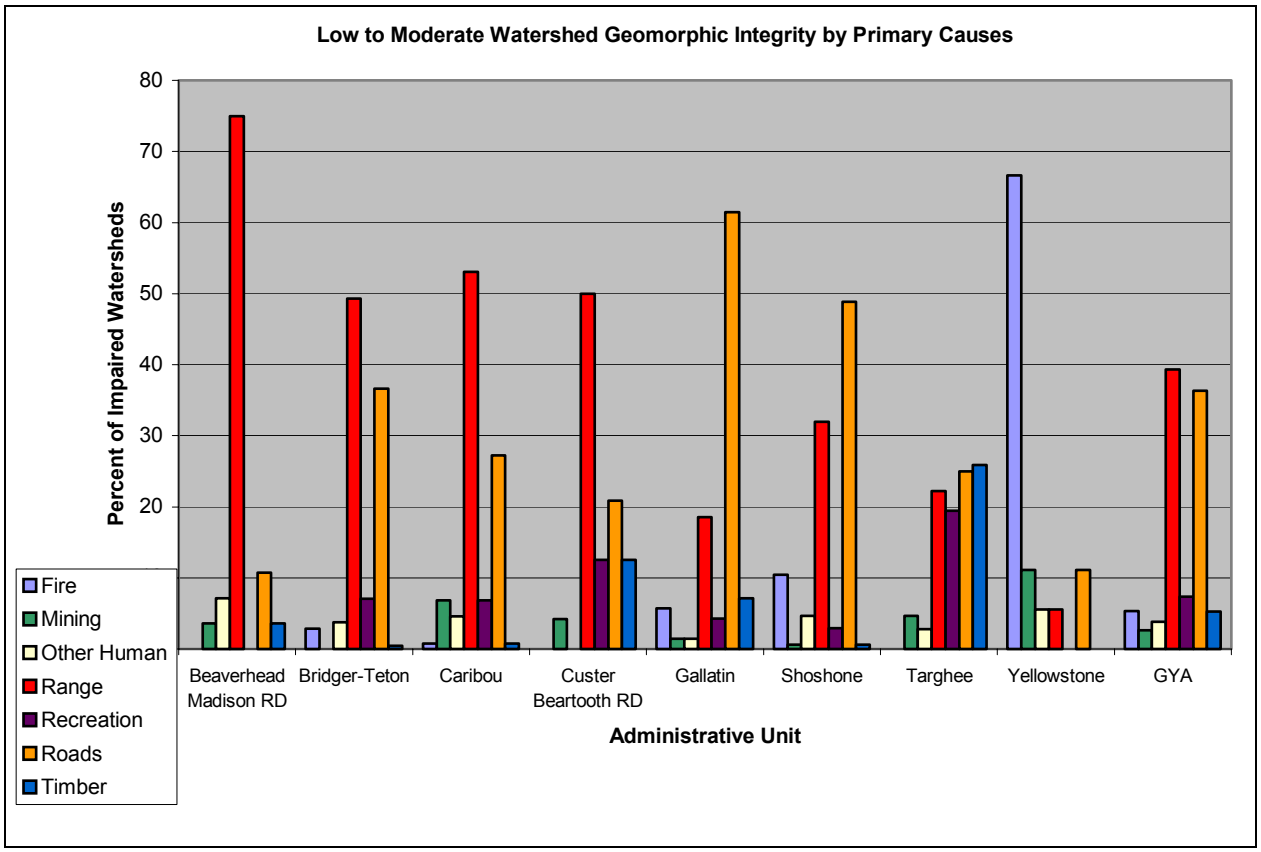

Figure 5. Low to Moderate Watershed Geomorphic Integrity by Primary Causes

Range and road impacts are the most frequent cause of GYA watershed geomorphic integrity to be downgraded to low or moderate. Range is the predominant cause on the Madison RD (Beaverhead NF), Bridger-Teton NF, Caribou NF, and Beartooth RD (Custer NF). Road impacts are the primarily cause on the Gallatin and Shoshone National Forests. In Yellowstone NP, fire is the primary cause of downgraded geomorphic integrity ratings due to several watersheds in the eastern part of the Park (Absaroka Range) with high watershed vulnerability ratings and a significant amount of 1988 canopy burn.

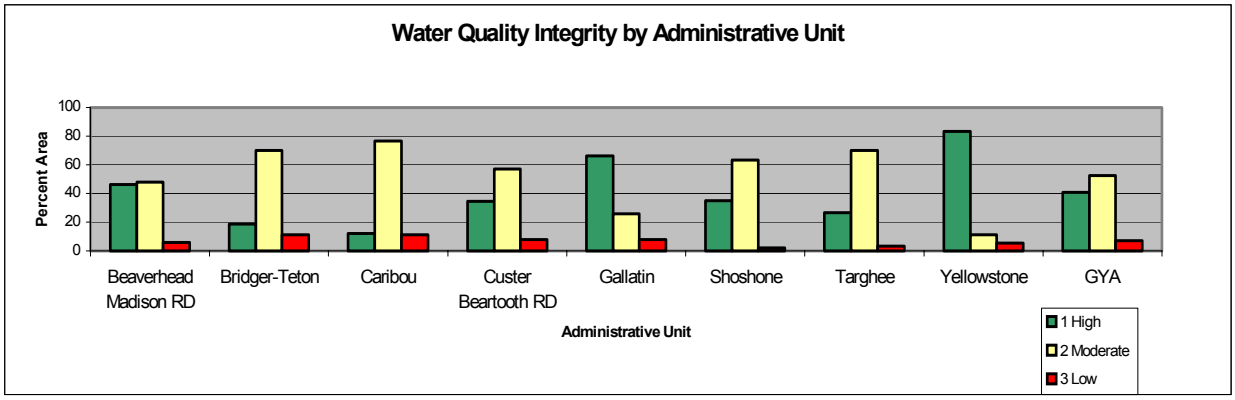

Figure 6. Water Quality Integrity by Administrative Unit

Water Quality	Beaverhead Madison RD	Bridger-Teton	Caribou	Custer Beartooth RD	Gallatin	Shoshone	Targhee	Yellowstone	GYA
1 High	46	19	12	35	66	35	27	83	41
2 Moderate	48	70	77	57	26	63	70	11	52
3 Low	6	11	11	8	8	2	3	5	7

Figure 7. Water Quality Integrity Comparison

The water quality integrity ratings shown in figures 6 and 7 are a direct function of the damaged stream layer which includes stream segments with one or more human-caused damaging factors including bank damage, sediment loading, channel modification, flow disruption, thermal change, chemical contamination, or biological stress.

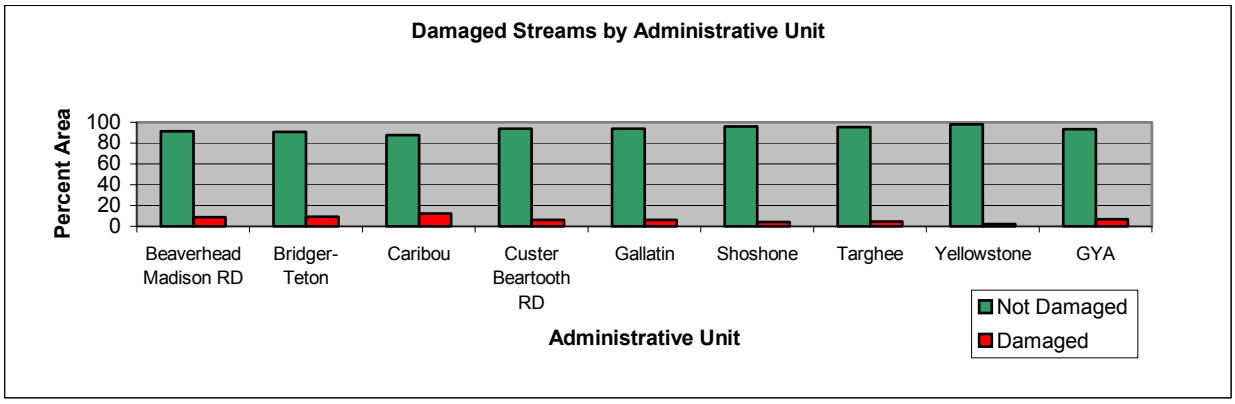

Figure 8. Damaged Streams by Administrative Unit

Damaged Streams	Beaverhead Madison RD	Bridger-Teton	Caribou	Custer Beartooth RD	Gallatin	Shoshone	Targhee	Yellowstone	GYA
Not Damaged	91	91	88	94	94	96	95	98	94
Damaged	9	9	12	6	6	4	5	2	6

Figure 9. Damaged Streams Comparison

Damaged streams are frequently listed on state 303(d) lists. The actual IWWI damaged stream layer map displays damaged stream layer by cause. The highest percentage of damaged streams occurs on the Madison RD (Beaverhead NF), Bridger-Teton NF, Caribou NF, and the Beartooth RD (Custer NF); they also have the highest percentages of impaired watershed conditions, with range as the primary cause.

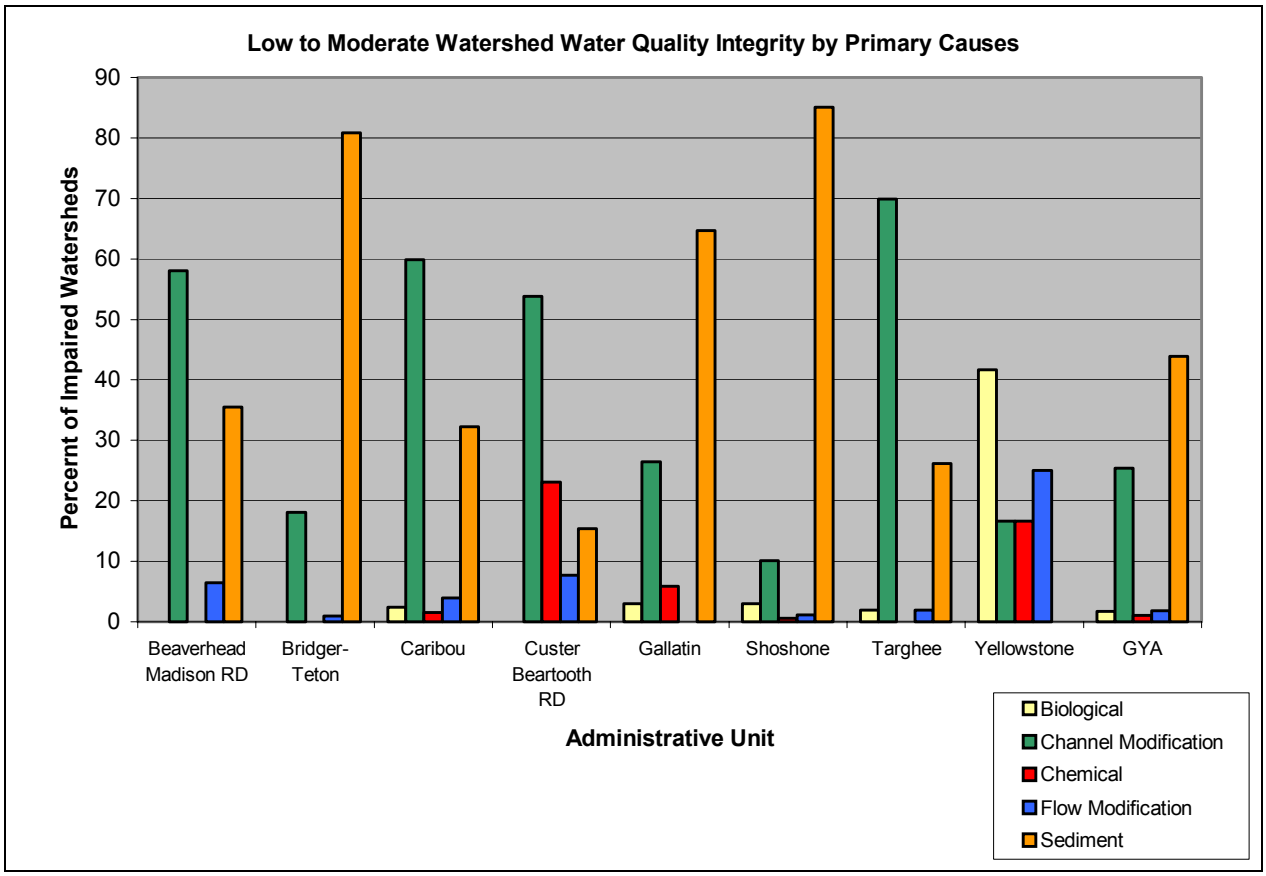

Figure 10. Low to Moderate Watershed Water Quality Integrity by Primary Causes

Sediment and channel modification are the primary causes of low to moderate water quality integrity ratings in the GYA. This is also reflective of range and roads as the primary causes of adverse GYA watershed impacts. Yellowstone NP is different than the GYA National Forests in that several stream segments have lowered moderate water quality integrity ratings due to biological causes – primarily non-native fish invasion. The chemical cause shown for the Beartooth RD (Custer NF), Gallatin NF, and YNP is from historical mining impacts in the Cooke City area.

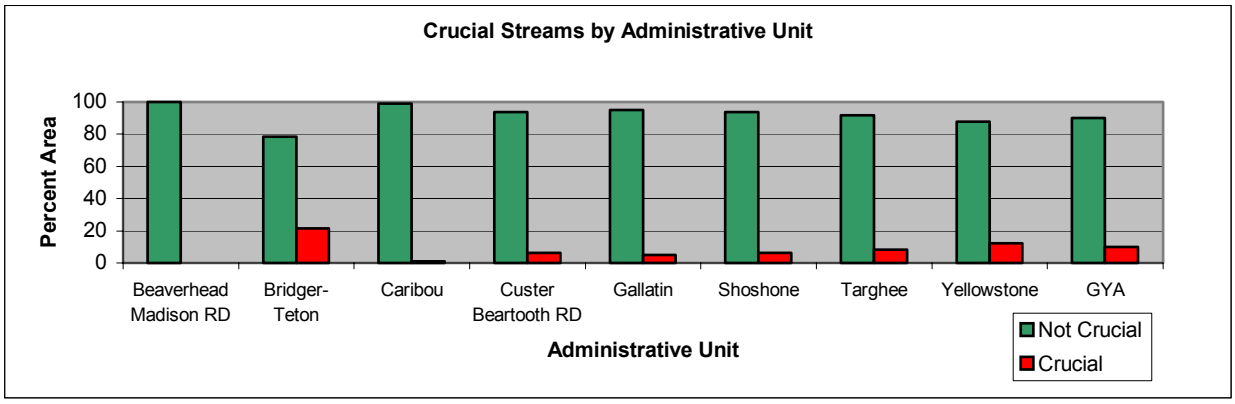

Figure 11. Crucial Streams by Administrative Unit

Crucial streams have especially high resource values including outstanding fishery, instream flow water rights, public supply diversions, outstanding recreation, or RNA or T&E reaches.

Crucial Streams	Beaverhead Madison RD	Bridger-Teton	Caribou	Custer Beartooth RD	Gallatin	Shoshone	Targhee	Yellowstone	GYA
Not Crucial	100	79	99	94	95	94	92	88	90
Crucial	0	21	1	6	5	6	8	12	10

Figure 12. Crucial Streams Comparison

About 10% of the streams in the GYA were rated as crucial. The Bridger-Teton NF has the highest percentage of crucial streams due primarily to a large number of stream segments mapped with outstanding recreation values in the Bridger and Teton Wilderness areas.

4 Lists of Watershed Improvement Opportunities

Each of the national forest units in the GYA has had watershed rehabilitation programs for a number of years – usually funded with watershed rehabilitation, road decommissioning, or wildlife/fish funds. In many cases related projects have been implemented through partnerships with other agencies or private organizations. Appendix B includes lists of known watershed rehabilitation projects on national forest land. Many of these project opportunities occur in watersheds with low geomorphic integrity and if accomplished would greatly improve the watershed condition ratings to moderate or high. The list does not include a number of potential mine reclamation projects that occur primarily on patented land. It is important to note the priority project list is only a compilation of known projects at the time of this report (February 2001).

It is important to note that Appendix B lists only national forest watershed rehabilitation projects (traditionally funded with NF watershed rehab or road decommissioning) and that many other types of projects and/or management actions can have watershed benefits

such as range management, road maintenance improvement, range allotment improvements, wildlife & fish habitat projects, mine reclamation etc.

5 Strategic Approach to Watershed Management in the GYA

Broad level strategic direction for watershed management within the Forest Service and Park Service is both clear and direct. Documents such as the *Clean Water Action Plan*, and the *Unified Federal Policy for a Watershed Approach to Federal Land and Resource Management* provide national direction to land managers to emphasize watershed protection and restoration in policy and decision making. At the agency level, the Chief's Natural Resource Agenda (Forest Service) and the Natural Resource Initiative (Park Service) provide further direction to emphasize the protection and restoration of watersheds.

The Government Performance Results Act provides guidance that agency missions should be carried out in a businesslike manner. In response to that Act, the Forest Service revised its Strategic Plan (USDA Forest Service Strategic Plan, 2000 Revision) to outline long-term goals and objectives for future management. Under a broad goal of Ecosystem Health, Objective 1a of the Strategic Plan states, "Improve and protect watershed conditions to provide the water quality and quantity and soil productivity necessary to support ecological functions and intended beneficial water uses." The objective further provides eight strategies to achieve the desired results. One goal of this report is to further define each of these strategies specific to GYA.

The information provided by the recently completed IWWI analysis is important in localizing these strategies to GYA. This analysis provides a common-scale, GYA-wide assessment of watershed condition, and serves to bring into focus important areas for strategic planning. The following recommendations for addressing the eight strategies of the 2000 Strategic Plan are based on the conclusions of the IWWI analysis.

The eight strategies are presented below in a priority ranking reflecting their importance to GYA.

1. Use cooperative techniques in planning and stewardship of the national forests and grasslands, national parks, and wildlife refuges to resolve natural resource issues cooperatively.

Implicit in this strategy is an emphasis on communication at all levels. The GYA contains a number of agencies with a variety of missions, as well as a diverse public with a variety of interests and values. Effective communication among these entities is essential to achieve the understanding necessary to resolve issues.

- The GYCC provides a vehicle for inter-agency communication. Similar efforts between federal agencies and tribes, states, and private interest groups (Greater Yellowstone Coalition, Henry's Fork Foundation, Bozeman Watershed Council, Bear River Advisory Group, Red Canyon CRM) should be fostered.

- IWWI data can serve as a useful source of information to identify additional partnership and cooperative watershed and planning and restoration opportunities. Identify possible projects for partnerships.

- Education is an integral part of communication. The GYA contains people with a vast amount of cultural and scientific knowledge concerning the history and workings of the ecosystem. Federal agencies should foster technical transfer of information both internally and externally.

2. Design projects to achieve soil and water quality protection and watershed restoration with emphasis on transportation and livestock grazing systems.

This strategy is especially applicable to GYA. The IWWI analysis showed that, where watersheds were identified as having low or moderate geomorphic and water quality integrity, the major causes were livestock grazing and roads. Following are some specific recommendations to implement this strategy:

Livestock Grazing

- Forest Plans within GYA generally provide vague direction for standards dealing with livestock management. Develop a common process for determining Allowable Use standards, streambank alteration, forage utilization, woody browse, and stubble height that would further define existing direction. Include these standards in Allotment Management Plans (AMPs).

- Increase the levels of range administration.

- Each forest should review its allotment reauthorization schedule. Where possible, elevate to high priority for AMP development those 6th code HUCs identified in the IWWI process as having a geomorphic integrity rating of moderate or low with range as the primary cause.

- Increase range condition and trend surveys to assess upland condition.

Transportation System

Use the Roads Analysis Process (RAP) to address the following:

- Disconnect roads from streams. Use information from RAP to identify where road drainage is causing sediment to enter streams. Prioritize these areas by HUCs identified in the IWWI analysis as having water quality integrity of moderate or low with the cause of roads. Initiate the process of road rehabilitation to complete disconnects.

- Decommission excess roads. Prioritize roads for decommissioning by HUCs identified in the IWWI analysis as having water quality integrity of moderate or low with the cause of roads. Initiate process to decommission roads.

- Relocate roads that encroach on stream channels. Identify roads that encroach on streams, causing either sediment introduction or channel configuration problems, and work with engineers to design adequate relocations.

- Identify fish barriers caused by stream crossings. Work with fish biologists to prioritize, and initiate process to replace barriers.

Many feel that backcountry trails are an appreciable source of sediment in roadless and wilderness areas.

- Utilize Greater Yellowstone Hydrology group to determine the extent and severity of problem throughout GYA by working with recreation specialists and engineers to identify trails that are a source of sediment and initiate a process to address the reduction of sediment.

IWWI provides important information on watershed conditions that is useful for developing integrated resource programs. Sharing this information with other functional or program areas can identify projects that would contribute to addressing critical watershed needs. For example, establishing priorities for trail and road maintenance and reconstruction, abandoned mine reclamation, developed site restoration, fisheries, range and wildlife improvement projects can all benefit from this information.

3. Provide research results and tools to support sustainable management, protection, and restoration of watersheds.

This strategy is especially applicable to GYA because of the large numbers of streams the area contains that are in good condition. The IWWI analysis showed that 34% of the watersheds within GYA function at high levels of integrity for water quality and geomorphic concerns. These areas can provide references for acceptable watershed conditions both within GYA and for many other locations in the Rocky Mountain west.

Recent methodologies for analyzing watershed condition (Federal Agency Guide for Pilot Watershed Analysis, Ecosystem Analysis at the Watershed Scale) recommend the use of reference reaches as a means for comparing watershed attributes. However, little work has been done to establish reference reaches for the variety of stream types that exist in wildland watersheds.

- Create and fund a team to field-inventory reference aquatic conditions on a variety of functioning landscapes throughout GYA. Develop relationships using field data to describe reference conditions for physical and biological components of the aquatic system. Provide that information in a format that can be incorporated into NRIS for nationwide dissemination.

4. Complete assessments, plans, and projects for watersheds identified as priority for treatment through Clean Water Action Plan cooperation with federal, tribal, state and private landowners.

- Utilize Greater Yellowstone Hydrologists to compile a list of the watersheds within GYA that have already been identified through various regional efforts, or are on state 303d lists. Use GYA influence to help obtain funding to complete work in these watersheds. (See project list in Appendix B).

5. Increase the number of abandoned mines and contaminated sites treated. Provide a comprehensive, GYA-wide, inventory of prioritized sites, and work with state abandoned mine agencies to complete projects.

6. Ensure the continued availability of water to meet purposes for which public lands were established and to sustain ecological functions.

Currently, federal agencies work through the individual states' water rights processes to obtain "favorable conditions of water flow" as directed by the Organic Act of the Forest Service and the establishment acts for the national parks and national wildlife refuges in the GYA. Administrative units within the GYA will continue to be a part of this process.

7. Implement a system of national standards for assessing watersheds by the end of 2001.

This process has already been established through the use of *A Framework for Analyzing the Hydrologic Condition of Watersheds*. GYA forests will use this process in determining the condition of 5th code HUCs.

8. Maintain the integrity of roadless areas through implementation of a roadless area conservation policy.

- The National Forest Roadless Area Conservation Policy is now in effect, and it will be followed within the GYA.

- Apply recommendations for livestock grazing (see above) in roadless watersheds where domestic grazing exists.

- Apply recommendations for trail restoration (see above) in roadless watersheds.

Program Funding

The above-mentioned direction clearly states that watershed management and restoration are the major goals of the Unified Federal Policy, the Clean Water Action Plan, and the 2000 revision of the Forest Service Strategic Plan. The funding necessary to achieve those goals must be available if they are to be attained. In reality, however, just the opposite has occurred.

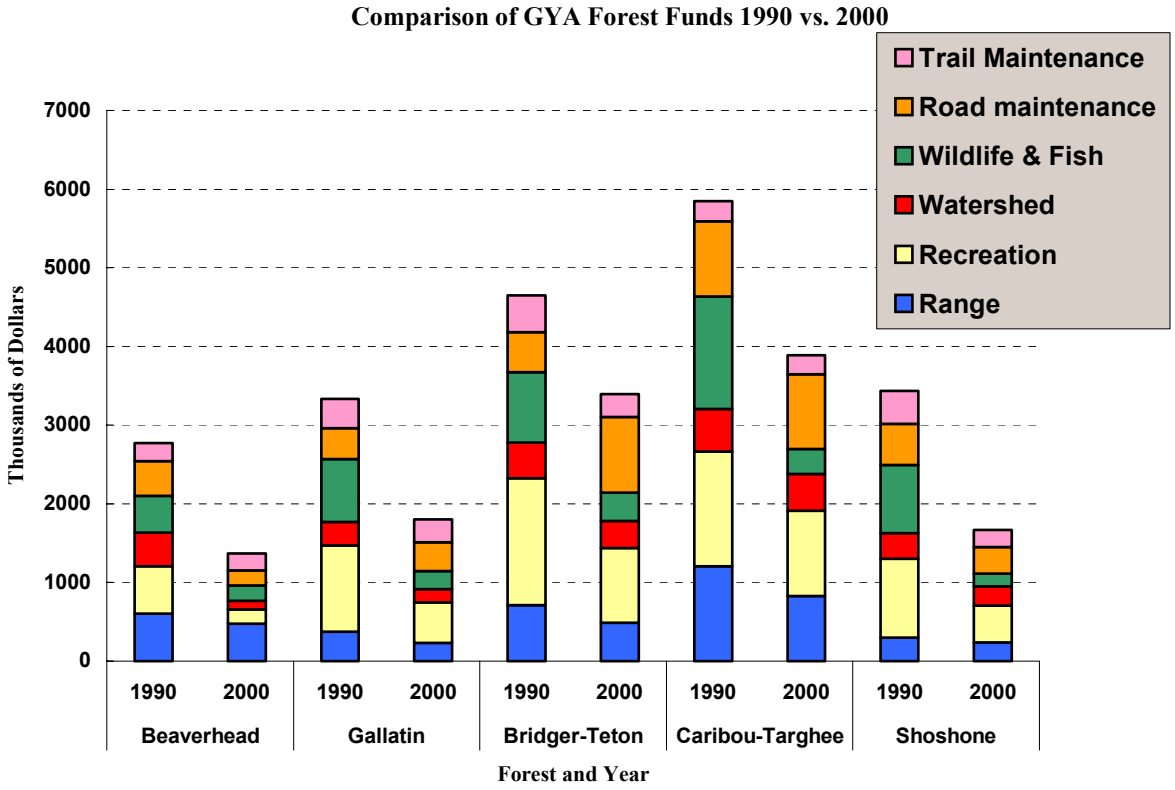

Figure 13. Comparison of GYA Forest Funds 1990 vs. 2000

Comparison of GYA Forests 1990 funds with 2000 funds by BLI in Thousands of dollars										
		Beaverhead		Gallatin		Bridger-Teton		Caribou-Targhee		Shoshone	
Budget Line Item		1990*	2000	1990*	2000	1990*	2000	1990*	2000	1990*	2000
Range		602	473	374	228	712.8	490	1204	828	296	234
Recreation		607	185	1095	516	1612	946	1461	1085	1006	472
Watershed		424	110	297	170	455	346	540	464	325	242
Wildlife & Fish		467	192	799	233	892	358	1430	321	867	160
Road Maintenance		440	190	396	361	512	964	958	950	522	341
Trail Maintenance		231	218	373	293	467	294	252	239	423	221
NOTE: 1990* cost was multiplied by 1.35 to adjust to 2000 dollars											

Figure 14. Comparison of GYA Forests by BLI

Figures 13 and 14 show that the 1990-2000 trend is a reduction in funding. The combined operations and maintenance and rehab treatment funds for budget codes that are critical to address the problems identified by the IWWI analysis have been reduced for each of the GYA Forests.

The average funding for watershed-related budget codes in the GYA National Forests are only 54% of 1990 allocations (adjusted to 2000). These budget reductions have considerably reduced the watershed management capability of the GYA national forests. Implementation of the Strategic Approach outlined in this section and the associated funding increase would be instrumental in improving watershed conditions in the GYA.

Appendix A

Map of Geomorphic Integrity for the GYA
Map of Water Quality Integrity for the GYA
Map of Watershed Vulnerability for the GYA
Map of Crucial Stream Segments for the GYA
Map of Damaged Stream Segments for the GYA

Appendix B

National Forest Priority Restoration Projects Table

Appendix B. Lists of GYA National Forest Watershed Rehabilitation Projects

Gallatin NF

Project name	District	Watershed (4HUC)	Miles/acres	Description	Cost
Little Bear Wilson road decommissioning	Bozeman	Gallatin	110 miles	road ripping, drainage, reseeding, some re-contouring, some conversion to ATV trail	$320,000
Taylor/Buck road decommissioning	Hebgen Lake	Gallatin	50 miles	road ripping, drainage, reseeding, some re-contouring	$150,000
North Gallatin road decommissioning	Bozeman	Gallatin	80 miles	road ripping, drainage, reseeding, some re-contouring, some conversion to ATV trail	$200,000
Bridger/Bangtails road decommissioning	Bozeman	Gallatin & Yellowstone	40 miles	road ripping, drainage, reseeding, some re-contouring, some conversion to ATV trail	$80,000
Mill Creek road decommissioning	Livingston	Yellowstone	15 miles	road ripping, drainage, reseeding	$50,000
West Lake road decommissioning	Hebgen Lake	Madison	29 miles	road ripping, drainage, reseeding	$100,000
				Gallatin NF total	$900,000

Custer NF (Beartooth District)

Project name	District	Watershed (4HUC)	Miles/acres	Description	Cost
Red Lodge Creek area road reclamation	Beartooth	Clarks Fork Yellowstone	?	road ripping, drainage, reseeding	$50,000
Stillwater roads reclamation	Beartooth	Stillwater River	?	road ripping, drainage, reseeding	$90,000
				Custer NF total	$140,000

Bridger-Teton NF

Project name	District	watershed (4HUC)	miles/acres	description	cost
Mule Draw soil stabilization and restoration	Big Piney	Green	245 acres	soil stabilization and forb meadow restoration	$245,000
Greys River debris placement & river restoration	Greys River	Snake	11 miles	large woody debris placement and meander restoration	$150,000
Poison Meadows restoration	Greys River	Snake	50 acres	soil stabilization and forb meadow restoration	$50,000
Roosevelt Meadows restoration	Greys River	Snake	125 acres	soil stabilization and forb meadow restoration	$125,000
Teton Wilderness trail relocation	Jackson	Snake	30 miles	trail reconstruction and relocation	$200,000
Gros Ventre Wilderness trail reconstruction	Jackson	Snake	3 miles	trail reconstruction and relocation	$25,000
Slate Creek trail stabilization	Jackson	Snake	11 miles	trail stabilization and relocation	$150,000
Teton Division travel management	Jackson	Snake	5 miles	road closure, ripping, seeding, and signing	$70,000
Rock Creek trail stabilization and reconstruction	Pinedale	Green	3.25 miles	trail stabilization, relocation, and bridge construction	$45,000
Lower Teepee Creek Road culvert replacement	Pinedale	Green	.25 acres	replacement of culvert with bridge and stream bank stabilization	$20,000
Twin Creek trail bridge construction	Pinedale	Green	.5 acres	construct 2 trail bridges – one at Twin Creek, one at Wagon Creek	$20,000
Irish Canyon Road ATV access	Pinedale	Green	.10 acres	construct ATV bridge at Forest boundary and harden ford at sheep ford	$20,000
Tosi Creek bridge survey and design	Pinedale	Green	.01 miles	construct 2 bridges on Tosi Creek	$45,000
Pot Creek rehabilitaiton	Pinedale	Green	1 acre	construct livestock fence, rehabilitate stream banks and replant willows	$25,000
				Bridger-Teton NF total	$1,190,000

Shoshone NF

Project name	District	Watershed (4HUC)	Miles/acres	Description	Cost
Sunlight Creek restoration	Clarks Fork	Clarks Fork Yellowstone	7 miles	In cooperation with Wyoming Game and Fish Department and local private landowners, re-establish pattern, profile, and dimension using natural channel design and restoration technology	$350,000
Charlie Creek gully restoration	Wind River	Upper Wind	2 acres	stabilize head cutting	$25,000
Washakie road decommissioning	Washakie	Popo Agie and Sweetwater	70 miles	complete obliteration	$210,000
Wind River road decommissioning	Wind River	Upper Wind	160 miles	complete obliteration	$480,000
Greybull road decommissioning	Greybull	Greybull and Upper Bighorn	90 miles	complete obliteration	$270,000
Wapiti road decommissioning	Wapiti	North Fork and South Fork Shoshone	80 miles	complete obliteration	$240,000
Clarks Fork road decommissioning	Clarks Fork	Clarks Fork Yellowstone	130 miles	complete obliteration	$390,000
				Shoshone NF Total	$1,965,000

Beaverhead NF (Madison District)

Project name	District	Watershed (4HUC)	Miles/acres	Description	Cost
Mill Creek	Madison	Ruby River	5 acres	channel restoration below dam	$26,000
Wigwam	Madison	Madison River	2 mi	road surfacing and drainage	$7,000
				Beaverhead NF Total	$33,000

Caribou NF

Project name	District	Watershed (4HUC)	Miles/acres	Description	Cost
?	?	?	?	?	?
?	?	?	?	Caribou NF total	?

Targhee NF

Project name	District	Watershed (4HUC)	Miles/acres	Description	Cost
Firewood Road decommissioning	Teton Basin	Mahogany	10 miles	Road scarification, seeding some re-contouring	$16,000
Road relocation planning	Teton Basin	Mahogany	12 miles	NEPA for relocating roads causing major sedemintation into cutthroat streams in a Roadless area	$300,000
Piney Pass trail maintenance and rehabilitation	Teton Basin	Mahogany	3 miles	Reconstruct ¾ mile, rehab portions that are abandoned, close 650 feet by seeding and rehab. Install check dams and drivable dips. Fill in heavily rutted segments with gravel.	$5,000
Little Elk Mountain rehabilitation	Palisades	T2S, R44E	600 acres	Apply native grass seeds on exposed soils, install gully plugs in eroded stream channels, resulting in improvement of watershed condition & reduction of soil displacement in downstream fisheries (EA's completed)	$42,000
Red Ridge watershed rehabilitation	Palisades	T1S, R44E	300 acres	Apply native grass seeds on exposed soils, install gully plugs in eroded stream channels, resulting in improvement of watershed condition & reduction of soil displacement in downstream fisheries (EA's completed)	$27,500
Palisades Wilderness Study Area trail relocation & upgrade	Palisades	T38-40N, R118W	10 miles	Trail relocation & upgrade in riparian zones (drainage work, installation of water control devices); reduction of sediment loads in streams,	$40,000
				Targhee NF total	$430,500