TECHNICAL NOTE

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ESTIMATING INITIAL STOCKING RATES

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Collecting Production Data Using 9.6 ft^2 Hoop, Clippers, Scale, and Cloth Bag; Photo: Brendan Brazee, NRCS, Boise, ID

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Stocking rate, defined as, the number of animals allotted to an area for a given length of time is one of the most important grazing management tools a rancher or land manager can manipulate, regardless of the grazing system, vegetation type or kind and class of livestock. Stocking rate has the largest impact on animal performance and the health of the forage resource of all of the management tools available, because it directly influences:

- Animal productivity
- Forage production
- Forage quality
- Species composition over the long term
- Plant physiology
- Profitability of the operation

Establishing a proper stocking rate is critical to maintaining animal performance and optimizing forage performance while also sustaining the health of the land resource over the long term. Factors that affect stocking rate include the animal species, class of livestock (dry cow, lactating cow, bull, steer, etc.), acres available for grazing, rainfall, topography, water distribution, forage species, forage productivity including regrowth characteristics, and facilitating practices such as grazing system, irrigation and fertility program. Effective managers will balance animal performance and forage production over the long term. With this in mind, setting the appropriate initial stocking rate consists of determining (1) how much forage is required by the type and class of animals raised (forage demand); (2) how much forage is produced during the year and how much is available for livestock consumption (available forage); and (3) how long will animals be using the area (duration of grazing).

FORAGE DEMAND

The basis for measuring forage demand is the *animal unit* (AU), which is defined as the amount of forage required to maintain a 1000-pound cow with calf. Studies have established that an AU requires on average 3.0 percent of the body weight in air dry forage daily (30 pounds per day for a 1000-pound cow). An *animal unit month* (AUM) is the average amount of dry weight forage required by a lactating 1000-pound cow and her calf for one month (30.4 days), or 912.5 pounds.

Not all kinds of livestock or wildlife have the same forage demand as a 1000-pound lactating cow. In addition, forage demand varies within a species depending on its class, i.e., its growth rate (e.g. heifers and steers vs. mature cow), lactation and maintenance (e.g., dry cow vs. cow with calf). For this reason, *animal unit equivalents* (AUE) have been developed to assist with the approximate determination of forage demand based on the kind, class and size of animal (see Table 1).

TABLE 1
Animal Unit Equivalents (AUEs)

Domestic Animal Kind-Class	AUE	Wildlife Animal Kind-Class	AUE
Cow – dry	1.00	Antelope	0.10
Cow with calf	1.00	Bison	1.00
Bull – mature	1.25	Deer – whitetail	0.13
Calf – weaned	0.60	Deer – mule	0.17
Steer/Heifer - 2 Years	0.80	Elk	0.48
Sheep – mature ewe or ram	0.20	Goat – mountain	0.14
Sheep – yearling	0.15	Moose	0.83
Goat	0.17	Sheep – bighorn (ewe)	0.14
Horse – mature	1.25- 2.00	Sheep – bighorn (ram)	0.18

For cow herds with animals having a different average weight than the 1000 pound average used above, AUE can be adjusted (i.e., every 100 pounds of animal weight equates to about 0.10 Animals Units thus a 1200-pound cow with a calf would be 1.2 AUE or a 1600 pound bull would be 1.6 AUE).

Example: A land manager needs to determine how much pasture he will need to acquire prior to implementing a brush management project which will require him to defer grazing from June 1st through October 30th this year. The herd consists of 300 pair of 1100 lbs Angus cross cattle with 15 Angus bulls during July and August.

Calculation: *#Head x AUE x Time in months = AUM's*
300 Cow/calf pairs x 1.1 AUE x 5 months = 1650 AUM's
15 Bulls x 1.25 AUE x 2 months = 38 AUM's

The manager will need to find a forage supply that will provide approximately 1700 AUM's for the deferment period.

FORAGE PRODUCTION

The next step in estimating initial stocking rate is to determine the amount of forage being produced. The local climate (temperature and precipitation), soil (texture – depth – fertility) and current vegetation management largely affect total forage production for an area. Total production of forage can be estimated by using simple clipping procedures and converting the green weight estimates to present reconstructed weights. You will need a frame of a known area (Table 2), clippers, paper bags and a scale that measures in grams. Additional information will be needed for reconstruction including degree of use, knowledge of growth curves, and familiarity with typical or "normal" growing season climate variables.

Detailed information on how to collect plant production data can be found in the National Range and Pasture Handbook, Chapter 4 (http://www.glti.nrcs.usda.gov/technical/publications/nrph.html) and the Monitoring Manual for Grassland, Shrubland, and Savanna Ecosystems, Volume II Chapter 9 (http://usda-ars.nmsu.edu/JER/Monit_Assess/monitoring_main.php)

TABLE 2
Range Hoop and Square Subplot
Dimensions and Conversion Factors

9.60 ft^2
Radius = 1.75 feet
Hoop Circumference = 10.996 feet
Square Plot Dimensions = 3.098 X 3.098 ft
Conversion Factor = Grams X 10 = lbs/ac
= Grams X 11.21 = kg/ha

4.80 ft^2
Radius = 1.24 feet
Hoop Circumference = 7.77 feet
Square Plot Dimensions = 2.19 X 2.19 ft
Conversion Factor = Grams X 20 = lbs/ac
= Grams X 22.42 = kg/ha

2.40 ft^2
Radius = 0.87 feet
Hoop Circumference = 5.498 feet
Square Plot Dimensions = 1.55 X 1.55 ft
Conversion Factor = Grams X 40 = lbs/ac
= Grams X 44.85 = kg/ha

1.0 m^2
Radius = 0.564 meter
Hoop Circumference = 3.545 meters
Square Plot Dimensions = 1.0 X 1.0 meter
Conversion Factor = Grams X 10 = kg/ha
= Grams X 8.93 = lbs/ac

0.50 m^2
Radius = 0.399 meter
Hoop Circumference = 2.51 meters
Square Plot Dimensions = 0.5 X 1.0 meter
Conversion Factor = Grams X 20 = kg/ha
= Grams X 17.86 = lbs/ac

0.25 m^2
Radius = 0.282 meter
Hoop Circumference = 1.77 meters
Square Plot Dimensions = 0.5 X 0.5 meter
Conversion Factor = Grams X 40 = kg/ha
= Grams X 35.71 = lbs/ac

The size of subplot to use depends on the nature of the area being sampled. Forage production varies between and within pastures and rangeland areas, so efforts to estimate total production should attempt to represent this variation as much as possible. Sites such as pastures that are uniformly vegetated with few species and consistent cover can be adequately sampled with smaller subplots (e.g., 2.4- 4.8 ft^2). Rangeland ecological sites that have many species and/or are sparsely vegetated require larger subplots (example 9.6 ft^2) to capture and reflect variation in site. It is recommended to sample at least 10 subplots. Collecting data for additional subplots can also increase the accuracy of the estimates.

Collecting Yield Data at Coffee Point Test Site – North of Aberdeen, Idaho;

Photo: Loren St. John, NRCS, Aberdeen, ID

DATA COLLECTION FOR ESTIMATING FORAGE PRODUCTION

Step 1: Determine Sample Area

The area to be sampled should be representative of the grazing unit. The subplots should be located with in the same Ecological Site on rangeland or in areas of similar growth and production potential within pasture systems.

Step 2: Determine Correction Factor for Clipped/Estimated green weights

Select at least two of the ten subplots to collect clipped data. These subplots should contain a majority of the species found in the sampling area. The clipped weight for each species is then divided by the estimated weight for the clipped subplots. The resulting factor is used to adjust green weight estimates based upon actual weights.

For example, the data collector clipped Idaho fescue in subplots 3 and 7 estimating 15 grams green weight. The clipped weight for the two plots was 17 grams. The correction factor can be multiplied by the average green weight of the ten subplots to determine the corrected green weight. 17gram/13 grams = 1.13, 1.13 x 124 lbs/ac = 140.5 lbs/ac corrected green weight.
See ID-CPA-006 in Appendix **C.**

Step 3: Determine Percent Dry Weight

The corrected green weight can be converted to dry weights using estimated dry matter ranges from *Table 3 Green Weight to Dry Weight Conversion.* Appendix A - *Dry Weight Percent of Selected Grasses, Grasslikes, Forbs, Shrubs, and Trees for Idaho* provides a more accurate conversion for most common range species.

TABLE 3
Green Weight to Dry Weight Conversions
Native Range (Green Wt x Percent = Air Dry Weight)

Grasses	% Dry Matter	Forbs	% Dry Matter	Deciduous Shrubs	% Dry Matter
Pre-Boot	25-35%	Pre-Bloom	15-25%	New Foliage	25-40%
Full-Bloom	35-45%	Full-Bloom	25-35%	Mature Foliage	40-55%
Soft-Dough	45-55%	Soft-Dough	35-45%	**Evergreen Shrubs**	**% Dry Matter**
Hard-Dough	55-60%	Hard-Dough	45-55%		
Seed-Ripe	60-70%	Seed-Ripe	55-65%	New Foliage	35-55%
Drying	70-95%	Drying	65-95%	Mature Foliage	55-70%

Seeded Pasture (Green Wt x Percent = Air Dry Weight)

Grasses	% Dry Matter	Forbs/Legumes	% Dry Matter
Pre-Boot	20-35%	Pre-Bloom	15-25%
Full-Bloom	35-45%	Full-Bloom	25-35%
Soft-Dough	45-55%	Soft-Dough	35-45%
Hard-Dough	55-60%	Hard-Dough	45-55%
Seed Ripe	60-70%	Seed Ripe	55-65%
Drying	70-95%	Drying	65-95%

Step 4: Determine Percent Growth Ungrazed
This is the average percent ungrazed by species for the sample area. For example if a species averages 40% utilization then record 60% for percent growth ungrazed.

Step 5: Determine Percent Growth Curve Complete
This is the cumulative proportion of growth completed for the current year. The growth adjustment corrects for how much the plant has grown for the year compared against the potential for the year or 100%. Climatic variations are not considered in this step.

Step 6: Determine Percent Normal Production
This is the effect of growing conditions on individual species. Precipitation timing and amount, temperature, and their relations may have an impact on species production. A value of 100% would be considered normal production.

Step 7: Determine Reconstruction Factor
The reconstruction factor coverts the corrected green weight of sampled vegetation into reconstructed present weight based upon steps 3- 6. This number represents the total expected production for the sample area at the end of the current growing season. The following formula is used, for further example see ID-CPA-006 in Appendix **C.**

$$\frac{\%\ \text{Dry weight}}{(\%\ \text{Current Growth Ungrazed})(\%\ \text{Growth Curve Complete})(\%\ \text{Normal Production})}$$

= Reconstruction Factor x Corrected Green Weight = Reconstructed Present Weight

ADJUSTMENTS TO FORAGE PRODUCTION FOR ESTIMATING STOCKING RATE

When estimating stocking rates it is a good idea to evaluate availability of forage for livestock based upon topography, distance to water, and type or class of livestock in the operation. Adjustment to the total production for these variables can have a significant effect on stocking rate and can identify opportunities for installation of facilitating practices such as stockwater pipelines and troughs. The total production of a grazing unit can be adjusted based on distance from water and percent slope. Table 4 shows the general guidelines for determining the amount of adjustment. Local knowledge should be used when available to assess if adjustments are reasonable. An example of how percent slope and distance to water can effect estimated stocking rate see ID-CPA-008 in Appendix C.

Table 4
Distance to Water and Percent Slope Adjustment Factors for Rangeland.
For further guidance see Chapter 5 NRPH

Distance to Water in feet	Percent Adjustment
2640	100%
5280	90%
7920	70%
10560	50%

Percent Slope	Percent Adjustment
0-15	100%
15-30	70%
31-60	40%
>60	0%

Utilization and Harvest Efficiency
Plants have a tolerance to grazing, but if herbage removal exceeds a critical point, most plants will lose vigor, produce less and if excessive removal continues, the plants will eventually die. Proper utilization is the approximate point of forage harvest that will not lead to range or pasture deterioration or decreased animal performance. The key to proper utilization is to leave sufficient leaf area to allow the plant to restore depleted energy reserves in response to grazing and thus maintain desirable productivity and composition.

A common starting point or rule for planning an appropriate level of utilization is "take half and leave half" or 50 percent utilization of annual forage production. This utilization includes forage actually consumed by the animal, but also damage to plants caused by trampling, loafing and other non-livestock factors such as loss to insects or utilization by wildlife. Some estimate as much as 25% of total annual production is lost to livestock damage and other competitive uses under low stocking density continuous grazing program. This can be referred to as harvest efficiency which is defined as the percentage of total *annual* standing forage that is consumed by the grazing animal. Harvest efficiency should not be confused with grazing efficiency which refers to the percentage of *allowable* standing forage consumed and results in higher percentages. Harvest efficiencies above 35% have a negative impact on animal performance. Table 5 provides guidance on determining harvest efficiency based upon type of grazing system and management level used for the operation.

An example of how Harvest Efficiency and the rule of thumb "Take Half, Leave Half " are related.

(1000 lbs/ac x 50% Use) – (1000 lbs/ac x 25% loss due to trampling, fouling, insects, etc.)
= 500 lbs/ac – 250lbs/ac = 250 lbs/ac of available forage.

To simplify the equation use 1000 lbs/ac x 25% Harvest Efficiency = 250 lbs/ac available forage.

Table 5 – Harvest Efficiency

Grazing Management Level	Harvest Efficiency
Continuous, Season Long	25%
Deferred Rotation, 2+ Pastures	25-30%
Rest Rotation, Multiple Pastures	25-30%
Short Duration , High Intensity	30-35%

Animal Performance Considerations
At low stocking rates, individual animal performance is maximized because animals are free to select high quality forage. Consequently, with low grazing pressure, palatable plant species in under-stocked pastures are at risk of over-utilization, because animals have unrestricted choice and will repeatedly consume the preferred species first (thus the same preferred plants will be grazed over and over again). Furthermore, total animal production per unit area will be low because of fewer animals in the pasture.

As stocking rate increases to a moderate level, individual performance declines. This is because the average forage quality consumed per animal is reduced as a direct result of the increase in animals per unit area. However, total animal production per unit area increases as more animals are carried

per acre. Under normal conditions, a moderate stocking rate will not adversely impact the forage resource.

At high stocking rates, total animal production per area declines as a result of poor individual animal performance. Individual animal performance is poor because each animal in the herd must compete for limited and rapidly diminishing supply of quality forage. As the forage resources diminish, the available nutrients for each animal declines and animals nutrient demand may not be met. Without consideration of other management options such as rapid rotation into ungrazed fields or pastures that have been grazed and have regrown, a reduction in the most palatable species will occur, weedy or undesirable species will increase and a decline in carrying capacity will eventually occur.

ADJUSTMENTS WITH MANAGEMENT

It is the three components of stocking rate – animal numbers, grazing area and grazing period, that managers have the most influence over when making grazing management decisions. A manager can adjust the number of animals, alter pasture size or manipulate the amount of time an area is grazed or the amount of time an area is rested.

The decision to manipulate one or more of the components should be guided by animal and pasture management objectives and economic considerations. Decisions to change animal numbers are most feasible when the area is either under-stocked or over-stocked (i.e., drought could require or necessitate a temporary reduction in herd size to minimize the impact on the reduced forage base). As herd size is changed, the grazing period must be adjusted accordingly to maintain the desired stocking rate.

Adjusting pasture size is not always economically feasible. However, there may be situations when altering pasture configuration or subdividing a single large pasture into smaller units, will improve grazing distribution and animal performance. Several factors should be considered when adjusting pasture size. Decreasing pasture size will require smaller herd numbers or a shorter grazing period. Shorter grazing periods require more intensive management because the margin for error on the time animals are in pasture is increased. Second, increasing pasture size without increasing animal numbers will result in reduced grazing distribution even if the grazing period is increased. Uneven grazing distribution in large pastures leads to patchy grazing with a mixture of under- and over-utilized areas. Eventually over-utilized areas lose desirable plants, productivity and support fewer animals.

The easiest, most flexible and economically feasible component of stocking rate to manipulate is the grazing period. By managing the amount of time a pasture is grazed, a manager can easily and quickly compensate for situations of over-stocking that arise from time to time. For example, short term drought will cause pasture production to be reduced. Decreasing the grazing period for each grazing unit can temporarily prevent over-grazing without reducing animal numbers.

PLANNING GRAZING PERIOD

Once the estimated carrying capacity has been determined for the ranch, the amount of time a group of animals spends in each pasture should be determined to complete the process of setting the initial stocking rate. The amount of time spent by livestock in each pasture depends largely on the grazing area itself, the type of operation and the management goals of the operation.

Stocking rates are commonly expressed as the number of animal units (AU) per unit time per unit area (usually an acre). Operations that use large pastures or grazing units typically base stocking rates on months to be most useful. For example each pasture's stocking rate may be expressed as animal unit months per acre (AUMs/Acre) or acres per animal unit month (Acres/AUM). Whereas, operations that use smaller pastures may find the numbers of days (D) a pasture can support a particular number of animals (AUDs/Acre) to be more useful.

The carrying capacity of a unit of land is commonly expressed in animal unit months (AUMs). An AUM is the measure of the forage supply within the management unit, based on the amount required to support an animal unit (AU) for one month. The value of determining the carrying capacity for the ranch, pasture or management unit is that it connects forage supply with forage consumption and is thus the absolute foundation to proper grazing management.

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Appendix A

Dry Weight Percent of Selected Grasses, Grasslikes, Forbs, Shrubs, and Trees for Idaho

DRY WEIGHT PERCENT OF SELECTED GRASSES, GRASSLIKES, FORBS, SHRUBS, AND TREES FOR IDAHO

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GRASS AND GRASSLIKES

GRASS PHENOLOGICAL STAGE CLASSIFICATION:

1 -GREEN LEAVES BEFORE BOOT
2- BOOT STAGE
3- SEED SOFT DOUGH TO RIPE
4- SEED DESIMINATION
5- WINTER DORMANCY CURED

INTRODUCED COOL-SEASON PERENNIAL GRASS

PLANT CODE	1	2	3	4	5	PRESENT SCIENTIFIC NAME	HISTORIC SCIENTIFIC NAME	COMMON NAME
AGCR	25-30	40-45	50-55	60-65	85-90	Agropyron cristatum	Agropyron cristatum	Fairway crested wheatgrass
AGDE2	25-30	40-45	50-55	60-65	85-90	Agropyron desertorum	Agropyron desertorum	Standard crested wheatgrass
AGCRxAGDE2	25-30	40-45	50-55	60-65	85-90	A. cristatum x A. desertorum		Hycrest crested wheatgrass
AGFR	25-30	40-45	50-55	60-65	85-90	Agropyron fragile	Agropyron sibiricum	Siberian wheatgrass
ALAR	20-25	35-40	45-50	55-60	80-90	Alopecurus arundinaceus	Alopecurus arundinaceus	Creeping foxtail
ARELE	20-25	35-40	40-45	50-55	75-85	Arrhenatherum elatius var. elatius	Arrhenatherum elatius	Tall oatgrass
BRER3	20-25	35-40	40-45	50-55	75-85	Bromus erectus	Bromus riparius	Meadow brome
BRIN2	20-25	35-40	40-45	50-55	75-85	Bromus inermis	Bromus inermis	Smooth brome
DAGL	20-25	30-35	40-45	50-55	75-85	Dactylis glomerata	Dactylus glomerata	Orchardgrass
FETR3	25-35	40-45	45-50	55-60	75-85	Festuca trachyphylla	Festuca ovina duriuscula	Hard fescue
FEOV	25-35	40-45	45-50	55-60	75-85	Festuca ovina	Festuca ovina	Sheep fescue
LOPE	25-30	40-45	45-55	55-60	75-85	Lolium perenne	Lolium perenne	Perennial ryegrass
PHAR3	20-25	40-45	50-55	55-60	75-85	Phalaris arundinacea	Phalaris arundinacea	Reed canarygrass
PHPR3	20-25	35-40	45-55	55-65	80-90	Phleum pratensis	Phleum pratensis	Timothy
POPR	20-25	35-40	45-50	55-60	75-85	Poa pratensis	Poa pratensis	Kentucky bluegrass
SCPH	20-25	35-40	45-50	55-60	75-85	Schedonorus phoenix	Festuca arundinacea	Tall fescue
THIN6	25-30	40-45	50-55	55-60	75-85	Thinopyrum intermedium	Agropyron intermedium	Intermediate wheatgrass
THIN6	25-30	40-45	50-55	55-60	75-85	Thinopyrum intermedium	Agropyron trichophorum	Pubescent wheatgrass
THPO7	25-30	40-45	50-55	60-65	85-90	Thinopyrum ponticum	Agropyron elongatum	Tall wheatgrass
PSJU3	20-25	35-40	45-50	55-65	70-85	Psathyrostachys juncea	Elymus junceus	Russian wildrye

NATIVE COOL-SEASON PERENNIAL GRASS

PLANT CODE	1	2	3	4	5	PRESENT SCIENTIFIC NAME	HISTORIC SCIENTIFIC NAME	COMMON NAME
ACHY	30-35	45-50	50-55	60-75	80	Achnatherum hymenoides	Oryzopsis hymenoides	Indian ricegrass
ACLE9	25-30	40-45	50-55	60-65	70+	Achnatherum lettermanii	Stipa lettermani	Letterman needlegrass
ACNEN2	25-30	40-45	50	55-60	75+	Achnatherum nelsonii ssp. nelsonii	Stipa columbiana	Columbia needlegrass
ACTH7	25-30	40-45	50-55	60-65	80+	Achnatherum thurberianum	Stipa thurberiana	Thurber needlegrass
BRMA4	20-25	35-40	40-45	50-75	65-85	Bromus marginatus	Bromus marginatus	Mountain brome
CARU	25-30	35-40	40-45	45-50		Calamagrostis rubescens	Calamagrostis rubescens	Pinegrass
DECA18						Deschampsia cespitosa	Deschampsia cespitosa	Tufted hairgrass
ELEL5	25-35	45-50	55-60	65-70	85-90	Elymus elymoides	Sitanion hystrix	Bottlebrush squirreltail
ELGL	25	35	40	75	75-85	Elymus glaucus	Elymus glaucus	Blue wildrye
ELLA3	25-30	45-50	53-56	60-65	80-90	Elymus lanceolatus ssp. lanceolatus	Agropyron riparium	Streambank wheatgrass
ELLAL	25	45-50	55-60	60-65	85-90	Elymus lanceolatus ssp. lanceolatus	Agropyron dasystachyum	Thickspike wheatgrass
ELTRT	25-30	40-45	50-55	60-65	75-90	Elymus trachycaulus ssp. trachycaulus	Agropyron trachycaulum	Slender wheatgrass
ELWA2	25-30	40-50	50-55	55-65	80-90	Elymus wawawaiensis	Agropyron spicatum	Snake River wheatgrass
FEID	25-35	40	45-50	50-60	75-85	Festuca idahoensis	Festuca idahoensis	Idaho fescue
HECO26	25-35	40-50	50-55	60-65	70+	Hesperostipa comata	Stipa comata	Needle & Thread
KOMA	20-35	38-50	50-55	60-65	75-85	Koeleria macrantha	Koeleria cristata	Prairie junegrass
LECI4	25-30	45-50	50-55	60-65	65-80	Leymus cinereus	Elymus cinereus	Basin wildrye
LESAS				70	90	Leymus salinus ssp. salmonis	Elymus salina	Salmon wildrye
MEBU	20-30	40-45	45-50	50-55	80-85	Melica bulbosa	Melica bulbosa	Oniongrass
PASM	25-35	45-55	53-58	60-65	70-90	Pascopyrum smithii	Agropyron smithii	Western wheatgrass
POFE	25-35	45		50-60	90-95	Poa fendleriana	Poa fendleriana	Muttongrass
POSE	25-30	38-45	50-55	60-65	70+	Poa secunda	Poa ampla	Big bluegrass
POSE	20-30	38-50	50-55	60-65	70+	Poa secunda	Poa nevadensis	Nevada bluegrass
POSE	25-30	40-45	50-55	55-60	65-90	Poa secunda	Poa secunda	Sandberg bluegrass
PSSPI	25-30	35-40	45	50-60	80-90	Pseudoroegneria spicata spp.inermis	Agropyron inerme	Beardless wheatgrass
PSSPS	25-30	40-50	50-55	55-65	80-90	Pseudoroegneria spicata ssp. spicata	Agropyron spicatum	Bluebunch wheatgrass

NATIVE WARM-SEASON PERENNIAL GRASS

PLANT CODE	1	2	3	4	5	PRESENT SCIENTIFIC NAME	HISTORIC SCIENTIFIC NAME	COMMON NAME
ARPUL	28-35	40-45	50-55	60-65	85-90	Aristida purpurea var. longiseta	Aristida longiseta	Red threeawn
SPCR	30-45	40-50	50	60-70	90	Sporobolus cryptandrus	Sporobolus cryptandrus	Sand dropseed

INTRODUCED COOL-SEASON ANNUAL GRASS

PLANT CODE	1	2	3	4	5	PRESENT SCIENTIFIC NAME	HISTORIC SCIENTIFIC NAME	COMMON NAME
BRAR5				56		Bromus arvensis	Bromus japonicus	Japanese brome
BRRU2				70		Bromus rubens	Bromus rubrum	Red brome
BRTE	20-30	35-50	50-55	60-65	85-90	Bromus tectorum	Bromus tectorum	Cheatgrass

NATIVE COOL-SEASON ANNUAL GRASS

PLANT CODE	1	2	3	4	5	PRESENT SCIENTIFIC NAME	HISTORIC SCIENTIFIC NAME	COMMON NAME
VUOCG				80		Vulpia octoflora	Festuca octoflora	Sixweeks fescue

GRASSLIKE

PLANT CODE	1	2	3	4	5	PRESENT SCIENTIFIC NAME	HISTORIC SCIENTIFIC NAME	COMMON NAME
CAFI	30	49	55	60-67	80	Carex filifolia	Carex filifolia	Threadleaf sedge
CAGE2	40	50	55	60	75	Carex geyeri	Carex geyeri	Elk sedge
ELEOC				38		Eleocharis sp.	Eleocharis sp.	Spikerush
JUNCO	20	40-45	55-60			Juncus balticus	Juncus spp	Wiregrass, Baltic rush

FORBS

FORB PHENOLOGICAL STAGE CLASSIFICATION:

1- GREEN BEFORE FLOWERING
2 - FULL BLOOM PETALS FALLING
3 - FRUIT RIPENING
4 - FRUIT RIPE OR FALL DORMANCY
5 - SEED DESIMINATION OR WINTER DORMANCY

INTRODUCED FORBS/LEGUMES

PLANT CODE	1	2	3	4	5	PRESENT SCIENTIFIC NAME	HISTORIC SCIENTIFIC NAME	COMMON NAME
COAR4		35				Convolvulus arvensis	Convolvulus spp	Field bindweed
CYOF	20	35		90		Cynoglossum officinale	Cynoglossum officinale	Houndstonque
SAKA	30	50		100		Salsola kali	Salsola kali	Russian thistle
SATR12	25	30	45	50	65	Salsola tragus	Salsola tenuifolia	Prickly Russian thistle
TRDU	33					Tragopogon dubius	Tragopogon dubius	Salsify
TRLA30	30	50		75		Tragopogon lamottei	Tragopogon pratensis	Goatsbeard
ASCI4	20	30				Astragalus cicer	Astragalus cicer	Cicer milkvetch
ERCI6		40		60		Erodium cicutarium	Erodium spp	Alfilaria
MESA	20	30		39-42		Medicago sativa	Medicago sativa	Alfalfa
MELIL	20	30				Melilotus	Melilotus spp.	Sweetclover
ONVI	20	30				Onobrychis sativa	Onobrychis sativa	Sainfoin

NATIVE PERENNIAL FORBS

PLANT CODE	1	2	3	4	5	PRESENT SCIENTIFIC NAME	HISTORIC SCIENTIFIC NAME	COMMON NAME
ACMI2		31-49				Achillea millefolium	Achillea millefolium	Western yarrow
AGUR	25	30-40	45			Agastache urticifolia	Agastache urticifolia	Horsemint/hyssop
AGGL	17-20	45				Agoseris glauca	Agoseris pumila	Mountain dandelion
ALAC4	15	20-40		70	70-90	Allium acuminatum	Allium acuminatum	Onion
ANRO2	35	55		85		Antennaria rosea	Antennaria rosea	Pussytoes
ARLU	18			43-45	65+	Artemisia ludoviciana	Artemisia ludoviciana	Louisiana sagewort
ASCO9			47			Astragalus columbianus	Astragalus columbia	Columbia vetch
ASSP4	31					Astragalus spaldingii	Astrogalus spaldingii	Milkvetch, spalding's
BASA3	17-32	27-36	35-45	45-50	65+	Balsamorhiza sagittata	Balsamorhiza sagittata	Arrowleaf balsamroot
CAAN7		27	30	35	50+	Castilleja angustifolia	Castilleja spp.	Indian paintbrush
COUMP	20	50				Comandra umbellata ssp. pallida	Comandra palida	Bastard toadflax
CRCA2	20-25	30-40	35	40	50	Crepis acuminata	Crepis acuminata	Tapertip hawksbeard
CRFL5				58		Cryptantha flava	Cryptantha flava	Yellow cryptantha
DEOC	22	28	30	35	50	Delphinium ×occidentale	Delphinium spp.	Tall larkspur
DENU2	25	30	35	40	50	Delphinium nuttallianum	Delphinium spp.	Low larkspur
DICA14				70		Dichelostemma capitatum	Dicheloatemma spp	Bluedicks
ERCH4					60-100	Erigeron chrysopsidis	Erigeron chrysopsidis	Dwarf yellow fleabane
ERCO7		50				Erigeron concinnus	Erigeron pumulus	Low Fleabane
ERSP4	22	25	33	35	55	Erigeron speciosus	Erigeron speciosus	Daisies
ERHE2	45-50		67-70	90		Eriogonum heracleoides	Erigonum heraculoides	Wyeth buckwheat

ERUM	20-25	30-40	46	50-55	65+	Eriogonum umbellatum	Eriogonum umbellatum	Sulphur-flower buckwheat
FRSP		20	20			Frasera speciosa	Fraseria speciosa	Elkweed
GABO2	17-20			45-50	85	Galium boreale	Galium boreale	Bedstraw
GEMA4	20					Geum macrophyllum	Geum macrophyllum	Largeleaf avens
GETR		39				Geum triflorum	Geum triflorum	Old Man's Whiskers
HEUN	20	30-35	38-45	50-55	65+	Helianthella uniflora	Helianthella uniflora	Oneflower sunflower
HEMA80	20	20	20	22	30	Heracleum maximum	Heracleum lanatum	Cow parsnip
HECH	40					Heuchera chlorantha	Heuchera spp.	Alumroot
HICY	20					Hieracium cynoglossoides	Hicracium cynoglossoidos	Houndstongue hawkweed
HISCA	15-20	25-30		35-40	65+	Hieracium scouleri var. albertinum	Hieracium albertinum	Hawkweed
LIPU11				60		Leptodactylon pungens	Leptodactylon pungens	Granite gilia
LOMA3	15-20	20-25	26-30	37	50	Lomatium macrocarpum	Lomatium spp.	Biscuitroot
LUARM4					57	Lupinus arbustus	Lupinus laxiflorus	Spur Lupine
LESU4			32		39	Lupinus sericeus	Lupinus sericeus	Silky Lupine
LUPIN	18-25	25-30	30-35	40-45	50-90	Lupinus	Lupinus spp.	Lupine
MEAR6	15-18	20-25	22	30	50-75	Mertensia arizonica	Mertensia leonardi	Bluebells
OSOC	15-18	21	25	30	50-70	Osmorhiza occidentalis	Osmorhiza occidentalis	Sweet anise
PELO		60				Pectis longipes	Pectis longpipes	Longstalk cinchweed
PEBA2	13-20	25	30-35	35-40	50-75	Penstemon barbatus	Penstemon barbatus	Beardlip penstemon
PELI2		50				Penstemon linarioides	Penstemon linarioides	Toadflax penstemon
ACNA2				64		Acourtia nana	Perezia nana	Dwarf desertpeony
PHHO	35	50		75		Phlox hoodii	Phlox hoodii	Hoods phlox
PHLO2	20-25	35-40	50		70-80	Phlox longifolia	Phlox longifolia	Longleaf phlox
POFO	15	20-30	30	35-50	60+	Polemonium foliosissimum	Polemonium foliosissimum	Jacobs ladder
POAR7	50					Potentilla arguta	Potentilla arguta	Galley cinquefoil
POGR9	44	50				Potentilla gracilis	Potentilla gracilis	Northwest cinquefoil
POTEN	15-20	25	30-35	38-45	55+	Potentilla	Potentilla spp.	Cinquefoil
RUOC2	20	25-35		30-40	55-70	Rudbeckia occidentalis	Rudbeckia occidentalis	Coneflower
PACA15		24				Packera cana	Senecio canus	Wooly groundsel
SESE2	15-20	25-30	35	40	55+	Senecio serra	Senecio serre	Butterweed
SOMI2	30					Solidago Missouriensis	Solidago Missouriensis	Missouri goldenrod
PSJA2	23	25	30	31	90	Pseudostellaria jamesiana	Stellaria jamesiana	Starwort
TAOF	20	25				Taraxacum officinale	Taraxacum officinale	Dandelion
THFE	23	30	36	40	70	Thalictrum fendleri	Thalictrum fendleri	Meadow rue
TRRA5	30					Tragia ramosa	Tragia spp	Noseburn
VAOC2		20		25		Valeriana occidentalis	Valeriana occidentalis	Valerian
HEMUM	30	55		90		Heliomeris multiflora var. multiflora	Viguiera multiflora	Showy goldeneye
VIOLA	15-20	20-25	30	38		Viola	Viola spp.	Violet
WYAM	20-25	25-30	35	40	55+	Wyethia amplexicaulis	Wyethia amplexicaulis	Mulesear

NATIVE BIENNIAL/ANNUAL FORB

PLANT CODE	1	2	3	4	5	PRESENT SCIENTIFIC NAME	HISTORIC SCIENTIFIC NAME	COMMON NAME
ARCA12	30-35	65		80-85		Artemisia campestris ssp. borealis	Artemisia spp.	Sageworts
CHAL7	29					Chenopodium album	Chenopodium spp	Lambsquarters
CRSE11	50					Croton setigerus	Croton spp	Dove seed
ERFL	30					Erigeron flagellaris	Erigeron flagellaris	Trailing daisy
GEVI2	20	38	30-35	40-45	55-70	Geranium viscosissimum	Geranium viscosissimum	Sticky geranium
HEAN3	25	50		95		Helianthus annuus	Helianthus annuus	Annual sunflower
LALOCO	25	45		95		Lappula occidentalis var. occidentalis	Lappula redowskii	Stickseed
ORLU2	15	20	25	35	45+	Orthocarpus luteus	Orthocarpus spp.	Owl-clover
PODO4	25	40		85		Polygonum douglasi	Polygonum douglasi	Knotweed
SEIN2	15-20	23-30	30-40	40-45	55+	Senecio integerrimus	Senecio integerrimus	Lambstongue
SOAM	20					Solanum americanum	Solanum nigrum	Black nightshade
SPCO	40-45	55		80-90		Sphaeralcea coccinea	Sphaeralcea coccinea	Scarlet globemallow
THIN			50			Thelypodium integrifolium	thelypodium integrifolium	Entire leaved thelypod
AMRE		20				Amaranthus retroflexus	Amaranthus spp	Red root
AMTE3				80		Amsinckia tessellata	Amsinckia spp	Fiddle neck
ERIN4				70		Eriogonum inflatum	Eriogonum inflatum	Indian pipe weed
LAPPU				85		Lappula	Lappula spp	Stick seed
PLOV				75		Plantago ovata	Plantago spp	Indian wheat
POHA5		10		50		Portulaca halimoides	Portulaca spp	Purslane

NATIVE VINE

PLANT CODE	1	2	3	4	5	PRESENT SCIENTIFIC NAME	HISTORIC SCIENTIFIC NAME	COMMON NAME
LABR	15-20		25-40		50-80	Lathyrus brachycalyx	Lathyrus spp.	Peavine, Bonneville pea
VIAM	20	25-30		75		Vicia americana	Vicia americana	American vetch
HULU	30			80		Humulus lupulus	Humulus spp	Hop

TREE/SHRUB/SUBSHRUB

SHRUB PHENOLOGICAL STAGE CLASSIFICATION:

1 - GREEN LEAVES ONLY OR FULL LEAF STAGE
2 - FLOWERS IN BUD, GREEN FLOWERING STAGE
3 - FLOWERS OPEN OR FRUIT DROP
4 - SEED MATURITY OR FALL DORMANCY * = GREEN FRUIT WT
5 - WINTER DORMANCY OR CURED LEAVES ** = DRY FRUIT WEIGHT

NATIVE SHRUB

PLANT CODE	1	2	3	4	5	PRESENT SCIENTIFIC NAME	HISTORIC SCIENTIFIC NAME	COMMON NAME
ARAR8	45	60	54-70	60-75		Artemisia arbuscula	Artemisia arbuscula	Low sagebrush
ARNO4	40	55	50-75	60-75		Artemisia nova	Artemisia nova	Black sagebrush
ARTR2	35-55	40-65	50	55-75	60-90	Artemisia tridentata	Artemisia tridentata	Big sagebrush
ARTRW8	75	61				Artemisia tridentata ssp. wyomingensis	Artemisia tridemtata wyomingens	Wyoming big sagebrush
ARTR4	40		38-50			Artemisia tripartita	Artemisia tripartita	Threetip sagebrush
ARCA13	35	50	70			Artemisia cana	Artemisia cana	Silver sagebrush
ARFI2	40	55	75			Artemisia filifolia	Artemisia filifolia	Sand sagebrush
ATCA2	58			60		Atriplex canescens	Atriplex canescens	Fourwing saltbush
ATCO	40	60	75			Atriplex confertifolia	Atriplex confertifolia	Shadscale
Cespp				70		Ceanothus species	Ceanothus species	Snowbrush
ERNAO	30-40	45-50	55-60	65	70+	Ericameria nauseosa ssp. consimilis	Chrysothamnus nauseosus	Rubber rabbitbrush
CHVI8	30	37-45	50-60	65	70+	Chrysothamnus viscidiflorus	Chrysothamnus viscidiflorus	Green rabbitbrush
EPVI	10			55		Ephedra viridis	Ephedra spp	Mormon-tea
KRLA2	20-25	60-67	65			Krascheninnikovia lanata	Eurotia lanata	Winterfat
FLCE					63	Flourensia cernua	Flourensia cernua	Tar bush
HODI	50					Holodiscus discolor	Holodiscus discolor	Oceanspray
MENOD		40		50		Menodora	Menodora spp	Twinberry
NOLIN				60		Nolina	Nolina spp	Beargrass (leaves only)
OPUNT				30		Opuntia	Opuntia spp	Pricklypear (fruit only)
OPUNT	10	15	13-20	10*	70**	Opuntia	Opuntia spp.	Pricklypear
PHLE4	33					Philadelphus lewisii	Philadelphus lewisii	Mockorange
PHMA5				74		Physocarpus malvaceus	Physocarpus malvaceus	Ninebark
PUTR2	30-35	40-45	55-65	65		Purshia tridentata	Purshia tridentata	Bitterbrush
RHTR				50		Rhus trilobata	Rhus trilobata	Skunkbush sumac
RIBES			45			Ribes	Ribes	Currant
ROWO	20-25	35	35-50	50*	85**	Rosa woodsii	Rosa spp.	Rose
SAVE4	35	38-45	60			Sarcobatus vermiculatus	Sarcobatus vermiculatus	Greasewood
SEFLF				20*		Senecio flaccidus	Senecio longilobus	Woolly groundsel
SYAL	25-30	35-40	65	30-40*	85**	Symphoricarpos albus	Symphoricarpos spp	Snowberry
TECA2			55	70		Tetradymia canescens	Tetradymia canescens	Horsebrush

NATIVE TREE/SHRUB

PLANT CODE	1	2	3	4	5	PRESENT SCIENTIFIC NAME	HISTORIC SCIENTIFIC NAME	COMMON NAME
ACGL	30					Acer glabrum	Acer glabrum	Rocky Mtn. maple
AMAL2	35	45	85	30*	85**	Amelanchier alnifolia	Amelanchier alnifolia	Serviceberry
CEVE	35	45	50	65		Ceanothus velutinus	Ceanothus velutinus	Snowbrush
JUOS			58			Juniperus osteosperma	Juniperus osteosperma	Utah Juniper
JUSC2	45	55	60	35*	85**	Juniperus scopulorum	Juniperus scopulorum	Rocky MountainJuniper
POTR5	20	20	37-50	52-56		Populus tremuloides	Populus tremuloides	Quaking aspen
PREM			43	69		Prunus emarginata	Prunus emarginata	Bitter-cherry
PRVI	30	40-46	65	40*	90**	Prunus virginiana	Prunus virginiana	Chokecherry
SALIX		30				Salix	Salix spp.	Willow
SANIC6	15	45	60	30*	80**	Sambucus cerulea	Sambucus cerulea	Elderberry

Appendix B

Relative Forage Preference of Plants for Grazing Use by Season

Relative Forage Preference Of Plants For Grazing Use by Season

Idaho NRCS 2-2009

1= Preferred 2= Desirable * = May be Poisonous or Otherwise Injurious 2*= Desirable but possibly injurious

COMMON PLANT NAME	Pl. Sym	Pl. Chr	CATTLE				SHEEP				HORSES				ELK				DEER				ANTELOPE			
			W	SP	SU	F	W	SP	SU	F	W	SP	SU	F	W	SP	SU	F	W	SP	SU	F	W	SP	SU	F
Rockymountain Maple	ACGL	NT																	1		2					
Needlegrass	ACHNA	PNG	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		2				2		
Indian Ricegrass	ACHY	PNG	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1		1		2		1		2
Letterman Needlegrass	ACLE9	PNG	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		2				2		
Common Yarrow	ACMI2	PNF						2	2											2	2			2	2	
Western Yarrow	ACMIL	PNF		2		2		2		2		2	2	2	2	2	2	2								
Columbia Needlegrass	ACNE9	PNG	2	1	2	2	2	2		2	2	2	2	2	2	2	2	2		2				2		
Western Needlegrass	ACOC3	PNG	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		2				2		
Swallen Ricegrass	ACSW3	PNG	2	1	1	2		1	2	2	2	1	1	2	2	1	1	2		1		2		1	2	2
Thurber Needlegrass	ACTH7	PNG	2	1	2	2	2	2	2	2	2	1	2	2	2	1	2	2		2				2		
Cusick Gianthyssop	AGCU	PNF		2	2	2		2	2	2		2	2	2		2	2	2		2				2		
Redtop Bentgrass	AGGI2	PIG	2	1	1	2		1	2		2	1	1	2		1	2			2						
Mountain Agoseris	AGGL	PNF		2				2	2			2	2			2	2			2	2			2	2	
Bentgrass	AGROS2	PNF	2	1	1	2		1	2		2	1	1	2		1	2			2				2		
Nettleleaf Gianthyssop	AGUR	PNF		2	2	2		1	1	2		2	2	2		2	2	2		2				2		
Onion	ALLIU	PNF		1				1	2							2	2			2	2			2	2	
Serviceberry	AMELA	NS	2	2	1	2	2	1	1	2	2	2	2	2	2	2	1	2	1	1	1	1	1	1	1	1
Fiddleneck	AMSIN	ANF																								
Pussytoes	ANTEN	PNF																		2	2			2	2	
Pussytoes	ANTEN	PNF																		2	2			2	2	
Dogbane	APOCY	PNF	*	*	*	*	*	*	*	*	*	*	*	*							2					
Rockcress	ARABI2	PNF																	2	2		2	2	2		2
Low Sagebrush	ARAR8	NS							2	2									2	2	2	2	1	1	1	1
Alkali Sagebrush	ARARL	NS					2			2									2	2	2	2		1	1	1
Silver Sagebrush	ARCA13	NS	2			2			2	2	2			2	2			2	2	2	2	2	2	2	2	2
Heartleaf Arnica	ARCO9	PNF		2				2	2			2	2			1	1			2	2					
Herbaceous Sagewort	ARDR4	PNF																					2	2	2	2
Sandwort	ARENA	PNF																								
Fringed Sagebrush	ARFR4	NHS					2			2					2				2				2	2	2	2
Louisiana Sagewort	ARLU	PNF								2									2	2	2	2		1	1	1
Black Sagebrush	ARNO4	NS					1	2	2	1									1	1	1	1	1	1	1	1
Red Threeawn	ARPUL	PNG																		2	2			2	2	
Stiff Sagebrush	ARRI2	NS																								
Threetip Sagebrush	ARTR4	NS																	2	2						
Subalpine Big Sagebrush	ARTRS2	NS	2		2	2	2	2	2	2						2	2	2	1	1	1	1	1	1	1	1
Basin Big Sagebrush	ARTRT	NS																	2	2	2	2	2	2	2	2
Mountain Big Sagebrush	ARTRV	NS	2		2	2	2	2	2	2					2		2	2	1	1	1	1	1	1	1	1
Wyoming Big Sagebrush	ARTRW8	PNS	2				2								2				2	2	2	2		1	1	1
Foothills Big Sagebrush	ARTRX	NS																	2	2	2	2	2	2	2	2
Bearberry	ARUV	NS																	2	2		2				
Aster *	ASTER	PNF						2	2										2		2	2		2	2	
Milkvetch	ASTRA	PNF		*	*			*	*			*	*								2			2	2	
Fourwing Saltbush	ATCA2	NS	1	1	2	2	1	1	2	2									1	2	2	2	2	2	2	2
Shadscale Saltbush	ATCO	NS	2	1		2	2	1		2					2				2	2	2	2	2	2	2	2
Nuttall Saltbush	ATNU2	NHS	1	2	2	2	1	1	2	2									2	2	2	2	2	2	2	2
Hooker's Balsamroot	BAHO	PNF		2				2				2				2				2	2			2	2	
Cutleaf Balsamroot	BAMA4	PNF		2				2				2				2				2	2			2	2	
Arrowleaf Balsamroot	BASA3	PNF		2	2			2	2							2	2		2	1	1	2		1	1	
Nodding Brome	BRAN	PNG	2	2	2	2		2	2	2	2	2	2	2	2	2	2	2		2				2		
Rattlesnake Brome	BRBR5	AIG		1	2	2		1		2		1	2	2		1		2		1		1		1		1
California brome	BRCA5	PNG		1	2	2		1		2	1	2	2			1		2		1		1		1		1
Mountain Brome	BRCA5	PNG	2	1	1	1	2	1	2	2	2	1	1	1	2	1	1	1		2				2		
Japanese Brome	BRJA	AIG		1	2	2		1		2		1	2	2		1	2			2				2		
Cheatgrass Brome	BRTE	AIG		1	2*	2*		1	*	2*		1	2*	2*		1	*	2*		1	*	1*		1	*	1
Columbia Brome	BRVU	PNG	2	2	2	2		2			2	2	2	2	2	2	2	2		2				2		
Douglas Sedge	CADO2	PNGL		2	2	2		2				2	2	2		2	2	2		2				2		
Mariposa Lily	CAEU	PNF																								
Threadleaf Sedge	CAFI	PNGL	2	1	2	2		2			2	1	2	2	2	1	2	2		2				2		
Elk Sedge	CAGE2	PNGL		2	2											2	2				2				2	
Camas	CAMAS	PNF		2				2				2				2				2	2			2	2	
Nebraska Sedge	CANE2	PNGL	2	1	1	2		2			2	1	1	2	2	1	2	2		2				2		
Liddon's Sedge	CAPE7	PNGL		2	2	2		2				2	2	2		2	2	2		2				2		
Sedge	CAREX	PNGL	2	2	2	2					2	2	2	2	2	2	2	2		2				2		
Pine Reedgrass	CARU	PNG		2	2	2										2	2	2		2				2		

Indian Paintbrush	CASTI2	PNF		2				2	2							2				2	2			2	2		
Curleaf Mountain Mahog.	CELE3	NS	2	2			2	2							2	2			1	1	2	1	1	1	1	1	
Redstem Ceanothus	CESA	PNS		2	2	2		2	2	2		2	2	2	2	2	2	2	2	2	2	2					
Snowbrush Ceanothus	CEVE	NS													2	2	2	2		1	1						
Salmonriver Rabbitbrush	CHPAI3	NS																									
Tallgreen Rabbitbrush	CHVI8	NS				2				2									2								2
Twistedleaf Rabbitbrush	CHVIP4	NS																	2				2				
Varied Green Rabbitbrush	CHVIV	NS				2				2									2								2
Dwarfgreen Rabbitbrush	CHVIV4	NS				2				2									2								2
Thistle	CIRSI	BNF										2	2			2	2										
False Toadflax	COMAN	PIF																									
Tapertip Hawksbeard	CRAC2	PNF		2	2			1	1			2	2			2	2			2	2			2	2		
Cryptantha	CRYPT	PNF																									
California Danthonia	DACA3	PNG		2	2	2		2				2	2	2		2	2			2				2			
Shrubby Cinquefoil	DAFL3	NS													2				2	2	2	2	2	2	2	2	2
Timber Danthonia	DAIN	PNG		2	2	2		2				2	2	2		2	2	2		2				2			
Onespike Danthonia	DAUN	PNG		2	2	2		2				2	2	2		2	2	2		2				2			
Low Larkspur	DEBI	PNF	2	*	*			2												2	2			2	2		
Tufted Hairgrass	DECA18	PNG	2	1	1	2	2	1	1	2	2	1	1	2	2	1	1	2		2				2			
Tansy Mustard	DESCU	BNF		2*	*			2	2			2				2				2				2			
Inland Saltgrass	DISP	PNG	2	2	2			2			2	2	2		2	2	2			2				2			
Bottlebrush Squirreltail	ELELE	PNG		2	2			2				2		2		2		2		2				2			
Blue Wildrye	ELGL	PNG		2	2			2				2				2				2				2			
Streambank Wheatgrass	ELLA3	PNG	2	1	2	2		2	2	2	2	1	2	2	2	1	2	2		2				2			
Thickspike Wheatgrass	ELMA7	PNG	2	1	2	2		2	2	2	2	1	2	2	2	1	2	2		2				2			
Quackgrass Wheatgrass	ELRE4	PIG		2								2				2				1	2			2	2		
Slender Wheatgrass	ELTR7	PNG	2	1	1	1	2	1	1	2	2	1	1	1	2	1	1	1		1		2		1			2
Willowweed	EPILO	PNF		2		2		2				2	2	2		2	2	2		2	2			2	2		
Cutleaf Filaree	ERCI6	AIF		1	1	2		1	1	2		1	1	2		1	1	2		1	1	2		1	1	2	
Wyeth Eriogonum	ERHE2	NHS			2			2	2																		
Fleabane	ERIGE2	PNF						2	2											2	2			2	2		
Eriogonum	ERIOG	NHS						2	2											2	2			2	2		
Tallgrey Rabbitbrush	ERNA10	NS				2				2				2					2				2				
Dwarfgray Rabbitbrush	ERNAN4	NS				2				2									2								2
Broadleaf Eriogonum	ERNEH	NHS			2			2	2																		
Wallflower	ERYSI	PNF						2												2	2			2	2		
Rough Fescue	FECA4	PNG																									
Idaho Fescue	FEID	PNG	2	1	1	1	2	1	1	2	2	1	1	1	2	1	1	1		1		2		1			2
Western Fescue	FEOC	PNG	2	2	2	2		2			2	2	2	2	2	2	2	2		2				2			
Green Fescue	FEVI	PNG			2	2			2	2	2		2	2	2		2	2			2						
Strawberry	FRAGA	PNF		2	2			2	2			2	2			2	2			2	2			2	2		
Whitestemmed Elkweed	FRAL2	PNF																									
Northern Bedstraw	GABO2	PNF						2	2											2	2			2	2		
Richardson Geranium	GERI	PNF		2	2			1	1			2	2			2	2			1	1			2	2		
Sticky Geranium	GEVI2	PNF						2	2											2	2			2	2		
Spiny Hopsage	GRSP	NS	2	2	2	2	2	2	2	2									2	2	2	2	2	2	2	2	2
Curlycup Gumweed	GRSQ	BNF																									
Broom Snakeweed	GUSA2	NHS					2												2	2			2	2	2	2	
Stickseed	HACKE	PNF																									
Halogeton	HAGL	AIF	*	*	*	*	*	*	*	*										2	2			2	2		
Goldenweed	HAPLO2	PNF																		2	2			2	2		
Common Sunflower	HEAN3	ANF			2				2				2				2				2				2		
Needle and thread Grass	HECO26	PNG	2	1	2	2	2*	1	2	2**	2	1	2	2	2	1	2	2		2	*	2*		2	*	2*	
Helianthella	HELIA	PNF		2	1			1	1			2	2			2	2			2	2			2	2		
Common Cowparsnip	HEMA80	PNF		2	2			2	2			2	2			2	2			2	2			2	2		
Alumroot	HEUCH	PNF																									
White Hawkweed	HIAL2	PNF						2	2											2	2			2	2		
Albert Hawkweed	HICY	PNF		2	2			1	2			2	2			2	2			2	2			2	2		
Woolyhawkweed	HISC2	PNF		2				1	2			2	2			2	2			2	2			2	2		
Creambush Oceanspray	HODI	NS													2	2	2	2	2	2	2	2	2	2	2	2	2
Foxtail Barley	HOJU	PNG	*	2	2	*	*	2	*	*	*	2	2*	*	*	2	*	*	*	2	*	*	*	2	*	*	
Rockymountain Iris	IRMI	PNF																		2	2						
Rush	JUNCU	PNGL																									
Juniper	JUNIP	NT																	1	2		2	1				
Prairie Junegrass	KOMA	PNG	2	2	2	2		2			2	2	2	2	2	2	2	2		2				2			
Belvedere Summercypress	KOSC	AIF		2	2			2	2			2	2			2	2			2	2			2	2		
Common Winterfat	KRLA2	NS	2	1	1	2	1	1	1	1	2	1	2	2	2	1	1	2		2	2		2	2	2	2	2
Lettuce	LACTU	AIF		2				1	2			2	2			2	2			1	1			1	1		
Peavine	LATHY	PNF		2	2			2	1			2	2			2	2			2	2			2	2		
Colorado wildrye	LEAM	PNG		2	2	2		2				2	2	2		2	2			2				2			
Basin Wildrye	LEC14	PNG	2	2	2			2			2	1	2	2		2				2				2			

Yellow Wildrye	LEFL4	PNG		2	2	2		2				2	2	2		2	2	2		2				2				
Spike Fescue	LEKI2	PNG		2	2			2				2	2	2		2	2			2				2				
Pepperweed	LEPID	ANF																						2	2			
Bitterroot Lewisia	LERE7	PNF																										
Salmon Wildrye	LESA2	PNG	2	1	1	2		1	2		2	1	1	2	2	1	1	2		2				2				
Bladderpod	LESQU	PNF						2	2											2	2			2	2			
Creeping Wildrye	LETR5	PNG	2	1	2	2		2			2	1	2	2		2	2	2		2				2				
Lewisia	LEWIS	PNF																										
Licoriceroot	LIGUS	PNF		2	2			2	2			2	2			2	2			2	2			2	2			
Twinflower	LINNA	PNG														2	2			2	2							
Lewis Flax	LIPE2	PIS																										
White Stoneseed	LIRU4	PNF			2	2		2	2	2										2	2			2	2			
Butterand eggs Toadflax	LIVU2	PIF																										
Biscuitroot	LOMAT	PNF	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2		2	2			2	2			
Honeysuckle	LONIC	PNS													2				2	2	1	2	2	2	2	2		2
Lupine	LUPIN	PNF		*				2*	2			*								2	2			2	2			
Rush Skeletonplant	LYJU	PNF																										
Fat Falsesolomonseal	MARAR	PNF		2	2			1	1	2		2	2			2	2			1	1	2		2	2			
Low Oregon Grape	MARE11	PNS																					2	2	2	2		2
Starry Falsesolomonseal	MAST4	PNF		2	2			1	1	2		2	2			2	2			1	1	2		2	2			
Bulbous Oniongrass	MEBU	PNG		2	2	2		2				2	2	2		2	2	2		2				2				
Bluebell	MERTE	PNF		2	2			1	1			2				2	2			2	2			2	2			
Purple Oniongrass	MESP	PNG	2	1	1	2		1	2		2	1	1	2	2	1	1	2		1				1				
Alkali Muhly	MUAS	PNG																		2								
Mat Muhly	MURI	PNG		2	2			2				2	2			2	2			2				2				
Plains Pricklypear	OPPO	NS4S		*	*			*	*														2	2	2	2		2
Little Ricegrass	OREX	PNG		2	2	2		2				2	2	2		2	2	2		2				2				
Owlclover	ORTHO	ANF																										
Sweetroot	OSMOR	PNF	2	1	2	2	2	1	1	2	2	1	2	2	2	1	2	2		2	2			2	2			
Western Wheatgrass	PASM	PNG	2	1	2	2		2		2	2	1	2	2	2	1	2	2		1				2				
Lousewart	PEDIC	PNF																										
Penstemon	PENST	PNF																		2	2			2	2			
Phacelia	PHACE	ANF																		2	2			2	2			
Alpine Timothy	PHAL2	PNG	1	1	1	1	2	1	1	2	1	1	1	1	1	1	1	1		2			1	2				
Hoods Phlox	PHHO	PNF						2																2				
Longleaf Phlox	PHLO2	PNF						2				2	2	2										2				
Phlox	PHLOX	PNF	2	2			2	2	2		2	2			2	2				2				2				
Mallow Ninebark	PHMA5	NS													2				2	2	2	2	2	2	2	2		2
Bud Sagebrush	PIDE4	NS		2*			2*	1*	2*										2	2	2	2	2	2	2	2		2
Big Bluegrass	POAM	PNG	1	1	1	1	2	1	2	1	1	1	1	1	1	1	2	2		1				1				
Bluegrass	POAM	PNG	1	1	1	1	2	1	2	1	1	1	1	1	1	1	1	2		1		2		1				2
Bulbous Bluegrass	POBU	PIG		2		2		2				2	2	2		2	2	2		2				2				
Cusick Bluegrass	POCU3	PNG	2	1	1	1	2	1	2	2	2	1	1	1	2	1	1	1		1		2		1				2
Alkali Bluegrass	POJU	PNG	2	1	2	2	2	1	2	2	2	1	2	2	2	1	2	2		2				2				
Nerved Bluegrass	PONE2	PNG	1	1	1	1	2	1	2	2	1	1	1	1	1	1	1	1		1		2		1				2
Kentucky Bluegrass	POPR	PIG	1	1	1	1	2	1	1	2	1	1	1	1	1	1	1	1		1		2		1				2
Cottonwood	POPUL	NT			2	2			2	2							2	2	2	2	2	2	2	2	2	2		2
Pine Bluegrass	POSC	PNG	2	1	2	1		1		2	2	1	2	1	2	1	2	1		2				2				
Nevada Bluegrass	POSE	PNG	1	1	1	1	2	1	2	2	1	1	1	1	1	1	1	1		1		2		1				2
Sandberg Bluegrass	POSE	PNG	2	2	2	2		1		2	2	2	2	2	2	2	2	2		1		2		1				2
Cinquefoil	POTEN	PNF		2	2			2	2							2	2			2	2			2	2			
Quaking Aspen	POTR5	PNT		2					1	2						2			2	1	1	2	2	2	2	2		2
Bittercherry	PREM	NT			2				2								2		2	2	2	2		2	2	2		2
Black Chokecherry	PRVI	NT		*	*	2		*	*	2									2	1	1			2				
Common Chokecherry	PRVI	NT		*	*	2		*	*	2									2	1	1	2		2				
Scurfpea	PSORA	PNF																										
Foxtail Wheatgrass	PSSA2	PNG	1	1	1	1	2	1	2	2	1	1	1	1	2	1	1	2		1		2		1				2
Beardless Wheatgrass	PSSPI	PNG	2	1	1	2	2	1	1	1	2	1	1	1	2	1	1	2		1				1				
Bluebunch Wheatgrass	PSSPS	PNG	1	1	1	1	2	1	2	2	1	1	1	1	2	1	1	2	2	1		2		1				2
Brackenfern	PTAQ	PNF	*	*	*	*	*	*	*	*	*	*	*	*														
Antelope Bitterbrush	PUTR4	NS	1	1	2	1	1	1	2	1	2	2	2	2	1	1	2	1	1	1	2	1	1	1	1	1		1
Buttercup	RANUN	PNF						2	2											2	2			2	2			
Currant	RIBES	NS				2				2								2		2	2			2	2			
Baldhip Rose	ROGY	NS			2	2			2	2							2	2	2	2	2	2	2	2	2	2		2
Rose	ROSA	PNS			2	2			2	2							2	2	2	2	2	2	2	2	2	2		2
Woods Rose	ROWO	NS			2	2			2	2							2	2	2	2	2	2	2	2	2	2		2
Blackberry	RUBUS	NS																			2							
Western Coneflower	RUOC2	PNF																										
Western Thimbleberry	RUPA	PNS															2	2	2	2	2	2						
Willow	SALIX	NT			2	2			2	2			2	2	2		2	2	2	2	2	2	2	2	2	2		2
Elderberry	SAMBU	NS	2		1	2	2		1	1					2		2	2		1	1			1	1			

Scoular Willow	SASC	NT			2				2	2		2	2		2	2	2	2	2	2	1	2	2	2	2	2			
Black Greasewood	SAVE4	NS	2	2*			2	2*			2	2							2				2						
Bulrush	SCIRP																													
Stonecrop	SEDUM	PNS4F																		2				2					
Butterweed Groundsel	SESE2	PNF		2	2			2	1			2	2			2	2			2	2			2	2				
Goldenrod	SOLID	PNF						2	2				2	2						2	2			2	2				
Mountain Ash	SORBU	NS													2		2	2											
Alkali Sacaton Dropseed	SPAI	PNG	2	2	1				2		2	2	1			2													
Nuttal Tansy	SPAR2	PNF																											
Globemallow, Scarlet	SPCO	PNF						2	2											2	2			2	2				
Scarlet Globemallow	SPCO	PNF		2	2			1	2	2		2	2			2	2			1	2	2		1	2	2			
Sand Dropseed	SPCR	PNG	2	2	2	2		2			2	2	2	2	2	2	2	2		2				2					
Alkali Cordgrass	SPGR	PNG	2	2	2	2		2			2	2	2	2		2													
Spirea	SPIRA	NS				2												2	2		2	2	2			2			
Prairie Cordgrass	SPPE	PNG		2	2			2				2	2			2	2			2				2					
Common Snowberry	STAL	NS			2	2			2	2			2	2			2	2		1	1	2	2	2	2	2			
Lemmon Needlegrass	STLE2	PNG	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2		2				2					
Thorn Skeletonweed	STSP6	PNF	*	*	*	*	*	*	*	*	*	*	*	*															
Western Snowberry	SYOC	NS							2	2							2	2	2	1	2	2	2	2	2	2			
Mountain Snowberry	SYOR2	NS			2	2			1	1			2	2			2	2	1	1	1	1	2	2	2	2			
Utah Snowberry	SYORU	NS			2	2			2	2			2	2			2	2		1	1	2	2	2	2	2			
Medusahead Wildrye	TACA8	AIG		2	2							2	2			2				2				2					
Dandelion	TAOF	PIF		1	2	2		1	1	2		1	2	2		1	2	2		1	2	2		1	2	2			
Gray Horsebrush	TECA2	NS					*	*	*	*									2	2	2	2	2	2	2	2			
Littleleaf Horsebrush	TEGL	NS					*	*	*	*									2	2	2	2	2	2	2	2			
Nuttall Horsebrush	TENU2	NS																	2	2	2	2	2	2	2	2			
Spiny Horsebrush	TESP2	NS	*	*	*	*	*	*	*	*	*	*	*	*															
Meadowrue	THALI2	PNF						2	1	2										2	2			2	2				
Thermopsis	THERM	PNF																											
Townsendia	TOWNS	BNF																											
Arrowgrass	TRCO4	PNF	*	*	*	*	*	*	*	*		*	*	*															
Salsify	TRDU	AIF		1	2			1	1	2		1	2																
Douglas Broadiaea	TRGRG2	PNF																											
Clover	TRIFO	PNF	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		2	2			2	2				
Trisetum	TRISE		2	1	2	2		2			2	1	2	2	2	1	2	2		2				2					
Spike Trisetum	TRSP2	PNG	2	1	2	2		2			2	1	2	2	2	1	2	2		2				2					
Blueberry	VACCI	NS													2		2	2	2	2	2	2	2	2	2	2			
Valerian	VALER	PNF			2			2												2	2			2	2				
Falsehellebore	VECA2	PNF		*	*	*		*	*	*										2	2								
American Vetch	VIAM	PNF	2	1	1	2	2	1	1	2	2	1	1	2	2	1	1	2		2	2			2	2				
Vetch	VICIA	PNF	2	1	1	2	2	1	1	2	2	1	1	2	2	1	1	2		2	2			2	2				
Violet	VIOLA	PNF			2			2	2											2	2			2	2				
Hairy Winter Vetch	VIVI	PIF		2	2			2	2			2	2			2	2			2	2			2	2				
Sixweeks Fescue	VUOC	ANG																											
Mulesear Wyethia	WYAM	PNF														2				2	2			2					
Whitehead Wyethia	WYHE2	PNF		2				2				2				2				2	2								
Wooly Wyethia	WYMO	PNF		2				2				2				2				2	2								
Common Beargrass	XETE	PNF																											
Deathcamas	ZIGAD	PNF	*	*	*	*	*	*	*	*	*	*	*	*															

Appendix C

Example Calculations and Related Documents

The following is an example of how to calculate estimated stocking rates from data collected during the inventory process. Maps are included for reference.

- ID-CPA-006 Similarity Index Worksheet – This form estimates total annual production for the Loamy 16+ ecological site found on the Summer Place grazing unit.

To calculate AUM's/acre based upon total production use this formula:

AUM's/ac = Total Production (lbs per acre) / 912.5 lbs per AUM x % Harvest Efficiency (HE) x Acres

AUM's/ac = 1157 lbs per acre / 912.5 lbs per AUM x 25% HE

= 0.32 AUM's/ac

- ID-CPA-013 Stocking Rate and Forage Value Rating – This form estimates stocking rate by plant preference ratings. Harvest efficiencies are applied to total production by species based upon animal preference values by season. Harvest efficiency (HE) for preferred is 35%, desirable is 25%, and undesirable 15%.

To calculate use total production values from ID-CPA-006 and separate by Plant preference as shown on the ID-CPA-013.

For Cattle we would use 1157 lbs/ac for the Loamy 16+ ecological site divided into the three categories:

$$\text{AUM's/ac} = \frac{\text{(preferred production x 35\% HE) + (desirable production x 25\% HE) + (undesirable production x 15\% HE)}}{\text{912.5 lbs per AUM}}$$

$$\text{AUM's/ac} = \frac{\text{(334 lbs per acre x 35\% HE) + (631 lbs per acre x 25\% HE) + (175 lbs per acre x 15\% HE)}}{\text{912.5 lbs per AUM}}$$

AUM's/ac = 300.9 / 912.5

= 0.33 AUM's/ac

- ID-CPA-008 Range & Pasture Computation Worksheet – This form allows you to summarize data collected and provide for additional adjustment to estimated stocking rates due to slope percent and distance to water. By using response units a manger or conservation planner may be able to identify opportunities to improve access to available resources. For this example the response units are composed of Ecological Site, Distance to Water, and % Slope.

For the Summer Place grazing unit we can estimate that there are 548 total AUM's available.

Now that we have calculated an estimated amount for total AUM's at the summer place we can determine the time and numbers of livestock that the grazing unit can support. Remember that these are only initial estimates with actual stocking rates adjusted according to monitoring data in conjunction with actual use, climate, and other pertinent data.

Example 1 – How Many?

The owner of the Summer Place grazing unit would like to know how many head he can graze from July 1st to August 30th in this pasture. The base herd of the ranch consists of Angus cross cattle averaging about 1200 lbs.

AUM = # Head x AUE x Time (months)

548 AUM's = # Head x 1.2 AU x 2 Months

548 AUM's = # Head x 2.4 AUM

548 AUM's / 2.4 AUM's = 228.33 or 229 Head from July 1st to August 30th

Example 2 – How long?

The owner of the Summer Place would like to know how long he can put 300 Angus cross cows and 12 Bulls in this unit. The AUE for the cows will remain at 1.2 and the Bulls should be 1.25 AU.

AUM = # Head x AUE x Time (months)

548 AUM's = (300 Head x 1.2 AU) + (12 Head x 1.25 AU) x Time

548 AUM's = (360 AU + 15 AU) x Time

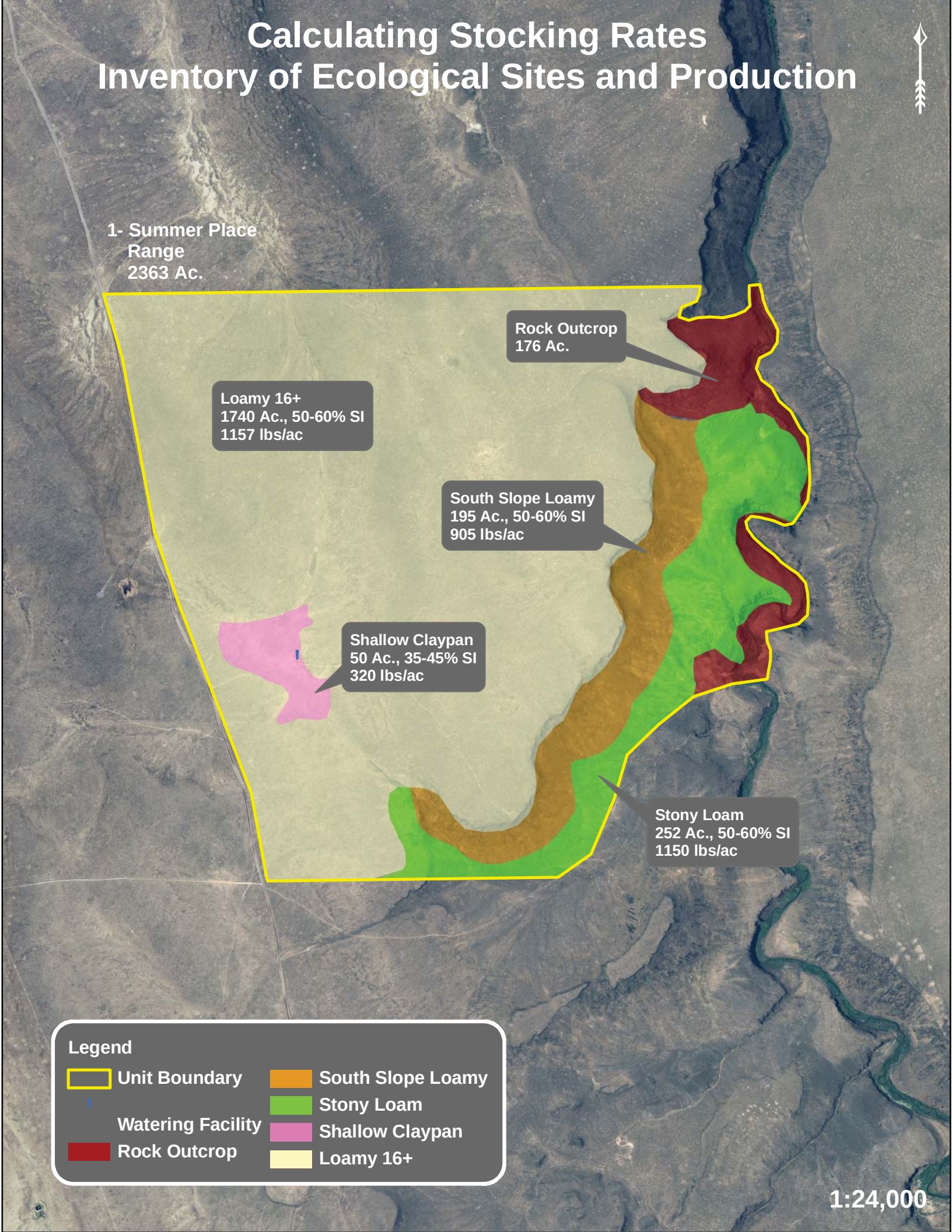
548 AUM's = 375 AU x Time

548 AUM's / 375 AU = 1.46 Months

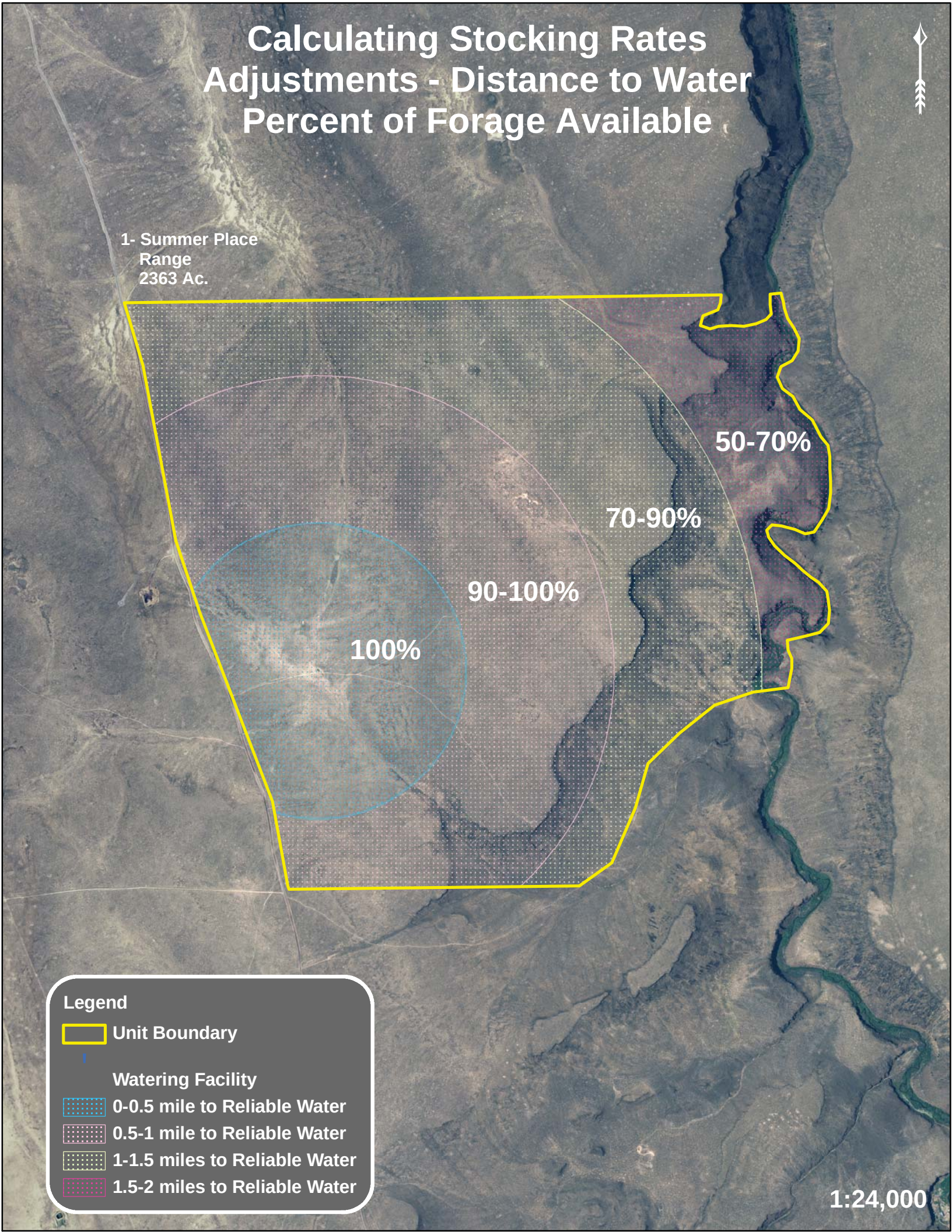
1.46 Months x 30.4 Days per Month *(365 day per year / 12 months)*

44.38 Or 44 Days which would be from July 1st through August 13th

Calculating Stocking Rates
Inventory of Ecological Sites and Production

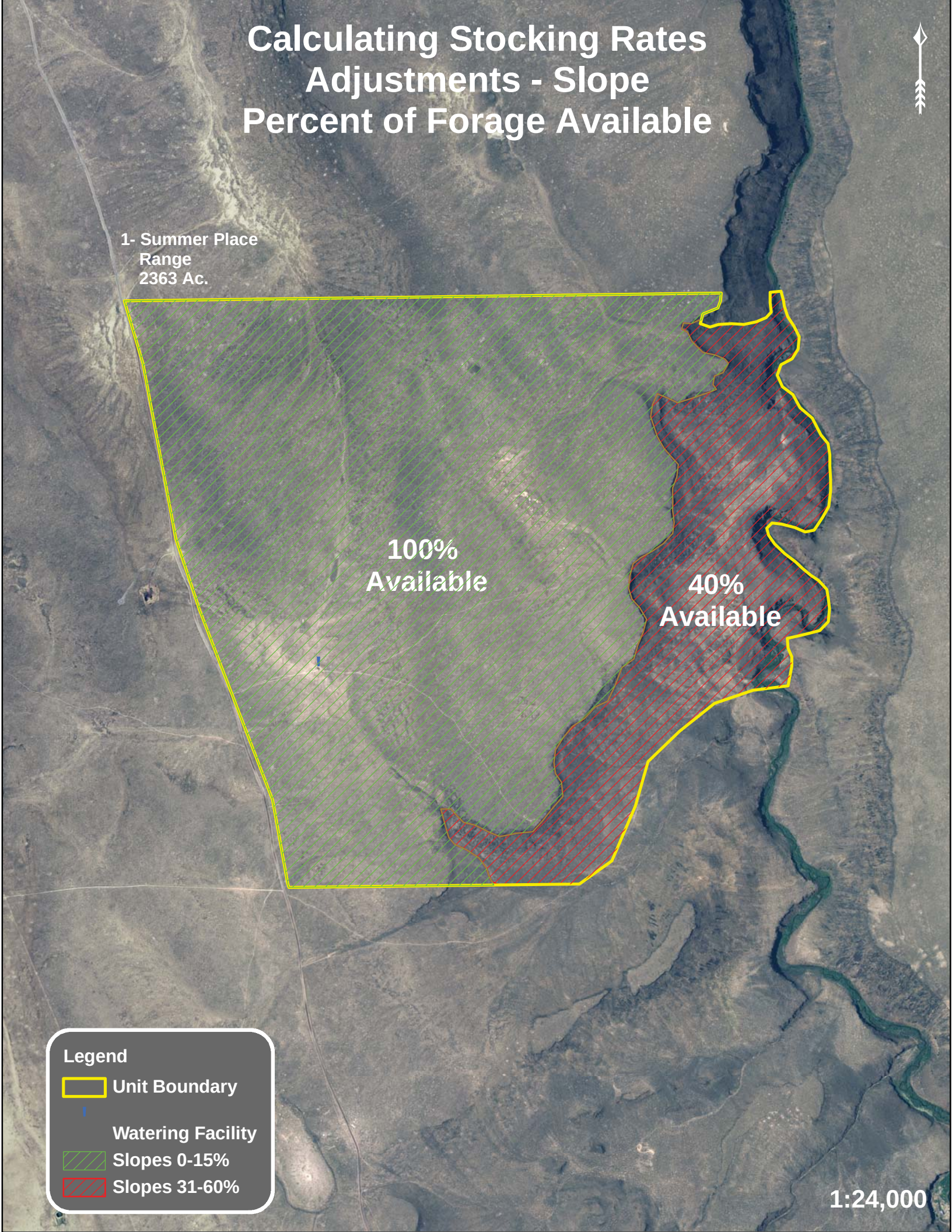


Calculating Stocking Rates Adjustments - Distance to Water Percent of Forage Available



Calculating Stocking Rates
Adjustments - Slope
Percent of Forage Available

1- Summer Place
Range
2363 Ac.

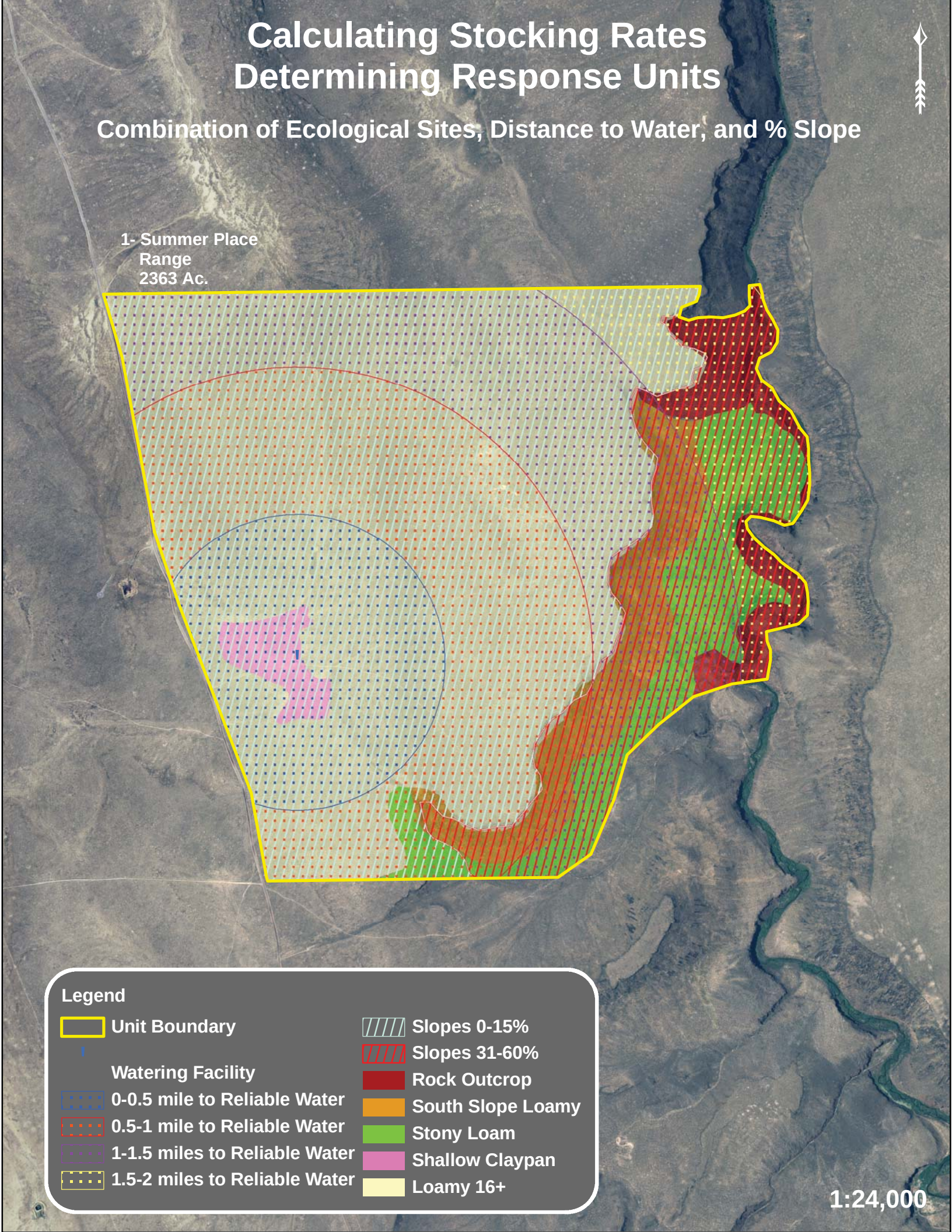


Legend
Unit Boundary
Watering Facility
Slopes 0-15%
Slopes 31-60%

1:24,000

Calculating Stocking Rates
Determining Response Units

Combination of Ecological Sites, Distance to Water, and % Slope



Prescribed Grazing - 528
Similarity Index Worksheet

ID-CPA-006
Idaho

Natural Resources Conservation Service — February 2008

Client: Example Production **Date:** 9/1/2008 **Transect No.:** **Section:**

Conservationist: Range Guy **County:** South **GPS :** **Township:**

Ecological Site: Loamy 16+ Artrv/Feid **MLRA:** 25 **Reference Vegetation State:** **Range:**

N / W / E / S

A											A1	A2	A3	A4	A5	B	C*	D*	E*	F*	G	H	I	J
Plant Information	Number of Plots in Transect: 10										Average Plot/ Estimated Green Wt. (lbs/ac)	Plot Size 9.6	Weight Clipped Plots			Clip / Estimated corrected green weight (lbs/ac)	% dry weight	% current growth ungrazed	% growth curve completed	% of normal production	Reconstruction factor (d)(e)(f)	Reconstructed present weight (lbs/ac)	Weight in reference state (lbs/ac)	Weight allowable (lbs/ac)
	Estimated or Clipped Weight Per Species											Conversion Factor Used	Estimated Weight	Clipped Weight	Clipped / Estimated plot conversion factor									
Plant Name	P-1	P-2	P-3	P-4	P-5	P-6	P-7	P-8	P-9	P-10														
FEID	17	15	5	10	10	0	10	28	17	12	124.0	10.00	15	17	1.13	140.5	90%	80%	95%	100%	1.18	166.4	570	166.4
PSSP6	0	0	20	25	5	35	10	0	0	16	111.0	10.00	41	44	1.07	119.1	90%	80%	95%	100%	1.18	141.1	110	110.0
ACNE9	0	0	0	0	9	0	1	2	0	0	12.0	10.00	9	9	1.00	12.0	85%	80%	95%	100%	1.12	13.4	90	13.4
ACOC3	8	10	0	0	0	0	0	0	0	0	18.0	10.00	8	9	1.13	20.3	85%	80%	95%	100%	1.12	22.6	90	22.6
PONE3	6	2	0	3	2	1	1	1	5	2	23.0	10.00	6	6	1.00	23.0	90%	80%	95%	100%	1.18	27.2	18	18.0
BRJA	1	1	1	1	1	0	1	1	1	3	11.0	10.00	2	2	1.00	11.0	90%	90%	100%	100%	1.00	11.0	0	0.0
POBU	4	3	1	4	4	T	2	2	1	1	22.0	10.00	4	5	1.25	27.5	90%	90%	100%	100%	1.00	27.5	0	0.0
ELEL5	0	0	0	0	5	0	0	0	0	2	7.0	10.00	5	6	1.20	8.4	85%	80%	90%	100%	1.18	9.9	45	9.9
BASA3	10	15	0	0	0	0	0	15	0	0	40.0	10.00	25	28	1.12	44.8	90%	70%	100%	100%	1.29	57.6	110	57.6
CRAC2	1	2	0	0	0	0	3	0	0	0	6.0	10.00	3	3	1.00	6.0	85%	85%	95%	100%	1.05	6.3	110	6.3
LUPINE	0	0	0	0	8	0	0	0	5	8	21.0	10.00	8	7	0.88	18.4	80%	95%	90%	100%	0.94	17.2	30	17.2
PHLO	0	2	0	0	T	T	2	0	0	1	5.0	10.0	2	2	1.00	5.0	90%	95%	100%	100%	0.95	4.7	22	4.7
ERPU	0	0	0	0	0	0	0	0	2	0	2.0	10.0	2	2	1.00	2.0	90%	95%	100%	100%	0.95	1.9	22	1.9
ZYVE	0	0	0	0	0	0	0	0	3	0	3.0	10.0	3	3	1.00	3.0	90%	90%	100%	100%	1.00	3.0	53	3.0
ASTRAGALUS	0	0	0	0	0	0	0	0	0	2	2.0	10.0	2	2	1.00	2.0	80%	95%	90%	100%	0.94	1.9	18	1.9
ACMI	T	0	0	0	1	0	0	0	0	1	2.0	10.0	1	1	1.00	2.0	80%	95%	90%	100%	0.94	1.9	31	1.9
% Litter																								
% Cover														From Large Plot Extension Sheet								643.2	419.0	320.1
% Bareground (%)																K. Total normal production for Ecological Site:					1200			
% Rock cover (%)																						Reconstructed Present Total Weight lbs/ac.		1156.9		
Remarks:											Total Cover:												Weight in Reference state (total of weight in column I):		1738.0	
																							L. Total weight of allowable present (total of weight in column J):			755.0
																							M. Similarity index (L divided by K x 100 = M):			62.9

Boxes with red indicate estimated weights for clipped plots. Total clipped weight for plots have been transferred from field sheet into column A4. Total reconstructed weight for site is 1157 lbs/ac

Prescribed Grazing - 528
Similarity Index Worksheet

ID-CPA-006
Idaho

Natural Resources Conservation Service

February 2008

Large Plot Extension Sheet

A											A1	A2	A3	A4	A5	B	C*	D*	E*	F*	G	H	I	J
Plant Information	Number of Plots in Transect: 2										Average Plot/ Estimated Green Wt. (lbs/ac)	Plot Size 436	Weight Clipped Plots			Clip/ Estimated corrected green weight (lbs/ac)	% dry weight	% current growth ungrazed	%growth curve completed	%of normal product-ion	Reconstruction factor (d)(e)(f)	Reconstructed present weight (lbs/ac)	Weight in reference state (lbs/ac)	Weight allowable (lbs/ac)
	Estimated or Clipped Weight Per Species												Estimated Weight	Clipped Weight	Clipped/ Estimated plot conversion factor									
Plant Name	P-1	P-2	P-3	P-4	P-5	P-6	P-7	P-8	P-9	P-10		Conversion Factor Used												
ATTRV	1800	2200									440.0	0.22	1	1	1.00	440.0	65%	90%	80%	100%	0.9	397.2	220	220.0
CHVI8	600	400									110.0	0.22	1	1	1.00	110.0	65%	90%	80%	100%	0.9	99.3	22	22.0
SYAL	550	500									115.5	0.22	1	1	1.00	115.5	60%	90%	85%	100%	0.8	90.6	22	22.0
PUTR	350	250									66.0	0.22	1	1	1.00	66.0	65%	85%	90%	100%	0.8	56.1	155	56.1

Prescribed Grazing - 528

Stocking Rate and Forage Value Rating

ID-CPA-013

Idaho

Natural Resources Conservation Service — **February 2008**

Client: Example Production **Location: Field 1** **Date:** 9/1/2008

Conservationist: Range Guy **Plant Community:** LY 16+ ARTRV/FEID

Plant Species	Present Composition		Animal: Cattle			Animal: Sheep			Animal:		
	Lbs/AC	%	P	D	U	P	D	U	P	D	U
Idaho Fescue	166.0	14%	166.0			166.0					
Bluebunch Wheatgrass	141.0	12%	141.0				141.0				
Columbia Needlegrass	13.0	1%		13.0				13.0			
Monkshood ****	23.0	2%			23			23.0			
Nevada Bluegrass	27.0	2%	27.0				27.0				
Japanese Brome	11.0	1%			11.0			11.0			
Bulbous Bluegrass	28.0	2%			11.0			11.0			
Bottlebrush Squirreltail	10.0	1%		10.0				10.0			
Arrowleaf Balsamroot	58.0	5%		58.0			58.0				
Tapertip Hawksbeard	6.0	1%		6.0		6.0					
Lupine ****	17.0	1%			17.0		17.0				
Longleaf Phlox	5.0	0%			5.0			5.0			
Shaggy Fleabane	2.0	0%			2.0		2.0				
Death Camas ****	3.0	0%			3.0			3.0			
Locoweed ****	2.0	0%			2.0			2.0			
Yarrow	2.0	0%			2.0		2.0				
Mountain Big Sagebrush	397.0	34%		397.0			397.0				
Green Rabbitbrush	99.0	9%			99.0			99.0			
Snowberry	91.0	8%		91.0		91.0					
Antelope Bitterbrush	56.0	5%		56.0			56.0				
Total	**1157.0**		**334.0**	**631.0**	**175.0**	**263.0**	**700.0**	**177.0**			
Percent by Preference			**29%**	**55%**	**15%**	**23%**	**61%**	**15%**			
Forage Value Rating			**Moderate**			**Moderate**					
Estimated Stocking Rate AUM/AC			**0.33**			**0.32**					

Comments: Pounds per acre for individual species from reconstructed weights on ID-CPA-006

Prescribed Grazing - 528

Range & Pasture Computation Worksheet

ID-CPA-008

Idaho

Natural Resources Conservation Service

February 2008

Ranch : **Example - Adjustment Calculations as Response Units**

Location : **Summer Place**

Technician's Name : **Range Guy**

Date : **9/1/2008**

	Mangement Unit Name	Total Acres	Ecological Site / Forage Type Response Unit	Acres	Similarity Index	Forage Value	Total Lbs/ Ac	Harvest Efficiency	Adjustment Factors	AUM's/AC	AUM's
1	**Summer Place**	1740	Ly 16+ 100/100	385	50%		1157	25%	100%	0.32	122
	Loamy 16+		Ly 16+ 95/100	775	53%		1157	25%	95%	0.30	233
			Ly 16+ 80/100	510	55%		1157	25%	80%	0.25	129
			Ly 16+ 60/100	70	60%		1157	25%	60%	0.19	13
									MU Total		**498**
2	**Summer Place**	50	Shallow Claypan 100/100	50	40%		320	25%	100%	0.09	4
	Shallow Claypan										
									MU Total		**4**
3	**Summer Place**	195	South Slope Ly 95/100	6	50%		905	25%	95%	0.24	1
	South Slope Loamy		South Slope Ly 95/40	54	58%		905	25%	38%	0.09	5
			South Slope Ly 80/40	129	53%		905	25%	32%	0.08	10
			South Slope Ly 60/40	6	60%		905	25%	24%	0.06	0
									MU Total		**17**
4	**Summer Place**	252	Stony Loam 95/100	27	50%		1150	25%	95%	0.30	8
	Stony Loam		Stony Loam 95/40	5	54%		1150	25%	38%	0.12	1
			Stony Loam 80/40	130	58%		1150	25%	32%	0.10	13
			Stony oam 60/40	90	60%		1150	25%	24%	0.08	7
									MU Total		**29**
5	**Summer Place**	126	Rock Outcrop	176	N/A		400	1%	1%	0.00	0
	Rock Out crop										
									MU Total		**0**
	Total Acres	**2363**	**Total AUM's For Operation**								**548**

This a summary of response units broken down by ecological site, distance to water, and percent slope. The values used for total lbs/acre should be calculated based upon data collection (See example ID-CPA-006). The values for adjustment factors are guidelines and should be adjusted based upon historic use patterns and livestock distribution, type and class of livestock, livestock behavior, climate, type of grazing system used, and several other variables depending on site. Notice how the cumulative effects of distance to water and percent slope can greatly reduce total AUM's. For example the Stony Loam 95/100 response unit has only a slight adjustment for water and a suggested initial stocking rate of 0.3 AUM's/ac. When compared to the Stony Loam 60/40 response unit which has adjustments for water (60%) and slope (40%) the recommended stocking rate is reduced to 0.08 AUM's/ac. This is a difference of approximately 9 Acres/AUM.