Hardie Summer Allotment Monitoring Report for the 2019 Grazing Season

Contents

Introduction

Purpose

On July 16, 2019, the U.S District Court for the District of Oregon ordered BLM in *Western Watersheds Project et al. v. Bernhardt et al.* (Case No. 2:19-cv-0750-SI, D. Or., Opinion and Order) to:

- "monitor the actual use on the Hardie Summer Allotment at least once per month during the permitted grazing season on the allotment (July, August, and September)";
- "review the condition of a sample of the riparian areas being grazed on the allotment"; and
- "file with the Court a report of the findings from the monitoring."

BLM submits this report in accordance with this direction in the July 16, 2019 Opinion and Order.

Location

The Hardie Summer Allotment is in southeastern Oregon situated within the Burns District of BLM. The allotment is approximately 10 miles to the southeast of Frenchglen, Oregon, within the Steens Mountain Cooperative Management and Protection Area (CMPA). The allotment is approximately 9,783 acres, of which approximately 39% of the allotment is interspersed private land through five pastures. The pasture names are (working from north to south) Bridge Creek, North, Fir Creek, Cabin, and Sylvies. See the allotment map in Appendix B.

Accessing much of the allotment is slow due to very rough, rocky road and having to travel around private lands. Travel time to access the allotment from the Burns District Office is often in excess of 2.5 hours, each way. As a result, time is the limiting factor for completing monitoring across the allotment per field day. Monitoring efforts for most field days were on a pasture basis focusing where livestock were grazing, and if time allowed, the neighboring pasture. The monitoring schedule was developed based on the grazing schedule described below.

Livestock Management

The Hardie Summer Allotment had been ungrazed since 2014. Because of uncertainty over whether the Hardie Summer Allotment would be grazed in 2019 pending resolution of the request for a preliminary injunction in the above-referenced litigation, coupled with late access due to snow, the fences within the Hardie Summer Allotment were not maintained prior to July 16th. The boundary fences to the north and east were routinely maintained from 2014 to 2019 by neighboring permittees and private landowners. On July 18, 2019, the BLM started planning, gathering materials, modifying contracts, sorting out logistical challenges, and preparing to ready the allotment for livestock grazing. From July 27th to July 31 the BLM reconstructed, repaired, or maintained fences along the western boundary of the allotment and internal fences between the North and Cabin Pastures. The BLM also installed a temporary electric fence along the property boundary in the Fir Creek Pasture to keep livestock out of the BLM-controlled portion of the Fir Creek pasture, and checked it weekly during the grazing season.

The permittee (Hammond Ranches) moved 408 cow/calf pair onto the Hardie Summer Allotment on July 31, 2019. The grazing rotation began in the Bridge Creek pasture and continued for three weeks, the livestock were moved to the North Pasture August 21, 2019. The livestock stayed in the North Pasture until September 15th and then entered the Cabin and Sylvies pastures before the allotment exit date of September 30th. The permittee then moved the livestock to the part of the Hammond FFR adjacent to

the Hardie Summer Allotment before beginning to trail them through the Mud Creek allotment en route back to Hammond Ranch Headquarters.

Trailing through the Mud Creek Allotment into the Hardie Summer Allotment took approximately 1.5 days. Trailing to the Hardie Summer allotment at the end of July took a substantially shorter time than the return trip will take because the cattle were in a pasture in which they were relatively easy to observe and gather. In addition, it is also generally easier to stage them for the trip because they want to travel up in elevation to areas with cooler temperatures. The return trip is slower because livestock have to be gathered and bunched before being herded down through Mud Creek. The Hardie Summer Allotment is also more difficult to gather livestock in because of the deep drainages, juniper woodlands, and aspen stands that livestock can hide in coupled with milder temperatures and less of a weather-driven reason for the cattle to want to go back down in elevation.

Inspection Dates and Locations

The monitoring schedule was developed based largely on the grazing schedule described above. More specifically, the BLM monitored the allotment on the following dates:

- July 24, 2019. Bridge Creek Pasture
- July 31, 2019. Bridge Creek Pasture
- August 5, 2019. Bridge Creek Pasture, Cabin Pasture
- August 9, 2019. Sylvies Pasture
- August 15, 2019. Bridge Creek Pasture
- August 22, 2019. Bridge Creek Pasture, BLM-controlled portion of North and Fir Creek Pastures.
- August 27, 2019. Bridge Creek Pasture, BLM-controlled portion of North and Fir Creek Pastures.
- September 4, 2019. BLM-controlled portion of North and Fir Creek Pastures, and Cabin Pasture.
- September 10, 2019. BLM-controlled portion of North and Fir Creek Pastures, and Cabin Pasture.
- September 20, 2019. BLM-controlled portion of North and Fir Creek Pastures, and Cabin Pasture.
- September 26, 2019. BLM-controlled portion of North and Fir Creek Pastures, Cabin Pasture, and Sylvies Pasture.
- September 30, 2019. Cabin (south half), and Sylvies Pastures
- October 2, 2019. Bridge Creek, BLM-controlled portion of North and Fir Creek Pastures, and Cabin Pasture.

The BLM completed upland livestock use monitoring by documenting compliance and collecting utilization information. Riparian monitoring included short term use indicators from the Multiple Indicator Monitoring (MIM) method and/or collecting photos, which occurred on the following main drainages:

Pasture Name	Drainage Monitored, Method Implemented
Bridge Creek	Little Bridge Creek, MIM and photos Big Bridge Creek, photos
North/ Fir Creek	Little Fir Creek, MIM and photos

Pasture Name	Drainage Monitored, Method Implemented
Cabin	Little Fir Creek, MIM and photos Big Fir Creek, MIM and photos
Sylvies	Lake Creek, photos

Monitoring Methods, Selection, Description and Frequency

The BLM used selected monitoring methods during the 2019 grazing season to continue the protocols already existing in monitoring plans that encompass the Hardie Summer Allotment, and also incorporated updated protocols. Monitoring efforts on most field days were conducted on a pasture basis focusing on where the livestock were grazing, and to the extent time allowed on a given day, the neighboring pasture.

There are two existing monitoring plans already existing that include the Hardie Summer Allotment.

1. The Burns District Monitoring Plan (1984) outlines how upland utilization is to be done by the Key Forage Plant Method, this is explained in detail in Appendix C (pages 15-27) of the plan.
2. The Steens CMPA Monitoring Plan (original 2008, 2011 updated) which discusses actual use and utilization. Monitoring is also discussed in the Andrews/Steens CMPA RMP documents at page 55.

The BLM used the Multiple Indicator Monitoring of Stream Channels and Streamside Vegetation Technical Reference 1737-23 (Revised, 2011) (MIM) to monitor a sampling of the riparian areas being grazed in the allotment. MIM was developed and tested largely after the two plans above began to be implemented (2011). The protocols look at multiple indicators of riparian areas, both long and short term. From the Introduction of the manual (page 1) *"Indicators and procedures in this protocol were selected and developed primarily to monitor impacts of livestock and other large herbivores".*

Upland Studies

- The protocol, also generically called utilization, is more formally known as the Key Species Method. It is a combination of the Landscape Appearance Method and the Ocular estimate Method (formerly Key Forage Plant Method) and is described in detail with updates (from the 1984 Burns District Monitoring Plan) in the BLM Technical Reference 1734-03 Utilization Studies and Residual Measurements (pages 81-86). It is for use on upland or mesic herbaceous grass species. Depending on the size and layout of the pasture there are multiple predetermined stops the observer makes to evaluate utilization. The stops are located based off of historical use mapping, or at a predetermined interval along main roads. At each stop the observer visually puts the site into a "class" based on a set of criteria based on the appearance of grazing use on seed stalks, young plants, grazing distribution or "patchiness" amongst plants, and other visual cues which are listed on the monitoring form. Classes, which are broader, are referred to in this report and the photos to help give a visual reference. The classes are: No Use (5-10%), Slight Use (6-20%), Light (21-40%), Moderate (41-60%), Heavy (61-80%), and Severe (81-100%). The utilization is put into a class per stop, and then averaged over the pasture to get a final, single number result of utilization percentage.

- The BLM collected data based on utilization stop locations established on a map developed in the 1990s. Prior to 2019, the locations had not been identified by GPS. BLM completed that effort throughout the 2019 grazing season. The BLM used the same locations in 2019 as in prior years. A complete list of coordinates for the locations accompanies the field data forms. One exception was the locations in the Bridge Creek Pasture that were instead based on .3 mile intervals along main roads rather than solely on the locations on the 1990s map due to access to the stops and time limitations.

- BLM checked each pasture once mid-season, and thereafter during the season of use depending on the results of the mid-season check. BLM also completed end of season monitoring in each pasture.

Riparian Studies

- Multiple Indicator Monitoring (MIM) is a protocol that looks at many long term and short term indicators of livestock use in riparian areas. The short term indicators (woody species browse, bank alteration, and stubble height) are a measurement of the current grazing season use and were the indicators the BLM collected on the selected Hardie Summer Allotment drainages. The remaining long term indicators discussed within the MIM protocol were collected at the same sites in July 2019 by contractors. Those data are currently going through the quality assurance and quality control process, and are not yet available.

- For the riparian areas in the Hardie Summer Allotment that are steeper gradient systems driven by woody shrubs (largely willows) and rock/cobble, the most relevant short term indicators are woody browse use and streambank alteration. Protocols for these two indicators are on pages 34-39 and 27-34 respectively of the MIM. Stubble height information was also collected (MIM pages 23-27).

- Designated Monitoring Area (DMA) types and location selection are discussed in the MIM on pages 5-10. The Burns BLM followed the protocol for locating representative DMAs, which calls for locating a site in a riparian complex that is meant to be representative of a larger area, and this protocol also therefore served to satisfy the Court's direction to review the condition of a "sample" of the riparian areas being grazed. Little Bridge Creek, Little Fir Creek, and Big Fir Creek were selected for completing MIM monitoring of annual indicators at DMAs because they contained areas that could meet the criteria to serve as representative sites per the MIM protocol (MIM pages 5-10), were subjected to grazing this season, and were determined by the BLM to be representative of the grazing impacts to streams in the pasture

- BLM checked each DMA once mid-season per pasture, and thereafter during the season of use depending on the results of the mid-season check. If livestock presence was none to very little (i.e., one or just a few animals), photos were collected in lieu of reading plots, as BLM did not consider these areas as being actively grazed enough to collect meaningful data to analyze. BLM completed end of season monitoring and read plots, however, regardless of livestock presence or use evidence.

Results and Discussion

Bridge Creek Pasture

Upland Monitoring

BLM collected data at 0.3 mile intervals along Bridge Creek Road and spur roads in 16 locations (15 locations on the October 2nd inspection). Overall, there was more livestock use in the southern half of the pasture, primarily due to availability and distribution of stock water. The key species were primarily Idaho fescue and bluebunch wheatgrass. Two locations were dominated by Kentucky bluegrass in the drainage bottoms. Per the Key Species Method Utilization protocol, utilization is determined first on each stop, and then averaged over the pasture. The photos below (Figure 1) show the progression in grazing use during one of the stops during the light categories as an example. The table below summarizes the results of the averaging of the data from each stop on each date that BLM monitored utilization in the pasture. The Bridge Creek pasture as a whole fell into the light utilization category, which is between 21-40%.

BLM calculated the October 2, 2019 end of season utilization percentage as 35% using the Key Species protocol. Ocular estimates of utilization have long been known to overestimate utilization (i.e., indicate there is more utilization than there is). This is particularly true for perennial cool season bunchgrasses, such as Idaho fescue, that carry the bulk of their weight in the bottom of the plant. The visual indicators from the Key Species protocol guide the observer to focus on the top part of the plant. Because 35% was above the 30% utilization ordered by the court, the BLM returned to the Bridge Creek pasture on to do a quantitative analysis of the areas that were read on October 2 as light, moderate, and heavy use on the key species Idaho fescue at those seven utilization stops. The BLM used a different, quantitative, agency accepted protocol called the Height-Weight Method (BLM Technical Reference 1734-03 Utilization Studies and Residual Measurements (pages 89-102)) to check personal judgement entailed in the use of the ocular estimated Key Species protocol, as well as determine percent utilization under the Height-Weight Method. The Height-Weight Method draws the relationship between the height and the weight of the plant, and then measures the amount of plant height on-the-ground to determine what the remaining plant weight is after livestock grazing. These data can be used to calculate the percentage of utilization. An additional part of the Height-Weight protocol is clipping ungrazed samples of the key species to check to see whether the previously prepared utilization scales used as part of the protocol are appropriate for the species on the rangeland where they will be used. The BLM collected Idaho fescue samples in Bridge Creek pasture on October 9, 2019, developed a height-weight curve, tested the previously prepared utilization scale against the site specific information, and found it was appropriate for use within the pasture. BLM found that the October 2, 2019 Key Species protocol reading of the 7 stops overestimated the utilization by 1 class; for example, what was in it the moderate use class for Key Species protocol would be in light use class considering the calculations of the Height-Weight Method. Taking into consideration the updated calculations based on the Height-Weight data, BLM recalculated the pasture utilization at 24%.

Date	% Use	Observers	Notes
08/05/2019	Not Measured	McCormack	Cattle in pasture 5 days, wait until week two to collect information
08/15/2019	25%	McCormack, Bonson	Measured at .3 mile intervals in 16 locations, most use in the vicinity of Big Bridge and Log House Reservoir by the available stock water (south half of pasture)
08/22/2019	26%	McCormack, Bonson	Use continued to be more apparent in the south half of the pasture near stock water
10/02/2019	35%	Bonson, Davies	Some livestock returned to the Bridge Creek pasture the last week in August after being moved. They were moved out back into the North Pasture the first week in September. Also, one stop was inadvertently missed during the monitoring completed on 10/02/2019, so there were 15 stops rather than the full 16.
10/09/2019	24%	McCormack, Bonson	Utilization was re-calculated with the Height-Weight method (explanation in preceding paragraph).

Figure 1 Bridge Creek Pasture Utilization (Stop 15) Example Photo August 15, 2019 Light Utilization (21-40%)

Figure 2 Bridge Creek Pasture Utilization (Stop 15) Example Photo August 22, 2019 Light Utilization (21-40%)

Figure 3 Bridge Creek Pasture Utilization (Stop 15) Example Photo October 2, 2019 Light Utilization (21-40%)

Riparian Monitoring

Little Bridge Creek Designated Monitoring Area (DMA)

Date	Woody Browse Use (%)	Streambank Alteration (%)	Stubbleheight (inches)	Observers	Notes
08/05/2019	10*	0	15	McCormack, Davies, Obradovich	Coyote and geyer willow dominant woody species. Willow browse readings majority is 0, two to three plots had a few clipped leaders
08/15/2019	10*	.25	16	McCormack, Bonson	Some livestock trailing (knocked over grass), very little grazing use
08/22/2019	10*	2	15	McCormack, Bonson	Vegetation beginning to senesce (turn brown)
10/02/2019	11*	1.25	9.5	Davies, Bonson	Vegetation senesced, recent rain/ frost/snow has matted vegetation down

*The protocol uses classes to show the relative degree of use of available current year's growth of key browse plants, in this case willow species. As per the MIM protocol, the lowest level of use is the "slight" class which is between 0-20% use. To convert the use class to an average percentage, a midpoint is used. The midpoint for the slight class is 10, so even though there was no-to-very-low use, the lowest value the protocol allows for is 10%.

Figure 4 Little Bridge Creek DMA August 5, 2019

Figure 5 Little Bridge Creek DMA August 15, 2019

Figure 6 Little Bridge Creek DMA August 22, 2019

Figure 7 Little Bridge Creek DMA October 2, 2019

Big Bridge Creek Photos: Despite its name, Big Bridge Creek has the least amount of water of all the riparian areas BLM monitored during the 2019 grazing season, and because it is dry it has very little to no riparian vegetation. Application of riparian monitoring protocols to yield data to use as intended proved difficult under this scenario. To track the condition of this area through the grazing season, BLM took photos at four locations. The photo points work from the lowest point (farthest downstream) where the drainage is within the Bridge Creek Pasture towards the highest point (farthest upstream). The fourth photo point on page 11 of this report was added after grazing started, so there is no pre grazing photo. Note that the photos taken on October 2nd, were after the plants had been grazed, senesced (turned brown), and frost/snow that matted the remaining grass down. The photos are differently sized because they were taken with different cameras.

Figure 8 and 9 Big Bridge Creek Photopoint 1 July 24, 2019 looking upstream (pre grazing) left, on the right is post grazing on October 2, 2019

Figure 10 and 11 Big Bridge Creek Photo point 2 July 24, 2019 looking upstream (pre grazing) on the left, post grazing on the right October 2, 2019

Figure 12 and 13, Big Bridge Creek Photo point 3 July 24, 2019 looking upstream (pre grazing) above, post grazing below

Figure 14 Big Bridge Creek Photo point 4, October 2, 2019 looking upstream (post grazing)

North Pasture

Upland Monitoring

Opportunity for upland monitoring was limited due to the large percentage of private land within the pasture boundary. BLM practice is to not monitor livestock grazing on private lands even if it is within an allotment boundary. As a result, there are two locations where utilization information was collected across the North and Fir Creek Pastures uplands. The key species were bluebunch wheatgrass and Idaho Fescue. BLM shared the coordinates for these monitoring locations to the plaintiffs in the above-referenced litigation through counsel in late September.

Date	% Use	Observers	Notes
08/15/2019	Not Measured	McCormack, Bonson	Cattle in pasture 1 day, wait until the following week to collect information
08/27/2019	2.5	McCormack, Bonson	The only time BLM saw cattle they were on private land
09/04/2019	2.5	Bonson, Obradovich	The only time BLM saw cattle they were on private land
09/10/2019	2.5	Bonson, Clayburn	The only time BLM saw cattle they were on private land
09/20/2019	2.5	McCormack	The only time BLM saw cattle they were on private land
09/26/2019	13	McCormack, Bonson	Cattle seen at the time of inspection on private land and BLM, near both utilization stops
10/02/2019	13	McCormack	No cattle seen at the time of inspection

Figure 15 North/Fir Creek Upland Utilization (Stop 2) Example Photo August 27, 2019 No Use (0-5%)

Figure 16 North/Fir Creek Upland Utilization (Stop 2) Example Photo September 26th, 2019 Slight Use (6-20%)

Riparian Monitoring

No riparian monitoring occurred in the North pasture. Cold Springs creek is an ephemeral drainage on BLM-controlled land and does not support riparian vegetation.

Fir Creek Pasture

Upland Monitoring

Per the court order on page 1, the BLM-controlled portion of the Fir Creek pasture was not grazed. The BLM checked for the presence of livestock from August 22 to October 2, 2019 on a weekly basis. While there were livestock grazing on adjacent private lands, the BLM-controlled portion the pasture did not have presence of livestock until the inspection on October 2, 2019 where two pair were seen, which is explained in the following riparian monitoring section in more detail.

Riparian Monitoring

The BLM originally thought Little Fir Creek to be perennial, but based on more in-depth monitoring and analysis, has determined it is actually more appropriately classified and functions as an intermittent stream.[1] By August 6, 2019, the stream running through the Fir Creek and Cabin Pastures was mostly dry. The DMA in Fir Creek pasture still had water on August 6, 2019, but the DMA in Cabin pasture was dry. By August 22, 2019, the DMA in Fir Creek pasture was also dry.

Little Fir Creek on the BLM-controlled portion of the Fir Creek pasture was monitored for livestock presence weekly from August 22, 2019 to October 2, 2019. At the time of these weekly inspections, BLM also checked the electric fence it had installed along the property boundary to keep livestock out of the BLM-controlled portion of the Fir Creek Pasture consistent with the Court's Order to ensure it was electrified (hot), the fencing up, and intact. Each week it tested hot and was upright, creating a barrier to livestock entering the BLM-controlled portion of the Fir Creek pasture. BLM did not detect any livestock in the vicinity of the fence until the September 20th inspection, when it observed a few hoof prints near the fence, trailing around on the permitted side of the fence. Livestock were seen at the time of inspection grazing near the permitted side of the fence on September 26. BLM detected no sign of livestock use within the excluded area along the creek during any of its monitoring inspections throughout the grazing season.

During the end of season inspection, however, after checking the electric fence to ensure it was still working, BLM observed two pair (two cows, two calves) within the excluded area on October 2nd, 2019. There was no evidence to suggest they had been there for over a day, no sign of them travelling along the creek, and they seemed lost. BLM attempted unsuccessfully to drive them out of the area at that time on foot. BLM contacted the permittee immediately from the field to resolve the issue and, ultimately, the gate along the Fir Creek / Cabin Pasture boundary was opened to allow the cattle to leave the excluded area, which BLM determined was likely to occur given that there was no water for the livestock in the creek within the excluded area such that they would exit to find water elsewhere. BLM staff also checked the adjacent wire fencing, which was intact, and do not know how or where the livestock breached the fence. In response to the discovery of the two pair within the excluded area, the

[1] Intermittent Stream, as defined by the 2005 Steens Mountain Cooperative Management and Protection Area Resource Management Plan (page 106, glossary): A stream, or reach of stream that flows for prolonged periods only when it receives groundwater discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources. A perennial stream is a stream in which water is present during all seasons of the year (page 109, glossary).

permittee went the next day, October 3, 2019, to gather them and found that they had already left the pasture.

Annual use indicators were not collected at the DMA on the BLM-controlled portion of Little Fir Creek within the Fir Creek Pasture because livestock were excluded from the area and there was no evidence of any cattle use along the creek during the grazing season. Photos that BLM took at the DMA are set forth below, and because the photo point is at a bend in the creek, photos looking across the channel to the north and south are also included.

Figure 17 Fir Creek Pasture, Little Fir Creek DMA, Upstream View on October 2, 2019

Figure 18 Fir Creek Pasture, Little Fir Creek DMA, Downstream View on October 2, 2019

Figure 19 Fir Creek Pasture, Little Fir Creek DMA, north side of channel on October 2, 2019

Figure 20 Fir Creek Pasture, Little Fir Creek DMA, south side of channel on October 2, 2019

Cabin Pasture

Upland Monitoring

The key species were bluebunch wheatgrass and Idaho fescue. There is no direct road/route available to travel through the Cabin Pasture from north to south which makes completing all of the inspection stops throughout the pasture slow. As a result, utilization was read over two days on September 26th and September 30th, 2019. Although the use was slight, livestock traffic was much more evident in the northern portion of the pasture. Therefore, the end of season inspection on October 2nd focused on the area that had been more travelled by livestock (stops 1 through 6). Two photos below show examples of the utilization (slight 6-20%) from either side of the pasture.

Date	% Use	Observers	Notes
09/26/2019, finished 09/30/2019	12	McCormack, Bonson	Difficulties with time and logistics getting to all areas on the 26th, finished collecting information on the 30th.
10/02/2019	13	McCormack	Due to time limitations, only the north side of the pasture was inspected where greater livestock traffic was more evident (stops 1-6).

Figure 21 Cabin Upland Utilization (Stop 3) Example Photo September 26th, 2019 Slight Use (6-20%)

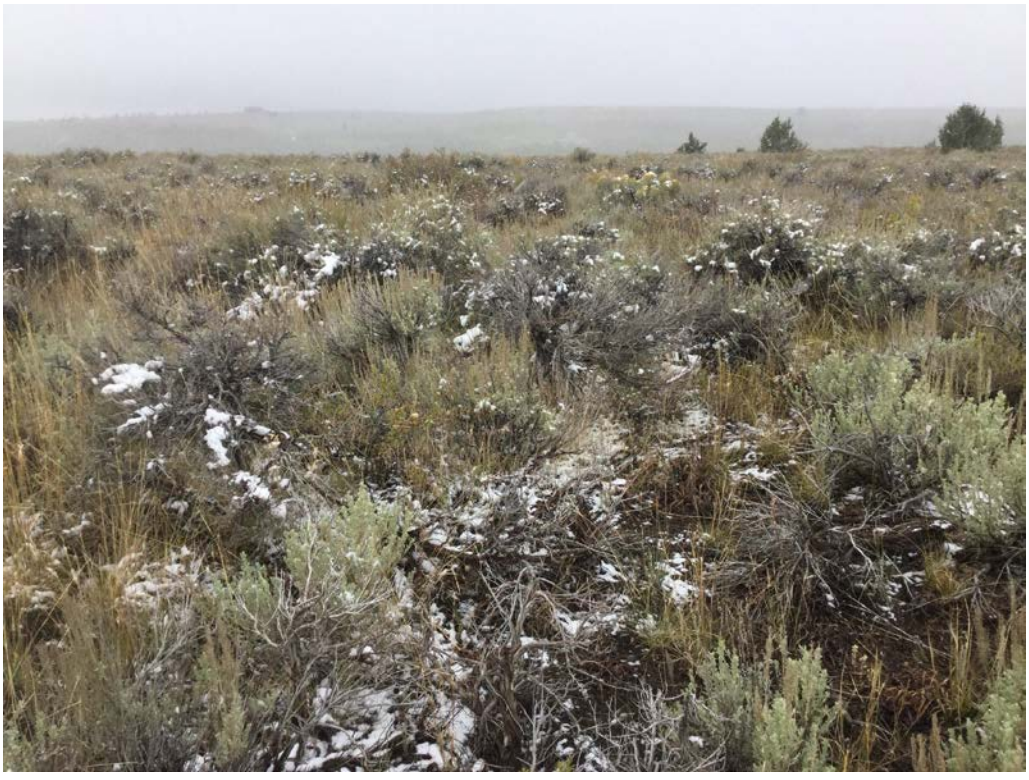

Figure 22 Cabin Upland Utilization (Stop 9) Example Photo September 30th, 2019 Slight Use (6-20%)

Riparian Monitoring

Little Fir Creek

Date	Woody Browse Use (%)	Streambank Alteration (%)	Stubbleheight (inches)	Observers	Notes
08/27/2019	No livestock use to measure	No livestock use to measure	No livestock use to measure	McCormack, Bonson	No livestock or livestock sign at time of inspection
09/04/2019	No livestock use to measure	No livestock use to measure	No livestock use to measure	Bonson, Obradovich	No livestock or livestock sign at time of inspection
09/10/2019	No livestock use to measure at DMA	No livestock use to measure at DMA	No livestock use to measure at DMA	Bonson, Clayburn	No livestock at time of inspection. Evidence of a small group (3-4) of cattle trailing by in vicinity but little grazing use
09/20/2019	No livestock use to measure at DMA	No livestock use to measure at DMA	No livestock use to measure at DMA	McCormack	No livestock or livestock sign at the time of inspection. No new evidence of livestock presence in Little Fir Creek from 09/10/2019 inspection
09/26/2019	10*	2.5	12.51	McCormack	Livestock traffic evident but very little grazing use
10/02/2019	10*	1	13.88	McCormack, Lemos	End of season inspection

*The protocol uses classes to show the relative degree of use of available current year's growth of key browse plants, in this case willow species. The lowest level of use is the "slight" class which is between 0-20% use. To convert the use class to an average percentage a midpoint is used. The midpoint for the slight class is 10, so even though there was no-to-very-low use, the lowest value the protocol allows for is 10%.

Figure 23 Cabin Pasture, Little Fir Creek DMA, upstream view September 4, 2019

Figure 24 Cabin Pasture, Little Fir Creek DMA, upstream view October 2, 2019

Big Fir Creek

Date	Woody Browse Use (%)	Streambank Alteration (%)	Stubbleheight (inches)	Observers	Notes
08/27/2019	No livestock use to measure	No livestock use to measure	No livestock use to measure	McCormack, Bonson	No livestock or livestock sign at time of inspection
09/04/2019	No livestock use to measure	No livestock use to measure	No livestock use to measure	Bonson, Obradovich	No livestock or livestock sign at time of inspection
09/10/2019	No livestock use to measure at DMA	No livestock use to measure at DMA	No livestock use to measure at DMA	Bonson, Clayburn	No livestock at time of inspection. Evidence of a 1-2 cattle traveling through in Big Fir Creek near MIM site
09/20/2019	No livestock use to measure at DMA	No livestock use to measure at DMA	No livestock use to measure at DMA	McCormack	No livestock or livestock sign at the time of inspection. No new evidence of livestock presence in Big Fir Creek from 09/10/2019
09/26/2019	10	1.25	19.97	Bonson	More evidence of livestock use than previous inspections
10/02/2019	10*	6.25	14.45	Lemos, McCormack	End of season inspection

*The protocol uses classes to show the relative degree of use of available current year's growth of key browse plants, in this case willow species. The lowest level of use is the "slight" class which is between 0-20% use. To convert the use class to an average percentage a midpoint is used. The midpoint for the slight class is 10, so even though there was no to very low use, the lowest value the protocol allows for is 10%.

Figure 25 Cabin Pasture, Big Fir Creek DMA, upstream view September 4, 2019

Figure 26 Cabin Pasture, Big Fir Creek DMA, upstream view October 2, 2019

Figure 27 Cabin Pasture, Big Fir Creek general photo downstream from DMA September 4, 2019

Figure 28 Cabin Pasture, Big Fir Creek general photo downstream from DMA October 2, 2019

Sylvies Pasture

Upland Monitoring

Date	% Use	Observers	Notes
09/30/2019	13	McCormack, Bonson	Very little use on BLM portion of pasture.

Upland monitoring occurred in two locations. The Sylvies pasture is largely private land, which for reasons explained above for pastures with a similar land ownership pattern, limits the available area for utilization stops in carrying out monitoring. There was some livestock use in the uplands and movement in the pasture, however, very little. At the time of inspection there were 10 pair seen of the neighboring permittee's cattle. BLM promptly contacted the neighboring permittee to have them removed, and BLM did not see these cattle on October 2nd during its end of season monitoring on the pasture.

Figure 29 Sylvies Pasture Upland Utilization (Stop 1) Example Photo September 30th, 2019 Slight Use (6-20%)

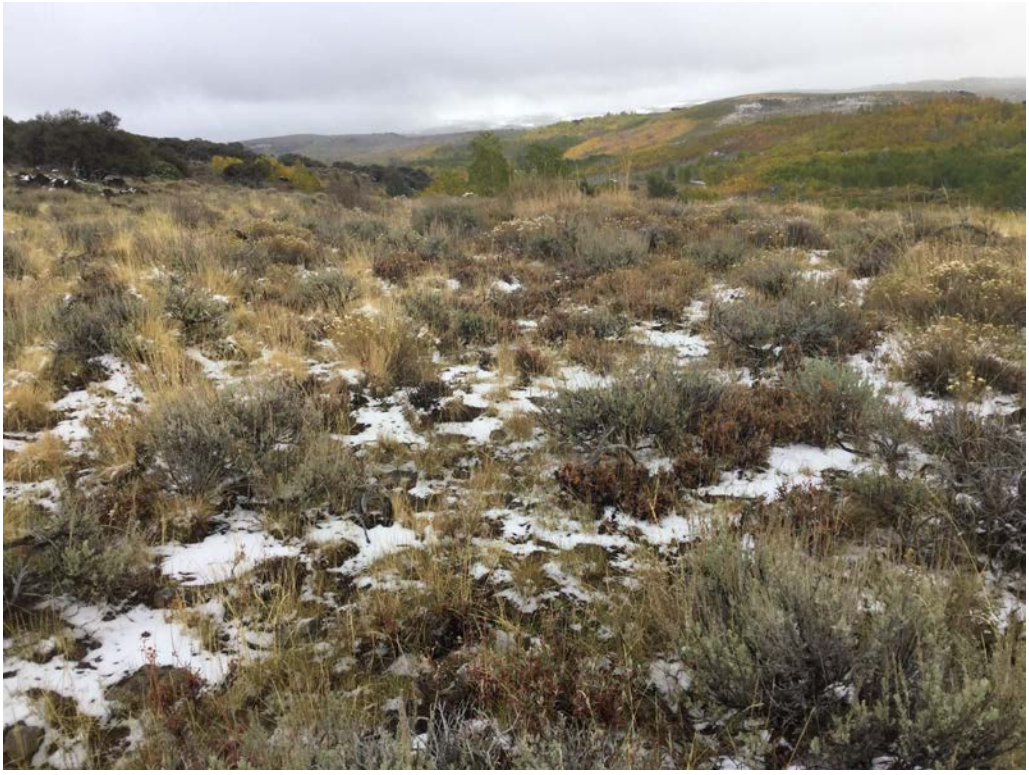

Figure 30 Sylvies Upland Utilization (Stop 2) Example Photo September 30th, 2019 Slight Use (6-20%)

Riparian Monitoring

Riparian photos were taken on Lake Creek which runs approximately 400 feet of stream on BLM-controlled portions of the pasture, sandwiched between private lands. The area had evidence of livestock and livestock grazing, but very little use overall. Frost and snow had knocked down much of the mesic grass species and sedges.

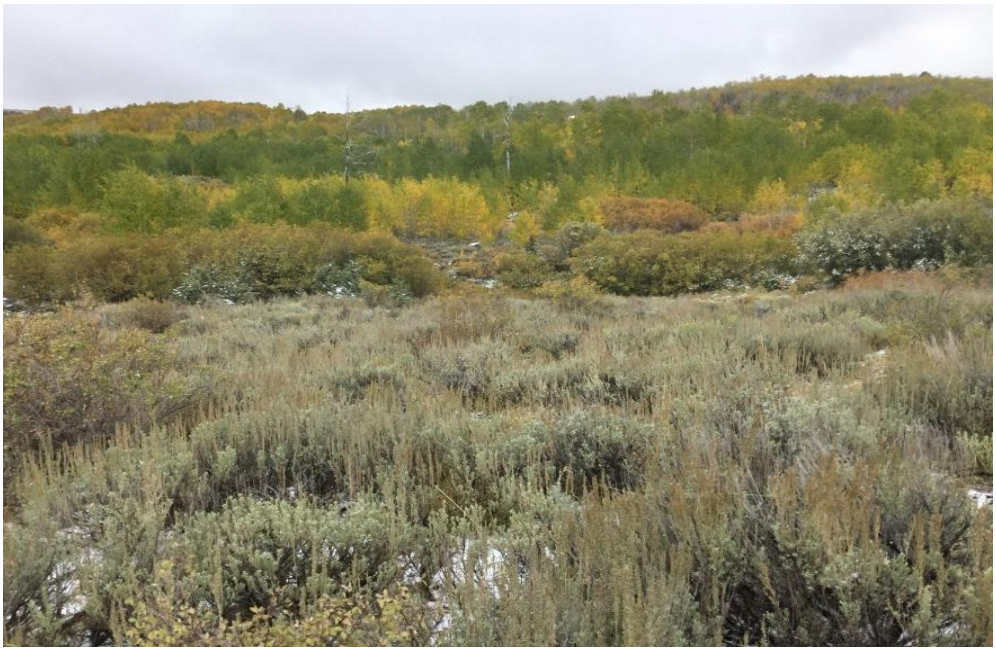

Figure 31 Sylvies Pasture, Lake Creek, view from north into the drainage, September 30, 2019.

Figure 32 Sylvies Pasture, Lake Creek, downstream of private land boundary, September 30, 2019

Figure 33 Sylvies Pasture, Lake Creek, downstream of private land boundary, September 30, 2019

Summary of Findings

As noted above, the Court ordered BLM to file this report to set forth its findings from the monitoring it was required to carry out pursuant to the preliminary injunction. In general, as described in more detail above, BLM monitored use on the allotment nearly once a week during the grazing season, from July 31 to September 30, 2019, and also carried out end-of-season monitoring beyond the conclusion of the season. Although this entire report describes the results of that monitoring, in this section, BLM summarizes its key findings with respect to the principal terms of the preliminary injunction. The overall principal finding is that its monitoring complied fully with those terms, and yielded results that support and are consistent with that finding, as detailed further below.

First, BLM did not allow turnout or grazing on the BLM-controlled portion of the Fir Creek Pasture. As an initial matter, in its July 30, 2019, letter to HRI, BLM made clear HRI was not authorized to turn out or graze in this pasture. In addition, as discussed above, BLM installed an electric fence along the boundary of the pasture and checked it weekly during the relevant period of the season to ensure it was working to keep livestock out of the BLM portion of the pasture and also examined the area along the creek for any signs of livestock use during its weekly monitoring visits and detected none. During its end-of-season inspection, BLM did observe two cow/calf pairs within the pasture and took immediate action to get them out, and based on these actions and its observations, reasonably determined they were there for no more than a couple of days and did not make it to the creek. Again, though, BLM did not authorize livestock being on this pasture, even for a day or two, and took steps to ensure the livestock were out of the pasture as quickly as practicable.

Next, BLM did not allow turnout or grazing of livestock on the BLM-controlled portions of any of the allotment's pastures above a 30 percent utilization standard. Again, as an initial matter, in its July 30, 2019, letter to HRI, BLM expressly authorized HRI to graze only in Bridge Creek, North, Cabin, and Sylvies pastures during the 2019 grazing season, with movements to be determined by a 30 percent utilization maximum. In addition, the monitoring BLM conducted in compliance with the Court's Order as described in this report verifies that utilization did not exceed this 30 percent utilization threshold on any of the four pastures on which grazing was authorized within this allotment. Although the end-of-season ocular monitoring BLM carried out on Bridge Creek pasture yielded a 35 percent utilization rate as a result of a few livestock apparently straying to return to the pasture for approximately one week, upon conducting further and more accurate quantitative follow-up monitoring, BLM determined the actual utilization rate on the pasture for the season to be 24 percent. A summary table showing the utilization rates based on BLM's monitoring for all pastures is set forth below.

In addition, as detailed in this report, BLM monitored the actual use on the Hardie Summer allotment at least once per month during the permitted grazing season on the allotment and reviewed the condition of a sample of the riparian areas being grazed on the allotment.

BLM makes several additional findings based more specifically on the monitoring it performed of the condition of a sample of riparian areas in pastures in which grazing occurred this season, in particular as it relates to riparian and fish habitat. BLM finds that the level of use that occurred in 2019 would not negatively affect stream conditions important to redband trout. General guidance is that lower streambank alteration and higher stubble heights can be used as a proxy to improve stream habitat conditions important to salmonids (Goss and Roper 2018). A 15 cm (6 inch) riparian stubble height and 25% bank alteration limit is considered a cautious standard that would allow aquatic objectives to be

met. (Goss and Roper 2018). Cleary and Leininger (2000), recommend a 10-15 cm (4-6 inches) riparian stubble height. Streambank alteration and stubble height measurements were well below both of these recommended levels. In addition, BLM also measured woody browse and found it to be none to slight in all Designated Monitoring Areas.

Livestock Grazing Use Summary for Hardie Summer Allotment 2019 Grazing Season

Pasture	Upland Results (% Utilization)	Riparian Results*		
		Woody Browse (%)	Bank Alteration (%)	Stubbleheight (inches)
Bridge Creek	24	Little Bridge Creek: 11	1	10
North	13	No riparian to measure	No riparian to measure	No riparian to measure
Fir Creek	0%, not used per order	Pasture not used	Pasture not used	Pasture not used
Cabin	13	Little Fir Creek: 10 Big Fir Creek: 10	1 6	14 15
Sylvies	13	Photos taken in lieu of measurements	Photos taken in lieu of measurements	Photos taken in lieu of measurements

*Values rounded to the whole numbers.

Appendix A: List of Coordinates for Monitoring Locations

Pasture	Location	Monitoring Type	Site	Latitude	Longitude
Cabin	Upland	Utilization	1	42.79108	-118.69627
Cabin	Upland	Utilization	2	42.79148	-118.70554
Cabin	Upland	Utilization	3	42.79532	-118.71247
Cabin	Upland	Utilization	4	42.78754	-118.71156
Cabin	Upland	Utilization	5	42.78790	-118.70270
Cabin	Upland	Utilization	6	42.79185	-118.68753
Cabin	Upland	Utilization	7	42.76400	-118.67324
Cabin	Upland	Utilization	8	42.76053	-118.67744
Cabin	Upland	Utilization	9	42.76381	-118.68497
Cabin	Upland	Utilization	10	42.76984	-118.69035
Cabin	Upland	Utilization	11	42.75249	-118.67891
Cabin	Upland	Utilization	12	42.76176	-118.70674
Cabin	Upland	Utilization	13	42.76768	-118.70992
Sylvies	Upland	Utilization	1	42.74774	-118.68617
Sylvies	Upland	Utilization	2	42.74317	-118.69077
North	Upland	Utilization	1	42.78768	-118.69379
North	Upland	Utilization	2	42.78329	-118.69035
Bridge Creek	Upland	Utilization	1	42.81889	-118.68913
Bridge Creek	Upland	Utilization	2	42.81815	-118.69329
Bridge Creek	Upland	Utilization	3	42.81969	-118.69846
Bridge Creek	Upland	Utilization	4	42.82120	-118.70250
Bridge Creek	Upland	Utilization	5	42.82263	-118.70763
Bridge Creek	Upland	Utilization	6	42.82456	-118.71196
Bridge Creek	Upland	Utilization	7	42.81506	-118.68989

Pasture	Location	Monitoring Type	Site	Latitude	Longitude
Bridge Creek	Upland	Utilization	8	42.81304	-118.68544
Bridge Creek	Upland	Utilization	9	42.81083	-118.69429
Bridge Creek	Upland	Utilization	10	42.80738	-118.69400
Bridge Creek	Upland	Utilization	11	42.80304	-118.69456
Bridge Creek	Upland	Utilization	12	42.80215	-118.69675
Bridge Creek	Upland	Utilization	13	42.80274	-118.69854
Bridge Creek	Upland	Utilization	14	42.80410	-118.70041
Bridge Creek	Upland	Utilization	15	42.79938	-118.69529
Bridge Creek	Upland	Utilization	16	42.79634	-118.69463
Bridge Creek	Riparian	Little Bridge DMA MIM		42.82258	-118.69705
Fir Creek	Riparian	Little Fir DMA MIM		42.78017	-118.69186
Cabin	Riparian	Little Fir DMA MIM		42.78201	-118.69923
Cabin	Riparian	Big Fir DMA MIM		42.77201	-118.68545
Bridge Creek	Drainage	Photopoint	PP 1	42.81347	-118.71973
Bridge Creek	Drainage	Photopoint	PP 2	42.81022	-118.70403
Bridge Creek	Drainage	Photopoint	PP 3	42.80783	-118.69516
Bridge Creek	Drainage	Photopoint	PP 4	42.80451	-118.68217
Lake Creek	Riparian	Photopoint	PP 1	42.74082	-118.68856

Appendix B: Allotment Map