

Appendix E: Priority Watersheds

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Introduction

One of the original purposes for establishing the National Forest System was to protect our Nation's water resources. The 2012 planning rule includes a strong set of requirements associated with maintaining and restoring watersheds and aquatic ecosystems, water resources, and riparian areas in the plan area. The increased focus on watersheds and water resources in the 2012 planning rule reflects the importance of this natural resource, and the Department and Agency's commitment to stewardship of our Nation's waters.

The 2012 planning rule requires that plans identify watersheds that are a priority for restoration and maintenance. The 2012 planning rule requires all plans to include components to maintain or restore the structure, function, composition, and connectivity of aquatic ecosystems and watersheds in the plan area, taking into account potential stressors, including climate change, how they might affect ecosystem and watershed health and resilience. Plans are required to include components to maintain or restore water quality and water resources, including public water supplies, groundwater, lakes, streams, wetlands, and other bodies of water. The planning rule requires that the Forest Service establish best management practices for water quality, and that plans ensure implementation of those practices.

Plans are also required to include direction to maintain and restore the ecological integrity of riparian areas. The Flathead National Forest (NF) proposes to maintain riparian areas through riparian habitat conservation areas and standards and guidelines.

Watershed Condition Framework

The watershed condition framework (WCF) will be used to identify priority watersheds, develop watershed action plans, and implement projects to maintain or restore conditions in priority watersheds.

Priority areas for potential restoration activities could change quickly because of events such as wildfire or the introduction of invasive species. Therefore, the 2012 planning rule includes priority watersheds as plan content, so that an administrative change could be used to quickly respond to changes in priority.

Benefits from implementing the WCF are as follows:

- Strengthens the effectiveness of Forest Service watershed restoration
- Establishes a consistent, comparable, credible process for determining watershed condition class
- Enables a priority-based approach for the allocation of resources for restoration
- Improves Forest Service reporting and tracking of watershed condition
- Enhances coordination with external agencies and partners.

The Forest Service Manual (FSM) 2520, Watershed and Air Management, uses three classes to describe watershed condition:

- Class 1 watersheds exhibit high geomorphic, hydrologic, and biotic integrity relative to their natural potential condition.

- Class 2 watersheds exhibit moderate geomorphic, hydrologic, and biotic integrity relative to their natural potential condition.
- Class 3 watersheds exhibit low geomorphic, hydrologic, and biotic integrity relative to their natural potential condition.

The FSM classification defines watershed condition in terms of “geomorphic, hydrologic and biotic integrity” relative to “potential natural condition.” Geomorphic functionality or integrity can be defined in terms of attributes such as slope stability, soil erosion, channel morphology, and other upslope, riparian, and aquatic habitat characteristics. Hydrologic functionality or integrity relates primarily to flow, sediment, and water-quality attributes. Biological functionality or integrity is defined by the characteristics that influence the diversity and abundance of aquatic species, terrestrial vegetation, and soil productivity.

In each case, integrity is evaluated in the context of the natural disturbance regime, geoclimatic setting, and other important factors within the context of a watershed. The definition encompasses both aquatic and terrestrial components, because water quality and aquatic habitat are inseparably related to the integrity and, therefore, the functionality of upland and riparian areas within a watershed. The three watershed condition classes are directly related to the degree or level of watershed functionality or integrity:

- Class 1 = Functioning Properly
- Class 2 = Functioning at Risk
- Class 3 = Impaired Function.

In this framework, a watershed is considered in good condition if it is functioning in a manner similar to one found in natural wildland conditions (Karr and Chu 1999,¹ Lackey 2001²). This characterization should not be interpreted to mean that managed watersheds cannot be in good condition. A watershed is considered to be functioning properly if the physical attributes are appropriate to maintain or improve biological integrity. This consideration implies that a Class 1 watershed in properly functioning condition has minimal undesirable human impact on natural, physical, or biological processes and is resilient and able to recover to the desired condition when or if disturbed by large natural disturbances or land management activities (Yount and Neimi 1990³). By contrast, a class 3 watershed has impaired function because some physical, hydrological, or biological threshold has been exceeded. Substantial changes to the factors that caused the degraded state are commonly needed to set them on a trend or trajectory of improving conditions that sustain physical, hydrological, and biological integrity. Defining specific classes for watershed condition is obviously subjective and, therefore, problematic for several reasons. First, watershed condition is not directly observable (Suter 1993⁴). In nature, no distinct lines separate a watershed that is functioning properly from impaired condition, and every classification scheme is arbitrary to some extent. Second, watershed condition is a mental construct that has numerous definitions and interpretations in the scientific literature (Lackey 2001). Third, the attributes that reflect the state of a watershed are continually changing because

¹ Karr, J.R.; Chu, L.W. 1999. Restoring life in running rivers: better biological monitoring. Washington, DC: Island Press. 206 p.

² Lackey, R.T. 2001. Values, policy, and ecosystem health. *Bioscience*. 51: 437–443.

³ Yount, J.D.; Niemi, G.J. 1990. Recovery of lotic communities and ecosystems from disturbance—a narrative case study. *Environmental Management*. 14: 547–570.

⁴ Suter, G.W. 1993. Critique of ecosystem health concepts and indexes. *Environmental Toxicology and Chemistry*. 12: 1533–1539.

of natural disturbances (e.g., wildfire, landslides, floods, insects, and disease), natural variability of ecological processes (e.g., flows and cycles of energy, nutrients, and water), climate variability and change, and human modifications.

The Flathead NF completed our WCF in 2011. The Forest Service identified 5 Class 2 hydrologic unit code (HUC) 12 watersheds and 176 Class 1 HUC 12 watersheds. There were no Class 3 watersheds identified. Table E-1 identifies the Class 2, Functioning at Risk, watersheds and their priority for restoration and figure E-1 shows the locations of the Class 2 watersheds.

Table E-1. WCF Class 2 watersheds on the Flathead National Forest

Current Priority Level	Watershed Name	Attributes Rated at Risk in Watershed Condition Framework Assessment	Current Planning Efforts	Overlapping Priorities and Partnerships	Notes
High	Cold Creek	Riparian/wetlands, road density, best management practices (BMPs), soil productivity	Chilly James. Scoped in February 2014	SW Crown Collaborative Forest Landscape Restoration Program (CFLRP), Bull Trout Cons Strategy Priority Watershed	Cold Ponds Wetland Restoration Project, Bull trout Conservation Strategy Watershed. Bull trout numbers are decreasing due to lake trout in Swan Lake.
High	Jim Creek	303(d) listed stream, riparian/wetlands, soil productivity, road density, functioning at risk condition class (FRCC), weeds	Chilly James. Scoped in February 2014	SW Crown CFLRP, Bull Trout Conservation Strategy Priority Watershed, Swan Total Maximum Daily Load Tech Advisory Group.	Bull trout numbers are decreasing due to lake trout in Swan Lake. Opportunity for riparian/wetland restoration and weed treatments. No in-stream fish habitat restoration needs identified (303d listing resulting from historic logging practices and poor road conditions.
High	Beaver Creek	Road density, BMPs, weeds, insects and disease, non-native fish	Beaver Creek. Proposed Action March 2014	SW Crown CFLRP	Opportunities to slow non-native fish invasion and reduce road density.
High	Meadow Creek	Channel morphology, riparian/wetlands, water quality, non-native species	Griffin Creek II Decision. December 2013	Montana Fish Wildlife & Parks	Opportunities to restore riparian conditions and water quality in Meadow Creek. Riparian fencing followed by large scale willow planting. Remove lodgepole pine encroachment. Establish beaver populations.
Moderate	Middle Logan	303(d) listed stream, non-native fish, road density, riparian/wetlands, FRCC, water quality	None	Montana Fish Wildlife & Parks	Logan Creek road relocation, Sanko Creek cutthroat restoration, road treatments into gravel pit.

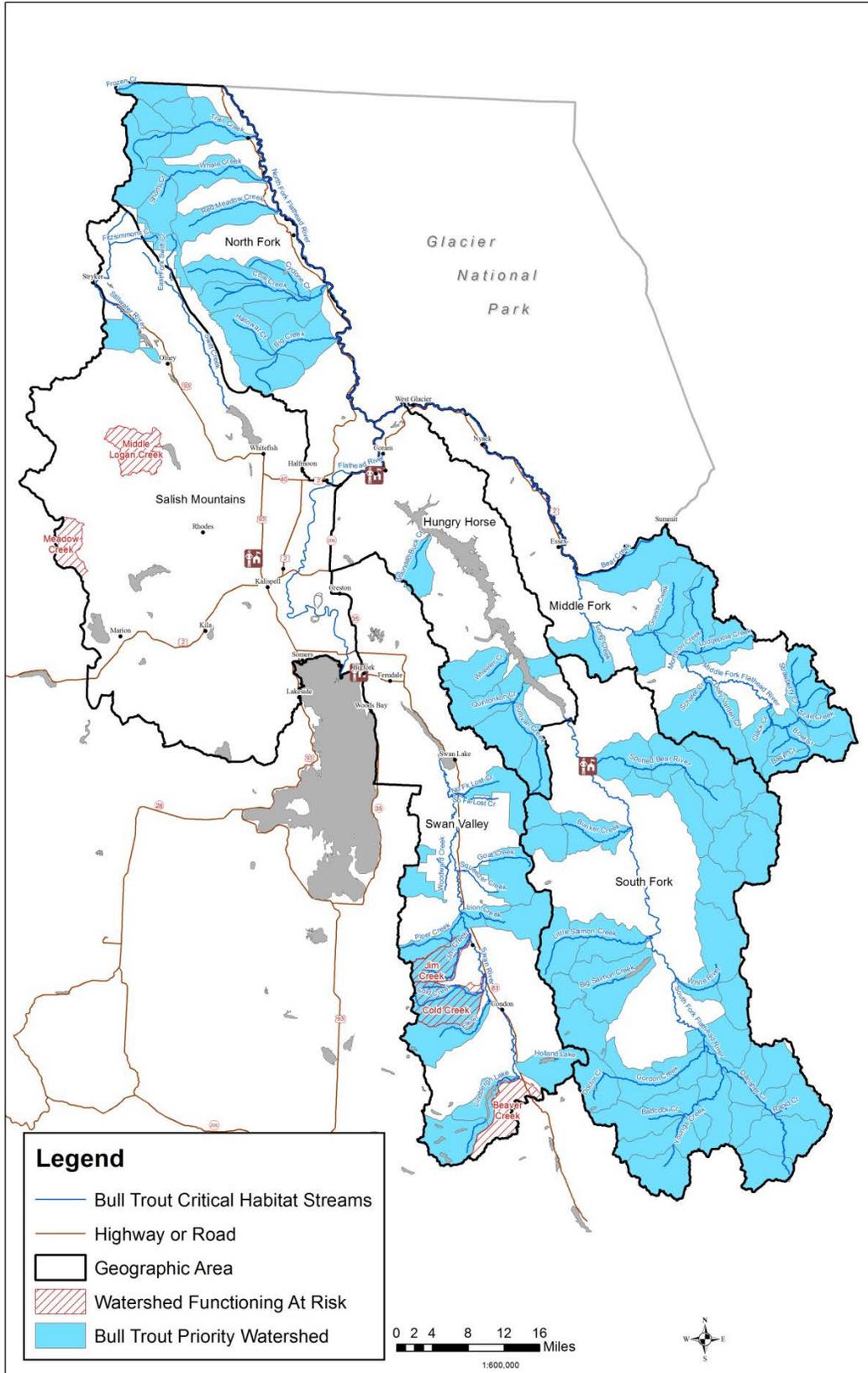


Figure E-1. Class 2, functioning at risk, watersheds and bull trout priority watersheds on the Flathead National Forest

Priority Watersheds

Priority watersheds are also being proposed for primary bull trout streams to provide an extra level of protection for this Federally listed threatened fish. These watersheds overlap with designated “critical habitat” for bull trout. Management in these watersheds would differ from other watersheds in that the riparian habitat conservation area would be 100 feet for intermittent streams rather than 50 feet. Intermittent streams are part of the stream network primarily in the headwaters and the additional protection would aid in large woody debris recruitment to the stream network, provide bank stability, and may reduce sediment that is routed to the stream network.

The following listing names the priority watersheds and associated primary bull trout streams (HUC 12 under the National Hydrologic Dataset). These watersheds are shown on figure e-1:

North Fork Flathead	Dolly Varden Creek
Frozen Lake	Bowl Creek
Trail Creek	Trail Creek
Whale Creek	South Fork Flathead
Red Meadow Creek	Spotted Bear River
Cyclone Lake	Wounded Buck
Coal Creek	Wheeler Creek
Big Creek	Sullivan Creek
Stillwater	Quintonkon Creek
Upper Stillwater Lake	Bunker Creek
Whitefish Lake/Upper Whitefish Lake	Little Salmon Creek
Middle Fork Flathead	Big Salmon Creek
Bear Creek	White River
Granite Creek	Gordon Creek
Morrison Creek	Danaher Creek
Lodgepole Creek	Rapid Creek
Strawberry Creek	Swan River
Long Creek	Lost Creek
Schafer Creek	Woodward Creek
Clack Creek	Goat/Squeezer Creek

Lion Creek

Elk Creek

Piper Creek

Lindbergh Lake

Jim Creek

Holland Lake

Cold Creek

