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Title:

Comments: RE: Comment on East Crazy Inspiration Divide Land Exchange #63115

December 20, 2022

To the Custer Gallatin National Forest:

Thank you for providing the opportunity to comment on the proposed East Crazy Inspiration Divide Land Exchange. For context, I am a Professor of Geology at Montana State University (since 1982) and have conducted field work throughout most of the mountain ranges of SW Montana; Past Chair of the U.S. National Committee for Geological Sciences and have worked extensively on identification and preservation of national geoheritage sites (more below); and I am an avid hunter and graduate of the One Montana Master Hunter program (2018). My comments below are informed by these professional and life experiences. However, the following comments represent entirely my personal perspectives. I have downloaded the documents provided on the USFS website and attended the public information/comment meeting on November 15, 2022 at the Commons in Bozeman MT.

I support this land swap in principle. The present checkerboard land ownership throughout the western United States was a terrible policy from the onset (Union Pacific Act, 1862), and has obviously created enduring problems of management of, and access to, our public lands. I congratulate the good faith, hard work invested by the numerous parties of interest who developed this plan: Custer-Gallatin National Forest staff, numerous landowners, Western Land Group, Yellowstone Club, Native American tribes (Crow Nation, Apsáalooke people) among many others. No plan in a transaction of this complexity can be perfect, and compromises have to be made by all parties. On balance, I think this is a good plan, and should respect the hard work done by the planning groups.

I do have a few specific comments about the plan:

*Years ago I enjoyed hunting in Montana FWP deer/elk district 315 on the west side of the Crazy Mountains. But, due to reports over the last few years of hunters being charged with criminal trespass even while using USFS trails, I have just given up hunting in this area. As I see it, this type of consolidation plan will go a long way towards mitigating these land access conflicts. Reworking of the Porcupine-Ibex Trail in this area would seem to be a good model for the proposed East Crazy Big Timber-Sweetgrass Creek trail system. Let's hope the Montana Legislature takes an additional positive step towards allowing "corner crossing" of public/private land corners.

*Some groups, such as the Backcountry Hunters and Anglers (BHA), have reservations about losing what has traditionally been popular deer/elk hunting lands in the lower sections of land that will transfer to private ownership. I would encourage that recommendations be made to allow public access to hunting on these lands, perhaps through existing programs such as the Montana FWP Block Management program, or the recently added Elk Access program. I know that this condition can't be imposed on land owners and managers, but strong recommendation and encouragement to follow this path would help defuse some of the major objections to this land swap. We know that hunting is an effective tool in wildlife management, and consistent hunting pressure (not just guided trophy hunts) will help keep herds healthy and at manageable numbers.

*Similarly, I would like to see the lands transferred to private ownership be placed into conservation easements. I note in some of the documents that the Switchback Ranch has already agreed to place some of their lands into a conservation easement. Habitat fragmentation is a major problem throughout the western U.S., and human habitation and infrastructure will create ongoing problems for wildlife migration, wintering and calving grounds, and needed cover, forage and access to water.

*Range management practices: for public lands that transfer to private ownership, I would encourage that future

range management practices be encouraged to follow regenerative agriculture principles. This won't happen all at once, but for example, old barbed wire fences that are in need of repair could be upgraded to flexible fencing solutions to allow big game migration while defining grazing range for livestock. These gradual changes to land management will provide long-term benefits to both public and private lands. It's good policy, good practice, makes economic sense for ranchers, and ensures good stewardship of lands well into the future.

*Historical prescriptive easements: to the extent possible, I would like to see the historical access points preserved in the Crazy Mountains. However, as explained in the Bozeman Public Information meeting, documenting these easements is often impossible because needed records were never formally developed or have been lost to time. Still, this would have been my preferred approach but the anticipated sustained litigation around these issues still could have resulted in no solution to the access problem. So, I am satisfied with (or resigned to) the current plan.

*I am particularly supportive of this land swap as it has seriously considered the cultural heritage concerns of our Native American community. From what I've read (through comments by Shane Doyle), the Crow Nation appears to be supportive of this land swap plan, and that's good enough for me.

*As a protection for the public, I would like to see a contractual agreement with deliverables and timeline with the Yellowstone Club to make sure that the trail developments are completed as planned and on time. Contracts are a protection for all parties as there is an agreed upon set of conditions. Let's make sure all of the proposed developments, in the Crazy Mountains and in the Madison Range, are completed on time for the enjoyment of the public.

*I look forward to exploring the newly proposed Big Timber-Sweetwater Creek trail via hiking, trail running and mountain biking.

I did find the Preliminary Environmental Assessment document deficient in two important areas: 1) Education and 2) Geoheritage. This is a more general critique of USFS procedures in creating these Environmental Assessment documents, but the Crazy Mountain Land Swap is a good case study to demonstrate the need and opportunity. These are missed opportunities to demonstrate the value of our National Forest lands for the public good.

1)Education: The USFS has a mission to support multiple use of public lands. "The term "multiple use" means the management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people;... a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values..." (43 USC § 1702(c)). Why isn't educational use of public lands considered to be one of these multiple uses? When I lead an educational geologic field trip to Yellowstone National Park (DOI/NPS) for example, I write a request for an educational fee waiver, I lead my field trip, and YNP/NPS credit for the educational use of YNP for their annual accounting. The National Forests should do the same in support of formal and informal education. There are so many opportunities to support local K-12 school systems with regular field trips to see sites of both biological and geological interest, to encourage students to do field-based observational studies, and to engage holistic systems-based thinking about making connections between natural systems that sustain us (water, soil, minerals) and our personal and societal lives. I would extend these opportunities to informal science education through institutions like the Museum of the Rockies and to other non-governmental groups such as the Audubon Society (e.g., winter bird count). There are many, many opportunities to engage citizen-science projects to collect baseline data in the National Forests, and there is an eager and energetic public that is willing to contribute. I encourage the USFS, and the Gallatin Custer National Forest specifically, to consider the educational possibilities as a major multiple use asset that is now under-utilized.

2)Geoheritage: "Geoheritage is a generic but descriptive term applied to sites or areas of geologic features with significant scientific, educational, cultural, and/or aesthetic value" (Geological Society of America Position Statement on Geoheritage). Geoheritage is closely linked to the concepts of geodiversity (analogous to biodiversity) and geoconservation. There are physical features in the rocks and landscapes that represent

geologic history, processes, and environments in unique ways (e.g., geodiversity) that cannot be replaced. Unfortunately, many of these sites are at risk of degradation due to both natural process and human activity (thus, geoconservation). The entire ecosystem is built on the geological foundations that dictate geochemistry (major and trace element availability for biota), hydrology (quantity and quality of water resources), distribution of biomes and microclimates, and the overall structure of the landscape. Biota living in an ecosystem are intrinsically connected to their physical, geological environments, and local human communities are dependent on their geologic setting with respect to geo-resources and geohazards. As a society, who we are and how we live are largely dependent on our collective relation to the geology around us. So, I was disappointed that there was no mention of the geologic setting in the Preliminary Environmental Assessment.

For the Crazy Mountains, the geochemistry of the southern and northern parts of the range are fundamentally different. The southern core of the range is dominated by the Crazy Mountain batholith that has calc-alkaline geochemical affinities (similar to many modern day igneous complexes at continental margins; and the site of various mineral exploration programs in search of porphyry copper mineralization) whereas the northern part of the range marks the boundary of the Montana Alkali Province. Other important geologic features: a radial dike swarm of shallow intrusive igneous rocks; spectacular Alpine glacial features; the easternmost and youngest extension of the Sevier-style fold and thrust belt terminates in the western foothills of the range; the Crazy Mountains are an "island" mountain range that is not fault bounded as the other ranges in SW Montana, but is the result of a regional doming uplift known as "epeirogeny"; Iddings Peak is named after J.P. Iddings (1857-1920) a pioneering geologist of the U.S. Geological Survey where he published the Livingston, Montana, quadrangle that constituted the first folio of the geological atlas of the United States. There are similar unique and interesting geologic features in the related land swap in the Madison Range: Lone Peak of the Big Sky ski area is a "Christmas Tree" laccolith that has formed by alternating intrusive sills of intermediate igneous rocks into Cretaceous sediments; the Spanish Peak fault north of the proposed land swap has uplifted ancient crystalline basement rocks (as old as 3.6 billion years) that originated as deep as 30 km below the present day surface; Laramide-style high angle reverse faults have uplifted the range in the land swap area; landscape evolution includes spectacular Alpine glaciation as well as formation of the world-famous Cedar Creek alluvial fan in the Madison River valley; the Cretaceous sedimentary rocks in the area host a series of perched water tables that contribute to the massive slumping, landslide, and water quality issues widely known throughout the development of Big Sky, Yellowstone Club and surrounding developments; the region is always susceptible to significant seismic events (Hebgen Lake, 1959, magnitude 7.2). All of these geologic components in both the Crazy Mountains and Madison Range contribute to the overall operation of the local ecosystems that support biological activity, and they also impact in important ways how humanity lives on and utilizes these special lands.

I hope that future Environmental Assessments conducted by the USFS will at least consider and address the educational and geoheritage values of our public lands.

In closing, let me again affirm that I support in principle the proposed Crazy Mountain Land Swap. I hope you will consider the additional comments I have submitted as you continue with your final deliberations. Looking forward to seeing you out on the trail sometime soon.

Respectfully,
David W. Mogk
Bozeman, MT