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Organization:

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Comments: To the Forest Plan Revision Team,

I prefer Alternative D

2.3 Ecosystems, 2.3.2, 2.3.3, 2.3.4, & 2.3.5

I am impressed by the forest services due diligence in preparing the draft plan for the Custer Gallatin National Forest. My concern is that the forest service must enable soil health to be a fully functioning ecosystem in critical habitat and riparian areas by following Best Practices using the latest research. I am very impressed by the research of Walter Jehne. [ldquo]Living plants support the microbes that create well-structured friable topsoil with high nutrient status and high water holding capacity.[rdquo] I am also impressed by Doctor Christine Jones[rsquo] research as well. Both are microbiologists. I have provided information to both webinar[rsquo]s. Also, monitoring needs to be a requirement in the yearly schedules of trained forest service personnel until the (soil carbon sponge) is fully functioning as Walter Jehne discusses which also includes nutrients, microbial, micro and macro invertebrates. Experts need to ensure that The Clean Air Act, and The Clean Water Act of 1977 are followed as well, as stipulated in the Custer Gallatin National Forest directives. This will assist the (soil carbon sponge) to provide a fully functioning Custer Gallatin National Forest so that all of the Custer Gallatin ecosystems will be protected as established by law in the 1976 National Forest Management Act. Such as:

[ldquo]Provide for diversity of plant and animal communities based on the suitability and capacity of the specific land area in order to meet overall multiple-use objectives

Effects of each management system to the end that it will not produce substantial and permanent impairment to the productivity of the land;

Soil, slope, or other watershed conditions will not be irreversibly damaged

Protection is provided for streams, stream-banks, shorelines, lakes, wetlands, and other bodies of water from detrimental changes in water temperatures, blockages of water courses, and deposits of sediment, where harvests are likely to seriously and adversely affect water conditions of fish habitat.[rdquo]

Soil species of conservation concern for the Custer Gallatin shall be identified at the regional level. Soil management zones with associated plan components will be established to protect the ecological integrity of the soil types using prescriptive Best Practices as our knowledge evolves.

Soils 2.3.3 under Guidelines numbers 6 and 7 page 20

[ldquo]Alternative D should be strengthened by placing additional emphasis on and prioritizing maintenance and restoration of ecosystem and habitat diversity in response to the stresses of the changing climate and social economic conditions.:

06 [ldquo]To limit degradation of topsoil resources and reduce the creation of new noxious weed infestation sites,[rdquo] and [ldquo]to maintain the productivity of conifer stands[rdquo] prescriptions should also include [ldquo]planting soil cover crops ... land management that increases soil organic matter, aggregate stability, microbiology, fungus, algae, and water retention to improve soil health ... increase biological activity, quorum sensing, (refers to density dependent coordinated behavior that regulators gene expression in the microbial population and/or in the host plant or animal all work together in coordinated behavior) as Dr. Christine Jones discusses [ldquo]and carbon sequestration.[rdquo]

As is charged by the 2012 Planning Rule: the [ldquo]plan must include plan components, including standards or guidelines, to maintain or restore the ecological integrity of terrestrial and aquatic ecosystems and watersheds in the plan areas.[rdquo] So in 2.3.1 Ecosystems [ldquo]where primary ecological processes have degraded beyond the point of self-repair,[rdquo] the forest service must assist the (soil carbon sponge) to become fully functioning. Monitoring is a very important part of a fully functioning (soil carbon sponge). I cannot stress enough that the forest plan components must exist for the long term productivity and sustainability of the National Forest ecosystems. If legislation is needed, I am willing to contribute my time.

As everyone knows water is critical to ecosystem survival. National Geographic has stated that by 2030 ONLY 40% of the world[rsquo]s water supply will be available. Since the Sibanye/Stillwater Mine has expanded its operation; the waste water management from the tailings pond truly needs to dry out the wet tailings to keep our streams and headwaters and 100 acres of lake, pond, and wetland restoration projects across the spectrum of montane and pine savanna habitats as clean as The Clean Water Act of 1977 directs. It is critical to Desired Conditions as stated in 2.3.5 Watershed and Aquatics (WTR) as defined by agency monitoring numbered 01-12. Our premier fishing is an economic boost to the Custer Gallatin area. Additional funding provided and continued barriers need to be constructed to exclude non natives. Also where water quality has been impaired due to forest activities; those areas that have been compromised and that the water quality in those 34 streams those responsible need to be held accountable and provide funding through bonding to pay the forest service for the clean up for future projects. Alternative D needs to prioritize the Conservation Watershed Network because it is essential to ecosystem species survival including species in refugia areas. Our amphibians and other unique species are very important to the survival of our interconnected planet.

#### 2.3.4 WARE

I heartily endorse that [ldquo]the Custer Gallatin has been working to restore soil, watershed, and aquatic habitat conditions by implementing best management practices, removing excess roads, improving road conditions

(reducing sediment), removing fish migration barriers, and implementing riparian conservation strategies.[rdquo] Mechanized travel needs to stay on prescribed trails as directed by easy to read large block print signs. Thank you.

There are other areas of concern:

[ldquo]Maintenance and restoration of soil health is an integral component to functioning grassland and scrubland ecosystems and their long term productivity as a desired condition.[rdquo] In the middle of Australia 8000 years ago there was a freshwater lake in a forested area. According to Walter Jehne the monsoon rains reduced the area because it stopped raining by the lake. The Lake is now a salt pan. Recently humans occupied the area and due to fire, grazing, timber harvest, and lack of rain the area acidified. The middle of Australia is now a desert. There was a forested area left on one side and now that area is a grassland savanna. It is very important to protect the grassland and scrubland ecosystem. All of these species are important to our healthy survival.

[ldquo]National Research Council 19914, Pellant and others 2005. Rangeland health assessments appropriately recognize the relationship between soil, biotic (above ground and below ground), and hydrologic components important to a functioning ecosystem and should be incorporated as plan components for soils, grasslands, scrublands, and permitted livestock sections of the plan.[rdquo]

Neal Spackman is working in a desert area in Saudi Arabia presently where conditions were the same as in Australia. He is having good results. His research is included in the Walter Jehne webinar.

Energy, Minerals, and Geologic Areas of Interest (EMIN)

[ldquo]Include a standard to establish baseline information on surface and ground water quality and quantity prior to permitting any new mineral or energy development activity.[rdquo] Please remember [ldquo]National Geographic has calculated only 0.007% of the planet[rsquo]s water is available to fuel and feed its seven billion people.[rdquo] And [ldquo]according to the United Nations, five billion people could have poor access to freshwater by 2050.[rdquo] This is motivation to protect our freshwater. I love being able to turn on the tap.

[ldquo]According to a recent report in High Country News, citing Headwater Economics, 20.6 million people visit Montana[rdquo]s public lands. Visitation to National Forests is 7.5 million, surpassing visitation to the National Parks and Bureau of Land Management Public lands. These social changes are affecting the economic base. Tourism and outdoor recreation is a dominant economic driver in Montana, second only to Agriculture. The traditional extractive industries associated with timber harvest, mining, and oil and gas development are no longer the economic drivers they once were, contributing less than 5 percent of the employment in Montana. Alternative D seems best able to address the stresses to the ecosystem and natural processes resulting from these changes.[rdquo] Remember we need to keep [ldquo]Montana the Last Best Place![rdquo]

Alternative D will also provide the best protection for listed endangered species by leaving their ecosystems intact. Climate change is going to negatively impact all species on the planet. Our endangered species in the lower 48 states must have their gene pool protected and to have the connectivity provided from Yellowstone to Yukon.

Also, [ldquo]Recognize the importance of public lands, specifically for the Custer Gallatin National Forest to maintain biodiversity in the face of declining wildlife populations dependent on grassland and shrub land ecosystems.[rdquo] Tourists come to Montana to see and enjoy our forests and wildlife!

#### Timber (TIM) 2.4.6

My concern about timber harvest is that climate change will impact the regrowing of the forest. Studies have shown that new seedlings cannot sustain themselves and soon die. Also studies have been done in clear cut areas and show that mature trees are not available to communicate with new trees. Since there are no mature trees left; they are not able to provide shade or protect the young seedlings from insect and disease by sending nutrient signals because the mature trees have been removed. This research was done by Suzanne Simard of Yale.

As stated and shown in Dr. Christine Jones[rsquo] webinar, we need to STOP using nitrogen altogether. Nitrogen does not permit the plants to develop the necessary Quorum Sensing. Chemicals, fungicides, herbicides, and fertilizers are interfering with the continued positive nutrient growth. We do more damage by killing the healthy interactions. Walter Jehne says [ldquo]Plants cannot build topsoil if high analysis fertilizers are used!!!![rdquo]

Please view Walter Jehne[rsquo]s and Dr. Christine Jones[rsquo] webinars; I believe they are on the right track. I[rsquo]d be interested in your viewpoints as well. hik66gray@aol.com Monitoring and adaptation will help the Custer Gallatin National Forest.

The reason the Custer Gallatin National Forest should continue to exist is because of the ecosystems. It is the only place in the lower 48 with a pristine ecosystem that has this many species. This would be our present to the planet if we can maintain all of the Custer Gallatin National Forest ecosystem. All of her exquisite species need to be preserved. With your help and guidance, monitoring, and adaptation to improve the quality of the soils and monitoring the clean air, water, and the ecosystems including the refugia; this can be accomplished. The better the quorum sensing; the healthier the ecosystem. You may reward yourselves and I will appreciate forever all that you have accomplished.

[ldquo]The nation that destroys its soils destroys itself.[rdquo] 1907 Theodore Roosevelt

<https://youtu.be/NqV1b4ps-sE>

No-till on the Plains 2019 Dr. Christine Jones Community Tipping Point

YouTube.com

healthypoils.com Australia. Walter Jehne

Walter Jehne Cooling the Climate and Restoring Ecosystems with Water Restoration

vimeo.com Walter[rsquo]s talk thru Raleigh Latham Pro

<https://e360Yale.edu>. Yale University e360 1September.2016 Suzanne Simard