



**Caribou-Targhee National Forest &
Curlew National Grassland**

Bear River & Malad River TMDL Implementation Plan



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Introduction

Section 303(d) of the federal Clean Water Act requires states to develop total maximum daily loads (TMDLs) for impaired water bodies. A TMDL identifies pollutant level limitations with the goal of improving water quality in order for waterbodies to support beneficial uses. Once the U.S. Environmental Protection Agency (EPA) approves a TMDL, an implementation plan is written. The EPA approved the Final Bear River/Malad River Subbasin Assessment and TMDL in June 2006 (ERI, Inc. 2006).

A variety of stakeholders including government agencies, local citizens, and watershed advisory groups (WAGs) develop TMDL implementation plans. Through a memorandum of understanding (MOU) with the State of Idaho (USDA FS 2008), the U.S. Forest Service is the designated agency for National Forest System (NFS) Lands. The Forest therefore prepared this implementation plan to provide a framework for achieving the TMDL goals on NFS Lands. With that focus, the purpose of this plan includes the following:

- Identify recent, current, and future actions necessary to achieve load reductions
- Outline a schedule of those actions
- Specify monitoring to document actions and progress toward water quality standards.

Subbasin Assessment and TMDL Summary

The Bear River Basin includes five subbasins within Idaho; only four involved TMDLs.

- 16010102 – Central Bear Subbasin
- 16010201 – Bear Lake Subbasin
- 16010202 – Middle Bear Subbasin
- 16010203 – Little Bear-Logan Subbasin: no TMDLs identified
- 16010204 – Lower Bear-Malad Subbasin

On NFS lands, total phosphorus (TP) and total suspended solids (TSS) TMDLs were developed for Bailey, Deep (HUC 16010202), Eightmile, Elkhorn, Fivemile, Georgetown, Mink, Pearl, Sheep, Skinner, Stauffer, Sulphur Canyon, Trout, Weston, Williams, Worm, and Wright Creeks. In addition, a bacteria TMDL was developed for Maple Creek.

TMDLs are also expected in 2008 for Dry, Preuss, Snowslide, Co-Op, and Strawberry Creeks (Thompson 2008). TMDLs were not developed in 2006 due to a lack of data (ERI, Inc. 2006). The Idaho Department of Environmental Quality (DEQ) collected data during 2006 and 2007.

The load allocations are based on the following target concentrations.

Phosphorus

- Streams with another stream as the receiving water: 0.075 mg/L TP
- Streams flowing into lakes and reservoirs: 0.050 mg/L TP
- Streams entering Utah exceptions: Bear River below Oneida Reservoir, Cub River, and Worm Creek: 0.05 mg/L TP

Sediment

- Streams with another stream as the receiving water:
 - During runoff: 80 mg/L TSS

- During summer and winter base flow: 60 mg/L TSS
- Worm Creek entering Utah exception: 35 mg/L TSS
- Water flowing into lakes and reservoirs:
 - During runoff: 60 mg/L TSS
 - During summer and winter base flow: 35 mg/L TSS

Bacteria

- Maple Creek: Not to exceed monthly geometric mean (minimum of five samples) of 126 *E. coli* organisms/100 ml of water (State Water Quality Standard).

Nitrogen

- Thomas Fork downstream of the Forest: 0.085 mg/L TN

Forest-wide Measures

The Caribou-Targhee National Forest (NF) manages the NFS lands contained in the Bear and Malad River subbasins within Idaho. Land management activities are guided by several laws, regulations, and directives. For water quality protection on all future projects, the Forest will rely heavily on adaptive management and best management practices (BMPs). In particular, the following documents provide specific management direction for these lands:

- Revised Forest Plan (RFP) for the Caribou NF (USDA FS 2003): The RFP establishes direction so that future decisions will use an interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and social sciences. Specifically, the RFP contains standards and guidelines that are often times equivalent to best management practices (BMPs).
- Caribou NF Riparian Grazing Implementation Guide (GIG; Leffert 2005): The GIG provides direction (e.g. BMPs) for managing livestock grazing within riparian areas.
- Forest Service Handbook 2509.22 – Soil and Water Conservation Practices Handbook (USDA FS 1988): The handbook provides BMPs for the protection and improvement of soil and water quality.
- MOU Implementing the Nonpoint Source Water Quality Program in the State of Idaho (USDA FS 2008): This MOU includes the Idaho Department of Environmental Quality (DEQ), the Idaho Department of Lands, the Bureau of Land Management, and the U.S. Forest Service. The Forest’s strategy for protecting and improving water quality includes, among other things, integrated project planning, identification and implementation of restoration needs, implementing BMPs on all ground disturbing activities, monitoring, and adjusting BMPs through adaptive management as needed. Idaho recognizes BMPs as an effective process for protecting beneficial uses and ambient water quality.

The Forest has produced several other documents to identify and guide restoration opportunities.

- The fisheries program completed a Forest-wide aquatic organism passage survey at road crossings (Lyman 2006 & 2008). Road crossings of cutthroat trout stronghold streams and 303(d) listed streams were inventoried in 2005. The remaining road/stream crossings were evaluated in 2007. Lyman prioritized fish passage projects; several are discussed below.

- The Forest has completed three relevant watershed analyses (WAs): Georgetown, Thomas Fork, and Montpelier Creek (Caribou-Targhee NF 2003a, 2001, & 2003b respectively). Several watershed improvement recommendations from these analyses are discussed below.
- The Caribou Travel Plan (Caribou-Targhee NF 2005) identified several watershed improvement opportunities associated with the transportation system.
- As directed by the RFP, the Forest annually updates and prioritizes watershed improvement needs across the entire Forest in the Watershed Improvement Five-Year Action Plan. Restoration priorities are determined by evaluating several criteria, one of which is beneficial use impairment. Other factors include possible funding sources, partnership opportunities, workforce, aquatic habitat, and the Forest's ability to implement successful projects.
- The Forest uses the Proper Functioning Condition (PFC) methodology (Pritchard, 1998, 1999) to assess stream and riparian health. The RFP desired condition for areas identified as functioning-at-risk or nonfunctioning is to show an upward trend toward PFC.

Specific Implementation Actions

TMDL Plan Prioritization: For the purposes of this plan, streams with TMDLs are prioritized low, moderate, and high based on the need for a load reduction, potential opportunities, and the amount of influence of NFS lands on the waterbody. IDEQ developed TMDLs for streams requiring load reductions and also for several streams that do not require load reductions. The Forest will place greater priority on streams requiring load reductions. However, several restoration measures on segments not requiring load reductions are also identified. In addition, the Forest commonly conducts restoration activities in watersheds that are neither influenced by a TMDL or a 303(d) listed stream. These measures are intended to be proactive in improving and protecting water quality throughout the subbasins.

Grazing Actions: Current and past disturbances related to grazing are identified as a potential pollutant source for several assessment units. Site-specific grazing measures are discussed in the stream-specific sections below. However, several common grazing related actions are discussed separately in the section titled "*Livestock Grazing Strategies.*" Given the similar nature of these measures and the relevant allotment administration procedures, it makes sense to discuss those strategies once as a whole rather than repeating the measures for each stream.

Actions: The following information is grouped by subbasin (fourth-level HUCs) and then by stream. A brief description, identification of potential pollutant sources, and possible restoration activities are provided for each stream with a TMDL on NFS lands.

16010102: Central Bear River Subbasin

The Thomas Fork WA (Caribou-Targhee NF 2001) provides several recommendations. Specific recommendations are listed in the stream-specific sections. Broader recommendations included:

- Improve grazing management, especially in riparian areas.
- Improve and expand beaver habitat through vegetative treatments to restore willow and aspen condition and abundance; particularly in Dry, Preuss, and Giraffe Creeks.

Dry Creek: TSS & TP

Dry Creek is a high priority area. The Dry Creek drainage includes assessment units (AU) BR005_02 (integrated reports) and BR005_02a (GIS layer). Streams include Dry Creek, Dip Creek, and unnamed tributaries. Data was insufficient to develop a TMDL, but sediment and nutrient TMDLs are expected in 2008.

Potential pollutant sources include livestock grazing disturbances and to a lesser extent, recreational trails. Implementation strategies will focus primarily on grazing. Dry Creek is in the Montpelier-Elk Valley grazing allotment and Dip Creek is within both the Red Mountain and Montpelier-Elk Valley allotments. Refer to the “*Livestock Grazing Strategies*” section.

Preuss Creek: TSS

Preuss Creek is a high priority area. The Preuss Creek AUs (BR006_02, BR006_02a, & BR006_02b) include Preuss Creek, Fish Creek, Beaver Creek, and unnamed tributaries. Data was insufficient to develop a TMDL, but a sediment TMDL is expected in 2008.

Potential sediment sources include grazing disturbances, and to a lesser extent, recreational trails and Forest Road 111. Implementation strategies will focus primarily on grazing. Preuss Creek is located in both the Montpelier-Elk Valley and Red Mountain allotments. Refer to the “*Livestock Grazing Strategies*” section.

The culvert on Forest Road 111 is a top priority for replacement (Lyman 2005). It is the only Preuss Creek culvert on NFS lands and it is a barrier to juvenile Bonneville cutthroat trout (BCT). The culvert blocks roughly 2.6 miles of headwater streams. The culvert is expected to be replaced by the next TMDL round in 2011. Culvert replacement would benefit resident fish movement and water quality.

As recommended in the Thomas Fork WA (C-T NF 2001), the Forest improved the cattle driveway ford on Preuss Creek downstream of the Crow Creek Road in 2002. The Forest hardened the crossing and installed drift fence to improve water quality and aquatic habitat. See: <http://www.fs.fed.us/r4/caribou-targhee/fisheries/documents/annualreports/2001annuareport.pdf>

Sheep Creek: TP & TSS

Sheep Creek is a low priority for the Forest. Load reductions are not required in Sheep Creek and load allocations are set at current estimated loads (ERI, Inc. 2006, pg 246). Sheep Creek is not perennial on Forest. The majority of the Sheep Creek AU (BR008_02) is downstream of the Forest. Only the upper most ~0.4 miles of this 9.8 mile stream are on NFS lands. Livestock grazing on the Montpelier Elk-Valley allotment will be managed according to the direction in the “*Livestock Grazing Strategies*” section.

Thomas Fork: TP, TN, & TSS

Although this stream is not located on Forest, the Forest fisheries staff worked with private landowners in the valley to restore Bonneville cutthroat trout (BCT) migratory routes to tributaries on the Forest during 2004 through 2006. The Forest collaborated with Trout Unlimited, the US Fish & Wildlife Service, the NRCS, Utah State University, University of Wyoming, Bear Lake Regional Commission, and several irrigators to screen, bypass, and improve fish passage at the three largest water diversions. These are the Taylor Diversion near

Geneva, ID, the Mumford diversion near Raymond, ID, and the Peterson Diversion, near the mouth of the Thomas Fork. More information can be found at:

http://www.fs.fed.us/r4/caribou-targhee/fisheries/documents/annualreports/2005_report.pdf

16010201: Bear Lake

The Georgetown and Montpelier Creek WAs (C-T NF 2003a & 2003b) contain several recommendations. Specific recommendations are listed below in the stream-specific sections. Broad recommendations included the following:

- Restore the historical water balance, which has been modified by changes in vegetative patterns.
- Close illegal pioneered roads and motorized trails, especially in riparian areas.
- Improve grazing management, especially in riparian areas.

Snowslide Canyon: TSS

Snowslide is a moderate priority area for the Forest. The Snowslide Canyon AUs (BR020_02f and BR021_02) include Snowslide Canyon and unnamed tributaries. Data was insufficient to develop a TMDL, but a sediment TMDL is expected in 2008. Also, the 2008 draft integrated report (IDEQ 2008) identifies BR020_02f as impaired by *Escherichia coli* (*E. coli*).

Potential pollution sources include livestock grazing disturbances on the Montpelier-Elk Valley allotment (*E. coli* and sediment) and the transportation system (sediment). Roads and trails include Roads 111 and 801 and Trail 502. Implementation strategies will focus on:

1. Improving the stream crossing on Trail 502
2. Livestock grazing measures to control *E. coli* and sediment; refer to the “*Livestock Grazing Strategies*” section.

Other opportunities were identified in the Montpelier Creek WA (C-T NF 2003b):

- In 2008, the Forest will move the cattle guard away from the narrow canyon section so that the required guard bypass route does not constrict the floodplain.
- In 2008, The Forest will also move the pasture fence above the canyon that is currently along the south bank of the creek so that livestock are not concentrated in the riparian area.
- Relocate or reconstruct the lower portion of Road 111 where it constricts the floodplain and stream to reduce sediment contributions directly to the stream. This project is dependent upon receiving high levels of funding.
- Provide proper surfacing and drainage on FS Road 801 to decrease sedimentation.

Georgetown Creek: TP & TSS

Georgetown Creek is a high priority for the Forest as it is also a priority restoration location in the Statewide Bonneville Cutthroat Trout Management Plan. Sediment and phosphorus load reductions are required for Georgetown Creek (BR022_02b). This AU is also proposed for 303(d) listing due to selenium and the Right Fork (BR022_02a) is proposed for 303(d) listing due to biota and habitat assessments (IDEQ 2008). Potential pollution sources include past mining activities, the transportation system, and livestock grazing (Red Pine and Green Mountain sheep allotments). The Forest has identified several projects to improve water quality and aquatic habitat conditions:

1. In 2007, the Forest fisheries crew worked cooperatively with the BLM and the Bear River Environmental Coordinating Committee to plan a fish ladder at the Georgetown Irrigation Company hydroelectric diversion headgate. The Forest Fisheries Biologist also worked cooperatively with the Idaho Attorney General's Office to prepare an agreement between the water users and the State. Overflow water from the City of Georgetown's water system located in the Right Hand Fork will be piped to the hydroelectric facility to mitigate the minimum flows required to bypass that facility. The water from the Right Hand Fork will be replaced by 5 cfs on the mainstem. The Forest and BLM plan to construct the ladder in the summer of 2008.
2. The Forest prepared an environmental assessment for the Georgetown Road Relocation Project (Caribou-Targhee NF 2008). The large road fill on the 2-mile section of road from the Forest boundary to Church Hollow has decreased floodplain capacity, reduced aquatic habitat, and contributes sediment and slag particles to the stream. The proposed action is to relocate this road segment onto the abandoned railroad grade and remove approximately 2 miles of old road fill from the floodplain. This work would occur over 5 years.
3. The Georgetown Canyon Road will be upgraded with the Twin Creek Timber Sale. Improvements will include improving drainage, spot graveling Road 102, turnpiking 0.2 miles of road 197, and closing a badly rutted secondary road.
4. A possible stewardship project resulting from the Smoky Canyon Panel F expansion would include developing a gravel source at the watershed divide at the head of Georgetown Canyon and additional graveling of the main Road 102.
5. Pollutants from the mining spoils located in Church Hollow will be addressed in the future under CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act). The timeframe for this project is presently unknown.
6. The Forest conducted a R1/R4 Physical Habitat Survey in Georgetown Creek during 2007.

The Georgetown WA identified several other recommendations, but specifics have not been developed at this time:

- Repair headcuts in the upper Georgetown reach preventing their upstream migration and eventually allowing fish passage.
- Restoration in the Right Hand Fork Georgetown Creek would center on reducing sediment production from the Road 225, improving/removing stream crossings, and reducing grazing impacts.
- Although Wood Canyon does not have a TMDL, restoration measures there would center on relocating the stream out of the road ditch to a stable point downstream.
- Support beaver transplant into the Georgetown subwatershed. This is no longer necessary as the 2007 physical habitat survey identified lots of beaver activity.

Stauffer Creek: TP & TSS

Stauffer Creek is a moderate priority area for the Forest as load reductions are not required. Load allocations were set at current estimated loads (ERI, Inc. 2006, pg 246). The headwaters of North Stauffer and South Stauffer Creeks (ID16010201BR006_02c) are located on Forest.

Livestock grazing and the transportation system are potential pollutant sources. North Stauffer Creek is in the Stauffer Canyon allotment and South Stauffer Creek is in the North Canyon allotment. Refer to the “*Livestock Grazing Strategies*” section. An ATV trail crosses both streams with fords, not bridges. The crossings will be examined to determine if improvements are needed to protect water quality.

Stauffer Creek is a Bonneville cutthroat trout stronghold and it is high priority for fish passage projects downstream of the Forest. Several restoration opportunities have been identified as the Forest is working cooperatively with Trout Unlimited, Idaho Department of Fish and Game, and private landowners. The Forest is developing plans to bypass a large irrigation headgate in lower Stauffer Creek that currently blocks fish migration when the gate is down. The partners plan on construction in 2009.

Co-op Creek: TP & TSS

The headwaters of Co-op Creek (ID16010201BR008_02a) are located on Forest. Data was insufficient to develop a TMDL in 2006, but TP and TSS TMDLs are expected in 2008.

Livestock grazing, and recreational trails to a lesser extent, are potential pollutant sources. The stream is in the Stauffer Canyon allotment. Refer to the “*Livestock Grazing Strategies*” section.

Skinner Creek: TP & TSS

Skinner Creek supports beneficial uses despite excess loads to the Bear River. Therefore, load allocations were set at current estimated loads (ERI, Inc. 2006, pg 246). Potential pollutant sources within the headwaters on NFS lands (BR007_02a) include the transportation system and livestock grazing on the Nounan and Stauffer Canyon allotments.

Skinner has been a high priority for the Forest and we completed a lot of work in the drainage during 2007. The Forest fisheries program orchestrated a partnership with U.S. Bureau of Reclamation (BOR), the Alleman family, U.S. Fish and Wildlife Service, the Bear River Environmental Coordinating Committee, the Bear Lake County Road Crew, and U.S. Natural Resources Conservation Service. The Forest Road Crew replaced an under-sized, perched culvert with a bottomless arch to facilitate fish passage. Downstream of the Forest at Nounan Road crossing, the Bear Lake County Road Crew replaced an under-sized, perched culvert with a bridge. The U.S. BOR also constructed diversion structures at three irrigation diversions on the Alleman Ranch to screen fish from irrigation canals and to provide passage for migrating fish. The Forest hydrologists also helped stabilize a downcut segment below Nounan Road with rock structures. Willows were reestablished in the floodplain. A project report is available online: <http://www.fs.fed.us/r4/cariboutarghee/fisheries/documents/Skinner%20Accomplishment%20Narrative.pdf>

In 2005, the Forest worked in cooperation with the Bear River Environmental Coordinating Committee, NRCS, Idaho Department of Agriculture, and the Alleman Ranch to relocate a cattle feedlot on the stream to the uplands. The feedlot was a significant source of sediment and animal waste to Skinner Creek. More on the project is available at:

http://www.fs.fed.us/r4/caribou-targhee/fisheries/documents/annualreports/2005_report.pdf

Pearl Creek: TP & TSS

Pear Creek is low priority because it does not require a load reduction. Current concentrations are below target concentrations and load allocations are set at current estimated loads (ERI, Inc. 2006, pg 238). The headwaters of Pearl and North Pearl Creeks are on Forest (BR005_02b).

Grazing disturbances and the transportation system are potential pollutant sources. Pearl Creek is located in the Nounan Allotment and North Pearl is the boundary between the Nounan and Trail Hollow Allotments. In 2003, the Forest constructed a grazing exclosure at Pearl Creek Spring to reduce the livestock impacts. Also refer to the “*Livestock Grazing Strategies*” section.

Eightmile Creek: TP & TSS

Eightmile Creek is a priority area for the Forest although load reductions are not required and allocations are set at current estimated loads (ERI, Inc. 2006, pg 246). Potential pollutant sources on NFS lands (BR004_02 and BR004_03a) include the transportation system, past timber harvest activities, recreation, and livestock grazing. The Eightmile AU (BR004_02) also includes the several tributaries excluding Wilson Creek: Sotter Creek, Steep Spring, Cow Fork, Mill Fork, Deep Hollow, and Aspen Springs/Trail Hollow.

The Forest recently concentrated watershed improvement efforts on the transportation system. In 2007, the Forest watershed program partnered with the Bear River Environmental Coordinating Committee to obliterate over 4 miles of trails and roads, relocate ¼ mile of trail, and install two bridges on the Mill Fork Trail (317). Soil erosion and riparian impacts were also reduced at four dispersed recreation sites by placing boulders. In-line with the Range-wide Conservation Agreement and Strategy for BCT, the project reduced erosion and improved water quality, aquatic habitat, and riparian conditions.

The above project complimented previous efforts in the watershed. Six sites dispersed sites were rehabilitated and defined by placing boulders during 2005. A range fence that closely paralleled the creek was removed in 2003 to reduce concentrating of cattle along the stream bank.

Future projects include implementation of the Honok Fuels Reduction project, which will include replacing a mud-bog trail crossing on private land with a culvert and gravel tread surface.

Sulphur Canyon Creek: TP & TSS

Sulphur Canyon is a low priority as it does not require a load reduction. Load allocations were set at current estimated loads (ERI, Inc. 2006, pg 246). The headwaters (BR002_02a) are located on Forest. Middle Sulphur does not have a defined channel on Forest and no specific actions are planned for Middle Sulphur.

The Georgetown WA (C-T NF 2003) identified watershed improvement needs in South Sulphur Canyon. The measures center on reducing sediment production from the road and recreational impacts. Actions could include road graveling, improving drainage, or restricting access. Enhancing beaver habitat would also be a benefit. South Sulphur is currently a low priority because it is dewatered downstream of the Forest and there are several mining-related roads and disturbances on private land within the Forest boundary.

Bailey Creek: TP & TSS

Although Bailey Creek does not require load reductions, it has been a high priority for the Forest. Load allocations were set at current estimated loads (ERI, Inc. 2006, pg 246). The Forest has already taken several steps to improve conditions in the Bailey Creek drainage (BR003_02a).

The Forest rated Bailey Creek as “functional at risk” during a grazing NEPA analysis prior to 2002. As part of an adaptive management strategy, the Bailey Creek Unit was rested from cattle grazing for four years. As a result, the riparian area improved from early seral stage in 2000 to mid seral stage by 2005. The Forest’s 2006 grazing BMP review in this unit is available online: http://www.fs.fed.us/r4/caribou-targhee/Grazing/bmp/bmp_review_north_bear_river_range_2006.pdf

Currently, no one is permitted to graze sheep on the Soda Peak Allotment in this area.

In 2008 the Forest will partner with the Bear River Environmental Coordinating Committee to assist Caribou County in replacing an undersized, perched culvert. The project will decrease erosion and facilitate the upstream migration of Bonneville cutthroat trout.

16010202: Middle Bear River

Trout Creek: TP & TSS

Load reductions in total phosphorus were recommended for Trout Creek because it appears to be a source of excess phosphorus to the Bear River. Several headwaters to Trout Creek are located on Forest and the AU (BR011_02) also includes North Ant Canyon, Hell Hole, and all other unnamed tributaries.

Trout Creek is a low priority. Most impacts appear to occur downstream of the Forest. The Forest manages approximately 1.4 miles in the headwaters of this nearly 11.4 mile long stream. The headwaters on Forest are not known to be perennial. Most flow enters the stream channel from springs located downstream of the Forest. Other than ongoing management, no specific implementation measures are planned.

Williams Creek: TP & TSS

Williams Creek is a low priority for the Forest. A load reduction is not required for Williams Creek because the current average concentrations are below the target concentrations (ERI, Inc. 2006, pg 238). Load allocations are set at current estimated annual loads. The Williams Creek AU (BR010_02) also includes the Right Fork Williams Creek/Canyon and other unnamed tributaries.

Williams Creek is perennial on-Forest for only approximately 500 feet, originating at a large spring. The drainage above the spring does not show signs of spring runoff. Forest Road 441 crosses the drainage immediately upstream of the spring, but the road quickly angles away from the drainage bottom with a thick maple and conifer buffer to minimize the sediment delivery. In 2004, the Term Grazing Permit was waived back to the Forest. Currently, no one is permitted to graze livestock on the Sinks Allotment.

Mink Creek: TP & TSS

Mink Creek does not require load reductions. Load allocations were set at current estimated loads. Mink Creek, Dry Creek, South Fork Dry Creek, and Birch Creek (BR007_02b and

BR007_03) are on NFS lands. Other than ongoing management and grazing administration (Mink Creek allotment), no specific implementation measures are planned. However, due to the important fisheries, Mink Creek remains a high priority area for the Forest.

There is a hydro-electric diversion on the Forest. Under the terms of the FERC (Federal Energy Regulatory Commission) permit, the Forest provides annual guidance to the permittee to adjust bypass flows based on snowpack conditions.

Strawberry Creek/Canyon: TP & TSS

The headwaters of Strawberry Creek (BR007_02a & BR007_02) located on Forest include Strawberry Canyon, Mass Canyon, Mill Canyon, Mill Hollow, Snow Hollow, and unnamed tributaries. Data was insufficient to develop a TMDL; TMDLs are expected in 2008

Potential pollutant sources on NFS lands include livestock grazing (Mink Creek and Strawberry Canyon allotments) and the transportation system. A significant source of sediment is the winter sanding operations along State Route 36 for winter travel/safety reasons. Other than ongoing grazing administration, the Forest has not identified any specific measures for this drainage.

Cub River: TP & TSS

The portions of the Cub River on Forest (BR004_03 & BR004_02) are supporting beneficial uses (IDEQ 2003 & 2008). No load reductions are necessary. The Cub River TMDLs apply downstream of the confluence with Sugar Creek. Sugar Creek is discussed below with Maple Creek since it is in that AU.

Although the load reductions are not required on Forest, the area is a high priority for watershed improvement work. The Forest will begin the Hillyard Canyon project on the Franklin Basin Road (406) in 2008. This 3.9 mile segment has deteriorated to the point that safety is a concern. The lack of surfacing, poor drainage, and severe rutting is contributing excessive amounts of sediment to the drainage and eventually to the stream channel. The project will be implemented in phases, the first of which is the development of a borrow/gravel source, correction of road drainage, and the placing of road base (pit run) on the worst upper 1.5 miles. Later phases will include placing cushioning material on the remainder of the road and then placing crushing aggregate surfacing on the entire 3.9 miles.

The Forest is also working cooperatively with Trout Unlimited through the Bear River Environmental Coordinating Committee to screen and bypass major irrigation diversions the Cub River.

Deep Creek: TP & TSS (16010202)

Reductions in TP and TSS are required for Deep Creek (BR003_02b). This AU is also proposed for 303(d) listing due to impairment by E. coli.

Deep Creek is a moderate priority. Disturbances by livestock grazing are a possible pollutant source. Deep Creek is in the Cherryville grazing allotment. Refer to the “*Livestock Grazing Strategies*” section. No specific projects have been identified.

Fivemile Creek: TP & TSS

Fivemile Creek does not require a TSS load reduction and load allocations were set at current estimated loads (ERI, Inc. 2006, pg 245). A phosphorus reduction however is necessary. The headwaters (BR019_02) are also proposed for 303(d) listing due to E. coli (IDEQ 2008).

Fivemile is a moderate priority. Strategies to reduce TP, TSS, and E. coli will focus on livestock grazing. Fivemile Creek is within the Weston allotment. Refer to the “*Livestock Grazing Strategies*” section. No specific projects have been identified.

Maple Creek: Bacteria (E. coli)

Reductions in E. coli are required in Maple Creek (BR003_02a). Nearby, Sugar Creek (BR003_02c), Deep Creek (BR003_02B), and Crooked Creek (BR003_02) are also proposed for 303(d) listing due to impairment by E. coli (IDEQ 2008).

Maple Creek is a moderate priority. Strategies to reduce E. coli will focus on livestock grazing. Maple, Deep, and Crooked Creeks are in the Cherryville grazing allotment and Sugar Creek is in the Sugar Creek allotment.

A trail maintenance project is planned along the Crooked Creek trail in 2008 to reduce sediment delivery directly to the stream.

Worm Creek: TP & TSS

The TMDLs apply to Worm Creek well downstream of the Forest, from Glendale Reservoir downstream to the Utah/Idaho border. Worm Creek and North Worm Creek (BR005_02a) upstream of Glendale Reservoir are supporting beneficial uses (IDEQ 2008).

Worm Creek is moderate priority with two projects planned for the near future. First native species reseeding will occur. Also, a stream channel improvement project is planned within Lower Worm Basin to improve range and watershed conditions.

16010204: Lower Bear River – Malad River

Wright Creek: TP & TSS

Wright Creek did not require a TSS load reduction and load allocations were set at current estimated loads (ERI, Inc. 2006, pg 245). A TP reduction is necessary however. Middle Wright Creek (BR010_03) is also proposed for 303(d) listing due to bacteria (fecal coliform).

The NFS lands in the Wright Creek (BR010_03 & BR010_02b) drainage are highly intermixed with private lands. Potential pollutant sources include stream bank instability, agriculture and mining (on private lands), livestock grazing, and the transportation system. Aerial photography illustrates that a majority of disturbances are mining-related (including roads) on private lands.

Wright Creek is a moderate priority. The Forest’s strategies to reduce bacteria, TP, and TSS loads will focus on livestock grazing in the Wright Creek and East Daniels allotments. The grazing permittees recently constructed a small temporary corral in the area to allow for improved grazing management. Refer to the “*Livestock Grazing Strategies*” section for additional information.

Weston Creek: TP & TSS

Weston Creek does not require a load reduction for TSS and load allocations are set at current estimated loads (ERI, Inc. 2006, pg 245). Phosphorus load reductions are necessary however. Potential pollution sources on NFS lands include livestock grazing and the transportation system to a lesser extent. Several headwaters to Weston Creek, and portions of Weston Creek itself, are located on NFS lands (BR020_02, BR020_02c, BR020_02d, and BR020_2e).

Strategies to reduce TP will focus on livestock grazing. The allotment west of Weston Creek is Dry Creek and the allotment east of Weston Creek is Minnie Creek. Moderate priority areas for improvement include either Trail Hollow or Grease Hollow in the Dry Creek Allotment. Refer to the “*Livestock Grazing Strategies*” section for additional information.

Elkhorn Creek: TP & TSS

Elkhorn Creek does not require annual load reductions and load allocations were set at current estimated loads (ERI, Inc. 2006, pg 245). TP and TSS do exceed target concentrations however during the winter low flow season.

Elkhorn is low priority for the Forest. The headwaters on Forest (BR008_02a) include approximately the upper half of this 4.6 mile long stream. Of those 2.3 miles on Forest, only the lower 0.4 miles are within an active livestock grazing allotment (Kents Canyon). The headwater allotments are closed to grazing. Other than continued current management, no implementation strategies are proposed.

Livestock Grazing Strategies

Implementation strategies for a majority of streams focus on livestock grazing. The Forest will rely heavily on an adaptive management approach with grazing BMPs¹. Water quality improvement will be achieved through:

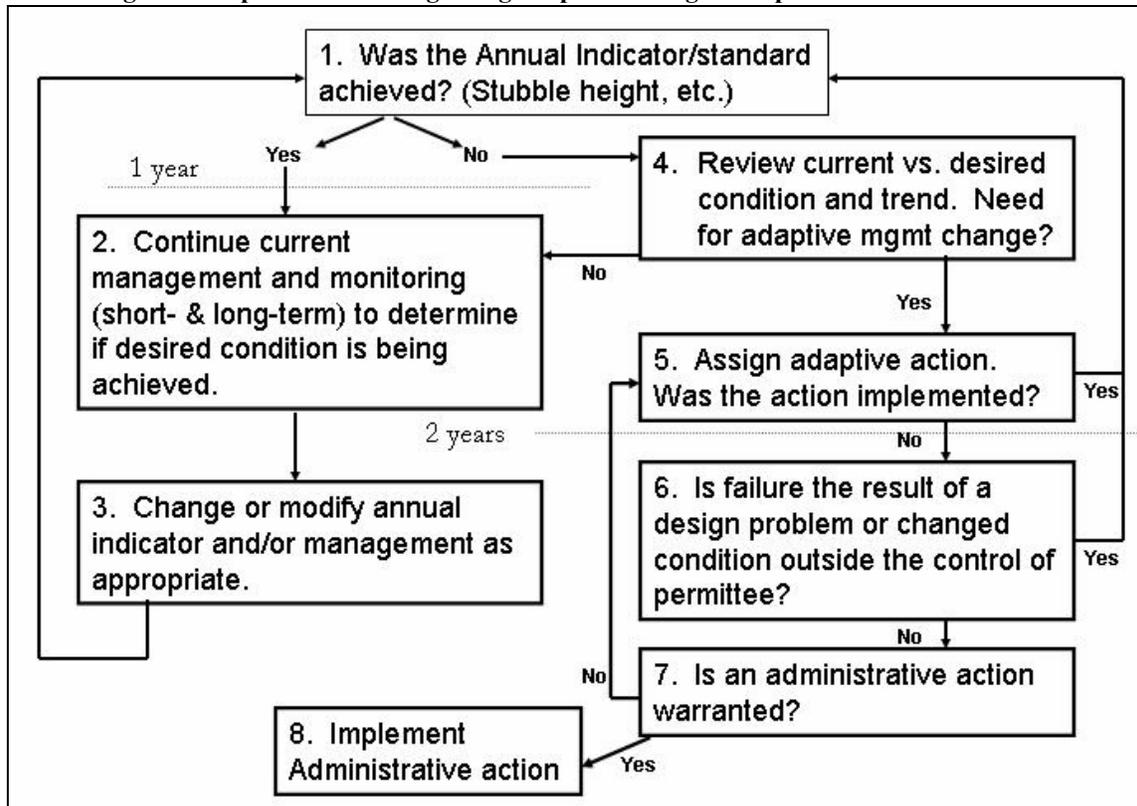
- Site-specific BMP design
- Proper BMP implementation by the Forest and the grazing permittees
- Monitoring of BMP implementation and effectiveness
- Use of monitoring data to inform adaptive management decisions with the goal of improving water quality

BMP Direction: Applicable grazing BMPs include RFP direction (USDA FS 2003), the Caribou Riparian GIG (Leffert 2005), Forest Service Handbooks (FSH) 22509.22 and 2209.13 (USDA FS 1988 & 2004), and *Grazing Management Processes and Strategies for Riparian –Wetland Areas* (USDI 2006). These are consistent with the Idaho Agricultural Pollution Abatement Plan (ISCC & IDEQ 2003).

¹ 40CFR130.2(m): Methods, measures, or practices selected by an agency to meet its nonpoint source control needs. BMPs include, but are not limited to, structural & nonstructural controls & operation & maintenance procedures. BMPs can be applied before, during, & after activities to reduce or eliminate the introduction of pollutants into receiving waters.

Adaptive Management (FSH 2209.13 – 92.23b; USDA FS 2004): The Forest will use an adaptive management approach to improve water quality with the ultimate goal of supporting beneficial uses (Figure 1).

Figure 1: Explanation of the grazing adaptive management process.



Administrative decisions will be made as needed (e.g. specific dates of grazing, livestock numbers, class of animal, grazing systems, and range readiness). The Forest will perform field checks as needed to identify any necessary adjustments. The permits, allotment management plans (AMP), and annual operating instructions (AOI) shall be modified, cancelled, or suspended if needed. District Rangers and Rangeland Management Specialists will consult an interdisciplinary team (IDT) on adaptive management, improvement, and non-administrative decisions/projects as needed to ensure proper implementation.

Allotments will be managed to meet or move towards the desired conditions, water quality standards, and support of beneficial uses, not to attain the annual use triggers (e.g. stubble height). As needed, the Forest will use an IDT approach to identify management options necessary to accelerate movement towards water quality standards and support of beneficial uses. For example, the Forest will incorporate more stringent requirements (e.g. increased stubble height) or additional indicators (e.g. streambank alteration) as needed to improve water quality and trend toward desired conditions.

Monitoring: Riparian designated monitoring areas (DMA) will be established as needed within allotments containing streams with approved TMDLs. Use-levels and long-term trend data will be collected as described by Burton et al. (2007). Data will be used to formulate or modify

desired condition objectives. Adaptive management will be applied as necessary to improve water quality towards supporting beneficial uses.

Table 1: Allotment management strategies for streams with TMDLs.

Allotment	Stream(s) with or expecting TMDLS	Measures
Montpelier-Elk Valley	Dry, Dip, Preuss, & Sheep Creeks, & Snowslide Canyon	This allotment has several existing DMAs and stream channel cross sections. An IDT will review existing data and desired conditions in order to determine trend in 2008. Adaptive management decisions will be applied as necessary to accelerate movement toward desired conditions.
Red Mountain	Dip (trib. to Dry) & Preuss Creeks	Red Mountain is grazed by sheep, while Montpelier-Elk Valley is grazed by cattle. Generally, the majority of livestock impacts along these streams appear to be cattle related. Therefore, priority will be given to the Montpelier-Elk Valley Allotment.
Stauffer Canyon	North Stauffer, Co-op, & Skinner Creeks	BMP review study results are available online http://www.fs.fed.us/r4/caribou-targhee/Grazing/bmp/bmp_review_north_bear_river_range_2006.pdf
North Canyon	South Stauffer	Adaptive management as needed.
Nounan	Skinner, Pearl, & North Pearl Creeks	The Forest established a DMA near the Forest boundary in 2002 to monitor riparian grazing. The site was revisited in 2006 for a grazing BMP review, which is available online at: http://www.fs.fed.us/r4/caribou-targhee/Grazing/bmp/bmp_review_north_bear_river_range_2006.pdf
Trail Hollow	North Pearl	The Forest is presently revising the allotment management plan (AMP). An adaptive management will be used to manage for the desired conditions.
Hells Kitchen and Sinks	Williams Creek and tributaries	Implement a revised AMP for Hells Kitchen. No plans to go through the grant process for the Sinks Allotment
Bailey Creek and Soda Peak	Bailey Creek	BMP review study results are available online http://www.fs.fed.us/r4/caribou-targhee/Grazing/bmp/bmp_review_north_bear_river_range_2006.pdf
Mink Creek	Mink Creek, Strawberry Canyon	The Forest established a DMA near the Forest boundary in 2007 to monitor riparian grazing. In addition, we resurveyed six stream channel cross-sections that were originally installed in 1993. The results of this monitoring will be analyzed and used to guide adaptive management of the grazing allotment.
Strawberry Canyon	Strawberry Canyon	Implement the revised AMP.
Cherryville	Deep & Maple Creeks	The Forest will conduct a Bonneville cutthroat trout conservation agreement and grazing BMP review in 2008. The results will be used to guide adaptive management.
Weston	Fivemile	Install a DMA if an appropriate location exists. Use data to inform adaptive management decisions.
Wright Creek	Wright Creek	Install a DMA on Wright Creek. Use data to inform adaptive management decisions.
East Daniels	Wright Creek tributaries	Place priority on Wright Creek Allotment DMA in perennial portion of Wright Creek. Review the lower portions of intermittent stream to determine suitability of a DMA there.
Dry Creek	Weston Creek tributaries	Priority areas for installing a DMA and improving conditions include Trail & Grease Hollows.
Minnie Creek	Weston Creek and tributaries	Install a DMA if an appropriate location exists. Use data to inform adaptive management decisions.
Kents Canyon	Elkhorn Creek	Install a DMA if an appropriate location exists. Use data to inform adaptive management decisions.

Expected Results: BMP effectiveness is dependant on proper implementation and maintenance of BMPs (Mosley et al. 1999). BMPs have been found effective at protecting water quality and minimizing erosion on this Forest² and other areas. Rangeland BMP monitoring across the Forest demonstrates that BMP implementation meets or exceeds the objectives and that BMPs are effective at protecting soil and water resources greater than 80% of the time.

Information Regarding the Draft 2008 Integrated Report (IDEQ 2008)

St. Charles Creek: 16010201-Bear Lake

This AU (BR016_03b) is supporting beneficial uses and a TMDL is not necessary (ERI, Inc. 2006). The AU is not listed in any section of the 2008 draft integrated report and the GIS layer shows it as “not supporting.” Based on the 2006 subbasin assessment (ERI, Inc. 2006), The Forest recommends that this AU be listed in Section 2 (full support) of the 2008 Integrated Report.

North Creek: 16010201-Bear Lake

The North Creek AU (BR010_02d) on Forest includes North Creek, North Canyon, Grunder Hollow, Meham Hollow, Mill Hollow, and other unnamed tributaries. Beneficial uses are supported and a TMDL is not necessary (ERI, Inc. 2006). However, the 2008 draft integrated report lists North Canyon as impaired (BR010_02). BR010_02d is not listed at all in the draft report, but is shown in the GIS layer as “not supporting.” If appropriate, this should be corrected and the AU should be listed in Section 2 (full support) of the 2008 Integrated Report.

In 2007, the Forest completed a cooperative effort funded by the Rocky Mountain Elk Foundation, the Eastern Idaho Resource Advisory Committee, and the Bear River Environmental Coordinating Committee to close and obliterate over 9 miles of roads/trails in the North Canyon area. Several dispersed camp sites were delineated with boulders or logs to reduce impacts. The goal was to improve water quality, soil productivity, aquatic habitat, and wildlife habitat.

Meadow Creek: 16010201-Bear Lake

Meadow Creek (BR010_02c) is an intermittent stream and a TMDL is not necessary (ERI, Inc. 2006). The 2008 draft integrated report does not list BR010_02c in any section, but it is shown in the GIS layer as “not supporting.” The Forest recommends that this AU be listed in Section 2 (full support) of the 2008 Integrated Report.

Deep Creek: 16010202- Middle Bear River

This AU (BR003_02b) is listed in Section 5 (impaired waters) for E. coli impairment. The Forest recommends that it is also listed in Section 4 (EPA approved TMDL) has having an approved TP and TSS TMDLs.

² The Forest has monitored BMP implementation and effectiveness on several timber sales since 1990 and on several grazing allotments since 2004. See: <http://www.fs.fed.us/r4/caribou-targhee/watershed/>

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