

APPENDIX 18

Description of the Methodology Used to Determine the Forage Production in the Seven Lakes ES Area

During the summer months of 1975 and 1976, BLM temporary employees (college students in the natural resources field) under the supervision of a BLM range conservationist collected field data using the BLM Weight Estimate Forage Inventory Method (BLM Manual 4412.11B). Prior to the field work, the vegetation was grouped into relatively homogeneous types using color infrared aerial photographs and a 1958 range survey of the area. Vegetative type boundary lines later were further refined in the field as necessary. Delineation of vegetation types was based on differences in vegetative species, slope, exposure, or abundance of the vegetation. Field work was done from June to October.

Within each vegetation type, transects were established which would be a representative sampling of the vegetation type. Circular frames measuring 9.6 square feet were located at equal intervals along the predetermined transect. The 9.6 square foot area of the frame was considered to be one plot from which clipping takes place and was used because measurements in grams per 9.6 square feet convert directly to pounds per acre. Initially, all of the current year's vegetative production was clipped and weighed in grams by plant species. The weight of the forage production in subsequent plots was estimated based on the findings of the clipped and weighed plots. A minimum of 10% of the plots were actually clipped, and approximately three plots were distributed per square mile, but each type contained at least one plot. Vegetation types smaller than 160 acres were not mapped except for some high production areas (meadows).

For each range vegetation type delineated a type writeup was made on BLM Standard Form 4412.4 (see Example A) and summarized on a vegetation type data work sheet (see Example B). Each type was given an identification label derived from the examiner's initials plus a number. For example, Lucy Malin and Bruce Easton would designate the types they examined as ME-1, ME-2, ME-3, etc. Generally, two employees would work together as a team, and there were three teams each year. The teams surveyed all the vegetation types found on private or state lands. They used 7.5 minute USGS topographic quadrangles to determine precise locations.

Clipped vegetation of each species was saved, weighed, air dried for one week, and then weighed again in order to determine the dry weight production. Clipping and weighing measurements were done on a weekly basis for each species because of changes in moisture status of the range plants, except in Fremont County which was clipped on a 10-day basis.

Based on the information collected as described previously, the number of pounds per acre (on a dry weight basis) of production of each species in a given vegetation type was computed. Next a proper use factor (PUF), which represents the average weight percentage of a particular plant species' current year's growth which can be safely grazed by a specific animal species without harming the plant production, was multiplied by the production figure in pounds, dry weight, per acre (LBS. DW/AC) for a given species in a particular vegetation type. The attached proper use table was used to determine the correct factor to use.

Because the summer grazing season in the ES area is from May through October, the summer and fall values from the table were averaged together to derive a summer use factor. In many cases, professional judgement was required when

the average between the spring and fall values did not indicate the correct proper use factor. For example, some use of *Artemisia tridentata* by cattle in the summer is normal, so instead of the zero value found in the table, 5% was substituted. Similarly, 50% was used as the proper use factor of *Sitanion hystrix* for winter sheep, and 20% was used as the proper use factor of *Eurotia lanata* for year long horses. Thus, the pounds of properly usable forage per acre in each vegetation type were calculated by multiplying the PUF times the pounds per acre of each species and totaling the products of all the species. The acreages of each type were determined using 7.5 minute USGS topographic quadrangles, and these acreages were then used to compute the total production of usable forage in pounds for each vegetation type by multiplying the number of acres that a vegetation type covered times the pounds of properly usable forage per acre which occurred in that type. Portions of the ES area were not available in 7.5 minute USGS topographic quadrangles; therefore, the existing 15 minute USGS quadrangles were expanded to the 7.5 minute scale.

The usable forage production (in pounds) of each type was divided by the number of pounds needed for an animal unit month (AUM) of a specific class and season of livestock. Seven hundred and eighty pounds of properly usable forage was used as an equivalent for one summer cattle AUM, 450 pounds equaled one winter sheep AUM (this represents 90 pounds per head of sheep), and 900 pounds equaled one year long wild horse AUM. Seven hundred and fifty pounds was used to equal one summer sheep AUM (this represents 150 pounds per head of sheep) and 780 pounds was used to equal one winter cattle AUM. AUMs for summer cattle, winter sheep, summer sheep, winter cattle, and year long horses were calculated separately for each vegetation type.

Finally, all the data were compiled on maps, and tabulated both by vegetation type and by section for each of the proposed pastures in the allotments. An overlay for each topographic map was prepared which displays the acreage for each vegetation type in each section per land status. Current grazing capacity for summer cattle, winter cattle, summer sheep, winter sheep, and year long horses expressed in AUMs is also displayed in a like manner. These overlays and maps, as well as the type writeups are available for public inspection in the Rawlins District Office.

The amount of properly usable forage determined by the survey is expressed as AUMs for one of the following: cattle grazing in the summer or cattle grazing in the winter or sheep grazing in the summer or sheep grazing in the winter or horses grazing year-round. The properly usable AUMs vary with the season of use and the class of grazing animal because the proper use factors discussed above and the forage requirements of the animals vary with the season of use and the class of grazing animals. The properly usable AUMs have been expressed on a common basis throughout this environmental statement where it was necessary to do so in order to make comparisons between use by different classes of grazing animals. Winter sheep AUMs were chosen as the common basis because winter sheep constitute the greatest use under the present and proposed action. For example, if an allotment was shown in the range survey to have 20,000 AUMs of forage for winter sheep grazing or 10,000 AUMs of forage for summer cattle grazing, the ratio of properly usable winter sheep AUMs to summer cattle AUMs is 2:1. This would represent an approximate ratio of 8-10 head of sheep to one cow. To express cattle use in that allotment on a winter sheep basis, the proposed cattle use in AUMs would be multiplied by two (see Appendix B-1-1). Two thousand AUMs of summer cattle use would be expressed as 4,000 winter sheep AUMs.

