

Site visit writeup from 9/3/2022

High Country Conservation participants: Josh Thomas and James Bakner

Elizabeth;

Attached below is my best suggestions for any of the mitigation areas that we walked to on Saturday, 9/3. There are a few basic suggestions that any future work should follow.

General description:

Overall, the riding trails at LPOA are in decent shape with some significant areas of disrepair. In our judgment, this is mainly because it's highly likely the trails weren't designed in any real way but more likely just added on as property boundaries with easements. Due to that, they climb in and out of drainages along straight property boundaries. Each trail as it drops in and climbs out of each drainage will get worse as the trail gets steeper. For the most part, from talking with Elizabeth this is going to be unavoidable to mitigate with easements to allow trail reroutes with easements on HOA member property. It is highly preferred that trails do not drop in and out of drainages at a steep grade, as they will be difficult to maintain year after year and do not promote a contiguous travelway. These are the standard issues we repeatedly saw at almost all of our site visits:

1. Clay soil composition: You have a substantial clay composition on most of the trail surfaces. This isn't such a terrible situation currently, as you have low enough traffic on the trails that there's a good grass cover for most areas that aren't too steep. For areas where horse hooves are getting trapped, where you have consistent tacky (saturated or semi-saturated soil from water seeps) you have a few mitigation solutions
  - a. Lower trail grade wherever possible, and promote water drainage off the trail wherever possible (low number of areas)
  - b. Remove top 12 inches of clay soil, lay down a geotextile to promote water drainage, then lay down a better draining aggregate that still sticks together. Any limestone road base will do the trick.
  - c. Perform b, but additionally put in drainage-improving PVC pipe in particularly wet areas. Pipe must be well suited for the area, imperceptible once installed, and must be surrounded by geotextile in order to prevent dirt intrusion to the drainage pipe.

In order of cost, b is the cheapest solution, followed by c.

2. Steep descents and climbs out of drains: This will be the most difficult to mitigate. Due to inability to reroute trails in most of these areas, your solutions may not be perfect. The perfect solution is to lower the trail grade and gradually drop into these drains. When that is simply not practical, you have some imperfect solutions. I have included standard trail specifications drawings of grade reversals (drain dips), check dams, and crib steps. Each situation will be unique, but it's highly likely you will want any and all of these.

3. Scour from culverts: Most of this should be mitigated with large rip-rap layers to maintain the soil surface that is currently there. While I don't think any of the culvert crossings are dangerous, there is a potential fall involved if the current tread surface is scoured away after a big rain event. Some of the culvert pipes looked like they were still functioning well, but some looked like they'd been overmatched by water flow. This was exacerbated by water flow down the trail in steep sections of trail. A combination of drain dips/grade reversals to push water off the trail and re-establishing water flow in these culverts is the best solution.

4. Entrance and exits out of creek beds. One of our last visits was to the area on Keith's property, that involved a large amount of clay sediment in the crossing, which would be difficult for most horses. For those crossings like that, hardening them significantly is the best solution in hand. I've included the brochure from tri-lock blocks, that we use for OHV erosion control. Horse hooves will likely not be friendly to the concrete blocks (or any pavers that we would use), so we would likely cover it with 6 inches or more of gravel to maintain a surface that's fine to ride when wet. Any solution involving installing a material like this, we'd highly recommend that the material interlock tightly, and the heavier the better to prevent disturbance in rain events. Any solution at these crossings that doesn't involve a bridge will likely need occasional touch up work, and if reports are true about water levels in rain events in the creek, then even a bridge would be difficult to maintain.

5. Small scale tread cupping from deer and wild animal traffic: In sections where this is possible, a trail dozer, excavator or something similar to a Skid Steer with a dozer blade (dingo, ditch witch, etc especially if it's got a 6-way blade). Re-benching the tread out to remove this cupping is an easy fix and could easily integrate with other project work. The area you re-bench will be muddy in the rain, so you may want to choose a growing season to perform this, and either reseed it immediately or put a light hay covering and keep traffic off it for a few weeks as the grass re-establishes itself.

Addendum regarding our final inspection area.

I did not view anything regarding that closed trail area that we inspected on our final location as particularly dangerous. The tread area was overall wide, quite a distance from the creek for the most part, and no more dangerous than other areas of the trail system.

Final thoughts:

Overall, your mellow graded trails and flat areas are in fine shape. The areas you should be primarily concerned with are descents and ascents out of drainages, and culvert repairs whenever necessary. Your consistent concern should be to prevent water from flowing parallel or directly down the trail into the drains. The reason why you don't have more significant problems in all these areas is that you have low enough traffic that you have a consistent grass covering or canopy that allows water to soak in more frequently. If this was a highly trafficked area, those ruts that we witnessed would be in much worse shape. I've separately attached the brochure to show you the interlocking tri-lock block, along with the standard forest service drawings of crib steps, check dams, and grade reversals (drain dips).

Call me if you have any more questions or if you need anything else.

Thanks,  
Josh Thomas  
High Country Conservation, LLC

