Salmon River Corridor Watershed Assessment Report

Salmon Field Office

September, 2011

Findley Basin Allotment, May 2007

Interdisciplinary Team Composition

The Salmon River Corridor watershed assessment and subsequent report was made possible by a collaborative effort between BLM Salmon Field Office and Idaho Falls District staff. The following personnel participated on the ID team and/or provided information during the assessment.

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Introduction

This document is a land health assessment for the National System of Public Lands administered by the Bureau of Land Management (BLM) Salmon Field Office (SFO) within the Salmon River Corridor Watershed Assessment (SRC) assessment area boundary (Map 1). The assessment area boundary extends to the 6th field Hydrologic Unit Code (HUC) and encompasses U.S. Forest Service (USFS), BLM, and State of Idaho managed lands, along with privately-owned lands, although the assessment is focused on Salmon BLM-managed lands.

The purpose of the assessment is to use a landscape-level approach for understanding ecologic processes, current land uses, and management actions affecting resources within the SRC area. This report documents the condition and/or function of public land resources and includes an evaluation of the eight Idaho Standards for Rangeland Health (USDI-BLM, 1997).

This report also contains recommendations developed by an interdisciplinary (ID) team that address identified resource issues within the SRC area. These recommendations describe objectives related primarily to native vegetation management, but also address other concerns such as noxious weeds, wildland-urban interface (WUI), recreational uses, travel management, and wildlife and fisheries habitat. Recommendations for lands managed by the BLM SFO will be used to prioritize the implementation of a list of future management actions for BLM Salmon lands covered by the assessment. Implementations of priority management actions is anticipated to begin as early as summer 2012.

Although this assessment outlines recommendations to meet management objectives, it is not a decision-making document. Any changes in management proposed as a result of this assessment would be implemented through decisions consistent with the Lemhi Resource Management Plan (RMP) (USDI-BLM, 1987), as amended, and would be analyzed site-specifically to comply with the provisions of the National Environmental Policy Act (NEPA).

Process

The SRC assessment was completed by an ID team comprised of BLM SFO resource specialists. ID team meetings were initiated in August of 2010, and facilitated through September of 2011.

Field tours conducted August through October of 2010 accomplished the following:

- Current resource conditions were observed and characterized (assessed) by the team;
- Desired resource objectives were reviewed and discussed; and
- Resource management issues were subsequently identified in the context of current land uses and policies.

Assessment data was then synthesized. The assessment starts with background information on the resources and land uses within the SRC area. The eight Idaho Standards for Rangeland Health are then described and a "call" is made for each allotment within the SRC as to whether the allotment is (1) "Meeting the Standard"; (2) "Not meeting the Standard"; (3) "Not meeting the Standard but making significant progress toward meeting"; or (4) the "Standard doesn't apply". Finally, a list of recommendations for achieving management objectives within the SRC area is outlined.

This assessment was done in accordance with the following BLM regulations and applicable guidance:

- 43 CFR §4180
- BLM Manual H-4180-1, Rangeland Health Standards Handbook and Guidance for Conducting Watershed-Based Land Health Assessments
- Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management (Standards and Guidelines) (1997)
- Lemhi RMP, as Amended (1987)
- Central Idaho Fire Management Plan (2005)

Background

The SRC area is located along the Salmon River in Lemhi County, Idaho, between the Salmon River Range and the Lemhi Range and runs from approximately five miles north of Ellis, ID to the town of Salmon. Salmon BLM managed lands are contained within Townships 17 - 21 North and Ranges 20 - 22 East, Boise Meridian.

The SRC boundary primarily follows watershed boundaries (6th field HUC) and encompasses approximately 255,976 acres of BLM, USFS, State of Idaho and privately owned lands (Table 1). However, in order to avoid splitting allotments and thus facilitating evaluation of Salmon BLM allotments toward meeting the Idaho Standards for Rangeland Health (USDI-BLM, 1997), it was necessary in some locations to adjust the assessment boundary to follow allotment boundaries. Grazing allotment boundaries are administratively determined and often do not follow topographic features. The 16 Salmon BLM allotments that are the focus of this assessment include: Cabin Creek, Camp Creek, Chipps Creek, Dummy Creek, Fenced Pasture, Findley Basin, Henry Creek, Hot Springs, Iron/Lime Creek, Lake Creek, Perreau Creek, Poison Creek, Second Creek, South Gulch, Tenmile Creek, and Williams Creek. These 16 Salmon BLM allotments, along with the adjacent USFS and Challis BLM allotments are portrayed in Map 1.

Table 1. Acreage and percent of area by ownership.

Ownership	Acreage	Percentage of Area
Salmon BLM	64,667	25%
Challis BLM*	12,671	5%
USFS	147,546	58%
State	2,889	1%
Private	28,203	11%
Total	255,976	100%

*Challis BLM lands fall within the watershed boundary, but are not assessed in this document.

Prehistory and History

The SRC area includes 64,667 acres of Salmon BLM land within 16 grazing allotments spanning both sides of the Upper Salmon River. Over the past 30 years, about 4,750 acres of Salmon BLM land (7.4%) have been examined for cultural resources using both intensive (Class III) and reconnaissance (Class II) field methods. Most of this coverage has been intensive in nature, a result of National Historic

Preservation Act of 1966, Section 106 compliance in response to proposed undertakings. A total of 97 prehistoric or historic sites and isolated occurrences have been recorded on BLM lands. Twenty-five more sites and isolates are either documented or known but not yet recorded on private lands. One cultural resource is recorded on State of Idaho property.

Prehistory

The majority of the prehistoric site record in the SRC area is found on terraces and truncated alluvial fan surfaces hemming the Salmon River's margin, or on confined floodplain surfaces of lower tributary canyons. Time-sensitive prehistoric artifacts attest of Native American presence and use of this landscape probably since Paleoindian times (ca. 10,000 – 10,500 BP). However, the majority of documented sites in the study area extend back no earlier than the middle-Archaic (ca. 4500 BP), gaining in frequency through the Late Prehistoric and Early Historic periods. Alternating geomorphic processes of stream aggradation and degradation within the canyon environment from the end of the Pleistocene through much of the Holocene have likely figured significantly in the paucity of earlier archaeological phenomena (Greiser, Webber, Greiser, & Hubber, 1992); (Eckerle, 1998). Prehistoric site recordings to date in the SRC have been largely the result of non-systematic survey or reconnaissance over the past 45 years, mainly documenting (often poorly) low-density, mixed surface-exposed remains. Strategic survey sampling with a goal toward ascertaining a more comprehensive sub-surface perspective would very likely afford an understanding of long-term change in patterns of prehistoric settlement and subsistence presently absent in the upper Salmon River reach (cf. (Davis, 2001) for significant work being conducted in the Lower Salmon River corridor).

The majority of recorded prehistoric phenomena in the Upper Salmon River corridor appear to represent a preponderance of task-oriented encampments occupied by small groups for short durations. Documented sites typically yield overlapping, mixed artifact assemblages likely resulting from periodic visitation over many centuries or millennia. The archaeological record is unclear as to whether the canyon confines of the SRC provided shelter for long-term winter encampments (e.g., pit house depressions) such as are known to have occurred on river terraces miles below along the Middle Fork and Lower Salmon Rivers. Food gathering and preparation, tool fabrication and maintenance, and perhaps short-term storage, may be inferred from at least a few of the sites investigated. Scattered concentrations of freshwater mussel (*M. falcate*) typify many of these surface scatters and are frequently found sloughing from cut-banks in buried contexts. In the Upper Salmon River stretch, freshwater mussel was a seasonal riverine resource of limited but persistent importance to Native peoples from at least 3,000 BP to 500 BP (Henrikson, 1985). The many deep tributary canyons both east and west of the corridor also afforded ready access to higher timbered country for big game hunting and plant gathering. Situated on upland canyon slopes at the breaks of the corridor, up to 1,800 feet above the river, are several documented prehistoric tool-stone quarry and reduction sites where outcropping cryptocrystalline silicates (chalcedony), rhyolite and welded ash (ignimbrite), and fine-grained andesite and basalt were sought over long periods of time for tool manufacture.

Common often isolated prehistoric features documented in the area include talus "pits" or depression features excavated into steep colluvial fans draping canyon walls, often with removed stones thrown or stacked around the down-slope perimeters. These were likely the result of short-term caching or storage of perishable items while traveling through the corridor; or in some cases, may have functioned as hunting blinds (e.g., (Kingsbury, 1995)). In addition, found on high ridges above the corridor with

panoramic views of the rugged landscape, are small circular or semi-circular arrangements of stacked stones, and long alignments of closely spaced stone heaps. Both feature types are thought to have been associated with Native American religious practices in past centuries.

History

The Historic/Contact period in the region begins with the arrival of the Lewis and Clark Expedition in August, 1805. William Clark's sketched map of the progress of the Corps in present-day Lemhi County depicted linking Indian trails he observed (or was informed of), but did not follow, while passing through the area. One of these linking trails is shown as a dotted line veering southwest from the lower reach of Lemhi Valley (below present-day Baker), crossing the foothills at the termination of the Lemhi Range to the Salmon River bottoms at the north end of the SRC area on the other side (Moulton, 1983). This feature is still present on public land, evidencing well-preserved tread remnants, and is a documented significant component of the Lewis and Clark National Historic Trail.

Very near this trail segment is another preserved trail alignment that forks past Hot Springs Creek, and then veers abruptly south. This old travel way slowly climbs the foothills below and west of Sal Mountain on a direct southward trajectory toward the upper end of Sevenmile Creek. The southerly route may be linked with a reported system of "high trails" from modern-day Salmon toward the Pahsimeroi Valley said to have followed the timberline along the east side of the Salmon River, passing well above the narrow bottoms of the stream (Smith, 1973). Other old Indian trails probably entered the Salmon corridor over passes down major side canyons coming in from the east and west, including Williams Creek, Poison Creek, Hat Creek, and others, later utilized by early settlers as pack trails.

The "Salmon River Trail" is the best documented historic travel route in the study area. This trail picked its way around ledge outcrops, across rocky talus slopes, and over floodplain point bars below the walls of the canyon against the shores of the Salmon River. On a cold November in 1830, John Work's Hudson's Bay Company brigade of fur trappers left the Round Valley (presently day Challis area), following this "road" downstream through the length of the study area. They encamped at three localities along the way on bars along the river's east margin. The arduous journey on the east side ended where the trail met a massive quartzite outcrop that plunged nearly vertically into the dark waters about 0.25 miles upstream of the mouth of present-day Sevenmile Creek. In his journal, Work notes (Haines 1971: 43): "Marched about 8 miles down the river to the traverse, this in consequence of an impassable rock. The river has to be crossed and the road lies on the west side." The party finally halted for nearly a week to rest and nourish their beleaguered horses on verdant grass meadows southwest of the modern community of Salmon (near Spring Creek). The trail down the Salmon River was aptly described by Work as ". . . exceedingly bad, very stony, lying over steep rocks and hills . . . very harassing both on the horses and people" (Haines, 1971). In heavy rains, their departure from the meadows led them east across the Salmon River again, where they fell onto a slippery Indian trail leading them over "the point of the mountain" to "Lewis's River" on the other side -- perhaps the same side-trail linking the Salmon River and Lemhi valleys that William Clark had mapped 25 years earlier. They continued their trek up that valley and away from the region.

During the 1870's and 1880's, travel on the "Salmon River Trail" increased, the rough "road" being more commonly engaged as a pack-train route between Salmon City, the Pahsimeroi country, and points southward. An alternate reported route was regularly used by the William Slavin and Eli Minert pack

train in the 1880's that traversed high, steep canyon slopes and drainages along the west side of the river from Salmon City at least as far as McKim Creek (Smith, 1970). Pack strings were also apparently following the ancient "high" trail below Sal Mountain mentioned above, across upper Sevenmile Creek and down Ten-Mile Creek on the east side. To date, few of these old trail features have been identified or documented.

After the discovery of gold in the Salmon River Mountains following the Civil War, Euro-American settlement rushed in quickly on the heels of the gold seekers. Between the establishment of Salmon City in 1866 and the end of the 1870's, homesteads and cattle ranches spread across the broad, fertile floodplains and benches of the Lemhi and Salmon Rivers. A few early ranching enterprises were attempted within the narrows of the Salmon River corridor as well. To the south, in the early-1870's, Lorenzo Falls founded a large cattle and horse operation in the Pahsimeroi Valley, ranging his livestock over a large tract of the Salmon corridor. Edward O'Neal ran cattle in the canyon just downstream of Falls' ranch, using the steep upland range as far downstream as present-day Briney Creek (Shoup, 1969). In the late 1870's, John Allison's ranch was founded at the mouth of Allison Creek, just south of the watersheds study boundary. In 1880, Allison moved a large herd of beef cattle gathered from the slopes of Cow Creek and Allison Creek canyons down the "Salmon River Trail" to market in Salmon City, the earliest documented cattle drive along this old route (Shoup, 1969).

At the north end of the SRC area, the Hyde Ranch (founded in 1878 on Hyde Creek just below Sevenmile Creek) served as a fresh water stop for pack-strings headed upriver into the Salmon canyon. In 1881, George L. Shoup established a sprawling cattle ranch directly to the west at the mouths of Perreau, Williams, and Henry Creeks. By the turn of the century, his ranching efforts had expanded into the Iron Creek watershed (Guest & Crosby, 1988). Edgar Edwards purchased a ranch just a few miles southwest of Salmon City in 1888, selling his earlier 1875 ranch north of town (Lemhi County History Committee, 1992). This new ranch encompassed the lush Spring Creek meadow at which John Work's Hudson's Bay brigade had rested nearly six decades earlier.

Throughout most of the 19th- Century, wagon transport south from Salmon City was not possible along the Salmon River. Wagon and stage routes southward to Challis and other mining communities took wide detours to the west between Leesburg and Morgan Creek, circumventing the ominous canyon (Matz, 1996). In 1894, the Idaho Legislature authorized the construction of the "State Wagon Road" system, intended to reach remote portions of the young state and improve commerce and travel. Included in the plan was a wagon road to be built from Stanley to the Montana line, along the upper Salmon and North Fork Rivers. Remarkably, by the end of 1895, a narrow, winding ribbon had been blasted and scraped out of the rock overlooking the river along the alignments of present-day Highways 75 and 93. Within the assessment area, this early wagon road closely paralleled or lay directly over the tread of the old "Salmon River Trail." Traces of the State Wagon Road are still visible as they peek out from beneath Highway 93, most often seen on the east side of the road shoulder. Several long vestiges of the historic road bed rest on privately owned land, but some recorded segments are also found on BLM parcels. At least three subsequent episodes of road improvement and expansion (during the late teens, the mid-1930's, and the late-1940's (Magoon, 2010) resulted in the present paved roadway that now affords casual vehicle travel through a once nearly inaccessible and secluded landscape.

Geology

The geologic history of the Salmon River region is a complex one of sedimentation, large scale structural deformation, regional faulting, major igneous intrusive events, volcanism, and mountain building by "Basin-and-Range" type faulting. Four primary geologic events helped to shape the landscape as it is seen today; these events are briefly summarized below.

During the Pre-Cambrian Period the Salmon Region was a highland and was located along the western continental margin of North America. Rock material eroded from the highlands and was deposited in the coastal marine basin to the west which formed a massive column (at least 50,000 feet thick) of mixed sedimentary rocks. Extreme pressure and heat from the weight of this thick column changed these sediments into a variety of metamorphic rocks. Some of these meta- sediments were eventually "pushed" on shore by global plate movements, and by the early Cretaceous Period some of these metamorphic rocks covered much of western and central Idaho.

The next major geologic event affecting this area was the intrusion of the Idaho Batholith starting about 80 to 100 million years ago. This extensive magmatic event uplifted much of central Idaho, shedding large blocks of the overlying marine meta-sediments that had been thrust onto central Idaho. Some of these blocks of meta-sediments slid further east and now form the cores of the Lemhi, Bitterroot, and Salmon River Ranges.

Challis volcanism began about 50 million years ago, and continued depositing lava and ash over the region from numerous sources until about 30 million years ago. Prior to Challis volcanism, the Salmon River flowed southward and down the present day Birch Creek Valley and was part of the upper Snake River drainage system. Deposition of Challis volcanic rocks formed the present day divide between the Salmon River and Birch Creek drainages.

About 17 million years ago "Basin-and-Range" faulting began in this region in response to crustal extension as a result of plate tectonics. This type of faulting essentially displaces blocks of crustal material, alternating sub-parallel strips of down-dropped (valleys) and up-thrown land forms (mountain ranges). The Lemhi and Salmon River valleys are down-dropped blocks. The Lemhi and Bitterroot Ranges are up-thrown in relation to these valleys, as is the eastern margin of the Salmon River Range.

Presently, the area located within the Salmon River Corridor includes a complex arrangement of surficial deposits as well as sedimentary, volcanic, and intrusive rocks (Table 2). The surficial deposits occur directly adjacent to the Salmon River and within the floodplain when the river flows in more open terrain. When the Salmon River flows through a narrow, steep canyon, the river is bordered primarily by volcanic rocks or sedimentary rock of the Swauger or Gunsight Formations. The Swauger Formation is composed of rocks with high quartz content (90-95%) while the Gunsight Formation is composed of metasandstones (Evans & Green, 2003). The deposits in both the Swauger and Gunsight Formations are relatively more resistant to physical weathering than are the volcanic rocks or the surficial deposits.

Table 2. Summary of geologic formations within the SRC area boundaries.

Formation Age	Stratigraphic Unit	Features of the Deposit
Surficial Deposits	Alluvial, colluvial, landslide, and glacial deposits, undivided	Composite unit of unconsolidated gravel, sand, silt, and clay deposits of present streams, rivers, and washes; hillside colluvium; landslide material; and glacial moraines and outwash.
Cenozoic Sedimentary Rocks	Sedimentary rocks - basin fill	The deposit can be divided into two sequences. The upper sequence is generally olive-gray and yellowish-gray to yellowish-brown/orange. The lower sequence is generally olive-gray and yellowish-gray to grayish-orange. Both sequences are comprised of tuffaceous mudstone and shale; however the lower sequence is also bentonitic. Also included within this deposit are tuffaceous sandstone, lenticular beds of conglomerate, lignite, lignitic mudstone, and some woody debris.
Cenozoic Volcanic Rocks	Challis Volcanic Group, undivided	The deposit is a composite of volcanic rock.
	Intermediate and mafic lavas	The deposit is composed of andesitic to basaltic lava flows. The lava is mostly aphyric, gray and greenish gray in color (though can be reddish-brown following weathering), the deposits are brittle, and the structure of the rock formations can be columnar jointy or blocky to platy. The mineral components are generally plagioclases, pleochroic micas, and apatite.
Tertiary to Cretaceous Intrusive Rocks	Mafic to Felsic Intrusions, undivided	Small, poorly exposed basaltic, andesitic, and granitic plutons.
Mesozoic to Proterozoic Sedimentary Rocks	Saturday Mountain Formation	This deposit can be divided into four members: • Uppermost member: medium-gray to medium-light-gray, finely crystalline, thick- to massive-bedded dolomite that weathers to a mottled appearance. Black chert nodules are present and are considered quite fossiliferous. • Second member: medium-dark-gray to medium gray, finely crystalline dolomite that weathers to distinctly mottled lighter gray colors. Black chert nodules are common and there are numerous beds with abundant fossils and fossil fragments. • Third member: yellowish-gray to medium gray, finely crystalline dolomite characterized by a network of irregular, interlaced, hairlike wisps and veinlets of white dolomite with abundant black chert nodules. • Basal member: interbedded clastic deposits of generally dark-colored sandstone, quartizite, shale, and mudstone.
	Kinnikinic Quartzite	White to light-gray, fine- to medium-grained, vitreous quartzite. This deposit is compositionally supermature and well sorted with tightly cemented subrounded grains.

Formation Age	Stratigraphic Unit	Features of the Deposit
	Summerhouse Formation	White and light-gray to pale-yellowish-orange, fine- to coarse-grained quartizite and dolomitic quartzite; locally includes an uppermost unit of massive dolomite.
Mesozoic to Proterozoic Sedimentary Rocks	Kinnikinic Quartzite and Summerhouse Formation, undivided	This map unit is used when poor exposure exists or when the map scale used for compilation prevents the two units from being shown separately.
Proterozoic Sedimentary Rocks	Swauger Formation	Light-gray, pale-green, and pale-red-purple, medium- to coarse-grained quartzite which commonly has a speckled appearance. The quartz content is typically 90-95% whereas the feldspar component rarely exceeds 5-10%. The bulk of the Swauger is believed to be deposited in a tidal environment; as such there are two-dimensional ripples and subaqueous dunes that are quite well developed in places.
	Gunsight Formation*	Light- to dark-gray, very fine grained to medium-grained, feldspathic metasandstone (containing at least 25% feldspar). Deposition was in a fluvial environment, but hummocky, crossbedded rocks in the Salmon River Mountains are interpreted as marine.
	Banded siltite unit	Centimeter-scale layers of light-gray siltite to very fine grained metasandstone alternating with black siltite or argillite.
	Coarse siltite unit	Grayish-green, medium- to coarse-grained siltite and fine-grained quartzite (metasandstone). Soft-sediment deformation structures are common in this unit, including convolute lamination, dish, pillar, and flame structures, syneresis cracks, and ball-and-pillow structures. This is primarily a turbidite deposit with minor debris flows indicated by rare pebbly beds.
	Diamictite unit	Grayish-green argillite, argillaceous siltite, and fine- to medium-grained siltite form the matrix and interbeds to matrix-supported, poorly sorted conglomerate. Matrix material is composed of sericite, muscovite, chlorite, and silt of quartz and plagioclase. The graded bedding in the siltite beds has been interpreted to indicate that the deposit was formed from turbidity currents whereas the conglomeratic beds are a result of subaqueous debris flows.
	Big Creek Formation *	Light-gray, coarse-grained siltite to medium-grained quartzite (metasandstone). The quartzite is composed of 50-60% quartz, 10-20% feldspar, 5-15% matrix, and as much as 5% heavy-mineral laminae. The unit includes silty laminae of rusty-brown-weathering carbonate and dark-gray as well as heavy mineral laminae. The deposit is believed to be formed from deposition by tidal current processes.

*The Gunsight and Big Creek Formations are divided into two units based upon location in relation to the Lem Peak fault. The project location is located north of the Lem Peak fault and the description reflects this.
Table information was gathered and summarized from (Evans & Green, 2003) (Lund, Evans, Tysdal, & Winkler, 2003), and (Tysdal, Lund, & Evans, 2003)

Soils

The SRC area exhibits a complex pattern of soils which reflects the geologic history, topography, and climate that is unique to this area. The soils in the northern portion of the SRC project area are derived from lacustrine deposits which reflect their floodplain topographic position. These soils tend to have a relatively high shrink-swell potential and commonly contain carbonates, soluble salts, or a combination of both. The potential for erosion to occur in response to wind or overland flow events is generally low due to the relatively level slope of these soils and the high amount of gravel that is contained in the surface layer. The level position and the gravel content of these soils also provide protection from off-trail use (e.g. grazing); these soils are generally rated by the Natural Resources Conservation Service (NRCS) as having a slight to moderate potential for erosion to occur following these activities.

Further south in the middle of the SRC area the soils reflect the plate movements as well as the deposition and erosional processes of the geologic past which have created steep slopes and a narrow canyon. Adjacent to the river the soils are generally on steep slopes and have developed from colluvium and/or mixed slope alluvium derived from quartzite or igneous rock. These soils are generally classified as Calcids, which contain calcium carbonate, and the soil map units typically do not erode due to wind or water movement because of the high amount of rock present. However, the steep slopes on which these soils are located make the potential for erosion to occur following off-trail activities to be rated by the NRCS as severe to very severe. Further to the east and west from the river the soils are mostly Cryolls, exhibit more development, and generally support a healthy stand of forest or grassland vegetation. The ground cover of the vegetation and the high rock content of these soils provide protection from wind and water erosion. The NRCS rates soils on the west side of the river as having a moderate potential for erosion to occur following off-trail activities whereas the soils to the east are rated as severe to very severe.

The soils in the southern most section of the SRC area are similar to the soils in the middle section with the exception that these soils generally have a high enough clay content to be considered Argids. As with the soils in the middle section of the SRC area, the soils of the southernmost section of the project area are resistant to wind and water erosion and are generally rated as moderate for the potential for erosion to occur following off-trail activities. Soils within the SRC area and their properties are summarized below.

Table 3. Summary of the soil map units located within the SRC area.

Map Unit Name	Parent Material	Off-Trail Erosion Hazard	WEG*
Aquents-Riverwash complex, nearly level	Mixed alluvium	Slight	8
Badland-Millhi complex, 10-50% slopes	Mixed alluvium	Severe	Not rated
Bartonflate gravelly loam, 1-4% slopes	Mixed alluvium	Slight	6
Bock-Bromaglin complex, 1-4% slopes	Mixed alluvium	Slight	5

Map Unit Name	Parent Material	Off-Trail Erosion Hazard	WEG*
Bursteadt-Tohobit complex, 0-3 % slopes	Mixed alluvium	Slight	3
Calcids-Rubble land-Rock outcrop complex, 50-80% slopes	Collvium and/or mixed slope alluvium	Very severe	7
Copperbasin, cool-Redfish complex, 1-4% slopes	Mixed alluvium	Slight	5
Cowbone-Tohobit complex, 0-3% slopes	Mixed alluvium	Slight	8
Cronks-Challis association, 20-50% slopes	Mixed colluvium	Moderate	7
Cronks-Vennum association, 6-20% slopes	Mixed colluvium	Slight	8
Cryolls-Rubble land-Rock outcrop complex, 50-80% slopes	Mixed colluvium over bedrock derived from igneous, metamorphic and sedimentary rock	Very severe	6
Dacont-Custco association, 20-50% slopes	Alluvium and/or colluvium derived from igneous rock and/or rhyolite	Moderate	7
Dacont-Zeebar association, 20-50% slopes	Alluvium and/or colluvium and/or slope alluvium derived from igneous rock and/or quartzite	Moderate	6
Dawtonia very gravelly loam, 4-8% slopes	Mixed alluvium and/or colluvium	Slight	7
Dawtonia-Frailton complex, 20-50% slopes	Mixed alluvium and/or colluvium	Moderate	6
Dawtonia-Custco association, 20-50% slopes	Mixed alluvium and/or colluvium	Moderate	6
Dawtonia-Dacont association, 20-50% slopes	Mixed alluvium and/or colluvium	Moderate	7
Ezbin-Zeebar-Nielsen complex, 20-50% slopes	Colluvium derived from igneous rock	Moderate	6
Gaciba-Dacont complex, 20-50% slopes	Colluvium over bedrock derived from igneous rock	Moderate	6
Klug-Gaciba-Dacont complex, 20-70% slopes	Colluvium derived from quartzite and/or granite	Moderate	6
Klug-Povey complex, 30-50% slopes	Colluvium derived from quartzite and/or granite	Severe	6
Lag very cobbly loam, 20-40% slopes	Mixed colluvium	Moderate	7

Map Unit Name	Parent Material	Off-Trail Erosion Hazard	WEG*
Lag-Klug association, 50-70% slopes	Mixed colluvium	Very severe	7
Lemco-Friedman complex, 20-50% slopes	Colluvium derived from quartzite	Moderate	6
Millhi silt loam, 2-4% slopes	Lacustrine deposits	Slight	5
Millhi complex, 10-30% slopes	Lacustrine deposits	Moderate	6
Millhi-Badland complex, 5-25% slopes	Lacustrine deposits	Moderate	6
Millhi-Lacrol association, 15-35% slopes	Lacustrine deposits	Moderate	6
Nielsen-Gaciba association, 20-50% slopes	Colluvium over bedrock derived from sandstone and/or shale and/or quartzite	Moderate	6
Packham-Perreau complex, 5-15% slopes	Mixed alluvium	Slight	7
Perreau silt loam, 8-20% slopes	Lacustrine deposits	Moderate	5
Resoot-Friedman complex, 20-50% slopes	Colluvium derived from igneous rock	Moderate	6
Rock outcrop and Rubble land, very steep	Not described	Very severe	Not rated
Shenon loam, 5-15% slopes	Alluvium derived from igneous rock	Slight	6
Venum-Cronks complex, 20-50% slopes	Mixed colluvium	Moderate	8
Venum-Custco association, 20-50% slopes	Mixed colluvium	Moderate	7
Yearian very stony loam, 1-4% slopes	Mixed alluvium	Slight	8
Zeebar-Nielsen-Povey complex, 20-70% slopes	Alluvium and/or colluvium and/or slope alluvium derived from igneous rock and/or quartzite	Moderate	5
Zer gravelly loam, 20-50% slopes	Mixed alluvium and/or colluvium	Moderate	6
Zer very cobbly loam, 20-50% slopes	Mixed alluvium and/or colluvium	Moderate	8
Zer-Snowslide complex, 5-25% slopes	Mixed alluvium and/or colluvium	Moderate	6

*Also included is the parent material from which the soil was derived, the potential for erosion to occur following off-trail use, and the NRCS Wind Erosion Group rating (a rating of 1-2 indicates a high potential for wind erosion to occur whereas a rating of 8 indicates that wind erosion is unlikely to occur).

Area of Critical Environmental Concern

The Sevenmile Area of Critical Environmental Concern (ACEC) is 1,035 acres in size and lies approximately three miles south of Salmon, Idaho on the east side of Highway 93 (Map 2). The area is considered relevant as a natural hazard due to the unstable nature of the soils and considerable slumps that occur. This has resulted in its designation of an ACEC by meeting the "natural hazard" criteria described in Section 103 of the Federal Land Policy and Management Act. Several management objectives were identified during the designation process including restricting vehicle use to authorized vehicles only, working with private parties who have the ditch right-of-way to find ways to reduce or prevent damage, maintaining the existing exclosure fence, monitoring the existing exclosure to meet riparian objectives, working with the Highway Department to determine ways to reduce hazards on Highway 93 created by slumping, and building three 2-acre exclosures. All management objectives have been met and the ACEC currently has approximately 450 acres of fenced exclosures to reduce soil erosion that has occurred in the past from grazing and motorized vehicle use.

Wildland Fire

Wildland fire has shaped plant communities for as long as vegetation and lightning have existed on earth (Pyne, 1997). It is a fundamental and relevant process of contemporary ecosystems that must be understood and managed to meet resource management goals. The important questions for managers about wildland fire are - when, where and of what severity to resources?

Fire Occurrence

Evidence of historic wildland fires can be found throughout the SRC area in the form of fire scars on trees, charred pieces of wood, and ash layers in the soil profile. Historically, fire starts were due to lightning or Native American burning. It is believed these fire starts often grew to burn relatively large acreages (100s to 10,000s of acres) during the course of a given summer or fall season when left unchecked. Since the late-1800's however, wildland fire has effectively been excluded from the SRC area due to aggressive fire suppression policies, domestic livestock grazing (removal of fine fuels), and land-use practices.

Forest Service, BLM, and State fire occurrence records for the SRC area indicate that between 1977 and 2007, wildland fires accounted for approximately 15,376 acres burned during 111 fires. Eighty percent of these fires were suppressed during initial attack at less than one acre in size. Eight fires accounted for 99% of the burned acres. These relatively large fires are identified in Table 4 below.

Table 4. Large Fire (>100 acres) Activity within the SRC Area 1977-2007.

Fire Name	Year	Total Acres Burned	Acres Burned by Northwest ReGAP Cover Class (USDI 2009)
Withington	2003	4,330	Forest & Woodland – 2,545 Semi-desert Shrubland & Grassland – 1,711 Mesic Shrubland & Grassland – 74
Sunset	2001	191	Semi-desert Shrubland & Grassland – 191
Twelvemile	2000	216	Forest & Woodland – 33 Semi-desert Shrubland & Grassland - 183

Fire Name	Year	Total Acres Burned	Acres Burned by Northwest ReGAP Cover Class (USDI 2009)
McKim	1991	4,187	Forest & Woodland – 1,729 Semi-desert Shrubland & Grassland – 2,323 Mesic Shrubland & Grassland – 135
Iron Mountain	1989	160	Forest & Woodland – 80 Semi-desert Shrubland & Grassland – 80
Sevenmile	1986	1,280	Forest & Woodland – 22 Semi-desert Shrubland & Grassland – 1,253 Mesic Shrubland & Grassland – 5
Lake Mountain	1985	4,449	Forest & Woodland – 2,795 Semi-desert Shrubland & Grassland – 1,278 Mesic Shrubland & Grassland – 376
Warm Springs	1983	376	Forest & Woodland – 60 Semi-desert Shrubland & Grassland – 314 Mesic Shrubland & Grassland – 2

Fire Ecology

Recurrent wildland fire has been the dominant landscape-level disturbance process affecting composition, structure, and pattern of the native, fire-adapted plant communities within the SRC area since at least the end of the Pleistocene (approx. 10,000 years ago). However, over a century of Euro-American settlement activities, including public land policies, have seriously altered that crucial role.

The natural role of wildland fire can be understood and communicated through the concept of fire regimes (Brown & Smith, 2000). Generally, fire regimes describe historical (pre Euro-American settlement) fire conditions under which vegetation communities have evolved and have been maintained. Historical (natural) fire regime data provide reference conditions against which current conditions can be compared for assessing wildland fire risk to plant communities and other resources. Historic Fire Regime Groups (Hann & Bunnell, 2001) - based on five combinations of fire return interval (frequency) and fire severity- for the SRC area are displayed in Map 3.

Assessing Risk to Ecosystems using Fire Regime Condition Class (FRCC)

Fire Regime Condition Classes (Hann & Bunnell, 2001) are qualitative measures describing the degree of departure from historical fire regimes possibly resulting in alterations of key ecosystem components such as species composition, structural stage, stand age, canopy closure, and fuel loadings. One or more of the following activities may have caused this departure: fire exclusion, timber harvesting, livestock grazing, exotic plant species, introduced insects and disease, or other past management activities. Three condition classes serve as relative wildfire risk rankings. The risk of loss of key ecosystem components from wildland fire increases from Condition Class 1 (lowest risk) to Condition Class 3 (highest risk).

FRCC for the SRC area is based on a subjective cross-walk from the five predominant Northwest ReGAP (USDI-BLM, 2009) land cover classifications representing existing native vegetation within the SRC area, and is presented in Table 5 and displayed in Map 4. Due to resolution limits of satellite-based imagery, estimates presented in Table 5 may differ from future site-specific assessments. For example, estimates obtained through satellite imagery do not take into account finer scale factors influencing

condition class such as livestock grazing, exotic plant species, recent insect and/or disease outbreak, individual stand structure, and associated biodiversity issues. Truly accurate assessments of FRCC should be obtained through forest stand examinations and range ecological site inventories.

Table 5. FRCC and Historic Fire Regime Group based on Northwest ReGAP Cover Class within the SRC Area.

Northwest ReGAP Cover Class	Total Acres	% of Total Acres	Fire Regime Condition Class	Historic Fire Regime Group
Forest & Woodland	112,568	44	56,229 - CC1 54,645 - CC2 1,693 - CC3	48,311 - III 6,143 - IV 58,114 - V
Mesic Shrubland & Grassland	7,930	3	7,052 - CC1 878 - CC2	597 - III 7,011 - IV 322 - V
Semi-desert Shrubland & Grassland	122,473	48	122,473 - CC2	122,473 - IV
High Montane Vegetation	1,366	<1	1,366 - CC1	1,366 - IV
Sparse Vegetation & Natural Barren Areas	771	<1	771 - CC1	771 - V

The baseline map used to develop Table 5 is adapted from the Northwest ReGAP project land cover classification, which used 30m resolution multi-spectral satellite imagery from 2002 through 2005 (Comer, et al., 2003) and land cover classes developed by (Anderson, Hardy, Roach, & Witmer, 1976).

Based on the FRCC assessment, semi-desert shrub & grassland, mesic shrub & grassland, and the lower- to mid-elevation, drier aspect forest and woodland portions of the SRC area are moderately to highly departed (CC2 & CC3) from historic conditions. Cause for departure is mainly due to fire exclusion and consequently species composition and stand structure changes due to succession, including over-stocking (the situation in which trees are so closely spaced that they compete for resources and do not reach full growth potential), that would contribute to non-characteristic wildland fire effects to these cover types. Livestock grazing and presence of exotic plant species are also contributing factors to departure in these forest cover types and would be reflected in a finer grained spatial representation of CC2 and CC3 estimates within these cover types, however the coarse resolution of the vegetation data does not support that level of detail for this assessment.

Wildland-Urban Interface (WUI)

WUI areas have been identified within the SRC area based on "values at risk" and their proximity to the assessed wildland fire hazard based on historic fire occurrence and fire behavior prediction models. The WUI within the SRC area is primarily concentrated along the Salmon River bottoms and in the majority of the river's tributaries. "Communities-at-risk" include subdivisions at Sevenmile, Twelvemile, Elk Bend and Williams Lake (Lemhi County Wildland Fire Interagency Group, 2006).

Big Game

Big game occurring in the assessment area includes mountain goat, bighorn sheep, pronghorn, moose, deer and elk. Rocky Mountain bighorn sheep and mountain goats are associated with high mountains and steep canyons. Mountain goats have not been reported on BLM managed lands within the SRC, but they may use some of the steeper rock faces on BLM since they are found on USFS managed lands above the BLM. Bighorn sheep habitat is found throughout most of the Salmon River Corridor, with the exception of the area in the immediate vicinity of the town of Salmon. The majority of the records of bighorn sightings in the area tend to be concentrated around the Williams Creek area. There are no records of bighorn sheep in Chipps Creek and Hot Springs Allotments and those allotments do not have habitat preferred by bighorn sheep.

Pronghorn occupy semi-desert shrub land and grassland habitats. In the SRC pronghorn can be found in the Cabin Creek, Poison Creek, Tenmile and Hot Springs Allotments. If Idaho Standards and Guidelines "Native Plant Communities (Standard 4)" is being met, then the area is providing adequate habitat for pronghorn. A migratory and/or movement challenge faced by pronghorn in the assessment area is wire fences where the bottom wire is below 18 inches. Pronghorn usually move under fences. If the bottom wire is below 18 inches then they have a hard time getting past the fence. In addition, woven-wire fences are almost impossible for pronghorn to move through.

Moose tend to be found along riparian areas, though they will cross semi-desert shrublands at times. If "Riparian Areas and Wetlands (Standard 2)" is being met then the area is providing adequate habitat for moose. Populations of moose are higher along the Lemhi River and its tributaries, but moose have been seen along the tributaries of the Salmon River in the SRC.

Deer occupy all habitat types from semi-desert shrub and grassland to high montane vegetation. They reach their greatest densities in semi-desert shrublands on rough, broken terrain and mesic shrublands that provide abundant browse and cover. Deer are migratory, meaning they summer at higher elevations and move down slope as fall approaches. Deer move to lower elevations and forage on more protected south-facing exposures during mid-winter. There is about 29,000 acres of winter range in the assessment area, of which 9,000 acres is considered crucial. When the allotments are meeting "Standard 4", including winter range, then the area is providing adequate habitat for deer.

Rocky Mountain elk can be found in most habitat types and elevations at least on a seasonal basis. Elk are considered generalist feeders that utilize shrubs, grasses, and forbs. Calving grounds are carefully selected by the cows and are generally in locations where cover, forage, and water are found together. Elk tend to inhabit higher elevations during spring and summer and migrate to lower elevations for winter range. Elk form large mixed herds on favored winter range. There is about 40,000 acres of elk winter range in the assessment area, of which 21,000 acres is considered crucial. When the allotments are meeting "Standard 4", including winter range, then the area is providing adequate habitat for elk.

Authorized Uses

Public Land Uses

Based on public demand, the BLM SFO processes and authorizes public use permits and rights-of-way. There are 106 rights-of-way authorized within the assessment boundary and uses include roads, power lines, telephone lines, ditches and canals, and highways. Existing uses in the SRC area include power lines to private residences, road rights-of-way allowing access to private land, irrigation pipelines and telephone lines. There are two land use permits, one authorizing a residence and one for agricultural use, located within the assessment area. There are five road easements granted to the BLM for crossing State of Idaho land and one road easement granted to BLM for public access across private land.

Travel Management

The BLM SFO first addressed the need for more active transportation management with the completion of the 2001 Lemhi RMP Amendment. Prior to 2001, public lands throughout the SFO were open to cross-country motorized travel. Decisions made within the 2001 RMP resulted in limiting motorized travel within most of the Field Office to "existing roads and trails, with subsets of the Field Office "limited to designated roads and trails."

Since 2001, the SFO has completed a comprehensive inventory of existing roads, primitive roads, and trails through the use of aerial photography and ground truthing. With necessary route inventories completed in 2007, the SFO began the travel management planning process and a decision was signed in 2011 designating over 350 miles of roads as open in the travel management north planning unit.

The entirety of the SRC boundary lies within the SFO North Travel Plan and as such has a designated route system. Travel management is an evolving process and as conditions on the ground change, new management objectives are identified, or new demands are made by the public the SFO needs to have a process in place to adapt to these changes. The watershed assessment process is an appropriate way to identify current travel management issues and objectives.

Road Maintenance

Certain designated routes within the SRC area are maintained on a recurring schedule. A larger portion of designated routes are not covered by this schedule and have not had recent maintenance or renovation, such as culvert replacement, re-shaping of running surface, and maintenance of other drainage features.

Primitive roads associated with historic timber sales within the Cabin, Ezra, and Ringle Creek drainages show signs of rills and gullying because drainage features are not functioning as originally intended. Although not associated with historic timber sales, primitive roads within the Henry and Williams Creek Allotments also show similar signs of deterioration and are not easily passed. Both areas show varying degrees of deterioration of the running surface.

Forest Products

Timber has been extracted from the SRC area since before establishment of the Salmon River Forest Reserve in 1906, for forest products such as lumber, fuel wood, mining timbers, house logs, and post and poles. Most harvesting activities prior to WWII were local subsistence operations for personal-use to support homesteading and ranching endeavors. Small mining ventures undoubtedly secured necessary

forest products from forested areas immediately surrounding the location of operations. Portions of the SRC area contain ample evidence, in the form of old stumps cut by axes or cross-cut saw, as testament to settlers' needs for forest products.

Timber and Forest Fuels Management

Since WWII, most timber harvesting activities within the SRC area have occurred on federally-owned lands and as prescribed by approved land use plan to meet resource and commodity production objectives. Timber sales on Forest Service and BLM-administered lands have harvested approximately 14,867 acres of timber since 1950 (Map 5). Silvicultural systems have included selection, shelter wood, and clear-cut prescriptions. Post-sale treatments have included slash burning, planting, and pre-commercial thinning. Forests and woodlands in the SRC area have the potential to provide a supply of wood products into the foreseeable future, however existing access is limited and market conditions are currently not favorable.

The current forest and woodland management strategy, in addition to timber harvest, also emphasizes treatments to reduce hazardous fuels through pre-commercial thinning and/or mastication of unmerchantable material. Since 2004, approximately 200 acres have been treated to meet hazardous fuels reduction objectives (Map 5).

Recreational Uses

Recreation use in the SRC area is concentrated at the seven developed recreation sites along the river corridor. These sites are primarily used for recreational boating for both fishing and float trips. Generally, these sites see an increase in use during the salmon and steelhead fishing seasons and during the hot months of July and August when floating and swimming are popular. The sites receive a moderate amount of camping during these times as well. Dispersed recreation within the assessment area occurs in the form of hiking, hunting, wildlife viewing, and dispersed camping. There are 12 outfitter and guides that are permitted for commercial guiding activities within the assessment area.

Numerous boat ramps located at both dispersed and developed recreation sites within the SRC provide an adequate amount of river access for recreational fishing and floating. However, the section of river between Iron Creek bridge and Elevenmile recreation site has little opportunity for recreational access. The public has requested that the BLM consider constructing a boat ramp at the undeveloped Camp Creek recreation site to provide better access to this stretch of the river.

Mineral Resources

The geologic history of the SRC project area has provided for a wide range of mining opportunities. The opportunities include leasable, salable, and locatable mineral extraction/development. In the past locatable mineral extraction (i.e. gold mining) has been the primary resource use, however leasable mineral exploration (i.e. geothermal) may become more evident in the future.

Two major periods of gold mining have occurred in the area; the first during the initial rush in 1861-1880's and then again in the 1930's. During both periods mining operations utilized hydraulic pressure in order to loosen the "flour" like gold deposits. The debris that was loosened from hill slopes collected and placed in sluice boxes where the debris was separated and the gold was collected. To this day evidence of these operations can be seen in the form of piles of discarded rock.

Additional exploration has occurred for copper, silver, lead, zinc, cobalt, tungsten, molybdenum, uranium, thorium, florite, and opals, though not to the extent that has occurred for gold. Future mining potential will continue to be for gold and other locatable minerals, however BLM has identified geothermal exploration (BLM has identified areas within the SRC area as potential for geothermal exploration). These opportunities for exploration and/or will continue indefinitely into the future.

The primary salable minerals within the area are "shale" (actually a shattered welded tuff member of the Challis volcanics), sand and gravel. Sources of sand-sized material on BLM lands are rare and most of the available gravel occurs in the northern portion of the SRC area.

The majority of the SRC area is not prospectively valuable for oil and gas. Geothermal resources occur mainly in the Hot Springs Allotment and along the river corridor in the McKim Creek area and south. There are no lands prospectively valuable for phosphate and lands prospectively valuable for coal exist only in the northern portion of the SRC area, near the town of Salmon. Locatable mineral potential is low in most of the SRC area, although it is moderate from approximately Williams Creek and north on the west side of the Salmon River and in the Lemhis from approximately Sevenmile Creek and north on the east side of the Salmon River (USDI-BLM, 1987). Hardrock leasing does not occur in the SRC area.

Livestock Grazing

Within the SRC area, there are 16 grazing allotments managed by the BLM SFO, 12 managed by the Salmon-Challis National Forest and 1 managed by the BLM Challis Field Office (CFO) (Map 1). There are currently 20 permittees that have grazing permits for the 16 Salmon BLM allotments within the SRC area. BLM-administered public lands provide a large proportion of the late spring, summer and fall forage base in the area. There are 5,256 active animal unit months (AUMs) of livestock forage allocated on the 16 Salmon BLM allotments. The livestock grazing allocation and management for Salmon BLM allotments within the SRC area are displayed in Tables 6 and 7

Stocking rate on Salmon BLM lands within the SRC area averages 12.8 acres per AUM and varies from 1 (Fenced Pasture) to 49 (Tenmile) acres per AUM (Table 6). The amount of utilization appropriate for a given area is influenced by soils, vegetation, topography (aspect, elevation and slope), distance from water, and local weather. Cattle (cow/calf pairs) are the primary type of livestock authorized on the allotments, but horse use does occur on four allotments.

BLM Permit Terminology

- AUM: the amount of forage needed to sustain one cow and her calf, one horse, or five sheep or goats for one month.
- Current Permit (AUMs): The AUMs the permittee is utilizing calculated based on the Number/Kind of livestock, Grazing Period, and Percent Public Land; calculated by RAS (BLM's Rangeland Administration System)
- RMP Active (AUMs): Active AUMs at the time of the signing of the Lemhi RMP
- RMP Long Term (AUMs): Target AUMs from the Lemhi RMP based on a 20-year timeframe.
- 5-Year Average (AUMs): The 5-year average of reported actual use AUMs.
- Active AUMs (Preference): The number of AUMs that the permittee is authorized to use on the allotment.

- Suspended AUMs: AUMs that have been removed from Active Preference on the allotment and suspended from the permit and can no longer be used without a decision that makes them Active.
- Total Preference: The total of the Active Preference and Suspended AUMs on the Permit.

Table 6. Current Livestock Grazing Allocation for BLM Allotments within the SRC Area.

Allotment	AUMs*					
	Current Permit(s)	RMP Active	RMP Long Term	5-Year Average	Current Acres (GIS)	Stocking Rate (Acres per Current AUM)
Cabin Creek	612	-	-	417	10,725	26
Camp Creek	195	201	201	101	3,552	16
Chipps Creek	60	42	42	38	1,527	31
Dummy Creek	87	87	87	63	2,846	32
Fenced Pasture	24	24	24	0	14	1
Findley Basin	44	44	66	0	670	14
Henry Creek	240	240	240	189	1,736	6
Hot Springs	992	925	794	743	9,206	10
Iron/Lime Creek	1510	1,275	1,314	1,393	18,989	9
Lake Creek	170	224	168	172	2,359	15
Perreau Creek	176	175	193	168	2,363	13
Poison Creek	374	507**	507**	190	5,167	13
Second Creek	151	152	152	64	2,422	16
South Gulch	211	-	-	-	2,579	12
Tenmile	30	30	30	35	2,064	49
Williams Creek	179	378	319	217	2,882	8

* The BLM recognizes that minor inconsistencies in AUM figures have occurred based on such things as rounding calculations, GIS data refinements, etc.

**140 AUM sheep permit cancelled in 1986.

Table 7. Livestock Grazing Management for BLM Allotments within the SRC Area.

Allotment	Livestock	Grazing Period		%Public Land	AUMs*				Other Terms and Conditions (corresponding text shown below table)
		Begin	End		Current Permit	Active	Suspended	Grazing Preference	
Cabin Creek	150 Cattle	05/15	09/15	100%	612	618	0	618	1, 4, 5, 7
Camp Creek	93 Cattle	05/12	06/20	97%	119	201	0	201	1, 2, 10
	75 Cattle	11/01	11/11	97%	26				
	25 Horse	05/01	06/30	100%	50				
Chipps Creek	225 Cattle	05/11	06/10	13%	30	24	123	147	1, 2, 10
	225 Cattle	05/11	06/10	13%	30	30	122	152	
Dummy Creek	-	-	-	100%	87	87	0	87	-
Fenced Pasture	3 Horse	05/01	12/31	100%	24	24	0	24	1
Findley Basin	30 Cattle	06/01	07/15	100%	44	44	22	66	1, 3
Henry Creek	178 Cattle	05/06	06/15	100%	240	240	130	370	1, 8
Hot Springs	69 Cattle	05/01	10/31	100%	417	420	188	608	1, 5, 9
	37 Cattle	05/01	10/31	100%	224	228	84	312	
	58 Cattle	05/01	10/31	100%	351	349	175	524	
Iron/Lime Creek	24 Cattle	07/01	10/31	100%	97	1,401	6	1,407	1, 5, 13
	253 Cattle	10/15	11/07	100%	200				
	46 Cattle	11/01	11/15	100%	23				
	330 Cattle	04/26	06/15	100%	553				
	55 Cattle	05/01	06/30	100%	110				
	70 Cattle	04/26	06/13	100%	113				
	70 Cattle	06/14	09/15	100%	216				
	134 Cattle	09/26	10/15	100%	88				
	15 Horse	04/21	11/30	100%	110	110	0	110	1, 5, 14

Allotment	Livestock	Grazing Period		%Public Land	AUMs*				Other Terms and Conditions (corresponding text shown below table)
		Begin	End		Current Permit	Active	Suspended	Grazing Preference	
Lake Creek	52 Cattle	05/01	08/15	93%	170	168	112	280	1, 2, 15
Perreau Creek	113 Cattle	05/11	06/10	100%	115	115	305	420	1, 6
	39 Cattle	05/11	06/10	100%	40	40	40	80	
	39 Cattle	05/11	05/26	100%	21	20	40	60	
Poison Creek	165 Cattle	04/27	06/15	100%	271	367	0	367	1, 3
	165 Cattle	10/24	11/11	100%	103				
Second Creek	74 Cattle	05/04	06/15	100%	105	152	0	152	1, 2, 11
	74 Cattle	10/24	11/11	!00%	46				
South Gulch	12 Horse	12/01	03/15	100%	42	210	0	210	1, 4, 6
	35 Cattle	06/07	10/31	100%	169				
Tenmile	40 Cattle	05/01	07/15	30%	30	30	10	40	1, 5, 12
Williams Creek	60 Cattle	05/01	06/30	100%	120	120	0	120	1
	129 Cattle	05/01	06/30	100%	259	258	122	380	

* The BLM recognizes that minor inconsistencies in AUM figures have occurred based on such things as rounding calculations, GIS data refinements, etc.

Other "Terms and Conditions" of permits (numbers below correspond to numbers presented in "Terms and Conditions" column in Table 7) held by permittees using allotments within the SRC area include:

1. As provided in 43 Code of Federal Regulations (CFR) 4130.3-2(d), you are hereby required to submit a certified actual use report within 15 days after completion of your annual grazing use. Failure to comply could result in the cancellation of your permit in whole or part.

2. The allotments shown on this permit shall meet the requirements as described in 43 CFR subpart 4180—Fundamentals of Rangeland Health and the Standards and Guidelines for grazing administration. Any changes in management will be based upon the resource evaluations and analysis as scheduled and completed by the area manager.

3. Supplemental feed is limited to salt, mineral, and/or energy/protein in block, granular, or liquid form. If used on Public Land, these supplements must be placed at least one-quarter (1/4) miles away from any riparian area, spring, stream, meadow, aspen stand, sensitive plant populations,

playa, or water development located on Public Land unless variance is approved by the Authorized Officer.

4. All range improvements will be maintained prior to turn-out, and all water developments and associated pipelines will be drained and winterized at the end of the season of use.

5. BLM management of the allotment will continue to emphasize maintenance or improvement of riparian communities.

6. Management of the allotment will continue to maintain or improve riparian communities found within the allotment, as well as, continue to achieve or make significant progress toward the Idaho Standards of Rangeland Health.

7. Grazing will be managed on a four pasture rotation grazing system, with deferment of grazing on different pastures of the allotment (Cabin Creek) in succeeding years.

8. Management of the Henry Creek Allotment will continue to maintain Henry Creek in its current proper functioning condition and maintain or improve other riparian communities found within the allotment, as well as achieving the Idaho Standards for Rangeland Health and conforming to the Guidelines for livestock grazing.

9. All use in the Hot Springs Allotment will be in accordance with the Hot Springs Allotment Management Plan (AMP).

10. This permit or lease is issued under the authority of section 416, Public Law 111-88 and contains the same mandatory terms and conditions as the expired or transferred permit of lease. This permit or lease may be canceled, suspended, or modified, in whole or in part to meet the requirements of applicable laws and regulations.

11. In accordance with Public Law 111-322, an extension of Public Law 111-242 Continuing Appropriations Act, 2011, this permit or lease is issued under the authority of section 416, Public Law 111-88 and contains the same mandatory terms and conditions as the expired or transferred permit or lease. The permit or lease may be canceled, suspended, or modified, in whole or in part to meet the requirements of applicable laws and regulations.

12. Tenmile Allotment is approximately 40% BLM (30 AUMs) and 60% USFS (71 AUMs). To facilitate management of this allotment, up to 47 cattle will be authorized on BLM provided 30 AUMs of forage are removed. This situation has been historically recognized to facilitate management on the Tenmile Allotment and is of benefitting interest to all parties involved. All use will be made in accordance with Memorandum of Understanding between the BLM and USFS located in the Tenmile Allotment file. Per this MOU, the USFS will issue all grazing bills on BLM and USFS land.

13. Cattle use on the Lime Creek Pasture is limited to 113 AUMs. Any use above the permitted numbers must be approved by the authorized officer.

14. Horse use is limited to the west side of the Salmon River. No horse use will be allowed on the Lime Creek Pasture on the east side of the Salmon River unless approved by the authorized officer.

15. The Lake Creek Allotment is scheduled for a Standards and Guidelines Assessment in 2002. Upon completion of the assessment and determination any appropriate permit adjustments will be made. In the interim, a goal of 4" to 6" post grazing or post growing (whichever is later) riparian stubble height will be sought.

Evaluation of the Idaho Standards for Rangeland Health

Approved in 1997, the eight Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing and Management (Standards and Guidelines) provide the resource measures and guidance needed to ensure healthy, functional rangelands. The Standards and Guidelines comply with regulation requirements and are in conformance with the Lemhi RMP (USDI-BLM, 1987).

The eight Standards for Rangeland Health are: (1) Watersheds; (2) Riparian Areas and Wetlands; (3) Stream Channel/Floodplain; (4) Native Plant Communities; (5) Seedings; (6) Exotic Plant Communities, Other Than Seedings; (7) Water Quality; and (8) Threatened and Endangered Plants and Animals. The process involves evaluating various datasets to determine whether or not an allotment is meeting each of the eight Standards and why. Datasets considered include Properly Functioning Condition (PFC) and riparian Multiple Indicator Monitoring (MIM) surveys; sage grouse habitat assessments; invasive plant inventories; sensitive plant and animal surveys; and information collected during the Rangeland Health Assessment (RHA) process. The Guidelines for Livestock Grazing Management direct the selection of grazing management practices to promote significant progress toward, or the attainment and maintenance of, the Standards. Specific guidelines are not discussed in this document.

Between 2008 and 2010, the BLM SFO conducted RHAs on the allotments within the SRC area. The data from the RHAs will be used as part of the data to evaluate if the allotments are meeting Standards 1 and 4, and at a lesser level Standards 5 and 8. The sites selected for the RHAs were chosen based upon distance from water and other infrastructure, representative soil type and ecological sites of the allotment, and were located in areas where rangeland conditions might be of concern on the allotment. Soil type was confirmed by digging soil pits and comparing with soils maps of the area, ensuring that the ID team collected data for the RHAs on soils representative of the allotment.

There were 11 major soil types found on BLM-managed lands within the SRC area. During the RHA process, eight soil complexes or associations were encountered. Twenty-six other soil units are present in the assessment area but each make up less than 2% of the total BLM-managed acres in the area. Of the sites evaluated with an RHA, six were on the Cronks-Challis association gravelly loam; two were on the Millhi-Lacrol association gravelly loam and one was on the Millhi Badland gravelly silt loam soil of the Millhi complex; one was on the Venum soil series; one on the Neilson gravelly clay loam; one was on the Klug complex gravelly loam; one was on the Zeebar very gravelly loam; and one was on the Dawtonia-Frailton complex very gravelly loam. During the RHAs, seventeen indicators of rangeland health were evaluated for their departure from what was expected on the sites based on Ecological Site Descriptions (ESDs) developed by the Natural Resources Conservation Service (NRCS). These ESDs are based on specific soil types, precipitation zones, aspect, slope, elevation, landscape position and location. They

describe various characteristics and attributes including the vegetative species and relative percentages of each that are expected to be present on the site. The ESDs are referred to by ID team staff while conducting the above mentioned RHAs. This facilitates the ID team to determine the departure from what is expected for the site being assessed based upon soil/site stability, hydrologic function, and biotic integrity.

Watersheds (Standard 1)

"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." (USDI-BLM, 1997).

For Standard 1, Watersheds, 10 of the indicators evaluated during RHAs were used to rate the soil and site stability for each site, and 10 indicators were used to rate the hydrologic function for each site (Pellant, Shaver, Pyke, & Herrick, 2005). All of the indicators for soil and site stability at every site on every allotment were rated as a "none to slight" departure from that expected, except on the Henry Creek Allotment with a "slight to moderate" departure. This allotment displayed some evidence of surface water flow, litter movement, and plant pedestalling. This was attributed to the lack of grass production of deep rooted perennial grasses. Most of the indicators for hydrologic integrity were also rated as a "none to slight" departure at every site on every allotment. The largest exception was a rating of "slight to moderate" departure for indicator #3 (Plant pedestals and/or terracettes) on three allotments: Henry Creek, Perreau Creek, and Williams Creek. Also a "slight to moderate" departure was noted for indicator #2 (Water-flow patterns) on the Henry Creek Allotment. Other departures for indicator #10 (Plant composition and distribution relative to infiltration) were noted on the Henry Creek and Perreau Creek Allotments and for indicator #14 (Litter amount) on Henry Creek and Williams Creek Allotments. These departures from that expected are due largely to a lack of deep rooted perennial grasses and increase in shallow rooted perennial and annual grass species on the assessment sites. All allotments within the SRC are "meeting" Standard 1.

The final evaluation finding for all allotments in the assessment area toward meeting Standard 1 is summarized in Table 8, below.

Table 8. Evaluation Finding for Standard 1.

Allotments "Meeting the Standard"			
Cabin Creek	Camp Creek	Chipps Creek	Dummy Creek
Fenced Pasture	Findley Basin	Henry Creek	Hot Springs
Iron/Lime Creek	Lake Creek	Perreau Creek	Poison Creek
Second Creek	South Gulch	Tenmile Creek	Williams Creek

Riparian Areas and Wetlands (Standard 2)

"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." (USDI-BLM, 1997)

Riparian-wetland areas are some of the most productive resources found on public and private lands (USDI-BLM, 1997). Riparian-wetland habitats (Riparian Ecosystems) are generally defined as a body of water with its adjacent soil and vegetation (Hall & Bryant, 1995). Riparian ecosystems have two important concerns: 1) woody vegetation for shade, cover, and streambank protection; and 2) streambanks themselves, often called the "greenline," with their protective herbaceous plant community. Riparian-wetland vegetation should also control erosion, stabilize streambanks, provide shading, filter sediment, aid floodplain development, dissipate energy, delay flood water, and increase groundwater recharge.

Proper Functioning Condition (PFC) is a qualitative method for assessing the condition of riparian-wetland areas. The term PFC is used to describe both the assessment process, and a defined, on the-ground condition of a riparian-wetland area (USDI-BLM, 1997). Riparian-wetland areas are in PFC when they are appropriate to soil type, climate, geology, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow (USDI-BLM, 1997). BLM utilizes the PFC process as a measurement indicator for riparian-wetland habitats and also for PFC as a general goal for associated habitats.

Streams are assessed in the SFO as either "Proper Functioning Condition (PFC)"; "Functional-At-Risk with an upward trend (FAR-up)", downward trend ("FAR-down"), or static trend ("FAR-static"); "Non-Functional (NF)"; or "Non-Riparian" (Map 6).

The riparian and wetland habitat in the SRC area contains beaked sedge, Northwest Territory sedge, Nebraska sedge, brookgrass, and multiple species of rushes and other riparian grasses. Riparian trees and shrubs that are also found include cottonwood, aspen, Booth willow, Geyer willow, Bebb willow, and coyote willow. Habitat associations that include sedges and willows (plants with deep, binding root masses) tend to provide higher levels of bank stability. Habitat associated with the Salmon River and tributary mountain streams also includes water birch, Engelmann spruce, cottonwood, and Douglas-fir.

A PFC evaluation was performed on streams within the SRC area in 2010 (Fahlgren, J. and J. Lacey, 2010). The overall conditions of the stream/riparian habitat on public land in the Salmon River Corridor are PFC with relatively steep gradient, mostly Rosgen A and B channel types, covered with extensive riparian tree/shrub communities. Typically, Hat, Ringle, Cabin, Iron, Henry, Williams, Perreau, Tenmile, Second, Warm Spring, Poison and McKim Creeks have an extensive overstory of cottonwood, alder, willow and maple with a thick understory of willow, dogwood, snowberry and rose. There are a few segments that are lower gradient and contain more meadow species including sedges, rushes and mesic grasses. The PFC ratings are 84% PFC, 14% FAR, and 0% NF (the remaining 2% represents non-riparian sites).

In general, the allotments in the SRC area are used in the late-spring and early summer. This allows for limited livestock use of stream/riparian habitats due to the cool and moist conditions and allows for

wetland/riparian plant regrowth during most of the summer season. Use previous to mid-July has shown to maintain and improve most riparian function (Kovalchik & Elmore, 1991).

The final evaluation finding for all allotments in the assessment area toward meeting Standard 2 is summarized in Table 9, below.

Table 9. Evaluation Finding for Standard 2.

Allotments "Meeting the Standard"			
Cabin Creek	Chipps Creek	Dummy Creek	Fenced Pasture
Findley Basin	Henry Creek	Hot Springs	Perreau Creek
Poison Creek	Second Creek	South Gulch	Tenmile Creek
Williams Creek	Camp Creek	Iron Lime Creek	
Allotments "Not meeting the Standard"			
Lake Creek			

Allotments "Not meeting the Standard":

Lake Creek Allotment: The allotment contains a portion of Henry Creek, a small, non-fishbearing perennial stream. It also contains York Creek, an intermittent stream channel, and three upland springs. Approximately 0.8 miles of Henry Creek existing with the Lake Creek Allotment is rated as FAR-down. The stream has been destabilized and incised over much of its length within the allotment, causing no floodplain inundation or sinuosity of the stream. The stream on the allotment has been historically heavily grazed with hot season grazing over the past ten-plus years, although some young riparian/wetland plant species do exist along the stream. The area is lacking riparian/wetland grasses, but a diverse amount of riparian shrubs do exist. Vegetation that has root masses capable of withstanding high stream flow is lacking on the greenline. Upstream, Henry Creek on the Henry Creek Allotment is rated as PFC. The upland springs on the allotment are in in varying condition. Benjamin Springs #1 and #2 are both surrounded by exclosure fencing, although portions of each spring are exposed to trampling below the downslope edge of each exclosure. York Creek on the allotment is steep and rocky with FAR-static condition on the wetland segments of the channel. The main emphasis for improving the ecological condition for Standard 2 is to improve the Henry Creek channel and wetland/riparian community on the allotment.

Stream Channel/Floodplain (Standard 3)

"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." (USDI 1997)

Stream channels and floodplains should dissipate energy of high water flows and transport sediment. Soils should support appropriate riparian/wetland species, allow water movement, sediment filtration, and water storage. Channels should not be entrenching. Also, width/depth ratio, gradient, sinuosity, and pool/riffle/run frequency should be appropriate for the valley bottom type, geology, hydrology, and soils.

Streams should have access to their floodplain and sediment deposition should be evident. Streambanks should also be within an appropriate range of stability according to site potential (USDI-BLM, 1997).

A PFC evaluation was performed on streams within the SRC area in 2010 (Fahlgren, J. and J. Lacey, 2010). The overall conditions of the stream/riparian habitat on public land in the Salmon River Corridor are PFC with relatively steep gradient, mostly Rosgen A and B channel types (Rosgen, 1994), covered with extensive riparian tree/shrub communities. Typically, Hat, Ringle, Cabin, Iron, Henry, Williams, Perreau, Tenmile, Second, Warm Spring, Poison and McKim Creeks have an extensive overstory of cottonwood, alder, willow and maple with a thick understory of willow, dogwood, snowberry and rose. These stream channels are very stable with strong root-masses and large rock and woody debris that limit erosion and provide for good to excellent habitat conditions. There are a few segments that are lower gradient and contain more meadow species including sedges, rushes and mesic grasses. These areas are mostly stable due to fair to excellent vegetative communities and limited grazing impacts. The PFC ratings are 84% PFC, 14% FAR, and 0% NF.

In general, the allotments in the SRC area are used in the late-spring and early summer. This allows for limited livestock use of stream/riparian habitats due to the cool and moist conditions and allows for wetland/riparian plant regrowth during most of the summer season once cattle have left the pasture. Use previous to mid-July has shown to maintain and improve most stream channel function (Kovalchik & Elmore, 1991).

The final evaluation finding for all allotments in the assessment area toward meeting Standard 3 is summarized in Table 10, below.

Table 10. Evaluation Finding for Standard 3.

Allotments "Meeting the Standard"			
Cabin Creek	Camp Creek	Chipps Creek	Dummy Creek
Fenced Pasture	Henry Creek	Hot Springs	Perreau Creek
Poison Creek	Second Creek	South Gulch	Tenmile Creek
Williams Creek	Iron/Lime Creek		
Allotments "Not meeting the Standard"			
Lake Creek			
Allotments where the "Standard doesn't apply"			
Findley Basin			

Allotments "Not meeting the Standard":

Lake Creek Allotment: The allotment contains a portion of Henry Creek; a small, non-fish-bearing perennial stream (approx.0.8 miles) rated as FAR-down. The stream has been destabilized and incised over much of its length within the allotment, causing no floodplain inundation or sinuosity of the stream. The stream on the allotment has been historically heavily grazed and hot season grazing over the past ten-plus years, although some young riparian/wetland plant species do exist along the stream. The area has down-cut and has higher bank instability than expected for the site potential. Upstream, on the Henry Creek Allotment, the stream is rated as PFC and in very good condition. The main emphasis for

improving the ecological condition for Standard 3 is to improve the Henry Creek channel and wetland/riparian community on the Lake Creek Allotment.

Native Plant Communities (Standard 4)

"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." (USDI-BLM, 1997)

The SRC area includes eight classes of land cover as defined by BLM Idaho Instruction Memorandum No. ID-2009-053 (Map 7). Using the Northwest ReGap (USDI-BLM, 2009) satellite-based vegetation layer, these classes are: Forest & Woodland (44%); Mesic Shrubland & Grassland (3%); Semi-desert Shrubland & Grassland (48%); High Montane Vegetation (0.5%); Sparse Vegetation & Natural Barren Areas (0.3%), Agriculture (2.5%); the remainder of lands are classified as either Urban & Other Developed Lands or Open water. This section will not discuss Agriculture, Urban & Other Developed Lands, or Open Water cover types since they are not considered native plant communities.

Invasive Species

While much of the assessment area consists of intact native vegetation, a number of invasive, non-native species are present (Map 8). These include spotted knapweed, cheatgrass, leafy spurge, houndstongue, musk, bull and Canada thistle, rush skeletonweed, henbane, and other less aggressive, yet non-native species such as Kentucky bluegrass and smooth brome, and bulbous bluegrass. Noxious weeds and invasive species pose a serious threat to intact native vegetative communities and degrade wildlife habitat and grazing allotment productivity, and can greatly increase the risk from uncharacteristic wildfire frequency and effects. This in turn can alter plant communities for many years if not permanently. Most weed infestations within this corridor occur along road systems, historically heavily grazed slopes and flats, and historic and recent ground disturbance areas such as pipelines, water trough locations and burned areas. Cheatgrass at various infestation levels occurs over much of the lower to middle elevation terrain within the assessment area. The BLM SFO works closely with the Lemhi Cooperative Weed Management Area (LCWMA) to contain, control and eradicate invasive plant populations using integrated pest management practices, along with working to prevent new invasive species from establishing on BLM lands.

Forest & Woodland

This land cover class includes natural vegetation dominated or characterized by tree species requiring environmental conditions of moderate moisture and temperature or which are only partially protected against desiccation. The SRC area contains approximately 112,568 acres of forested and woodland vegetation. Elevation, aspect, precipitation, and soil type are the primary determinants of forest and woodland distribution due to their influence on daily temperature extremes and available moisture for plant growth. Generally, persistent forest and woodland acres are found at higher elevations (above 7,000 feet) and on more mesic (wetter) sites on north and east facing slopes within the SRC area. However, the ecotone (transition) between rangeland and forest communities can fluctuate significantly up or down slope depending on aspect. Drier south and west aspects often support rangeland communities to higher elevations, while north and east slopes support forest stringers lower into the valley. Productivity and growth rates of forest and woodland vegetation within the assessment area are relatively low compared to other regions within the larger Columbia River Basin, primarily because of limited precipitation.

Composition

Lowest-elevation forest and woodlands contain Douglas-fir, curl-leaf mountain mahogany (rocky outcrops, slopes and ridges), and scattered Rocky Mountain juniper. As a result of fire exclusion over the past 100 years, the lower forest boundary has been creeping (encroaching) into what would be considered historically as rangelands. Given enough time these areas are slowly converting from range to forest/woodland communities as the result of tree canopy closure.

Mid-elevation forests are dominated by Douglas-fir. With increasing elevation, Douglas-fir gives way to mixed conifer communities of lodgepole pine, subalpine fir, and Engelmann spruce. Finally, whitebark pine is a minor type found at the highest forested elevations, generally above 8,600 feet, on windswept ridgelines.

Quaking aspen and black cottonwood are two hardwood tree species present within the SRC area, and are typically constrained to drainage bottoms and/or moist upland areas (seeps, springs, etc.). Stands of these species tend to be narrow (linear), and/or are usually small (less than five acres) and often have other tree species or mesic shrubs interspersed. In particular, the extent and integrity of the aspen cover type within the SRC area has been reduced by wildland fire exclusion.

Structure

Forest and woodland acres within the SRC area can generally be described as multi-structured and multi-aged. The current stand structure and age-class distribution is primarily the by-product of forest succession coupled with a relatively successful fire suppression policy during the past 50-100 years. These factors have added significantly to an abundance of younger age- and smaller size-classes.

Historically, the preponderance of SRC area stands established and developed under a mixed-severity fire regime. Effects of variable burn severity included maintaining a fine-grained forest community mosaic across the forested extent. Elements of this mosaic were small stands dominated by various age structures of seral conifer species (Douglas-fir, lodgepole pine, limber pine, whitebark pine) and seral hardwoods such as aspen. Some stands experienced non-lethal underburns that maintained open understories by killing saplings and fire-sensitive species. Others experienced patchy fire mortality that gave rise to patchy tree regeneration including seral species. Occasional stand-replacement fires may have reduced the spatial diversity, but the varying distribution of seed sources and sprouting shrubs in the pre-burn mosaic probably enhanced variability in post-burn vegetation (Brown & Smith, 2000). A fire effect near the lower forest boundary was to maintain seral grasslands, shrublands, and aspen groves by periodically removing most of the invading young Douglas-fir (Arno & Gruell, 1983).

Vestiges of the historic, mixed-severity fire regime "effect" are still visible throughout the SRC area. However, the fine-grained community mosaic indicative of a functioning mixed-severity regime is slowly fading from the landscape as successional processes continue to coalesce and homogenize forest patches over time in the absence of fire.

Forest Health

In broad terms, a healthy forest is one that maintains desirable ecosystem functions and processes. Aspects of forest health include biological diversity; soil, air, and water productivity; and resilience or resistance to natural disturbances.

The predominant forest health issue within the SRC area is reduced stand and tree vigor due to overstocking. Overstocking is primarily the result of fire exclusion since the early 1900's. Few of the forest stands within the SRC area have experienced the thinning, sanitation, and fuel-reducing benefits of mixed-severity fire since Euro-American settlement. In southwestern Montana, (Arno & Gruell, 1983) estimated a mean fire-free interval of only 41 years within similar habitat types.

Decreased forest vigor and overstocking within the SRC area is increasing the risk of tree mortality due to greater susceptibility to insects, disease and stand-replacing fire. Stand replacement (high-severity) fire potential is positively correlated to increases in the accumulation of dead material on the forest floor and increases in stocking density characteristic of these forest stands.

Mountain pine beetle activity is currently at epidemic levels throughout the SRC area (Map 9) causing extensive mortality in lodgepole pine, whitebark pine and limber pine. During low beetle population levels, attacks are primarily on individual or small groups of trees under stress due to injury, drought, overcrowding, etc. However as beetle populations increase, attacks may involve most trees 8 inches diameter at breast height (dbh) or greater, regardless of their apparent health. Epidemic levels of infestation are expected to continue until suitable stand conditions have been exhausted.

Douglas-fir bark beetle activity is evident throughout the Douglas-fir forest type (Map 9) causing mortality to large, mature Douglas-fir where it occurs. Douglas-fir most susceptible to bark beetle attack are generally larger than 14 inches dbh; older than 120 years; growing in dense stands; or are weakened by drought, root disease, or defoliation.

Western spruce budworm defoliation is widespread within Douglas-fir, subalpine fir and Engelmann spruce stands of the SRC area (Map 9), causing extensive mortality in mid- and lower-canopy levels of those host species due to expansive areas with multi-storied stand structures. Generally western spruce budworm does not cause direct tree mortality, however it will predispose trees to attacks by other insects or diseases. Budworms grow more vigorously in stressed trees, and budworm populations can increase dramatically during drought conditions. Densely stocked and/or multi-storied stands with predominantly Douglas-fir or subalpine fir are at highest risk to budworm infestation.

Douglas-fir dwarf mistletoe and lodgepole pine dwarf mistletoe disease is conspicuous throughout the SRC area with significant areas being characterized as having 'heavy' infection levels as rated using the 6-class dwarf mistletoe rating system (Hawksworth, 1977).

Mesic Shrubland & Grassland

This land cover class includes natural vegetation dominated or characterized by shrub and/or herb species requiring environmental conditions of moderate moisture and temperature or which are only partially protected against desiccation; 7,930 acres of land are classified as this type in the SRC area. For the SRC area most of the vegetation that falls into this type is considered riparian and is discussed under Standard 2.

Semi-desert Shrubland & Grassland

This land cover class includes natural vegetation dominated or characterized by shrub and/or herb species having structural or functional adaptations to prevent water loss by evaporation; 122,473 acres of the SRC area is mapped as this type. The semi-desert type is dominated by Wyoming big sagebrush with a

bluebunch wheatgrass dominated understory, mostly in the lower, drier elevations near the town of Salmon. As the elevation and amount of precipitation increases, there is a shift to mountain big sagebrush with a bluebunch wheatgrass and/or Idaho fescue understory. Threetip sagebrush with a mixed understory can occur in moist depressions, north and east-facing slopes at mid-elevations, and at the transition zone between Wyoming and mountain big sage.

In the early 1980's, an Ecological Site Inventory (ESI) was completed in the assessment area. At that time about 34% of the semi-desert landscape was in "good" condition, about 38% was in "fair" condition, about 1% was in excellent condition, and about 2% was in poor condition. The remaining approximately 25% was classified as unmapped. An excellent condition community would have 76 to 100% of the kinds, amounts, and proportions of vegetation produced in the potential plant community; good, fair, and poor condition classes would have 51 to 75%, 26 to 50%, and 0 to 25% respectively of these factors (USDI-BLM, 1987). In 2010, the BLM SFO conducted RHAs on the allotments in the assessment area (see description of site locations under Standard 1). During these assessments, the BLM recorded seventeen indicators of rangeland health and how they departed from the "reference state" as described by the appropriate rangeland ecological site description (Pellant, Shaver, Pyke, & Herrick, 2005). There are two major differences that should be pointed out between the inventory of the 1980's, and the newer RHA method. First, the rangeland ecological site descriptions have been modified to better reflect the natural variation in a site. In the 1980's, the range sites were compared to the potential plant community only. Since that time, it has been accepted that a site in an early seral state can still be considered in excellent shape even though it is not at potential. For example, a wildfire in a healthy system will leave the site in an early seral condition, however the site will still characteristically move towards the potential plant community over time. Second, for each indicator, the departure from the site description is recorded, but it is not rated using the same method (e.g. good, fair, or poor) as in the 1980's inventory. Rangeland health assessments are not meant to replace Ecological Site Inventories, but they are used as a rapid assessment tool to evaluate soil/site stability, hydrologic function, and integrity of the biological community at the ecological site level (Pellant, Shaver, Pyke, & Herrick, 2005).

Of the seventeen indicators, nine are relevant to biotic integrity and thus native plant communities. Across the assessment area some of these nine indicators were considered to be a "none to slight" departure from expected, meaning that the sites were very similar to what was expected for those sites. A few sites were considered to be "slight to moderate" or "moderate", which were interpreted as a variation as to what was expected for a particular site. Where such departures did occur it was often because of the order of dominance of functional/structural groups on the sites, annual production, or the presence of annual grasses or "weedy" species. Three allotments in the assessment area had a "none to slight" departure from expected for biotic integrity; three allotments had a "slight to moderate" departure; and one allotment had a "moderate" departure. There were three allotments, with multiple pastures, that had a "none to slight" departure for one or more pastures as well as a "slight to moderate" departure for any other pasture(s). One allotment has a "moderate" departure from that expected.

Functional/structural groups are a suite of species that are grouped together, on an ecological site basis, because of similar shoot (height and volume) or root (fibrous vs. tap) structure, photosynthetic pathways, nitrogen fixing ability, or life cycle (annual vs. perennial) (Pellant, Shaver, Pyke, & Herrick, 2005).

The ID team concluded Indicator #12 (Functional /Structural Groups) was a "none to slight " departure on Perreau Creek, South Gulch, and Tenmile Allotments and a "slight to moderate" departure on Camp Creek, Fenced Pasture, and Henry Creek Allotments. Cabin Creek, Hot Springs, and Iron/Lime Creek Allotments had one or more pastures with "none to slight" as well as pastures with "slight to moderate" departures. Williams Creek Allotment had a "moderate" departure from that expected.

Camp Creek, Fenced Pasture, and Henry Creek Allotments rated as having a "slight to moderate" departure for indicator #12 occur on basically loamy soils dominated by various shrub (three-tip, mountain big sagebrush, or low sagebrush) overstory with either bluebunch wheatgrass or Idaho fescue understory.

On the Camp Creek Allotment, the site description for a loamy, mountain big sagebrush/Idaho fescue ecological site (R012XY021ID) describes a site with a composition, by weight, of 40-50% grasses; 15-25% shrubs, and 1-3% forbs. It was noted on this particular site the presence of invasive species, namely Kentucky bluegrass and common dandelion within the grass understory. The composition of Kentucky bluegrass was as equal to that of the Idaho fescue and Bluebunch wheatgrass and dandelion also appeared to be the dominant forb on the site.

On the Fenced Pasture Allotment, a portion (approx. 1/3) of the allotment had historically been irrigated with non-native grasses introduced. This area has since reverted to cheatgrass, annual mustards, and ryegrass. The site description for the native portion, on a loamy, Wyoming big sagebrush/Low sagebrush/Bluebunch wheatgrass site (R012XY015ID) describes a site with 5-10% grasses, 50-75% shrubs, and 1-3% forbs. This particular site plant composition has shifted toward annual grasses and forbs and introduced, non-native grasses. The native portion of the allotment (approx. 2/3) appears as expected, with some weed infestation along the road and adjacent to the non-native area.

On the Henry Creek Allotment, the site description for a gravelly loam, three-tip sagebrush/Idaho fescue ecological site (R012XY010ID) describes a site with a composition, by weight, of 30-50% grasses; 10-25% shrubs; and 1-5% forbs. However, the composition by weight on this allotment is currently dominated by shrubs. Within the grass component, this site should be dominated by deep-rooted, perennial grasses (e.g. Idaho fescue). On this allotment there has been a shift in the grass component from deep-rooted grasses to more shallow-rooted grasses (e.g. Sandberg bluegrass).

The Cabin Creek, Hot Springs, and Iron/Lime Allotments were overall rated as having a "none to slight" departure from that expected. However, a "slight to moderate" departure for indicator #12 as well as #16 (Invasive Plants) was found on certain sites within certain pastures. These areas occurred within pastures on these allotments where the presence of cheatgrass or a shift in shrub dominance was apparent.

The Cabin Creek Allotment site (Nipple Peak pasture) supports Wyoming big sagebrush with bluebunch wheatgrass and Salmon wildrye understory on a sandy to gravelly loam soil type. The site description (R012XY017ID) reveals composition by weight is 50-70% grasses, 10-20% forbs, and 20-30% shrubs. This site appeared to have more cheatgrass and annuals present than that expected. In March 1995, the season of use was reduced from May1-Nov.1 to June1-Sept.15. Grazing occurs under four pasture deferred rotation management. Rangeline agreement, grazing management changes and reduction in cattle numbers since 1995 have facilitated improvement in the allotment such that they allotment now meets Standard 4.

The Hot Springs Allotment assessment sites occurred within the three lower pastures (Reservoir, Clark Springs, and Hot Springs). These sites support Wyoming big sagebrush with bluebunch wheatgrass on loamy or clay loam soils. The site description (R012XY036ID) for the Reservoir and Hot Springs pastures describes a composition by weight as 50-60% grasses, 5-15% forbs, and 30-40% shrubs. The site description (R012XY032ID) for the Clark Spring pasture describes a composition by weight of approximately 55-65% grasses, 5-15% forbs and 25-35% shrubs. These sites were rated at a "none to slight" departure from that expected, except a "slight to moderate" departure within the Reservoir pasture due to increased cheatgrass and reduced presence of bluebunch wheatgrass.

The Iron/Lime Creek Allotment sites occurred within the Lower Cabin, Twin Peaks, Lime Creek, and Deer Creek pastures. These sites support Wyoming big sagebrush with bluebunch wheatgrass on loamy soils or three-tip sagebrush with Idaho fescue on gravelly loam soils. The site description (R012XY008ID) for the Lower Cabin Creek pasture describes composition by weight is approximately 55-65% grasses, 10-20% forbs, and 20-30% shrubs by weight. The site description (R012XY010ID) for Twin Peaks, Lime Creek and Deer Creek pastures describes composition by weight is approximately 50-70% grasses, 10-20%forbs and 20-30% shrubs. Lower Cabin and Twin Peaks pasture rangeland sites were rated at "none to slight" departure from that expected, but the presence of cheatgrass was noted throughout. The Lime and Deer Creek pastures were rated at a "slight to moderate" departure due to presence of cheatgrass and knapweed and shrub dominance (Deer Creek pasture).

The Williams Creek Allotment site supports Wyoming big sagebrush with bluebunch wheatgrass on gravelly loam soils. The site description (R012XY004ID) describes composition by weight is approximately 55-70% grasses, 5-15% forbs and 20-30% shrubs. This site was rated as "moderate" departure from that expected due to a shift to shrub dominance, lack of bluebunch wheatgrass, and increase in cheatgrass.

High Montane Vegetation

This land cover class includes natural vegetation dominated or characterized by shrub and/or herb species having structural or functional adaptations to survive cold temperatures and resist frost damage; about 0.5% of the SRC area is classified as this type. Most of this cover type within the assessment area is found on lands managed by the Salmon-Challis National Forest.

Sparse Vegetation & Natural Barren Areas

This land cover class includes natural vegetation dominated or characterized by shrub, herb, or non-vascular plant species having structural or functional adaptations for living on rock surfaces or in rocky substrates. Vegetation is scattered or nearly absent; total vegetation cover, excluding crustose lichens, is generally 1-10% at the peak of the growing season. In addition, natural areas (undisturbed by man) where vegetation is generally less than 1% of the surface area are included. About 0.3% of the SRC area is classified as this type.

The final evaluation finding for all allotments in the assessment area toward meeting Standard 4 is summarized in Table 11.

Table 11. Evaluation Finding for Standard 4.

Allotments "Meeting the Standard"			
Camp Creek	Chipps Creek	Dummy Creek	Findley Basin
Hot Springs	Iron/Lime Creek	Lake Creek	Poison Creek
Second Creek	South Gulch	Tenmile Creek	Cabin Creek
Allotments "Not meeting the Standard"			
Fenced Pasture	Henry Creek	Perreau Creek	Williams Creek

Allotments "Not meeting the Standard":

Fenced Pasture: The southern, historically irrigated portion of the allotment is comprised mostly of introduced grasses and invasive annuals; plant composition has shifted away from that represented and described in the rangeland site guide for the area. The northern, native portion of the allotment displays plant species composition which depicts the rangeland site guide description, with departure from the description with regard to amount of cheatgrass, spotted knapweed, and other invasive species.

Henry Creek: The plant understory component of the functional/structural groups has shifted away from deep rooted perennial grasses to shallow rooted perennial grass in the understory. The allotment appears to have a dominant shrub component. Productivity of the deep rooted perennial grasses is reduced due to this compositional shift in grass species.

Perreau Creek: The allotment varies from the site description with regard to grass species composition. It appears that there has been a decrease in the amount of blue bunch wheatgrass and an increase in Sandberg's bluegrass and cheatgrass. This change from deep rooted to shallow rooted grasses has reduced the overall grass productivity of the allotment.

Williams Creek: The allotment appears to have a dominant shrub component with a grass component shift from deep rooted bunchgrasses to shallow rooted perennials and cheatgrass. The lack of bluebunch wheatgrass and dominance of cheatgrass in the understory does not correlate with the rangeland site description. The grass productivity of the area has been reduced with an increase in annual grass productivity.

Seedings (Standard 5)

"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." (USDI-BLM, 1997).

There are 3 seedings on BLM-managed lands in the assessment area that involved predominately non-native plants (Map 5). The first was the contour furrow seeding within the Reservoir pasture that took place in the Hot Springs Allotment in 1971. Approximately 400 acres of the allotment were contour furrowed and drilled with a rangeland drill using 3,200 pounds of a mixture of Western Wheatgrass, Siberian Crested Wheatgrass, yellow sweet clover, and Ladak alfalfa at a rate of 8 pounds per acre. The second was the Findley Basin seeding within the Findley Basin Allotment. In 1983, approximately 20 acres were mowed and seeded with Siberian crested wheatgrass at a rate of 10 pounds per acre. These

seeded areas are relatively small portions of the allotments and are vigorous with good herbaceous and seed stalk production. The amount of surface litter and gravels promotes soil stability. These seedings meet Standard 5 of the Idaho Standards for Rangeland Health. The third site is the Kilpatrick property and recreation site, which has been seeded with both native and non-native species on multiple occasions. The Kilpatrick property is an old homestead property acquired by BLM. It is not a part of any allotment and is not grazed by livestock. It has proved difficult to reclaim successfully due to past disturbance associated with homesteading activities, invasive species presence and a lack of water for irrigation of the seedings.

The final evaluation finding for all allotments in the assessment area toward meeting Standard 5 is summarized in Table 12, below.

Table 12. Evaluation Finding for Standard 5.

Allotments "Meeting the Standard"			
Findley Basin	Hot Springs		
Allotments where the "Standard Doesn't Apply"			
Cabin Creek	Camp Creek	Chipps Creek	Dummy Creek
Fenced Pasture	Henry Creek	Iron/Lime Creek	Lake Creek
Perreau Creek	Poison Creek	Second Creek	South Gulch
Tenmile Creek	Williams Creek		
Kilpatrick property "Not Meeting the Standard"			

Exotic Plant Communities, other than Seedings (Standard 6)

"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 (USDI-BLM, 1997).

Standard 6 was developed specifically for those areas on BLM lands within the state of Idaho where invasion by exotic, non-native species (primarily cheatgrass and medusahead rye) has altered the ecosystem to a point where it is incapable of recovery without expensive rehabilitation. This situation does not occur anywhere within the SRC area; so this Standard does not apply.

The final evaluation finding for all allotments in the assessment area toward meeting Standard 6 is summarized in Table 13, below.

Table 13. Evaluation Finding for Standard 6.

Allotments where the "Standard Doesn't Apply"			
Cabin Creek	Camp Creek	Chipps Creek	Dummy Creek
Fenced Pasture	Findley Basin	Henry Creek	Hot Springs
Iron/Lime Creek	Lake Creek	Perreau Creek	Poison Creek
Second Creek	South Gulch	Tenmile Creek	Williams Creek

Water Quality (Standard 7)

"Surface and ground water on public lands comply with the Idaho Water Quality Standards." (USDI 1997)

For Standard 7, BLM goals include that "Surface and ground water on public lands comply with the Idaho Water Quality Standards." (USDI-BLM, 1997). In 1998, the Idaho Department of Environmental Quality (DEQ) in conjunction with Idaho BLM assessed water quality and identified a state-wide list (the "303(d)" list) of water quality-limited streams and water bodies on Idaho public lands in response to section 303(d) of the Clean Water Act. Assessment of water quality on public lands is based on meeting beneficial uses with regards to stream/riparian habitat and using biological species as indicators. The DEQ subsequently published the *1999 Salmon River Watershed Mid-Salmon-Panther Creek Sub-basin Assessment* for streams included on the 1998 303(d) list, some of which also occur within the SRC area. The DEQ updates the 303(d) list every two years, the most recent being in 2010, with publication of the *2010 Integrated 303(d)/305(b) Report*. Water bodies and streams within the SRC area that support beneficial uses and/or are water quality-limited (303(d)) are listed in Table 14, below.

Other monitoring relative to surface water quality in the SRC area includes DEQ's Beneficial Use Reconnaissance Program (BURP) data, which are published in DEQ's sub-basin assessments. The BLM also monitors water temperature and riparian and stream habitat indicators, and conducts some fish sampling in conjunction with the DEQ and the Idaho Department of Fish and Game (IDFG). Much of the DEQ identified limitations in the SRC area are related to private irrigation withdrawals which are non-discretionary to the BLM.

Table 14. Water Quality-Limited Streams and Water Bodies in the Salmon River Corridor.

Stream	Segment	Impairment	Length (miles)
Salmon River	North Fork to Pahsimeroi	Phosphorous	38

Source: State of Idaho DEQ 2010 Integrated 303(d)/305(b) Report

The final evaluation finding for all allotments in the assessment area toward meeting Standard 7 is summarized in Table 15, below.

Table 15. Evaluation Finding for Standard 7.

Allotments "Meeting the Standard"			
Cabin Creek	Camp Creek	Chipps Creek	Dummy Creek
Fenced Pasture	Henry Creek	Hot Springs	Iron/Lime Creek
Lake Creek	Perreau Creek	Poison Creek	Second Creek
South Gulch	Tenmile Creek	Williams Creek	
Allotments where the "Standard Doesn't Apply"			
Findley Basin			

Threatened and Endangered Plants and Animals (Standard 8)

"Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species." (USDI-BLM, 1997)

Habitat in the area (Table 16) supports mammals, birds, amphibians, reptiles, fish, and plants (upland and riparian). Some of these species are listed on the Idaho State Director's list of sensitive species (May 20, 2003) (USDI-BLM, 2003) and are the focus of this Standard. A "common-to-scientific name" crosswalk of all plant and animal species mentioned in this section can be found in Appendix A.

Table 16. Important habitat for various wildlife species within the SFO area by cover type.

Cover Type	Mammals	Birds	Reptiles and Amphibians
Forest and Woodland	Canada lynx, gray wolf, wolverine, Townsend's big-eared bat, fisher, white-tail deer, mule deer, moose, mountain goat, elk	flammulated owl, calliope hummingbird, Lewis's woodpecker, Williamson's woodpecker, olive-sided flycatcher, Cassin's finch, northern goshawk, Hammond's flycatcher	
Semi-desert Shrubland and Grassland (Sage-steppe)	gray wolf, pygmy rabbit, Townsend's big-eared bat, bighorn sheep, mule deer, elk, pronghorn	greater sage-grouse, ferruginous hawk, loggerhead shrike, sage sparrow, Brewer's sparrow, golden eagle, long-billed curlew, sage thrasher, green-tailed towhee, Swainson's hawk, prairie falcon	
Mesic Shrubland and Grassland (Riparian)	Townsend's big-eared bat, fisher, white-tail deer, mule deer, moose	yellow-billed cuckoo, bald eagle, Lewis's woodpecker, willow flycatcher, loggerhead shrike, eared grebe, green-tailed towhee	western toad, common garter snake
High Montane Vegetation	Canada lynx, gray wolf, wolverine, bighorn sheep, moose, mountain goat, elk	black rosy-finch	
Sparse Vegetation and Natural Barren Areas	wolverine, Townsend's big-eared bat, bighorn sheep, mountain goat	peregrine falcon, golden eagle	

Mammals

Mammals in the area include the Canada lynx (listed as threatened under the ESA), wolverine (warranted for listing under the ESA but precluded by higher priority actions), gray wolf, pygmy rabbit, Townsend's big eared bat and fisher which are listed as sensitive species by the Idaho State Director of the BLM.

The Iron Hat and North Lemhi Canada lynx Analysis Units (LAU) comprise less than 1,000 acres of habitat on BLM managed land in the SRC area. The LAUs cross onto adjacent National Forest lands to incorporate enough habitat to meet the requirements of an LAU. Based on the Canada Lynx Conservation Assessment and Strategy (LCAS) (Ruediger, 2000), BLM-administered lands within the SRC area do not provide primary lynx habitat since the forest vegetation is considered a "dry site," which lacks adequate components for species reproduction and foraging. The SFO does not have any reports of lynx occurring within the SRC area, though there have been documented sightings on the USFS managed lands above the BLM. While riparian corridors in the area may provide corridors for lynx to move through the area, the allotments that overlap the LAUs are the Camp Creek (0 acres of mapped habitat on BLM), Dummy Creek (120 acres), Hot Springs (20 acres), Iron/Lime Creek (185 acres), Poison Creek (185 acres), Second Creek (280 acres) and Tenmile (90 acres) Allotments. The mapped habitat is considered secondary habitat and is mostly Douglas-fir and lodgepole pine that is not growing in a mosaic pattern with subalpine fir stands.

The wolverine requires extensive tracts of land to accommodate large home ranges and extensive movements. The primary habitat during winter is mid-elevation conifer forest, and summer habitat is subalpine areas associated with high-elevation cirques. Summer use of high-elevation habitats is related to the availability of prey and den sites and human avoidance. Lower-elevation forests likely contain the greatest amount of ungulate carrion in winter. Den sites are often in large boulder or talus fields in subalpine cirques (IDFG, 2005). There are no records of wolverine on the BLM managed lands in the SRC, but there are records on the USFS lands above the BLM managed lands.

The gray wolf occurs in parts of Idaho characterized by a mosaic of dry and mesic conifer and subalpine forest, as well as grassland and shrubland habitats. Large areas are required by individual wolves. Den sites are often in wooded, protected sites near water (IDFG, 2005). Wolves can be found throughout the SRC area from the outskirts of Salmon to high elevation conifer habitat. The wolves in the area continue to grow in population. The BLM has no record of rendezvous or den sites on BLM managed land in the area. In 2009, the IDFG reported two documented and one suspected pack in the SRC area.

Surveys for pygmy rabbits by the SFO have failed to find them in the SRC. The nearest known locations are near the town of Lemhi to the east and in the Morgan Creek or Pahsimeroi River drainages to the south. There is one record in the Idaho Natural Heritage Database of a pygmy rabbit in the Iron/Lime Allotment. The BLM does not have any reports of Townsend's big eared bats or fishers in the area. There are records on the adjacent USFS managed lands which suggest the species could use BLM managed habitat in the area also.

Birds

Land administered by the BLM SFO occurs within either the Great Basin or Northern Rockies Bird Conservation Regions (BCR). A review of the conservation list described by the USFWS in Birds of Conservation Concern (USDI USFWS, 2008) indicates 33 species in the two BCRs. Seventeen of these species occur in both BCRs, the other 16 species occur in one or the other. Eleven of the species do not occur in the SFO area (Sibley, 2000) (IDFG, 2004), though they are present in the larger BCRs, leaving 22 species of Conservation Concern. Two of these, the yellow-billed cuckoo and greater sage-grouse, are warranted for listing under the ESA but precluded by higher priority actions. Fourteen of the species are also listed as Sensitive Species by the Idaho State Director for the BLM as occurring in the SFO area,

they are: bald eagle, yellow-billed cuckoo, greater sage-grouse, peregrine falcon, ferruginous hawk, flammulated owl, calliope hummingbird, Lewis's woodpecker, Williamson's sapsucker, willow flycatcher, olive-sided flycatcher, loggerhead shrike, sage sparrow, and Brewer's sparrow. The other eight species of conservation concern are: eared grebe, golden eagle, long-billed curlew, sage thrasher, green-tailed towhee, black rosy-finch, Swainson's hawk, and Cassin's finch. In addition three species are listed by the State Director as Sensitive and are not on the USFWS list, they are: prairie falcon, northern goshawk, and Hammond's flycatcher.

Suitable habitat for the yellow-billed cuckoo is considered to be a "large block" (a minimum of 25 acres to upwards of 99 acres) of cottonwood canopy and a thick willow understory (Federal Register, 2001). This type of habitat is not present in the overall SFO area. The only acknowledged sightings of yellow-billed cuckoo in the overall SFO area were reported at a backyard feeder just north of the city of Salmon and outside of the SRC area. The bird was likely a migrant, vagrant, or transient bird since the sighting-habitat lacked the "preferred" vegetative composition. The only place for likely habitat in the SRC area for yellow-billed cuckoo would be along the Salmon River in cottonwood stands on private land. There are no large cottonwood stands on BLM managed lands within the SRC.

Much of the SRC area is not considered habitat for greater sage-grouse. However, occasional records of sage-grouse in the corridor have been made and approximately 32,000 acres of land in the assessment area are currently identified as "key" greater sage-grouse habitat, including at least a portion of the Cabin Creek, South Gulch and Tenmile Allotments and almost all of the Hot Springs Allotment (Map 10). The SRC area is part of the Western Association of Fish and Wildlife Agencies Sage-grouse Management Zone IV, which include portions of Idaho, Nevada, Oregon, Wyoming, Utah and Montana (Stiver, Rinkes, & Naugle, 2010). Within Management Zone IV the SRC area is part of the Snake-Salmon-Beaverhead, Idaho Population. The average number of leks counted for this population per 5-yr period increased substantially from 1965–1969 to 2000–2007, however population trends, as indicated by average number of males per lek, declined by 57% from 1965–1969 to 2000–2007 (Garton, et al., In Press). Within the SRC area, approximately 6,000 acres are mapped as nesting habitat (Hot Springs Allotment); 0 as winter habitat; and 3,000 as summer habitat (Hot Springs and South Gulch Allotments) with overlap between the seasonal habitats. The Challis Sage-Grouse Local Working Group has included about 1,000 acres within the assessment area as part of the Morgan/Hat Creek/Fuller Gulch Priority Area (portions of the Cabin Creek and South Gulch Allotments); this is an area where the group felt there was a high priority for protection and restoration (CSGLWG, 2007). There is one lek mapped within the assessment area, in the Hot Springs Allotment. The lek was first discovered in 2005 and had a maximum count that year of 15 males, but only 2 males were counted in 2010. The county landfill is within one mile of the lek, including a pit for disposal of dead animals, which helps sustain a higher than normal raven population (sage-grouse nest predators).

A breeding habitat assessment for greater sage-grouse was completed in each of the three pastures in the Hot Springs Allotment. This assessment rates habitat as "unsuitable", "marginal" or "suitable" for greater sage-grouse nesting. Due to the topography and lack of greater sage-grouse sightings in the other allotments during the nesting season assessments were not completed for any of the SRC area allotments. The Clark Spring pasture was providing suitable habitat for nesting sage grouse with a slightly high sagebrush canopy of Wyoming big sagebrush and an average grass height shorter than desired. The other two pastures were rated unsuitable. The Hot Springs pasture burned in 1986 and the sage-brush has not

re-established at the study plot in the pasture. The monitoring site was providing suitable habitat in all categories except sage brush cover and height, since the Wyoming big sage brush has not re-established on the site. The portions of the pasture that have not burned in the last 25 years should be providing suitable nesting habitat. The Reservoir pasture is dominated by clayey soils that receive less than ten inches of precipitation in a year. These soils support both Wyoming big sage-brush and bluebunch wheatgrass, but not at the levels of more productive ecological sites. The site did not have the Wyoming big sagebrush density or height sufficient to provide suitable cover for sage-grouse. The average height of grass in the pasture was less than required for suitable sage-grouse habitat. While the site has limitations due to moisture and soil content there should be more bluebunch wheatgrass on the site. There were small bluebunch plants starting to grow on the site which is a sign that things are improving under the current grazing management of the pasture.

There are six raptor species which are considered sensitive by the BLM that may occur in the SRC area. Bald eagle activities within the area are concentrated along the Salmon River. These bald eagles generally utilize cottonwoods in the valley bottom, although conifers may provide perch or roosting sites. The bald eagles principally forage on fish and waterfowl, though some scavenging on animals that are winter-killed or killed by vehicles does occur. There are bald eagle nests within the SRC area, all along the Salmon River on private land. There are also records within the SRC area of flammulated owl, northern goshawk and peregrine falcon. The flammulated owl sightings have been on the USFS managed lands above the BLM. The northern goshawk has been documented using the timbered stringers in the Williams Lake area. There are two peregrine falcon nesting sites within the area, one on BLM land in the Williams Lake area. While there are no records of prairie falcon or ferruginous hawk within the SRC area, both may occur there.

Most migratory bird use is limited to the summer period due to the cool climate, low precipitation, and harsh fall, spring, and winter month conditions in the assessment area. Birds arrive during late spring (April/May) and migrate from the area in early fall (August/September). The species present during summer are most likely breeding and rearing young. They leave as the weather changes in late summer. A few species are present during the wintertime, including the bald eagle and greater sage-grouse. The other nine sensitive bird species could occur in the assessment area, and probably do, though records of their occurrence are lacking.

Amphibians and Reptiles

One amphibian, the western toad, and one reptile, the common garter snake, are on the Idaho BLM State Director's Sensitive Species list for the assessment area. There are no records of either species within the assessment area.

Fish

Fish species within the SRC area include the Sockeye salmon, which is listed as "endangered" under the ESA, and Chinook salmon, steelhead, and bull trout, which are listed as "threatened" under the ESA; as well as the Westslope cutthroat trout, which is listed as a sensitive species by the Idaho State Director of the BLM. Table 17 summarizes distribution of Threatened, Endangered, and Sensitive (TES) fish species and designated critical habitat found within the SRC area.

Distribution of TES fish species in the SRC area has been reduced from the historic extent. Fish access from the Salmon River to the tributary streams is limited from the historical ranges mostly due to

irrigation/diversion practices that started in the 1870's and that continue today. Habitat has also been modified via historical grazing practices, beaver removal, mining and other activities. Additionally, bull trout may have been limited during this period due to increased water temperatures in the lower reaches of the streams.

The introduction of eastern brook trout into the system has further affected bull trout, as these two species interbreed, producing sterile offspring. Brook trout are also more aggressive and likely to out-compete bull trout for food and cover, especially in the lower elevation, warmer stream reaches.

Table 17. TES Fish Species Distribution and Critical Habitat within the SRC area.

Species	Drainage/Stream								
	Salmon River	Hat	Iron	Rattle-snake	Williams	Perreau	Warm Spring	Poison	McKim
Chinook	X		X						
DCH	X	X	X		X	X		X	X
Sockeye	X								
DCH	X								
Steelhead	X	X	X		X		X		X
DCH	X	X	X		X		X	X	
Bull Trout	X	X	X						
DCH	X								
Cutthroat Trout	X	X	X	X	X	X	X	X	X

DCH = Designated Critical Habitat

Redband/resident rainbow trout and westslope cutthroat trout are found in almost every stream reach in the assessment area. Cutthroat trout are on a decline throughout their range due to habitat loss, dewatering, sedimentation, and competition from introduced species. Some of these introduced species, such as rainbow trout from out-of-basin, have affected the genetics of cutthroat stocks. Rainbow and cutthroat trout can tolerate warmer conditions and have remained throughout much of the assessment area. Streams and high mountain lakes within the sub-basin have been stocked by various individuals and government agencies throughout the last century. Idaho Department of Fish and Game (IDFG) started a regular stocking program in the late 1960's. They have planted five species of game fish of various strains and stocks during the last 25 years.

Private irrigation diversions are present in the SRC area. These can originate on public or private lands and often create a lower volume in the stream channel or dewater a stream segment completely. Specific stream segments with fish that are usually impacted this way on public land include: Iron, Poison, Warm Springs, Second, Rattlesnake, Henry, Williams, and Perreau Creeks.

The following grazing allotments within the SRC area contain a portion of a stream and/or river occupied by either resident fish or TES fish species: Perreau Creek, Hot Springs (Salmon River), Williams Creek, Iron/Lime Creek, Second Creek (Salmon River), Fenced Pasture (Salmon River), Poison Creek, Cabin Creek (Hat Creek), and South Gulch (Hat Creek).

The Tenmile, Dummy Creek, Camp Creek, Henry Creek, Lake Creek and Findley Basin Allotments do not have habitat for fish. These allotments contain either intermittent streams and/or non-fish bearing perennial streams that are too small to provide habitat.

Sensitive Plants

Plant species found on Salmon BLM managed lands within the SRC area designated as "sensitive species" by the Idaho State Director of the BLM include the Challis milkvetch, Idaho range lichen, the Lemhi penstemon, and Salmon twin bladderpod (Table 18). Sensitive plant species are documented in only four of the Salmon BLM allotments; Findley Basin, Hot Springs, South Gulch, and Perreau Creek (Map 11). Potential threats to these species include competition from invasive plant species, soil erosion and trampling related to cattle grazing.

Table 18. Habitat and Known Occurrence of Upland Sensitive Plant Species on Salmon BLM Managed Lands within the SRC Area.

Sensitive Plant Species	Habitat and Known Occurrence on Salmon BLM Managed Lands within the SRC Area
Challis Milkvetch	Clay slopes of Challis Volcanics weatherings comprised of loose gravel to white ashy clay, with sagebrush or shadscale. Typical habitat is a south-facing, erosive, very dry and sparsely vegetated slope. Occurs on Salmon BLM lands east of the Findley Basin Allotment, west of the Salmon River.
Idaho Range Lichen	Bentonite badlands in sagebrush steppe near the town of Salmon; occurs in the Reservoir Pasture of the Hot Springs Allotment.
Lemhi Penstemon	Early seral habitat and areas of disturbance in dry grasslands, sagebrush steppe and open ponderosa pine or Douglas-fir/grasslands; occurs between 6300 and 7200' in elevation. Occurs in the South Gulch Pasture of the South Gulch Allotment.
Salmon Twin Bladderpod	Mid-elevation talus slopes in sagebrush foothills; also in scabland, shale banks, talus slopes and gravelly soils from 4050-4600' elevation. Occurs in the South Pasture of the Perreau Creek Allotment.

Findings for Standard 8 are presented in Table 19, below.

Table 19. Evaluation Finding for Standard 8.

Allotments "Meeting the Standard"			
Cabin Creek	Camp Creek	Chipps Creek	Dummy Creek
Findley Basin	Iron/Lime Creek	Lake Creek	Poison Creek
Second Creek	South Gulch	Tenmile	Williams Creek
Allotments "Not meeting the Standard, but making significant progress toward meeting"			
Hot Springs[1]			
Allotments "Not meeting the Standard"			
Fenced Pasture	Henry Creek	Perreau Creek	

[1] Allotment is not meeting for greater sage-grouse

Allotments "Not meeting the Standard, but making significant progress toward meeting":

Hot Springs: Between 1986 and 2003 approximately 24% of the allotment was burned by wildfire. These wildfires consumed the native sagebrush in those areas, and it is just starting to reestablish itself on those acres. The majority of the burned areas support healthy stands of native grasses and forbs, as described under Standard 4. The allotment provides suitable habitat for sensitive wildlife species that rely on a mosaic of vegetation or grasslands, but sagebrush obligates do not have the habitat (sagebrush) they need. Species such as greater sage-grouse, sage sparrow and Brewer's sparrow would not have their habitat requirements met with the lack of sagebrush, especially on the southern end of the allotment. However, because sagebrush is re-establishing on the allotment, it is expected that the area will have the necessary habitat to support sagebrush obligate species in the future and is therefore making significant progress towards meeting Standard 8.

Allotments "Not meeting the Standard":

Fenced Pasture: The southern portion of the allotment has had the shrubs removed through mechanical means. The adjacent landowner has also removed grass annually, decreasing the amount of cover available for wildlife. The allotment would not provide adequate habitat for wildlife that rely on sagebrush or higher stature grasses for cover or forage, especially on the south end of the allotment. The northern end of the allotment provides adequate habitat, but is at risk given the non-native invasive species in the understory.

Henry Creek: As described under Standard 4, the vegetation on the allotment has shifted away from deep rooted perennial grasses to shallow rooted perennial grass in the understory. The allotment appears to have a dominant shrub component. The change from taller stature grasses to lower stature grasses can decrease hiding cover for some species, including migratory birds that are on the State Director's Sensitive Species list. The heavier shrub cover would provide additional cover for these species.

Perreau Creek: The decreased amount of blue bunch wheatgrass and increase in Sandberg's bluegrass and cheatgrass described under Standard 4 has an effect on wildlife, including Special Status Species. The change from taller stature grasses to lower stature grasses can decrease hiding cover for many species, including migratory birds that are on the State Director's Sensitive Species list.

Idaho Standards for Rangeland Health- Evaluation Summary

Table 20 summarizes the results of the Standards and Guidelines evaluation process by allotment. Allotments meeting, or making progress towards meeting, all applicable Standards are: Cabin Creek, Camp Creek, Chipps Creek, Dummy Creek, Findley Basin, Iron/Lime Creek, Poison Creek, Second Creek, South Gulch, Tenmile, and Hot Springs (Map 12).

Table 20. Summary of Standards and Guidelines Evaluation by Allotment.

Allotment	Std 1	Std 2	Std 3	Std 4	Std 5	Std 6	Std 7	Std 8
Cabin Creek	Met	Met	Met	Met	N/A	N/A	Met	Met
Camp Creek	Met	Met	Met	Met	N/A	N/A	Met	Met
Chipps Creek	Met	Met	Met	Met	N/A	N/A	Met	Met
Dummy Creek	Met	Met	Met	Met	N/A	N/A	Met	Met
Fenced Pasture	Met	Met	Met	Not Met	N/A	N/A	Met	Not Met
Findley Basin	Met	Met	N/A	Met	Met	N/A	N/A	Met
Henry Creek	Met	Met	Met	Not met	N/A	N/A	Met	Not Met
Hot Springs	Met	Met	Met	Met	Met	N/A	Met	Not Met - Progress
Iron/Lime Creek	Met	Met	Met	Met	N/A	N/A	Met	Met
Lake Creek	Met	Not Met	Not Met	Met	N/A	N/A	Met	Met
Perreau Creek	Met	Met	Met	Not Met	N/A	N/A	Met	Not Met
Poison Creek	Met	Met	Met	Met	N/A	N/A	Met	Met
Second Creek	Met	Met	Met	Met	N/A	N/A	Met	Met
South Gulch	Met	Met	Met	Met	N/A	N/A	Met	Met
Tenmile Creek	Met	Met	Met	Met	N/A	N/A	Met	Met
Williams Creek	Met	Met	Met	Not Met	N/A	N/A	Met	Met

Allotments that are currently not meeting, or making progress toward meeting, all applicable Standards are: Fenced Pasture, Henry Creek, Lake Creek, Perreau Creek, and Williams Creek (Map 12). These five allotments require an Authorized Officer's "determination" to document the causal factors for not achieving the Standards; this will be completed in a subsequent Determination document. The Kilpatrick property, which is not a part of any allotment and is not grazed by livestock, is not meeting for Standard 6, Seedings.

Recommendation for Management Objectives

The ID team has reviewed all of the information presented in this document and has prioritized the following objectives for project development, appropriate analysis under the NEPA, and implementation. These objectives were created to mitigate or rectify priority issues that have been discussed earlier in this document. Objectives that are required to move towards meeting the Standards are specified. Other objectives, while important for improving the SRC area, are not necessarily needed for an allotment to move towards meeting the Idaho Standards for Rangeland Health.

Required for allotment(s) to move toward meeting Standard(s):

1. In the Lake Creek Allotment, move the portion of Henry Cr. that is not in PFC, towards PFC.
2. In the Perreau Creek, Williams Creek, and Henry Creek Allotments, increase the cover of bluebunch wheatgrass and the diversity and cover of forbs, while maintaining Wyoming big sagebrush in the lower elevation understory.

Additional objectives in the SRC area:

Site Specific

1. In the Iron-Lime Allotment, improve conditions at Benjamin Springs #1 and #2.
2. In the Williams Creek Allotment, improve riparian conditions at Crib Spring.
3. Provide additional boater access to the Salmon River within the SRC area.
4. In the Perreau Creek Allotment, improve riparian habitat along Spring Creek through conifer/juniper removal.
5. In the Cabin Creek and Iron-Lime Allotments, reduce conifer encroachment into aspen stands and improve forest health in the Cabin/Ezra/Ringle Creek drainages.
6. In the Cabin Creek Allotment, identify range improvements needing maintenance in order to maintain proper cattle distribution in the Lower/Upper Ezra/Ringle pastures.
7. In the Hot Springs Allotment, protect spring source and unfenced riparian area below the Sevenmile exclosure.
8. Reduce invasive species in the Fenced Pasture Allotment.
9. Reduce weeds and increase desirable vegetation at the Kilpatrick Recreation Site.
10. Reduce erosion and maintain roads in the Williams Creek/Henry Creek Allotments.
11. Reduce erosion and maintain roads within the Cabin/Ezra/Ringle Creek areas.

Area-wide

1. Reduce invasive species along roadsides, particularly cheatgrass.

2. Continue to implement the Travel Plan and address Travel Plan issues that arise.

3. Implement a fire management strategy that includes the full range of activities to help achieve ecosystem sustainability including the "use of wildland fire" [1] consistent with BLM direction[2] for Implementation of Federal Wildland Fire Management Policy (USDA and USDI 2009). As part of this strategy, investigate and document potential control lines for wildland fire management following existing roads and/or using natural barriers to fire spread; identifying values-at-risk; and otherwise updating/refining the most recent fire management plan with this new information for state director approval.

These objectives will be explored during the 2011 field season and alternatives for addressing them will be developed. Where *Idaho Standards for Rangeland Health* Standards are not being met, and no progress is being made towards meeting the Standards, information will also be gathered to help determine the causal factors for not meeting the Standards.

[1] See National Wildfire Coordinating Group Memorandum NWCG #024-2010 titled *Terminology Updates Resulting from Release of the Guidance for the Implementation of Federal Wildland Fire Management Policy (2009)*. An electronic copy of the memorandum can be found at: http://www.nwcg.gov/general/memos/nwcg-024-2010.html.

[2] See BLM Instruction Memorandum #2009-112 titled *Updated Policy for Implementation of Federal Wildland Fire Management Policy*. An electronic copy of the memorandum can be found at: http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2009/IM_2009-112.html

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Appendices

Appendix A- Common-to-Scientific Name Crosswalk

Grass and Grass-Like		
Common Name	**Scientific Name**	**Status**
Bald spikerush	*Eleocharis erythropoda*	native
Baltic rush	*Juncus balticus*	native
Basin wildrye	*Leymus cinereus*	native
Beaked sedge	*Carex rostrata*	native
Bearded wheatgrass	*Elymus caninus*	native
Bluebunch wheatgrass	*Pseudoroegneria spicata*	native
Brookgrass	*Catabrosia aquatica*	native
Bulbous bluegrass	*Poa bulbosa*	introduced, invasive
Cheatgrass	*Bromus tectorum*	introduced, invasive
Creeping meadow foxtail	*Alopecurus arundinaceus*	native
Crested wheatgrass	*Agropyron cristatum*	introduced
Idaho fescue	*Festuca idahoensis*	native
Indian ricegrass	*Achnatherum hymenoides*	native
Kentucky bluegrass	*Poa pratensis*	native
Letterman's needlegrass	*Achnatherum lettermanii*	native
Meadow barley	*Hordeum brachyantherum*	native
Nebraska sedge	*Carex nebrascensis*	native
Needle and thread	*Hesperostipa comata*	native
Nordan crested wheatgrass	*Agropyron desertorum* cv. Nordan	introduced
Northwest Territory sedge	*Carex utriculata*	native
Pale sedge	*Carex livida*	BLM Type 4
Prairie Junegrass	*Koeleria macrantha*	native
Red top	*Agrostis gigantea*	native
Rush	*Juncus spp.*	native
Sandberg bluegrass	*Poa secunda*	native
Sedge	*Carex* spp.	native
Siberian crested wheatgrass	*Agropyron fragile*	introduced
Simple kobresia	*Kobresia simpliciuscula*	native
Smooth brome	*Bromus inermis*	introduced
Tufted hairgrass	*Deschampsia cespitosa*	native
Water sedge	*Carex aquatilis*	native

Forbs		
Common Name	**Scientific Name**	**Status**
Alkali primrose; Bluedome primrose	*Primula alcalina*	BLM Type 3
Aster; Daisy	*Aster* spp.	native
Beautiful Indian paintbrush	*Castilleja pulchella*	native
Bluebells	*Mertensia* spp.	native
Canada thistle	*Cirsium arvense*	introduced, state noxious
Cinquefoil	*Potentilla spp.*	native
Common dandelion	*Taraxacum officinale*	invasive
Common yarrow	*Achillea millefolium*	native
Cordilleran phacelia; Silverleaf phacelia	*Phacelia hastata*	native
Cushion buckwhat	*Eriogonum ovalifolium*	native
Douglas' dustymaiden	*Chaenactis douglasii*	native
Douglas-fir dwarf mistletoe	*Arceuthobium douglasii*	native
Fernleaf biscuitroot	*Lomatium dissectum*	native
Gardencress pepperweed	*Lepidium sativum*	native
Groundsel	*Senecio* spp.	native
Heartleaf arnica	*Arnica cordifolia*	native
Herb sophia	*Descurainia sophia*	introduced, invasive
Indian paintbrush	*Castilleja* spp.	native
King's sandwort	*Arenaria kingii*	native
Leafy spurge	*Euphorbia esula*	introduced, state noxious
Lemhi penstemon	*Penstemon lemhiensis*	BLM Type 3
Lewis' flax	*Linum lewisii*	native
Locoweed	*Astragalus* spp.	native
Lodgepole pine dwarf mistletoe	*Arceuthobium americanum*	native
Lupine	*Lupinus* spp.	native
Meadow milkvetch	*Astragalus diversifolius*	BLM Type 3
Milkvetch	*Astragalus* spp.	native
Canada thistle	*Cirsium arvense*	introduced, state noxious
Nettle	*Urtica spp.*	native
Nineleaf biscuitroot	*Lomatium triternatum*	native
Musk Thistle	*Carduus nutans*	introduced, state noxious
Pale agoseris	*Agoseris glauca*	native
Park milkvetch	*Astragalus leptaleus*	BLM Type 5
Parsnipflower buckwheat	*Eriogonum heracleoides*	native
Penstemon	*Penstemon* spp.	native
Plains milkvetch	*Astragalus gilviflorus*	BLM Type 3
Salmon twin bladderpod; Idaho bladderpod	*Physaria didymocarpa* var. *lyrata*	BLM Type 2

Forbs		
Common Name	**Scientific Name**	**Status**
Sandwort	*Arenaria* spp.	native
Scouringrush horsetail	*Equisetum hyemale*	native
Spotted knapweed	*Centaurea stoebe* ssp. *micranthos*	introduced, state noxious
Spotted knapweed	*Centaurea stoebe*	introduced, state noxious
Sulphur-flower buckwheat	*Eriogonum umbellatum*	native
Tufted; Desert evening primrose	*Oenothera caespitosa*	native
Western tansymustard	*Descurainia pinnata*	native
Whitetop; Hoarycress	*Cardaria draba*	introduced, state noxious
Yellow fritillary	*Fritillaria pudica*	native

Shrubs and Sub-shrubs		
Common Name	**Scientific Name**	**Status**
Antelope bitterbrush	*Purshia tridentata*	native
Basin big sagebrush	*Artemisia triendtata* spp. *tridentata*	native
Bebb willow	*Salix bebbiana*	native
Booth willow	*Salix boothii*	native
Coyote willow; Narrow-leaf willow	*Salix exigua*	native
Curl-leaf mountain mahogany	*Cercocarpus ledifolius*	native
Currant	*Ribies* spp.	native
Drummond's willow	*Salix drummondiana*	native
False mountain willow	*Salix pseudomonticola*	BLM Type 3
Geyer willow	*Salix geyeriana*	native
Gray alder	*Alnus incana*	native
Greasewood	*Sarcobatus vermiculatus*	native
Green rabbitbrush	*Ericameria teretifolia*	native
Hoary willow; Sageleaf willow	*Salix candida*	BLM Type 3
Low sagebrush; Little sagebrush	*Artemisisa arbuscula*	native
Mountain big sagebrush	*Artemisia tridentata* ssp. *vaseyana*	native
Redosier dogwood	*Cornus sericea*	native
Rubber rabbitbrush	*Ericameria nauseosa*	native
Sitka alder	*Alnus viridis* ssp. *sinuata*	native
Threetip sagebrush	*Artemisia tripartita*	native
Water birch	*Betula occidentalis*	native
Willow	*Salix* spp.	native
Wood's rose	*Rosa woodsii*	native
Wyoming big sagebrush	*Artemisia tridentata* spp. *wyomingensis*	native

Trees		
Common Name	**Scientific Name**	**Status**
Aspen	*Populus tremuloides*	native
Black cottonwood	*Populus balsamifera* ssp. *trichocarpa*	native
Cottonwoods	*Populus* spp.	native
Douglas-fir	*Pseudotsuga menziesii*	native
Engelmann spruce	*Picea engelmannii*	native
Fir	*Abies* spp.	native
Limber pine	*Pinus flexilis*	native
Lodgepole pine	*Pinus contorta*	native
Ponderosa pine	*Pinus ponderosa*	native
Rocky Mountain juniper	*Juniperus scopulorum*	native
Saltcedar	*Tamarix ramosissima*	introduced, state noxious
Spruce	*Picea* spp.	native
Subalpine fir	*Abies lasiocarpa*	native

Fish		
Common Name	**Scientific Name**	**Status**
Bull trout	*Salvelinus confluentus*	ESA Threatened
Eastern brook trout	*Salvelinus fontenalis*	Introduced
Snake River steelhead trout	*Oncorhynchus mykiss*	ESA Threatened
Snake River spring/summer Chinook salmon	*Oncorhynchus tshawytscha*	ESA Threatened
Westslope cutthroat trout	*Oncorhynchus clarki lewisii*	ID BLM Sensitive
Redband/resident rainbow trout	*Oncorhynchus mykiss*	Introduced
Mountain whitefish	*Prosopium williamsoni*	No Special Status
Various sculpin	*Cottus spp.*	No Special Status
Various suckers	*Castostomus ssp.*	No Special Status
Speckled dace	*Rhinichthys osculus*	No Special Status
Redside shiner	*Richardsonius balteatus*	No Special Status

Amphibians and Reptiles		
Common Name	**Scientific Name**	**Status**
common garter snake	*Thamnophis sirtalis*	ID BLM Sensitive
western toad	*Bufo boreas*	ID BLM Sensitive

Birds		
Common Name	**Scientific Name**	**Status**
bald eagle	*Haliaeetus leucocephalus*	ID BLM Sensitive
Brewer's sparrow	*Spizella breweri*	ID BLM Sensitive
calliope hummingbird	*Stellula calliope*	ID BLM Sensitive
ferruginous hawk	*Buteo regalis*	ID BLM Sensitive
flammulated owl	*Otus flammeolus*	ID BLM Sensitive
greater sage-grouse	*Centrocercus urophasianus*	ESA Candidate Species
Hammond's flycatcher	*Empidonax hammondii*	ID BLM Sensitive
Lewis's woodpecker	*Melanerpes lewis*	ID BLM Sensitive
loggerhead shrike	*Lanius excubitor*	ID BLM Sensitive
northern goshawk	*Accipiter gentilis*	ID BLM Sensitive
olive-sided flycatcher	*Contopus cooperi*	ID BLM Sensitive
peregrine falcon	*Falco peregrinus*	ID BLM Sensitive
prairie falcon	*Falco mexicanus*	ID BLM Sensitive
sage sparrow	*Amphispiza belli*	ID BLM Sensitive
Williamson's sapsucker	*Sphyrapicus thyroideus*	ID BLM Sensitive
willow flycatcher	*Empidonax traillii*	ID BLM Sensitive
yellow-billed cuckoo	*Coccyzus americanus*	ESA Candidate Species

Mammals		
Common Name	**Scientific Name**	**Status**
Canada lynx	*Lynx canadensis*	ESA Threatened Species
elk	*Cervus elaphus*	
fisher	*Martes pennanti*	ID BLM Sensitive
gray wolf	*Canus lupus*	ID BLM Sensitive
moose	*Alces alces*	
mountain goat	*Oreamnos americanus*	
mule deer	*Odocoileus hemionus*	
white tail deer	*Odocoileus virginianus*	
pronghorn	*Antilocapra americana*	
pygmy rabbit	*Brachylagus idahoensis*	ID BLM Sensitive
Rocky Mountain bighorn sheep	*Ovis canadensis canadaensis*	
Townsend's big eared bat	*Corynorhinus townsendii*	ID BLM Sensitive
wolverine	*Gulo gulo*	ID BLM Sensitive

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Appendix B – Rangeland Health Assessment Sites and Allotment Overviews