7.1 Appendix A – Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management

Standards for Rangeland Health

Introduction

The Standards for Rangeland Health, as applied in the State of Idaho, are to be used as the Bureau of Land Management's management goals for the betterment of the environment, protection of cultural resources, and sustained productivity of the range. They are developed with the specific intent of providing for the multiple use of the public lands. Application of the standards should involve collaboration between the authorized officer, interested publics, and resource users.

Rangelands should be meeting the Standards for Rangeland Health or making significant progress toward meeting the standards. Meeting the standards provides for proper nutrient cycling, hydrologic cycling, and energy flow.

Monitoring of all uses is necessary to determine if the standards are being met. It is the primary tool for determining rangeland health, condition, and trend. It will be performed on representative sites.

Appropriate to soil type, climate, and landform, indicators are a list of typical physical and biological factors and processes that can be measured and/or observed (e.g., photographic monitoring). They are used in combination to provide information necessary to determine the health and condition of the rangelands. Usually, no single indicator provides sufficient information to determine rangeland health. Only those indicators appropriate to a particular site are to be used. The indicators listed below each standard are not intended to be all inclusive. The issue of scale must be kept in mind in evaluating the indicators listed after each standard. It is recognized that individual isolated sites within a landscape may not be meeting the standards; however, broader areas must be in proper functioning condition. Furthermore, fragmentation of habitat that reduces the effective size of large areas must also be evaluated for its consequences.

Standard 1 (Watersheds)

Watersheds provide for the proper infiltration, retention, and release of water appropriate to soil type, vegetation, climate, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Indicators may include, but are not limited to, the following:

1. The amount and distribution of ground cover, including litter, for identified ecological site/s) or soil-plant associations are appropriate for site stability.
2. Evidence of accelerated erosion in the form of rills and/or gullies, erosional pedestals, flow patterns, physical soil crusts/surface sealing, and compaction layers below the soil surface is minimal for soil type and landform.

Standard 2 (Riparian Areas and Wetlands)

Riparian-wetland areas are in properly functioning condition appropriate to soil type, climate, geology, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Indicators may include, but are not limited to, the following:

1. The riparian/wetland vegetation is controlling erosion, stabilizing streambanks, shading water areas to reduce water temperature, stabilizing shorelines, filtering sediment, aiding in floodplain development, dissipating energy, delaying flood water, and increasing recharge of groundwater appropriate to site potential.
2. Riparian/wetland vegetation with deep strong binding roots is sufficient to stabilize streambanks and shorelines. Invader and shallow rooted species are a minor component of the floodplain.
3. Age class and structural diversity of riparian/wetland vegetation is appropriate for the site.
4. Noxious weeds are not increasing.

Standard 3 (Stream Channel/Floodplain)

Stream channels and floodplains are properly functioning relative to the geomorphology (e.g., gradient, size, shape, roughness, confinement, and sinuosity) and climate to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Indicators may include, but are not limited to, the following:

1. Stream channels and floodplains dissipate energy of high water flows and transport sediment. Soils support appropriate riparian-wetland species, allowing water movement, sediment filtration, and water storage. Stream channels are not entrenching.
2. Stream width/depth ratio, gradient, sinuosity, and pool, riffle and run frequency are appropriate for the valley bottom type, geology, hydrology, and soils.
3. Streams have access to their floodplains and sediment deposition is evident.
4. There is little evidence of excessive soil compaction on the floodplain due to human activities.
5. Streambanks are within an appropriate range of stability according to site potential.
6. Noxious weeds are not increasing.

Standard 4 (Native Plant Communities)

Healthy, productive, and diverse native animal habitat and populations of native plants are maintained or promoted as appropriate to soil type, climate, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Indicators may include, but are not limited to, the following:

1. Native plant communities (flora and microbiotic crusts) are maintained or improved to ensure the proper functioning of ecological processes and continued productivity and diversity of native plant species.
2. The diversity of native species is maintained.
3. Plant vigor (total plant production, seed and seedstalk production, cover, etc.) is adequate to enable reproduction and recruitment of plants when favorable climatic events occur.
4. Noxious weeds are not increasing.
5. Adequate litter and standing dead plant material are present for site protection and for decomposition to replenish soil nutrients relative to site potential.

Standard 5 (Seedings)

Rangelands seeded with mixtures, including predominately non-native plants, are functioning to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and the hydrologic cycle.

Indicators may include, but are not limited to, the following:

1. In established seedings, the diversity of perennial species is not diminishing over time.
2. Plant production, seed production, and cover are adequate to enable recruitment when favorable climatic events occur.
3. Noxious weeds are not increasing.
4. Adequate litter and standing dead plant material are present for site protection and for decomposition to replenish soil nutrients relative to site potential.

Standard 6 (Exotic Plant Communities, other than Seedings)

Exotic plant communities, other than seedings, will meet minimum requirements of soil stability and maintenance of existing native and seeded plants. These communities will be rehabilitated to perennial communities when feasible cost effective methods are developed.

Indicators may include, but are not limited to, the following:

1. Noxious weeds are not increasing.
2. The number of perennial species is not diminishing over time.
3. Plant vigor (production, seed and seedstalk production, cover, etc.) of remnant native or seeded (introduced) plants is maintained to enable reproduction and recruitment when favorable climatic or other environmental events occur.
4. Adequate litter and standing dead plant material is present for site protection and for decomposition to replenish soil nutrients relative to site potential.

Standard 7 (Water Quality)

Surface and ground water on public lands comply with the Idaho Water Quality Standards.

Indicators may include, but are not limited to, the following:

1. Physical, chemical, and biologic parameters described in the Idaho Water Quality Standards.

Standard 8 (Threatened and Endangered Plants and Animals)

Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

Indicators may include, but are not limited to the following:

2. Parameters described in the Idaho Water Quality Standards.
3. Riparian/wetland vegetation with deep, strong, binding roots is sufficient to stabilize streambanks and shorelines. Invader and shallow rooted species are a minor component of the floodplain.
4. Age class and structural diversity of riparian/wetland vegetation are appropriate for the site.

5. Native plant communities (flora and microbiotic crusts) are maintained or improved to ensure the proper functioning of ecological processes and continued productivity and diversity of native plant species.
6. The diversity of native species is maintained.
7. The amount and distribution of ground cover, including litter, for identified ecological site(s) or soil-plant associations are appropriate for site stability.
8. Noxious weeds are not increasing.

Guidelines for Livestock Grazing Management

Introduction

Guidelines direct the selection of grazing management practices, and where appropriate, livestock management facilities to promote significant progress toward, or the attainment and maintenance of, the standards. Grazing management practices are livestock management techniques. They include the manipulation of season, duration (time), and intensity of use, as well as numbers, distribution, and kind of livestock. Livestock management facilities are structures such as fences, corrals, and water developments (ponds, springs, pipelines, troughs, etc.) used to facilitate the application of grazing management practices. Livestock grazing management practices and guidelines will be consistent with the Idaho Agricultural Pollution Abatement plan.

Grazing management practices and facilities are implemented locally, usually on an allotment or watershed basis. Grazing management programs are based on a combination of appropriate grazing management practices and facilities developed through consultation, coordination, and cooperation with the Bureau of Land Management, permittees, other agencies, Indian tribes, and interested publics.

These guidelines were prepared under the assumption that regulations and policies regarding grazing on the public lands will be implemented and will be adhered to by the grazing permittees and agency personnel. Anything not covered in these guidelines will be addressed by existing laws, regulations, Indian treaties, and policies.

The BLM will identify and document within the local watershed all impacts that affect the ability to meet the standards. If a standard is not being met due to livestock grazing, then allotment management will be adjusted unless it can be demonstrated that significant progress toward the standard is being achieved. This applies to all subsequent guidelines.

Guidelines

1. Use grazing management practices and/or facilities to maintain or promote significant progress toward adequate amounts of ground cover [determined on an ecological site basis) to support infiltration, maintain soil moisture storage, and stabilize soils.
2. Locate livestock management facilities away from riparian areas wherever they conflict with achieving or maintaining riparian-wetland functions.
3. Use grazing management practices and/or facilities to maintain or promote soil conditions that support water infiltration, plant vigor, and permeability rates and minimize soil compaction appropriate to site potential.
4. Implement grazing management practices that provide periodic rest or deferment during critical growth stages to allow sufficient regrowth to achieve and maintain healthy,

properly functioning conditions, including good plant vigor and adequate vegetative cover appropriate to site potential.

5. Maintain or promote grazing management practices that provide sufficient residual vegetation to improve, restore, or maintain healthy riparian-wetland functions and structure for energy dissipation, sediment capture, ground water recharge, streambank stability, and wildlife habitat appropriate to site potential.
6. The development of springs, seeps, or other projects affecting water and associated resources shall be designed to protect the ecological functions, wildlife habitat, and significant cultural and historical/ archaeological/paleontological values associated with the water source.
7. Apply grazing management practices to maintain, promote, or progress toward appropriate stream channel and streambank morphology and functions. Adverse impacts due to livestock grazing will be addressed.
8. Apply grazing management practices that maintain or promote the interaction of the hydrologic cycle, nutrient cycle, and energy flow that will support the appropriate types and amounts of soil organisms, plants, and animals appropriate to soil type, climate, and landform.
9. Apply grazing management practices to maintain adequate plant vigor for seed production, seed dispersal, and seedling survival of desired species relative to soil type, climate, and landform.
10. Implement grazing management practices and/or facilities that provide for complying with the Idaho Water Quality Standards.
11. Use grazing management practices developed in recovery plans, conservation agreements, and Endangered Species Act, Section 7 consultations to maintain or improve habitat for federally listed threatened, endangered, and sensitive plants and animals.
12. Apply grazing management practices and/or facilities that maintain or promote the physical and biological conditions necessary to sustain native plant populations and wildlife habitats in native plant communities.
13. On areas seeded predominantly with non-native plants, use grazing management practices to maintain or promote the physical and biological conditions to achieve healthy rangelands.
14. Where native communities exist, the conversion to exotic communities after disturbance will be minimized. Native species are emphasized for rehabilitating disturbed rangelands. Evaluate whether native plants are adapted, available, and able to compete with weeds or seeded exotics.
15. Use non-native plant species for rehabilitation only in those situations where:
    a. native species are not readily available in sufficient quantities;
    b. native plant species cannot maintain or achieve the standards; or
    c. non-native plant species provide for management and protection of native rangelands.

Include a diversity of appropriate grasses, forbs, and shrubs in rehabilitation efforts.[1]

16. On burned areas, allow natural regeneration when it is determined that populations of native perennial shrubs, grasses, and forbs are sufficient to revegetate the site. Rest burned or rehabilitated areas to allow recovery or establishment of perennial plant species.

[1] An apparent editing mistake with numbering the 1997 Idaho guidelines was carried forward in this appendix to avoid misidentifying specific guidelines.

17. Carefully consider the effects of new management facilities (e.g., water developments, fences) on healthy and properly functioning rangelands prior to implementation.
18. Use grazing management practices, where feasible, for wildfire control and to reduce the spread of targeted undesirable plants (e.g., cheatgrass, medusa head, wildrye, and noxious weeds) while enhancing vigor and abundance of desirable native or seeded species.
19. Employ grazing management practices that promote natural forest regeneration and protect reforestation projects until the Idaho Forest Practices Act requirements for timber stand replacement are met.
20. Design management fences to minimize adverse impacts, such as habitat fragmentation, to maintain habitat integrity and connectivity for native plants and animals.

7.2 Appendix B – Recent actual use report and utilization summaries for the Owyhee River Group allotments

Table B-1: Castlehead-Lambert allotment actual use 1986 through 2011

Year	Castlehead Pasture[e]			Carter Pasture			Red Basin Pasture			Lambert Pasture			Horse Pasture			Allotment AUMs
	From	To	AUMs	From	To	AUMs	From	To	AUMs	From	To	AUMs	From	To	AUMs	
1986	8/14	9/20	447	7/17	8/14	489	6/15	8/15	574	4/15	7/15	1343	4/15	7/15	30	2,853
1987[a]			1081			553			547		REST					2,181
1988	7/10	10/15	1285		REST		6/7	7/11	646	4/16	6/8	934	4/13	4/21	22	2,865
1989	7/8	9/30	1117	5/21	8/13	1038		REST		4/20	6/10	863				3,018
1990[b]	7/23	10/2	1228	4/15	5/24	632	5/22	7/25	1072		REST					2,932
1991[c]	7/8	9/30	514	5/21	7/8	1013		REST		4/15	5/30	845				2,372
1992	6/8	8/31	1163		REST		5/1	6/13	679	4/8	5/5	431				2,273
1993	7/2	10/15	1112	6/10	7/25	516		REST		4/15	6/25	1170				2,798
1994	7/25	10/4	1047	6/13	7/27	773	4/15	6/15	1108	REST						2,955
1995	8/1	10/3	991		REST		6/15	8/4	869	4/15	6/19	1158				3,018
1996	7/31	10/8	1044	6/12	8/3	897		REST		4/15	6/14	1095				3,036
1997	7/31	10/5	1083	4/15	6/5	888	6/2	8/3	1081		REST		4/20			3,052
1998[d]	8/2	10/10	946	6/11	8/6	870		REST		4/15	6/13	999				2,815
1999	8/2	11/1	1064		REST		6/11	8/3	963	4/15	6/12	1135	4/20	10/10	57	3,162
2000	8/1	10/5	984	6/5	8/3	1036	4/15	6/6	919	REST						2,939
2001	8/14	9/22	568	6/12	8/1	902	4/2 7/31	4/17; 8/15	514	4/15	6/13	1034				3,018
2002-04	No data															
2005[e]	8/23	9/15	376		REST		7/13	8/23	755	4/15	5/31	855				1,986
2006	8/27	10/4	335	4/16	5/27	685	7/7	8/27	901	5/25	7/7	772				

Year	Castlehead Pasture[e]			Carter Pasture			Red Basin Pasture			Lambert Pasture			Horse Pasture			Allotment AUMs
	From	To	AUMs	From	To	AUMs	From	To	AUMs	From	To	AUMs	From	To	AUMs	
2007[f]	Crutcher Fire			Crutcher Fire			6/6	10/12	1270	4/17	6/6	914				
2008	REST Crutcher Fire			REST Crutcher Fire			REST Crutcher Fire			4/18	7/25	863				863
2009	7/1	9/30	1391		REST			REST		4/19	6/15	849	4/15	9/20	52	2,292
2010	8/18	9/30	736	4/17	5/21	604	6/27	8/18	956	5/21	6/27	669	4/8	9/22	55	3,020
2011	8/17	9/30	637	4/15	5/22	687	7/13	8/22	644	5/22	7/23	1050				3,018

[a] No actual use reported (AUMs are estimated)
[b] No use by M. Stanford (actual use filed)
[c] No report from D. Stanford (AUMs in pastures 2 and 4 are estimated)
[d] No actual use report from M. Stanford
[e] Castlehead pasture divided in 2005 to create pastures 1 (Castlehead) and 6 (Between-the-Canyons); pastures often used in combination; actual use summarized to include both pastures.
[f] Crutcher Fire ignited 7/7/2007 resulted in cattle scattered in all pastures; all use after 7/7 recorded in Red Basin Pasture.

Table B-2: Garat allotment actual use 1986 through 2011 (calculated at 94 percent PD on spreadsheet from 2006 forward)

Year	Dry Lake Piute Creek			Forty-Five			Kimball			Big Horse			Juniper Basin			Allotment AUMs
	From	To	AUMs	From	To	AUMs	From	To	AUMs	From	To	AUMs	From	To	AUMs	
1986	3/22	7/22	2,299	3/22	7/24	1,159	4/7	7/20	3,395	7/26	9/20	697	7/27	9/22	1640	9,190
1987	4/1-10/15*															10,904
1988	4/1	6/20	3,535	RESTED			3/15	8/1	7,401	7/1	8/5	751	8/1	9/25	2,607	14,294
1989	3/15	6/28	3,670	3/20	7/19	5,343	RESTED			7/11	9/25	1,928	6/21	9/27	4,493	15,434
1990	RESTED			3/20	7/26	3,548	3/15	7/19	6,102	7/17	9/28	2,139	7/9	9/27	5,519	17,308
1991	3/19	5/31	1,127	RESTED			3/15	8/2	6,945	7/26	9/20	646	7/11	9/20	3,824	12,542
1992	3/15	6/20	3,309	3/18	6/20	2,327	6/15	8/18	1,442	RESTED			4/16	8/6	6,090	13,168
1993	RESTED			4/4	7/19	4,062	7/8	9/26	2,743	3/31	7/9	3,645	7/10	10/10	3,292	13,742
1994	3/17	7/14	4,438	RESTED			3/22	7/15	5,368	RESTED			6/26	9/28	4,720	14,526
1995	3/25	6/24	996	3/19	6/28	3,144	RESTED			3/15	6/25	3,730	6/21	9/28	6,568	14,438
1996	RESTED			3/19	6/23	4,101	6/17	9/8	2,368	3/15	6/12	3,063	6/10	10/12	5,519	15,051

Year	Dry Lake Piute Creek			Forty-Five			Kimball			Big Horse			Juniper Basin			Allotment AUMs
	From	To	AUMs	From	To	AUMs	From	To	AUMs	From	To	AUMs	From	To	AUMs	
1997	3/20	6/24	3,802	6/21	6/27	169**	3/16	6/16	3,958	6/25	9/10	2,310	6/11	10/14	5,507	15,746
1998	3/17	6/27	4,514	3/20	6/28	3,018	6/15	8/25	3,018	RESTED			8/20	10/15	5,650	16,200
1999	RESTED			3/17	6/14	4,948	6/24	9/18	4,017	3/15	6/23	4,615	6/21	10/15	5,296	18,876
2000	3/19	7/10	4,896	RESTED			3/16	6/22	4,393	RESTED			6/15	10/15	7,863	17,152
2001	RESTED			3/18	7/15	5,059	6/30	9/18	3,500	3/15	6/23	4,610	6/19	10/15	5,485	18,654
2002	3/17	7/14	4,423	3/20	7/13	4,657	6/18	9/28	4,249	RESTED			6/21	10/15	4,901	18,230
2003	3/17	7/10	1,623	RESTED			3/20	6/21	2,512	3/16	5/15	966	4/10	9/15	5,618	10,719
2004	4/16	7/1	9,06	3/31	7/15	3,390	RESTED			3/27	7/5	3,030	7/25	9/18	3873	11,199
2005	3/15	7/9	3,140	3/15	7/11	1,739	3/18	7/15	4,528	RESTED			7/18	10/15	6,081	15,488
2006	3/27	7/8	2,251		RESTED		3/18	7/15	5,264	3/15	6/27	2,817	6/25	10/15	8,538	18,870
2007	3/15	7/9	4,612	3/19	6/1	2,454	4/17	8/30	3,533	RESTED			6/18	10/10	3,781	14,380
2008		RESTED		3/27	7/14	3,341	5/12	8/23	3,657	3/22	5/15	1,980	6/19	10/15	4,342	13,320
2009	3/16	7/9	4,254	3/20	7/6	4,501	6/16	10/11	2,724	RESTED			6/27	10/13	3,487	14,966
2010	3/21	7/7	4,391		RESTED		3/24	7/14	4,640	RESTED			6/22	9/20	4,975	13,106
2011		RESTED		3/21	7/15	4,908	5/18	9/12	3,694	3/17	7/1	4,183	6/17	9/30	4,565	17,350

*Actual use reported on an allotment basis in 1987.
** Considered a rest year in rest/rotation schematic.

Table B-3: Swisher Springs and Swisher FFR allotments actual use 1988 through 2010

Year	Pasture 1			Pasture 2			Pasture 3			Swisher Springs Allotment	Swisher FFR (public and private land)		
	From	To	AUMs	From	To	AUMs	From	To	AUMs	Total AUMs	From	To	AUMs
1988	4/16	6/24	151	8/2	8/31	65				216	6/25	8/1	82
1989				7/28	10/9	149	4/16	6/26	156	305	6/26	7/28	69
1990	4/16	7/1	176	8/1	8/31	71				247	7/2	7/31	69
1991				7/16	8/31	105	4/16	7/1	176	281	7/2 8/31	7/15 9/16	112
1992	4/16	6/20	145	7/31	10/4	139				284	6/21	7/30	84
1993				7/17	10/7	167	4/16	6/21	145	312	6/22	7/16	54

Year	Pasture 1			Pasture 2			Pasture 3			Swisher Springs Allotment			Swisher FFR (public and private land)		
	From	To	AUMs	From	To	AUMs	From	To	AUMs	Total AUMs			From	To	AUMs
1994	4/16	6/27	153	7/29	10/5	143				296			6/28	7/28	64
1995				4/20 7/15	5/6 9/30	190	5/7	6/26	104	294			6/27	7/14	37
1996	4/15	6/25	138	7/17	9/30	136				274			6/26	7/16	40
1997				7/26	10/15	137	4/16	7/10	159	296			4/1 7/11 11/4	4/15 7/25 11/4	127
1998	4/15	7/15	176	8/2	10/5	111				287			7/16	8/1	33
1999				7/15	10/5	146	4/16	7/1	143	289			7/2	7/14	24
2000															
2001															
2002	4/15	7/1	147	7/15	9/30	145				292			7/2	7/14	25
2003															
2004															
2005	4/15	7/1	127	7/2	9/30	149				276			10/1	10/31	61
	Actual use for Swisher Spring Allotment was reported for the allotment and not separated by pasture between 2006 and 2010.									From	To	AUMs			
2006										4/20	10/31	319	4/15	5/6	11
2007										4/20	10/15	285	4/10	No data	No data
2008										5/1	9/12	167	11/1	11/20	22
2009										4/15	10/31	309			
2010										4/15	10/31	309			

Table B-4: The Castlehead-Lambert allotment percent (%) key species utilization by pasture, 1990-2003

Year	Pasture 1 Castlehead		Pasture 2 Carter Springs		Pasture 3 Red Basin		Pasture 4 Lambert Table		Pasture 5 Horse		Pasture 1 Castlehead		Pasture 6 Between-the-Canyons	
	FEID	PSSP	FEID	PSSP	FEID	PSSP	FEID	PSSP	FEID	PSSP	FEID	PSSP	FEID	PSSP
1990					24	48					Pasture 1 (Castlehead) was divided in 2005 to create pasture 1 (Castlehead) and pasture 2 (Between-the-Canyons)			
1991														
1992	60	52			45	43	30							
1993	48		40				35							
1994	58	36	30	40	35	36								
1995	25				37	39	16							
1996			66				32							
1997	32	19	37		63	56								
1998														
1999														
2000														
2001														
2002														
2003														
2004														
2005	pasture split in 2005 pasture 1 (Castlehead) pasture 6 (Between-the-Canyons)													
2006														
2007														
2008														
2009			5											
2010			5		35	13	10	6						
2011					9		3		41	25	15	10	22	22

Table B-5: The Garat allotment percent (%) bluebunch wheatgrass utilization by pasture, 1979-2011

Year	Pastures 1&2 Dry Lake & Piute Creek	Pasture 3 Forty-Five	Pasture 4 Kimball	Pasture 5 Big Horse	Pasture 6 Juniper Basin
1979	--	--	39	--	--
1981	36	36	--	5	36
1988	--	--	29	--	--
1989	52	52	--	45	52
1990	19	19	12	27	19
1991	49	49	19	--	49
1992	34	34	7	4	34
1993	--	--	39	44	--
1994	24	24	51	--	24
1995	35	35	--	42	35
1997	--	--	3	56	--
2002	--	--	25	--	--
2003	28	28	--	19	--
2004	--	--	--	61	--
2007	34	34	--	19	34
2008	20	20	34	--	20
2009	22	22	15	--	22
2010	16	16	15	11	16
2011	--	--	31	--	--
Average	26	22	25	30	31

--No Data or Rested

Table B-2: The Swisher Springs and FFR allotment percent (%) key species utilization

Year	Pasture 1		Pasture 2		Pasture 3		Swisher FFR	
	FEID	PSSP	FEID	PSSP	FEID	PSSP	FEID	PSSP
1983			27	32		16		
1984	10	10			0	0		
1985								
1986	16		33					
1987			56	39				
1988	43		52	38				
1989					54			
1990								
1991								
1992	40			40				
1993			65	43	51	59		
1994	39		55	30				
1995			15					
1996								
1997					37			
1998					51			
1999 - 2009	No utilization reports on record between 1999 and 2009							
2010			11				8	
2011	3		22	11		29	27	17

7.3 Appendix C – Performance-based Alternative Lotic/ Lentic Riparian Area Monitoring Protocol

Lentic (spring/seep/wetland) Area Performance Standard Criteria Protocol May 8, 2012
EA No. DOI-BLM-ID-B030-2012-0012

Since there is not a specific or inclusive methodology available for the collection of the lentic metrics, the MMIM protocol would be modified for use. Measurements would be collected for herbaceous stubble height, woody browse, and alteration caused by livestock along the margins of the riparian-wetland area. Both the stubble height and the woody browse measurements would follow the MMIM protocol assuming the tape strung through the center of the long axis of the spring area is the greenline. The edge shear alteration measurement would occur along the margin of the spring area. The protocol is described below.

1. Collect all data digitally using the MMIM Excel spreadsheet (Data_Entry_Module Livestock Use 2011)- Toughbook, PDA or GPS unit:
   Access online: http://rmsmim.com/Downloads/tabid/62/Default.aspx
2. Select representative (both spatially balanced and proportional to the amount of the resource within the pasture/ allotment) key riparian spring area(s) to monitor through coordination with the permittee (s)

   Establish spring area
   String tape along the long axis of the spring - modify and assume the tape is the greenline
3. Use MMIM woody browse protocol to measure browse- assume tape is the greenline: Interagency Technical Reference 1737-23, *Multiple Indicator Monitoring of Stream Channels and Streamside Vegetation*

4. Use MMIM to measure stubble height along the tape

5. Use MIM frame along edge to measure current years alteration- see MIM protocol for measuring stream bank alteration

7.4 Appendix D – Comparison of Alternatives

Table D-1: Castlehead-Lambert allotment (#634) alternative comparison of allotment data

	Alternative 1 *No Action*	**Alternative 2** *Applicant's Proposed Action*	**Alternative 3** *Performance-Based*	**Alternative 4** *Season-Based*	**Alternative 5** *No Grazing*
Cattle Number	304 Cattle-06 Livestock (10 horses 4/8 to 9/30 –58AUMs) 215 Cattle-Teo and Sarah Maestrejuan	448 Cattle-06 Livestock (10 horses 4/8 to 9/30 –58AUMs) 312 Cattle-Teo ands Sarah Maestrejuan	334 Cattle-06 Livestock (10 horses 4/8 to 9/30 –58AUMs) 238 Cattle-Teo and Sarah Maestrejuan	214 Cattle-06 Livestock (10 horses 4/8 to 9/30 – 58AUMs) 154 Cattle-Teo and Sarah Maestrejuan	No cattle
Active AUMs	2,945	4,278	3,244	2,101	0
Suspension AUMs	2,080	1,046	2,080	2,080	0
Permitted AUMs	5,025	5,324	5,324	4,181	0
% Change compared to recent average actual use- 2,817 AUMs (2002-2011)	+5%	+52%	+15%	-25%	-100%
% Change Compared to Current Authorized Active use AUMs (permit)	-9%	+32%	No Change	-35%	-100%
% Change Compared to No Action alternative Active use AUMs	No change	+45%	+10%	-26%	-100%

Table D-2: Castlehead-Lambert allotment (#634) alternative comparison of pasture data

	Pasture	**Alternative 1** *No Action*		**Alternative 2** *Applicant's Proposed Action*		**Alternative 3** *Performance-Based*		**Alternative 4** *Season-Based*		**Alternative 5** *No Grazing*
Seasons of Use by Pasture	1 Castlehead	All Years	7/8 to 9/30	Year 1	8/15 to 8/30	All Years	7/8 to 9/30	Year 1	6/1 to 6/30	
				Year 2	9/15 to 9/30			Year 2	9/16 to 9/30	
	2 Carter Springs	Year 1	5/21 to 7/7	Year 1	5/25 to 6/26	Year 1	5/21 to 7/7	Year 1	4/15 to 5/31	
		Year 2	Rest			Year 2	Rest			
		Year 3	5/21 to 7/7			Year3	5/21 to 7/7			
		Year 4	4/16 to 5/20	Year 2	7/5 to 8/6	Year 4	4/16 to 5/20	Year 2	4/15 to 4/30	
		Year 5	5/21 to 7/7			Year 5	5/21 to 7/7			

	Pasture	Alternative 1 *No Action*		Alternative 2 *Applicant's Proposed Action*		Alternative 3 *Performance-Based*		Alternative 4 *Season-Based*		Alternative 5 *No Grazing*
		Year 6	Rest			Year 6	Rest			
	3 Red Basin	Year 1	4/16 to 5/20	Year 1	6/27 to 8/6	Year 1	4/16 to 5/20	Year 1	7/1 to 9/15 (with additional flexibility)	
		Year 2	5/21 to 7/7			Year 2	5/21 to 7/7			
		Year 3	Rest			Year3	Rest			
		Year 4	5/21 to 7/7	Year 2	5/25 to 7/4	Year 4	5/21 to 7/7	Year 2	7/1 to 9/15 (with additional flexibility)	
		Year 5	Rest			Year 5	Rest			
		Year 6	5/21 to 7/7			Year 6	5/21 to 7/7			
	4 Lambert Table	Year 1	Rest	All Years	4/15 to 5/24	Year 1	Rest	Year 1	7/1 to 7/31 (with additional flexibility)	
		Year 2	4/16 to 5/20			Year 2	4/16 to 5/20			
		Year 3	4/16 to 5/20			Year3	4/16 to 5/20			
		Year 4	Rest			Year 4	Rest	Year 2	7/1 to 7/31 (with additional flexibility)	
		Year 5	4/16 to 5/20			Year 5	4/16 to 5/20			
		Year 6	4/16 to 5/20			Year 6	4/16 to 5/20			
	5 Horse	All Years	Flexible: use with horses or with pasture 3	All years	8/7 to 8/14	All Years	Flexible: use with horses or with pasture 3	Year 1	Transition- Castlehead to Lambert Table 7/1	
								Year 2	Transition- BTC to Lambert Table 7/1	
	6 Between-the-Canyons	All Years	7/8 to 9/30	Year 1	8/31 to 9/30	All Years	7/8 to 9/30	Year 1	9/16 to 9/30	
				Year 2	8/15 to 9/14			Year 2	5/1 to 6/30	
Number of Days by Pasture	1 Castlehead	All Years	85	Year 1	16	All Years	85	Year 1	30	
				Year 2	16			Year 2	15	
	2 Carter Springs	Year 1	48	Year 1	33	Year 1	48	Year 1	47	
		Year 2	Rest			Year 2	Rest			
		Year 3	48			Year 3	48			
		Year 4	35	Year 2	33	Year 4	35	Year 2	16	

	Pasture	Alternative 1 *No Action*		Alternative 2 *Applicant's Proposed Action*		Alternative 3 *Performance-Based*		Alternative 4 *Season-Based*		Alternative 5 *No Grazing*
		Year 5	48			Year 5	48			
		Year 6	Rest			Year 6	Rest			
	3 Red Basin	Year 1	35	Year 1	41	Year 1	35	Year 1	77	
		Year 2	48			Year 2	48			
		Year 3	Rest			Year 3	Rest			
		Year 4	48	Year 2	41	Year 4	48	Year 2	77	
		Year 5	Rest			Year 5	Rest			
		Year 6	48			Year 6	48			
	4 Lambert Table	Year 1	Rest	All Years	40	Year 1	Rest	Year 1	Flexibility to not use; days of use accounted for in other pasture	
		Year 2	35			Year 2	35			
		Year 3	35			Year 3	35			
		Year 4	35			Year 4	35	Year 2	Flexibility to not use; days of use accounted for in Red Basin pasture	
		Year 5	Rest			Year 5	Rest			
		Year 6	35			Year 6	35			
	5 Horse	All Years	NA	All Years	8	All Years	NA	Year 1	NA	
								Year 2	NA	
	6 Between- the- Canyons	All Years	85	Year 1	31	All Years	85	Year 1	15	
				Year 2	31			Year 2	60	
AUMs by Pasture	1 Castlehead	All Years	1,450 (with pasture 6)	Year 1	400	All Years	1,598 (with pasture 6)	Year 1	363	
				Year 2	400			Year 2	181	
	2 Carter Springs	Year 1	819	Year 1	831	Year 1	903	Year 1	569	
		Year 2	Rest			Year 2	Rest			
		Year 3	819			Year 3	903			
		Year 4	597	Year 2	831	Year 4	658	Year 2	194	
		Year 5	819			Year 5	903			
		Year 6	Rest			Year 6	Rest			

	Pasture	Alternative 1 *No Action*		Alternative 2 *Applicant's Proposed Action*		Alternative 3 *Performance-Based*		Alternative 4 *Season-Based*		Alternative 5 *No Grazing*
	3 Red Basin	Year 1	597	Year 1	1,024	Year 1	658	Year 1	932	
		Year 2	819			Year 2	903			
		Year 3	Rest			Year 3	Rest			
		Year 4	819	Year 2	1,024	Year 4	903	Year 2	932	
		Year 5	Rest			Year 5	Rest			
		Year 6	819			Year 6	903			
	4 Lambert Table	Year 1	Rest	All Years	1,000	Year 1	Rest	Year 1	Flexibility to not use; AUMs accounted for in Red Basin	
		Year 2	597			Year 2	658			
		Year 3	597			Year 3	658			
		Year 4	597			Year 4	658	Year 2	Flexibility to not use; AUMs accounted for in Red Basin	
		Year 5	Rest			Year 5	Rest			
		Year 6	597			Year 6	658			
	5 Horse	All Years	NA	All Years	200	All Years	NA	Year 1	NA	
								Year 2	NA	
	6 Between-the-Canyons	All years	1,450 (with pasture 1)	Year 1	775	All Years	1,598 (with pasture 1)	Year 1	181	
				Year 2	775			Year 2	726	
Acres per AUM by Pasture	1 Castlehead	All Years	8.2 (with pasture 6)	Year 1	11.7	All Years	7.5 (with pasture 6)	Year 1	12.8	
				Year 2	11.7			Year 2	25.7	
	2 Carter Springs	Year 1	11.2	Year 1	11.1	Year 1	10.2	Year 1	16.2	
		Year 2	Rest			Year 2	Rest			
		Year 3	11.2			Year 3	10.2			
		Year 4	15.4	Year 2	11.1	Year 4	14.0	Year 2	47.4	
		Year 5	11.2			Year 5	10.2			
		Year 6	Rest			Year 6	Rest			
	3 Red Basin	Year 1	19.0	Year 1	11.1	Year 1	17.2	Year 1	12.2	
		Year 2	13.8			Year 2	12.5			

	Pasture	Alternative 1 *No Action*		Alternative 2 *Applicant's Proposed Action*		Alternative 3 *Performance-Based*		Alternative 4 *Season-Based*		Alternative 5 *No Grazing*
		Year 3	Rest			Year 3	Rest			
		Year 4	13.8	Year 2	11.1	Year 4	12.5	Year 2	12.2	
		Year 5	Rest			Year 5	Rest			
		Year 6	13.8			Year 6	12.5			
	4 Lambert Table	Year 1	Rest	All Years	11.5	Year 1	Rest	Year 1	Flexibility to not use; AUMs accounted for in Red Basin	
		Year 2	19.3			Year 2	17.5			
		Year 3	19.3			Year 3	17.5			
		Year 4	19.3			Year 4	17.5	Year 2	Flexibility to not use; AUMs accounted for in Red Basin	
		Year 5	Rest			Year 5	Rest			
		Year 6	19.3			Year 6	17.5			
	5 Horse	All Years	NA	All Years	9.3	All Years	NA	Year 1	NA	
								Year 2	NA	
	6 Between- the- Canyons	All Years	8.2 (with pasture 6)	Year 1	9.4	All Years	7.5 (with pasture 6)	Year 1	40.1	
				Year 2	9.4			Year 2	10.0	

Table D-3: Garat allotment (#584) alternative comparison of allotment data

	Alternative 1 ***No Action***	**Alternative 2** ***Applicant's Proposed Action***	**Alternative 3** ***Performance-Based***	**Alternative 4** ***Season-Based***	**Alternative 5** ***No Grazing***
Cattle Number (based on 96 percent public)	2,955 (2,837 on Public Domain) Flexibility for 250 head 10/1-10/15 (118AUMs) 15 horses 3/15 to 9/30 (99AUMs)	3,522 (3,381 on Public Domain) Flexibility for 250 Cattle 10/1-10/15 (118AUMs); 25 horses 3/14 to 10/14 (177AUMs) (Increasing to 5,408 in 20 yrs if objectives met)	3,054 (2,932 on Public Domain) Flexibility for 250 head 10/1-10/15 (118AUMs) 15 horses 3/15 to 9/30 (99AUMs)	1,604 (1,540 on Public Domain) Flexibility for 250 head 10/1-10/15 (118AUMs) 15 horses 3/15 to 9/30 (99AUMs)	0
Active AUMs	18,870	22,750 (33,646 in 20 yrs if objectives met)	19,500	10,343	0
Voluntary Nonuse AUMs	NA	NA	NA	NA	NA
Suspension AUMs	10,896	10,896 (0 in 20 yrs if objectives met)	10,896	10,896	0
Permitted AUMs	29,766	33,646	30,296	21,239	0
% Change compared to recent average actual use-14,802 AUMs (2002-2011)	+27%	+53 (+127% in 20 yrs if objectives met)	+32 %	-30 %	-100%
% Change Compared to Current Authorized Active use AUMs (permit)	-3%	+17% (+73% in 20 yrs if objectives met)	No Change	-47%	-100%
% Change Compared to No Action alternative Active use AUMs	No change	+21% (+78% in 20 yrs if objectives met)	+3%	-45%	-100%

Table D-4: Garat allotment (#584) alternative comparison of pasture data

	Pasture	**Alternative 1**		**Alternative 2**		**Alternative 3**		**Alternative 4**		**Alternative 5**
		No Action		***Applicant's Proposed Action***		***Performance-Based***		***Season-Based***		***No Grazing***
Seasons of Use by Pasture	1 Dry Lake	Year 1	3/15 to 6/15	All Years	3/13 to 7/30 (rested at least one in each three years)	Year 1	3/15 to 6/15	Year 1	3/15 to 4/15	
		Year 2	Rest			Year 2	Rest	Year 2	3/15 to 4/15	
		Year 3	3/15 to 6/15			Year 3	3/15 to 6/15	Year 3	3/15 to 4/15	
	2 Piute Creek	Year 1	3/15 to 6/15	All Years	3/13 to 7/30 (rested at least one in each three years)	Year 1	3/15 to 6/15	Year 1	3/15 to 4/15	
		Year 2	Rest			Year 2	Rest	Year 2	3/15 to 4/15	
		Year 3	3/15 to 6/15			Year 3	3/15 to 6/15	Year 3	3/15 to 4/15	
	3 Forty-	Year 1	3/15 to 6/15	All Years	3/13 to 7/30 (rested at least	Year 1	3/15 to 6/15	Year 1	7/1 to 10/15 (flexible use	

	Pasture	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5
		No Action		*Applicant's Proposed Action*		*Performance-Based*		*Season-Based*		*No Grazing*
	Five				one in each three years)				with other pastures)	
		Year 2	3/15 to 6/15			Year 2	3/15 to 6/15	Year 2	7/1 to 10/15 (flexible use with other pastures)	
		Year 3	Rest			Year 3	Rest	Year 3	4/16 to 6/30 (use can extend to 10/15)	
	4 Kimball	Year 1	Rest	All Years	3/13 to 9/30	Year 1	Rest	Year 1	7/1 to 10/15 (flexible use with other pastures)	
		Year 2	3/15 to 6/15			Year 2	3/15 to 6/15	Year 2	4/16 to 6/30 (use can extend to 10/15)	
		Year 3	3/15 to 6/15			Year 3	3/15 to 6/15	Year 3	7/1 to 10/15 (flexible use with other pastures)	
	5 Big Horse	Year 1	8/1 to 9/30	All Years	3/13 to 7/30 (rested at least one in each three years)	Year 1	8/1 to 9/30	Year 1	4/16 to 6/30 (use can extend to 10/15)	
		Year 2	8/1 to 9/30			Year 2	8/1 to 9/30	Year 2	7/1 to 10/15 (flexible use with other pastures)	
		Year 3	6/16 to 9/30			Year 3	6/16 to 9/30	Year 3	7/1 to 10/15 (flexible use with other pastures)	
	6 Juniper Basin	Year 1	6/16 to 9/30	All Years	5/16 to 9/30	Year 1	6/16 to 9/30	Year 1	4/16 to 6/30 (use can extend to 10/15)	
		Year 2	6/16 to 9/30			Year 2	6/16 to 9/30	Year 2	7/1 to 10/15 (flexible use with other pastures)	
		Year 3	6/16 to 9/30			Year 3	6/16 to 9/30	Year 3	7/1 to 10/15 (flexible use with other pastures)	
Number of Days by Pasture	1 Dry Lake	Year 1	62	All Years	Summary for all pastures: 200	Year 1	62	Year 1	32	
		Year 2	0			Year 2	0	Year 2	32	

	Pasture	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5
		No Action		*Applicant's Proposed Action*		*Performance-Based*		*Season-Based*		*No Grazing*
		Year 3	62			Year 3	62	Year 3	32	
	2 Piute Creek	Year 1	62			Year 1	62	Year 1	32	
		Year 2	0			Year 2	0	Year 2	32	
		Year 3	62			Year 3	62	Year 3	32	
	3 Forty-Five	Year 1	62			Year 1	62	Year 1	107 (flexible use with other pastures)	
		Year 2	62			Year 2	62	Year 2	107 (flexible use with other pastures)	
		Year 3	0			Year 3	0	Year 3	76	
	4 Kimball	Year 1	0			Year 1	0	Year 1	107 (flexible use with other pastures)	
		Year 2	62			Year 2	62	Year 2	76	
		Year 3	62			Year 3	62	Year 3	107 (flexible use with other pastures)	
	5 Big Horse	Year 1	61			Year 1	61	Year 1	76	
		Year 2	61			Year 2	61	Year 2	107 (flexible use with other pastures)	
		Year 3	108			Year 3	108	Year 3	107 (flexible use with other pastures)	
	6 Juniper Basin	Year 1	47 (full herd) 61 (½ of herd)			Year 1	47 (full herd) 61 (½ of herd)	Year 1	76	
		Year 2	47 (full herd) 61 (½ of herd)			Year 2	47 (full herd) 61 (½ of herd)	Year 2	107 (flexible use with other pastures)	
		Year 3	108			Year 3	108	Year 3	107 (flexible use with other pastures)	
AUMs by Pasture (PD only)	1 Dry Lake	Year 1	2,776 AUMs (½ of herd)	All Years	Allotment-wide 22,750 Allotment-wide in 20 years if objectives are met: 33,646	Year 1	2,988 AUMs (½ of herd)	Year 1	1,620 AUMs (In combination with Piute Creek pasture)	
		Year 2	0 AUMs			Year 2	0 AUMs	Year 2	1,620 AUMs (In	

	Pasture	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5
		No Action		*Applicant's Proposed Action*		*Performance-Based*		*Season-Based*		*No Grazing*
									combination with Piute Creek pasture))	
		Year 3	2,776 AUMs (½ of herd)			Year 3	2,988 AUMs (½ of herd)	Year 3	1,620 AUMs (In combination with Piute Creek pasture)	
	2 Piute Creek	Year 1	2,776 AUMs (½ of herd)			Year 1	2,988 AUMs (½ of herd)	Year 1	In combination with Dry Lake pasture	
		Year 2	0 AUMs			Year 2	0 AUMs	Year 2	In combination with Dry Lake pasture)	
		Year 3	2,776 AUMs (½ of herd)			Year 3	2,988 AUMs (½ of herd)	Year 3	In combination with Dry Lake pasture	
	3 Forty-Five	Year 1	2,776 AUMs (½ of herd)			Year 1	2,988 AUMs (½ of herd)	Year 1	Undefined AUMs (use period concurrent with multiple pastures)	
		Year 2	2,776 AUMs (½ of herd)			Year 2	2,988 AUMs (½ of herd)	Year 2	Undefined AUMs (use period concurrent with multiple pastures)	
		Year 3	0 AUMs			Year 3	0 AUMs	Year 3	3,850 AUMs (through 7/1, after which use period is concurrent with multiple pastures)	
	4 Kimball	Year 1	0 AUMs			Year 1	0 AUMs	Year 1	Undefined AUMs (use period concurrent with multiple pastures)	
		Year 2	2,776 AUMs (½ of herd)			Year 2	2,988 AUMs (½ of herd)	Year 2	3,850 AUMs (through 7/1, after which use	

	Pasture	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5
		No Action		*Applicant's Proposed Action*		*Performance-Based*		*Season-Based*		*No Grazing*
									period is concurrent with multiple pastures)	
		Year 3	2,776 AUMs (½ of herd)			Year 3	2,988 AUMs (½ of herd)	Year 3	Undefined AUMs (use period concurrent with multiple pastures)	
	5 Big Horse	Year 1	2,731 AUMs (½ of herd)			Year 1	2,940 AUMs (½ of herd)	Year 1	AUMs accounted for in Juniper Basin pasture	
		Year 2	2,731 AUMs (½ of herd)			Year 2	2,940 AUMs (½ of herd)	Year 2	Undefined AUMs (use period concurrent with multiple pastures)	
		Year 3	3,224 AUMs (⅓ of herd)			Year 3	3,470 AUMs (⅓ of herd)	Year 3	Undefined AUMs (use period concurrent with multiple pastures)	
	6 Juniper Basin	Year 1	4,209 AUMs (full herd) + 2,731 AUMs (½ of herd)			Year 1	4,530 AUMs (full herd) + 2,940 AUMs (½ of herd)	Year 1	3,850 AUMs (through 7/1, after which use period is concurrent with multiple pastures)	
		Year 2	4,209 AUMs (full herd) + 2,731 AUMs (½ of herd)			Year 2	4,530 AUMs (full herd) + 2,940 AUMs (½ of herd)	Year 2	Undefined AUMs (use period concurrent with multiple pastures)	
		Year 3	6,448 AUMs (⅔ of herd)			Year 3	6,940 AUMs (⅔ of herd)	Year 3	Undefined AUMs (use period concurrent with multiple pastures)	

	Pasture	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5
		No Action		*Applicant's Proposed Action*		*Performance-Based*		*Season-Based*		*No Grazing*
Acres per AUM by Pasture (PD only)	1 Dry Lake	Year 1	12.4	All Years	Allotment-wide: 8.9 Allotment-wide in 20 years if objectives are met: 6.0	Year 1	11.4	Year 1	21.2 (In combination with Piute Creek pasture)	
		Year 2	NA			Year 2	NA	Year 2	21.2 (In combination with Piute Creek pasture)	
		Year 3	12.4			Year 3	11.4	Year 3	21.2 (In combination with Piute Creek pasture)	
	2 Piute Creek	Year 1	12.4			Year 1	11.4	Year 1	In combination with Dry Lake pasture	
		Year 2	NA			Year 2	NA	Year 2	In combination with Dry Lake pasture	
		Year 3	12.4			Year 3	11.4	Year 3	In combination with Dry Lake pasture	
	3 Forty-Five	Year 1	15.5			Year 1	14.3	Year 1	Undefined acres per AUMs (use period concurrent with multiple pastures)	
		Year 2	15.5			Year 2	14.3	Year 2	Undefined acres per AUMs (use period concurrent with multiple pastures)	
		Year 3	NA			Year 3	NA	Year 3	11.2 (through 7/1, after which use period is concurrent with multiple pastures)	

	Pasture	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5
		No Action		*Applicant's Proposed Action*		*Performance-Based*		*Season-Based*		*No Grazing*
	4 Kimball	Year 1	NA			Year 1	NA	Year 1	Undefined acres per AUMs (use period concurrent with multiple pastures)	
		Year 2	13.9			Year 2	12.9	Year 2	10.0 (through 7/1, after which use period is concurrent with multiple pastures)	
		Year 3	13.9			Year 3	12.9	Year 3	Undefined acres per AUMs (use period concurrent with multiple pastures)	
	5 Big Horse	Year 1	13.9			Year 1	12.9	Year 1	Undefined acres per AUMs (use period concurrent with multiple pastures)	
		Year 2	13.9			Year 2	12.9	Year 2	Undefined acres per AUMs (use period concurrent with multiple pastures)	
		Year 3	11.8			Year 3	11.0	Year 3	Undefined acres per AUMs (use period concurrent with multiple pastures)	
	6 Juniper Basin	Year 1	7.0			Year 1	6.5	Year 1	Undefined acres per AUMs (use period	

	Pasture	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5
		No Action		*Applicant's Proposed Action*		*Performance-Based*		*Season-Based*		*No Grazing*
									concurrent with multiple pastures)	
		Year 2	7.0			Year 2	6.5	Year 2	Undefined acres per AUMs (use period concurrent with multiple pastures)	
		Year 3	7.6			Year 3	7.0	Year 3	12.7 (through 7/1, after which use period is concurrent with multiple pastures)	

Table D-5: Swisher Springs allotment (#450) alternative comparison of allotment data

	Alternative 1 *No Action*	**Alternative 2** *Applicant's Proposed Action*	**Alternative 3** *Performance-Based*	**Alternative 4** *Season-Based*	**Alternative 5** *No Grazing*
Cattle Number	49 Cattle	53 Cattle	53 Cattle	32 Cattle	0 Cattle
Active AUMs	322	345	345	210	0
Suspension AUMs	192	192	192	192	0
Permitted AUMs	514	537	537	402	0
% Change compared to recent average actual use-285 AUMs (2002-2011)	+13%	+21%	+21%	-26%	NA
% Change Compared to Current Authorized Active use AUMs (permit)	-7%	No Change	No Change	-39%	-100%
% Change Compared to No Action alternative Active use AUMs	No Change	+7%	+7%	-34%	-100%

Table D-6: Swisher Springs allotment (#450) alternative comparison of pasture data

	Pasture	**Alternative 1**		**Alternative 2**		**Alternative 3**		**Alternative 4**		**Alternative 5**
		No Action		***Applicant's Proposed Action***		***Performance-Based***		***Season-Based***		***No Grazing***
Seasons of Use by Pasture	1 Road Field	Yr1	4/15 to 7/15	Yr1	4/15 to 7/15	Yr1	4/15 to 7/15	Yr1	7/14 to 10/31	
		Yr2	Rest	Yr2	Rest	Yr2	Rest	Yr2	4/15 to 8/2	
								Yr3	7/1 to 10/31	
	2 Mountain Field	Yr1	7/16 to 10/31	Yr1	7/16 to 10/31	Yr1	7/16 to 10/31	Yr1	Rest	
		Yr2	7/16 to 10/31	Yr2	7/16 to 10/31	Yr2	7/16 to 10/31	Yr2	Rest	
								Yr3	4/15 to 6/30	
	3 Lower Allotment	Yr1	Rest	Yr1	Rest	Yr1	Rest	Yr1	4/15 to 7/13	
		Yr2	4/15 to 7/15	Yr2	4/15 to 7/15	Yr2	4/15 to 7/15	Yr2	8/3 to 10/31	
								Yr3	7/1 to 10/31	
Number of Days by Pasture	1 Road Field	Yr1	92	Yr1	92	Yr1	92	Yr1	110	
		Yr2	0	Yr2	0	Yr2	0	Yr2	110	

	Pasture	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5
		No Action		*Applicant's Proposed Action*		*Performance-Based*		*Season-Based*		*No Grazing*
								Yr3	123	
	2 Mountain Field	Yr1	108	Yr1	108	Yr1	108	Yr1	Rest	
		Yr2	108	Yr2	108	Yr2	108	Yr2	Rest	
								Yr3	77	
	3 Lower Allotment	Yr1	0	Yr1	0	Yr1	0	Yr1	90	
		Yr2	92	Yr2	92	Yr2	92	Yr2	90	
								Yr3	123	
AUMs by Pasture	1 Road Field	Yr1	149	Yr1	160	Yr1	160	Yr1	115	
		Yr2	0	Yr2	0	Yr2	0	Yr2	115	
								Yr3	129 (includes use in pasture 3)	
	2 Mountain Field	Yr1	174	Yr1	188	Yr1	188	Yr1	Rest	
		Yr2	174	Yr2	188	Yr2	188	Yr2	Rest	
								Yr3	81	
	3 Lower Allotment	Yr1	0	Yr1	0	Yr1	0	Yr1	95	
		Yr2	149	Yr2	160	Yr2	160	Yr2	95	
								Yr3	129 (includes use in pasture 1)	
Acres per AUM by Pasture	1 Road Field	Yr1	9.3	Yr1	8.7	Yr1	8.7	Yr1	10.0	
		Yr2	NA	Yr2	NA	Yr2	NA	Yr2	10.0	
								Yr3	16.2 (includes use in pasture 3)	
	2 Mountain Field	Yr1	7.5	Yr1	7.0	Yr1	7.0	Yr1	Rest	
		Yr2	7.5	Yr2	7.0	Yr2	7.0	Yr2	Rest	
								Yr3	21.6	
	3 Lower Allotment	Yr1	NA	Yr1	NA	Yr1	NA	Yr1	10.0	
		Yr2	6.7	Yr2	6.2	Yr2	6.2	Yr2	10.0	

	Pasture	Alternative 1	Alternative 2	Alternative 3	Alternative 4		Alternative 5
		No Action	*Applicant's Proposed Action*	*Performance-Based*	*Season-Based*		*No Grazing*
					Yr3	16.2 (includes use in pasture 1)	

Table D-7: Swisher FFR allotment (#637) alternative comparison of allotment data

	Alternative 1 *No Action*	Alternative 2 *Applicant's Proposed Action*	Alternative 3 *Performance-Based*	Alternative 4 *Season-Based*	Alternative 5 *No Grazing*
Cattle Number	15 Cattle	15 Cattle	15 Cattle	15 Cattle	0 Cattle
Active AUMs	15	15	15	15	0
Suspension AUMs	0	0	0	0	15
Permitted AUMs	15	15	15	15	15
% Change compared to recent Actual Use (2002-2011)	no change	no change	no change	no change	NA
% Change Compared to Current Authorized Active use AUMs (permit)	no change	no change	no change	no change	-100%

Castlehead-Lambert Grazing Allotment #0592

DRAFT – Permittee Proposed Adaptive Management Concept
(December 12, 2011)

This alternative recognizes the substantial increase in available forage resulting from wildfire occurrence over much of the allotment. In addition the variation in climate/weather annually requires a significant amount of adaptive management flexibility in order to properly manage grazing use. Such flexibility is built in to the grazing management proposal.

Permit renewal proposal, mandatory terms and conditions. Active use would include ½ of the currently suspended cattle use AUMs. *(Note some variation from BLM numbers may occur as a result of method of calculation and rounding)*

Operator	Livestock		Season of Use	Federal land	AUMs		
	No	Kind			Active	Suspended	Permitted
Stanford 59% ??	448	Cattle	4/15 – 9/30	100 %	2,489	639	3,128
	10	Horses	4/8 – 9/22	100 %	56	0	56
Collins 41% ??	312	Cattle	4/15 – 9/30	100 %	1733	404	2137
					4,278	**1043**	**5,321**

Grazing Management:

All grazing use would occur within the mandatory terms and conditions, in that, livestock numbers would not exceed 760 cattle and 10 horses. All grazing use would occur between April 15 and September 30 and the total Active Use would not exceed 4,223 cattle and 56 horse AUMs annually. The seasons of use and adaptive management flexibility in pasture use days provides opportunity for grazing management to take advantage of climatic variation by moving livestock in a manner that assures management objectives are met.

The adaptive management flexibility allows use distribution among pastures as dictated by climate/weather occurrences. This together with voluntary reductions in livestock numbers during very low production years will assure compliance with land use plan utilization standards and allotment management objectives.

Any changes in management that are beyond the adaptive management flexibility must be approved by the authorized officer.

Adaptive Management for Cattle Use in Primary Pastures

Pasture	# Cattle	# Days	Approximate # AUMs	Ave stocking density
Lambert	760	40 ± 10	750 - 1250	11.8
Carter Springs	760	33 ± 9	600 - 1050	11.1
Red Basin	760	41 ± 10	775 - 1275	11.1
Mountain 1A	760	16 ± 5	275 - 525	10.0
Mountain 1B	760	31 ± 9	550 - 1000	10.2
Section 4 - Horse Pasture	Discretionary	8	150 - 200	10.0

Discretionary Horse Use

Pasture	# Horses	# Days	# AUMs	Ave stocking density
Section 4-A Horse Pasture	10	Discretionary	56	N/A

Adaptive Management Flexibility and Grazing Treatments

The Lambert pasture would be scheduled for early spring use annually for 40 ± 10 days beginning April 15. A light stocking density average of 11.7 acres per AUM would be scheduled to achieve an average light (30%) level of utilization. Grazing would generally end on May 24 but could be extended up to June 3th when favorable growing conditions would allow full regrowth and seed production after grazing ends. In years that unfavorable weather prevents use of the Lambert pasture at turnout, livestock would be turned out in either the Carter Springs or Red Basin pasture. Livestock could be held in the alternative turnout pasture up to 14 days before moving to the Lambert pasture. Time spent in the alternate turnout pasture would be considered during the scheduled use of that pasture. The light level of grazing use and frequent opportunity for full regrowth would maintain good range condition and provide suitable nesting and brood rearing habitat for sage-grouse throughout the Lambert pasture.

The Carter Springs and Red Basin pastures would be scheduled 2nd and 3rd in the rotation in alternate years so that each pasture would receive a deferred grazing treatment in alternate years. Most of these pastures were burned in 200__ and have experienced very significant increases in production as a result. The Carter Springs pasture would be scheduled for 33 days of grazing use ± 9 days and the Red Basin pasture would be scheduled for 41 days ± 10

days. These pastures would be scheduled for a light stocking density of 11.1 acres per AUM respectively. Similar use over the past 8 years has resulted in identifiable improvement in upland and riparian systems.

The Mountain 1A and 1B pastures would receive deferred grazing treatments annually and use would be alternated annually in rotation. These pastures would be scheduled for a light stocking density averages of 10 and 10.2 acres per AUM respectively and would receive annual deferred grazing treatments. The Mountain 1A pasture would only be scheduled for 16 days of grazing use ± 5 days and the Mountain 1B pasture would be scheduled for 31 days ± 7 days.

The flexibility of the system allows management to adapt to variation in annual climate/weather conditions. For example, during any year when ample water is available on the lambert table, either the Carter Springs or Red Basin pastures can receive an early spring grazing treatment that benefits both uplands and riparian systems. The elevations vary significantly between the Carter Springs / Red Basin pastures and the Lambert pasture to the south and Mountain Pastures to the north, climate/weather influences differ on an annual basis. Strict adherence to grazing use dates precludes the flexibility needed to adapt to climate/weather variation and the opportunity to apply proper grazing management.

Terms and Conditions

The following terms and conditions would be included in the grazing permit to assist in achieving management guidelines, provide for proper range management, or assist in the orderly administration of the Public Rangelands:

1) Grazing within the Castlehead-Lambert Allotment (#00634) will be in accordance with the Final Grazing decision, dated _____.

2) You are required to properly complete, sign and date an Actual Grazing Use Report Form (4130-5) for each allotment. The completed form(s) must be submitted to this office within 15 days from the last day of your authorized annual grazing use.

3) Supplemental feeding is limited to salt, mineral, and/or protein in block, granular, or liquid form. If used, these supplements must be placed at least one-quarter (1/4) mile away from any riparian area, spring, stream, meadow, aspen stand, playa, special status plant population, or water development. Special supplements intended to achieve livestock distribution would require prior approval?

4) Pursuant to 43 CFR 10.4(b), you must notify the BLM Field Manager, by telephone with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2) on federal lands. Pursuant to 43 CFR 10.4(c), you

must immediately stop any ongoing activities connected with such discovery and make a reasonable effort to protect the discovered remains or objects.

5) Livestock grazing is not authorized in exclosures within the Castlehead-Lambert Allotment (#00634).

6) Livestock turnout dates are subject to Lower Snake River District (LSRD) range readiness criteria.

Rangeland Management Projects

Further discussion is needed to determine the proper action relative to reservoir maintenance and/or improvement.

If necessary, off-road travel for survey, design, construction, or maintenance would require prior consultation with the authorized officer. Cooperative Agreements will be developed for each project prior to construction. All projects on public lands would be constructed to conform to BLM design specifications. *Applicable mitigation measures would be incorporated into the construction of the rangeland management projects (delete reference to wilderness study areas).* Pending survey, design, and layout of proposed fences, cattle guards may be installed where they cross roads on public lands if this is determined to be feasible. Wildlife escape ramps would be placed in all livestock troughs on public land in the allotments.

Fence Reconstruction / Relocation

Reconstruct a section of boundary fence that was destroyed by fire. Construct approximately 0.72 miles along a ridge to the east of the West Fork Red Canyon Creek in pasture 1B. This fence would become the allotment boundary with the Bull Basin Allotment. The authorized officer would be notified in advance of construction dates so that the project can be monitored. If necessary, off-road travel for survey, design, construction, or maintenance would require prior consultation with the authorized officer. Cooperative Agreements will be developed for this project prior to construction. All projects on public lands would be constructed to conform to BLM design specifications.

Reservoir Construction

Reservoir conditions need to be reexamined to determine the extent of work needed to make all reservoirs serviceable.

Western Range Service

P. O. Box 1330 - Elko, Nevada 89803 || 990 Fifth Street - Elko, Nevada 89801
(775) 738-4007 - Fax: (775) 753-7900

Memorandum

DATE: November 21, 2011

TO: Peter Torma
Attn: Garat Permit Renewal Team

FROM: Quinton Barr

SUBJECT: **Garat Permit Renewal Modification**

Garat Permit Renewal Team;

The enclosed *November 18, 2011 Modification* to the Petan Company of Nevada, Inc. (Petan) June 2011 *Application for Grazing Permit Renewal* for the Garat Allotment was prepared based upon our discussions during the November 9, 2011 meeting at the Owyhee Field Office in Marsing. Specific modifications from the June 2011 application are summarized below.

Application, Page 1, Mandatory Terms and Conditions: Line 1 - cattle numbers reduced and start date changed to March 13 to reflect cattle trailing period; **Lines 1 and 2 -** Percent Public Land changed to 96% based upon Owyhee RMP acreage and GIS acreage reported by Peter Torma; **Line 3 -** Horse numbers increased to an average of 25 head.

Application, Page 1, Other Terms and Conditions: 2nd T&C - November modification replaces and supercedes the June 2011 application; **4th T&C -** Line 1 reflects Garat season of use and trailing period; **5th T&C -** Line 2 reflects flexibility for removing strays; **6th T&C -** Line 3 reflects an average of 25 saddle horses in the horse pastures of the Garat Allotment, with provision for up to 75 horses when needed; **7th T&C -** clarification regarding active and total preference for the Garat Allotment consistent with the Approved Owyhee RMP; **8th T&C -** date changed to reflect November 18, 2011 Modification.

Application, Page 3: blank and faxed copy signed by John Jackson on November 18, 2011 both included. John is out with his crew shipping calves today. I prepared the modified application based upon the acreage for the Garat Allotment reported in the Approved Owyhee RMP, and John reviewed and signed it. The percent public land figure (96%) did not change based upon the GIS acreage provided by Peter Torma this morning. Thus, I updated page 7 of Attachment A to the November 2011 modification, but did not need to adjust the AUM and %PL figures from those on the Modified Application that John had already reviewed and signed.

Attachment A, Page 1: 1st Paragraph - updated references to the November 18, 2011 Modification and June 2011 *Application for Grazing Permit Renewal*; **3rd Paragraph -** expanded references to the modification and 1999 *Approved Owyhee RMP*; **4th Paragraph -** corrected reference to Form 4130-2a and total preference specified by the Owyhee RMP.

Attachment A, Page 2: Table 1 - updated to reflect the active use shown in the Mandatory Terms and Conditions of the November 18, 2011 modified grazing application; **1st Paragraph -** clarified that only adjustments based upon Short-Term Monitoring shall be restricted to 10% of the total preference; **2nd Paragraph -** updated references to the November 18, 2011 modification and it's Attachment A.

Attachment A, Page 3: Grazing Strategy - clarified discussion regarding mid-season overlap in use periods to optimize livestock distribution; moved Dry Lake 2 entry to it's own line; clarified that the Kimball use period is flexible; clarified that the Spring pastures will be rested once every 3 years, while the Kimball pasture (now identified as a Flexible pasture rather than a Spring pasture) will be deferred at least once every 3 years or rested once every 5 years; clarified the management flexibility in pasture use periods based upon water availability.

Attachment A, Page 4: Allotment Specific Objective - clarified that such objectives were approved by the Owyhee RMP.

Attachment A, Page 6: 2nd Paragraph - updated to reference the June 2011 grazing application; **4th Paragraph -** clarified that range studies will be scheduled near the end of each 5-year grazing cycle.

Attachment A, Page 7: 2nd Paragraph - clarified that the percent public land figure (96%) is based upon more accurate GIS acreage.

Attachment A, Page 8: Last Paragraph - clarified that the following formula is the *Desired Stocking Rate* formula.

Attachment A, Page 9: 5th Paragraph - removed conflicting language that the adjustments discussed are irrespective of the allotment average utilization level because such adjustments would only occur when utilization levels do not exceed allowable use; **Last Paragraph -** corrected reference to Spring pastures rather than West pastures and added footnote clarifying the future nature of the range improvements discussed.

Attachment A, Page 10: 2nd Paragraph - clarified that Petan recommends consideration of improvement projects to re-drill the identified wells when workloads would allow; **3rd Paragraph -** clarified that Petan recommends consideration of the Piute Creek fence modification to provide more management control over the timing of livestock grazing along Piute creek.

CASE FILE COPY

APPLICATION FOR GRAZING PERMIT RENEWAL

November 18, 2011 Modification

AUTH NUMBER: 1101449
DATE PRINTED: 5/25/2011

Form 4130-2a
(February 1999)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR GRAZING PERMIT RENEWAL

RETURN BY: June 24, 2011

STATE	ID
OFFICE	LLIDB03000
AUTH NUMBER	1101449
PREFERENCE CODE	03
DATE PRINTED	05/25/2011

BUREAU OF LAND MANAGEMENT
OWYHEE FIELD OFFICE
20 FIRST AVE WEST
MARSING ID 83639

PETAN CO. OF NEV, INC
HC 32 P.O. BOX 450
TUSCARORA NV 89834

This application for grazing permit renewal describes your current permit schedule(s) and summarizes your permitted use. If you wish to apply for renewal of this permit, sign and return this form by the date shown above. Contact your local BLM office at 208-896-5912 if you have questions.

MANDATORY TERMS AND CONDITONS

ALLOTMENT	PASTURE	LIVESTOCK NUMBER	LIVESTOCK KIND	GRAZING BEGIN	PERIOD END	%PL	TYPE USE	AUMS
00584 GARAT		3522	CATTLE	03/13	09/30	96	ACTIVE	22454
		250	CATTLE	10/01	10/15	96	ACTIVE	118
		25	HORSES	03/14	10/14	100	ACTIVE	177

OTHER TERMS AND CONDITIONS:

THIS IS AN APPLICATION TO RENEW A TERM GRAZING PERMIT, TO ISSUE A TERM GRAZING PERMIT FOR A 10-YEAR PERIOD, AND TO CHANGE/MODIFY THE EXISTING TERM GRAZING PERMIT FOR THE GARAT ALLOTMENT IN ACCORDANCE WITH 43 C.F.R PART 4100 AND WITH THE ADMINISTRATIVE PROCEDURE ACT, 5 U.S.C. 558(c).

THIS APPLICATION REPLACES AND SUPERCEDES OUR JUNE 2011 GRAZING APPLICATION, INCLUDING ATTACHMENT A TO THE JUNE 2011 APPLICATION, THAT WAS SUBMITTED VIA CERTIFIED MAIL ON JUNE 27, 2011.

THIS APPLICATION IS FILED BECAUSE, IN ACCORDANCE WITH "ORDER APPROVING STIPULATED SETTLEMENT AGREEMENT" FILED JUNE 26, 2008, IN WESTERN WATERSHEDS PROJECT v. THOMAS DYER, et. al., CV-97-519-S-BLW (U.S. DISTRICT COURT, DISTRICT OF IDAHO) (DOCKET #455) THE BLM COMMITTED TO "COMPLETE THE REQUIRED ENVIRONMENTAL ANALYSES AND ISSUE FINAL GRAZING DECISIONS AND GRAZING PERMITS" (DOCKET #451, PARAGRAPH 11) AS RELATED TO THE GARAT ALLOTMENT BY 2011 (DOCKET #451-2, PAGE 2 OF 3).

LINE 01 REFLECTS A SEASON OF USE FOR THE GARAT ALLOTMENT OF MARCH 15 THROUGH SEPTEMBER 30, WITH TWO DAYS (MARCH 13 – 14) APPROVED FOR TRAILING TO ALLOW THE CATTLE TO REACH THE *45* AND *DRY LAKES* PASTURES BY MARCH 15.

LINE 02 REFLECTS MANAGEMENT FLEXIBILITY FOR REMOVING STRAYS (NOT TO EXCEED 250 HEAD BETWEEN OCTOBER 1 AND OCTOBER 15) AFTER THE SCHEDULED GRAZING SEASON ENDS.

LINE 03 REFLECTS AN AVERAGE OF 25 SADDLE HORSES AUTHORIZED TO GRAZE BETWEEN MARCH 14 AND OCTOBER 14 WITHIN THE HORSE FIELDS LOCATED NEAR STATELINE CAMP, FOUR CORNERS CAMP, AND/OR PIUTE CREEK CAMP. APPROXIMATELY 15 SADDLE HORSES RESIDE AT ONE OF THESE CAMPS SEASON LONG, WHILE SADDLE HORSE NUMBERS CAN INCREASE TO 75 HEAD DURING PERIODS WHEN CATTLE ARE BEING GATHERED, MOVED BETWEEN PASTURES, AND/OR BRANDED.

LINES 01 – 03 TOTAL 22,749 AUMs, CONSISTENT WITH THE 22,750 ACTIVE AUM PREFERENCE SPECIFIED BY THE *APPROVED OWYHEE RESOURCE MANAGEMENT PLAN* DATED DECEMBER 30, 1999. PETAN'S PREFERENCE WITHIN THE GARAT ALLOTMENT INCLUDES 10,896 SUSPENDED AUMs, FOR A TOTAL PREFERENCE OF 33,646 AUMs ASSOCIATED WITH THIS APPLICATION FOR GRAZING PERMIT RENEWAL.

SEE ATTACHMENT A FOR OTHER TERMS AND CONDITONS ASSOCIATED WITH THIS NOVEMBER 18, 2011 APPLICATION FOR GRAZING PERMIT RENEWAL.

ALLOT NO CONDITIONS

NO ALLOTMENT TERMS OR CONDITIONS

NO OFFICE TERMS OR CONDITIONS

ALLOTMENT SUMMARY (AUM'S)

ALLOTMENT	ACTIVE AUMS	SUSPENDED AUMS	TEMP SUSPENDED AUMS	PERMITTED USE
00584 GARAT	22750	10896	0	33646

FILE COPY

APPLICATION FOR GRAZING PERMIT RENEWAL

November 18, 2011 Modification

AUTH NUMBER: 1101449
DATE PRINTED: 5/25/2011

Standard
Terms and Conditions

1. Grazing permit or lease terms and conditions and the fees charged for grazing use are established in accordance with all the provisions of the grazing regulations now or hereafter approved by the Secretary of the Interior.

2. They are subject to cancellation, in whole or in part, at any time because of:
   a. Noncompliance by the permittee/lessee with rules and regulations.
   b. Loss of control by the permittee/lessee of all or a part of the property upon which it is based.
   c. A transfer of grazing preference by the permittee/lessee to another party.
   d. A decrease in the lands administered by the Bureau of Land Management within the allotment(s) described.
   e. Repeated willful unauthorized grazing use.

3. They are subject to the terms and conditions of allotment management plans if such plans have been prepared. Allotment management plans MUST be incorporated in permits or leases when completed.

4. Those holding permits or leases MUST own or control and be responsible for the management of livestock authorized to graze.

5. The authorized officer may require counting and/or additional or special marking or tagging of the livestock authorized to graze.

6. The permittee's/lessee's grazing case file is available for public inspection as required by the Freedom of Information Act.

7. Grazing permits or leases are subject to the nondiscrimination clauses set forth in Executive Order 11246 of September 24, 1964, as amended. A copy of this order may be obtained from the authorized officer.

8. Livestock grazing use that is different from that authorized by a permit or lease MUST be applied for prior to the grazing period and MUST be filed with and approved by the authorized officer before grazing use can be made.

9. Billing notices are issued which specify fees due. Billing notices, when paid, become a part of the grazing permit or lease. Grazing use cannot be authorized during any period of delinquency in the payment of amounts due, including settlement for unauthorized use.

10. Grazing fee payments are due on the date specified on the billing notice and MUST be paid in full within 15 days of the due date, except as otherwise provided in the grazing permit or lease. If payment is not made within that time frame, a late fee (the greater of $25 or 10 percent of the amount owed but not more than $250) will be assessed.

11. No Member of, or Delegate to, Congress or Resident Commissioner, after his election of appointment, or either before or after he has qualified, and during his continuance in office, and no officer, agent, or employee of the Department of the Interior, other than members of Advisory committees appointed in accordance with the Federal Advisory Committee Act (5 U.S.C. App.1) and Sections 309 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.) shall be admitted to any share or part in a permit or lease, or derive any benefit to arise therefrom; and the provision of Section 3741 Revised Statutes (41 U.S.C. 22; 18 U.S.C. Sections 431-433, and 43 CFR Part 7), enter into and form a part of a grazing permit or lease, so far as the same may be applicable.

SIGNATURE OF PERMITTEE: _____ DATE : _____

Title 18, U.S.C., Section 1001 makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false ficticious, or fraudulent statements or representations as to any matter within its jurisdiction.

FILE COPY

APPLICATION FOR GRAZING PERMIT RENEWAL

November 18, 2011 Modification

AUTH NUMBER: 1101449
DATE PRINTED: 5/25/2011

Standard
Terms and Conditions

1. Grazing permit or lease terms and conditions and the fees charged for grazing use are established in accordance with all the provisions of the grazing regulations now or hereafter approved by the Secretary of the Interior.

2. They are subject to cancellation, in whole or in part, at any time because of:
   a. Noncompliance by the permittee/lessee with rules and regulations.
   b. Loss of control by the permittee/lessee of all or a part of the property upon which it is based.
   c. A transfer of grazing preference by the permittee/lessee to another party.
   d. A decrease in the lands administered by the Bureau of Land Management within the allotment(s) described.
   e. Repeated willful unauthorized grazing use.

3. They are subject to the terms and conditions of allotment management plans if such plans have been prepared. Allotment management plans MUST be incorporated in permits or leases when completed.

4. Those holding permits or leases MUST own or control and be responsible for the management of livestock authorized to graze.

5. The authorized officer may require counting and/or additional or special marking or tagging of the livestock authorized to graze.

6. The permittee's/lessee's grazing case file is available for public inspection as required by the Freedom of Information Act.

7. Grazing permits or leases are subject to the nondiscrimination clauses set forth in Executive Order 11246 of September 24, 1964, as amended. A copy of this order may be obtained from the authorized officer.

8. Livestock grazing use that is different from that authorized by a permit or lease MUST be applied for prior to the grazing period and MUST be filed with and approved by the authorized officer before grazing use can be made.

9. Billing notices are issued which specify fees due. Billing notices, when paid, become a part of the grazing permit or lease. Grazing use cannot be authorized during any period of delinquency in the payment of amounts due, including settlement for unauthorized use.

10. Grazing fee payments are due on the date specified on the billing notice and MUST be paid in full within 15 days of the due date, except as otherwise provided in the grazing permit or lease. If payment is not made within that time frame, a late fee (the greater of $25 or 10 percent of the amount owed but not more than $250) will be assessed.

11. No Member of, or Delegate to, Congress or Resident Commissioner, after his election or appointment, or either before or after he has qualified, and during his continuance in office, and no officer, agent, or employee of the Department of the Interior, other than members of Advisory committees appointed in accordance with the Federal Advisory Committee Act (5 U.S.C. App.1) and Sections 309 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.) shall be admitted to any share or part in a permit or lease, or derive any benefit to arise therefrom: and the provision of Section 3741 Revised Statutes (41 U.S.C. 22; 18 U.S.C. Sections 431-433, and 43 CFR Part 7), enter into and form a part of a grazing permit or lease, so far as the same may be applicable.

SIGNATURE OF PERMITTEE: _____ DATE: 11/18/11

Title 18, U.S.C., Section 1001 makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false ficticious, or fraudulent statements or representations as to any matter within its jurisdiction.

APPLICATION FOR GRAZING PERMIT RENEWAL
November 18, 2011 Modification

GARAT ALLOTMENT GRAZING APPLICATION - ATTACHMENT A
PETAN COMPANY OF NEVADA, INC. – NOVEMBER 2011

PERMITTEE GRAZING APPLICATION/ALTERNATIVE

Petan Company of Nevada, Inc. (Petan) submits this November 18, 2011 Modification to it's June 2011 *Application for Grazing Permit Renewal* to renew a Term Grazing Permit, to issue a Term Grazing Permit for a 10-year period, and to change/modify the existing Term Grazing Permit for the Garat Allotment. This application replaces and supercedes our June 2011 Grazing Application, including Attachment A to the June 2011 application, that was submitted to your office via *Certified Mail* on June 27, 2011.

There is no change to the base property for the preference assignment for the Garat Allotment associated with this permit renewal, so we do not need to complete Form 4130-1a (*Grazing Preference Application – Base Property Preference Attachment and Assignment*). Likewise, there are no changes related to this permit renewal for our: Qualifications; Ownership and Control of Livestock; Ownership and Control of Unfenced Land Located within Bureau of Land Management (BLM) Allotments; Other BLM Grazing Permits or Leases; Other Federal, State and Local Agency Grazing Authorizations; or, Designation of Authorized Representative, so we do not need to complete Form 4130-001b (*Grazing Application – Supplemental Information*).

This Grazing Application modification includes a cooperative grazing management plan for the Garat Allotment to allow continued success in meeting the December 30, 1999 *Approved Owyhee Resource Management Plan* (Owyhee RMP) goals and objectives and conforming to *Idaho Standards for Rangeland Health* (Idaho Standards) and guidelines for livestock grazing management. The cooperative grazing management plan establishes a framework for the cooperative, mutually beneficial management of livestock grazing within the Garat Allotment by the BLM and Petan, as set forth below. This grazing management alternative is intended to serve as the functional equivalent of an Allotment Management Plan to replace and supersede the 1989 Management Agreement between the BLM and Petan for the Garat Allotment (1989 Agreement).

PERMITTED USE

The voluntary non-use of the 1989 agreement will immediately be restored as Active Preference, but the suspended AUMs will remain in suspended status. Thus, the initial Active Preference for the Garat Allotment will be 22,750 AUMs (19,500 prior Active Preference AUMs + 3,250 restored voluntary non-use AUMs) and the Total Permitted Preference will be 33,646 AUMs (22,750 Active AUMs + 10,896 Suspended AUMs), as shown in Form 4130-2a (*Application for Grazing Permit Renewal, November 18, 2011 Modification*) to which this attachment is affixed, and in Table 1 below. This distribution of the livestock preference for the Garat Allotment conforms to the Active, Suspended Nonuse, and Total Preferences specified by the Owyhee RMP.

Table 1: Initial Active Use and Total Permitted Use

Allotment Name (Number)	Livestock		Season of Use	% Public Land	Active Use (AUMs)
	Number	Kind			
Garat (00584)	3,522	C	3/13-9/30	96	22,454
Garat (00584)	250	C	10/01-10/15	96	118
Garat (00584)	25	H	3/14-10/14	100	177
				Totals =	**22,749**
Preference Specified by the Owyhee RMP				**Active Preference =**	**22,750**
				Suspended Use =	**10,896**
				Total Preference =	**33,646**

At the end of the first 5-year grazing cycle (and after every 5-year cycle thereafter), the *Monitoring and Use Supervision* information presented below will be evaluated and adjustments to the Active Preference for the next grazing cycle will be implemented based upon the *Grazing Use Adjustment Protocol* established herein. Since any adjustments based upon Short-Term Monitoring are limited to 10% of the Total Preference at the end of any 5-year period, it would take 20 years before all of the Suspended Use within the Garat Allotment could be restored as Active Preference, assuming that Short-Term Monitoring adjustments result in the maximum allowed increase at the end of each and every 5-year grazing cycles for the first four cycles.

OTHER TERMS AND CONDITIONS

In addition to the terms and conditions printed on the face of Form 4130-2a (*Application for Grazing Permit Renewal, November 18, 2011 Modification*) to which this attachment is affixed, and the standard terms and conditions printed on back of Form 4130-2a, the following terms and conditions will apply to the Grazing Permit for the Garat Allotment:

1. All grazing use will be in accordance with the provisions set forth in Attachment A to the *November 18, 2011 Modification* of the Grazing Application for the Garat Allotment (#00584). Said Attachment A serves as the functional equivalent of an Allotment Management Plan for the Garat Allotment.
2. Livestock turnout dates are subject to the following Range Readiness criteria. Range readiness is defined as that point in time when the soils have firmed after the spring thaw, when squirrel-tail (SIHY) has at least 2 inches of new growth, and bluebunch wheatgrass (AGSP) has at least 4 inches of new growth. When these parameters are reached, the rangelands in the Garat Allotment are considered ready for livestock use; the plants having achieved a growth stage that enables them to maintain themselves. Pastures with substantial old feed may be used before these limits are reached once the soils have firmed, after mutual agreement with the BLM.

3. You are required to properly complete, sign, and date an *Actual Grazing Use Report Form* (4130-5, or equivalent) for each allotment. The completed form(s) must be submitted to this office within 15 days from the last day of your authorized annual grazing use.
4. You will be annually billed for your grazing use after-the-fact based upon your "as filed" *Actual Grazing Use Report Form*, or its equivalent.
5. Supplemental feeding is limited to salt, mineral, and/or protein in block, granular, or liquid form. If used, these supplements must be placed at least one-quarter (1/4) mile way from any riparian area, spring, stream, meadow, aspen stand, playa, special status plant population, or water development.
6. Pursuant to 43 CFR 10.4(b), you must notify the BLM Field Manager, by telephone with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined in 43 CFR 10.2) on federal lands. Pursuant to 43 CFR 10.4(c), you must immediately stop any ongoing activities connected with such discovery and make a reasonable effort to protect the discovered remains or objects.

GRAZING STRATEGY

The grazing strategy presented below provides a framework for a grazing system within the Garat Allotment that is designed to continue to meet Owyhee RMP goals and objectives and conform to Idaho Standards, while allowing adjustments due to annual variability in precipitation, forage production, and livestock water availability without placing unnecessary demands and stresses upon the BLM's staff and resources. Likewise, the mid-season (5/16-7/30) overlap in use periods is allowed to ensure that livestock movement between pastures occurs in a controlled fashion to optimize the distribution of livestock between pastures within the Garat Allotment.

Garat Allotment Grazing Strategy

Dry Lake 1	Spring	3/15 to 7/30			
Dry Lake 2	Spring	3/15 to 7/30			
"45"	Spring	3/15 to 7/30			
Big Horse	Spring	3/15 to 7/30			
Kimball	Flexible	3/15 to 7/30	or		5/16 to 9/30
Juniper Basin				Summer	5/16 to 9/30

- Graze at least two of the Spring pastures between 3/15 and 5/15 each year
- Rest each of the Spring pastures at least once every 3 years
- If Petan determines that mid-season water is adequate, use 1 to 3 of the Spring pastures longer (as late as 7/30), otherwise use Kimball during the Spring period
- If Petan determines that mid-season water is adequate in Spring pastures, the Kimball and/or Juniper Basin pastures may be deferred until after 7/15, or rested
- Defer the Kimball pasture at least once every 3 years, or rest it once every 5 years
- If mid-season water is scarce in Spring pastures, graze the Juniper Basin pasture (and Kimball, when needed) between 5/16 and 9/30, distributing cattle as needed
- Management Flexibility for Strays: Not to exceed 250 head from 10/1 – 10/15

Upon approval of this Grazing Application, grazing use outside of the parameters established herein under the Sections titled “Permitted Use”, “Other Terms and Conditions”, and “Grazing Strategy” may be allowed within the Garat Allotment upon prior notification and approval by an authorized officer of the BLM.

ALLOTMENT SPECIFIC OBJECTIVES

The following allotment specific objectives for the Garat Allotment were established in the July 1999 *Proposed Owyhee Resource Management Plan* and approved by the Owyhee RMP.

1. Supply 22,750 AUMs for livestock grazing in the short-term (provide forage to sustain the current Active Preference), and 33,646 AUMs in the long-term (provide forage to sustain the Total Preference).*
2. Improve unsatisfactory and maintain satisfactory watershed health/condition on all areas.
3. Improve unsatisfactory and maintain satisfactory vegetation health/condition on all areas.
4. Meet or exceed State of Idaho water quality standards.
5. Maintain or improve riparian/wetland areas to attain proper functioning or satisfactory condition.
6. Maintain or enhance the condition, abundance and distribution of wildlife habitat.
7. Manage special status species and habitats to increase or maintain populations.

* Annual utilization data collected by Western Range Service between 1990 and 2010 indicate that expected utilization levels would not have exceeded 25% on existing key forage species or 26% on all observed forage species in the Garat Allotment if actual use had been 22,750 AUMs during that entire 21-year period. Further, such utilization data indicate that expected utilization levels would not have exceeded 37% on existing key forage species or 39% on all observed forage species in the Garat Allotment if actual use had been 33,646 AUMs (the Total Preference) during that entire 21-year period (see page 1 of Appendix 1 herein).

  Similarly, the BLM reported in their December 2006 Final Rangeland Health Assessment for the Garat Allotment upon utilization data collected between 1990 and 2003. This data indicate that expected utilization levels would not have exceeded 23% on existing key forage species in the Garat Allotment if actual use had been 22,750 AUMs, and would not have exceeded 34% on existing key forage species if actual use had been 33,646 AUMs (the Total Preference) during that entire 14-year period (see page 2 of Appendix 1 herein).

MONITORING AND USE SUPERVISION

Short-Term Monitoring:

Actual Use

It is anticipated that after the voluntary non-use of the 1989 Agreement is restored as Active Preference, actual use by Petan's livestock will continue to fluctuate in response to annual variations in forage and stock water availability, primarily as influenced by weather patterns. Petan will prepare annual actual use reports so the amount of livestock use occurring within the Garat Allotment each year can be tracked. Such actual use reports will provide the data necessary for the BLM to generate after-the-fact billing statements for Petan's annual grazing use within the Garat Allotment. The requirement for Petan to prepare and submit annual actual use reports will continue after any adjustments in Active Preference are made pursuant to the *Grazing Use Adjustment Protocol* established herein.

Utilization

Utilization data will be collected annually using the Key Species Method described in the 1996 Interagency Technical Reference entitled *Utilization Studies and Residual Measurements* (1996 Utilization Reference). To the extent possible, utilization studies will be conducted within 15 days of the end of the livestock grazing season each year. Additional utilization studies may be conducted at other times during a grazing season. Utilization data will be collected at each established BLM Vegetation Study Site (VSS) within Garat pastures that are grazed in a given year. To foster cooperation and joint responsibility for the management and monitoring of the Garat Allotment, the BLM and Petan will annually coordinate these studies and will conduct joint, cooperative utilization studies whenever possible.

To increase consistency and reduce observer bias, utilization classes will be identified using the *Utilization Gauge* described under the Height-Weight Method in the 1996 Utilization Reference by comparing the average residual height of key forage plants that are open to grazing with the average ungrazed height for each key forage species measured in a utilization cage, rather than based upon the utilization class descriptions. At least 25 plants of the dominant key forage species that are open to grazing will be measured at each VSS by observing the nearest key forage plant within a 180^0 arc having a 5-foot radius in front of the observer's toe at each sampling interval along a utilization transect. For such utilization determinations, Key Species shall be: bluebunch wheatgrass (AGSP), Idaho fescue (FEID), and/or Thurber needlegrass (STTH2) within Shallow Claypan 11-13" and Loamy 10-13" (or higher precipitation) ecological sites; and, squirreltail (SIHY) within Loamy 7-10" precipitation ecological sites.

Long-Term Monitoring:

Trend and Ecological Status

Trend within the Garat Allotment will primarily be evaluated by monitoring changes in ecological status scores over time. A report entitled *Ecological Status and Production Analysis Report for the July 22 – August 8, 2003 Studies in the Garat Allotment* dated January 15, 2004 and received by the Owyhee Field Office on February 20, 2004 demonstrated that ecological status within the Garat Allotment between 1979 and 2003 had improved such that the previous *Management Framework Plan* and Owyhee RMP ecological status objectives had been achieved at 10 of 12 VSSs. Progress toward achieving the objectives occurred at the remaining 2 VSSs, both of which had burned in the recent past (1973-1995), were in early seral status in 1979, and had improved to mid seral status by 2003.

A report entitled *Ecological Status and Production Analysis Report for the August 3-7, 2009 Studies in the Garat Allotment* dated June 17, 2011 that was attached to the June 2011 *Application for Grazing Permit Renewal* demonstrated that ecological status within the Garat Allotment between 1997 and 2009 has been maintained or improved at the vast majority (11 out of 12, or 92%) of the VSSs in the Garat Allotment over that 12-year period.

The trend in ecological status at VSSs within the Garat Allotment will be periodically reassessed by comparing the similarity index for the species composition on a site at a given time with that of the historic climax plant community (potential natural community) using the method described in Section 600.0402(b) of the 1997 Natural Resources Conservation Service *National Range and Pasture Handbook* (NRPH). Species composition will be determined using the Dry Weight Rank Method described in the 1996 Interagency Technical Reference entitled *Sampling Vegetation Attributes* (1996 Sampling Reference). Total production will be determined along with species composition using the Harvest Method described in the 1996 Sampling Reference. The similarity index will be calculated based upon species composition rather than the production of individual species because production was found to be highly variable between sampling plots at VSSs within the Garat Allotment, resulting in large confidence intervals which render such production data insensitive for detecting changes.

Such species composition and production studies will be conducted on a periodic basis to evaluate long-term changes in ecological status. Such studies will be scheduled near the end of each 5-year grazing cycle within the Garat Allotment, contingent upon available monitoring budgets and availability of personnel. To foster cooperation and joint responsibility for the management and monitoring of the Garat Allotment, the BLM and Petan will together plan and coordinate these studies and will conduct joint, cooperative ecological status studies (species composition and production) whenever work schedules allow.

The BLM may supplement the species composition and production studies with Nested Frequency studies, Rangeland Health Evaluations, and other appropriate studies if they determine that there is a need for such studies to assess the *Allotment Specific Objectives* described herein. To foster cooperation and joint responsibility for the management and monitoring of the Garat Allotment, the BLM will invite and encourage Petan and any interested publics to participate in such additional studies whenever they are conducted within the Garat Allotment.

Water Quality and Riparian Conditions

In about January 2000, the boundary of the Garat Allotment was adjusted by the BLM so that the allotment extends only to the rims of the Owyhee River and South Fork Owyhee River rather than to the centerline of said rivers, resulting in the following land status within the 211,673 acre Garat Allotment (based upon more accurate GIS based acreage measurements, contrast with the Owyhee RMP): 202,633 public acres; 8,834 State acres; and, 206 Private acres. This adjustment increased the Percent Public Land within the Garat Allotment to 96% (the previous Permit calculated 94% Public Land) and removed from the Allotment the vast majority of the former stream segments for which Idaho water quality and riparian functional condition were concerns.

To the extent that any water quality concerns become an issue in areas that remain within the Garat Allotment, the BLM will be responsible for identifying, monitoring, and evaluating such concerns. If the BLM determines that there is a need to assess riparian functionality in areas that remain within the Garat Allotment, the BLM will establish the timing, location, and frequency for such monitoring in consultation with Petan and any interested publics. The BLM will thereafter conduct such riparian monitoring using the methods described in BLM Technical References 1737-3; 1737-7; 1737-8; and, 1737-9 and 1737-15 (or 1737-11 and 1737-16 where appropriate). If needed, such studies will be scheduled to occur at least once prior to the end of each 5-year grazing cycle within the Garat Allotment, contingent upon the BLM's available monitoring budget and resources. To foster cooperation and joint responsibility for the management and monitoring of the Garat Allotment, the BLM will invite and encourage Petan and any interested publics to participate in water quality and riparian studies whenever they are conducted within the Garat Allotment.

Wildlife Habitat and Special Status Species Habitat or Populations

If the BLM determines that there is a need to assess wildlife habitat or Special Status Species habitat or populations within the Garat Allotment, the BLM will establish the timing, location, and frequency for such monitoring in consultation with Petan and any interested publics. The BLM will thereafter conduct such habitat or population monitoring using methods approved in BLM manuals, handbooks, or technical references. If needed, such studies will be scheduled to occur at least once prior to the end of each 5-year grazing cycle within the Garat Allotment, contingent upon the BLM's available monitoring budget and resources.

To foster cooperation and joint responsibility for the management and monitoring of the Garat Allotment, the BLM will invite and encourage Petan and any interested publics to participate in such habitat or population studies whenever they are conducted within the Garat Allotment.

GRAZING USE ADJUSTMENT PROTOCOL

Adjustments Based Upon Long-Term Monitoring

If analysis of the monitoring data for *Trend and Ecological Status*, *Water Quality and Riparian Conditions*, and/or *Wildlife Habitat and Special Status Species Habitat or Populations* demonstrates that one or more of the *Allotment Specific Objectives* described herein are not being met at the end of a 5-year grazing cycle within the Garat Allotment, the BLM will determine if significant progress was made toward achieving the objective(s). If significant progress toward the objective(s) was not made during the last 5-year livestock grazing cycle, the BLM will evaluate the above listed monitoring data in light of weather patterns, actual use, and utilization levels during such grazing cycle to determine whether livestock management was a contributing factor in the failure to meet or make progress toward the objective(s).

If it is determined that livestock management was a contributing factor in the failure to meet or make progress toward the objective(s), Petan will cooperate with the BLM and any interested publics to identify and implement adjustments to livestock grazing management to address the grazing problems. If such cooperative approach fails to produce agreement on the actions that need to be implemented to address the grazing problems, the BLM may modify the Term Grazing Permit for the Garat Allotment in accordance with BLM grazing regulations.

If analysis of the monitoring data listed above indicates that the *Allotment Specific Objectives* described herein are met, or significant progress toward such objective(s) is being made, or that livestock grazing management is not a contributing factor in the failure to meet or make progress toward the objective(s), adjustments in grazing use within the Garat Allotment will be made based upon Short-Term monitoring of *Actual Use* and *Utilization* as described below.

Adjustments Based Upon Short-Term Monitoring

If the allotment average utilization level on key species observed in the Garat Allotment exceeds Allowable Use (50% utilization) at the end of a 5-year grazing cycle, the Active Preference for the next grazing cycle will be reduced to a Desired Stocking Rate that will result in achieving Allowable Use, according to the following *Desired Stocking Rate* formula:

Desired Stocking Rate = Actual Use x Allowable Use / Observed Utilization

where: Desired Stocking Rate = The Adjusted Active Preference in AUMs
Actual Use = The average Actual Use for the period in AUMs
Allowable Use = 50% utilization of key species
Observed Utilization = The allotment average utilization for the period expressed as a percentage

If the allotment average utilization level on key species observed in the Garat Allotment at the end of a 5-year grazing cycle does not exceed Allowable Use, but is within 10 percentage points thereof (i.e. is between 41% and 50%), the Active Preference for the next grazing cycle will remain unchanged.

If the allotment average utilization level on key species observed in the Garat Allotment at the end of a 5-year grazing cycle is 10 percentage points or more below Allowable Use (i.e. is 40% or less), the Active Preference for the next grazing cycle will be increased to a level that will result in achieving Allowable Use, according to the Desired Stocking Rate formula described above.

Note: adjustments to the Active Preference at the end of any 5-year grazing cycle based upon Short-Term monitoring as described herein will be limited to 3,365 AUMs (10% of Petan's current Total Preference for the Garat Allotment of 33,646 AUMs).

Note: if the allotment average utilization level on key species does not exceed Allowable Use, but the average utilization within a particular pasture (or pastures) at the end of a grazing cycle does, then the grazing distribution between pastures within the Garat Allotment will be adjusted for the next grazing cycle by modifying the Grazing Strategy described herein.

RANGELAND IMPROVEMENTS

Petan and the BLM will cooperate to identify and evaluate locations where existing or additional livestock water sources could be restored, improved, or developed to improve livestock distribution within the Garat Allotment, particularly in the pastures herein identified as Spring pastures.[1] As such sites are identified, Petan will assess them and provide the BLM with input regarding their feasibility and potential to benefit its livestock management within the Garat Allotment. In turn, the BLM will assess such sites for their potential to contribute toward the achievement of the *Allotment Specific Objectives* described herein, and will provide the necessary environmental and cultural clearances needed to implement any such projects.

[1] Any such rangeland improvement projects are simply potential future projects. The *November 18, 2011 Modification* of Petan's *Application for Grazing Permit Renewal* and it's *Permittee Grazing Application/Alternative* do not rely upon the development of any such improvements, and any site specific environmental documentation need not commence until specific projects are identified.

Petan and the BLM will cooperate to identify potential funding sources that might be used to implement any agreed upon range improvement projects within the Garat Allotment, including, but not limited to, range betterment funds and Grazing Lands Conservation Initiative project grants. Petan and the BLM will identify all economic contributions, construction responsibilities, and maintenance responsibilities for each party associated with any such projects through Section-4 Range Improvement Permits or Cooperative Agreements.

Petan recommends the two existing well locations in the Big Horse Pasture of the Garat Allotment known as *Middle Windmill* and *45 Windmill* as high priority sites that could be re-drilled to provide livestock water to significantly improve livestock distribution in that pasture. These locations have the potential to provide livestock water at each old windmill site, as well as to significant additional acreage in the Big Horse Pasture by means of gravity fed pipelines to lower elevation areas. Petan requests that a cooperative process be started as soon as Petan and BLM workloads allow to determine what will be required to re-drill these wells and restore the water delivery structures to a functioning condition, and to develop a pipeline system from one or both well sites.

Finally, Petan again recommends the modification of the cross-fence layout in the Piute Creek/Piute Basin area, as was presented in our June 27, 1997 "Comments to the Draft Owyhee Resource Management Plan and Draft Environmental Impact Statement" as a range improvement project that would benefit the Garat Allotment. A generalized map showing the approximate locations for the proposed fence modifications is reproduced in Appendix 2 herein. Such fence modifications would form two small pastures enclosing Piute Creek. Fencing to the east of these new pastures would be removed, thereby reducing livestock trailing along both sides of the existing fence between Piute Creek and Partition Reservoir. These modifications would improve livestock distribution, increase management flexibility by providing Petan with more control over when its cattle have access to the majority of Piute Creek, and improve aesthetic values for other resource users around Piute Creek and the portion of the Garat Allotment where the Dry Lake #2 and Kimball Pastures currently abut. The BLM will be responsible for resource inventories prior to such fence construction and removal on public lands, and will be responsible for construction of the proposed improvement. However, subject to coordination with the permittee, Petan may be willing to provide the labor for the new fence construction on public lands should the BLM provide the materials for such fence. As was the case for the old fence that will be removed, maintenance for the new fence will be the responsibility of Petan.

ATTACHMENTS

Appendix 1 – Expected Utilization if Livestock Grazing was at 22,750 AUMs or the Full Preference of 33,646 AUMs (2 pages)

Appendix 2 – Map, Proposed Piute Creek/Piute Basin Fence Modifications (1 page)

Expected Utilization if Livestock Grazing was at 22,750 AUMs or the Full Preference of 33,646 AUMs
Analysis of Western Range Service Utilization Data

Garat Allotment - Owyhee Field Office, Idaho BLM

Observed Utilization Data Collected by Western Range Service, Actual Use Data Reported by the Permittee to the BLM

Parameter (units)		Annual Calculations from 1990 through 2010																						Overall Average
		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	1990 - 2010
KEY FORAGE SPECIES	Observed Utilization (%) Simple Average for Key Species	12	4	10	17	23	13	17	18	11	15	17	19	21	24	19	15	25	19	12	15	17	16
	Actual Use (AUMs)	17,308	12,542	13,168	13,742	14,526	14,438	15,051	15,746	16,200	18,876	17,152	18,654	18,230	10,719	11,199	15,488	18,607	12,487	13,169	14,871	16,095	15,156
	% Expected Utilization* on Key Species at **22,750 AUMs** (AUM level with Voluntary Non-Use Restored)	15	8	18	29	36	21	26	26	15	19	23	23	27	50	39	22	30	34	21	23	24	25
	% Expected Utilization* on Key Species at **33,646 AUMs** (Full Preference with Voluntary Non-Use and Suspended Use Restored)	23	11	27	43	53	30	38	39	23	27	34	34	39	74	58	33	44	50	31	34	35	37
ALL OBSERVED SPECIES	Observed Utilization (%) Simple Average for All Observed Species	14	4	10	18	23	13	16	18	11	14	17	19	26	25	21	16	27	20	12	16	17	17
	Actual Use (AUMs)	17,308	12,542	13,168	13,742	14,526	14,438	15,051	15,746	16,200	18,876	17,152	18,654	18,230	10,719	11,199	15,488	18,607	12,487	13,169	14,871	16,095	15,156
	% Expected Utilization* on All Observed Species at **22,750 AUMs** (AUM level with Voluntary Non-Use Restored)	18	8	18	30	36	20	24	26	16	17	23	23	32	52	42	24	33	37	21	25	24	26
	% Expected Utilization* on All Observed Species at **33,646 AUMs** (Full Preference with Voluntary Non-Use and Suspended Use Restored)	27	11	26	45	53	30	38	38	23	25	34	34	47	77	62	35	49	54	31	37	35	39

* % Expected Utilization – The utilization level that would be expected had livestock grazing been at the specified AUM level.

% Expected Utilization = Observed Utilization x Specified AUM Level / AUMs Actual Use

Expected Utilization if Livestock Grazing was at 22,750 AUMs or the Full Preference of 33,646 AUMs
Analysis of Bureau of Land Management Utilization Data

Garat Allotment - Owyhee Field Office, Idaho BLM

Observed Utilization Data and Actual Use Data Reported by the BLM

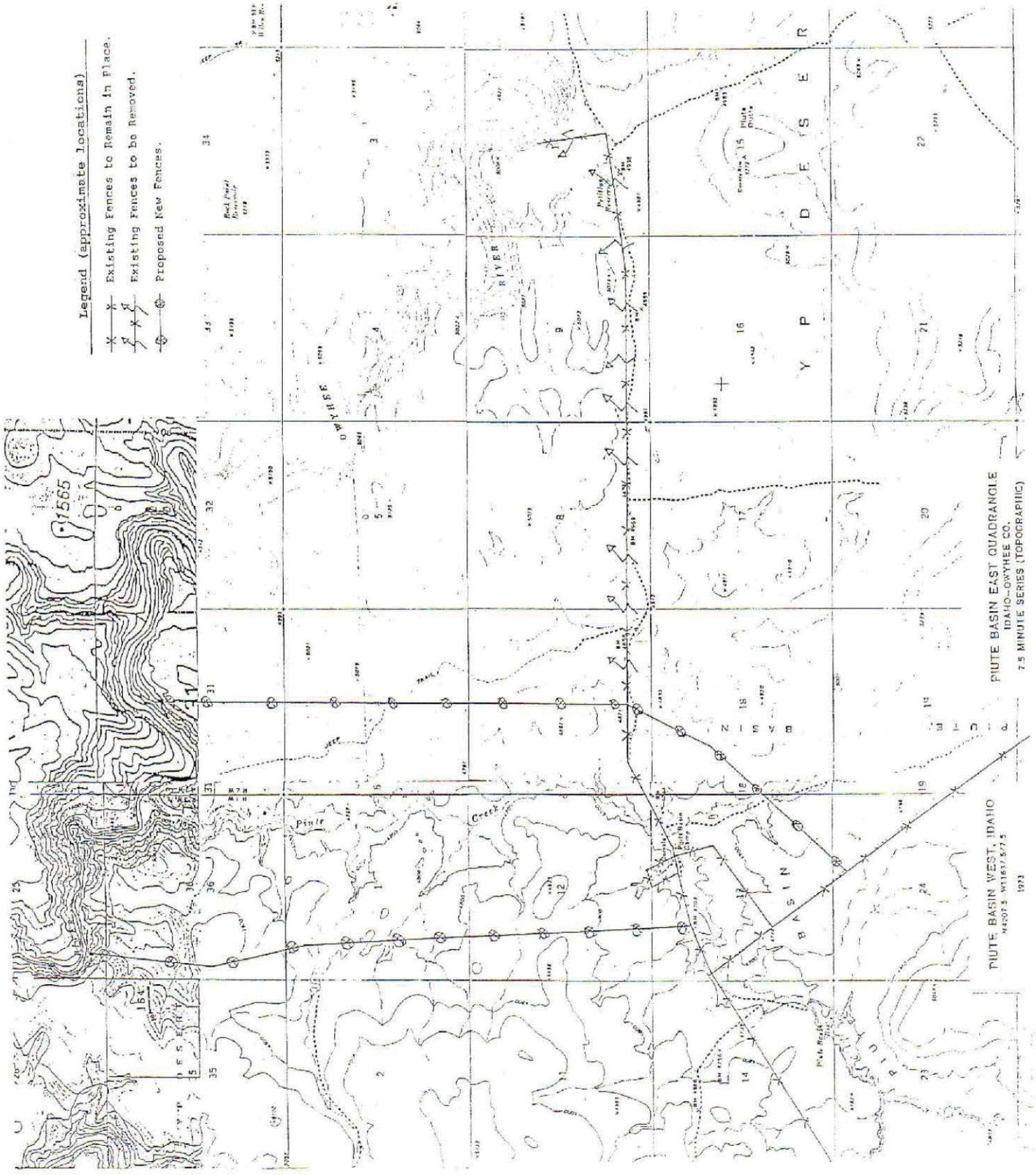
Parameter (units)		Annual Calculations from 1990 through 2003														Overall Average
		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	1990 - 2003
KEY FORAGE SPECIES **Rested pastures considered as 0% utilization in the calculations.**	Observed Utilization (%) Simple Average for Key Species	10	4	8	19	21	13	16	17	12	15	16	21	21	22	**15**
	Actual Use (AUMs)	17,308	12,542	13,168	13,742	14,526	14,438	15,051	15,746	16,200	18,876	17,152	18,654	18,230	10,719	**15,454**
	% Expected Utilization* on Key Species at **22,750 AUMs** (AUM level with Voluntary Non-Use Restored)	13	7	14	31	33	20	24	25	17	18	21	26	26	47	**23**
	% Expected Utilization* on Key Species at **33,646 AUMs** (Full Preference with Voluntary Non-Use and Suspended Use Restored)	19	11	20	47	49	30	36	36	25	27	31	38	39	69	**34**

* % Expected Utilization – The utilization level that would be expected had livestock grazing been at the specified AUM level.

% Expected Utilization = Observed Utilization x Specified AUM Level / AUMs Actual Use

Original Attached to Petan's June 27, 1997 "Comments to the Draft Owyhee Resource Management Plan and Draft Environmental Impact Statement"

Prepared by Western Range Service



CASE FILE COPY

APPLICATION FOR GRAZING PERMIT RENEWAL

AUTH NUMBER: 1102196
DATE PRINTED: 5/25/2011

Form 4130-2a
(February 1999)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR GRAZING PERMIT RENEWAL

RETURN BY: June 24, 2011

STATE	ID
OFFICE	LLIDB03000
AUTH NUMBER	1102196
PREFERENCE CODE	03
DATE PRINTED	05/25/2011

BUREAU OF LAND MANAGEMENT
OWYHEE FIELD OFFICE
20 FIRST AVE WEST
MARSING ID 83639

06 LIVESTOCK CO.
C/O DENNIS STANFORD
BOX 167
JORDAN VALLEY OR 97910

This application for grazing permit renewal describes your current permit schedule(s) and summarizes your permitted use. If you wish to apply for renewal of this permit, sign and return this form by the date shown above. Contact your local BLM office at 208-896-5912 if you have questions.

MANDATORY TERMS AND CONDITONS

ALLOTMENT	PASTURE	LIVESTOCK NUMBER	KIND	GRAZING BEGIN	PERIOD END	%PL	TYPE USE	AUMS
00450 SWISHER SPRINGS		53	CATTLE	04/15	10/31	100	ACTIVE	348
00637 SWISHER FFR		15	CATTLE	12/01	12/31	100	ACTIVE	15

OTHER TERMS AND CONDITIONS:

LIVESTOCK NUMBERS AND DATES MAY VARY ANNUALLY WITHIN YOUR ESTABLISHED PERIOD OF USE PROVIDED AUMS ARE NOT EXCEEDED.

TURN OUT IS SUBJECT TO BOISE DISTRICT RANGE READINESS CRTIERIA.

SALT AND/OR SUPPLEMENT SHALL NOT BE PLACED WITHIN ONE QUARTER (1/4) MILE OF SPRINGS, STREAMS MEADOWS, ASPEN STANDS, PLAYAS OR WATER DEVELOPMENTS.

CHANGES TO THE SCHEDULED USE REQUIRES PRIOR APPROVAL.

YOU ARE REQUIRED TO COORDINATE TRAILING ACTIVITIES WITH THE BLM PRIOR TO INITIATION. A TRAILING PERMIT OR SIMILAR AUTHORIZATION MAY BE REQUIRED PRIOR TO CROSSING PUBLIC LANDS.

LIVESTOCK EXCLOSURES LOCATED WITHIN YOUR GRAZING ALLOTMENT(S) ARE CLOSED TO ALL DOMESTIC GRAZING USE.

YOU ARE REQUIRED TO MAINTAIN RANGELAND IMPROVEMENTS IN ACCORDANCE WITH THE COOPERATIVE AGREEMENTS AND RANGE IMPROVEMENT PERMITS IN WHICH YOU ARE A SIGNATOR OR ASSIGNEE. ALL MAINTENANCE OF RANGELAND IMPROVEMENTS WITHIN A WILDERNESS STUDY AREA REQUIRES CONSULTATION WITH THE AUTHORIZED OFFICER.

YOU ARE REQUIRED TO PROPERLY COMPLETE, SIGN, AND DATE AN ACTUAL

CASE FILE COPY

APPLICATION FOR GRAZING PERMIT RENEWAL

AUTH NUMBER: 1102196
DATE PRINTED: 5/25/2011

GRAZING USE REPORT FORM (4130-5) FOR EACH ALLOTMENT. THE COMPLETED FORM(S) MUST BE SUBMITTED TO THIS OFFICE WITHIN 15 DAYS FROM THE LAST DAY OF YOUR AUTHORIZED ANNUAL GRAZING USE.

SUPPLEMENTAL FEEDING IS LIMITED TO SALT, MINERAL, AND/OR PROTEIN IN BLOCK, GRANULAR, OR LIQUID FORM. IF USED, THESE SUPPLEMENTS MUST BE PLACED AT LEAST ONE-QUARTER 1/4 MILE AWAY FROM ANY RIPARIAN AREA, SPRING, STREAM, MEADOW, ASPEN STAND, PLAYA, SPECIAL STATUS PLANT POPULATION, OR WATER DEVELOPMENT.

PURSUANT TO 43 CFR 10.4(B) YOU MUST NOTIFY THE BLM FIELD MANAGER, BY TELEPHONE WITH WRITTEN CONFIRMATION, IMMEDIATELY UPON THE DISCOVERY OF HUMAN REMAINS, FUNERARY OBJECTS, SACRED OBJECTS, OR OBJECTS OF CULTURAL PATRIMONY (AS DEFINED IN 43 CFR 10.2) ON FEDERAL LANDS. PURSUANT TO 43 CFR 10.4(C), YOU MUST IMMEDIATELY STOP ANY ONGOING ACTIVITIES CONNECTED WITH SUCH DISCOVERY AND MAKE A REASONABLE EFFORT TO PROTECT THE DISCOVERED REMAINS OR OBJECTS.

AS A RESULT OF JUDGE WINMILL'S FEBRUARY 29, 2000, MEMORANDUM DECISION AND ORDER THE FOLLOWING INTERIM TERMS AND CONDITIONS NOW APPLY TO THIS GRAZING AUTHORIZATION:
1) KEY HERBACEOUS RIPARIAN VEGETATION, WHERE STREAMBANK STABILITY IS DEPENDENT UPON IT, WILL HAVE A MINIMUM STUBBLE HEIGHT OF 4 INCHES ON THE STREAMBANK, ALONG THE GREENLINE, AFTER THE GROWING SEASON;
2) KEY RIPARIAN BROWSE VEGETATION WILL NOT BE USED MORE THAN 50% OF THE CURRENT ANNUAL TWIG GROWTH THAT IS WITHIN REACH OF THE ANIMALS;
3) KEY HERBACEOUS RIPARIAN VEGETATION ON RIPARIAN AREAS, OTHER THAN THE STREAMBANKS, WILL NOT BE GRAZED MORE THAN 50% DURING THE GROWING SEASON, OR 60% DURING THE DORMANT SEASON; AND
4) STREAMBANK DAMAGE ATTRIBUTABLE TO GRAZING LIVESTOCK WILL BE LESS THAN 10% ON A STREAM SEGMENT.

ALLOT NO CONDITIONS

NO ALLOTMENT TERMS OR CONDITIONS

NO OFFICE TERMS OR CONDITIONS

ALLOTMENT SUMMARY (AUM'S)

ALLOTMENT	ACTIVE AUMS	SUSPENDED AUMS	TEMP SUSPENDED AUMS	PERMITTED USE
00450 SWISHER SPRINGS	348	0	0	348
00637 SWISHER FFR	15	0	0	15

CASE FILE COPY

APPLICATION FOR GRAZING PERMIT RENEWAL

AUTH NUMBER: 1102196
DATE PRINTED: 5/25/2011

Standard Terms and Conditions

1. Grazing permit or lease terms and conditions and the fees charged for grazing use are established in accordance with all the provisions of the grazing regulations now or hereafter approved by the Secretary of the Interior.

2. They are subject to cancellation, in whole or in part, at any time because of:
   a. Noncompliance by the permittee/lessee with rules and regulations.
   b. Loss of control by the permittee/lessee of all or a part of the property upon which it is based.
   c. A transfer of grazing preference by the permittee/lessee to another party.
   d. A decrease in the lands administered by the Bureau of Land Management within the allotment(s) described.
   e. Repeated willful unauthorized grazing use.

3. They are subject to the terms and conditions of allotment management plans if such plans have been prepared. Allotment management plans MUST be incorporated in permits or leases when completed.

4. Those holding permits or leases MUST own or control and be responsible for the management of livestock authorized to graze.

5. The authorized officer may require counting and/or additional or special marking or tagging of the livestock authorized to graze.

6. The permittee's/lessee's grazing case file is available for public inspection as required by the Freedom of Information Act.

7. Grazing permits or leases are subject to the nondiscrimination clauses set forth in Executive Order 11246 of September 24, 1964, as amended. A copy of this order may be obtained from the authorized officer.

8. Livestock grazing use that is different from that authorized by a permit or lease MUST be applied for prior to the grazing period and MUST be filed with and approved by the authorized officer before grazing use can be made.

9. Billing notices are issued which specify fees due. Billing notices, when paid, become a part of the grazing permit or lease. Grazing use cannot be authorized during any period of delinquency in the payment of amounts due, including settlement for unauthorized use.

10. Grazing fee payments are due on the date specified on the billing notice and MUST be paid in full within 15 days of the due date, except as otherwise provided in the grazing permit or lease. If payment is not made within that time frame, a late fee (the greater of $25 or 10 percent of the amount owed but not more than $250) will be assessed.

11. No Member of, or Delegate to, Congress or Resident Commissioner, after his election of appointment, or either before or after he has qualified, and during his continuance in office, and no officer, agent, or employee of the Department of the Interior, other than members of Advisory committees appointed in accordance with the Federal Advisory Committee Act (5 U.S.C. App.1) and Sections 309 of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.) shall be admitted to any share or part in a permit or lease, or derive any benefit to arise therefrom; and the provision of Section 3741 Revised Statutes (41 U.S.C. 22; 18 U.S.C. Sections 431-433, and 43 CFR Part 7), enter into and form a part of a grazing permit or lease, so far as the same may be applicable.

SIGNATURE OF PERMITTEE: 06 Livestock by Dennis S Stoop DATE : 6-22-11

Title 18, U.S.C., Section 1001 makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false ficticious, or fraudulent statements or representations as to any matter within its jurisdiction.

7.8 Appendix H – Alternative 2 – Earliest on-date and latest off-date in Applicants' Proposed Action

Calculation of earliest on-date and latest off-date for pastures of Castlehead-Lambert allotment with implementation of various terms of flexibility in move dates between pastures with implementation of Alternative 2 - Applicants' Proposed Action

Table H-1: Pasture use on the Castlehead-Lambert allotment

Pasture	Earliest on-date	Shortest pasture use	Longest pasture use	Possible days of use
Lambert Table	4/15 [1]	5/14 to Carter Springs or Red Basin	6/3 to Carter Springs or Red Basin	30 to 50
	4/30 from Carter Springs or Red Basin	5/28 to Carter Springs or Red Basin	6/17 [2] to Carter Springs or Red Basin	
Carter Springs	4/15 [3]	4/29 to Lambert Table	4/29 to Lambert Table	24 to 42
	5/15 from Lambert Table Year 1	6/7 to Red Basin Year 1	6/25 to Red Basin Year 1	
	5/29 from Lambert Table Year 1	6/7 to Red Basin Year 1	6/25 to Red Basin Year 1	
	6/4 from Lambert Table Year 1	6/27 to Red Basin Year 1	7/15 to Red Basin Year 1	
	6/15 from Red Basin Year 2	7/8 [6] to Castlehead or BTC Year 2	7/26 to Castlehead or BTC Year 2	
	6/18 from Lambert Table Year 1	7/11 to Red Basin Year 1	7/29 to Red Basin Year 1	
	7/5 from Red Basin Year 2	7/28 to Castlehead or BTC Year 2	8/15 to Castlehead or BTC Year 2	
	7/19 from Red Basin Year 2	8/11 to Castlehead or BTC Year 2	8/29 to Castlehead or BTC Year 2	
	7/25 from Red Basin Year 2	8/17 to Castlehead or BTC Year 2	9/4 to Castlehead or BTC Year 2	
	8/8 from Red Basin Year 2	8/31 to Castlehead or BTC Year 2	9/18 [4] to Castlehead or BTC Year 2	
Red Basin	4/15 [3]	4/29 to Lambert Table)	4/29 to Lambert Table)	31to 51
	5/15 from Lambert Table Year 2	6/14 to Carter Springs Year 2	7/4 to Carter Springs Year 2	
	5/29 from Lambert Table Year 2	6/14 to Carter Springs Year 2	7/4 to Carter Springs Year 2	
	6/4 from Lambert Table Year 2	7/4 to Carter Springs Year 2	7/24 to Carter Springs Year 2	
	6/8 from Carter Springs Year 1	7/8 [6] to Castlehead or BTC Year 1	7/28 to Castlehead or BTC Year 1	
	6/18 from Lambert Table Year 2	7/18 to Carter Springs Year 2	8/7 to Carter Springs Year 2	
	6/26 from Carter Springs Year 1	7/26 to Castlehead or BTC Year 1	8/15 to Castlehead or BTC Year 1	
	6/28 from Carter Springs Year 1	7/28 to Castlehead or BTC Year 1	8/17 to Castlehead or BTC Year 1	
	7/12 from Carter Springs Year 1	8/11 to Castlehead or BTC Year 1	8/31 to Castlehead or BTC Year 1	
	7/16 from Carter Springs Year 1	8/15 to Castlehead or BTC Year 1	9/4 to Castlehead or BTC Year 1	
	7/30 from Carter Springs Year 1	8/30 to Castlehead or BTC Year 1	9/19 [5] to Castlehead or BTC Year 1	
Castlehead	7/9 [6] from Red Basin Year 1 Or		9/30	11to 21

Pasture	Earliest on-date	Shortest pasture use	Longest pasture use	Possible days of use
	from Carter Springs Year 2			
Between the Canyons	7/9 [6] from Red Basin Year 1 Or from Carter Springs Year 2		9/30	22 to 40
Section 4 - Horse Pasture [7]	4/8		9/22	168

[1] Lambert Table earliest on-date 4/15.
[2] Lambert Table latest off-date 6/17.
[3] Carter Springs or Red Basin earliest on-date 4/15.
[4] Carter Springs latest off-date 9/18.
[5] Red Basin latest off-date 9/19.
[6] Castlehead or Between-the-Canyons earliest on date 7/9.
[7] Horse pasture - horses would be authorized at the permittee's discretion, anytime between 4/8 and 9/22 annually.

7.9 Appendix I – Determination – Castlehead-Lambert Allotment

Appendix I

DETERMINATION

Achieving Standards for Rangeland Health
and
Conforming with Guidelines for Livestock Grazing Management

Resource Area: **Owyhee Field Office**

Watershed Name/Number**:** **Upper Owyhee (17050104)**

Grazing Allotment Name/Number: **Castlehead-Lambert (0634)**

Public Land (acres): **45,826**

Streams on Public Land (miles): **20.25 miles perennial; 124.2 miles intermittent**

Date(s) of Rangeland Health Assessment and Evaluation Report: **January 2012**

Name of Permittee(s): **06 Livestock Co / 1101456**
Collins Family Trust / 1103947

Assessment Participants (Name & Discipline or Interest):

Jake Vialpando – Project Manager
Steve Christensen – Rangeland Management Specialist
Gillian Wigglesworth - Botanist
Susan Filkins – Natural Resource Specialist
Jason Sutter - Wildlife Management Biologist
Gina Rone - Soils
Bonnie Claridge - Fisheries Biologist
Jessica Gottlieb – Writer/Editor

Standard 1 (Watersheds)
Watersheds provide for the proper infiltration, retention, and release of water appropriate to soil type, vegetation, climate, and landform to provide for proper nutrient cycling, hydrologic cycling and energy flow.

Standard
- □ Standard does not apply
- ■ Meeting the Standard
- □ Not meeting the Standard, Livestock grazing management practices are significant factors
- □ Not meeting the Standard; making significant progress toward
- □ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines
- ■ Conforms with Guidelines for Livestock Grazing Management
- □ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).___

Rationale:
The Rangeland Health Assessment and Evaluation Report (USDI BLM 2012) revealed that a slight-to-moderate departure category best reflects overall upland soil and watershed conditions on the Castlehead-Lambert allotment. Although localized soil impacts are identified, overall soil and hydrologic integrity and their associated attributes are maintained, thus leading to the conclusion that Standard 1 for upland watersheds is being met. However, because overall watershed conditions are closely tied to the health of the biotic community, the current imbalance of vegetative composition identified in Standard 4 is a concern where juniper encroach and dominate and where juniper occurrence is not a portion of site potential as identified in ecological site descriptions (USDA NRCS 2010). Soils associated with riparian areas are addressed under Standards 2 and 3.

Absence of periodic fire in juniper-dominated portions of all pastures other than Lambert Table pasture appears to be the major factor influencing the Castlehead-Lambert allotment. Where fire has been absent, juniper encroachment continues to decrease soil cover necessary for nutrient cycling and site protection. This elevates the potential for accelerated soil erosion due to reduced soil surface stability, greater soil water loss, and decreased or more variable soil water storage ability, all of which affect watershed function over the long term. The underrepresentation of native perennial grasses, forbs, and shrubs in areas of juniper encroachment are unable to provide proper nutrient cycling, hydrologic cycling, and energy flow in juniper-dominated portions of the allotment.

The 2007 Crutcher fire had the largest impact by affecting approximately 50 percent of the allotment to varying degrees of severity. In areas where upland vegetation was burned or reduced, annuals and perennials are re-establishing on the site and provide for improving upland vegetation and watershed conditions. Notable delays in recovery, however, were observed in areas where junipers dominated before the fire. This suggests that with prolonged absence of fire and a shift away from reference site conditions, such as a decline in native perennial bunchgrasses and herbaceous annuals due to juniper encroachment, a site will have greater difficulties in recovering after a disturbance from fire.

Vegetation is the primary factor that influences the spatial and temporal variability of upland soil and watershed processes, thus changes in ground cover and vegetation affect runoff, erosion, and infiltration. Although vegetation communities with a full complement of dominant grasses and shrubs consistent with site potential are not present within the allotment where junipers dominate, healthy, productive, and diverse populations of native plants are maintained outside those areas. With the exception of juniper- dominated sites, proper nutrient cycling, hydrologic function, soil stability, and energy flow are provided by current vegetation.

Information Sources:

USDI BLM. 2012. Rangeland Health Assessment and Evaluation Report; Achieving the Idaho Standards for Rangeland Health; Castlehead-Lambert allotment (0634). BLM Idaho State Office. Boise, Idaho. 84p.

USDA NRCS. 2010. Ecological Site Descriptions (Draft). Available from the Idaho State Office of BLM, Boise ID or the Idaho State Office of NRCS, Boise ID.

Standard 2 (Riparian Areas and Wetlands)
Riparian-wetland areas are in properly functioning condition appropriate to soil type, climate, geology, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Standard

- □ Standard does not apply
- □ Meeting the Standard
- ■ Not meeting the Standard, Livestock grazing management practices are significant factors
- □ Not meeting the Standard; making significant progress toward
- □ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines

□ Conforms with Guidelines for Livestock Grazing Management

■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 4, 5, 6

Rationale:

The majority of the riparian-wetland areas associated with both streams and springs/seeps occur within the four northern pastures (1, 2, 5, and 6) of the Castlehead-Lambert allotment. Major perennial streams located all or in part within the allotment include Little Smith, Beaver, and Castle Creeks and the East Fork, West Fork and Red Canyon. Approximately 24.5 miles of the streams (about 90 percent of the perennial and about 20 percent of the intermittent) that support riparian areas were assessed between 1998 and 1999: 15.5 miles were identified as functioning-at-risk (FAR)[a] and approximately 9.0 miles were in proper functioning condition (PFC).

Twenty-two of the 37 springs that occur within the allotment have been assessed. In 2002 and 2003, 14 of the springs were assessed: two were in PFC, six were FAR, and eight were NF. A total of 13 springs were assessed in 2009: nine were in PFC, three were FAR, and one was NF. Seven of the 13 springs that were assessed in 2009 were also surveyed in 2002; three had no change and four had improved in condition. Six additional springs that were not surveyed in 2003 were assessed in 2009: five were in PFC and one was FAR. The streams and springs that were surveyed are representative of the major drainages and riparian-wetland areas as well as the riparian water resource within the allotment.

Stream reaches that are not in proper functioning condition had inadequate riparian-wetland vegetation present to protect streambanks and dissipate energy during high flows, and plant communities often lacked deep-rooted bank-stabilizing hydric species. Additional specific issues identified within the allotment assessments included deeply incised stream channels, a high percent of bare ground, heavy browse on woody species where present, and a general loss of soil because banks were trampled and eroded. Although four springs appear to be on an upward trend, many of the springs and especially the springs that are not fenced to exclude livestock are not meeting the standard. Specific issues identified during assessments included a high percent of bare soil, heavy utilization of riparian-wetland vegetation, and shearing of wetland soils.

[a] PFC indicates a riparian-wetland area has adequate vegetation, landform, or large woody debris present to dissipate stream energy, filter sediment, aid ground water recharge, aid in floodplain development, stabilize streambanks, and/or maintain channel characteristics.
FAR indicates that the riparian-wetland area is in functional condition, but an existing soil, water, or vegetation attribute makes them susceptible to degradation.
NF indicates that the riparian-wetland area does not have sufficient vegetation, landform, or large woody debris to dissipate stream energy, filter sediment, aid ground water recharge, aid in floodplain development, stabilize streambanks, and/or maintain channel characteristics.

Many of the issues identified have likely been the result of the season of use. Grazing during the growing season (July-September) for riparian areas tends to congregate livestock in stream channels, along floodplains, and in springs/seeps. Actual use reports indicated (see Appendix G of the RHA) authorized livestock use continued through the growing season. For example, per Appendix G in the RHA, during 2009 and 2010, livestock grazing occurred from July to September in the Castlehead and the Between-the-Canyons pastures (pastures 1 and 6). Over time, the impacts to the riparian-wetland areas have led to insufficient vegetation and landform to dissipate stream energy during high flow events. Additionally, the removal of riparian vegetation and loss of stream channel form and function has reduced the riparian-wetland areas' ability to filter sediment, aid ground water recharge, aid in floodplain development, and stabilize streambanks.

Information Sources:

USDI Bureau of Land Management.1993. Technical Reference 1737-8 - Greenline riparian-wetland monitoring: Riparian area management. ftp://ftp.blm.gov/pub/nstc/techrefs/Final%20TR%201737-8%20-%20Cagney.pdf

USDI Bureau of Land Management. 1998. Technical Reference 1737-11 - Process for assessing proper functioning condition for lentic riparian-wetland areas. ftp://ftp.blm.gov/pub/nstc/techrefs/Final%20TR%201737-11.pdf

USDI Bureau of Land Management. 1997. Technical Reference 1737-14 - Grazing management for riparian-wetland areas: riparian area management. ftp://ftp.blm.gov/pub/nstc/techrefs/Final%20TR%201737-14.pdf

USDI Bureau of Land Management. 1998. Technical Reference 1737-15 - A user guide to assess proper functioning condition and support science for lotic areas. ftp://ftp.blm.gov/pub/nstc/techrefs/Final%20TR%201737-15.pdf

USDI Bureau of Land Management. 1999. Owyhee Resource Management Plan. Available at the Owyhee Field Office, Marsing, Idaho.

USDI Bureau of Land Management. 2011. Technical Reference 1737-23 - Multiple Indicator Monitoring of Stream Channels and Streamside Vegetation. http://www.blm.gov/nstc/library/pdf/MIM.pdf

Idaho Department of Environmental Quality. 2002. Lower Owyhee Watershed Integrated Report. http://www.deq.idaho.gov/media/458038-integrated_report_2002_final_entire.pdf

Idaho Department of Environmental Quality. 2009. Lower Owyhee Watershed Five Year Review.

http://www.deq.idaho.gov/media/455477-_water_data_reports_surface_water_tmdls_owyhee_watershed_upper_owyhee_watershed_upper_five_year_review_0609.pdf

Idaho Department of Environmental Quality Lower Owyhee Watershed TMDLs: http://www.deq.idaho.gov/water-quality/surface-water/tmdls/table-of-sbas-tmdls.aspx

Idaho Department of Fish and Game Fisheries Management Plan 2007-2012. http://fishandgame.idaho.gov/public/fish/planFisheries.pdf

USDI U.S. Geological Survey. National Hydrologic Dataset (NHD), Earth Science Information Center. http://nhd.usgs.gov/data.html

USDA Farm Services Agency. 2009. NAIP Aerial Imagery. http://www.fsa.usda.gov/FSA/apfoapp?area=home&subject=prog&topic=nai

Standard 3 (Stream Channel/Floodplain)
Stream channels and floodplains are properly functioning relative to the geomorphology (e.g., gradient, size shape, roughness, confinement, and sinuosity) and climate to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Standard
- □ Standard does not apply
- □ Meeting the Standard
- ■ Not meeting the Standard, Livestock grazing management practices are significant factors
- □ Not meeting the Standard; Making significant progress toward
- □ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines
- □ Conforms with Guidelines for Livestock Grazing Management
- ■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 4, 5, 7

Rationale:

The majority of the riparian-wetland areas associated with both streams and springs/seeps occur within the four northern pastures (1, 2, 5, and 6) of the Castlehead-Lambert allotment. Major perennial streams located all or in part within the allotment include: Little Smith, Beaver, and Castle Creek and the East Fork, West Fork and Red Canyon. Approximately 24.5 miles of the streams (about 90 percent of the perennial and about 20 percent of the intermittent) that support riparian areas were assessed

between 1998 and 1999: 15.5 miles were identified as functioning-at-risk (FAR)[b] and approximately 9.0 miles were in proper functioning condition (PFC).

Reaches of stream that are not in proper functioning condition have inadequate riparian-wetland vegetation present to protect streambanks and dissipate energy during high flows, and plant communities are often not comprised of deep-rooted bank-stabilizing hydric species. Additional issues identified within the allotment assessments included deeply incised stream channels, a high percent of bare ground, heavy browse on woody species where present, and a general loss of soil because stream banks and channels are trampled and eroded. Most of the stream channels and floodplains within these pastures are dependent on riparian vegetation for stability because they are not armored with rock and the geology and soil types are erosive.

Many of the issues identified have likely been the result of the season of use. Grazing during the growing season (July-September) for riparian areas tends to congregate livestock in stream channels, along floodplains, and in springs/seeps. Actual use reports indicated (see Appendix G of the RHA) authorized livestock use continued through this growing season. For example, per Appendix G in the RHA, during 2009 and 2010, livestock grazing occurred from July to September in the Castlehead and Between the Canyons pastures (pastures 1 and 6). Over time, the impacts to the riparian-wetland areas have led to insufficient vegetation and landform to dissipate stream energy during high flow events. Additionally, the removal of riparian vegetation and loss of stream channel form and function has reduced the riparian-wetland areas' ability to filter sediment, aid ground water recharge, aid in floodplain development, and stabilize streambanks.

Information Sources:

USDI Bureau of Land Management.1993. Technical Reference 1737-8 - Greenline riparian-wetland monitoring: Riparian area management. ftp://ftp.blm.gov/pub/nstc/techrefs/Final%20TR%201737-8%20-%20Cagney.pdf

USDI Bureau of Land Management. 1998. Technical Reference 1737-11 - Process for assessing proper functioning condition for lentic riparian-wetland areas. ftp://ftp.blm.gov/pub/nstc/techrefs/Final%20TR%201737-11.pdf

[b] PFC indicates a riparian-wetland area has adequate vegetation, landform, or large woody debris present to dissipate stream energy, filter sediment, aid ground water recharge, aid in floodplain development, stabilize streambanks, and/or maintain channel characteristics.
FAR AND NF indicate that the riparian-wetland area does not have sufficient vegetation, landform, or large woody debris to dissipate stream energy, filter sediment, aid ground water recharge, aid in floodplain development, stabilize streambanks, and/or maintain channel characteristics.

USDI Bureau of Land Management. 1997. Technical Reference 1737-14 - Grazing management for riparian-wetland areas: riparian area management. ftp://ftp.blm.gov/pub/nstc/techrefs/Final%20TR%201737-14.pdf

USDI Bureau of Land Management. 1998. Technical Reference 1737-15 - A user guide to assess proper functioning condition and support science for lotic areas. ftp://ftp.blm.gov/pub/nstc/techrefs/Final%20TR%201737-15.pdf

USDI Bureau of Land Management. 1999. Owyhee Resource Management Plan. Available at the Owyhee Field Office, Marsing, Idaho.

USDI Bureau of Land Management. 2011. Technical Reference 1737-23 - Multiple Indicator Monitoring of Stream Channels and Streamside Vegetation. http://www.blm.gov/nstc/library/pdf/MIM.pdf

Idaho Department of Environmental Quality. 2002. Lower Owyhee Watershed Integrated Report. http://www.deq.idaho.gov/media/458038-integrated_report_2002_final_entire.pdf

Idaho Department of Environmental Quality. 2009. Lower Owyhee Watershed Five Year Review. http://www.deq.idaho.gov/media/455477-_water_data_reports_surface_water_tmdls_owyhee_watershed_upper_owyhee_watershed_upper_five_year_review_0609.pdf

Idaho Department of Environmental Quality Lower Owyhee Watershed TMDLs: http://www.deq.idaho.gov/water-quality/surface-water/tmdls/table-of-sbas-tmdls.aspx

Idaho Department of Fish and Game Fisheries Management Plan 2007-2012. http://fishandgame.idaho.gov/public/fish/planFisheries.pdf

USDI U.S. Geological Survey. National Hydrologic Dataset (NHD), Earth Science Information Center. http://nhd.usgs.gov/data.html

USDA Farm Services Agency. 2009. NAIP Aerial Imagery. http://www.fsa.usda.gov/FSA/apfoapp?area=home&subject=prog&topic=nai

Standard 4 (Native Plant Communities)
Healthy, productive, and diverse native animal habitat and populations of native plants are maintained or promoted as appropriate to soil type, climate, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Standard
□ Standard does not apply

□ Meeting the Standard
□ Not meeting the Standard, Livestock grazing management practices are significant factors
□ Not Meeting the Standard; Making significant progress toward
■ Not Meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines

■ Conforms with Guidelines for Livestock Grazing Management
□ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).___

Rationale:

Assessments of rangeland health completed in the January 2012 Rangeland Health Assessment and Evaluation Report (USDI BLM 2012) for the six pastures of the Castlehead-Lambert allotment reveal that the standard for Native Plant Communities is not met within large portions of the ecological sites where juniper encroachment and dominance is present and juniper occurrence is not a portion of the site potential described in ecological site descriptions (USDA NRCS 2010). Additionally, sagebrush steppe vegetation communities within the Castlehead-Lambert allotment exhibit vegetation functional-structural groups that vary from the reference site potential, with an underrepresentation of dominant bunchgrass species for the sites, primarily bluebunch wheatgrass and Idaho fescue. At the same time, the presence of Sandberg bluegrass in vegetation communities is greater than the minor component described in ecological site descriptions.

State-and-transition models have been defined for a number of low sagebrush/bunchgrass and big sagebrush/bunchgrass vegetation communities (USDA NRCS 2010). These models identify a reference plant community with a co-dominance by deep-rooted perennial grasses (e.g., bluebunch wheatgrass, Idaho fescue, and Thurber's needlegrass) and sagebrush. These models also identify possible vegetation change from reference site potential to a greater dominance by sagebrush, shallow-rooted bunchgrasses (e.g., Sandberg bluegrass and squirreltail), annual herbaceous species, and juniper. Factors that can lead to this shift include fire history, improper grazing management, or a combination of both. In addition, the state-and-transition models identify that dominance by deep-rooted perennial bunchgrasses can be enhanced and maintained with proper grazing management. The presence of sagebrush in the reference state shrub layer depends on the amount of time since the most recent fire and the individual sagebrush species present. Presence of juniper is dependent on a source of seed and absence of periodic fire. As a result, a number of phases of the reference state for low sagebrush or big sagebrush vegetation communities can be expressed through the vegetation composition. The expressed vegetation composition is an indicator of past disturbances, including fire and grazing

practices, and is in a dynamic equilibrium. Additionally, the current phase of the potential reference community has potential to change as a result of future disturbances or removal of disturbances. The state-and-transition models further identify that following frequent or combined disturbances, a transition to a different vegetation community can be crossed, resulting in a new state. Return to the reference state once the new state is created requires large inputs, such as mechanical vegetation manipulation. Return to the reference vegetation community requires more than passive removal of the disturbance which led to the new state or restoration of natural disturbance regimes which have been absent.

Ecological site descriptions for Castlehead-Lambert allotment do not identify the presence of juniper in reference site descriptions, although juniper has the potential to invade sites totaling 77 percent of the acreage. State-and-transition models described in ecological site descriptions also identify that juniper dominance of the vegetation community is limited to a new state resulting from the absence of fire and improper grazing management.

Wildfire in 2007, which burned in portions of pastures 1 (Castlehead), 2 (Carter Springs), 3 (Red Basin), and 6 (Between-the-Canyons), has reduced juniper dominance within burned portions of the allotment and progress toward vegetation recovery and site potential is occurring, as evidenced by rangeland health field assessments completed in burned areas following the fire. Other recent fires have also contributed to the reduction of juniper dominance within much of the allotment. Juniper encroachment is not a concern within pasture 4 (Lambert Table). Ecological sites mapped in pasture 4 do not include potential for juniper invasion in the absence of fire. Absence of periodic fire in juniper-dominated portions of all pastures other than pasture 4 is the primary factor for the allotment not meeting Standard 4. Historic livestock grazing also contributed to juniper encroachment into sagebrush/bunchgrass vegetation communities, as identified in state-and-transition models. Healthy, productive, and diverse populations of native perennial grasses, forbs, and shrubs are not maintained with juniper encroachment. Remaining native perennial grasses, forbs, and shrubs in juniper-dominated portions of the allotment do not provide for proper nutrient cycling, hydrologic cycling, and energy flow.

In addition to the juniper encroachment within Castlehead-Lambert allotment, sagebrush steppe vegetation communities within the allotment exhibit vegetation functional-structural groups that vary from the reference site potential. State-and-transition models identified for low sagebrush/bunchgrass and big sagebrush/bunchgrass ecological sites, as identified above, are applicable to vegetation communities in Castlehead-Lambert allotment. Dominant bunchgrass species for the reference state, primarily bluebunch wheatgrass and Idaho fescue, are under-represented in the current vegetation communities, while the dominance by Sandberg bluegrass is greater than the minor component described in ecological site descriptions. This departure from ecological site potential is a result of historic livestock grazing and

fire history, a conclusion reached when one considers that 95 percent of the Castlehead-Lambert allotment was reported in early or mid-seral condition in the Proposed Owyhee Resource Management Plan and Final Environmental Impact Statement (USDI BLM 1999). These data were recorded as part of a vegetation inventory completed in the late 1970s. The vegetation shift noted for the Castlehead-Lambert allotment likely occurred in the late portion of the 19th century and the early years of the 20th century, a period when public-land livestock grazing was controlled little and stocking rates were high (Vavra, Laycock, & Pieper, 1994).

Although vegetation communities with a full complement of dominant bunchgrasses and shrubs consistent with site potential are not present within the allotment, and a minor component of invasive species is recorded, healthy, productive, and diverse populations of native plants are maintained at levels that meet Standard 4 outside those areas dominated by juniper. With the exception of juniper-dominated sites, proper nutrient cycling, hydrologic cycling, and energy flow are provided by current vegetation.

The slight to moderate departure from potential for biotic integrity reported for pasture 4 in the 2012 evaluation report does not result in the pasture not meeting Standard 4, although historic livestock grazing is the strongest influence for this departure. In addition, repeated livestock grazing during the active growing season for native perennial bunchgrasses[c] has not provided opportunity for recovery from growing season livestock grazing. Failure to provide opportunity for recovery from growing season use in pasture 4 included the 2-year period of stabilization and rehabilitation following the 2007 fire, in which only pasture 4 was available for grazing use in the allotment.

Failure to provide adequate rest or deferment from livestock grazing use following scheduled active growing season use remains a concern in relation to meeting the ORMP vegetation management objective: Improve unsatisfactory and maintain satisfactory vegetation health/condition on all areas. Recent implementation of annual active growing season use in pasture 4 and frequent active growing season use of the pastures 2 and 3 may not provide adequate growing season deferment or rest. A number of sources suggest limiting the intensity of grazing use of bluebunch wheatgrass during the active growing season and providing at least 2 years of deferment for every year of active growing season use (Stoddart 1946), (Blaisdell and Pechanec 1949), (Mueggler 1972), (Mueggler 1975), (Anderson 1991), (Miller et.al. 1994), (USDA NRCS 2012).

Information Sources:

[c] The active growing season for bluebunch wheatgrass and Idaho fescue within vegetation communities of Castlehead-Lambert allotment is May-June, a period when decreasing soil moisture does not provide opportunity for regrowth before the dormant period.

Anderson, Loren D. 1991. Bluebunch wheatgrass Defoliation; Effects & Recovery. USDI Bureau of Land Management Technical Bulletin 91-2. Salmon, Idaho. 10p.

Blaisdell, James B., Joseph F. Pechanec. 1949. Effects of herbage removal at various dates on vigor of bluebunch wheatgrass and arrowleaf balsamroot. Ecology 30: 298-305.

Miller, Richard F., Jamie M. Seufert, Marshall R. Haferkamp. 1994. Management of bluebunch wheatgrass (Agropyron spicatum): a review. Oregon State University Agricultural Experiment Station. Station Bulletin 669. Corvallis, Oregon. 39p.

Mueggler, W.F. 1972. Influence of competition on the response of bluebunch wheatgrass to clipping. Journal of Range Management 25:88-92.

Mueggler, W.F. 1975. Rate and pattern of vigor recovery in Idaho fescue and bluebunch wheatgrass. Journal of Range Management 28(3) p.198-204.

Stoddart, L.A., 1946. Some physical and chemical responses of Agropyron spicatum to herbage removal at various seasons. Utah State Agricultural Experiment Station Bulletin #324. 24p.

USDI BLM. 1999. Proposed Owyhee resource management plan and final environmental impact statement. Boise Field Office Bureau of Land Management. Boise, Idaho.

USDI BLM. 2012. Rangeland Health Assessment and Evaluation Report; Achieving the Idaho Standards for Rangeland Health; Castlehead-Lambert allotment (0634). BLM Idaho State Office. Boise, Idaho. 84p.

USDA NRCS 2012. Plant fact sheet; bluebunch wheatgrass. Web page accessed 2/14/2012: http://plants.usda.gov/factsheet/pdf/fs_pssp6.pdf

USDA NRCS. 2010. Ecological Site Descriptions (Draft). Available from the Idaho State Office of BLM, Boise ID or the Idaho State Office of NRCS, Boise ID.

Vavra, Martin, William A. Laycock, and Rex D. Pieper. 1994. Ecological Implications of Livestock Herbivory in the West. Society for Range Management. Denver, Colorado. 297p.

Standard 5 (Seedings)
Rangelands seeded with mixtures, including predominately non-native plants, are functioning to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and the hydrologic cycle.

Standard

■ Standard does not apply
□ Meeting the Standard
□ Not meeting the Standard, Livestock grazing management practices are significant factors
□ Not meeting the Standard; Making significant progress toward
□ Not Meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines

□ Conforms with Guidelines for Livestock Grazing Management
□ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).___

Rationale:

Through a review of rangeland health standards assessments, monitoring data, and project files, the presence of seeded plant communities have not been identified within the Castlehead-Lambert allotment.

Standard 6 (Exotic Plant Communities, Other than Seedings)

Exotic plant communities, other than seedings, will meet minimum requirements of soil stability and maintenance of existing native and seeded plants. These communities will be rehabilitated to perennial communities when feasible cost effective methods are developed.

Standard

■ Standard does not apply
□ Meeting the Standard
□ Not meeting the Standard, Livestock grazing management practices are significant factors
□ Not meeting the Standard; Making significant progress toward
□ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines

□ Conforms with Guidelines for Livestock Grazing Management
□ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).___

Rationale:

Although the presence of exotic plant communities has been identified within the Castlehead-Lambert allotment, the occurrence of cheatgrass and other invasive species and their potential for expansion to dominate vegetation communities is limited and has been incorporated into discussions under Standard 4 – Native Plant Communities.

Standard 7 (Water Quality)
Surface and ground water on public lands comply with the Idaho Water Quality Standards.

Standard
- □ Standard does not apply
- □ Meeting the Standard
- ■ Not meeting the Standard, Livestock grazing management practices are significant factors
- □ Not meeting the Standard; Making significant progress toward
- □ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines
- □ Conforms with Guidelines for Livestock Grazing Management
- ■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 10

Rationale:

The Idaho Department of Environmental Quality (IDEQ) is the state agency tasked with complying with and implementing the federal Clean Water Act. IDEQ sets the state's standards through the integrated report and beneficial use process. Idaho BLM is expected to implement grazing practices that make progress toward achieving proper functioning condition and satisfactory riparian condition on stream segments listed as water quality limited in the current IDEQ 303(d) list.

The Castlehead-Lambert allotment is within the Lower Owyhee River watershed that was assessed by IDEQ in 2002 (integrated report) and reviewed in 2009 (5-year review). The watershed was assigned beneficial uses that include cold water aquatic life and primary and secondary recreation contact. Cold-water aquatic life water bodies are defined as those having water quality appropriate for the protection and maintenance of a viable aquatic life community for cold-water species. Streams within the allotment that are identified by IDEQ as not supporting the beneficial use include Beaver, Castle, Little Smith, Red Canyon Creeks, and their tributaries.

To comply with the Clean Water Act and protect and enhance the quality of the surface and ground water in the Upper Owyhee watershed, BLM is responsible for developing

range management plans that authorize livestock grazing on Federal lands while meeting State Water Quality Standards criteria in the sub-basin. BLM has monitored water temperatures and concluded that temperatures in the East and West Fork of Red Canyon, Red Canyon, and Little Smith Creeks exceeded the IDEQ criteria for support of the cold-water aquatic life beneficial use. The presence of livestock within stream channels and riparian-wetland area, particularly during the growing season, has led to insufficient vegetation and landform to dissipate stream energy during high flow events that has subsequently led to a loss of stream channel form and function and has reduced the riparian-wetland areas' ability to filter sediment and stabilize stream banks. Consequently, stream channels are wider and shallower, there is less shading, and more sediment loading, all contributing to increased temperatures.

Information Sources:

Idaho Department of Environmental Quality. 2002. Lower Owyhee Watershed Integrated Report. http://www.deq.idaho.gov/media/458038-integrated_report_2002_final_entire.pdf

Idaho Department of Environmental Quality. 2009. Lower Owyhee Watershed Five Year Review.
http://www.deq.idaho.gov/media/455477-_water_data_reports_surface_water_tmdls_owyhee_watershed_upper_owyhee_watershed_upper_five_year_review_0609.pdf

Idaho Department of Environmental Quality Lower Owyhee Watershed TMDLs:
http://www.deq.idaho.gov/water-quality/surface-water/tmdls/table-of-sbas-tmdls.aspx

USDI Bureau of Land Management. 1999. Owyhee Resource Management Plan. Available at the Owyhee Field Office, Marsing, Idaho.

Standard 8 (Threatened and Endangered Plants and Animals)
Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

Standard

- □ Standard does not apply
- □ Meeting the Standard
- ■ Not meeting the Standard, Livestock grazing management practices are significant factors
- □ Not meeting the Standard; Making significant progress toward
- □ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines

□ Conforms with Guidelines for Livestock Grazing Management

■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 5, 6, 8, 12

Rationale:

Botany

The available information as discussed in the Rangeland Health Assessment and Evaluation Report for Castlehead-Lambert (USDI BLM 2012) for special status plants indicates that Standard 8 is being met for thinleaf goldenhead and mountain ball cactus, the only known special status plants within the Castlehead-Lambert allotment. The known thinleaf goldenhead population currently resides in pastures 1 and 6, where implementation of a deferred grazing regime is in place. Grazing occurs after the critical growing period of this species, which allows for the species to flower and fruit on a regular basis. Also, this plant's growing points are at or below ground level, making it somewhat resilient to grazing and trampling effects after seed set. Observations as noted in the Rangeland Health Assessment and Evaluation Report for Castlehead-Lambert (USDI BLM 2012) on mountain ball cactus sites indicate livestock are not significantly affecting the occurrences or habitat due to the lack of vegetation and rocky nature typical of the habitat which prevent livestock congregation, trailing or herbivory. No threats were observed at any of the sites and plants appeared vigorous and capable of reproducing with evidence of recent flowering or fruiting. For these reasons, Standard 8 is being met for special status plants.

Wildlife

Overall, the Castlehead-Lambert allotment is making significant progress toward meeting Standard 8 for wildlife in upland habitats, due in large part to the juniper clearing effects of the recent 2007 wildfire, the demonstrable post-burn recovery of native plant communities, and the suitable sagebrush steppe habitat conditions in pasture 4. Upland wildlife habitats within the unburned portions of the allotment (with the exception of pasture 4) have departed substantially from what would be expected under a natural disturbance regime (i.e., periodic wildfires; Rowland et al. 2008). Sagebrush steppe and mountain shrub communities that would be expected at higher elevations in pastures 1, 2, 3, and 6 based on ecological site descriptions are being negatively impacted by juniper encroachment and have been predominantly converted to woodland habitat. Although the increase in juniper cover may have benefited some woodland-associated special status wildlife species such as northern goshawks and Lewis' woodpeckers, these woodland habitats are unsuitable for sagebrush-obligate and shrub-dependent special status species such as greater sage-grouse, pygmy rabbits, Brewer's sparrows, loggerhead shrikes, sage sparrows, and Wyoming ground squirrels.

The Crutcher wildfire of 2007 substantially reduced (less than 60 percent) juniper dominance in these pastures and post-burn recovery of upland native communities is occurring. The return of perennial bunchgrasses and forbs, and in the long term (i.e., 20 to 50 years), the shrub component, should provide the structural and functional constituents necessary for suitable breeding habitat for the aforementioned shrub-associated species and foraging habitat for spotted and Townsend's big-eared bats, as well as raptors such as golden eagles, ferruginous hawks, and prairie falcons. Upland habitats within pasture 4 have not been affected by juniper encroachment or recent wildfires, and although preferable bunchgrasses and less desirable bluegrasses are under- and over-represented (respectively) in comparison to reference conditions, wildlife habitat within the pasture is providing adequate protective cover and suitable nesting and foraging habitat for greater sage-grouse and other shrub-obligate wildlife species.

On the other hand, Standard 8 is not being met for wildlife in riparian/wetland habitats accessible to livestock grazing due to a lack of hydric vegetation and soil instability along streambanks and in wet meadows. Typically, for the reaches of stream that are not in proper functioning condition, there is inadequate riparian/wetland vegetation present to protect streambanks and dissipate energy during high flows, and plant communities are often not comprised of deep-rooted bank-stabilizing hydric species. Heavy herbaceous riparian vegetation use and streambank trampling by livestock have reduced nesting substrate, protective cover, and foraging areas for many riparian-dependent special status wildlife species such as northern goshawks, calliope hummingbirds, willow flycatchers, and some special status bat species like fringed myotis. Heavy use and trampling in riparian areas also have increased stream temperatures, channel width-to-depth ratios, and sediment loads, which degrade and limit suitable habitat for aquatic special status species such as Columbia spotted frogs, western toads, and redband trout. In addition to the effects of livestock grazing, juniper encroachment is threatening riparian areas and aspen stands and limiting the amount of nesting and foraging habitat many riparian-dependent migratory birds and special status species require.

Information Sources:

Baker, W.L. 2006. Fire and restoration of sagebrush ecosystems. Wildlife Society Bulletin 34: 177-185.

Connelly, J.W., S.T. Knick, M.A. Schroeder, and S.J. Stiver. 2004. Conservation assessment of greater sage-grouse and sagebrush habitats. Western Association of Fish and Wildlife Agencies. Unpublished Report. Cheyenne, Wyoming.

Idaho Department of Fish and Game. 2005. Idaho Comprehensive Wildlife Conservation Strategy. Idaho Conservation Data Center, Idaho Department of Fish and

Game, Boise, ID. http://fishandgame.idaho.gov/public/wildlife/cwcs/ [accessed November 28, 2011].

Idaho Department of Fish and Game. 2005a. Idaho Comprehensive Wildlife Conservation Strategy, Appendix B. Idaho Conservation Data Center, Idaho Department of Fish and Game, Boise, ID. Available online: http://fishandgame.idaho.gov/public/docs/compWildStrategy/appendixB.pdf [accessed November 28, 2011].

Idaho Partners in Flight. 2000. Idaho Bird Conservation Plan, Version 1.0, January 2000. Idaho Partners in Flight. Available online: http://www.blm.gov/wildlife/plan/pl_id_10.pdf [accessed November 28, 2011].

NatureServe. 2011. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://www.natureserve.org/explorer. (Accessed: November 10, 2011).

Rowland, M.M., L.H. Suring, R.J. Tausch, S. Greer and M.J. Wisdom. 2008. Charateristics of western juniper encroachment into sagebrush communities in central Oregon. USDA Forest Service Forestry and Range Sciences Laboratory, LaGrande, Oregon, USA. 23 pp.

Stiver, S.J., A.D. Apa, J.R. Bohne, S.D. Bunnell, P.A. Deibert, S.C. Gardner, M.A. Hilliard, C.W. McCarthy, and M.A. Schroeder. 2006. Greater sage-grouse comprehensive conservation strategy. Western Association of Fish and Wildlife Agencies. Unpublished Report. Cheyenne, Wyoming.

USDI Bureau of Land Management. 2003. Idaho Bureau of Land Management Sensitive Species List. Instruction Memorandum ID-2003-057. State Director Idaho State Office, BLM. Boise, Idaho.

USDI BLM. 2012. Rangeland Health Assessment and Evaluation Report; Achieving the Idaho Standards for Rangeland Health; Castlehead-Lambert allotment (0634). BLM Idaho State Office. Boise, Idaho. 84p.

USDI U.S. Fish and Wildlife Service. 2008. Birds of Conservation Concern 2008. U.S. Fish and Wildlife Service, Division of Migratory Bird Management. Arlington, Virginia. Available online: http://www.fws.gov/migratorybirds/NewReportsPublications/SpecialTopics/BCC2008/BCC2008.pdf [accessed November 28, 2011]

USDI U.S. Fish and Wildlife Service. 2009. Semi-annual Species List Update 14420-2010-SL-0081. Memorandum from Idaho Fish and Wildlife Office to Idaho State Director, BLM. December 30, 2009.

USDI U.S. Fish and Wildlife Service. 2011. U.S. Fish and Wildlife Service, Environmental Conservation Online System, Species Reports, Species By County Report, Owyhee County, Idaho. http://ecos.fws.gov/tess_public/countySearch!speciesByCountyReport.action?fips=16073 [accessed November 28, 2011].

Determination:

I have determined that Standards 2, 3, 4, 7, and 8 of the Idaho Standards for Rangeland Health are not being met in the Castlehead-Lambert allotment. Current livestock grazing management practices are significant factors in not meeting Standards 2, 3, 7, and 8. Livestock management practices do not conform with all Idaho Guidelines for Livestock Grazing Management guidelines, including 4, 5, 6, 7, 8, 10, and 12.

Owyhee Field Manager

8/28/2012
Date

7.10 Appendix J – Determination – Garat Allotment

Appendix J

DETERMINATION

Achieving Standards for Rangeland Health
and
Conforming with Guidelines for Livestock Grazing Management

Resource Area: **Owyhee Field Office**

Watershed Name/Number**:** **Upper Owyhee (17050104)**
South Fork Owyhee (170505)

Grazing Allotment Name/Number: **Garat (0584)**

Public Land (acres): **202,618**

Streams on Public Land (miles): **0 miles perennial; 651.65 miles intermittent and ephemeral**

Date(s) of Rangeland Health Assessment and Evaluation Report: **January 2012**

Name of Permittee(s): **Petan Company of Nevada, Inc. / 1101449**

Assessment Participants (Name & Discipline or Interest):

Jake Vialpando – Project Manager
Carmela Leavitt – Rangeland Management Specialist
Steve Christensen-Rangeland Management Specialist
Susan Filkins – Natural Resource Specialist
Jason Sutter – Wildlife Biologist
Jim Priest - Wildlife Biologist
Gina Rone - Soils
Bonnie Claridge - Fisheries Biologist
Jessica Gottlieb – Writer/Editor

Standard 1 (Watersheds)
Watersheds provide for the proper infiltration, retention, and release of water appropriate to soil type, vegetation, climate, and landform to provide for proper nutrient cycling, hydrologic cycling and energy flow.

Standard
- □ Standard does not apply
- □ Meeting the Standard
- □ Not Meeting the Standard, Livestock grazing management practices are significant factors
- □ Not Meeting the Standard; Making significant progress toward
- ■ Not Meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines
- ■ Conforms with Guidelines for Livestock Grazing Management
- □ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).__

Rationale: Assessments of rangeland health completed in the January 2012 Rangeland Health Assessment and Evaluation Report (USDI BLM 2012) reveal that watershed standards are not being met in pastures 1, 3, and 6, as well as in other localized areas of the Garat allotment. Impacts from absence or presence of fire and historic grazing management are the main causes and have resulted in departures from expected conditions in the plant community, which adversely affects soil and hydrologic function.

The 2012 Garat evaluation report identifies that the sagebrush steppe vegetation communities currently present vary from reference site potential, as sagebrush dominates and deep-rooted bunchgrass species are underrepresented. With a decrease in vegetative cover, runoff and erosion become more common and adversely impact watershed function and nutrient cycling. The plant community composition and distribution may remain static or move further away from reference conditions. These departures from ecological site potential (USDA NRCS 2010) were concluded during the RHA and Evaluation (USDI BLM 2012) and suggest little current improvement from static or declining conditions, resulting in a moderate rating of soil/site stability and hydrologic function in pasture 3 and, to a lesser extent, in pasture 1. This decrease in watershed function contributed to a finding that Standard 1 was not being met in pastures 1 and 3.

Degraded watershed function from changes in biotic integrity is especially apparent in water flow patterns, pedestals, and bare ground that show departures from reference conditions when associated with Loamy 10-13” sites. Since the majority of monitoring in the Garat allotment occurred on loamy sites, the increased presence of degraded soils

found at many locations could be more prevalent because 52 percent of the allotment consists of Loamy 10-13” sites.

Sediment movement may be relatively short to non-existent on flat terrain but is of greater significance where slopes promote transport over longer distances that are not disrupted by vegetation, gravels, litter, or biotic crusts. Despite the presence of large and relatively flat plateaus in the Garat allotment, steep slopes can be found where abrupt rims give way to below-lying basins, such as in the northeast portions of Forty-five Field, the northern part of Kimball, the eastern half of Big Horse Basin, and through the central part of Juniper Basin. Slopes average 0 to 15+ percent across the plateaus and intermediate slopes but can be 20 to 50+ percent on the breaklands below the rim.

Ground cover data exhibits a downward or static trend in basal vegetation, total vegetation, and biological crusts, along with static or increasing canopy cover-representing shrubs, increased litter, and a reduction in bare ground. When litter is increasing, as can be expected with the abundant presence of mature sagebrush, bare soils often decline and are masked by abundant material. However, bare ground may increase again over time with plant mortality and decadence, especially in mature sagebrush communities, which is the case in pasture 3 and, at a more reduced rate, in pasture 1. With decreased litter and increased bare ground, the potential detachment of soil particles due to a lack of protective cover can contribute to increased erosion. This was noted as being observed at the 2003 RHFA sites (USDI BLM 2012).

Where fire occurred in the last 30 years and subsequent livestock grazing management did not provide opportunity for recovery of vegetation immediately following the fires (see maps in USDI BLM 2012), localized areas are degraded and many sites that burned in the mid-1980s have not recovered. This is apparent in pastures 4 and 6, where soil and hydrologic function are compromised due to a lack of plant diversity, a reduced shrub component, and a departure from ecological potential in the structural functional groups, along with dominance of annual and small perennial grasses.

In pasture 6, the most notable departure from reference conditions is from invasive plants. Five of the eight sites that did not meet the standard for exotic plant communities are dominated by annual species and occur within the old fire perimeters. Three ground cover trend sites show predominantly static or decreasing conditions for basal vegetation, microbiotic crusts, non-persistent litter, total vegetation, and canopy cover. Although annuals provide spring forage for livestock and cover for watershed protection by effectively reducing raindrop energy, the presence of annuals affect the biological, chemical, and physical aspects of soils and long-term (more than 30 years) rangeland health.

Invasive annuals modify the ecosystem attributes of soil temperature and soil water distribution, provide less root mass and soil stability than perennial bunchgrasses, reduce the diversity and cover of microbiotic crusts over time, promote loss of native

plants, and adversely alter fire intervals and impacts (Pellant 1996). The extremely flammable conditions associated with standing dead cheatgrass have the potential to worsen watershed conditions if vegetation is removed by wildfire. The resulting combination of water erosion on unprotected steeper ground and deflating wind erosion could promote soil surface loss and degradation and reduce soil productivity that would add to the already deteriorated conditions. This dominance of annuals and its adverse effects on watershed function contributed to a finding of not meeting the Standard in pasture 6.

Alterations of soils occur due to livestock trampling and hoof action when soils are wet in the spring, particularly in pastures 1, 2, 3, and 4. In addition, heavy livestock use surrounding reservoirs such as Juniper Reservoir and Piute Reservoir, water developments, and salting areas, results in localized compaction, increased bare ground, and removal of vegetation. On the Garat allotment, these developed areas make up less than 2 percent of the allotment and effects of livestock trampling and hoof action on watershed functionality generally decline with distance away from water developments.

Vegetation is the primary factor that influences the spatial and temporal variability of soil and watershed processes in the Garat allotment. Departures from ecological site potential result from historic grazing and fire history and influence proper nutrient cycling, hydrologic cycling, and energy flow at various levels. As vegetative conditions change, so do infiltration, runoff, and erosion. An improvement in biotic integrity (Standard 4) is therefore a major factor that contributes to the satisfactory maintenance of watershed condition over the long term.

Information Sources:

Blaisdell, J.P., R.B. Murray, and E.D. McArthur. 1982. Managing inter-mountain rangelands-sagebrush-grass ranges. Gen. Tech. Rep. USDA FS, INT-134, 46 p.

Daddy, F., M.J. Trlica, and C.D. Bonham. 2006. Vegetation and soil water differences among big sagebrush communities with different grazing histories. Southwestern Naturalist, 33(4):413-424.

Pellant, M. 1996. Cheatgrass: the invader that won the West. Interior Columbia Basin Ecosystem Management Project, BLM ID State Office, white paper. 23 p.

USDI BLM. 2012. Rangeland Health Assessment and Evaluation Report; Achieving the Idaho Standards for Rangeland Health; Garat allotment (0584). BLM Idaho State Office. Boise, Idaho. 90p.

USDA NRCS. 2010. Ecological Site Descriptions (Draft). Available from the Idaho State Office of BLM, Boise ID or the Idaho State Office of NRCS, Boise ID.

Standard 2 (Riparian Areas and Wetlands)
Riparian-wetland areas are in properly functioning condition appropriate to soil type, climate, geology, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Standard
- □ Standard does not apply
- ■ Meeting the Standard
- □ Not meeting the Standard, Livestock Grazing Management Practices are significant factors
- □ Not Meeting the Standard; Making significant progress toward
- □ Not meeting the Standard; Livestock Grazing Management Practices are **not** significant factors

Guidelines
- ■ Conforms with Guidelines for Livestock Grazing Management
- □ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).___

Rationale:

Approximately 2.5 miles of Piute Creek, between the Piute Basin Reservoir and the fence between pastures 2 and 4, were assessed in 2004 as functional-at-risk[1]. This reach of the creek is influenced by water backing up from the reservoir, which has altered the natural/desired width and depth ratios. The reach lacks woody riparian vegetation; however, because both the form and function of the channel have been altered, this area lacks the potential to support woody vegetation. The assessment indicated that the reach is static, with no apparent trend in condition. In 2003, two springs were assessed as non-functioning. However, the PFC protocol used to assess the springs may not be appropriate because the lentic riparian-wetland areas have lost their ecological integrity and score low when evaluated for management and restoration prioritization. The riparian-wetland areas that would be associated with the two springs did not support any riparian vegetation and had lost all form and function.

Information Sources:

Idaho Department of Environmental Quality. 2002. Lower Owyhee Watershed Integrated Report. http://www.deq.idaho.gov/media/458038-integrated_report_2002_final_entire.pdf

[1] FAR indicates that the riparian-wetland area is in functional condition, but an existing soil, water, or vegetation attribute makes it susceptible to degradation.
NF indicates that the riparian-wetland area does not have sufficient vegetation, landform, or large woody debris to dissipate stream energy, filter sediment, aid ground water recharge, aid in floodplain development, stabilize streambanks, and/or maintain channel characteristics.

Idaho Department of Environmental Quality. 2009. Lower Owyhee Watershed Five Year Review.
http://www.deq.idaho.gov/media/455477-_water_data_reports_surface_water_tmdls_owyhee_watershed_upper_owyhee_watershed_upper_five_year_review_0609.pdf

Idaho Department of Environmental Quality Lower Owyhee Watershed TMDLs:
http://www.deq.idaho.gov/water-quality/surface-water/tmdls/table-of-sbas-tmdls.aspx

USDA Farm Services Agency. 2011. NAIP Aerial Imagery:
http://www.fsa.usda.gov/FSA/apfoapp?area=home&subject=prog&topic=nai

USDI Bureau of Land Management, 1999. Owyhee Resource Management Plan. Available at the Owyhee Field Office, Marsing, ID.

USDI Bureau of Land Management. 2007. Technical Bulletin 2007-2 BLM/ID/GI-07+1150 – Lentic Riparian-Wetland Area Prioritization Guide: A Process for Evaluationg Management & Restoration Priorities for Non-Riverine Systems.

USDI Bureau of Land Management. 1998. Technical Reference 1737-15 - A user guide to assess proper functioning condition and support science for lotic areas:
ftp://ftp.blm.gov/pub/nstc/techrefs/Final%20TR%201737-15.pdf

USDI Bureau of Land Management. 1998. Technical Reference 1737-11 - Process for assessing proper functioning condition for lentic riparian-wetland areas: ftp://ftp.blm.gov/pub/nstc/techrefs/Final%20TR%201737-11.pdf

USDI U.S. Geological Survey. National Hydrologic Dataset (NHD), Earth Science Information Center: http://nhd.usgs.gov/data.html

Standard 3 (Stream Channel/Floodplain)
Stream channels and floodplains are properly functioning relative to the geomorphology (e.g., gradient, size shape, roughness, confinement, and sinuosity) and climate to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Standard
- □ Standard does not apply
- ■ Meeting the Standard
- □ Not meeting the Standard, Livestock Grazing Management Practices are significant factors
- □ Not meeting the Standard; Making significant progress toward

□ Not meeting the Standard; Livestock Grazing Management Practices are **not** significant factors

Guidelines

■ Conforms with Guidelines for Livestock Grazing Management
□ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).___

Rationale:

See rationale under Standard 2 above.

Standard 4 (Native Plant Communities)

Healthy, productive, and diverse native animal habitat and populations of native plants are maintained or promoted as appropriate to soil type, climate, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Standard

□ Standard does not apply
□ Meeting the Standard
■ Not meeting the Standard, Livestock Grazing Management Practices are significant factors
□ Not meeting the Standard; Making significant progress toward
□ Not meeting the Standard; Livestock Grazing Management Practices are **not** significant factors

Guidelines

□ Conforms with Guidelines for Livestock Grazing Management
■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 4

Guideline 4: Implement grazing management practices that provide periodic rest or deferment during critical growth stages to allow sufficient regrowth to achieve and maintain healthy, properly functioning conditions, including good plant vigor and adequate vegetative cover appropriate to site potential.

Rationale:

The Rangeland Health Assessment and Evaluation Report completed in January 2012 (USDI BLM, 2012) for the Garat allotment concluded that the standard for Native Plant Communities is not being met. Rangeland health assessments at a majority of sites identified a slight-to-moderate or less departure from healthy biotic integrity. However, in many areas, the plant communities have shifted due to historic livestock grazing practices and altered fire return intervals from what is expected at site potential. A summary of rangeland health field assessment data for pastures 3 (Forty-five Field), 5

(Big Horse), and 6 (Juniper Basin) identifies that this vegetation shift away from a co-dominance of deep-rooted perennial bunchgrasses to a greater dominance of sagebrush species or shallow-rooted bunchgrasses, resulted in a moderate departure from healthy biotic integrity and contributed to a finding of not meeting the rangeland health standard for Native Plant Communities in these pastures. Rangeland health field assessments for pastures 1 (Dry Lake), 2 (Piute), and 4 (Kimball) identify less departure (none to slight; slight to moderate) from the site potential biotic integrity.

Rangeland health field assessments completed in the eastern most portion of pasture 5 and the northern portion of Pasture 6 identify that exotic annual grass species are present in higher-than-expected amounts. This dominance of annual grasses contributed to an additional conclusion of not meeting Standard 4 within those portions of pastures 5 and 6. The cause for not meeting Standard 4 at locations dominated by annual species is past fire and historic grazing treatments implemented within a few years following historic fires.

Trend monitoring data for the majority of the allotment (pastures 1, 2, 3, 5 and 6), show no apparent or static trend. However, the two trend plots in pasture 4 identify a consistent downward trend in the frequency of bluebunch wheatgrass and Idaho fescue between 2003 and 2009. Both species are identified as dominant bunchgrass species at ecological site potential. This decrease in desirable perennial bunchgrass species contributes to a finding that Standard 4 is not met in pasture 4. Consistent livestock grazing in this pasture during the active growing season for native perennial grasses[2] has occurred in recent years. Resting this pasture from grazing for an entire year has only occurred in 2 years (2004 and 1995) during the past two decades, and deferment of grazing until after the active growing season has not occurred during that same period, resulting in little opportunity for recovery of perennial herbaceous species vigor from repeated growing-season use. Therefore, current livestock grazing management practices (lack of periodic rest and/or deferment from livestock grazing) is identified as a significant causal factor for not meeting Standard 4 within pasture 4.

State-and-transition models have been defined within ecological site descriptions for a number of low sagebrush/bunchgrass and big sagebrush/bunchgrass vegetation communities (USDA NRCS 2010). These models identify a reference plant community with a co-dominance by deep-rooted perennial grasses (e.g., bluebunch wheatgrass, Idaho fescue, and Thurber's needlegrass) and sagebrush. These models also identify possible vegetation change from reference site potential to a greater dominance by sagebrush and shallow-rooted bunchgrasses (e.g., Sandberg bluegrass and squirreltail) or annual herbaceous species. Factors that can lead to this shift include fire history, improper grazing management, or a combination of both. In addition, the state-and-transition models for a number of low sagebrush/bunchgrass and big

[2] The active growing season for bluebunch wheatgrass and Idaho fescue within vegetation communities of Garat allotment is May to mid-July, a period when decreasing soil moisture does not provide opportunity for regrowth before the dormant period.

sagebrush/bunchgrass vegetation communities identify that dominance by deep-rooted perennial bunchgrasses can be enhanced and maintained with proper grazing management. The presence of sagebrush in the shrub layer of the reference state vegetation community is dependent on the time since the most recent fire and the individual sagebrush species present. As a result, a number of phases of the reference state for low sagebrush or big sagebrush vegetation communities can be expressed through the vegetation composition. The expressed vegetation composition is an indicator of past disturbances, including fire and grazing practices, and is in a dynamic equilibrium. Additionally, the current phases of the potential reference community have potential to change as a result of future disturbances or removal of disturbances. The state-and-transition models further identify that following frequent or combined disturbances, a transition to a different vegetation community can be crossed, resulting in a new state. Return to the reference state, once the new state is created, requires large inputs, such as mechanical vegetation manipulation. Return to the reference vegetation community requires more than passive removal of the disturbance that led to the new state or restoration of natural disturbance regimes which have been absent.

Ecological site descriptions and associated state-and-transition models for low sagebrush and big sagebrush ecological sites present in Garat allotment are consistent with those identified in the preceding paragraph. The 2012 Rangeland Health Assessment and Evaluation Report for the Garat allotment identifies that in many areas dominated by native plant communities, the sagebrush component is greater than expected in terms of cover, while relative abundance of deep-rooted bunchgrasses has decreased correspondingly. Shrub mortality and decadence are common at sites throughout the allotment that have not burned within the last several decades. This shift from the reference vegetation composition contributed to the recorded departure from the functional-structural groups and reduced plant vigor, which are the dominant factors contributing to departure of biotic integrity of these sites from potential or desired conditions.

In addition, the 2012 evaluation report for the Garat allotment identifies that many of the sagebrush steppe vegetation communities present are in a phase of the reference conditions exhibited by the herbaceous components of vegetation functional-structural groups that vary from the reference site potential. Vegetation communities include an underrepresentation of dominant deep-rooted bunchgrass species for the sites. At the same time, the representation of Sandberg bluegrass in vegetation communities is higher than the minor component described in the reference site potential of the ecological site descriptions.

Herbaceous and shrub species departures from ecological site potential are a result of historic livestock grazing and fire history. A review of state-and-transition models presented in applicable ecological site descriptions for the Garat allotment do not indicate that the transition to a state other than the dynamic reference communities has been crossed in most of the allotment that currently supports native perennial species.

Those portions of pastures 5 and 6 dominated by non-native annual species have transitioned to a state that will require vegetation manipulation to control annual species and establish perennial species.

Recorded livestock utilization levels, averaged within each of the pastures from 1979 to 2011, have been light on key forage plant species (22 to 31 percent). These utilization levels are appropriate to allow for maintenance of perennial plant communities capable of facilitating proper nutrient cycling, hydrologic cycling, and energy flow (Holochek, et al. 1999). Light utilization levels also allow trend toward desired vegetation conditions. Reported livestock distribution does include grazing intensity concentrated adjacent to water troughs, dirt tanks, salting sites, Piute Creek and Juniper Reservoir. Utilization is higher in these areas and decreases farther away from areas of livestock concentration. Recent recorded livestock utilization does not appear to be a significant factor in failure to meet the standard for Native Plant Communities within the allotment as a whole or within any one pasture.

A concern remains that livestock management practices are not providing adequate rest or deferment from livestock grazing use during the active growing season, especially within pasture 4 where downward trend in frequency of deep-rooted bunchgrass species was recorded. Planned implementation of a rest-rotation grazing schedule for four of the six pastures in the allotment, and recent implementation of rest in less than the planned 1-of-3-years cycle, may not provide adequate opportunity for recovery of plant health and vigor following repeat years of active growing season use. A number of sources suggest limiting the intensity of grazing use of bluebunch wheatgrass during the active growing season and providing at least 2 years of deferment or rest for every year of active growing season use (Stoddart, 1946), (Blaisdell & Pechanec, 1949) (Mueggler, 1972) (Mueggler, 1975) (Anderson, 1991) (Miller, Seufert, & Haferkamp, 1994) (USDA NRCS, 2012).

In summary, healthy, productive, and diverse populations of native plants are maintained at an adequate level within pastures 1 and 2 to meet the standard for Native Vegetation Communities, even though vegetation communities with a full complement of dominant grasses and shrubs consistent with the reference phase of the site potential are not present. Proper nutrient cycling, hydrologic cycling, and energy flow are provided by current vegetation within these pastures. Standards for Native Vegetation Communities are not met within pastures 3, 5, and 6 where the departure of biotic indicators from site potential is moderate, portions of pastures 5 and 6 dominated by annual species, and pasture 4 where downward trend in frequency of desirable deep-rooted bunchgrass species is recorded. Failure to meet the standard for Native Vegetation Communities in pastures 3, 5, and 6 is attributed to historic grazing management practices and fire history, while failure to meet the standard in pasture 4 is attributed to current livestock grazing management practices.

Information Sources

Anderson, Loren D. 1991. Bluebunch wheatgrass Defoliation; Effects & Recovery. USDI Bureau of Land Management Technical Bulletin 91-2. Salmon, Idaho. 10p.

Blaisdell, James B., Joseph F. Pechanec. 1949. Effects of herbage removal at various dates on vigor of bluebunch wheatgrass and arrowleaf balsamroot. Ecology 30: 298-305.

Holechek, Jerry L., Hilton Gomez, Francisco Molinar, and Dee Galt. 1999. Grazing studies: what we've learned. Rangelands. 21(2): 12-16.

Miller, Richard F., Jamie M. Seufert, Marshall R. Haferkamp. 1994. Management of bluebunch wheatgrass (Agropyron spicatum): a review. Oregon State University Agricultural Experiment Station. Station Bulletin 669. Corvallis, Oregon. 39p.

Mueggler, W.F. 1972. Influence of competition on the response of bluebunch wheatgrass to clipping. Journal of Range Management 25:88-92.

Mueggler, W.F. 1975. Rate and pattern of vigor recovery in Idaho fescue and bluebunch wheatgrass. Journal of Range Management 28(3) p.198-204.

Stoddart, L.A., 1946. Some physical and chemical responses of Agropyron spicatum to herbage removal at various seasons. Utah State Agricultural Experiment Station Bulletin #324. 24p.

USDI BLM. 1999. Proposed Owyhee resource management plan and final environmental impact statement. Boise Field Office Bureau of Land Management. Boise, Idaho.

USDI BLM. 2012. Rangeland Health Assessment and Evaluation Report; Achieving the Idaho Standards for Rangeland Health; Garat allotment (0584). BLM Idaho State Office. Boise, Idaho. 90p.

USDA NRCS 2012. Plant fact sheet; bluebunch wheatgrass. Web page accessed 2/14/2012: (USDI BLM, 2012)

USDA NRCS. 2010. Ecological Site Descriptions (Draft). Available from the Idaho State Office of BLM, Boise ID or the Idaho State Office of NRCS, Boise ID.

Vavra, Martin, William A. Laycock, and Rex D. Pieper. 1994. Ecological Implications of Livestock Herbivory in the West. Society for Range Management. Denver, Colorado. 297p.

Standard 5 (Seedings)

Rangelands seeded with mixtures, including predominately non-native plants, are functioning to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and the hydrologic cycle.

Standard

■ Standard does not apply
□ Meeting the Standard
□ Not meeting the Standard, Livestock grazing management practices are significant factors
□ Not meeting the Standard; Making significant progress toward
□ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines

□ Conforms with Guidelines for Livestock Grazing Management
□ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).___

Rationale:
Although there are some small inclusions of seeded areas within the Garat allotment, the presence of these seeded communities has been identified as an insignificant portion of the allotment. Seedings do not dominate vegetation communities and have been incorporated into discussions under Standard 4 – Native Plant Communities.

Standard 6 (Exotic Plant Communities, Other than Seedings)
Exotic plant communities, other than seedings, will meet minimum requirements of soil stability and maintenance of existing native and seeded plants. These communities will be rehabilitated to perennial communities when feasible cost effective methods are developed.

Standard

■ Standard does not apply
□ Meeting the Standard
□ Not meeting the Standard, Livestock grazing management practices are significant factors
□ Not meeting the Standard; Making significant progress toward
□ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines

□ Conforms with Guidelines for Livestock Grazing Management
□ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).___

Rationale:
The presence of exotic plant communities has been identified within the Garat allotment, with the occurrence of cheatgrass and other invasive species. However, as is discussed under Standard 4 – Native Plant Communities in the Rangeland Health Assessment and Evaluation Report completed in January 2012 (USDI BLM, 2012) for the Garat allotment, current available information shows their potential for expansion to dominate vegetation communities is limited.

Standard 7 (Water Quality)
Surface and ground water on public lands comply with the Idaho Water Quality Standards.

Standard
- □ Standard does not apply
- ■ Meeting the Standard
- □ Not meeting the Standard, Livestock Grazing Management Practices are significant factors
- □ Not meeting the Standard; Making significant progress toward
- □ Not meeting the Standard; Livestock Grazing Management Practices are **not** significant factors

Guidelines
- ■ Conforms with Guidelines for Livestock Grazing Management
- □ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).___

Rationale:

The Idaho Department of Environmental Quality (IDEQ) is the state agency tasked with implementing the federal Clean Water Act. IDEQ sets the state's standards through the integrated report and beneficial use process. Idaho BLM is expected to implement grazing practices that make progress toward achieving proper functioning condition and satisfactory riparian condition on stream segments listed as water quality limited in the current IDEQ 303(d) list.

Juniper Basin Reservoir falls within the Upper Owyhee watershed that was assigned cold water aquatic life and primary and secondary recreation contact beneficial uses. The reservoir is currently not supporting the beneficial use. However, the reservoir was created for irrigation water storage, rather than cold water biota or recreational use. In June 2009, IDEQ prepared a 5-year review for the watershed that the Garat allotment falls in (Upper Owyhee), and stated, "It is unclear how appropriate the beneficial use assigned to Juniper Reservoir is…"

Juniper Reservoir was not assessed by the BLM for functional condition; however, field visits in 2011indicated there was heavy livestock use surrounding the reservoir and there were impacts associated with the use of riparian vegetation and trampling adjacent to the water body. As expected, distribution of grazing is concentrated adjacent to reservoirs and utilization is higher in these areas but decreases farther away from water sources.

Information Sources:

Idaho Department of Environmental Quality. 2002. Lower Owyhee Watershed Integrated Report. http://www.deq.idaho.gov/media/458038-integrated_report_2002_final_entire.pdf

Idaho Department of Environmental Quality. 2009. Lower Owyhee Watershed Five Year Review. http://www.deq.idaho.gov/media/455477-_water_data_reports_surface_water_tmdls_owyhee_watershed_upper_owyhee_watershed_upper_five_year_review_0609.pdf

Idaho Department of Environmental Quality Lower Owyhee Watershed TMDLs: http://www.deq.idaho.gov/water-quality/surface-water/tmdls/table-of-sbas-tmdls.aspx

USDI Bureau of Land Management. 1999. Owyhee Resource Management Plan. Available at the Owyhee Field Office, Marsing, Idaho.

Standard 8 (Threatened and Endangered Plants and Animals)
Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

Standard

- □ Standard does not apply
- □ Meeting the Standard
- ■ Not meeting the Standard, Livestock grazing management practices are significant factors
- □ Not meeting the Standard; Making significant progress toward
- □ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines

- □ Conforms with Guidelines for Livestock Grazing Management
- ■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 4,8,9,12, 20

Rationale:

Plants

The available information for special status plants indicate Standard 8 is not being met for Davis' peppergrass. However, Standard 8 is being met for rattlesnake stickseed, inch-high lupine, Newberry's milkvetch, and stream orchid. Threats to Davis' peppergrass are associated with livestock grazing such as concentration, trampling, and soil disturbance. The playa habitat in which this plant inhabits is easily damaged due to the types of soils. Playas where Davis' peppergrass occurs are in hard clay bottoms on volcanic plains that get inundated with water during spring seasons. After the spring the playas dry and become cracked and solid similar to concrete. These aridisols have low organic matter content, a layer of pebbles on the surface of the ground, and a subsurface zone where salts have accumulated to form a hard or cemented layer (Owyhee Watershed Council and Scientific Ecological Services). This special status plant in the Garat allotment is found in pasture 5, where a spring rest/rotation grazing regime was prescribed in 1993. Davis' peppergrass would benefit from a grazing rotation that includes grazing outside of spring or winter seasons to provide some protection to the playa habitat when playas are desirable to livestock due to water inundation and wet soils that can be easily damaged. Placement of livestock reservoirs and salt away from playas inhabited by Davis' peppergrass can decrease the amount of livestock activity in the vicinity. For these reasons, Standard 8 is not being met.

Wildlife

Habitat conditions for sage-grouse and other sagebrush-obligate species on the Garat allotment are a combination of man-made and natural forces (i.e., livestock management, wildfire, and natural progression) on the plant community over time. The strategy for assessing/evaluating Standard 8, as identified on page 64 of the Rangeland Health Assessment & Evaluation Report (RHA&ER), is to "apply a landscape-level approach focused on habitat values required by sage-grouse." These habitat values would largely provide habitat characteristics illustrated by the *Sage-grouse Breeding Habitat Suitability Indicators* identified on page 62 of the RHA&ER. The following paragraphs will provide rationale for concluding that the Garat Allotment is "Not Meeting Standards and that Current Livestock Grazing Management Practices are Significant Factors" for Standard 8 of the *Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management*.

Livestock grazing (historic and current), fire, and land management practices have all contributed to present-day conditions. In general, key habitat components for sage-grouse include an adequate canopy cover of tall grasses and medium-height shrubs for nesting, abundant forbs and insects for brood-rearing, and the availability of herbaceous riparian species for late growing-season foraging (page 86, Garat RHA&ER). Of primary concern is the ability of the sagebrush vegetation community to provide habitat structure (overstory/understory interface) and function (nesting, security, and foraging cover) for effective sage-grouse habitat.

The 2003/2004 sage-grouse breeding habitat assessments identified at various levels issues in sagebrush community composition, structure, and function in all pastures. Pastures 1 and 2 showed the highest potential for suitable sage-grouse breeding habitat; however, of concern in the overstory is the mixed spreading/columnar growth form of sagebrush that exposes the understory. Although not desirable, the effect of this condition appears to be minimized by the occurrence of suitable grass/forb height and perennial grass canopy cover in the understory.

In pastures 5 and 6, sage-grouse breeding habitat conditions were rated as marginal. A marginal habitat rating suggests that there are specific or a mix of disconnected habitat indicators in vegetation composition, structure, and function that are a concern associated with the effectiveness of the overstory/understory to provide nesting and security cover.

On the low end of the spectrum are unsuitable sage-grouse breeding habitat conditions identified at sites in pasture 3, due to the combination of marginal sagebrush canopy cover (greater than 25 percent) and growth form in the overstory, in conjunction with unsuitable grass/forb height and perennial grass canopy cover in the understory. An unsuitable average sagebrush canopy cover of less than 10 percent exists in pasture 4 as well. A wildfire in 1985 (followed by no rest from livestock grazing) and continued grazing in pasture 4 has contributed to the current depressed condition and unsuitable sage-grouse breeding habitat conditions at this site.

A native vegetation community of healthy, productive, and diverse populations of native plants typically provides an adequate composition, structure, and function for effective sage-grouse habitat conditions. Effective sage-grouse habitat is closely related to vegetation community conditions discussed in Standard 4. Because vegetation communities have shifted from the site potential of co-dominance by deep-rooted perennial grasses to a greater dominance by sagebrush species or shallow-rooted bunchgrasses due to historic grazing and fire (in addition to exotic annual grass dominance in portions of pastures 5 and 6), Standard 8 is not being met within pastures 3, 5, and 6. This vegetation progression to shallow-rooted bunchgrasses, although meeting Standard 4 for adequate nutrient cycling, energy cycling, and hydrologic cycling, is counter to the development of effective sage-grouse habitat conditions.

The downward trend of perennial bunchgrasses in pasture 4 has also led to unsuitable habitat conditions for sage-grouse. In addition to the results of historic grazing and fire, current livestock management is constraining herbaceous vigor and annual production of larger bunchgrasses in the understory, thereby favoring an increased occurrence of smaller bunchgrasses and annuals (see Standard 4). This scenario prevents the allotment from meeting habitat conditions required for sage-grouse; therefore Guidelines 4, 8, 9, 12 of the *Idaho Rangeland Health and Guidelines for Livestock Grazing Management* are not being met.

In summary, pastures 1 and 2 provide the best, but not optimal, conditions for sage-grouse nesting. Pastures 5 and 6 were rated as marginal, and with improved grazing management, may have potential to progress toward a healthier and more desirable sage-grouse habitat conditions. Pastures 3 and 4 have sites that are not meeting the needs for effective sage-grouse breeding habitat and therefore are not meeting Standard 8 of the Idaho Standards for *Rangeland Health and Guidelines for Livestock Grazing Management*. Any attempts to improve habitat conditions through grazing management or vegetation manipulation will require a long-term strategy. Deferring use during the critical spring herbaceous growing period can advance understory vegetation vigor and production to improve nesting and early-brood rearing habitat conditions.

In portions of the allotment, fences are not constructed to Owyhee RMP standards (1999 ORMP, page 133). For example, in some places, the height of the top wire is approximately 60 inches high, which violates the ORMP standards in big game ranges of 38 to 40 inches, depending on species. Although undocumented in the Garat allotment, management fences are known to contribute to habitat fragmentation, disrupting wildlife movement and sometimes causing wildlife mortalities. Fence standards have been developed by the BLM to mitigate these issues, but the fences in this allotment do not comply with these standards. Therefore, some fences in the Garat allotment are not meeting Guideline 20 of the Idaho Standards for *Rangeland Health and Guidelines for Livestock Grazing Management.*

Determination:

I have determined that Standards 1, 4, and 8 of the Idaho Standards for Rangeland Health are not being met in the Garat allotment. Historic livestock grazing management practices and wildfire have been identified as causal factors toward not meeting Standard 1, while current livestock grazing management practices are significant factors in not meeting Standards 4 and 8. Livestock management practices do not conform with all Idaho Guidelines for Livestock Grazing Management, including 4, 8, 9, 12, and 20.

Owyhee Field Manager

8/28/2012
Date

Appendix K

DETERMINATION

Achieving Standards for Rangeland Health
and
Conforming with Guidelines for Livestock Grazing Management

Resource Area:	**Owyhee Field Office**
Watershed Name/Number**:**	**Upper Owyhee (17050104)**
Grazing Allotment Name/Number:	**Swisher Springs (0450)** **Swisher FFR (0637)**
Public Land (acres):	**Swisher Springs: 3,694** **Swisher FFR: 153**
Streams on Public Land (miles):	**Swisher Springs: 0 miles perennial; 22.6 miles intermittent** **Swisher FFR: < 0.01miles**

Date(s) of Rangeland Health Assessment and Evaluation Report: **January 2012**

Name of Permittee(s): **06 Livestock Co / 1102196**

Assessment Participants (Name & Discipline or Interest):

Jake Vialpando – Project Manager
Steve Christensen – Rangeland Management Specialist
Gillian Wigglesworth – Botanist
Susan Filkins – Natural Resource Specialist
Jason Sutter - Wildlife Management Biologist
Gina Rone - Soils
Bonnie Claridge - Fisheries Biologist
Jessica Gottlieb – Writer/Editor

Standard 1 (Watersheds)

Watersheds provide for the proper infiltration, retention, and release of water appropriate to soil type, vegetation, climate, and landform to provide for proper nutrient cycling, hydrologic cycling and energy flow.

Standard - Swisher Springs allotment

□ Standard does not apply
■ Meeting the Standard
□ Not meeting the Standard, Livestock grazing management practices are significant factors
□ Not meeting the Standard; Making significant progress toward
□ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines - Swisher Springs allotment

■ Conforms with Guidelines for Livestock Grazing Management
□ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).__

Rationale:

Assessments of rangeland health completed in the January 2012 Rangeland Health Assessment and Evaluation Report (USDI BLM 2012) reveal that the soil and hydrologic function integrity indicators have been rated as a slight-to-moderate departure from reference conditions and best reflect the overall condition of the watershed on the Swisher Springs allotment. The assessments also conclude that Standard 1 for Watershed is being met. However, juniper encroachment is identified as a future concern for watershed health in the absence of fire.

Overall watershed condition is closely tied to the health of the biotic community and soil surface stability. Vegetation (upland and riparian) is the primary factor that influences the spatial and temporal variability of soil processes and, as vegetation condition changes, so does infiltration, runoff, and erosion. Static conditions or slight progress in upland vegetation cover are apparent and suggest some improvement. The allotment was not rested after the 2007 Crutcher fire, but a temporary protective fence was constructed to exclude cattle from burned areas. Although the plant communities within burned areas show an increase in shallow-rooted bunchgrasses and limited decrease in deep-rooted bunchgrasses, soil cover indicates the allotment has recovered after the fire.

Bare ground has decreased over the short-term between 2003 and 2009 observations but otherwise shows an average increase of about 10 percent in all pastures over the long-term (more than 20 years). Though this increase in bare ground over the years is non-significant at two out of three sites, it is not desirable, especially where juniper is present or where shifts away from ecological site potential are apparent. The western portion of pasture 2 is most vulnerable to a future reduction in soil stability and hydrologic function and could experience effects from continued juniper encroachment in the current remaining small stand that was not affected by recent fires.

Despite these concerns, the otherwise limited departure of the soil and hydrologic function integrity indicators at assessment locations, when compared to the applicable ecological site descriptions, leads to a finding that watershed attributes in the allotment are within those present at ecological site potential and that proper nutrient cycling, hydrologic cycling, and energy flow are maintained. For these reasons, this allotment is meeting Standard 1.

Standard - Swisher FFR allotment

□ Standard does not apply
■ Meeting the Standard
□ Not meeting the Standard, Livestock grazing management practices are significant factors
□ Not meeting the Standard; Making significant progress toward
□ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines - Swisher FFR allotment

■ Conforms with Guidelines for Livestock Grazing Management
□ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).__

Rationale:

Assessment of rangeland health information for Swisher FFR allotment is similar to that for the Swisher Springs allotment. Departure of watershed conditions at the assessment site identified soil/site stability and hydrologic function as slight-to-moderate and review of all information as disclosed in the January 2012 Rangeland Health Assessment and Evaluation Report (USDI BLM 2012) concludes that Standard 1 for Watershed is being met. However, the currently still limited juniper encroachment is identified as a future concern for watershed health in the absence of fire.

Information Sources:

USDI BLM. 2012. Rangeland Health Assessment and Evaluation Report;
Achieving the Idaho Standards for Rangeland Health; Castlehead-Lambert allotment (0634). BLM Idaho State Office. Boise, Idaho. 84p.

USDA NRCS. 2010. Ecological Site Descriptions (Draft). Available from the Idaho State Office of BLM, Boise ID or the Idaho State Office of NRCS, Boise ID.

Standard 2 (Riparian Areas and Wetlands)

Riparian-wetland areas are in properly functioning condition appropriate to soil type, climate, geology, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Standard - Swisher Springs allotment

□ Standard does not apply
□ Meeting the Standard
■ Not meeting the Standard, Livestock grazing management practices are significant factors

□ Not meeting the Standard; Making significant progress toward
□ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines - Swisher Springs allotment

□ Conforms with Guidelines for Livestock Grazing Management
■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 4, 5, 6

Rationale:

There are two intermittent streams (Swisher and Moonshine Creeks) and one spring (Swisher Spring) that support riparian-wetland areas within the allotment. The small riparian-wetland areas occur within pasture 2 of the allotment. Pasture 1 and 3 contain intermittent reaches of stream that do not appear to support riparian vegetation (NAIP 2011).

Approximately 1 mile of both Swisher and Moonshine Creeks and Swisher Spring were assessed in 2012 using the BLM PFC[a] protocol and were rated as FAR[b]. The intermittent riparian areas associated with the streams are lacking hydric riparian vegetation and have shrinking riparian areas and unstable streambanks. The spring is not fenced to exclude livestock and has a high percentage of bare soil, heavy utilization of riparian-wetland vegetation, and shearing of wetland soils.

Proper Functioning Condition information for pasture 2 indicated a lack of riparian vegetation and livestock trailing as issues on the streams and the spring that support intermittent flows and riparian-wetland areas. Grazing during the growing season (July to September) for riparian areas tends to congregate livestock near springs and along stream channels and floodplains. For example, from 2006 to 2010, actual use reports indicate that livestock grazing occurred from April to October across the allotment (Appendix G in the RHA). Over time, the impacts to the riparian-wetland area have led to insufficient vegetation and landform to dissipate stream energy, filter sediment, aid in floodplain development, stabilize streambanks, and maintain stream channel characteristics.

Information Sources:

Idaho Department of Environmental Quality Lower Owyhee Watershed Integrated Report, 2002: http://www.deq.idaho.gov/media/458038-integrated_report_2002_final_entire.pdf

[a] PFC Assessments are based on Interagency Technical Reference 1737-15, *A User Guide to Assessing Proper Functioning Condition and Supporting Science for Lotic Areas* and 1737-16, *A User Guide to Assessing Proper Functioning Condition and Supporting Science for Lentic Areas*

[b] FAR indicates that the riparian-wetland area is in functional condition, but an existing soil, water, or vegetation attribute makes it susceptible to degradation.

USDA Farm Services Agency. 2009. NAIP Aerial Imagery. http://www.fsa.usda.gov/FSA/apfoapp?area=home&subject=prog&topic=nai

USDI Bureau of Land Management. 1999. Owyhee Resource Management Plan. Available at the Owyhee Field Office, Marsing, Idaho.

USDI U.S. Geological Survey. National Hydrologic Dataset (NHD), Earth Science Information Center. http://nhd.usgs.gov/data.html

Standard - Swisher FFR allotment

- ■ Standard does not apply
- □ Meeting the Standard
- □ Not meeting the Standard, Livestock grazing management practices are significant factors
- □ Not meeting the Standard; Making significant progress toward
- □ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines - Swisher FFR allotment

- □ Conforms with Guidelines for Livestock Grazing Management
- □ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).__

Rationale/Information Sources: N/A

Standard 3 (Stream Channel/Floodplain)

Stream channels and floodplains are properly functioning relative to the geomorphology (e.g., gradient, size shape, roughness, confinement, and sinuosity) and climate to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Standard - Swisher Springs allotment

- □ Standard does not apply
- □ Meeting the Standard
- ■ Not meeting the Standard, Livestock grazing management practices are significant factors
- □ Not meeting the Standard; Making significant progress toward
- □ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines - Swisher Springs allotment

- □ Conforms with Guidelines for Livestock Grazing Management
- ■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 4, 5, 7

Rationale:

There are two intermittent streams (Swisher and Moonshine Creeks) that support riparian-wetland areas within the allotment. The small riparian-wetland areas occur within pasture 2 of the allotment. Pasture 1 and 3 contain intermittent reaches of stream that do not appear to support riparian vegetation (NAIP 2011).

Approximately 1 mile of both Swisher and Moonshine Creeks were assessed in 2012 using the BLM PFC protocol and were rated as FAR. The intermittent riparian areas associated with the streams are lacking hydric riparian vegetation, have shrinking riparian areas and unstable streambanks.

Proper Functioning Condition information for pasture 2 indicated a lack of riparian vegetation and livestock trails along and to streams as issues on the streams that support intermittent flows and riparian-wetland areas. Grazing during the growing season (July to September) for riparian areas tends to congregate livestock along stream channels and floodplains. For example, from 2006 to 2010, actual use reports indicate that livestock grazing occurred from April to October across the allotment (Appendix G in the RHA). Over time, the impacts to the riparian-wetland area have led to insufficient vegetation and landform to dissipate stream energy, aid in floodplain development, stabilize streambanks, and maintain stream channel characteristics.

Information Sources:

Idaho Department of Environmental Quality Lower Owyhee Watershed Integrated Report, 2002: http://www.deq.idaho.gov/media/458038-integrated_report_2002_final_entire.pdf

USDA Farm Services Agency. 2009. NAIP Aerial Imagery. http://www.fsa.usda.gov/FSA/apfoapp?area=home&subject=prog&topic=nai

USDI Bureau of Land Management. 1999. Owyhee Resource Management Plan. Available at the Owyhee Field Office, Marsing, Idaho.

USDI U.S. Geological Survey. National Hydrologic Dataset (NHD), Earth Science Information Center. http://nhd.usgs.gov/data.html

Standard - Swisher FFR allotment

- ■ Standard does not apply
- □ Meeting the Standard
- □ Not meeting the Standard, Livestock grazing management practices are significant factors
- □ Not meeting the Standard; Making significant progress toward
- □ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines - Swisher FFR allotment

- □ Conforms with Guidelines for Livestock Grazing Management
- □ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).__

Rationale/Information Sources: N/A

Standard 4 (Native Plant Communities)

Healthy, productive, and diverse native animal habitat and populations of native plants are maintained or promoted as appropriate to soil type, climate, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Standard - Swisher Springs allotment

□ Standard does not apply
■ Meeting the Standard
□ Not meeting the Standard, Livestock grazing management practices are significant factors
□ Not meeting the Standard; Making significant progress toward
□ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines - Swisher Springs allotment

■ Conforms with Guidelines for Livestock Grazing Management
□ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).__

Rationale:

The Swisher Springs allotment is meeting Standard 4, with concern for the minor occurrence of juniper and cheatgrass and concern for the reduction in dominance of bluebunch wheatgrass and Idaho fescue in the herbaceous understory of vegetation communities. However, in relation to the Owyhee Resource Management Plan (ORMP) VEGE 1 objective, *to improve unsatisfactory and maintain satisfactory vegetation health/condition on all areas*, the recorded decline in dominance of bluebunch wheatgrass and Idaho fescue is a concern. Downward trend of these native perennial bunchgrasses continues, as indicated by short- and long-term trend data gathered for all three pastures.

The January 2012 Rangeland Health Assessment and Evaluation Report (USDI BLM 2012) reveals none-to-slight or slight-to-moderate departures of biotic integrity indicators from site potential. Dominant native perennial bunchgrasses and shrubs that are expected at site potential, as identified in ecological site descriptions, occur at a reduced incidence (USDA NRCS 2010). Additionally, minor occurrence of juniper and cheatgrass was documented within the vegetation communities in all three pastures. Juniper and cheatgrass are not vegetation components found at site potential. Ecological site descriptions for the Swisher Springs allotment indicate juniper has the potential to invade 100 percent of the allotment acreage and that juniper dominance of vegetation communities is only identified in an unknown new state in the state-and-transition model for the Very Shallow Stony Loam 10-14" ecological site. The unknown state results from improper grazing management and the absence of natural fire. This new state is similar to the Shallow Breaks 14-18" ecological site, a site with the visual aspect of western juniper and a sparse understory of Idaho fescue and Thurber's needlegrass.

Even with these concerns, the limited departure of the rangeland health indicators at assessment locations, when compared to the applicable ecological site descriptions for Shallow Claypan 12-16", Very Shallow Stony Loam 10-14", and Loamy 13-16" sites, leads to a finding that biotic attributes within the allotment are similar to those present at ecological site potential. Although vegetation communities with a full complement of dominant perennial bunchgrasses and shrubs consistent with ecological site potential are not present within the allotment and a minor component of invasive species is recorded, sufficient healthy, productive, and diverse populations of native plants are maintained to provide for proper nutrient cycling, hydrologic cycling, and energy flow. Rangeland health Standard 4 is being met in all three pastures.

Trend data for all three pastures include recorded decline in frequency of bluebunch wheatgrass and Idaho fescue, bunchgrass species that dominate the herbaceous component at site potential. At the same time, the data identify an increase in frequency of Sandberg bluegrass and squirreltail, bunchgrass species that are a minor component of the herbaceous component at site potential. These short-term trends are consistent in all three pastures between 2003 and 2009, when monitoring data were recorded. These trends, as they relate to the ORMP VEGE 1 objective, raise concerns associated with the long term rangeland health in these pastures. The departure of biotic integrity indicators concluded above, though no greater than slight-to-moderate, also causes concern when associated with the ORMP VEGE 1 objective in the long term.

Precipitation data from the SNOTEL site at Mud Flat (USDI BLM 2012) provide insight to climatic conditions that may manifest in vegetation conditions assessed in 2001 and trends in frequency of native perennial bunchgrass species recorded between 1988 and 2009. Recorded crop-year precipitation in 6 of the 10 years between 1999 and 2008 was below the long-term average. Recent downward trend in frequency of bluebunch wheatgrass and Idaho fescue can be partially attributed to limited soil moisture in a number of consecutive years prior to 2009, when the most recent trend data were recorded.

Recorded trends in density of tree and shrub species at the monitoring site in pasture 2 are consistent with recent fire occurrence. The recorded loss of the sagebrush and juniper between 1998 and 2003, and their subsequent re-establishment by 2009, is consistent with the timing of the 2000 Meadow fire and the knowledge that these woody species are killed by fire (USDA-FS 2011). Although the density of green rabbitbrush also declined in response to this fire, this more fire-tolerant species is able to re-sprout following fire. Dominance of green rabbitbrush at this trend site is likely the result of an earlier fire, although BLM data do not include records of fire prior to 2000 at this site or within the Swisher Springs allotment. No trend sites, other than the trend site for pasture 2, are located within boundaries of fires recorded since 1960 (Owyhee Field Office GIS data).

Reported livestock grazing actual use has been in compliance with the terms and conditions of the grazing permit. Similarly, recorded utilization has not exceeded the maximum allowable limit of 50 percent established in the ORMP. Although consistent with terms and conditions of the grazing permit, scheduled implementation of alternate-year deferment of grazing use until

after the active growing season for native perennial bunchgrass species[c] within two of the three pastures of Swisher Springs allotment may not provide adequate deferment or rest to achieve ORMP management objectives. A number of sources suggest limiting the intensity of grazing use of bluebunch wheatgrass during the active growing season and providing at least 2 years of deferment for every year of active growing season use (Stoddart 1946, Blaisdell and Pechanec 1949, Mueggler 1972, Mueggler 1975, Anderson 1991, Miller et.al. 1994, USDA NRCS 2012).

Historic and recent fires within portions of this allotment, combined with influences from historic and current livestock grazing management practices, point toward a need to implement future management actions that ensure that biotic conditions can recover toward vegetation communities that more closely resemble the potential identified in ecological site descriptions. The ORMP identifies a number of management actions, and the Idaho Standards and Guidelines provide guidelines that can assist in making progress toward meeting the land use plan vegetation objective. In addition, livestock management practices can be implemented in drier-than-average years to avoid the combined negative consequence from vegetation response to dry conditions and defoliation from grazing. Implementation of appropriate actions will better ensure that land use plan vegetation objectives are met and the Idaho Standards and Guidelines will continue to be met.

Standard - Swisher FFR allotment

□ Standard does not apply
■ Meeting the Standard
□ Not meeting the Standard, Livestock grazing management practices are Significant Factors
□ Not meeting the Standard; Making significant progress toward
□ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines - Swisher FFR allotment

■ Conforms with Guidelines for Livestock Grazing Management
□ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).__

Rationale:

Assessment of rangeland health information for the Swisher FFR allotment, completed in the January 2012 Rangeland Health Assessment and Evaluation Report (USDI BLM 2012), resembles that for the Swisher Springs allotment above. Slight-to-moderate departure of biotic conditions at the assessment site identified biotic attributes resembling potential in the allotment.

The Swisher FFR allotment is meeting Standard 4, with concern for the occurrence of cheatgrass and juniper and the dominance of Sandberg bluegrass in the herbaceous understory. Although

[c] The active growing season for bluebunch wheatgrass and Idaho fescue within vegetation communities of Swisher Springs allotment is May-June, a period when decreasing soil moisture does not provide opportunity for regrowth before the dormant period.

vegetation communities with a full complement of dominant perennial grasses and shrubs consistent with site potential are not present within the allotment and a minor component of invasive species is recorded, healthy, productive, and diverse populations of native plants are maintained to provide for proper nutrient cycling, hydrologic cycling, and energy flow. The need for periodic deferment of grazing use to a period other than the active growing season for native perennial bunchgrass species or year-long rest from grazing is recommended to ensure that land use plan objectives to improve unsatisfactory and maintain satisfactory vegetation health/condition on all areas will be met.

Information Sources:

Anderson, Loren D. 1991. Bluebunch wheatgrass Defoliation; Effects & Recovery. USDI Bureau of Land Management Technical Bulletin 91-2. Salmon, Idaho. 10p.

Blaisdell, James B., Joseph F. Pechanec. 1949. Effects of herbage removal at various dates on vigor of bluebunch wheatgrass and arrowleaf balsamroot. Ecology 30: 298-305.

Miller, Richard F., Jamie M.Seufert, Marshall R. Haferkamp. 1994. Management of bluebunch wheatgrass (*Agropyron spicatum*): a review. Oregon State University Agricultural Experiment Station. Station Bulletin 669. Corvallis, Oregon. 39p.

Mueggler, W.F. 1972. Influence of competition on the response of bluebunch wheatgrass to clipping. Journal of Range Management 25:88-92.

Mueggler, W.F. 1975. Rate and pattern of vigor recovery in Idaho fescue and bluebunch wheatgrass. Journal of Range Management 28(3) p.198-204.

Stoddart, L.A., 1946. Some physical and chemical responses of *Agropyron spicatum* to herbage removal at various seasons. Utah State Agricultural Experiment Station Bulletin #324. 24p.

USDA NRCS. 2010. Ecological Site Descriptions (Draft). Available from the Idaho State Office of BLM, Boise ID or the Idaho State Office of NRCS, Boise ID.

USDA NRCS 2012. Plant fact sheet; bluebunch wheatgrass. Web page accessed 2/14/2012: http://plants.usda.gov/factsheet/pdf/fs_pssp6.pdf

USDA U.S. Forest Service. 2011. Fire Effects Information System web page. http://www.fs.fed.us/database/feis/

USDI BLM. 2012. Rangeland Health Assessment and Evaluation Report; Achieving the Idaho Standards for Rangeland Health; Swisher Springs (0450) and Swisher FFR (0637) allotments. BLM Idaho State Office. Boise, Idaho. 84p.

Standard 5 (Seedings)

Rangelands seeded with mixtures, including predominately non-native plants, are functioning to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and the hydrologic cycle.

Standard - Swisher Springs and Swisher FFR allotments

■ Standard does not apply
□ Meeting the Standard
□ Not meeting the Standard, Livestock grazing management practices are significant factors
□ Not meeting the Standard; Making significant progress toward
□ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines - Swisher Springs and Swisher FFR allotments

□ Conforms with Guidelines for Livestock Grazing Management
□ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).__

The seeded plant communities are not present within the Swisher Springs and Swisher FFR allotments, as noted in the January 2012 Rangeland Health Assessment and Evaluation Report. As a result, Standard 5 does not apply to the Swisher Springs or Swisher FFR allotments.

Standard 6 (Exotic Plant Communities, Other than Seedings)

Exotic plant communities, other than seedings, will meet minimum requirements of soil stability and maintenance of existing native and seeded plants. These communities will be rehabilitated to perennial communities when feasible cost effective methods are developed.

Standard - Swisher Springs and Swisher FFR allotments

■ Standard does not apply
□ Meeting the Standard
□ Not meeting the Standard, Livestock grazing management practices are significant factors
□ Not meeting the Standard; Making significant progress toward
□ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines - Swisher Springs and Swisher FFR allotments

□ Conforms with Guidelines for Livestock Grazing Management
□ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).__

Although exotic plant communities are present within the Swisher Springs and Swisher FFR allotments, as noted in the January 2012 Rangeland Health Assessment and Evaluation Report, the occurrence of cheatgrass and other invasive species and their potential for expansion to dominate vegetation communities is limited and was incorporated into discussions under Standard 4 – Native Plant Communities. As a result, Standard 6 does not apply to either Swisher Springs or Swisher FFR allotments.

Standard 7 (Water Quality)

Surface and ground water on public lands comply with the Idaho Water Quality Standards.

Standard-Swisher Springs allotment

- □ Standard does not apply
- □ Meeting the Standard
- □ Not meeting the Standard, Livestock grazing management practices are significant factors
- □ Not meeting the Standard; Making significant progress toward
- ■ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines-Swisher Springs allotment

- □ Conforms with Guidelines for Livestock Grazing Management
- □ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).__

Rationale

The Idaho Department of Environmental Quality (IDEQ) is the state agency tasked with complying with and implementing the federal Clean Water Act. IDEQ sets the state's standards through the integrated report and beneficial use process. Idaho BLM is expected to implement grazing practices that make progress toward achieving proper functioning condition and satisfactory riparian condition on stream segments listed as water quality-limited in the current IDEQ 303(d) list.

The Swisher Springs allotment is within the Upper Owyhee River watershed that was assessed by IDEQ in 2002 (integrated report) and reviewed in 2009 (5-year review). The watershed was assigned beneficial uses that include cold water aquatic life and primary and secondary recreation contact. Streams within the allotment that are identified by IDEQ as not supporting the beneficial use include Castle and Beaver Creeks and their tributaries. Swisher, Long Meadow, and Moonshine Creeks are all tributaries to Castle Creek. Additionally, Beaver Creek has been placed on the 303(d) list, and the streams that traverse pasture 3 are tributaries to Beaver Creek; thus, they are also on the 303(d) list. If there are Section 303(d) listed streams located in an allotment, the allotment is not meeting the Idaho DEQ standards and thus is not meeting Standard 7.

Since the BLM has not measured temperature, sediment loading, or bacteria levels in any of the streams within the allotment, there is a lack of evidence to determine whether livestock are significantly impacting the water quality of the streams. The Upper Owyhee River watershed assessment discussed the pollutants of concern (temperature, sediment, and flow alteration) and that the major land use in the area is rangeland; however, the allotment makes up a small percent of the total area of the watershed.

Information Sources:

Idaho Department of Environmental Quality. 2003. Upper Owyhee Watershed

Subbasin Assessment and Total Maximum Daily Load, Owyhee County, Idaho. http://www.deq.idaho.gov/media/455421-_water_data_reports_surface_water_tmdls_owyhee_watershed_upper_owyhee_watershed_upper_entire.pdf

Idaho Department of Environmental Quality. 2002. Lower Owyhee Watershed Integrated Report. http://www.deq.idaho.gov/media/458038-integrated_report_2002_final_entire.pdf

Idaho Department of Environmental Quality. 2009. Lower Owyhee Watershed Five Year Review. http://www.deq.idaho.gov/media/455477-_water_data_reports_surface_water_tmdls_owyhee_watershed_upper_owyhee_watershed_upper_five_year_review_0609.pdf

Idaho Department of Environmental Quality Lower Owyhee Watershed TMDLs: http://www.deq.idaho.gov/water-quality/surface-water/tmdls/table-of-sbas-tmdls.aspx

USDI Bureau of Land Management. 1999. Owyhee Resource Management Plan. Available at the Owyhee Field Office, Marsing, Idaho.

Standard - Swisher FFR allotment

- ■ Standard does not apply
- □ Meeting the Standard
- □ Not meeting the Standard, Livestock grazing management practices are significant factors
- □ Not meeting the Standard; Making significant progress toward
- □ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines - Swisher FFR allotment

- □ Conforms with Guidelines for Livestock Grazing Management
- □ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).__

Rationale/Information Sources: N/A

Standard 8 (Threatened and Endangered Plants and Animals)

Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

Standard-Swisher Springs allotment

- □ Standard does not apply
- □ Meeting the Standard
- ■ Not meeting the Standard, Livestock grazing management practices are significant factors
- □ Not meeting the Standard; Making significant progress toward

□ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines-Swisher Springs allotment

□ Conforms with Guidelines for Livestock Grazing Management
■ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s). 5, 6, 8, 12

Rationale:

Swisher Springs allotment is making significant progress toward meeting Standard 8 for wildlife in upland habitats; however, this is not the case in riparian areas. Although the native vegetation communities that comprise uplands habitats within the allotment indicate slight departure from reference conditions, upland habitats are structurally and functionally providing suitable breeding and foraging habitat for sagebrush-obligate and shrub-dependent special status species such as greater sage-grouse, pygmy rabbits, Brewer's sparrows, loggerhead shrikes, and sage sparrows. However, Standard 8 is not being met for special status wildlife in the few riparian/wetland habitats that occur within the allotment due to a lack of hydric vegetation and soil instability along streambanks. Herbaceous riparian vegetation use and streambank trampling by livestock have reduced the size of the riparian areas, as well as nesting substrate, protective cover, and foraging areas for many riparian-dependent special status wildlife species such as northern goshawks, calliope hummingbirds, willow flycatchers, and some special status bat species like fringed myotis. Overall, riparian areas are not providing adequate nesting structure and cover for dependent species due to a lack of woody species such as willows and aspen in particular. In addition, current degraded riparian/wetland conditions are probably limiting late-brood rearing habitat use by greater sage-grouse.

Standard-Swisher FFR allotment

□ Standard does not apply
■ Meeting the Standard
□ Not meeting the Standard, Livestock grazing management practices are significant factors
□ Not meeting the Standard; Making significant progress toward
□ Not meeting the Standard; Livestock grazing management practices are **not** significant factors

Guidelines-Swisher FFR allotment

■ Conforms with Guidelines for Livestock Grazing Management
□ Does not conform with Guidelines for Livestock Grazing Management; Guideline No(s).__

Rationale:

Swisher FFR is meeting Standard 8 for wildlife in upland habitats. Current native plant community composition in upland habitats is providing cover, structure and forage for most shrub-obligate and -dependent species. However, localized areas of cheatgrass, decreases in desirable perennial bunchgrasses, and juniper encroachment are concerns for the long-term health of these upland

vegetation communities. Riparian/wetland habitats are negligible on BLM lands within the FFR and therefore are not applicable to the standard.

Information Sources:

Connelly, J.W., S.T. Knick, M.A. Schroeder, and S.J. Stiver. 2004. Conservation assessment of greater sage-grouse and sagebrush habitats. Western Association of Fish and Wildlife Agencies. Unpublished Report. Cheyenne, Wyoming.

Idaho Department of Fish and Game. 2005. Idaho Comprehensive Wildlife Conservation Strategy. Idaho Conservation Data Center, Idaho Department of Fish and Game, Boise, ID. http://fishandgame.idaho.gov/public/wildlife/cwcs/ [accessed November 28, 2011].

Idaho Department of Fish and Game. 2005a. Idaho Comprehensive Wildlife Conservation Strategy, Appendix B. Idaho Conservation Data Center, Idaho Department of Fish and Game, Boise, ID. Available online: http://fishandgame.idaho.gov/public/docs/compWildStrategy/appendixB.pdf [accessed November 28, 2011].

Idaho Partners in Flight. 2000. Idaho Bird Conservation Plan, Version 1.0, January 2000. Idaho Partners in Flight. Available online: http://www.blm.gov/wildlife/plan/pl_id_10.pdf [accessed November 28, 2011].

Stiver, S.J., A.D. Apa, J.R. Bohne, S.D. Bunnell, P.A. Deibert, S.C. Gardner, M.A. Hilliard, C.W. McCarthy, and M.A. Schroeder. 2006. Greater sage-grouse comprehensive conservation strategy. Western Association of Fish and Wildlife Agencies. Unpublished Report. Cheyenne, Wyoming.

USDI Bureau of Land Management. 2003. Idaho Bureau of Land Management Sensitive Species List. Instruction Memorandum ID-2003-057. State Director Idaho State Office, BLM. Boise, Idaho.

USDI U.S. Fish and Wildlife Service. 2011. Environmental Conservation Online System, Species Reports, Species by County Report, Owyhee County, Idaho. http://ecos.fws.gov/tess_public/countySearch!speciesByCountyReport.action?fips=16073 [accessed November 28, 2011].

USDI U.S. Fish and Wildlife Service. 2008. Division of Migratory Bird Management. Birds of Conservation Concern. Arlington, Virginia. Available online: http://www.fws.gov/migratorybirds/NewReportsPublications/SpecialTopics/BCC2008/BCC2008.pdf [accessed November 28, 2011].

Determination:

I have determined that Standards 1 and 4 of the Idaho Standards for Rangeland Health for the Swisher Springs allotment are being met. Additionally, I have determined that Standards 2, 3, 7, and 8 of the Idaho Standards for Rangeland Health are not being met, and current livestock grazing management practices are significant factors in not meeting Standards 2, 3, and 8. At this time, there is insufficient evidence to conclude whether or not current livestock grazing management practices are significant factors in not meeting Standard 7. Livestock management

practices do not conform with all Idaho Guidelines for Livestock Grazing Management, including guidelines 4, 5, 6, 7, 8, and 12.

I have determined that of the applicable Idaho Standards for Rangeland Health pertaining to the Swisher Fenced Federal Range (FFR) allotment, which include Standards 1, 4, and 8, all Standards are being met.

Owyhee Field Manager

8/28/2012
Date

7.12 Appendix L – Wildlife

Table L-1: Special status wildlife species, status, and occurrence potential within Owyhee River allotments

Common Name	Species	Status (conservation plans)[1]	Occurrence Potential[2]		
			Castlehead-Lambert	Garat	Swisher Springs/Swisher FFR
Columbia Spotted Frog	*Rana luteiventris*	ESA C (SGCN)	Present	Improbable	Probable
Greater Sage-grouse	*Centrocercus urophasianus*	ESA C (SGCN/HPBB/BCC)	Present	Present	Present
Golden Eagle	*Aquila chrysaetos*	BGEPA (HPBB/BCC)	Probable	Probable	Present
Northern Leopard Frog	*Rana pipiens*	BLM 2 (SGCN)	Improbable	Not Present	Improbable
Pygmy Rabbit	*Brachylagus idahoensis*	BLM 2 (SGCN)	Possible	Possible	Possible
Columbia River Redband Trout	*Oncorhynchus mykiss gibbsi*	BLM 2 (SGCN)	Present	Not Present	Not Present
Black Tern	*Chlidonias niger*	BLM 3 (SGCN)	Improbable	Possible	Improbable
Brewer's Sparrow	*Spizella breweri*	BLM 3 (SGCN/HPBB/BCC)	Probable	Probable	Present
California Bighorn Sheep	*Ovis canadensis californiana*	BLM 3 (SGCN)	Present	Present	Improbable
Calliope Hummingbird	*Stellula calliope*	BLM 3 (HPBB/BCC)	Possible	Possible	Possible
Common Garter Snake	*Thamnophis sirtalis*	BLM 3	Possible	Possible	Possible
Ferruginous Hawk	*Buteo regalis*	BLM 3 (SGCN/HPBB/BCC)	Possible	Present	Possible
Fringed Myotis	*Myotis thysanodes*	BLM 3 (SGCN)	Possible	Possible	Possible
Lewis' Woodpecker	*Melanerpes lewis*	BLM 3 (SGCN/HPBB/BCC)	Possible	Possible	Possible

Common Name	Species	Status (conservation plans)[1]	Occurrence Potential[2]		
			Castlehead-Lambert	Garat	Swisher Springs/Swisher FFR
Loggerhead Shrike	*Lanius ludovicianus*	BLM 3 (HPBB/BCC)	Probable	Present	Present
Northern Goshawk	*Accipiter gentilis*	BLM 3 (HPBB)	Possible	Not Present	Possible
Piute Ground Squirrel	*Spermophilus mollis*	BLM 3 (SGCN)	Improbable	Possible	Improbable
Prairie Falcon	*Falco mexicanus*	BLM 3 (HPBB)	Probable	Present	Present
Sage Sparrow	*Amphispiza belli*	BLM 3 (HPBB/BCC)	Probable	Probable	Probable
Spotted Bat	*Euderma maculatum*	BLM 3 (SGCN)	Present	Present	Probable
Townsend's Big-eared Bat	*Plecotus townsendii*	BLM 3 (SGCN)	Possible	Possible	Possible
Western Toad	*Bufo boreas*	BLM 3	Possible	Possible	Possible
Willow Flycatcher	*Empidonax trailii*	BLM 3 (HPBB/BCC)	Possible	Possible	Possible
Black-throated Sparrow	*Amphispiza bilineata*	BLM 4	Improbable	Improbable	Improbable
Dark Kangaroo Mouse	*Microdipodops megacephalus*	BLM 4	Improbable	Possible	Improbable
Kit Fox	*Vulpes velox*	BLM 4	Not Present	Improbable	Not Present
Little Pocket Mouse	*Perognathus longimembris*	BLM 4	Not Present	Possible	Not Present
White-faced Ibis	*Plegadis chihi*	BLM 4 (SGCN/HPBB)	Present	Present	Possible
Wyoming Ground Squirrel	*Spermophilus elegans nevadensis*	BLM 4	Possible	Possible	Possible

[1] Status includes Candidate (ESA C) species listed under the Endangered Species Act (16 U.S.C. § 1531-1544), eagles (BGEPA) protected by the Bald and Golden Eagle Protection Act (16 U.S.C. § 668-668d), and BLM Type 2 (BLM 2), Type 3, (BLM 3), and Type 4 (BLM 4) special status species (USDI BLM 2003). Additional designations under state and national conservation plans include Idaho Species of Greatest Conservation Need (SGCN; (IDFG 2006b)), Idaho Partners in Flight High Priority Breeding Bird (HPBB; (IPIF 2000)), and U.S. Fish and Wildlife Service Birds of Conservation Concern (BCC; (USDI USFWS 2008)).

[2] Categories include species presence documented (Present), species likely to occur based on preferred habitat and local species abundance and nearby occurrences within 5 miles (Probable), species may occur based on preferred habitat and/or occurrences within 25 miles (Possible), species not likely to occur based on limited or lack of preferred habitat and/or occurrence over 50 miles (Improbable), and species not present due to lack of habitat (Not Present). Presence of habitat within project area was determined from Idaho Vertebrate Modeling Database (University of Idaho n.d.); Oregon Wildlife Viewer (Oregon State University n.d.); (Yensen and Sherman 2003); Idaho, Oregon and Nevada BLM unpublished data; and specialist expertise. Habitat descriptions modified from Idaho Vertebrate Modeling Database (University of Idaho n.d.).

Table L-2: Migratory bird species with the potential to occur within Owyhee River allotments

Common Name	Species Name	BLM STATUS[1]	ID SGCN[2]	HPBB[3]	BCC[4]	IWJV[5]	NABCI ID[6]
American Avocet	*Recurvirostra americana*		S3	Y		Y	Y
American Coot	*Fulica americana*						
American Crow	*Corvus brachyrhynchos*						
American Dipper	*Cinclus mexicanus*			Y			Y
American Goldfinch	*Carduelis tristis*						
American Kestrel	*Falco sparvarius*						
American Pipit	*Anthus rubescens*						
American Robin	*Turdus migratorius*						
American Widgeon	*Anas americana*					Y	Y
Ash-throated Flycatcher	*Myiarchus cinerascens*						
Bank Swallow	*Riparia riparia*						
Barn Owl	*Tyto alba*						
Barn Swallow	*Hirundo rustica*						
Barrow's Goldeneye	*Bucephala islandica*		GAME	Y			Y
Belted Kingfisher	*Ceryle alcyon*						
Black Rosy-finch	*Leucosticte atrata*		S3	Y	Y		Y
Black-billed Magpie	*Pica pica*			Y			
Black-capped Chickadee	*Poecile atricapilla*						
Black-chinned Hummingbird	*Archilochus alexandri*			Y			
Black-crowned Night-Heron	*Nycticorax nycticorax*		S2B				Y

Common Name	Species Name	BLM STATUS[1]	ID SGCN[2]	HPBB[3]	BCC[4]	IWJV[5]	NABCI ID[6]
Black-headed Grosbeak	*Pheucticus melanocephalus*						
Black-necked Stilt	*Himantopus mexicanus*		S3	Y		Y	Y
Black-throated Gray Warbler	*Dendroica nigrescens*			Y	Y		
Blue-winged Teal	*Anas discors*						Y
Bobolink	*Dolichonyx oryzivorus*						Y
Bohemian Waxwing	*Bombycilla garrulus*						
Bonaparte's Gull	*Larus phildelphia*						
Brewer's Blackbird	*Euphagus cyanocephalus*	BLM 5					
Broad-tailed Hummingbird	*Selasphorus platycercus*						
Brown Creeper	*Certhia americana*						
Brown-headed Cowbird	*Molothrus ater*						
Bufflehead	*Bucephala albeola*						Y
Bullock's Oriole	*Icterus bullocki*						
Bushtit	*Psaltriparus minimus*						
California Gull	*Larus californicus*		S2B				Y
California Quail	*Callipepla californica*		GAME				
Canada Goose	*Branta canadensis*						Y
Canvasback	*Aythya valisineria*		S2N			Y	Y
Canyon Wren	*Catherpes mexicanus*						
Caspian Tern	*Sterna caspia*		S2B				Y
Cassin's Finch	*Carpodacus cassinnii*	BLM 5				Y	Y
Cassin's Vireo	*Vireo cassinii*						
Cattle Egret	*Bubulcus ibis*		S2B				Y
Cedar Waxwing	*Bombycilla cedrorum*						

Common Name	Species Name	BLM STATUS[1]	ID SGCN[2]	HPBB[3]	BCC[4]	IWJV[5]	NABCI ID[6]
Chipping Sparrow	*Spizella passerina*						
Chukar	*Alectoris chukar*		GAME				
Cinnamon Teal	*Anas cyanoptera*		GAME	Y		Y	Y
Clark's Grebe	*Aechmophorus clarkii*		S2B			Y	Y
Clark's Nutcracker	*Nucifraga columbiana*					Y	Y
Cliff Swallow	*Hirundo pyrrhonota*						
Common Goldeneye	*Bucephala clangula*						Y
Common Loon	*Gavia immer*		S1B			Y	y
Common Merganser	*Mergus merganser*						
Common Nighthawk	*Chordeiles minor*						
Common Poorwill	*Phalaenoptilus nuttallii*						
Common Raven	*Corvus corax*						
Common Yellowthroat	*Geothlypsis trichas*						
Cooper's Hawk	*Accipiter cooperii*						
Cordilleran Flycatcher	*Empidonax occidentalis*	BLM 5					Y
Dark-eyed Junco	*Junco hyemalis*						
Double-crested Cormorant	*Phalacrocorax auritus*						
Downy Woodpecker	*Picoides pubescens*						
Dunlin	*Calidris alpina*						Y
Dusky Flycatcher	*Empidonax oberholseri*			Y		Y	Y
Eared Grebe	*Podiceps nigricollis*				Y	Y	Y
Eastern Kingbird	*Tyrannus tyrannus*						
Forster's Tern	*Sterna forsteri*		S1				Y
Franklin's Gull	*Larus pipixcan*		S2B	Y		Y	Y

Common Name	Species Name	BLM STATUS[1]	ID SGCN[2]	HPBB[3]	BCC[4]	IWJV[5]	NABCI ID[6]
Gadwall	*Anas strepera*					Y	Y
Grasshopper Sparrow	*Ammodramus savannarum*	BLM 5	S2B	Y			Y
Gray Flycatcher	*Empidonax wrightii*		N	Y		Y*	
Gray Jay	*Perisoreus canadensis*						
Gray Partridge	*Perdix perdix*		GAME				
Great Blue Heron	*Ardea herodias*						
Great Egret	*Ardea alba*		S1B				
Great Horned Owl	*Bubo virginianus*						
Greater Yellowlegs	*Tringa melanoleuca*						Y
Green-tailed Towhee	*Pipilo chlorurus*	BLM 5			Y	Y	Y
Green-winged Teal	*Anas crecca*						Y
Hairy Woodpecker	*Picoides villosus*						
Hermit Thrush	*Catharus guttatus*						
Hooded Merganser	*Lophodytes cucllatus*		S2B	Y			
Horned Grebe	*Podiceps auritus*		S1				Y
Horned Lark	*Eremophila alpestris*						
House Finch	*Carpodacus mexicanus*						
House Wren	*Troglodytes aedon*						
Killdeer	*Charadrius vociferus*			Y			Y
Lark Sparrow	*Chondestes grammacus*			Y			
Lazuli Bunting	*Passerina amoena*						Y
Least Sandpiper	*Calidris minutilla*					Y	Y
Lesser Goldfinch	*Carduelis psaltria*		S2				Y
Lesser Scaup	*Aythya affinis*		S3			Y	Y

Common Name	Species Name	BLM STATUS[1]	ID SGCN[2]	HPBB[3]	BCC[4]	IWJV[5]	NABCI ID[6]
Lesser Yellowlegs	*Tringa flavipes*						Y
Lincoln's Sparrow	*Melospiza linconlnii*						
Long-billed Curlew	*Numenius americanus*	BLM 5	S2B	Y	Y	Y	Y
Long-billed Dowitcher	*Limnodromus scolopaceus*					Y	Y
Long-eared Owl	*Asio otus*						
MacGillivray's Warbler	*Oporornis tolmiei*			Y			Y
Mallard	*Anas platyrhynchos*					Y	Y
Marbled Godwit	*Limosa fedoa*		S2		Y		Y
Marsh Wren	*Cistothorus palustris*						
Merlin	*Falco comlumbarius*		S2B				
Mountain Bluebird	*Sialia currucoides*					Y	Y
Mourning Dove	*Zenaida macroura*						
Nashville Warbler	*Vermivora ruficapilla*						
Northern Flicker	*Colaptes auratus*						
Northern Harrier	*Circus cyaneus*						
Northern Pintail	*Anas acuta*		S2N			Y	Y
Northern Pygmy-owl	*Glaucidium gnoma*	BLM 5					Y
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*						
Northern Saw-whet Owl	*Aegolius acadicus*						
Northern Shoveler	*Anas clypeata*		S2N			Y	Y
Northern Shrike	*Lanius excubitor*						
Orange-crowned Warbler	*Vermivora celata*						
Osprey	*Pandion haliaetus*						Y
Pied-billed Grebe	*Podilymbus podiceps*						

Common Name	Species Name	BLM STATUS[1]	ID SGCN[2]	HPBB[3]	BCC[4]	IWJV[5]	NABCI ID[6]
Pine Siskin	*Carduelis pinus*						
Red-breasted Nuthatch	*Sitta canadensis*						Y
Red-eyed Vireo	*Vireo olivaceus*						
Redhead	*Aythya americana*		GAME	Y		Y	Y
Red-naped Sapsucker	*Sphyrapicus nuchalis*	BLM 5				Y	
Red-necked Phalarope	*Phalaropus lobatus*					Y	Y
Red-tailed Hawk	*Buteo jamaicensis*						
Red-winged Blackbird	*Aeglaius phoeniceus*						
Ring-billed Gull	*Larus delawarensis*						
Ring-necked Duck	*Aythya collaris*						Y
Rock Wren	*Salpinctes obsoletus*			Y			
Rough-legged Hawk	*Buteo lagopus*						
Ruby-crowned Kinglet	*Regulus calendula*						
Ruddy Duck	*Oxyura jamaicensis*		S2N			Y	Y
Rufous Hummingbird	*Selasphorus rufus*			Y		Y	Y
Sage Thrasher	*Oreoscoptes montanus*	BLM 5		Y	Y	Y	Y
Sandhill Crane	*Grus canadensis*		GAME	Y		Y	Y
Savannah Sparrow	*Passerculus sandwichensis*						
Say's Phoebe	*Sayornis saya*						
Sharp-shinned Hawk	*Accipiter striatus*			Y			
Short-eared Owl	*Asio flammeus*	BLM 5	S4	Y			Y
Snow Bunting	*Plectrophenax nivalis*						
Snow Goose	*Chen caerulescens*						Y
Snowy Egret	*Egretta thula*		S2B			Y	Y

Common Name	Species Name	BLM STATUS[1]	ID SGCN[2]	HPBB[3]	BCC[4]	IWJV[5]	NABCI ID[6]
Song Sparrow	*Melospiza melodia*						
Sora	*Porzana carolina*						
Spotted Sandpiper	*Actitis macularia*					Y	Y
Spotted Towhee	*Pipilo maculatus*						
Stellar's Jay	*Cyanocitta stelleri*						
Swainson's Hawk	*Buteo swainsoni*	BLM 5	S3B	Y		Y	Y
Townsend's Solitaire	*Myadestes townsendi*						Y
Townsend's Warbler	*Dendroica townsendi*			Y			Y
Tree Swallow	*Tachcineta bicolor*						
Tundra Swan	*Cygnus columbianus*						Y
Turkey Vulture	*Cathartes aura*						
Vaux's Swift	*Chaetura vauxi*						Y
Veery	*Catharus fuscescens*						
Vesper Sparrow	*Pooecetes gramineus*						
Violet-green Swallow	*Tachycineta thalassina*						
Virginia Rail	*Rallus limicola*						
Warbling Vireo	*Vireo gilvus*						
Western Burrowing Owl	*Athene cunicularia*	BLM 5	S2				Y
Western Grebe	*Aechmophorus occidentalis*		S2B	Y		Y	Y
Western Kingbird	*Tyrannus verticalis*						
Western Meadowlark	*Sturnella neglecta*						
Western Sandpiper	*Calidris mauri*					Y	Y
Western Screech-Owl	*Otus kennicotti*						
Western Tanager	*Piranga ludoviciana*			Y			Y

Common Name	Species Name	BLM STATUS[1]	ID SGCN[2]	HPBB[3]	BCC[4]	IWJV[5]	NABCI ID[6]
Western Wood-Pewee	*Contopus sordidulus*						
White-crowned Sparrow	*Zonotrichia leucophrys*						
White-headed Woodpecker	*Picoides albolarvatus*		S2	Y	Y	Y	Y
White-throated Swift	*Aeronautes saxatalis*					Y	
Willet	*Catoptrophorus semipalmatus*					Y	Y
Wilson's Phalarope	*Phalaropus tricolor*	BLM 5	S3B			Y	Y
Wilson's Snipe	*Gallinago delicata*						Y
Wilson's Warbler	*Wilsonia pusilla*						
Wood Duck	*Aix sponsa*						Y
Yellow Warbler	*Dendroica petechia*			Y			
Yellow-breasted Chat	*Icteria virens*						
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*					Y*	
Yellow-rumped Warbler	*Dendroica coronata*						

[1]BLM Status includes species on the watch list (BLM 5;(USDI BLM 2003)).
[2]ID SGCN includes Idaho Species of Greatest Conservation Need with the following designations: S-State Rank, 1-critically imperiled, 2-imperiled, 3-rare, B-breeding population, N-nonbreeding population, and GAME - game bird (IDFG 2006b).
[3]HPBB includes Idaho Partners in Flight High Priority Breeding Bird species (IPIF 2000).
[4]BCC includes U.S. Fish and Wildlife Service Birds of Conservation Concern (USDI USFWS 2008).
[5]IMJV includes Intermountain West Joint Venture Continentally Important Species. Asterisk denotes that the species is not CIS in Intermountain West Avifaunal Biome.
[6]NABCI includes Continental and Regional Priority Bird Species of Idaho listed by North American Bird Conservation Initiative partners (North American Waterfowl Plan, U.S. Shorebird Conservation Plan, Partners in Flight, Waterbird Conservation for the Americas) under state and national conservation plans.

7.13 Appendix M – Background Information

7.13.1 Rangeland Ecology / Seasons and Intensities of Grazing Use

Rangeland Vegetation Ecology

Succession is the process of soil and plant community development on an ecological site. Primary succession is the formation process that begins on substrates which have never previously supported any vegetation. Ecological site development associated with soil parent materials, climatic conditions, and the natural range of disturbances with time produces a plant community in dynamic equilibrium. The resulting plant community is referred to as the historic climax plant community or potential natural plant community. The dominant plant species expected are those present within the potential natural plant community for each ecological site (Clements 1916) (Dyksterhuis 1949) (National Research Council 1994).

Retrogression can occur in response to management practices or severe natural climatic events, with species composition of vegetation communities altered from the historic climax or potential plant community. Secondary succession occurs on previously formed soil from which some or all vegetation has been partially or completely removed by a disturbance factor.

Alternate evolution theory has led to ecological concepts that multiple stable state plant communities can potentially occupy individual ecological sites. These concepts and perspectives are the foundation of state-and-transition models and thresholds. Vegetation evaluation procedures must be able to assess continuous and reversible (the traditional range model posed by Clements) as well as discontinuous and nonreversible vegetation dynamics (the state-and-transition model), because both patterns occur and neither pattern alone provides a complete assessment of vegetation dynamics on all rangelands (Briske, Fuhlendorf and Smeins 2005).

A state-and-transition model is used to describe vegetation dynamics and management interactions associated with disturbance within an ecological site. States are relatively stable and resistant to disturbances up to a threshold point. The reference state is defined as the vegetation communities that result through time under natural disturbance regimes. A threshold is the boundary between two states, such that secondary succession does not result in restoration through natural events, such as a simple change in management or removal of a disturbance factor. Active restoration must be accomplished once a threshold is passed in order to return to the reference state. Inputs of management actions necessary to cross the threshold from a new state and return to the state that includes the potential natural community are greater than simple removal of a disturbance factor or restoration of a natural disturbance factor. Examples of management inputs necessary to cross that threshold include mechanical vegetation treatments, herbicide treatments, prescription fire, or a combination of active management inputs. Transition is the trajectory of system change between states.

State-and-transition models have been defined within ecological site descriptions for a number of low sagebrush/bunchgrass and big sagebrush/bunchgrass vegetation communities (USDI USFWS 2010). These models for ecological sites with a sagebrush shrub component identify the reference plant community with co-dominance by deep-rooted perennial grasses (e.g., bluebunch wheatgrass, Idaho fescue, and Thurber's needlegrass) and sagebrush. These models also identify possible vegetation change from reference site potential to a greater dominance by

sagebrush and shallow-rooted bunchgrasses (e.g., Sandberg bluegrass and squirreltail) or annual herbaceous species. Factors that can lead to this shift include altered fire return intervals, improper grazing management, or a combination of both. In addition, the state-and-transition models note that dominance by deep-rooted perennial bunchgrasses is enhanced and maintained with proper grazing management. The presence of sagebrush in the shrub layer of the reference state is dependent on the time that has passed since the most recent fire and the individual sagebrush species present. As a result, a number of phases of the reference state for low sagebrush or big sagebrush vegetation communities can be expressed through the vegetation composition. The expressed vegetation composition is an indicator of past disturbances, including fire and grazing management practices, and is in a dynamic equilibrium. Additionally, the current phase of the potential reference community has potential to change as a result of future disturbances or removal of disturbances. The state-and-transition models further identify that following frequent or combined disturbances, a transition to a different vegetation community can be crossed, resulting in a new state. State-and-transition models are not precise enough to identify a clear line when some thresholds have been crossed. States which differ from the variability resulting from natural distrbance factors in the reference state are more broadly defined, especially when vegetation change results in a shift between the dominance of species present in the reference state. Other thresholds resulting in states dominated by non-native annual species are more clearly defined. As stated above, both the traditional range model and the state-and-transition model occur and neither pattern alone provides a complete assessment of vegetation dynamics on all rangelands (Briske, Fuhlendorf and Smeins 2005).

Miller and Eddleman (2001) identify a number of temporal changes in vegetation composition within the sagebrush biome attributed to livestock grazing, introduction of exotic plants, change in fire regimes, and herbicides. One scenario of change is an increase in the dominance of woody species (shrubs and trees), a decline in fire frequency and a decrease in perennial forbs and grasses. A second scenario is an increase in annual weeds (e.g., cheatgrass), an increase in fire frequency, and a loss of native perennial shrubs, forbs, and grasses. Change that usually occurs with excessive grazing and in the absence of fire within many sagebrush steppe types includes an increase in density and cover of shrubs, annual forbs, and annual grasses, with a corresponding decrease in native perennial grasses and forbs. If Sandberg bluegrass is present in the ecological site, it generally increases with excessive grazing.

Cagney and others (2010) identified grazing influences in a sandy soil ecological site in the 10-to-14-inch precipitation zone in south-central Wyoming. Four plant communities in three states (state-and-transition model) were identified, with the discussion of factors leading to transitions between states and resources values associated with these states. Two described plant communities (bunchgrass; sagebrush/bunchgrass) make up the reference state, with varying amounts of sagebrush resulting from natural disturbance factors, primarily fire. With time alone, Wyoming big sagebrush will advance into the bunchgrass community following fire. With improper grazing management, the rate of sagebrush advancement into the bunchgrass community and the density of sagebrush can be increased. In addition, improper grazing management can result in deep-rooted bunchgrasses (species that dominate the understory in the reference state) being replaced by grazing-resistant grasses (rhizomatous grasses and bluegrass). The replacement of deep-rooted perennial bunchgrass species by rhizomatous grasses and bluegrass results in a second state – a new grazing-resistant and stable plant community. A third possible state is a plant community made up almost entirely of sagebrush with bare ground in the understory and is the result of continued improper grazing management.

Mueggler and Stewart (1980) identify similar vegetation community responses to improper livestock grazing within low sagebrush/bluebunch wheatgrass, low sagebrush/Idaho fescue, and big sagebrush (Wyoming and mountain)/bluebunch wheatgrass habitat types in southwest Montana. There, an increased dominance by sagebrush and Sandberg bluegrass, among other species, corresponded with the grazing-influenced decrease in the dominate bunchgrass species within each of these habitat types. The authors noted other described sagebrush/bunchgrass habitat types throughout the sagebrush biome, including descriptions for Idaho, Oregon, and Nevada, with species compositions similar to those described in Montana.

Anderson and Holt (1981) identified a number of studies of vegetal dynamics on exclosures or other protected areas which did not provide clear conclusions regarding the validity of the classical Clements based successional theory. Data from their study of change within heavily grazed Wyoming big sagebrush/bunchgrass sites excluded from grazing for 25 years suggest that many different assemblages of the same species could form relatively stable communities on a given site. The relative abundance of the component species would depend largely on the disturbance history, the nature of past disturbances, and the vegetal composition at the time of disturbance. Any of the relatively stable community assemblages might be considered climax communities. Allington and Valone (2011) identified that with 40 years of livestock exclusion in southeastern Arizona, restoration of soil properties was initiated, grass cover was increased, and native grasses returned, leading to a conclusion that desertification toward a shrubland state had not occurred. Both these studies indicate that the response in vegetation composition to disturbance or removal of disturbance may be a process which occurs over a number of years. In the short term, what may appear to be a different state in the state-and-transition models may be a slow progression between phases, which is dependent on recovery of factors for plant establishment or growth, such as soil properties.

State-and-transition models identified in ecological descriptions for a number of the sagebrush/bunchgrass ecological sites descriptions represented in the Owyhee River Group allotments (USDI USFWS 2010) are similar to the state-and-transition model for the south-central Wyoming site. Many of the ecological site descriptions for low and big sagebrush sites identify retrogression and secondary succession through phases of the reference state, with varying degrees of dominance by Sandberg bluegrass, squirreltail, and annual grasses resulting from grazing management practices. Fire tolerance of these bunchgrass species has less influence on the species composition of these sites following fire. Dominance by deep-rooted perennial bunchgrasses (e.g., bluebunch wheatgrass, Idaho fescue, Thurber's needlegrass) is enhanced and maintained with proper grazing management.

A less productive state dominated by sagebrush in the shrub layer and Sandberg bluegrass, annual grasses, and annual forbs in the herbaceous layer is described in the state-and-transition models for a number of ecological site descriptions for the Owyhee River Group allotments. This plant community develops due to continued improper grazing management and lack of fire. Frequent fire leads to a similar plant community in this state, though lacking sagebrush and often with rabbitbrush, a more fire-tolerant shrub (USDA Forest Service 2012).

Seasons and Intensities of grazing use

The consequences of livestock impacts to vegetation resources and individual plants are related to the season in which livestock graze a vegetation community, as well as the intensity, duration, and frequency of use in a given year (Reed, Roath and Bradford 1999). Long-term consequences from grazing management practices result from the response from the successive years of use a vegetation resource receives. Inappropriate grazing management practices are a

process of repeated, selective use of the more desired plant species in a grazing environment. This grazing and regrazing within one growing season or in successive years has profound effects on the individual plants and their ability to compete with other plants for water, minerals, solar energy, and space. Similarly, the consequences of physical impacts associated with livestock grazing can result from a single impacting event or a sequence of impacting events without opportunity for recovery to occur. The result is a loss of productivity and potential death of a select group of plants that are excessively pressured by grazing animals.

A number of authors have identified physiological differences of rangeland plants, primarily grasses, as they relate to their response to grazing defoliation between those that grow in the Great Plains and the Intermountain West (Mack and Thompson 1982); (Vavra, Laycock and Pieper 1994). Caespitose grasses in the Intermountain West, including the majority of perennial bunchgrasses within upland vegetation communities of group 1 allotments, evolved at least in partial response to low selective pressure by large congregating grazing mammals. The dominant caespitose grass within potential vegetation communities of the Owyhee River Group allotments is bluebunch wheatgrass, a species susceptible to repeated grazing. A number of sources suggest limiting the intensity of grazing use of bluebunch wheatgrass during the active growing season and providing at least two years of deferment of grazing use outside the active growing season for every year of active growing season use (Stoddart 1946); (Blaisdell and Pechanec 1949); (Mueggler 1972); (W. F. Mueggler 1975);; (Miller, Seufert and Haferkamp 1994); (USDA NRCS 2012). Burkhardt and Sanders (2010) provided the Owyhee Initiative Board of Directors with a science review of management tools appropriate for spring growing season grazing and recommended similar deferment or rest from growing season use. These retired university professors recommended a system of "early-on-early-off or a two to three early-season pasture rotation allowing grazed bunchgrasses to complete their reproductive cycle without grazing interruption at least on alternating years if not every year, based on their review of research and practical experience.

Intensity of grazing use includes a number of potential impacts to a variety of resource values. One aspect of intensity of grazing use is utilization of forage species. Utilization is defined as the proportion or degree of current year's forage production that is consumed or destroyed by animals (USDI BLM 1999d). For purposes of analysis, slight utilization is generally defined as up to 20 percent, light utilization is from 21 to 40 percent, moderate utilization is defined as 41 to 60 percent, and heavy utilization is defined as 61 to 80 percent. Severe utilization is greater than 81 percent. Generally, the vigor of forage grass species can be sustained with light or moderate utilization, while heavy utilization reduces photosynthetic tissue below levels needed to maintain root reserves, diminishing the vigor of utilized species. However, the timing of grazing use relative to plant phenology and the occurrence of repeat grazing of individual plants combine with utilization levels to affect the health and vigor of key species, as well as changes to vegetation community composition. Moderate utilization during periods when reserves and photosynthesis are limited for initial growth, during regrowth, or during seed formation will impact herbaceous species greater than the same level of utilization during periods when the plant is not actively growing. A review of the literature by Anderson (L. D. Anderson 1991), pertaining to the effects of defoliation and vigor recovery of bluebunch wheatgrass, and research by Ganskopp (1988), pertaining to similar effects to Thurber's needlegrass, revealed a high sensitivity to utilization during the active growing season. Grazing use that occurred when the plant was entering the boot stage, a period early in its seed producing stage of growth, was the period of highest sensitivity. Utilization levels of thirty to forty percent under deferred grazing systems or one time utilization levels greater than 50 percent during the growing season have been shown to cause significant reductions in vigor and productivity. Time frames necessary for recovery may extend beyond the average 2 to 4-year cycle frequently used in

grazing rotations. Researchers have recommended that desert ranges be stocked for around 30 to 35 percent use of forage production in an average year to meet both vegetation management and livestock production objectives (Holechek, Thomas, et al. 1999).

Forb species tend to not have the ability to regrow following grazing. While grasses tend to have growing points close to the soil surface[2], growing point of forbs are elevated with growth. As a result, grasses are less likely to have growing points removed with light to moderate levels of grazing while growing points of forbs are easily removed, even with light grazing. Additionally, some forbs are highly palatable and sought out by grazing animals.

Long-term impacts of moderate to heavy utilization are dependent on the individual plant species' ability to maintain health and vigor, recover from impacts, and remain competitive while being utilized by grazing animals. The composition of a vegetation community, as it relates to the relative palatability of different plant species available for grazing, will affect measured utilization and subsequent levels of competition between individual plants. Although stocking rates are usually established to limit utilization to light or moderate levels, factors affecting livestock distribution will cause some areas where animals tend to concentrate to be utilized to a heavy degree, while other areas may remain unused or only slightly used.

The intensity of livestock use will also affect other resource values, including the ability to meet management objectives which relate to standing vegetation material and ground cover remaining after use. As utilization levels are increased, canopy cover of grazed and browsed plants declines. Additionally, deposition of protective plant litter to the soil surface, incorporation of litter into the soil, and the density and distribution of plant roots in the soil profile are decreased. As a result, increased utilization can reduce cover of bare ground by vegetation material and litter, increase puddling of clay soils with raindrop impact, reduce rates of infiltration of precipitation, and reduce permeability and moisture storage of soils. High utilization levels can contribute to increased overland flow of precipitation and snowmelt, soil erosion, siltation of streams, and a decline in surface water quality affecting beneficial uses. All these adverse impacts to soil properties and availability of soil moisture from high levels of utilization result in long-term reduced plant vigor and productivity.

Reed et al (1999) provided a grazing response index based on the frequency of grazing forage plants, intensity of removal of photosynthetically active material, and opportunity to grow prior to grazing or to regrow. Generally, a positive index resulting from grazing less than 7-10 days, removal of less than 40 percent of photosynthetically active material, and most or all of the growing season to grow or regrow is beneficial to the health, structure, and vigor of plants. Conversely, a negative index results from grazing longer than 14 to 20 days, removal of more than 55 percent of photosynthetically active material, and little or no chance to grow or regrow indicating that management practices are harmful.

Winter grazing use (November 1 to March 1) of upland vegetation communities generally is a period of minimum impacts. Upland herbaceous plants are mostly dormant during the winter season of use with the exception of some photosynthesis by new plant growth after fall and winter precipitation and during warming weather trends, primarily on south exposed slopes. Forage quality of cured standing herbaceous vegetation is moderate to low, improving when mixed with new growth or browse from palatable shrubs. Light to moderate utilization of standing cured herbaceous vegetation is not detrimental to health and vigor of plants. Light to

[2] Mack and Thompson (Mack and Thompson 1982) cited other sources who identified morphologic features of caespitose grasses in the Intermountain West that make them more susceptible to grazing impacts as compared to rhizomatous grasses in the Great Basin.

moderate defoliation of new growth usually is not detrimental to maintenance of health and vigor of herbaceous species since soil moisture will be available for spring and early summer growth, regrowth, and completion of the annual growth cycle prior to soil moisture depletion. Grazing of fall sprouting annual species may reduce competition with desirable perennial herbaceous species during the following growing season. Light to moderate utilization levels will retain adequate standing material and litter for soil protection from wind erosion, rainfall impact, and late winter and spring runoff. Heavy utilization levels will expose the soil surface to these negative impacts, especially on sites with marginal potential to produce a reasonable vegetation cover and in years with limited growth of protective vegetation cover. The potential for repeated grazing of localized areas, resulting in heavy utilization, is present with severe weather conditions and snow accumulation reducing livestock distribution. Negative impacts intensify on palatable shrub species when snow accumulation makes herbaceous species unavailable. Livestock management actions to maintain animal distribution are oftentimes limited by weather and accessibility.

Early spring grazing use (February 1 to May 1) results in additional impacts to vegetation and soil resources as compared to winter use. Table VEGE-1 was developed with data presented in the Proposed Southeastern Oregon Resource Management Plan and Final Environmental Impact Statement and identifies average dates for initiation of growth, flowering, and seed-ripe for a number of bunchgrass species by elevation. Early growth of herbaceous species, primarily cool season species, occurs with rising soil temperatures. Minimal impacts to plant vigor and health occur with light to moderate utilization of early growth when adequate soil moisture is available for regrowth and completion of the annual growth cycle. Moderate utilization, in years with minimal soil moisture available for regrowth after use, could deplete plant vigor and health, especially during periods of critical growth. Heavy to severe defoliation can expose the soil surface to future erosive forces of wind and water. Use of palatable annual species early in this period may reduce competition with desirable native perennial species when grazing is removed and adequate soil moisture remains to complete growth cycles. Early growth of herbaceous vegetation contains high water content and thus, when combined with leached old growth, has only moderate forage quality, improving after mid-March in most years. The hazard of compaction of wet soils with hoof action of livestock may be present, resulting in a reduction of infiltration and soil moisture holding capacity in fine-textured soils. Opportunities for good livestock distribution are present with more locations of available water and cool air temperature.

Table VEGE-1: Approximate growth stage dates for bunchgrass species[1]

Elevation (feet)	Sandberg bluegrass			Squirreltail			Bluebunch wheatgrass			Idaho fescue		
	Initiate growth	**Flowering**	**Seed-ripe**	**Initiate growth**	**Flowering**	**Seed-ripe**	**Initiate growth**	**Flowering**	**Seed-ripe**	**Initiate growth**	**Flowering**	**Seed-ripe**
4,000	March 10	April 15	May 15	March 25	June 1	July 1	March 15	June 15	July 125	April 1	July 1	Aug 1
4,700	April 1	May 5	June 15	March 25	June 1	July 1	March 25	June 25	Aug 15	April 5	July 1	Aug 15
6,000	April 15	June 25	Aug 1	May 1	June 25	Aug 1	April 25	July 15	Aug 15	May 10	July 20	Sept 1

[1] Adapted from appendix R of the Proposed Southeastern Oregon Resource Management Plan and Final Environmental Impact Statement (USDI BLM 2001).

Upland growing season grazing use (May 1 to July 1) is the season of greatest impact to native perennial grass species. Upland plants are actively growing, allocating carbohydrates from roots and crowns and from limited photosynthetic surface area to early growth, regrowth, and seed formation. Herbaceous plants are susceptible to defoliation impacts as a result of the depletion of carbohydrates, especially with moderate to heavy utilization, repeated grazing, and/or frequent growing season use. Grass species are especially susceptible to impacts from defoliation during seed formation and seed stalk elongation, due to the high requirement for carbohydrate from remaining plant material and photosynthesis. Opportunities for regrowth and completion of the annual growth cycle after defoliation are limited, especially in years of below average precipitation and soil moisture. Soil compaction from the physical presence of livestock remains a concern with moist soils, especially in areas with shallow and fine-textured soils. Upland shrub species reach maximum growth withdrawing shallow soil moisture early and deeper water reserves as the season progresses. Opportunities for good livestock distribution during the early portion of this season are present with more locations of available water, high palatability of quality forage, and cool air temperature. Repeated use during the growing season can be expected to reduce vigor and health of desirable perennial herbaceous species and lead to trends away from desired future conditions.

Summer grazing use (July 1 to October 31) defers grazing until after the active growing season for most bunchgrass species. A deferred season of use provides for livestock grazing after most of the upland species have reached the growth stage of late seed development and replenished carbohydrate reserves. Most upland plants, including native bunchgrass species, have completed their annual growth cycles and have entered senescence. As a result, upland communities have declining forage quality and lower palatability to wildlife and domestic herbivores after the growing season and during the summer. Livestock will tend to turn to palatable browse species, especially when herbaceous utilization levels become heavy late during this period, to maintain a given level of nutrition when mixed with lower quality herbaceous feeds. With the onset of senescence, native upland vegetation communities are less susceptible to negative impacts of light to moderate defoliation. Heavy to severe

defoliation can expose the soil surface to future erosive forces of wind and water. Livestock distribution away from water sources is limited by high ambient temperatures, increasing the need for frequent watering and causing cattle to graze primarily during the evenings and throughout the night, while becoming less active during daylight hours. Localized impacts from defoliation and the physical presence of livestock intensify, especially near water sources and other areas of concentrated activity. Additionally, nutrient concentration will occur in areas of concentrated livestock activity.

Fall grazing use (October 15 to November 30) remains a period of limited impact to upland plant species. Herbaceous upland plants remain senescent with some new growth of annual species and regrowth of perennial bunchgrass species during warming conditions when soil moisture has been replenished by fall precipitation. Upland herbaceous health and vigor is not impaired with light to moderate utilization of cured standing materials. Heavy to severe use may expose soils to erosion from wind and water for an extended period through the initiation of spring growth. Cooler ambient temperatures, with some fall regrowth of upland herbaceous species, may provide for better livestock distribution than during summer. Forage quality of upland herbaceous species remains low, though improving with the initiation of new fall growth. Livestock will retain a percentage of palatable browse species in their diets, when available, to maintain a given level of nutrition by combining it with lower quality herbaceous feeds.

Season-long grazing of a pasture generally begins during the growing season and extends to the end of the period of authorized use, typically into the fall period. Many of the impacts associated with use during the growing season occur with season-long use. Additional impacts occur from localized livestock concentration late in the season as sources of water diminish, as forage quality declines in upland communities, and as ambient temperatures rise. The effects of season-long grazing on species composition are largely dependent on the degree of utilization on the key species. Although the stocking rates that are generally implemented with season-long grazing are designed to achieve moderate levels of utilization on most areas, factors such as terrain, location of fences and water, and vegetation types available, prevent uniform patterns of grazing. Heavy grazing will inevitably occur in some areas while light utilization will occur in others. A trend away from desired future conditions is expected in areas receiving moderate to heavy utilization on an annual basis, especially when that use occurs during active growing periods.

No pastures in the Owyhee River Group allotments are scheduled for yearlong (March 1 through February 28) grazing by domestic livestock nor is yearlong use included in any alternative. Although terms and conditions of to permit to graze cattle in Swisher FFR may not exclude opportunity for yearlong grazing, winter weather conditions make the allotment unavailable during a portion of the year.

Exclusion of livestock grazing removes impacts to vegetation resources resulting from authorized use. Defoliation of herbaceous and shrub species is limited to that which occurs from insect and native herbivore use. Except in instances when native herbivore numbers are high, upland utilization levels during the growing season and dormant seasons are light. In any year, small areas of concentrated native herbivore use may have moderate to high utilization levels. Residual standing herbaceous material and litter accumulation is greater than with scheduled use by livestock in any season. Soil protection from rain impact is high, limiting erosion and improving soil structure and infiltration. The initiation of herbaceous growth with

warming spring soil temperatures may be slightly delayed due to greater interception of solar radiation by standing and down litter.

Livestock grazing schedules are generally implemented to provide opportunity for unacceptable resource conditions to improve, to maintain resource values which are consistent with management objectives, or to avoid unacceptable impacts to resource values or conflicts between uses of public land resources. Anticipated short and long-term impacts from annual use of a pasture during any one season are presented above. Though some established grazing schedules provide for annual use of a pasture during one specified season, more often the mix of management objectives associated with a given pasture can better be met by varying the season of use over a repeating cycle of two or more years. Multiyear grazing schedules are primarily developed with varied seasons of use through an established rotation to allow desirable vegetation species the opportunity to regain vigor and health for future growth, productivity, and sustainability of resource values. Similarly, opportunities for recovery from grazing impacts to other resources, specific to a season of use, may be provided by varying the season in which livestock graze a pasture. Long-term and cumulative impacts of implementing a grazing scheme will define trend toward future vegetation communities and resource conditions.

Most multiyear grazing schedules can be defined as either a deferred-rotation or rest/rotation schedule. Both types of grazing schedules were designed primarily to promote plant vigor, seed production, seedling establishment, root production, and litter accumulation for herbaceous plants in upland ecosystems. Deferred rotation grazing schedules provide for one or more years of grazing use after seed-set, following one or more years of growing season use. In its simplest form, a deferred rotation grazing schedule within a pasture provides for a 2-year rotation cycle with one year of use during the critical period of plant growth followed by one year of deferment of use until after the growing season. More conservative schedules provide for a higher proportion of deferment than years of use during the period of active growth.

Rest/rotation schedules allow for similar opportunities for recovery with one or more years of the grazing rotation in which no use is scheduled. Caution should be implemented to ensure that higher levels of utilization during periods of use of one pasture while providing rest for another pasture do not preclude meeting management objectives. At moderate utilization levels, either rest/rotation or deferred-rotation grazing systems can allow for adequate recovery of upland herbaceous root growth and associated carbohydrate storage following the impacts of critical season defoliation. The number of years of rest or deferment necessary to meet vegetation management objectives is dependent on a number of factors including resource conditions, soil and climatic factors, and the intensity of grazing use. With an increase in the proportion of years of rest or deferred use to the number of years of use during the critical season, the opportunity for recovery and maintenance of plant health and vigor is improved. Recovery following heavy use during the active growing season may require a substantial number of rest or deferment years to provide adequate opportunities for recovery of health and vigor, especially when growth conditions are poor or if the vegetation resource is in poor ecological condition.

7.13.2 Soils

Impacts on Soils

Both human activities and natural events have the potential to impact soil resources on rangelands in the Owyhee River group of allotments. Soils vary extensively across landscapes and thus are primarily dictated by local landform, geologic material, and climate. No two sites are identical, grazing is inherently heterogeneous, and current vegetation patterns represent a complex response to environmental factors, historic land uses, and site-specific responses to many natural processes. The degree of impacts on soils therefore depends upon their inherent characteristics and how sensitive and resilient they are to disturbances.

1. Human Influences and Impacts

Activities that have caused soil disturbance in the analysis area include livestock grazing and recreation, with the latter generally limited to vehicular use and restricted to existing roads and trails. Early grazing and modern land use practices have contributed to wide-ranging landscape changes and have altered wildfire occurrence from historic levels (Quinney 1999). Historic and current grazing management has influenced fire frequency by reducing fine fuels that carry fire; conversely, with the establishment of perennial and annual weeds, the risks of greater soil burn severity, higher-than-normal erosion, and associated sedimentation increase.

2. General Grazing Influences

The effects and consequences of grazing on soil resources are related to the intensity, duration, and frequency of use by livestock. Livestock primarily affect soils via two methods: (1) indirectly through consumption of vegetation, and (2) directly by hoof action. Grazing can alter vegetation structure, plant composition, and ecological function and physically affect soils through trampling and compaction, which can lead to changes in soil physical, chemical, and biological properties. Soil physical properties include soil bulk density, erosion, surface crusts, infiltration, and others. Soil chemical properties consist of soil organic carbon, nitrogen, phosphorus, pH, and others. Soil biological properties include micro- and macroorganisms that can have considerable influence on soil structure and nutrient availability. Alterations to any of these properties can affect the fertility, productivity, and sustainability of managed ecosystems.

Vegetative Cover

The quantity and type of vegetative cover are critical components in ameliorating the effects of raindrop impact, runoff, wind and water erosion, and overall soil stability and function. Where livestock utilization levels are increased, the quantity of vegetative material is reduced and canopy cover declines. Additionally, deposition of protective plant litter to the soil surface, incorporation of litter into the soil, and the density and distribution of plant roots in the soil profile are decreased. As a result, a reduction in vegetative material allows for increased runoff due to reduced infiltration capacities and elevated erosion potential (Pluhar, Knight and Heitschmidt 1987) (Thurow, Blackburn and Taylor, Jr. 1986).

Litter, bare ground, total ground cover, bulk density, initial soil moisture content, organic matter content, and rock cover have some influence on infiltration, runoff and sediment yield (Wood and Blackburn 1981), (McCalla, II, Blackburn and Merrill 1984a), (McCalla, II, Blackburn and Merrill 1984b), (Lusby 1963) (Thompson 1968), (Meeuwig 1970), (Meeuwig 1971) and play an important role in soil surface protection and proper soil function. Dadkhah and Gifford

(1980) found that the most important factor influencing sediment production was grass cover and that 50 percent protective ground cover was sufficient to provide adequate soil stabilization. In contrast, Packer (1963) found that about 70 percent ground cover appears to be a requirement for preventing accelerated erosion and effective soil stabilization.

A healthy vegetative cover provides multiple benefits that include reduced erosion potential and is therefore necessary to manage for good stands of herbaceous ground cover. Unfortunately, the intensity of livestock use can lead to a change in plant species composition that may not be as effective in intercepting raindrops and retarding runoff as the reference site plant community. The timing of grazing use throughout the active growing season and repeated grazing of individual plants combine with utilization to affect the health and vigor of key species, such as deep-rooted bunchgrasses, as well as vegetation community composition. Thus, grazing management and stocking rate can have a indirect impact on soil erosion, and any change in vegetative cover or species composition that reduces infiltration and increases runoff can promote erosion.

Soil stability is a primary control over the fertility, productivity, and sustainability of managed ecosystems. Disturbance to surface soils by livestock grazing can influence ecosystem fertility through the alteration of vegetation cover, soil physical properties, microbial communities, carbon cycling, nitrogen fixation, and hydrologic properties (Schlesinger, et al. 1996).

Studies show that light grazing actually increases soil organic carbon (SOC) and nitrogen; Ganjegunte et al. (2005), Bauer et al. (1987), Lodge (1954), Rhoades et al. (1964), and Wood and Blackburn (1984) all found that soil organic matter, soil nitrogen, and soil phosphorus levels differed only slightly among grazing treatments and exclosures. Lack of a clear relationship between grazing practices and SOC has therefore been mainly attributed to soil variations, depth of soil sampling, and variables in carbon distributions within the grazing system (Schuman, et al. 1999).

Furthermore, individual plant species can affect rates of litter supply and availability with the litter of a variety of grass species differing in rates of decomposition and nutrient immobilization or release (Facelli and Pickett 1991). These differences can establish feedbacks that affect both litter quality and the rates at which soil nutrients are released from organic to inorganic forms. Monocultures, such as cool season invasive annuals that produce nutrient-poor litter, can reduce soil nutrient supply and affect long-term range productivity.

Physical Soil Impacts

Much work has been done to decipher the effects of grazing on soil bulk density, infiltration, and the resulting runoff and sediment yield. Some report higher bulk density and lower infiltration with prolonged grazing (Allington and Valone 2011); (Reed and Peterson 1961); (Knoll and Hopkins 1959); (Pluhar, Knight and Heitschmidt 1987); (Thurow, Blackburn and Taylor, Jr. 1986) while others (Laycock and Conrad 1967) attribute differences in bulk density to varying seasonal soil moisture conditions. In general, spring and early summer livestock grazing on wetter soils contribute to more pronounced compaction of the loosened soil than grazing during late summer.

Impacts of livestock trampling generally rise as stocking rates increase and is augmented when soils are wet (Warren, et al. 1986). Unfortunately, it is often unclear if the effects on infiltration and soil loss are caused by hoof action or by the removal of vegetation which would otherwise protect the soil from raindrop impacts and potential surface sealing. Heavy continuous grazing is generally most impactful to soil hydrologic function, while the effects of moderate to light continuous grazing are significantly less deleterious and frequently not significantly different from each other (McCalla, II, Blackburn and Merrill 1984a).

Puddling is an indicator of reduced infiltration capacity of the soil, is often more pronounced in gentler terrain, and can occur naturally due to complete water saturation during wet seasons and from soil compaction. Grazing management that causes soil compaction can lead to puddling of unsaturated soils due to the loss of pore space and is a concern in areas where grazing activities have occurred on moist soils when compaction impacts are the greatest.

Soil pugging is a major management problem and is caused by cattle grazing when the soil is too wet. The cattle hooves can sink several inches into the mud, causing pugging or compaction in the soil below (Eldridge 2004). This significantly reduces vegetative growth because the dense compacted soil layer restricts the movement of water, air, and roots through the soil as its structure has in fact been destroyed in the compacted layer. Compaction is more severe where the soil is bare so that maintaining good vegetative cover will lessen the effect of the cattle hooves on the soil.

In areas of water, shade, salt, or mineral locations, compaction from livestock congregation and trail networks can initiate runoff and result in accelerated short- or long-distance movement of sediments. Early grazing of riparian areas is more desirable than grazing during the dry summer months as is results in a better distribution of use between the riparian are and adjacent uplands (Clary and Webster 1989).

Biological Invasions

Biological invasions like non-native grasses are a particularly significant threat to native populations and communities because they do not merely compete with or consume native species. They alter environmental conditions or resource availability, thereby causing functional as well as compositional change (D'Antonio and Vitousek 1992). A competitive effect from invasive species can result in reduced water and soil nutrient availability, while altered humidity or rates of nutrient mineralization represent an ecosystem effect.

Grass litter affects soil surface temperature and moisture, thereby influencing seed germination, seedling growth, and nutrient transformations (Facelli and Pickett 1991). The excessive buildup of litter from invading grasses, such as cheatgrass and medusahead, enhances seed germination of several alien species in desert shrublands because of improved water availability associated with the litter cover (Evans and Young 1970), often favoring the continuous establishment of invasive vegetation as well altering fire frequency.

Invasion can set in motion a grass/fire cycle where an invasive grass colonizes an area and provides the fine fuel necessary for the initiation and propagation of increasingly frequent and intense fire occurrence. The competitive ability of invasive grasses, particularly cheatgrass, to exploit soil resources leads to its rapid recovery, causes further susceptibility to fires, and can suppress the growth of native species (Chambers, et al. 2007). Post-fire vegetation dynamics are influenced by competition for soil water and soil nutrients between native and invasive species, with the latter generally being more efficient and dominant. Although ungrazed and unburned cheatgrass provides protective cover on soils, it is less effective than many other grasses (Stewart and Hull 1949) with regard to providing soil stability and nutrients.

Western juniper invasion in former grass- and shrub-dominated ecosystems can lead to a negative influence on hydrologic cycles, soil stability, and vegetative community composition and diversity. However, many juniper ecosystems are subject to accelerated erosion as juniper overstory significantly affects production, diversity, and cover of the herbaceous layer (Miller, et al. 2005) while others remain stable. Davenport et al. (1998) and Miller (2005) suggest that such differences in soil erosion are a function of site erosion potential, determined by climate, geomorphology, soil erodibility, and ground cover, as well as soil depths and plant associations. Because ground cover has a primary effect on erosion rates (Wood, Wood and Tromble 1987),

reductions of herbaceous intercanopy plants as a result of competition from juniper can cause erosion rates to increase. Added impacts from livestock grazing then have the potential to directly move a juniper site across an erosion threshold by concurrently reducing intercanopy vegetation cover and soil water infiltration capacities through trampling effects (Davenport, et al. 1998).

Juniper is highly competitive in terms of available soil moisture, nutrients, and understory photosynthetic needs (Pierson, et al. 2007) (Wilcox and Davenport 1995). As juniper increases and shrubs and bunchgrasses are lost from the plant community, hydrologic function, such as infiltration, is impaired due to the lack of diversity in plant structure and spatial distribution of roots.

Soil Microbiotic Crusts

Another potential impact of grazing on soils is the disruption of biological soil crusts that influence nutrient cycling and stabilize surface soils (Belnap and Gillette 1998). Microbiotic crusts are fragile when dry and are easily crushed and trampled by humans or livestock (Belnap and Gardner 1993) (Cole 1990). While the surface crust can be regenerated by living filaments when the soil is again wet, the structure of soil and the abandoned sheaths below the surface are permanently destroyed (Belnap and Gardner 1993). Since microbiotic crusts are a primary contributor of nitrogen in arid and semiarid regions, loss of soil crusts can result in serious degradation of soil fertility.

Land use by domestic livestock results in compaction and disturbance of the surface soil, with resulting negative impacts on microbiotic soil crusts. Marble and Harper (1989) determined that season of use by livestock had a significant effect on microbiotic crust coverage values and species richness. Decreases in these two parameters can be observed in areas used by livestock during both early and late winter as opposed to areas used only during the early winter. Reduced trampling during late winter and spring, when soil moisture is high and microbiotic species are metabolically active, might permit the organisms to recover from the disturbance enough to reduce soil erosion.

Recovery depends on the composition of the soil crust, severity and timing of the disturbance, climatic events during and following disruption, and proximity of surrounding inoculant sources (Anderson, Harper and Holmgren 1982) (Johansen and St. Clair 1986) (Marble and Harper 1989) (Belnap and Gardner 1993). Although partial recovery from trampling by livestock can occur in less than 20 years, estimated time for full recovery may range from 30 to 40 years for cyanobacteria, 40+ years for mosses, and 50 to 100+ years for lichen where the crust is entirely removed (Belnap, Rosentreter, et al. 2001).

3. Season of Use

Season of use is delineated by livestock grazing schedules that are implemented to provide opportunity for resource improvement or maintenance. Anticipated impacts on soils from changes in vegetation due to annual use of a pasture during any one season are presented below. For an in depth discussion on seasons and intensities of use and their effects on vegetation, refer to the Rangeland Vegetation section 3.4.1.1.

Early spring grazing use (February 1 to May 1) has minimal impacts to plant vigor and health with light to moderate utilization of early growth when adequate soil moisture is available for regrowth and completion of the annual growth cycle. Moderate utilization, in years with minimal soil moisture available for regrowth after use, could deplete plant vigor and health, especially during periods of critical growth. Heavy to severe defoliation can expose the soil surface to future erosive forces of wind and water and affect the soil moisture regime.

Compaction of soils can occur when soils are wet or saturated, resulting in reduced infiltration, moisture-holding capacity, and puddling with fine-textured soils being especially vulnerable.

Upland growing season grazing use (May 1 to July 1) is the season of greatest impact to native perennial grass species. Opportunities for regrowth and completion of the annual growth cycle after defoliation are limited, especially in years of below average precipitation and soil moisture. This increases the risk of erosive forces of wind and water on exposed soils. Where soils are still wet or moist, concerns for compaction and reduced infiltration remain and add further stress of decreased moisture availability that is needed for active growth and seed development. Repeated use during the growing season can reduce vigor and health of desirable perennial herbaceous species and lead to trends away from desired future conditions, consequently affecting nutrient and water cycles.

Summer grazing use (July 1 to October 31) defers grazing until after the active growing season for most upland plants, including native bunchgrass species, have completed their annual growth cycles. Although native upland communities are less susceptible to negative impacts from defoliation because of a decline in palatability, livestock now often congregate near water developments or riparian sources and can intensify localized impacts within areas of concentrated activity. Heavy or severe use of uplands and a reduction in ground and canopy cover can expose soils to erosive forces of wind and water, and microbiotic soil crusts are especially fragile during this dry season.

Fall grazing use (October 15 to November 30) has limited impacts on upland plant species and herbaceous health and vigor is not impaired with light to moderate utilization of cured standing materials. Heavy to severe use may expose soils to erosion from wind and water for an extended period through the initiation of spring growth. To maintain plant productivity, grazing intensity should be kept at or less than a moderate level even in period of plant dormancy.

Winter grazing use (November 1 to March 1) of upland vegetation communities generally is a period of minimum impacts. It provides rest during the growing period every year and promotes plant vigor, seed and root production, and seedling establishment. This, in turn, strengthens soil stability that reduces erosion potential by providing ground cover and by promoting water infiltration and retention, which ensures that soil moisture will be available for next years' annual growth cycle. Although microbiotic soil crusts are less fragile during moist periods of time and may continue to grow from late winter through early spring because of optimal soil water conditions, growth can be disrupted if heavy livestock grazing persists.

Warmer or thawing conditions increase the presence of wet or saturated soils and disturbance from displacement and compaction, especially in lighter textured or clay soils. Severe weather conditions may limit animal distribution and can result in heavy utilization or elimination of the remaining plant cover, increasing the susceptibility to localized wind and rain impacts and late winter and spring runoff. Frozen soils are more resilient to mechanical hoof damage and compaction.

No Grazing or exclusion of livestock grazing removes annual impacts to vegetation resources resulting from livestock and reduces disturbance to native herbivore use. Increased vegetative cover provides soil protection from rain impact, organic material and litter, adds microtopography to reduce water flow, therefore limiting erosion and improving soil structure and infiltration. The initiation of herbaceous growth with warming spring soil temperatures may be slightly delayed due to greater interception of solar radiation by standing and down litter and some locations may experience slight changes in freeze and thaw cycles. It should be noted that exclusion of livestock may not result in immediate rangeland improvement (Yeo 2005). The lack of correlation between periods of grazing exclusion and vegetative response suggest that site history and site potential are important factors determining rates of vegetation recovery or

maintenance. Once vegetation degrades to some threshold, cessation of grazing may not halt continued decline or at least may not allow the community to improve, especially if exclusion or rest is only over a short period (1 to 2 years).

4. Stocking Rate

Stocking rate is defined as the number of animals on a pasture during a month and is usually expressed in animal unit months (AUM) per area. Along with proper grazing management and grazing during the correct time of year, appropriate stocking rates are critical for sustained pasture productivity. In a summary of 25 studies on effects of grazing intensity on native vegetation and livestock production, heavy stocking rates consistently caused a downward trend in ecological condition, light stocking caused an upward trend, and slight improvement occurred under moderate stocking (Holechek, Gomez, et al. 1999). Greatest benefits can be observed with light or conservative stocking during dry years.

Invariably, the most productive and palatable forage species decline in cover under heavy stocking while they tend to increase under light rates though more impacts can be observed on forage production than plant composition (Holechek, Gomez, et al. 1999). Because stocking rates and ecological condition suggest such a close relationship, differences in AUMs per acre can provide a measure that allows for comparison of potential soil impacts caused by variable stocking rates in a given pasture or allotment. For details on stocking rates refer to the Rangeland Vegetation section 3.4.1.1.

5. Desired Condition for Soils

The Idaho Standards for Rangeland Health (Appendix A) are to be used for the betterment of the environment and to sustain productivity of the range with the specific intent of providing for multiple uses of public lands. Rangeland should meet or make significant progress toward meeting the standards to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

The desired condition for upland watersheds is to provide for infiltration, retention, and release of water appropriate to soil type, vegetation, climate, and landform (Appendix A). Soil quality and long-term productivity are components of overall rangeland health and uses indicators, such as amount and distribution of ground cover (including litter), to identify if ecological site or soil-plant associations are appropriate for site stability.

Aggregate stability, organic matter, and soil crusts also can be measured to assess soil quality, based on threshold values for soil disturbance types that vary across the landscape. Evidence of accelerated erosion in the form of rills and/or gullies, erosional pedestals, flow patterns, physical soil crusts/surface sealing, and compaction layers below the soil surface should be minimal for soil type and landform.

The Owyhee Resource Management Plan (USDI BLM 1999a) states that watershed health condition should be improved if unsatisfactory and maintained if satisfactory, while current localized accelerated erosion problems should be stabilized and potential future erosion should be prevented. Grazing practices should therefore be implemented that provide adequate amounts of ground cover (determined on an ecological site basis) during and at the end of the grazing season to support proper infiltration, maintain soil moisture, stabilize soils, and maintain site productivity.