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Comments:

please find attached pdf with more thoughts regarding watersheds in the Gallatin Range.

Dear Custer Gallatin National Forest planning team and Supervisor Erickson,

I continue to be concerned about watershed health with increased population and use, impact of climate change and impact of additional trails in the Gallatin Range.

Doing a literature search, the Journal of Environmental Management contained an article that reviewed research from Australia and the US looking at impacts from hiking, horse riding and mountain biking in protected areas. The review stated that there were impacts on vegetation, soils and trails in common though there were differences in severity based on the activity. Impacts included damage to existing trails, soil erosion, compaction and nutrification, changes in hydrology, trail widening, exposure of roots, rocks and bedrock, damage to plants including reduction in vegetation height and biomass, changes in species composition, creation of informal trails and the spread of weeds and plant pathogens. They found that impacts in Australia could be greater than in the US, due to [ldquo]differences in evolutionary history, impacts on soil and vegetation[rdquo]. Mountain bike specific impacts include soil and vegetation damage from skidding and the construction of unauthorized trails, jumps, bridges and other trail technical features. 1

The National Forest Management Act of 1976 mandates the protection and reclamation of watersheds. Specific Act provisions (Section 6) that support Alternative D of the Custer Gallatin National Forest Draft Revised Plan include the following:

1. A thorough analysis of all recreational uses that could impact forest watersheds.
2. A promotion of a sound technical and ecological base for effective management.
3. The responsibility of the US Forest Service to be a leader in assuring that the Nation maintains a natural resource conservation posture that meets the requirements of the nation in perpetuity.
4. Ensure research is based on continuous monitoring and assessment of the effects of each management system to the end that it will not produce substantial and permanent impairment of the productivity of the land.
5. Protecting and improving the future productivity of the renewable resources of the forest land on sale areas including sale are improvement operations, reforestation, and wildlife habitat management.
6. Ensure that timber will be harvested from National Forest System lands only where:

1. Soil, slope or other watershed conditions will not be irreversibly damaged
2. Protection is provided for water bodies from detrimental changes likely to adversely affect water conditions or fish habitat.
3. Such timber cuts are carried out in a manner consistent with the protection of soil, watershed, fish, wildlife, recreation, aesthetic resources and the regeneration of the timber resource.

The National Forest Management Act of 1976 does not exclude recreational activities from similar concerns for the protection and reclamation of forest watersheds. It is obvious the Act recognizes the

1 Pickering, Catherine Marina, Wendy Hill, and Yu-Fai Leung. 2010. Comparing hiking, mountain biking, and horse riding impacts on vegetation and soils in Australia and the United States of America. *Journal of Environmental Management* 91: 551-562.

value and sensitivity of these biotic communities to disturbance. Whatever plan alternative or component blend is chosen, the following questions warrant answers:

1. What are specific US Forest Service mandates for protecting forest watersheds from human- caused change agents?
2. What priorities do these mandates have in regulating visitor use, especially motorized and mechanized access?
3. What specific monitoring programs will be executed to establish adequate hydrologic baselines and trends for both water quality and quantity in each forest watershed?
4. How will success in achieving the previously listed 1976 management mandates be defined and measured? Will desired outcomes be translated into measurable objectives? How will the public be routinely informed of progress and any changes needed to improve management?
5. What specific monitoring and evaluation programs will be implemented to ensure a sound technical and ecological base for effective monitoring? How will these activities be sustained with diminishing agency budgets?
6. How will Forest Service managers determine if the limits of acceptable change for visitor use have been exceeded and how will the public be notified of the results?
7. The Montana University System represents a repository of skilled scientists, researchers, and graduate students with technical expertise in forest ecosystems. Personnel should have significant potential to measure the consequences of Forest Service management actions. What collaboration with the university system has been considered to monitor and collect data regarding forest assets, user impacts, and related data analysis and summary? This could be a worthwhile partnership with declining Forest Service budgets.
8. One measure of success of good public land management plans is how well limitation on human use are effectively enforced. How will the Forest Service be able to consistently and effectively enforce provisions of the new management plan with diminishing budgets and an increasing number of forest users? How will the Forest Service respond if the law enforcement workload exceeds its budget limitation?
9. What consideration is there for the long-term effects of changing climate on forest health and its related management implications to visitor use management? Climate change is now a designated national security issue for the U.S. Department of Defense (Report on Effects of a Changing Climate to the Department of Defense, January 2019). How will long-term visitor use be evaluated in response to severe/extensive wildfire seasons?
10. How will the Forest Service consider and respond to reports of concern expressed by forest users after plan implementation? Will these comments be summarized and made available to the public? Will there be long-term opportunities for the public to meet with the Forest Service and express perceptions of management plan progress?
11. There is no consideration of forest airspace access with current technology including hot air balloons, drones, and hang gliders/paragliders. How will potential disturbance/impacts from these sources be considered?

I strongly support Alternative D with 230,000 acres of wilderness in the Gallatin Range. For me, wilderness provides solace with solitude, a chance to recharge. I am inspired by untrammelled spaces and our vast intact

ecosystem. One of the things I love most about the western US is the [lsquo]big empty[rsquo] and the lack of visible impact by humans. These areas are my [lsquo]church[rsquo].

Thank you for your consideration of my input. I look forward to your answers to the above questions.