Reach Groups listed in the above table are described as follows: HC-1: private lands below the Herd Creek Allotment; HC-2: BLM portion of lower Herd Creek between private lands; HC-3: Bennetts private property, Herd Creek; HC-4: BLM exclosure upstream of private and below the Forest boundary; HC-5: Forest Service portion above boundary to confluence of main fork; LC-7: BLM portion of Lake Creek below Herd Lake; LC-8: BLM portion of Lake Creek above Herd Lake. During the Herd Creek watershed analysis, the watershed was divided into 37 survey reaches. Survey reaches were combined into 19 reach groups. Reach groups had similar channel types, steam widths, fish accessibility, ownership and/or land management.

Priority reaches for key species were established using the following: data from annual spawning ground counts; juvenile fish sampling, reach types and habitat condition; scientific literature; biologist's observations; and description of suitable habitat areas based on environmental parameters. The BLM portions of the watershed are used by priority species during different life stages (see description of life history characteristics presented in the Biological Assessments listed in the Reference Appendix). Priority reaches for chinook salmon were generally in lower mainstem Herd on BLM portions of the watershed. Bull trout are present both above, and below BLM-managed reaches of Herd Creek. Westslope cutthroat trout were suspected to occur throughout the watershed, but they have only been recently observed in lower Herd Creek and lower Lake Creek. Lower reaches are especially important for chinook salmon, steelhead, and fluvial bull trout production. All perennial and intermittent streams (except those above Herd Lake on Lake Creek) are designated (under the Endangered Species Act) as critical habitat for chinook salmon.

Habitat variables measured using the R1/R4 standard habitat inventory procedures (Overton and others 1997) have been compared to regional objectives described in PACFISH (USDA & USDI, 1995), and are depicted in table 3 below.

Table 3. Current mean values of aquatic habitat variables compared to PACFISH Riparian Management Objectives (RMO's) by reach group in the Herd Creek watershed, 1992-1996 (derived from Herd Creek Watershed Analysis, Tables 25, 26, 27, 28, and 30, October 1997).

Reach	Wetted channel width in feet	Pool frequency #/mile, (PS)	Pool-width/ max. depth ratio (PS <10)	Percent Stable streambank (PS >80)	Percent Undercut banks (PS >75)	Percent Surface fines	LWD frequency #/mile, (PS)
HC-1(pvt)	17	32 (56)	5.3 (<10)	79 (>80)	ND*	45	ND
HC-2 BLM	24	37 (50)	2.3 (<10)	78 (>80)	17 (>75)	18	53 (>20)
HC-3 (pvt)	21	31 (56)	7.1 (<10)	62 (>80)	7 (>75)	22	13 (>20)
HC-4 BLM exclos.	21	45 (56)	6.2 (<10)	88 (>80)	43 (>75)	18	23 (>20)
HC-5 F.S.	20	47 (56)	6.7 (<10)	87 (>80)	22 (>75)	8	23 (>20)
LC-7	7	85 (96)	5.6 (<10)	71 (>80)	16 (>75)	39	45 (>20)
LC-8	ND	ND	ND	ND	ND	ND	ND

* ND = No data * *NA = Not applicable PS = PACFISH standard

The current minimum riparian and aquatic habitat conditions applied to all streams in the Challis Resource Area are described in *Attachment 15* of the Challis Resource Management Plan (July, 1999). Riparian Management Objectives (RMO's) for PACFISH streams are incorporated in this attachment. Revised RMO's were recommended as a result of the 1997 Herd Creek Watershed Analysis, and are listed on page 178 of that document. In summary, fisheries habitat conditions on BLM lands within the Herd Creek watershed are in an upward trend that is approaching the recommended habitat conditions for this watershed.

Vegetation Types and Rangeland Resources: The dominant vegetation types on the BLM administered portions of the allotment are sagebrush/grass communities commonly dominated by three varieties of sagebrush species *(Artemisia tridentata)* with cool-season bunchgrass understories comprised of bluebunch wheatgrass *(Agropyron spicatum)*, Idaho fescue *(Festuca idahoensis)*, Indian ricegrass *(Oryzopsis hymenoides)*, needle-and-thread *(Stipa comata)*, squirreltail *(Sitanion hystrix)*, and bluegrasses *(Poa spp.)*. Common forbs include *Astragalus spp., Lupinus spp., Crepis spp., and Phlox spp.*. Mountain sagebrush with Idaho fescue and mountain mahogany stands are present on the higher elevation mountain slopes.

Surveys in 1995 identified six to 12 plant species at lower elevations and 12 to 20 species in higher elevations. The Ecological Site Inventory of rangeland (1995 survey) indicated that 79% of the shrub/grassland types on public land are currently in Late Seral or Potential Natural Condition (PNC). Current range condition inventories show that uplands in Herd Creek are; 53% in late seral (good), 26% at PNC (excellent), and 21% unclassified (rockland and forested). Most of the uplands on public land show little sheet or concentrated erosion, evidenced by the lack of litter movement, pedestals, rills or active gullies. Spacing, vigor, and productivity of plants indicate, for the most part, healthy, stable, and functioning uplands.

Uplands on federal land are generally not contributing to riparian degradation. Upland trend study plots show a static or slightly upward trend.

A variety of state listed noxious weeds occupy the allotment. Principle species include spotted knapweed, and black henbane. Occupation and establishment has primarily been along roadways, however, small infestations may also be present in roadless areas associated with ephemeral drainages. Although known sites are being treated through chemical, manual, and biological methods, and are generally not expanding, new sites are being discovered requiring expanded treatment efforts. Avenues of weed expansion have been linked to birds, rodents, grazing animals (i.e. elk, deer, and livestock) and humans.

Threatened/Endangered/Sensitive Plants: Seven Special status plants are known to occur on the allotment: Wavy-leaf thelypodium *(Thelypodium repandum)*, Challis milkvetch *(Astragalus amblytopis)*, Lemhi milkvetch *(Astragalus aquilonius)*, Park milkvetch *(Astragalus leptaleus)*, Challis crazyweed *(Oxytropis besseyi var. salmonensis)*, White eatonella *(Eatonella nivea)*, and Yellowstone draba *(Draba incerta)*.

Soils: Twenty-seven soil map units, combined into three soil complexes, were mapped and described for public lands in Herd Creek. Soil Groups are described as follows (derived

from the Custer/Lemhi Soil Survey General Soils Map, Order 3 Soil Survey, Natural Resource Conservation Service):

> Zeebar-Friedman-Donkeyhill Complex; Well-drained Cryoborolls, shallow to deep gravelly loamy and gravelly clayey, well drained soils on mountains and foothills derived from extrusive igneous rocks. Water erosion hazard is moderate on these soils, and they are subject to compaction.
>
> Orthids-Dawtonia-Cronks Complex; Orthids, Haplargids and Argixerolls that are gravelly loamy, hilly to extremely steep, shallow to very deep, well drained soils on mountains and foothills derived dominantly from extrusive igneous rocks and quartzite. Water erosion hazard is slight to moderate on these soils, and they are subject to compaction.
>
> Cryoborolls-Cryochrepts-Koffgo: Cryoborolls and Cryocrepts, well-drained gravelly loams, shallow through very deep, on steep to extremely steep mountains derived primarily from quartzite and extrusive igneous rocks, with a moderate to severe erosion hazard.

Wilderness: The allotment is within both the Jerry Peak wilderness study area (WSA), and the Jerry Peak West WSA. Areas recommended to Congress for wilderness designation include 26,750 acres within the Jerry Peak WSA.

Water Quality: Herd Creek is designated a secondary contact recreational use (IDPA 16.01. 02. 101.). Existing uses include cold water biota, salmonid spawning, agricultural water supply, and secondary recreation. Current water temperatures in Herd Creek vary by season and elevation and in the lower stream reaches range from 32 degrees F in the winter to 72 degrees F in the summer (unpublished data, BLM/Shoshone-Bannock, 1993-96). Potential pollutants in Herd Creek are coliform bacteria, effluent from pastures, fertilizer, oil, and gasoline. In Herd Creek, dissolved material, nutrients, organic debris, ions, and trace minerals are often present in low amounts, well within the range that supports aquatic life. The pH of Herd Creek is mildly basic, typical of mountain streams in the Upper Salmon River Basin. Calcium carbonate is the primary mineral component in Herd Creek.

Sediment bedload and fines at depth have increased from reference to current due to changes in riparian vegetation and soil condition from past uses. The response channel (mostly located on private land) cannot move the large amount of bedload introduced to the reach. The amount of sediment is now decreasing, but until every channel reach can move contributed sediment out of the system, the stream will remain out of balance. The gradual decrease in the amounts of bedload and fine sediment will result in an improved stream channel.

Recreation Use: Diverse recreational activities are provided on the allotment in the form of hunting, hiking, fishing, scenic travel, wildlife viewing, antler gathering, rockhounding, backpacking, dispersed camping and non-technical mountain and rock climbing. Herd Creek is part of the Challis Extensive Recreation Management Area (ERMA). Herd Lake and the

Herd Lake Overlook are Challis ERMA-designated Recreation and Roadless Area Sites. Parts of the Jerry Peak Wilderness Study Area (WSA) and the Boulder-White Clouds WSA are located on, or immediately adjacent to the allotment. Three developed sites are contiguous to the Jerry Peak WSA: the Herd Lake Overlook, Herd Lake Campground, and Upper Lake Creek Campground (closed to vehicle access since the 1983 Mackay earthquake).

ACEC: All BLM lands within the Herd Creek watershed are designated as an Area of Critical Concern (ACEC) through the Challis Resource Management Plan (1999). In addition, a portion of the upper Lake Creek watershed from Jerry Peak along the divide to Lake Creek, west to section 30, T.9N., R20E., south along section 31 to the T.9N., and T.10N. line, and eastward to Jerry Peak is designated as a Research Natural Area. There are 17,943 acres designated as ACEC, of which 1,060 acres are designated as an RNA. Values which accommodated the ACEC designation are the great variety of range and forest plant communities found at high elevations; presence of rare plants; riparian recovery and demonstration area; known spawning and rearing habitat for special status steelhead trout, bull trout, and chinook salmon; roadless/primitive and scenic values. Plant communities are mountain big sagebrush/grasslands and mixed conifer forests with patches of mountain mahogany.

Cultural Resources: Approximately 17 % of the BLM lands within the allotment have been inventoried for cultural resources. Many areas exist within the allotment that have not been inventoried for cultural resources but appear to have a high probability for containing sites. As a result of the inventories, 18 sites and one isolated find have been recorded. The site types include 15 lithic scatters, one talus pit site, and two rock shelter sites.

In general lithic scatters represent the most frequent known site type found within the allotment. Most sites appear to be situated near riparian areas (including seeps and spring sources) and in areas which may have supported water and riparian vegetation at one time.

Economic/Social Values: Each of the two permittees operate full time livestock/agriculture businesses and employ permanent and seasonal workers which support local economies in the Clayton/Challis area. They are dependent upon both public and NF lands for their overall operation.

Floodplains/Wetlands/Riparian Zones: The allotment contains approximately 8 miles of riparian stream habitat on BLM. Principal streams are briefly described in the table below. This information is summarized from data obtained through contracted riparian inventories, habitat surveys, and monitoring during the period 1994 through 1998.

Table 4. Riparian Function, Trend and Vegetation Type by Stream, Length, and Reach

Stream	Reach	Length (miles)	Functionality/ Trend	Vegetation Types
Herd Creek	HC-001	1.1	PFC	Willow/sedge-mixed grass Alder/mixed grass

	HC-002	.9	PFC	Willow/sedge-mixed grass
	HC-003	.7	PFC	Willow/sedge-mixed grass
	HC-004	.7	PFC	Willow/sedge-mixed grass
Lake Creek	LKC-001	.5	FAR/upward	Willow/sedge-mixed grass
	LKC-002	.5	FAR/NT	Willow/sedge-mixed grass
	LKC-003	1.5	FAR/upward	Willow/sedge-mixed grass
	LKC-004	.2	FAR/NT	Cottonwood/dogwood
	LKC-005	1.0	PFC	Willow/sedge-mixed grass
	LKC-006	.9	FAR/upward	Willow/sedge-mixed grass Aspen/dogwood
	LKC-007	1.6	FAR/upward	Willow sedge/mixed grass Aspen/dogwood
Sheep Creek	not	assessed		
McDonald Cr	not	assessed		

PFC = Proper Functioning Condition; FAR = Functional-at-Risk; NF = Non-functional
DN = Downward trend; NT = No trend; UP = Upward trend

There are also numerous springs and seeps scattered throughout the BLM administered public land within the allotment. Some springs that supported reliable water were developed and piped into stockwater troughs dating back to the 1940s through the 1970s under authorization through project development permits. These spring sites support a variety of hydric and upland shrubs with mixed herbaceous grasses dominated by bluegrass species. Site disturbance from project maintenance activities and concentrated wild ungulate and/or livestock grazing is common.

Wildlife: Elk, mule deer, antelope, sage grouse, blue grouse, and chukar partridge are some of the more common wildlife species found on this allotment. A variety of non-game birds, reptiles, amphibians, and mammals are also present. Riparian habitats along intermittent and perennial streams are some of the most important sites for nongame wildlife. Mule deer and elk winter range is present and the allotment also provides habitat for elk calving and mule deer fawning. Antelope fawning and sage grouse nesting may occur on the allotment, but no specific fawning or nesting areas have been identified. Big game winter ranges have generally been identified and mapped on the allotment, but no other special or unique habitats are known to be present.

Wild and Scenic Rivers: The East Fork of the Salmon River is eligible for further study to determine potential for inclusion in a National rivers system, with a suitability finding deferred until further coordination with other agencies is completed. Outstandingly remarkable (OR) values on the East Fork of the Salmon River are recreational, fisheries, and scenic with a recreational tentative classification. Herd Creek has been found to be suitable for Wild and Scenic designation with outstandingly remarkable values for fisheries and