MUSY – Forage Environmental Assessment

APPENDIX C - CAPACITY

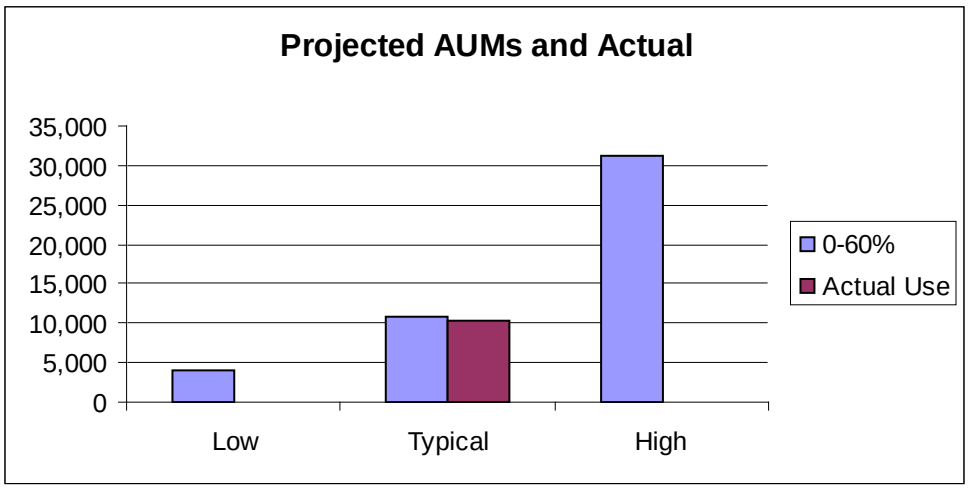
Capacity 2002-2005

Table 1 – Modeled sustainable capacities (elk and cattle combined as AUM's, forage values are total pounds) based on 2002 – 2005 production measures (T.E.A.M.S., 2007). Modeled capacities are shown for typical, dry, and wet climate conditions.

Eco-Site	San Antonio	East Fork Jemez	Confluence	Onion Creek	Sulfur Creek	Blank	Totals (pounds)	AUMs
Typical Conditions – Total annual precipitation is about 15" and occurs from winter snowpack/water content, spring snow/rain showers, and summer monsoonal rains.								
<35% 0-60% slope	584,855.952	285,713.868	442.936	41,220.266	244,037.552	7,872.360	1,164,142.934	1,293.492
<35% 0-30% slope	337,263.402	266,741.663	442.186	41,143.563	213,632.158	6,976.347	866,199.319	962.444
>35% 0-60% slope	4,421.332	36,259.236	329.665		63,336.501		104,346.734	115.941
>35% 0-30% slope	4,053.540	34,373.380	279.769		58,144.997		96,851.686	107.613
MM 0-60% slope	701,447.994	2,263,649.618			94,237.429		3,059,335.041	3,399.261
MM 0-30% slope	693,786.702	2,253,588.166			92,465.528		3,039,840.396	3,377.600
MV 0-60% slope	2,264,072.057	1,807,607.631			513,702.390		4,585,382.079	5,094.869
MV 0-30% slope	2,246,737.917	1,801,220.988			510,906.471		4,558,865.376	5,065.406
Rip 0-60% slope	295,894.024	528,270.798		1,509.331	115,334.576		941,008.728	1,045.565
Rip 0-30% slope	290,406.169	526,818.401		1,509.331	111,180.417		929,914.318	1,033.238
Total Forage	**3,850,691.359**	**4,921,501.150**	**772.601**	**42,729.597**	**1,030,648.449**	**7,872.360**	**9,854,215.516**	
AUMs 0 - 60% slope	**4,278.546**	**5,468.335**	**0.858**	**47.477**	**1,145.165**	**8.747**		**10,949.128**
Forage 0-30% slope	**3,572,247.731**	**4,882,742.598**	**721.955**	**42,652.894**	**986,329.570**	**6,976.347**	**9,491,671.095**	
AUMs 0-30% slope	**3,969.164**	**5,425.270**	**0.802**	**47.392**	**1,095.922**	**7.751**		**10,546.301**
Dry Conditions – winter snowpack/water content, spring precipitation, especially rain and/or summer monsoonal rains are below average								
<35% 0-60% slope	271,678.323	133,178.771	394.645	18,296.108	113,340.380	3,561.628	540,449.856	600.500
<35% 0-30% slope	249,262.461	124,323.552	393.987	18,262.061	99,144.156	3,157.010	494,543.227	549.492

Eco-Site	San Antonio	East Fork Jemez	Confluence	Onion Creek	Sulfur Creek	Blank	Totals (pounds)	AUMs
>35% 0-60% slope	0.000	0.000	0.000		0.000		0.000	0.000
>35% 0-30% slope	0.000	0.000	0.000		0.000		0.000	0.000
MM 0-60% slope	248,775.021	776,734.092			35,244.195		1,060,753.308	1,178.615
MM 0-30% slope	245,974.654	773,268.279			34,576.855		1,053,819.788	1,170.911
MV 0-60% slope	842,762.362	688,568.742			199,446.347		1,730,777.452	1,923.086
MV 0-30% slope	835,716.081	686,130.183			198,359.418		1,720,205.683	1,911.340
Rip 0-60% slope	89,166.374	159,192.845		615.460	39,497.656		288,472.333	320.525
Rip 0-30% slope	87,495.830	158,754.533		615.460	38,047.380		284,913.202	316.570
Total Forage	1,452,382.081	1,757,674.449	394.645	18,911.568	387,528.578	3,561.628	3,620,452.949	
AUMs 0 - 60% slope	1,613.758	1,952.972	0.438	21.013	430.587	3.957		4,022.725
Forage 0-30% slope	1,418,449.026	1,742,476.548	393.987	18,877.520	370,127.809	3,157.010	3,553,481.900	
AUMs 0-30% slope	1,576.054	1,936.085	0.438	20.975	411.253	3.508		3,948.313
Wet Conditions - winter snow pack/water content, spring moisture especially rain and summer monsoonal rains are all above average								
<35% 0-60% slope	1,538,546.049	571,066.966	998.221	100,567.516	582,320.583	24,104.764	2,817,604.099	3,130.671
<35% 0-30% slope	1,416,579.239	533,143.417	996.532	100,380.324	518,227.669	21,421.255	2,590,748.436	2,878.609
>35% 0-60% slope	5,197.496	51,403.246	558.613		95,166.199		152,325.553	169.251
>35% 0-30% slope	4,765.893	48,776.046	474.420		87,540.247		141,556.606	157.285
MM 0-60% slope	2,011,572.726	6,941,511.902			298,353.487		9,251,438.115	10,279.376
MM 0-30% slope	1,989,143.843	6,910,757.962			292,764.566		9,192,666.371	10,214.074
MV 0-60% slope	6,018,936.417	5,434,494.012			1,593,639.584		13,047,070.014	14,496.744
MV 0-30% slope	5,968,959.340	5,415,324.137			1,585,009.472		12,969,292.949	14,410.325
Rip 0-60% slope	873,040.434	1,582,389.180		5,110.403	296,536.855		2,757,076.871	3,063.419
Rip 0-30% slope	857,048.664	1,578,055.756		5,110.403	286,087.495		2,726,302.319	3,029.225
Total Forage	10,447,293.122	14,580,865.306	1,556.834	105,677.919	2,866,016.707	24,104.764	28,025,514.652	
AUMs 0 - 60% slope	11,608.103	16,200.961	1.730	117.420	3,184.463	26.783		31,139.461
Forage 0-30% slope	10,236,496.979	14,486,057.318	1,470.952	105,490.727	2,769,629.449	21,421.255	27,620,566.681	
AUMs 0-30% slope	11,373.886	16,095.619	1.634	117.212	3,077.366	23.801		30,689.519

Actual stocking rates for both elk and livestock during 2003 was 2,270 AUMs of livestock and an estimated 7,200 to 9,000 AUMs of elk. This is thought to be a typical moisture year with approximately 14 inches of precipitation during the growing season. This indicates that actual stocking (9,470 – 11,270 AUMs) was almost the same as the modeled capacity of the Preserve (10,949 AUMs). Assuming elk and cattle were congregating on slopes 0 to 30 percent (which is a safe assumption), the Preserve was very close to meeting the modeled capacity for these slopes (10,546 AUMs). Utilization data indicate that the capacity was generally not exceeded except in the riparian areas. More active herding, establishment of water/salt/mineral sources in the upland grasslands, as well as the repair, maintenance and relocation of fences, could alleviate this overgrazing and shift use to other ecological sites. Based on the monitoring data, which are supported by modeling, the Preserve is close to the maximum number of livestock with the existing number of elk. Total modeled capacity and actual use (using a median elk use) during a year with approximately 15 inches of precipitation during the growing season is show in Figure 57.



Appendix C: Figure 1 - Total modeled capacity and actual use on slopes 0-60% during a year with approximately 15 inches of precipitation during the growing season

The determination of annual capacity depends not only on available forage but also on the availability and distribution of water. A dry winter may not recharge upland earthen tanks and thus may limit the distribution of both elk and livestock. Even though spring rains may yield typical forage amounts, capacity may still be limited due to a lack of upland water. Capacity may also be adjusted to accommodate recreation or other Preserve activities or to address specific ecological issues. Annual operating plans include both capacity as a well as a plan for distribution based on available forage, water, other planned activities, and current and forecasted conditions. Managing the distribution of livestock in context with a large elk herd is not an exact science. The proposed conservative framework for determining capacity based on only the most productive land, supported by systematic monitoring and evaluation was designed to ensure that over-utilization is not repeated or persistent in time and space. The values in Table 51 would be adjusted as annual production values are averaged over time.