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Evanston-Mountain
View Ranger District

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Environmental Assessment

Stillwater Sheep and Goat Allotment

Evanston-Mountain View Ranger District
Uinta-Wasatch-Cache National Forest
Summit County, Utah

Occurs in Portions of:
Townships 1 and 2 North, Range 10 East, Salt Lake Meridian and
Township 1 South, Range 10 East, Uintah Meridian

Figure 1: Stillwater Fork, Christmas Meadows.

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Environmental Assessment
Stillwater Sheep and Goat (S&G) Allotment

Uinta-Wasatch-Cache National Forest
Evanston-Mountain View Ranger District
Summit County, Utah

Lead Agency: U.S. Department of Agriculture, Forest Service

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Abstract: The Uinta-Wasatch-Cache National Forest proposes to continue to authorize livestock (sheep) grazing on the Stillwater Sheep and Goat (S&G) Allotment using adaptive management in a manner that continues to meet or move toward desired conditions identified in the 2003 Revised Forest Plan. This proposal involves following current Revised Forest Plan Standards and Guidelines and implementing grazing management strategies that use current range management concepts and technology to control the time, intensity, and frequency of grazing using a variety of management practices. The allotment is located within the Evanston-Mountain View Ranger District of the Uinta-Wasatch-Cache National Forest in Summit County, Utah.

The Forest Service developed two alternatives, including: Alternative 1 – Proposed Action and Alternative 2 – No Grazing. In Alternative 1, the Forest Service is proposing to continue to authorize grazing on the Stillwater S&G allotment. In Alternative 2, permitted livestock grazing would be eliminated on the allotment two years after a notice to the permittee is issued.

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I. PURPOSE OF AND NEED FOR ACTION

The Forest Service has prepared this Environmental Assessment in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. This Environmental Assessment discloses the direct, indirect, and cumulative environmental impacts that would result from the Proposed Action and No Grazing Alternatives.

Additional documentation may be found in the project planning record located at the Evanston-Mountain View District Office in Mountain View, Wyoming. The project record is available for public review and contains planning records, Interdisciplinary Team notes, specialist reports and letters received during the environmental analysis.

A. Background

The Stillwater Sheep and Goat (S&G) Allotment is located on the north slope of the Uinta Mountains. The elevation of the allotment varies from just over 8,000 feet near Lily Lake on the northern end to nearly 12,000 feet along the Uinta crest at Kletting and Hayden Peaks. It is located in Summit County, Utah and is approximately 26,700 acres. A Vicinity Map of the Allotment is located at the end of this document in Appendix A.

Livestock grazing has been permitted on the Uinta-Wasatch-Cache National Forest since shortly after establishment beginning in 1906. Domestic livestock grazing on the National Forest has occurred continuously since that time. The regulation of grazing has increased over time. The Forest Service, with the grazing permittees, has developed annual grazing plans for the Stillwater Allotment since the 1940's. Allotment boundaries, livestock numbers, seasons of use, and grazing management practices have been adjusted many times since domestic livestock grazing has been authorized.

Term grazing permits are generally valid for 10 years from the date of issuance. Section 504(a) of the Rescission Act of 1995 requires each National Forest System unit to establish and adhere to a schedule for the completion of environmental analysis and decisions on all allotments within the National Forest. Section 504 (b) of Public Law 104-19 provides: *"Notwithstanding any other law, term grazing permits which expire or are waived before the NEPA analysis and decision pursuant to the schedule developed by individual Forest Service System units, shall be issued on the same terms and conditions and for the full term of the expired or waived permit. Upon completion of the scheduled NEPA analysis and decision for the allotment, the terms and conditions of existing grazing permits may be modified or re-issued, if necessary to conform to such NEPA analysis."* Grazing on the Stillwater Allotment is being continued in accordance with this direction.

B. Purpose and Need for Action

Recent resource information collected by specialists shows that the current level of livestock management is meeting or moving toward desired condition objectives identified in the 2003 Land and Resource Management Plan (Revised Forest Plan) for the Wasatch-Cache National Forest (USDA Forest Service 2003a). Management is consistent with Revised Forest Plan Standards, Guidelines, Goals, and Objectives. The purpose and need is to authorize livestock (sheep) grazing in a manner that continues to meet or move towards the desired conditions defined in the Forest Plan, Wasatch-Cache National Forest (see Section 1.5). This analysis would comply with Section 504 of Public Law 104-19 to schedule and complete NEPA analyses on grazing allotments where needed.

Grazing is a sustainable use of National Forest System (NFS) lands and is permissible through the Multiple Use Sustained Yield Act of 1960, as amended. The Stillwater Allotment lies within the Western Uintas Management Area and contain lands considered capable and suited for domestic livestock grazing in the Forest Plan. (FEIS for the Forest Plan, pg. B9-2; Forest Plan, pg. 4-126) Continued domestic livestock grazing is consistent with the goals, objectives and guidelines of the Forest Plan.

It is Forest Service policy to make forage available to qualified livestock operators from lands suitable for grazing consistent with land management plans (FSM 2203.1; 36 CFR 222.2(c)).

It is Forest Service policy to continue contributions to the economic and social well being of people by proving opportunities for economic diversity and by promoting stability for communities that depend on the range resource for their livelihood (FSM 2202.1).

The Forest Plan, which directs the management of lands encompassing the project area, has as one of its desired conditions to permit livestock grazing use within active allotments and to recognize the importance of permitted grazing on the national forest to local agricultural communities, maintenance of open space, and the western ranching lifestyle (pg. 4-126).

C. Proposed Action

The action proposed by the Forest Service is to continue to authorize grazing on the Stillwater S&G Allotment through issuance of a term grazing permit with an associated new Allotment Management Plan (AMP). The AMP objectives will focus on implementing the best scientifically based management practices available, designed to perpetuate healthy rangeland conditions or improve rangeland health and will be consistent with this Alternative. The AMP will be completed and approved as soon as practical and without further NEPA documentation.

The Proposed Action would employ an adaptive management strategy, which adjusts the timing, intensity, frequency, and management of grazing on the allotment as needed to meet Forest Plan standards and guidelines, and that would continue to meet or satisfactorily move forest resources toward desired conditions and meet Forest Plan objectives. The adaptive management strategies applied will be the best scientifically based management practices available, designed to perpetuate healthy rangeland conditions or improve rangeland health. Current best management practices consist of: 1) controlling the intensity of grazing by managing the duration of grazing, 2) varying the time of grazing, and 3) providing rangeland vegetation the opportunity to either grow before grazing or regrow after grazing.

Monitoring would determine the need and frequency for administrative adjustments in the timing, intensity, frequency, and/or management of grazing. Vegetation response to grazing use and other environmental factors affecting a plant's ability to grow and/or regrow will be evaluated each year and used as an aid in planning the following year's livestock use. The specific manner in which livestock grazing will occur on the allotment will be based on management direction in the AMP, and possible additional adaptive management direction developed each year at an annual planning meeting. The specific grazing strategy developed at the annual meeting will be incorporated into Annual Operating Instructions (AOI) for the allotment. Management direction developed in the yearly AOIs will be consistent with this Alternative.

The Proposed Action is designed to fully implement all applicable standards, guidelines, goals and objectives defined in the Revised Forest Plan. If long-term or yearly monitoring determines that objectives are not being met, then the management actions will be adjusted. As desired resource conditions are currently being achieved, it is expected that they will continue to be achieved following the

implementation of the Proposed Action. Additional information pertaining to the Proposed Action can be found in Chapter II of this Environmental Assessment (EA). Objectives and Evaluation of Objectives are discussed in Chapter II in Section B.1.

D. Decision Framework

Based upon the effects of the alternatives, the Evanston-Mountain View District Ranger will decide whether or not to continue permitting livestock grazing on the allotment and if so, under what conditions (i.e., design features, mitigation, monitoring). If livestock grazing is authorized, an Allotment Management Plan (AMP) will be developed to incorporate and implement this decision. The AMP will be completed and approved and is based on the NEPA documentation in this EA.

E. Public Involvement

The Evanston-Mountain View Ranger District initiated scoping for this project on December 5, 2008. A scoping letter was mailed to approximately 77 individuals, summer home owners, groups, public land agencies, and government entities. The scoping letter was also posted on the Web at: http://www.fs.fed.us/r4/uwc/projects/wcnf/proposed/index.shtml. On December 8, 2008 a news release was provided to the *Uinta County Herald*. The project was also identified in the Schedule of Proposed Actions (SOPA) for the Uinta-Wasatch-Cache National Forest which is also posted on the Forest Service Web site at: http://www.fs.fed.us/sopa/. Four comment letters were received in response to scoping. A copy of the scoping letter and mailing list are in the official project file, which is available for review at the Evanston-Mountain View Ranger District Office in Mountain View, Wyoming.

In accordance with 36 CFR 215.6 regulations for notice and comment, a detailed description of the Proposed Action and alternatives was distributed on August 19, 2009 to the permittees, to those who commented on the December 5, 2008 scoping notice, and all others on the original scoping notice contact list informing them of the documents' availability and requesting comments. A request for comments was published in the Legal Notice section of the "*Uinta County Herald*" on August 25, 2009, and also on the Web on the Forest's website. In response, five comment letters were received. Those comments are summarized in Chapter IV.

F. Forest Plan Direction

The 2003 Revised Forest Plan sets forth management direction for managing the land and resources of the Wasatch-Cache National Forest, and among other things, describes management goals and objectives, resource protection methods, and desired resource conditions. The Forest Plan is the result of programmatic analysis, which is addressed in the Forest Plan FEIS (USDA Forest Service 2003a). This environmental analysis incorporates applicable direction from the Revised Forest Plan.

The Stillwater S&G Allotment EA is a project-level analysis; its scope is confined to addressing the significant issues and possible environmental consequences of the project. Where appropriate, the Stillwater S&G Allotment EA tiers to the Forest Plan FEIS, as encouraged by 40 CFR 1502.20.

Chapter 4 of the Revised Forest Plan contains Forest-wide as well as area-specific management direction (USDA Forest Service 2003). The Revised Forest Plan Standards and Guidelines pertinent to this analysis are summarized in Tables 2 and 3.

The Forest Plan divides National Forest System lands into management areas based on resource needs and opportunities. The Stillwater Allotment is within the Western Uintas Management Area.

The allotment is located within the following Management Prescriptions: 1.2 (Wilderness - Opportunity Class II), 1.3 (Wilderness - Opportunity Class III), 2.5 (Scenic Byways), 3.1a (Aquatic Habitat Emphasis), 3.2d (Terrestrial Habitat Emphasis – Developed), 4.1 (Backcountry Non-Motorized Emphasis), and 4.4 (Dispersed Motorized Emphasis). See Revised Forest Plan, Management Prescriptions – Western Uintas Management Area Map. Within these management prescriptions, livestock grazing is allowed on open allotments to meet site-specifically defined desired conditions. In the 3.1A management prescription, grazing is allowed with a more restrictive utilization standard for Riparian Class 1 (Revised Forest Plan, pages 4-65 to 4-73).

Consideration of Best Available Science

The scientific integrity of the discussions and analyses in this EA and specialist reports included in the project record are based on best available science and include discussion of the methodology used in the analysis, scientific sources that are relied upon and referenced, relevant literature that is reviewed, scientific literature that is cited by the public are considered when shown to be relevant, opposing views are discussed when they are raised by the public or other agencies, and the disclosure of incomplete or unavailable information.

Scientific literature cited in public comments is addressed in responses to public comments and the responses are incorporated in the technical report and/or included in the environmental documents. Some references present different conclusions reached by researchers. When opposing views have been raised by the public or other agencies they are discussed either in the public comments, technical report or in the environmental document. The information is adequately complete for assessing the environmental effects of the proposal. The information that is collected is expected to represent most of the conditions found in the area at the present time.

G. Issues

The Forest Service identified relevant issues to be addressed in the EA. Issues analyzed in depth were defined as those directly or indirectly caused by implementing the Proposed Action.

Issues to Be Analyzed in Depth

This section displays four key issues identified during the scoping process, but does not contain a comprehensive list of all the issues considered in the analysis. Those issues that were determined to be analyzed in depth in the evaluation of the alternatives are: 1) Rangeland Health, 2) Aquatic and Riparian Conditions, 3) Wildlife Habitat, and 4) Recreation / Wilderness. Refer to the project record for additional information on these issues.

Issue 1. Rangeland Health - Livestock grazing can cause changes in rangeland plant composition, plant community structure, and ground cover, and affect rangeland health and productivity.

Rangeland health is defined by the National Academy of Sciences as “the degree to which the integrity of the soil and ecological processes of rangeland ecosystems are sustained and/or the degree of integrity of the soil and ecological processes that are most important in sustaining the capacity of rangelands to

satisfy values and produce commodities." The Revised Forest Plan established the following direction for managing rangelands; "Manage rangeland ecosystems so they support vegetation with adequate ground cover to protect watersheds and plant communities with desired species composition, structure and function dominated by desired perennial grasses and forbs, with a range of shrub cover (USDA Forest Service 2003a, page 4-32)."

Grazing by herbivores can have significant effects on rangeland health and productivity. The frequency of grazing, the intensity of grazing, and the opportunity for plants to grow before grazing or regrow following grazing are factors that affect rangeland health and productivity. Grazing that occurs over too long a period of time or that allows plants to be too severely grazed or that does not allow for plants to grow before grazing or regrow after grazing during the growing season will negatively impact range plants. Conversely, plants that are never grazed, especially grasses, may become coarse and overgrown. In areas where wild ungulate grazing would not occur, this may cause several things to happen. Plants may begin to grow at a later date, as the plant growth points are covered up by dead plant material. For some species of bunchgrasses over time this could result in senescence of the plant. Lack of grazing will also cause grasses to become less palatable to herbivores, as there is a larger percentage of woody material in the plant. (Rhodes and Sharrow 1990).

Properly managed grazing will account for the needs of the plants as well as the needs of the herbivores. Properly managed grazing will also allow for rare plant species and native plant species to reproduce, grow, and regrow in their natural habitats.

- *Indicator used to compare alternatives:* A qualitative estimate of the effects on range condition and trend which includes plant composition and ground cover.

Issue 2. Aquatic and Riparian Conditions - Livestock grazing can cause trampled stream banks and altered riparian plant composition and community structure, and affect riparian conditions, stream function, and water and fisheries resources.

Livestock grazing can have significant effects on riparian conditions and water resources. As with upland rangeland areas, the frequency of grazing, intensity of grazing, and the opportunity for plants to grow before grazing or regrow after grazing are factors that affect the impacts of grazing on riparian vegetation. In addition to indirect effects, grazing can directly affect stream bank conditions. While grazing impacts riparian vegetation as described, it can also physically affect the stream banks proper. Livestock can physically trample and cause bank failure affecting instream habitat. While the geology of the area affects stream bank stability, in general, the longer the time period livestock graze along a stream, the greater the chances that bank damage will occur.

- *Indicators used to compare alternatives:*
  - A qualitative estimate of the effects on riparian vegetation composition, trend and community structure.
  - A qualitative estimate of the effects on stream conditions including stream bank stability and water quality.
  - A qualitative assessment of the effects on fish habitat conditions and on fish populations and trends (including aquatic Threatened, Endangered and Forest Service Sensitive species, and on aquatic Management Indicator Species).

Issue 3. Wildlife Habitat - Livestock grazing can cause changes in plant composition and

structure, and disturb wildlife, and affect wildlife habitat conditions and populations.

The Stillwater S&G Allotment provides habitat for numerous species of wildlife. The key habitats for wildlife that could be affected by livestock grazing on the allotments are aspen, grasslands, shrublands, and riparian areas. These habitat types are utilized by the Management Indicator Species (MIS) (i.e., northern goshawk, beaver, and snowshoe hare), migratory birds and Threatened, Endangered, or Sensitive Species (TES).

Management indicator species (MIS) are species selected because changes in their numbers are believed to indicate the effects of management activities on a range of species. One of the factors considered when selecting MIS is their close tie to the communities they represent. Management indicator species for the key terrestrial wildlife habitats on the allotment could be affected by livestock grazing. Livestock grazing can affect their distribution and habitat on the allotment through competition for available forage. Grazing has the potential to impact future stands of aspen and willow components that supply important forage and building materials utilized by beaver. The goshawk preys on large-to-medium-sized birds and mammals, which it captures on the ground, in trees, or in the air. Specific habitat attributes used by these prey species include herbaceous and shrubby understories that can be affected by livestock grazing. Conversely, livestock grazing can stimulate regrowth and provide more palatable nutritious forage and have a positive effect for some small mammals, such as the snowshoe hare.

- *Indicators used to compare alternatives:*
  - A qualitative assessment of the amount and kind of forage available for wildlife in key habitats.
  - A qualitative assessment of the effects on habitats and the viability threatened, endangered, species of concern, and Forest Service sensitive species of wildlife potentially present in the allotment.
  - A qualitative assessment of the effects on habitats and population trends of Management Indicator Species (MIS) on the allotment.
  - A qualitative assessment of the effects on wildlife distribution patterns.

Issue 4. Recreation/Wilderness - Livestock grazing can disturb recreation visitors and cause changes in ecological conditions, and affect recreational and wilderness experiences.

Within the Stillwater Allotment there are many recreation opportunities including several developed facilities. During mid-July, August, and the first two weeks in September, recreationists may encounter livestock on the allotment. Livestock grazing can displace visitors and make popular hiking trails, fishing spots, and campsites undesirable.

About 12,000 acres of the Allotment is within Wilderness. The presence of livestock in the wilderness can also alter an individual's wilderness experience.

- *Indicators used to compare alternatives:*
  - A qualitative assessment of the effects on recreation users.
  - A qualitative assessment of the effects on roadless and wilderness characteristics.

Issues Eliminated from Detailed Study

Some issues were eliminated from detailed study because they were: 1) outside the scope of the proposed

action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. The Council for Environmental Quality NEPA regulations requires this delineation in 40 CFR Sec. 1501.7, "…identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (40 CFR 1506.3)…" The following topics are not covered in detail in the EA, but are discussed briefly below to add to the overall understanding of the project:

Open Space Provided by Grazing

The ranching family permitted on the Stillwater Allotment owns a total of approximately 8,000 acres in Uinta County, Wyoming that is used as part of the ranching operation. In addition to this deeded land, the ranch leases an additional 15,000 acres of private land in Uinta County for grazing. These deeded and leased lands provide a combined total of 23,000 acres of undeveloped open space in Uinta County. There are 716,738 acres of privately owned lands in Uinta County (University of Wyoming, Department of Geography and Recreation). The 23,000 acres of deeded and leased land tied to this ranch represents 3% of the total private lands owned in Uinta County. This undeveloped open space provides wildlife habitat in the lower elevations, below the National Forest, in Uinta County.

In 2002 the University of Wyoming, Agricultural Experiment Station in cooperation with Uinta County, conducted a survey of residents in and around Uinta County. This survey was conducted in order to determine resident and landowner preferences for rural land use. Of those individuals surveyed, 84% felt that undeveloped open space in Uinta County was an important characteristic to conserve (Mcleod et al. 2002).

Economic Effects to Permittee

The elimination of livestock grazing on the allotment would negatively impact the financial well being of the permittee. The ranch would be forced to find alternate summer range for its livestock. In 2008, the National Forest grazing fee per animal unit month was $0.27 for a ewe/lamb pair. On average, private land rates are approximately $3.00 per animal unit month. Assuming the ranch could find private land pasture in the summer, they would experience a significant increase in the amount they would pay per animal unit month.

Heritage Resources

Heritage resources are both the physical remains of, and knowledge about, past human activity on the Uinta-Wasatch-Cache National Forest. They include archaeological sites, artifacts, historic document collections, rock art, Forest administrative buildings, traditional plant gathering and ceremonial places, and human-altered landscapes (including tie-hacking and mining districts). Heritage resources are managed within the context of overall Forest management for the long-term benefit of all Americans.

Native American groups have occupied the Uinta Mountains, and adjoining areas, for at least 14,000 years. The period of occupation is subdivided into several stages. The major subdivisions are: Paleo-Indian (14,000(+) to 8,500 B.C.); Archaic (8,500 B.C. to 1,550 B.C.); Fremont occupations/influence and Archaic continuation (1,550 B.C. to 700 B.C.); Archaic (700 B.C. to 400 B.C.); Protohistoric and Historic Period (400 B.C. to circa 1930). Archaeological materials associated with the Native American occupation of the Uinta Mountains consist of surface and buried deposits indicative of Native American cultures, in open air sites and rockshelter contexts.

Historic resources in the study area are most commonly associated with logging activities. Historic logging took place in two phases. An early phase, dating between the late 1860's to 1911, was

characterized by small groups of independent loggers. Many of these men were engaged in the production of railroad ties and were often referred to as "tie-hackers." The second phase of logging ran from 1912 through the 1930's, when the Standard Timber Company organized logging camps and turned the logging operation into a corporately run enterprise. Remnants of logging cabins, roads, flumes, and other associated features can be found throughout the north slope of the Uinta Mountains. Agriculture uses such as stock raising would have also been prevalent in and around the Uinta Mountains with the arrival of homesteaders in the late 1800's.

In compliance with 36 CFR 800, and the National Historic Preservation Act, The USDA Forest Service, in consultation with the Utah State Historic Preservation Office (Dykmann 2008), has made the determination that continued grazing in this area will not adversely effect historic properties as per 36 CFR 800.5(b).

II. ALTERNATIVES INCLUDING THE PROPOSED ACTION

The Forest Service developed two alternatives, including: Alternative 1 – Proposed Action and Alternative 2 – No Grazing. The alternatives were developed to address and define issues identified by the interdisciplinary team, through public scoping, and through consultation with specialists from the Forest Service, Utah Division of Wildlife Resources, and U.S. Fish and Wildlife Service.

A. Alternatives Eliminated From Detailed Study

Federal agencies are required by the National Environmental Policy Act (NEPA) to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14).

An alternative to eliminate grazing in the High Uintas Wilderness on this allotment was considered, but dismissed from detailed study.

The presence of livestock grazing within wilderness areas is addressed in Section 4(d)(4)(2) of the Wilderness Act which states: “the grazing of livestock, where established prior to the effective date of this Act, shall be permitted to continue subject to such reasonable regulations as are deemed necessary by the Secretary of Agriculture.” Forest Service regulation (36 CFR 393.7) also states that grazing in wilderness areas will be controlled under the general regulations governing the grazing of livestock on National Forests.

The Utah Wilderness Act of 1984 designated the High Uintas Wilderness. The Utah Wilderness Act incorporated Section 108 of the Colorado Wilderness Act which included House Committee Report Language stating: "...there shall be no curtailment of grazing permits or privileges in an area simply because it is designated as wilderness." Grazing is a historical use in the High Uintas Wilderness. In addition, Section 303 of the Utah Wilderness Act of 1984 noted that recreation conflicts alone would not be the determining factor in the removal of livestock from those newly established Wilderness Areas…”

In addition, capability and suitability of lands for livestock grazing was considered in development of the 2003 Revised Forest Plan. The Forest Plan recognized that grazing in wilderness was occurring and determined that this was acceptable (Forest Plan, p. 4-64).

This alternative was dismissed from detailed study because existing resource conditions are meeting or moving toward the desired condition objectives.

B. Alternatives Considered in Detail Including the Proposed Action

This section describes the alternatives considered in detail that will be analyzed in the EA. The Proposed Action, Alternative 1, addresses the purpose and need to continue meeting or move resources towards desired future condition. The National Environmental Policy Act requires examination of a “no action” alternative. The no action alternative can be interpreted to be no grazing, as in Alternative 2.

1. Alternative 1 – Proposed Action

The action proposed by the Forest Service is to continue to authorize grazing on the Stillwater S&G

Allotment through issuance of a term grazing permit with an associated new Allotment Management Plan (AMP). The AMP will focus on implementing the best scientifically based management practices available, designed to perpetuate healthy rangeland conditions or improve rangeland health and will be consistent with this Alternative. The AMP will be completed and approved as soon as practical and without further NEPA documentation.

The Proposed Action would employ an adaptive management strategy, which adjusts the timing, intensity, frequency and management of grazing on the allotment as needed to meet Forest Plan standards and guidelines, and that would continue to meet or satisfactorily move forest resources toward desired conditions and meet Forest Plan objectives. The adaptive management strategies applied will be the best scientifically based management practices available, designed to perpetuate healthy rangeland conditions or improve rangeland health. Current best management practices consist of: 1) controlling the intensity of grazing by managing the duration of grazing, 2) varying the time of grazing, and 3) providing rangeland vegetation the opportunity to either grow before grazing or regrow after grazing.

Monitoring would determine the need and frequency for administrative adjustments in the timing, intensity, frequency, and/or management of grazing. Vegetation response to grazing use and other environmental factors affecting a plant's ability to grow and/or regrow will be evaluated each year and used as an aid in planning the following year's livestock use. The specific manner in which livestock grazing will occur on the allotment will be based on management direction in the AMP, and possible additional adaptive management direction developed each year at an annual planning meeting. The specific grazing strategy developed at the annual meeting will be incorporated into yearly Annual Operating Instructions (AOI) for the allotment. Management direction developed in the yearly AOIs will be consistent with this Alternative.

Objectives

Desired conditions for the management areas applicable to the Stillwater S&G Allotment are found in the Forest Plan as follows: Western Uintas Management Area (pages 4-176 through 4-190). In accordance with direction in the Forest Plan (see Forest Plan Appendix X-5), the interdisciplinary team (ID Team) has reviewed and in some cases refined or supplemented the Forest Plan prescribed DFC to be more specific to the project area and the Proposed Action. The refinements/supplements are consistent with the Forest Plan prescribed DFCs, and are outlined in the Table 1.

Table 1: Additional Site-Specific Desired Conditions.

Resource Indicator	Applicable Component of the Forest Plan Desired Future Condition	Additional Site-Specific Desired Condition
Soil productivity	Most soils have at least minimal protective ground cover. Soils have adequate physical properties for vegetative growth and soil-hydrologic function. Degradation of soil quality and loss of soil productivity is prevented. Soil productivity, quality, and function are restored where adversely impaired and contributing to an overall decline in watershed condition.	Soils will be managed to ensure that abiotic characteristics are functioning properly, such as the maintenance of the A-horizon, and the absence of pedestaling, rills, gullies, sheet erosion or soil deposition. Additionally, riparian soils will be managed to ensure that erosion deposition is occurring at acceptable levels, relative to the site, to allow for stream channel stabilization.

Resource Indicator	Applicable Component of the Forest Plan Desired Future Condition	Additional Site-Specific Desired Condition
		Minimal protective ground cover is defined by Forest Plan standard S7 as at least 85% of potential. After reviewing the 2003 Forest Plan ground cover potentials on page VII-1 the ID Team determined that additional allotment specific ground cover potentials are needed to adequately represent the major cover types found on the allotment. Ground cover potentials listed on Table 5.1 in the Forest Plan Monitoring Report (USDA Forest Service 2005) were used to provide additional ground cover potentials for cover types not listed in the 2003 Forest Plan. For ground cover on this allotment the ID Team has determined that the desired condition is to provide for an upward/static trend for the existing monitoring sites listed on Table 10 of this document while achieving at least 85% potential, as shown below. Additionally, for any new monitoring sites established in the following cover types, ground cover shall fall within the range of ground cover potentials described in the 2003 Forest Plan and 2005 Forest Plan Monitoring Report: • Aspen 90-98 (85%=77-83) (Forest Plan, page VII-1) • Uinta Alpine Grassland 97-100 (85%=82-85) (Forest Plan, page VII-1) • Uinta alpine, upland turf and meadow communities 80-100 (85%=68-85) (Forest Plan Monitoring Report 2005, Table 5.1) • Uinta Alpine erosional surface (including talus) communities 33-85 (85%=28-72) (Forest Plan Monitoring Report 2005, Table 5.1)
Riparian Areas, Springs, Wetlands and Aquatic Habitats	Riparian areas have a range of vegetative structural stages that are	Maintain or improve riparian areas to provide for healthy conditions

Resource Indicator	Applicable Component of the Forest Plan Desired Future Condition	Additional Site-Specific Desired Condition
	at or moving toward properly functioning condition, provide a transitional zone between upland terrestrial habitats and aquatic habitats, and have the features necessary to promote stable stream channels and diverse habitat conditions. Desirable riparian vegetation occupies the historical floodplain. Riparian areas provide for fish, wildlife, and water quality requirements. Habitats will be managed to maintain cool, clear water and well-vegetated stream banks for cover and bank stability. Cool water temperatures will be preserved through well-vegetated banks. Spring sources and associated wetlands in the Western Uintas Management Area will be protected from excessive use and will be restored to proper functioning. Riparian areas will be protected from overuse and trampling from livestock grazing and recreation uses. Spring sources will be fenced and provide water for livestock.	with an upward/static trend, by maintaining Properly Functioning Conditions (PFC) on all streams. Class I riparian areas within the project area listed in the Forest Plan are: East Fork Bear River, Hayden Fork, Ostler Fork and Stillwater Fork. (USFS 2003, LRMP p. VII-6) In addition to the riparian areas identified in the Forest Plan and listed above, in accordance with Forest Plan direction (p. VII-3) the ID Team has identified the following Class I riparian areas: Bear River, the streams below Ryder Lake and McPheters Lake to the confluence with Stillwater Fork, and the stream below Kermsuh Lake to the confluence with Stillwater Fork. Only one Class II riparian area was listed in the Forest Plan for the project area: Main Fork Stillwater Fork (USFS 2003, p. VII-7). In accordance with Forest Plan direction (p. VII-3), the ID Team has identified the following Class II riparian areas: streams in West Basin with perennial flow and not identified as Class I, stream reach above McPheters Lake, and stream reach above Ryder Lake. All riparian areas not identified above as Class I or II are Class III riparian areas. Riparian areas will have adequate deep-rooted vegetation or armoring along banks to allow for sediment filtering and erosion prevention. Proper function of wetlands and riparian areas associated with springs will be maintained to meet or exceed conditions outlined in Forest Plan standards and guidelines S24, S25, S26, G4 and G7. (See Mitigation and Management Requirements Section below).

Resource Indicator	Applicable Component of the Forest Plan Desired Future Condition	Additional Site-Specific Desired Condition
		Undisturbed stream banks exist on at least 80% of Class I riparian areas. Pool-riffle ratios are approximately 1:1 in fish-bearing streams. Water temperatures in fish-bearing streams are not to exceed 20°C.
Upland vegetation	Maintain upland (sagebrush, mountain brush, grassland) plant communities are dominated by desired perennial grasses, forbs, and have a range of shrub cover. Associated herbaceous and woody vegetation provides for plant communities that are diverse in seral status and structure and provide food and habitat for wildlife, forage for livestock, and a variety of recreational opportunities and aesthetic values.	Maintain or improve rangelands to provide for healthy conditions with an upward/static trend by ensuring that species composition is dominated by native perennial vegetation and desirable native plant species with high to moderate erosion control potentials relative to the site. Ground cover is maintained at 85% of its potential range for each vegetation cover type as defined above.
Riparian vegetation	Riparian areas have a mix of seral and climax vegetation that is at or approaching PFC. Trees, willows, dogwood, birch, alder, sedges, rushes and hydric grasses, depending on stream substrate, gradient, and elevation, dominate riparian areas. These areas provide healthy self-perpetuating plant communities. Riparian plant habitats and rare riparian species will be protected from trampling and overuse by livestock grazing and recreational uses.	Streams and riparian areas will be managed to ensure that healthy ground cover exists relative to the site, with Class I riparian areas maintaining 70% or more late-seral vegetation communities, Class II riparian areas maintaining 60% or more late-seral vegetation communities, and Class III riparian areas maintaining 40% or more late-seral vegetation communities, (2003 Forest Plan page 4-37) and that the health and age structure of the vegetation is at acceptable levels for the site.
Livestock Management	Livestock grazing is a permitted use. Grazing levels will be adjusted and managed with up-to-date Allotment Management Plans (AMPs). AMPs prescribing rest and deferred rotation grazing systems and riparian pastures will be in place. Structural improvements such as fences and water developments will be constructed or reconstructed and maintained to improve animal distribution and control. Structural improvements that are not needed will be removed from the forest. Grazing permit holders will move	For riparian areas, adequate vegetative cover (as defined by the heights prescribed in Forest Plan standards S24 and S25) provide filtering of runoff, protection of the soil, and habitat for wildlife in riparian areas. Riparian shrub and trees are perpetuated by retaining at least 50% of annual growth of these plants (i.e., as provided for in Forest Plan standard S26). (See Mitigation and Management Requirements Section below).

Resource Indicator	Applicable Component of the Forest Plan Desired Future Condition	Additional Site-Specific Desired Condition
	livestock as needed to meet management objectives for the ground. Ongoing ecosystem monitoring will be used to refine standards. Permit holders will share responsibility with the Forest Service for monitoring use, and will hold full responsibility for movement and control of livestock. Excess and unauthorized livestock use will be minimal. The number of term grazing permits will be reduced by the formation of grazing associations and the issuance of grazing agreements instead of individual permits.	Grazing levels will be adjusted and managed with an up-to-date Allotment Management Plan (AMP) that prescribes grazing systems and establishes management that ensures the time and timing of grazing is altered. When and/or if needed, structural improvements such as fences and water developments will be constructed or reconstructed and maintained, to improve animal distribution and control.

The following parameters are designed to maintain or allow for improved range conditions on both upland and riparian sites:

Annual Meetings

The intent of the annual meeting is to determine how livestock grazing will occur on the allotment for that year. The specific items to be covered are: 1) livestock class 2) livestock numbers, 3) grazing season, 4) unit sequence, 5) livestock distribution, 6) time of grazing, 7) range improvements, and 8) mitigation measures for other uses. These items will be developed into an Annual Letter of Instruction. The planning process will be based on current best management practices. Currently, these practices include time controlled grazing, which limits the duration of grazing which controls the intensity of grazing, and varies the timing of grazing and provides opportunities for plant growth before grazing or regrowth after grazing. Grazing impacts will be monitored and evaluated. Evaluations will include the previous year's grazing, the amount of forage present, rate of plant growth, animal performance, wildlife needs, and mitigation measures for other uses. Identification of noxious weeds and any new populations of noxious weeds will also be discussed at the annual meeting.

Livestock Kind and Class

Kind and class of livestock will be based in accordance with the term grazing permit. The kind of livestock listed on the term grazing permit is sheep and the class of livestock is ewe/lamb pairs. Class may be modified to accommodate the permittee, and/or to improve resource conditions or to accomplish a specific resource objective. This may include substituting yearling sheep for ewe/lamb pairs to improve distribution and overall utilization. The effects of any adjustments to livestock class will be monitored and evaluated. If long-term or yearly monitoring determines that resource objectives are not being met, then livestock class will be modified, or another adaptive management strategy implemented to ensure that resource objectives are met.

Livestock Numbers

Livestock numbers will be based on the current permitted numbers, as listed on the term grazing permit. The Stillwater allotment is permitted for 1,200 ewe/lamb pairs. Livestock numbers may be adjusted due to resource conditions. This may include reductions due to drought, to accomplish specific vegetation treatments, or to improve resource conditions and management. Livestock numbers may also be adjusted to reflect changes, such as changes in areas grazed within the allotment. The effects of any adjustments to

livestock numbers will be monitored and evaluated. If long-term or yearly monitoring determines that resource objectives are not being met, then livestock numbers will be modified and/or other adaptive management strategies implemented to ensure that resource objectives are met.

Grazing Season

The grazing season will be the season of use listed on the term grazing permit. This season is from July 11th to September 10th. The grazing season may be adjusted due to resource conditions. This may include: reductions due to drought, to accomplish specific vegetation treatments, or to improve resource conditions and management. The grazing season may also be adjusted to reflect changes of areas grazed. Any adjustments to the grazing season will be monitored and evaluated. If long-term or yearly monitoring determines that resource objectives are not being met, then the grazing season will be modified to ensure that resource objectives are met.

Unit Sequence

Currently, the allotment uses a rest rotation grazing strategy that consists of following plant growth and development during the growing season. This usually involves starting in a low elevation unit, moving to the high elevation units, and then back down to the remaining low elevation units. The grazing strategy typically moves in a clockwise or counter-clockwise rotation. One year, the grazing strategy moves clockwise, the next year, it is counter-clockwise. The purpose of the clockwise/counter-clockwise rotation is to graze the different units at a different time of the year. Varying the time of year a plant is grazed provides some plants the opportunity to complete their growth cycle prior to grazing. Plants grazed early in the season are given the opportunity to regrow and complete their growth cycle after grazing. This type of system also allows certain units to be rested for the entire season. Within the allotment, this has resulted in grazing upper elevations, inside the High Uintas Wilderness boundary, six times in the past twenty years. This type of use provides for minimal resource conflicts with other uses in the wilderness, while providing longer periods of rest in the wilderness, and periodic periods of rest in the lower units. By utilizing a grazing strategy that incorporates both periods of rest and proper use, rangeland health and productivity can be optimized throughout the entire allotment. Unit sequence may be adjusted due to resource conditions. This may include: deferred use due to drought, to accomplish specific vegetation treatments, or to improve resource conditions and management. The unit sequence will be determined at the annual meeting. Any adjustments to unit sequence will be monitored and evaluated. If long-term or yearly monitoring determines that resource objectives are not being met, then the unit sequence will be modified to ensure that resource objectives are met.

Livestock Distribution

Livestock distribution will be optimized by moving livestock through the allotment as a single herd, limiting the size of an area grazed at any one time. Managing livestock as a single herd will force animals to use areas they would normally not use. The use of a herder, temporary electric fence, permanent barbed-wire fence, and existing topography as boundaries are examples of techniques used to limit areas grazed by livestock at any one time. The placement of watering structures and salt, in areas under utilized by livestock, are examples of techniques used to improve overall grazing distribution. All of these techniques are designed to cause livestock to graze the coarse less palatable forage they would normally not graze. Removing this coarse less-palatable forage allows plants the ability to produce more palatable forage in the form of regrowth during that same growing season or growth the following growing season. Increasing the availability of fresh, more palatable forage in lightly used or unused areas will improve grazing distribution for both wildlife and livestock. Improving distribution and limiting the duration of grazing will prevent over-grazing of preferred grazing sites. This will result in enhanced long-term health of forage producing plant communities on the allotment.

Time of Grazing

The time in each unit will essentially depend on the current growth rate of forage plants. Time in each

unit will be estimated at the annual meeting based on unit capacity and past use and incorporated into the Annual Operating Instructions. However, yearly fluctuations in growing conditions may call for Forest Service administrative adjustments during the grazing season to ensure that resource objectives are met. Livestock will be moved into the next unit when forage utilization standards are met, and/or when plants begin to regrow after being grazed by livestock and livestock are able to start grazing the regrowth. Units will be grazed once during the calendar year. Grazing intensity should be classified as moderate and not exceed utilization standards described in the Revised Forest Plan (USDA Forest Service 2003a, pages 4-51 to 4-52).

Range Improvements
This alternative includes the maintenance of all existing range improvements, i.e., spring developments, stock ponds, fences and stock trails, on the allotment. There is one water development that currently exists on the allotment, a stock tank fed from the Forest Service water system near the Lily Lake dump station. Maintenance of existing range improvements will continue to be performed by the term grazing permit holder, as specified in their term grazing permit. This alternative also includes the reconstruction of range improvements on the allotment. A range improvement structure will be reconstructed when it is determined that the structure is no longer functional, but still needed. During the reconstruction or maintenance of range improvements, ground disturbance should be kept to a minimum and any areas disturbed should be reseeded. Native plant species that provide forage or cover to wildlife, protect soil, and prevent noxious weed infestations should be used. These activities will be discussed at each annual meeting.

Currently, there are no new or reconstructed range improvements projects scheduled or made part of this alternative. However, additional range improvements may be identified in the future in order to continue implementing best management practices. If additional improvements are needed, (such as water developments or drift fences), over the course of the allotment management plan, the appropriate NEPA documentation and decision will be completed prior to construction. This alternative is designed to fully implement Forest Plan Standards and Guidelines.

Mitigation and Management Requirements

Mitigation measures, Best Management Practices (BMPs), and Forest-wide standards and guidelines included in the action alternative are listed below. Research and information substantiating these requirements are found in the Forest Plan and FEIS (USFS 2003).

Management Requirements
The Forest Plan (USFS 2003, p. 4-36 thru 4-56 and 4-58 thru 4-78) contains standards and guidelines (see LRMP, p. 3-36 for definition of these two terms) including some applicable to livestock grazing. Those pertinent to the project area and this environmental analysis are summarized Tables 2 and 3.

Table 2: Forest Plan (LRMP) Standards (S) that apply to this project.

(S4) Place new sources of chemical and pathogenic pollutants where such pollutants will not reach surface or ground water. (LRMP, p. 4-36)
(S7) Allow management activities to result in no less than 85% of potential ground cover for each vegetation cover type. (LRMP, p. 4-37). (See LRMP, Appendix VII for potential ground cover values by cover type).
(S24) As a tool to achieve desired conditions of the land, maximum forage utilization standards for

vegetation types in satisfactory condition using traditional grazing systems (rest rotation, deferred rotation, season long) are as follows:

Table S24: Percent utilization of key grass or grass like vegetation, by vegetation type, for rangelands in satisfactory condition.

Vegetation Type	Condition	Percent Utilization of Key Grasses or Grass-Like
Upland and Aspen	Satisfactory	50%
Crested Wheatgrass	Satisfactory	60%
Riparian* Class I	Satisfactory	50%
Riparian* Class II & III	Satisfactory	60%

* Riparian, away from greenline

(S25) As a tool to achieve desired conditions of riparian areas, maximum forage utilization standards (stubble height) for low to mid elevation *greenline* species in Class I, II, and III riparian areas (see Appendix VII) in satisfactory condition are as follows: (Key species being grazed include water sedge, Nebraska sedge, and and/or wooly sedge.)

Table S25: Greenline stubble height at the end of the growing season, by riparian class, for rangeland satisfactory condition.

Vegetation Type	Condition	Greenline Stubble Height at End of Growing Season
Riparian Class I	Satisfactory	No less than 5”
Riparian Class II	Satisfactory	No less than 4”
Riparian Class III	Satisfactory	No less than 3”

(S26) For all rangelands, including big game winter range and riparian areas, permit no more than 50% of the current year’s growth on woody vegetation to be browsed during one growth cycle (i.e., when use has reached 50% allow no additional livestock use). (LRMP, p. 4-52)

Table 3: Wasatch-Cache National Forest Guidelines (G) that apply to this project.

(G3) Proposed actions analyzed under NEPA should adhere to the State Nonpoint Source Management Plan to best achieve consistency with both Sections 313 and 319 of the Federal Water Pollution Control Act. (LRMP, p. 4-37)
(G4) At the end of an activity, allow no more than 15% of an activity area to have detrimental soil displacement, puddling, compaction and/or to be severely burned. (LRMP, p. 4-37)
(G7) Manage Class I Riparian Area Greenlines for 70% or more late-seral vegetation communities as described in Intermountain Region Integrated Riparian Evaluation Guide (USFS, 1992). Manage Class II Riparian Area Greenlines for 60% or more late-seral vegetation communities. Manage Class III Riparian Area Greenlines for 40% or more late-seral vegetation communities. (LRMP, p. 4-37)
(G9) Avoid soil disturbing activities (those that remove surface organic matter exposing mineral soil) on steep, erosive, and unstable slopes, and in riparian, wetlands, floodplains, wet meadows, and alpine areas. (LRMP, p. 4-38)
(G11) Use Best Management Practices and Soil and Water Conservation Practices during project assessment/ implementation to ensure maintenance of soil productivity, minimization of sediment discharge into streams, lakes and wetlands to protect designated beneficial uses (LRMP 4-38)

(G12) Locate new actions (such as incident bases, fire suppression camps, staging areas, livestock handling facilities, recreation facilities, roads and improvements) outside of Riparian Habitat Conservation Areas. If the only suitable location for such actions is within Riparian Habitat Conservation Areas, sites will be located to minimize resource impacts (LRMP, p. 4-38)

(G14) Manage vegetation for properly functioning condition at the landscape scale. Desired structure and pattern for cover types of the Wasatch-Cache National Forest (from USFS 1996) … are as follows … (USFS 2003, LRMP p. 4-39 thru 4-42)*

Table G14. Desired Structure and Pattern for Cover Types.

Cover Type	Landscape Structure	Landscape Patterns
Aspen	Balanced Range: Grass/Forb and Seedling/Sapling = 40 % Young, Mid Aged and Mature forests = 30% Old Forests = 30% Stand Density Index > 300 and Basal Area < 140.	Patterns are within historical ranges. Pattern sizes, shapes and corridors are maintaining processes. The role of fire is to influence distribution of structural classes and patterns across landscapes.
Mountain Mahogany	Balanced Range: Grass/Forb about 10-20% Early Mid, and Late Seral about 20-40%	20-40% of acres are in mid-seral or later structural stages in patches of >25 acres. Pattern is more or less heterogeneous mosaic of structural classes.
Tall Shrub (Mountain Brush)	Multiple vegetation layers with alternating vertical dominance.	Acreages and dispersion within historical ranges.
Sagebrush(Big)/Grassland	Balanced range of structural stages. 40% of area with 15% or more crown cover (as measured by line intercept method).	Patterns are within the historical range.
Riparian	Amount and type of vegetation types present that maintain riparian-dependent resources and provide a high rate of recovery following disturbance.	Plant community type compositions and accompanying riparian ecosystem functions maintain proper ground water recharge, storage, delivery, water tables, channel morphology and bank stability.

*Guideline direction for some cover types are not shown here as they are not applicable in this project area.

Annual and Long-term Monitoring

Monitoring is used to evaluate whether the prescribed management is meeting the objectives. Established long-term monitoring points in riparian and upland locations will be re-evaluated every five to ten years, or when additional resource information is necessary to facilitate proper management, to analyze the effectiveness of the proposed management strategy. Specific monitoring points to be evaluated include: 16-4, 6-18, 16-30, 16-30C, and 26-1. These monitoring points will be evaluated to determine if the resource objectives (such as; abiotic characteristics of the soil, ground cover, species composition, seral stage of riparian vegetation, utilization levels and stubble heights) described on Tables 1, 2, and 3 of this

EA are being met. If an evaluation of the long-term monitoring points determines that livestock grazing is not allowing the resource objectives to be met then management actions will be taken, once that determination is made. Those management actions may include one of or any combination of the following:

- Alter the amount of time an area is grazed (i.e., reduced due to over utilization, to accomplish a specific vegetation treatment, or to improve resource conditions and management).
- Alter livestock management (i.e., relocate salting areas, trailing routes, and sheep camps to improve resource conditions and management).
- Alter the time of year an area is grazed (i.e., deferred use due to drought, exclude use to improve resource conditions, or graze an area earlier or later in the year to accomplish a specific vegetation objective).
- Implement range improvements projects (i.e., construct trails, stock ponds and/or fences to improve distribution and management). This would require further NEPA analysis.
- Alter the numbers of livestock (i.e., reduced to improve management, to accomplish a specific vegetation treatment, or to improve resource conditions).

Management actions are not limited to those listed above and may include additional adaptive management strategies. If prescribed management actions are not followed the permit would be found in non-compliance and the appropriate administrative action would be taken according to Forest Service Handbook direction (FSH 2209.13, Chapter 10, section 16).

In addition to the long term monitoring points, the short-term or annual effects of grazing will be evaluated every year for the grazed units on the allotment. These effects include: the number of times a unit is defoliated, the degree of use a unit receives (utilization), and the amount of time available for a unit to grow or regrow. This information will be collected every year throughout the grazing season. If annual monitoring determines that livestock grazing is not allowing the resource objectives (Objectives described on Tables 1, 2, and 3 of this EA) to be met, then management action(s) will be taken as mentioned above, to ensure that objectives are met.

The GRI may be incorporated into the Annual Letter of Instruction and used to evaluate the short-term or previous year's effects of grazing. The Grazing Response Index (GRI) is designed to evaluate the number of times a unit is defoliated during the growing season (frequency of grazing), the degree of use a unit receives during the growing season (intensity of grazing), and the amount of time available for the unit to grow or regrow during the growing season (opportunity). The GRI can be used to help plan the next year's grazing strategy. If the GRI evaluation indicates negative impacts from that year's strategy, then adjustments will be made to eliminate the negative impacts the following year. Possible adjustments include reducing the duration of grazing or the number of grazing animals or altering the time of grazing. Monitoring for the year will be discussed at each annual meeting. At that time, the specific monitoring for the year will be decided, as well as when it will be done and who will do it. Since monitoring offers the opportunity to educate as well as learn, the Forest Service will offer to include the permittee in monitoring efforts. These opportunities will be discussed at each annual meeting.

2. Alternative 2 – No Grazing

Under this alternative, permitted livestock grazing would be eliminated on the allotment. The permittee would be given two years advance notice of cancellation of the permit as provided for under 36 CFR 222.4(a)(1) (USDA Forest Service 2002). Existing range improvements would be removed at Forest Service expense. The exception to this would be fences on the National Forest boundary which are

privately owned and actually located on the private land side of the boundary. Livestock driveways and trails would not be maintained. Developed springs would be retained for wildlife use and would be maintained at Forest Service expense. The grazing permittee would be reimbursed for his portion of range improvements per 36 CFR 222.6(a) (USDA Forest Service 2002).

C. Comparison of Alternatives

This section provides a summary of the effects of implementing each alternative. Information in Table 4 is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives. The differences between alternatives are displayed in Table 4.

Table 4: Anticipated Effects of the Alternatives Relative to Issues.

Issue/Resource	Alternative 1 – Proposed Action	Alternative 2 – No Grazing
RANGELAND HEALTH (ISSUE 1)	Maintains satisfactory conditions and/or improves rangeland health and productivity. Maintain vigor in forage plants.	Short-term rangeland condition improvement, possible long-term stagnation.
Threatened, Sensitive, or Proposed Sensitive Plants	No effect to threatened plant species. No impact to sensitive or proposed sensitive plants.	Effects to threatened, sensitive, or proposed sensitive plants are the same as Alternative 1.
Noxious Weeds	No increased noxious weed infestation. All known noxious weed sites are being treated by chemical and/or mechanical methods, in accordance with applicable State and Federal regulations.	Effects to noxious weeds are the same as Alternative 1.
Soil	Soil quality is in good condition. A historic sheep bed ground noted southwest of Hell Hole Lake. Very little evidence of sheep trailing or grazing in dry meadows along Stillwater Fork. Wilderness alpine areas in West Basin and Middle Basin had no evidence of sheep trailing or grazing. Vegetation and litter cover ranged from 80 to 100% cover. Forest Plan standards are being met with 85% or more potential ground cover existing for each vegetation cover type. Abiotic characteristics of each long-term upland monitoring site and overall soil surface conditions are healthy and functioning properly.	Effects to soil quality are the same as Alternative 1. However, in the dry meadow areas along Stillwater Fork, there would eventually be no evidence of sheep trailing or grazing and bare soil due to grazing activity would gradually decrease, and continue to meet Forest Plan standards.
AQUATIC AND RIPARIAN CONDITIONS (ISSUE 2)	Maintains satisfactory aquatic and riparian conditions and/or improves conditions. Waters fully meet the beneficial uses for which they are classified and are currently supporting beneficial uses as designated by the State of Utah. Stream banks, riparian areas, and wet meadows are in good condition with very	Minimal rapid short-term improvement, improved conditions, no livestock impacts to streambanks. Waters continue to support beneficial uses. Stream bank stability, riparian areas, and wet meadows, wetlands, continue to be in good to excellent condition. Native vegetation present and vigorous, shrubs vigorous and growing to expected heights. Stubble height requirement

Issue/Resource	Alternative 1 – Proposed Action	Alternative 2 – No Grazing
	stable well armored banks, dense, deep-rooted vegetation, small amounts of bare soil and minor amounts of short-term trampling. No evidence that livestock were causing the slumping on C3 stream types and that the slumping was apparently natural. The Stillwater Fork stream channel near Christmas Meadows Trailhead has many bare banks that are two to three feet in height. Sheep are not impacting the stream channel. The stream is very stable. Recreation, livestock, and other activities in the Stillwater drainage are not affecting the stream channel characteristics in the meadow areas. Wetlands appear to be in excellent condition with no signs of trampling by livestock and only small trail crossing areas. No indications that livestock are affecting the function of the floodplains. Native vegetation present and vigorous, shrubs vigorous and growing to expected heights. Banks stable. Stubble height requirement met or exceeded. No impact to the suitablity of Wild and Scenic Rivers.	met or exceeded. No impact to the suitablity of Wild and Scenic Rivers.
Fish and Aquatic Species	Few impacts to stream habitat and fish attributed to livestock grazing. Based on this, continued grazing would result in localized minor impacts to stream banks where sheep cross. Green line vegetation at crossing points would continue to be impeded from trending towards their site potential. The banks above and below the crossing points would not be adversely impacted. Fish populations and general habitat would continue to be in good condition. Macroinvertebrate composition indicated Stillwater Fork and Hayden Fork are healthy streams dominated by sediment intolerant species. Continued livestock grazing would have limited impacts on amphibians, mollusks, and aquatic macroinvertebrates.	Minor impacts to stream banks at the few livestock crossing points would be reduced as livestock grazing is phased out over a two year period, although recreational stock and hiking impacts would continue. The condition of the vast majority of the stream banks would remain unchanged. Green line vegetation would remain unchanged except at livestock crossing points. Where livestock no longer use those areas and in the absence of other natural disturbances, green line vegetation would trend towards the potential of the site. With the existing healthy riparian conditions there would be little or no impacts on amphibians, mollusks, and aquatic macroinvertebrates.
Aquatic Management Idicator Species	Bonneville cutthroat trout – May impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species**.** Despite the continuing expansion of brook trout, the overall trend of Bonneville cutthroat trout population in the drainage is flat, and livestock grazing is not likely to affect their population trend.	Bonneville cutthroat trout – No impact to BCT from grazing activities.

Issue/Resource	Alternative 1 – Proposed Action	Alternative 2 – No Grazing
WILDLIFE HABITAT (ISSUE 3)	Maintain or improve forage availability, and forage quality. Some displacement of wildlife by livestock movement and occupancy.	Maximum forage volume, reduced forage quality over time. No displacement of wildlife by livestock movement and occupancy.
Terrestrial Management Indicator Species (MIS)	Implementation of the Proposed Action will not change the Forest-wide population trends for MIS species.	Implementation of the No Grazing Alternative will not impact locally or change the Forest-wide population trends for MIS species.
	Northern goshawk – Grazing could impact goshawk foraging habitat in openings, range monitoring points indicate light to moderate use providing ample forage availability to northern goshawk prey base. No change in the number of goshawks within the allotment due to sheep grazing or the condition of the vegetation. Snowshoe hare – Continued maintenance or improvement of upland and riparian conditions, and thus habitat is maintained or improved. No change in the number of snowshoe hares within the allotment due to sheep grazing or the condition of the vegetation. Beaver – Monitoring has indicated that the current management, utilization, and permitted use are at appropriate levels to achieve or exceed Revised Forest Plan management direction. No change in the number of beavers within the allotment due to sheep grazing or the condition of the vegetation.	Northern goshawk – Maintain hiding cover for prey species in some habitat types. Possible reduced availability of palatable forage for prey species. No change in the number of goshawks within the allotment. Snowshoe hare – Maintain hiding cover in some habitat types. Possible reduced availability of palatable forage. Some increase in cover in young forests where no grazing would occur. No change in the number snowshoe hare within the allotment. Beaver – Minimal to static benefit in riparian habitats because livestock browsing of willows and aspen is currently insignificant. No change in the number of beaver within the allotment.
Threatened, Endangered or Proposed Species	Canada lynx – May affect, but not likely to adversely affect.	No effect to Canada lynx.
Sensitive Species	Wolverine – May impact individuals, but is not likely to contribute to a trend towards federal listing or cause a loss of viability to the population or species. Goshawk, great gray owl, and boreal owl – No affect to nesting habitat. No recent or historic sightings of boreal or great grey owl. May impact individuals, but is not likely to contribute to a trend towards federal listing or cause a loss of viability to the population or species. Northern three-toed woodpecker – No impact.	Wolverine - No impact. Goshawk, great gray owl, and boreal owl – No impact. Northern three-toed woodpecker – No Impact.
Neotropical Migratory Bird	The Proposed Action would have little or no impact to nesting or foraging Neotropical	No impact.

Issue/Resource	Alternative 1 – Proposed Action	Alternative 2 – No Grazing
Species	migratory birds.	
Big and Small Game Species	Big Game – Maintain forage availability and quality. Occasional short-term minimal displacement of wildlife by livestock movement and occupancy. Small Game – Minimal effects.	Increased forage availability, slight reduction in forage quality. No displacement of wildlife by livestock movement and occupancy. Small Game – Increased hiding cover to evade predators. Slight reduction in the availablility of nutritious palatable forage over time.
Small Mammals	Minimal effects. Some loss of cover to meadow species and minimal impact to forest species. Maintain palatable forage where grazing occurs.	Increased hiding cover to evade predators. Maximum forage volume, reduced forage quality over time.
RECREATION / WILDERNESS (ISSUE 4)	Some recreationist/livestock conflicts, recreational use may slightly increase, maintain current wilderness character and opportunity class.	No recreationist/livestock conflicts, same level of recreational use, maintain wilderness character and possibily change opportunity class designation from a Class II to a Class I.

III. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This Chapter summarizes the physical and biological environments of the project area and the direct, indirect, and cumulative effects of implementing each alternative. It also presents the scientific and analytical basis for the comparison of alternatives presented in Chapter II.

The analysis in Chapter III makes the following assumptions:

- Under the Proposed Action, adaptive management will be employed to ensure that conditions on the allotment are static, moving toward, or meeting desired conditions.
- Analysis of effects was based on current or average levels of use.
- If long-term or yearly monitoring determines that resource objectives are not being met, then grazing will be modified to ensure that resource objectives are met using an adaptive management strategy.
- Current and accurate science was used and scientific uncertainty was disclosed if applicable.

A. List of Past, Present, and Reasonably Foreseeable Future Actions

Principle past, present/ongoing, and reasonably foreseeable projects or events must be considered to analyze cumulative effects. Past, present, and ongoing activities have resulted in the resource's existing condition. Reasonably foreseeable future actions are also considered. For the complete cumulative effects analysis for each resource area, see the individual resource sections, as follows in Chapter III. Not all projects or events on the list are applicable in order to analyze the cumulative effects of each resource. Only relevant projects or events will be discussed by resource.

Past Actions/Events

- Grazing – Sheep have grazed the allotment for the past 90 years. From 1925-1960 significant reductions in season of use and livestock numbers and pasture rotations took place which resulted in a 70% reduction in AUMs from historic grazing numbers (see Table 11).
- Timber Harvest – Limited tie hacking occurred by individuals from the 1860s to 1911. From 1912 to the 1930s, the Standard Timber Company had a corporately run logging operation.
- Wildfire – The East Fork Wildfire occurred in 2003.
- Introductions of brook trout to some streams.

Present and Ongoing Actions

- Sheep grazing – Approximately 1,200 ewe/lamb pairs graze the allotment from July 11th to September 10th.
- Recreational Activities – Horseback riding, fishing, hunting, and dispersed and developed camping continue to occur. Two developed campgrounds (Stillwater and Christmas Meadows Campgrounds), Wolverine ATV Trailhead, and a summer home area with 40 recreational residences occur within the allotment.
- Roads, Trails, and Motorized Recreation Use – Approximately 25 miles of roads and 9 miles of motorized ATV trails occur in the lower portion of the Stillwater drainage. There are approximately 16 miles of nonmotorized trail throughout the allotment.
- Treatment of noxious weeds according to the WCNF Noxious Weed EIS/ROD.

Reasonably Foreseeable Actions

- Timber harvest activities associated with the Moffit Creek, Reservoir Creek, and Mill City Creek timber sales.
- Oil and Gas Activities (Table Top well) – The Table Top exploratory oil well was partial drilled in the winter of 2006–2007. In the foreseeable future, additional drilling may occur at the original well and an additional well from the existing five acre disturbed site (well pad). If the wells are successful in discovering oil or gas, there would be an expected increase in year round vehicle traffic to the Table Top well pad for routine activities and maintenance associated with producing wells. During the winter months it can be expected that the road leading up to the well site would be plowed to allow access for maintenance and other activities. Additional traffic may be generated and additional disturbance caused if a second approved five acre drill pad is constructed and four additional wells drilled from this location.
- Geophysical seismic activities may occur in the foreseeable future. These activities consist of setting off underground charges along seismic transects (up to 90 miles of transects) and recording data to create an underground image of potential oil and gas reserves. The disturbance from the underground charges and drilling is minimal. However, a helicopter is used to move equipment and personnel between locations.

B. Physical Environment

1. Topography

The Stillwater S&G Allotment is located on the north slope of the Uinta Mountains. The elevation of the allotment varies from just over 8,000 feet near Lily Lake on the northern end to nearly 12,000 feet along the Uinta crest at Kletting and Hayden Peaks.

The broad core of the Uinta Mountains consist of late Pre-Cambrian brick red to purplish red beds of quartzite, sandstone and shale that were formed over a billion years ago under primarily marine conditions that persisted until uplift and building of the Uinta Mountains began about 65 million years ago. The landforms that exist in these mountains are derived from the multiple glacial epochs which affected almost all the area within this allotment, with the exception of only the tops of the highest ridges separating the large cirque basins of the Main Fork and Stillwater Fork of the Bear River.

Successive periods of glacial scouring of the upper basins, and the subsequent deposition of this material into moraines and other glacial landforms, have greatly affected soil development within the allotment and subsequent vegetative distribution. For example, soils derived from sandstone and shale formations are relatively infertile and produce less forage. The steepness of slope and aspect are also found to directly influence water availability and subsequent vegetative distribution. Topography has an indirect affect on plant distribution by allowing a deposition or accumulation of snow that remains into the growing season. Helm (1982) found that vegetation on north and south aspects can vary in alpine snowbed communities. The aspect of the slope also affects duration of exposure to sunlight and subsequent water availability. The angle or degree of slope affects water availability by influencing where water will accumulate or how quickly it will be moved off site. Slope stability can also influence vegetative distribution. Steep slopes are usually related to instability of substrate and support species adapted to this instability (Brown 2006). Glaciers played a major role in forming the topography of the landscape at the coarse scale and directly influenced plant growth and distribution at finer scales (Brown 2006).

The climate for the allotment is described as a continental mountain climate. Annual precipitation may vary from a low of 15 inches per year on the lower northern end of the allotment to a high of 51 inches

per year on the southern end in the upper elevations of the Uinta Mountains. The average annual precipitation for the entire allotment is 20 to 40 inches (NOAA 2009a). Precipitation occurs from winter snowfall and summer thunderstorm activities. Most of the precipitation falls as snow between the months of October and April. However thunderstorms generally occur in the summer from July to early August. Thunderstorms generally occur as a cloudburst that may drop heavy precipitation along a narrow path (Ashcroft et al. 1992). On average a 30 minute storm will produce 0.35 inches of water on the allotment.

In addition to precipitation patterns, other climatic factors affecting plant growth and distribution include temperature, extreme wind conditions, duration and depth of snow, freeze-thaw cycles and sunlight availability. This allotment is predominantly populated with cool season plants. Growth begins for cool season plants when the ground temperature reaches 42 degrees Fahrenheit. For example, alpine ecosystems are characterized by a low mean air temperature which keeps the ground colder for a longer period of time, shortening the growing season and limiting plant distribution to those species that can adapt to this shorter growing season. In addition, snow can act as an insulating layer, keeping ground temperatures below 42 degrees Fahrenheit and limiting sunlight availability. The length of time snow remains in place and how it comes off is indirectly dependant on annual variations in air temperature, sunlight, wind, and snow depth. Extreme winds can have a direct effect on plant distribution and growth. Brown (2006) noted that, "Alpine vegetation is often low-growing, mat-forming, or dwarfed due to frequent high winds." Freeze-thaw cycles also influence vegetative distribution. This cycle creates frost boils, hummocks and has been attributed to forming assorted rock patterns (Corte 1963; Washburn 1956). The amount of sunlight a particular area receives also influences plant distribution. Slope aspect and above ground canopy cover are two variables that influence sunlight availability.

Slight differences caused by these environmental factors create numerous microhabitats scattered throughout the allotment. These environmental factors play a major role in defining current species composition, cover and production found within each microhabitat. This will be discussed further in the Soils and Rangeland Health sections.

2. Soils

Basic soil resource information for the non-wilderness portions of the allotment can be found in the unpublished Soil Resource Inventory (SRI) for the North Slope of the Uinta Mountains (USDA Forest Service 1995). Soil types within this SRI were mapped at a Level III level of detail, with soils identified as associations and complexes of soil Families. Maps and descriptions of soil types that occur within the allotment are on file at the Supervisor's Office in Salt Lake City and are available on request.

There are fifteen soil types found on the allotment. These soil types are put together in various combinations based upon slope, glacial geology/landform, and micro-climate to produce the eighteen soil map units found on the allotment. The relationships between soil type, soil map unit, glacial geology, landform, micro-climate, and native vegetation are described in Table 5.

Table 5: Soil Types and Characteristics, Stillwater S&G Allotment.

Soil Name	Location	Dominate Native Vegetation
UT647_NS102 Sessions-Furniss Families Assn.	Lower sideslopes and bottoms of meadows	Lower sideslopes: Mt. big sagebrush, Idaho fescue, needlegrass Bottoms: silver sage, willow, tufted hairgrass, beaked sedge
UT647_NS104 Foxcreek-Turson-Monchego Families Assn.	Terraces and floodplains along streams	Terraces: Mt. big sagebrush, Idaho fescue, needlegrass, sedges Floodplains: willow, tufted hairgrass, beaked sedge

Soil Name	Location	Dominate Native Vegetation
UT647_NS205 Hoodle Family, Alpine Meadows	Dry alpine meadows	Antennaria, bistort, erigeron
UT647_NS206 Mirror Lake-Dromedary Families Complex	Stream terraces	Colombia needlegrass, common juniper, heartleaf arnica, lupine, lodgepole pine
UT647_NS207 Quazar-Yata Families Complex	Ground moraines on lower mountain sideslopes	Mt. big sagebrush, snowberry, brome, slender wheatgrass, asst. tall forbs
UT647_NS208 Fourmile Family	Outwash fans and stream terraces	Mt. big sagebrush, Idaho fescue, needlegrass
UT647_NS221 Duchesne Family, Cold, 0 to 10%	Ground moraines	Lodgepole pine, subalpine fir, grouse whortleberry, heartleaf arnica
UT647_NS222 Duchesne Family, Cold, 10 to 20%	Ground moraines	Lodgepole pine, subalpine fir, grouse whortleberry, heartleaf arnica
UT647_NS223 Duchesne Family, Cold, 20 to 40%	Ground moraines	Lodgepole pine, subalpine fir, grouse whortleberry, heartleaf arnica
UT647_NS225 Duchesne-Mirror Lake Families, Cold phase	Ground moraines on upper sideslopes	Lodgepole pine, subalpine fir, grouse whortleberry, heartleaf arnica
UT647_NS226 Duchesne-Mirror Lake Families, Thin Surface, Warm phase	Ground moraines on ridgetops and pediments	Lodgepole pine, aspen, common juniper, Oregon grape, bearberry, mountain lover
UT647_NS227 Duchesne-Fourmile Families	Outwash fans and adjacent ground moraine	Moraines: Lodgepole pine, aspen, common juniper, Oregon grape, bearberry, mountain lover Outwash Fans: Mt. big sagebrush, Idaho fescue, needlegrass
UT647_NS238 Duchesne, Cold-Furniss-Senchert Families	Knob and kettle moraines	Knobs: Lodgepole pine, subalpine fir, grouse whortleberry, heartleaf arnica Kettles: silver sage, willow, tufted hairgrass, beaked sedge
UT647_NS502 Talus-Rock OutCrop-Mirror Lake Cold Families	Alpine ridgelines (below timberline)	Lodgepole pine, subalpine fir, grouse whortleberry, heartleaf arnica
UT647_NS503 UB1	Alpine cirque sideslopes	Alpine poppy, saxifrage, hawksbeard, groundsel, mugwort
UT647_NS520 Mirror Lake, Cold Family-Talus-Rock Outcrop/ UB6	Alpine Ridgetops and plateaus	Engelmann Spruce, lodgepole, curly sedge, cushion plant community
UT647_NS525 AM4	Scoured cirque basin floors	Ross avens, single spike sedge, Artemisia scopulorum
UT647_NS531 AM3	Hummocky moraines in cirque basins	Salix gluaca, Ross avens, krummholz spruce, single spike sedge

As Table 5 indicates, the geology and soils have a strong influence on the vegetation found in any area on the allotment. This correlation is extensively discussed by Brown (2006); a limestone substrate has a remarkably different flora than a quartzite substrate. For example, the Ranunculus adoneus community type was only found on limestone substrates. Conversely, the common alpine species Geum rossii was

absent from the limestone areas. This will be discussed further in the Rangeland Health section.

In the 1960's, range condition surveys were conducted for this allotment. Results of these surveys indicate that there were "no poor soil condition areas" mapped within the allotment. The survey mapped approximately 830 acres of conifer, dry meadow, and grassland vegetation types with "fair" soil conditions. The soil condition trend for these areas was either upward or not apparent. Although the mapped areas were scattered throughout the allotment, the majority are found along west facing mid elevation slopes in the middle part of the Stillwater Fork, south of the Bear River Smiths Fork Trail.

During the summer of 2008, the Soil Scientist for the Uinta-Wasatch-Cache National Forest evaluated the existing soil quality conditions. A variable length step survey method was used within capable range portions of the allotment that were likely to be used by livestock. The presence of any of the following ground cover characteristics were noted at each sample point: 1) vegetation or litter, 2) rock, 3) bare soil associated with gopher activity, and 4) bare soil resulting from causative agents. Descriptions and maps of transect location, length, and vegetation types are contained in a separate report (Flood 2009a).

a. Direct, Indirect, and Cumulative Effects to Soils

Direct and Indirect Effects: Overall, existing soil quality was found to be in good condition for the areas surveyed throughout the allotment. A historic sheep bed ground was noted to exist southwest of Hell Hole Lake. Dry meadows along the Stillwater Fork showed very little evidence of sheep trailing or grazing. The wilderness alpine areas in West Basin and Middle Basin had no evidence of sheep trailing or grazing. Vegetation and litter cover ranged from 80 to 100% cover. Bare soil associated with gopher activity ranged from 0 to 8% of the transect sample points. A small amount of the sample points (0 to 15%) contained bare soil that could not be associated with any specific causative agent. Ground cover data for each transect is summarized in Table 6.

The recreation trail running through this area has a 500 foot section of very wet and rutted trail, however, the poor trail conditions are determined to be unrelated to sheep trailing.

Table 6: Summary of 2008 Ground Cover Transect Monitoring Data: Stillwater S&G Allotment.

Allotment	Vegetation Type	Transect #	Percent of Ground Cover in			
			Vegetation and Litter Combined	Rock	Bare Soil (gopher)	Bare Soil (other)
Stillwater	Conifer	01072908t	93 (est.)	0	5 (est.)	5 (est.)
Stillwater	Wet meadow	02072908t	100	0	0	0
Stillwater	Dry meadow	03072908t	80	6	8	6
Stillwater	Dry meadow	04072908t	80	2	3	15
Stillwater	Dry meadow	01082608T	95	3	0	2
Stillwater	Wet meadow	03082608T	100	0	0	0
Stillwater	Wet meadow	03082608T	96	0	0	4

/1: Vegetation and litter values combined
Source: Flood, P. 2009a.

In addition, the abiotic characteristics of each long-term upland monitoring site were also evaluated. Characteristics evaluated included the maintenance of the A-horizon, and the presence or absence of pedestaling, rills, gullies, sheet erosion or soil deposition. This evaluation concluded that overall soil surface conditions on the allotment are healthy and functioning properly. Individual site evaluations are kept on file at the Evanston-Mountain View District Office.

Cumulative Effects Scope: The scope of the cumulative analysis identifies significant issues, the geographic area, time frame for analysis, and other actions affecting the resources of concern. The significant cumulative effects issue related to soil resources is that certain past, present, and reasonably foreseeable future management activities have the potential to create disturbances to soils. These disturbances could consist of detrimental amounts of erosion or compaction. The indicator for cumulative effects is the kind and amount of detrimental disturbance observed, predicted, or anticipated from the various types of management activities that have the potential to create disturbances to soils. The geographic area for the analysis of cumulative effects to soils will be the individual activity areas represented by the grazing allotment pastures. The time frame for the analysis of reasonably foreseeable actions is about 10 years, which represents the approximate length of time the Proposed Action authorizes grazing for. The time frame for the analysis of past actions is about 100 years.

Cumulative Effects Affected Environment: Other actions that may have an influence on soil resources within the cumulative effects analysis area are disclosed in detail in Section 3, subsection A, of the environmental assessment document. Historically, sheep grazing have occurred in the allotments at levels much greater than what is currently being proposed. Recreational activities of various kinds span the allotments, and recreational use is increasing as the resident and visitor populations grow. The 2002 East Fork Fire burned in approximately 600 acres of conifer vegetation communities in pasture 1 of the allotment, southeast of Lily Lake in the vicinity of the Bear River Smiths Fork Trail. A well for gas and oil exploration was drilled in conifer vegetation communities in pasture 2 of the allotment, and an additional drilling pad has been proposed in the same area. Past timber harvest consisted of tie-hack operations during the late nineteenth and early 20th centuries. There are no current or future proposed timber harvest activities proposed within the allotment.

Determination of Cumulative Effects: Several effects may occur from other activities occurring within the cumulative effects area. Generally, past levels of historic over-grazing may have caused erosion and sedimentation by shearing soil and leaving bare surface soil that can erode during storm events.

Recreation uses create impacts on soil quality associated with the establishment of dispersed camp sites and user-developed ghost roads accessing these sites, legal and illegal ATV use, and general foot, horse, and vehicle traffic. Motorized roads and trails have the potential to erode during storm events that may cause sedimentation of streams if they are close by. Dispersed recreation may cause detrimental amounts of soil disturbance and trampling that could lead to accelerated soil erosion. Recreation uses intersect and contribute cumulatively where similar impacts are occurring due to grazing.

Wildfire effects on soil vary with the severity and intensity of burning. These effects can include burning/consumption of soil organic matter in the forest floor, creation of water repellent characteristics on the soil surface, and loss of soil fertility through soil erosion. Wildfire effects are short term in nature and in most cases diminish as vegetation re-establishes in the burned areas.

Timber harvest and oil/gas development activities can affect soil quality through the removal of forest floor and topsoil material, and erosion or compaction of subsurface soil layers. These effects are confined to access roads and trails to the harvest units, log landings, and well pads associated with the activities.

Cumulative Effects: Current grazing activities are having little or no effects upon the soil resources within the most of the upland vegetation communities within the allotment pastures.

Sheep and cattle grazing resulted in high impacts to soil resources from the late 1800s until the 1930s when active grazing management took effect in the area. Since then, a gradual improvement in land conditions has occurred as indicated by increased ground cover and absence of active soil erosion in most

areas within grazing allotments. Implementation of the Proposed Action or its alternative would have little or no cumulative effects on the gradual improvement of soil quality that has been occurring as a result of past livestock number reductions within most of the upland vegetation communities of the allotment pastures.

Motorized and dispersed recreation uses are concentrated around Lily Lake, within the northern portion of pasture 1 of the allotment, and along the Bear River in the far eastern part of pasture 2. The principal effects to soil quality from these features and activities are detrimental amounts of soil compaction and soil erosion. It is anticipated that these effects will increase over time as forest recreation increases in the cumulative effects analysis area. Because these areas only have a very limited intersection with where domestic livestock grazing actually occurs in these pastures, implementation of the Proposed Action or its alternative will have little or no cumulative effects on the detrimental soil compaction and erosion that occurs now or in the future as a result of motorized road/trail usage and dispersed recreation activities.

The majority of the allotment area affected by the East Fork fire was burned at moderate to high severity. Vegetation has re-established in all of the burned areas in the allotment since the fire occurred, and there is no evidence of ongoing soil erosion or water repellency. Because there is also no indication that domestic livestock grazing is occurring within any burned areas, implementation of the Proposed Action or its alternative would have no cumulative effect on the recovery of soil conditions within areas of the allotment previously affected by wildfire.

The effects of historical timber harvest on soil quality have dissipated over time and become undetectable. Since there are no longer any direct or indirect impacts to soil quality from past timber harvest activities, there will be no cumulative effects resulting from the Proposed Action or its alternative.

The effects of oil and gas development access roads on soil resources are very limited because of the use of best management practices such as installing proper drainage and re-vegetation of disturbed areas. However, a small area of soils (approximately 10 acres) would remain in a detrimentally disturbed condition while the drill pads are being utilized. Because there is no indication that domestic livestock grazing is occurring within these drill pad locations or along the access roads, implementation of the Proposed Action or its alternative would have no cumulative effect on the detrimental soil disturbance that exists there, now of in the future.

Applicable Revised Forest Plan Standards and Guidelines

Soil conditions were evaluated to determine compliance with applicable standards and guidelines defined in the Revised Forest Plan. Results of this analysis are as follows:

Standard (S7) Allow management activities to result in no less than 85% of potential ground cover for each vegetation cover type. (See Appendix VII in the Forest Plan for potential ground cover values by cover type.) (USDA Forest Service 2003a, page 4-37)

The Revised Forest Plan intended for this standard to be applied to only Rangeland Cover Types. Ground cover ranges at potential for the range vegetation types found in the allotment are listed in Appendix VII of the Revised Forest Plan (USDA Forest Service 2003a) and in Tables 4 through 6 of the First Year Forest Plan Monitoring Report (USDA Forest Service 2004). Site specific monitoring of ground cover indicates that current vegetation/litter/rock ground cover conditions range from 80% to 100% on sites with vegetation types such as alpine, upland turf, and meadow communities preferred by sheep bands. However, a portion of the observed bare soil conditions were due to gopher activity, and are considered to be an inherent property of this vegetation cover type (Goodrich 2006b). Bare soil due to other causative agents, which includes grazing activities but is not solely attributed to grazing, ranges from 0% to 15%,

which is within the threshold set in this standard. Forest Plan standard S7 - met. This is discussed further in the Ecological Status and Trend section.

Guideline (G4) At the end of an activity, allow no more than 15% of an activity area to have detrimental soil displacement, puddling, compaction and/or to be severely burned. (USDA Forest Service 2003a, page 4-37)

This guideline is intended to be applied to soil disturbances that result from management activities only. Soil displacement, puddling, compaction, or burning from inherent, natural processes is not considered to be detrimental for the purpose of applying this guideline.

Ground cover transects conducted within the pastures reveal that the primary causative agent in producing disturbed and barren soils is gopher burrowing and casting, an inherent, natural process that can occur anywhere there is a sufficient depth of insulating snow to produce a sub-nivean environment. Because it is a natural feature of these pastures, bare soil produced by this activity should not be considered a detrimental soil disturbance for the purpose of evaluating the effects of proposed management activities.

Bare soil due to grazing activity can result in detrimental soil displacement (erosion) or compaction. Using data from ground cover transects conducted in the pastures, bare soil due to other than gopher activity ranges from 0% to 15%, which is within the threshold set in this guideline. Transect 04072908t was located in a wet meadow and did have nearly 15% bare soil, however this transect coincides with an historic sheep bedground area, and is not indicative of current grazing use. Forest Plan guideline G4 is being met.

Guideline (G9) Avoid soil disturbing activities (those that remove surface organic matter exposing mineral soil) on steep, erosive, and unstable slopes, and in riparian, wetlands, floodplains, wet meadows, and alpine areas. (USDA Forest Service 2003a, page 4-38)

Unstable slopes are not a common feature on this allotment. Steep and erosive slopes are found along the lower canyon side slopes across the allotment. The gradient of some of these slopes exceeds 50%, and as such these areas are not considered to be part of the capable range acres for this allotment. Very little livestock grazing occurs on these very steep landforms. Although riparian and alpine areas are part of the suitable/capable grazing acres for this allotment, monitoring of soil quality conditions detected very little or no evidence of sheep trailing or grazing in these areas. Monitoring results from Table 6 indicate that bare soil conditions occupy less than 6% of the wet and dry meadow areas surveyed. Transect 04072908t was located in a wet meadow and did have nearly 15% bare soil, however this transect coincides with an historic sheep bedground area, and is not indicative of current grazing use. Forest Plan guideline G9 is being met.

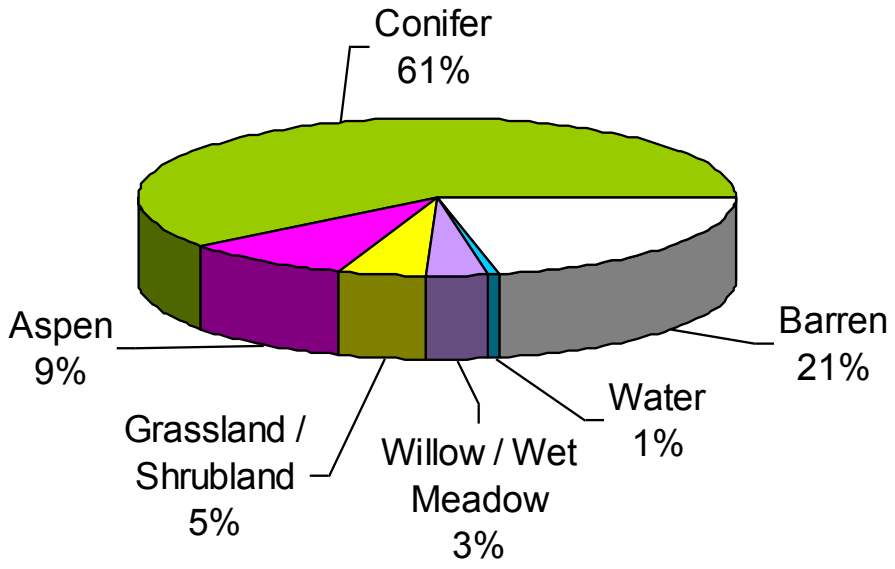
Guideline (G11) Use Best Management Practices and Soil and Water Conservation Practices during project level assessment and implementation to ensure maintenance of soil productivity, minimization of sediment discharge into streams, lakes and wetlands to protect of designated beneficial uses. (USDA Forest Service 2003a, page 4-38)

Best management practices currently being implemented include: 1) controlling the intensity of grazing by managing the duration of grazing, 2) varying the time of grazing, and 3) providing rangeland vegetation the opportunity to either grow before grazing or regrow after grazing. Site specific management practices include: avoiding concentrated use and subsequent soil disturbance by limiting the duration and placement of bedding and salting areas, and locating these areas away from water sources. Forest Plan guideline G11 is being met.

C. Rangeland Health (Issue 1)

Rangeland health, productivity and plant dispersion on the allotment is directly related to topography, geology, climate, domestic livestock grazing practices, wildlife, human activities and plant species interactions. Specifically, some of these influences include: slope, aspect, elevation, stability, deposition or accumulation of snow, substrate type, soil type, fertility of soil, water holding capacity of soil, amount of precipitation, type of precipitation (snow vs. rain), area of precipitation, timing of precipitation, temperature, wind, duration and depth of snow, solar availability, freeze-thaw cycles, wildlife species, wildlife populations, areas and plants used by wildlife, amount of time and time of year an area is used by wildlife, amount of use by wildlife, type of livestock, numbers of livestock, areas and plants used by livestock, amount of time and time of year an area is used by livestock, amount of use by livestock, management activities associated with livestock, recreational activities, road construction, energy development, fire, timber harvests, facilities construction, landscaping, re-seeding projects, and the physical and chemical competition between plants for available space and nutrients. Slight differences caused by any of these factors can alter the numerous microhabitats found on the allotment and change the overall cover and species composition found on each site. Plant communities are always changing at rates that vary depending on disturbance or climatic events (Brown 2006).

Figure 2 demonstrates the percentages of the six distinct vegetation/cover types that exist on the allotment. Each vegetation type is categorized by the dominant vegetative or physical feature found on the allotment and is made of many diverse microhabitats.



1. Range Vegetation

Mountain Shrublands / Grasslands (Including Alpine)

The mountain shrublands / grasslands vegetation type represents the low lying open parks, shrub covered areas and alpine meadows found scattered throughout the allotment ranging from 8,000 to 11,000 feet elevation. This vegetation type consists of approximately 1,254 acres or 5% of the total allotment.

In the lower elevations, between 8,000 to 8,800 feet elevation, mountain big sagebrush and yellow

rabbitbrush are the two dominant shrub species found in this vegetation type, followed by western snowberry, shrubby cinquefoil, and silver sagebrush. Common grass species include mountain bromegrass, Letterman's needlegrass, needle and thread, muttongrass, slender wheatgrass, and thickspike wheatgrass. Common forb species include aspen pea vine, western yarrow, Drummond's rockcress, and pussytoes. Precipitation for the lower portion of this vegetation type averages between 18 to 24 inches per year.

In addition, the mountain shrublands / grasslands vegetation type also represents alpine vegetative communities found in open parks above tree-line, between 10,000 to 11,000 feet in elevation. Vegetative communities described in Garry D. Brown's, 2006 Alpine Classification, directly correlate to those found during the 2008 analysis. Common grass, sedge, and rush species include; black alpine sedge, Parry's rush, Drummond's rush, alpine timothy, timber oatgrass, western single spike sedge, sheep sedge, and tufted hairgrass. Common forb, willow and shrub species include Gordon's ivesia, mariposa lily, creeping sibbaldia, fleabane, goldenrod, varileaf cinquefoil, dwarf bilberry, and plainleaf willow. Precipitation for this upper portion of this vegetation type averages 37 to 51 inches per year.

Aspen

The aspen vegetation type is located in the middle to lower elevations throughout the allotment. Much of the aspen community type contains a mixture of aspen and lodgepole pine. Understory vegetation found in this community type closely resembles the POTR-PICO (aspen and lodgepole pine) community types described in Aspen Community Types of the Intermountain Region (Mueggler 1988). Wheelers bluegrass, slender wheatgrass, aspen pea vine, lupine, heartleaf arnica, and yarrow are common forms of understory vegetation found in this type. The aspen vegetation type covers approximately 2,449 acres and accounts for 9% of the allotment. Elevation for this type ranges from 8,400 to 9,000 feet. Consequently, precipitation varies from 20 to 40 inches annually, depending on elevation.

Willow / Wet Meadow

The Willow / Wet Meadow vegetation type represents the wet open parks and riparian stingers that are found scattered throughout the analysis area ranging from 8,000 to 10,500 feet elevation. Tufted hairgrass, bluejoint, and alpine timothy are the common grasses found in this vegetation type. Common sedges and rushes include; water sedge, spike rush, Drummond's rush, Baltic rush, sheep sedge, and western singlespike sedge. Forb species commonly found in this type are white marsh marigold, bluebells, cinquefoil, pussytoes, ballhead ragwort, and American bistort. Willows and shrubs commonly found in this type are plainleaf willow, Booth willow, Drummond willow, Gyer willow, wolf willow, whiplash willow, alder, shrubby cinquefoil, and silver sagebrush. Many different community types are found within this vegetation type. Many of the community types listed in Youngblood et al., Riparian Community Type Classification of Eastern Idaho – Western Wyoming (1985), have similar species lists as compared to those noted during the 2008 analysis. Species composition, as well as precipitation, will vary tremendously depending on the elevation of each site. Precipitation will vary annually from 18 inches in low elevations to 40 inches in high elevations. This vegetation type consists of approximately 905 acres or 3% of the total analysis area.

Conifer

Coniferous vegetation includes lodgepole pine, Engelmann spruce, and subalpine fir. Lodgepole pine is typically found in the lower portion of the allotment, below 9,500 feet elevation. Engelmann spruce can be found scattered throughout the allotment in drainage bottoms and along steep hillsides. The subalpine fir stands are generally found in the higher elevations on the allotment, around tree line. This type comprises 16,296 acres or 61% of the analysis area. Very few grasses, forbs, and shrubs are found in the understory of this vegetation type which limits livestock grazing. However, some less densely stocked stands, located near alpine meadows and in wetter areas along riparian stingers and valley bottoms do produce 200 pounds of forage per acre or more. These are typically small areas in which the understory

vegetation is typically characterized by riparian or alpine community types. Precipitation in the conifer forests varies from 40 to 51 inches annually.

Barren Areas
There are 5,680 acres or 21% classified as barren in the analysis area. These areas are primarily late Pre-Cambrian rock outcrops that are found in the upper elevations on mountain tops and steep side slopes. These areas are typically void of vegetation, however, areas of sparsely populated alpine vegetation can be found scattered across this cover type.

a. Direct, Indirect, and Cumulative Effects to Rangeland Health

Alternative 1 (Proposed Action)

Direct and Indirect Effects: Implementing the Proposed Action would maintain and/or provide for continued improvement in rangeland health and productivity (see Table 10: Evaluation of Monitoring Points). Continued implementation of a grazing plan with short grazing periods and alternating the time of use would allow most forage plants to complete their growth cycle every other year and/or recover from the effects of grazing. Plants in wilderness areas would have a longer interval in which they can complete their growth cycle. Forage plants will continue to improve in vigor, resulting in greater amounts of litter and decaying organic matter, providing for long-term soil maintenance and soil stability. The amount of bare soil will remain static or continue to decrease, except in areas inhabited by pocket gophers. This improvement should continue for the planning period. Plant nutrients will continue to be recycled through livestock grazing and fecal deposition. Soil crusting will be limited and plant seedlings will be able to become established. As current management is meeting Revised Forest Plan standards and guidelines for vegetative resources, it is expected that those standards and guidelines will continue to be met.

Cumulative Effects: The cumulative effects area is defined as the Stillwater drainage within the boundaries of the Stillwater S&G allotment. Overall satisfactory conditions will continue to be maintained or improve.

Alternative 2 (No Grazing)

Direct and Indirect Effects: The elimination of livestock grazing on the allotment would benefit forage plants on most areas for a period of time. The elimination of livestock grazing would allow all forage plants to complete their growth cycle. This would allow forage plants to improve in vigor, resulting in greater amounts of litter and decaying organic matter. The amount of bare soil would remain static and/or decrease, except in those areas inhabited by pocket gophers. Depending on wild ungulate selectivity, prolonged periods of non-use would result in an accumulation of littler. The accumulation of litter may begin to negatively affect plant development (Rhodes and Sharrow 1990). Soil nutrients can be tied-up in non-decomposing organic matter. Bare soil, especially in the lower elevation zones can develop crusts inhibiting new plant seedling establishment. Over an extended period of time (10 to 20 years) vegetation would remain in the same state or possibly decline.

Cumulative Effects: The cumulative effects area is defined as the Stillwater drainage within the boundaries of the Stillwater S&G allotment. There would be a (5 to 10 year) improvement in rangeland health and productivity. After that conditions would level out and or possibly decline, especially in the low elevation areas.

Threatened, Endangered, and Sensitive Plants

Survey for plants has been intensive in the past few decades in the Intermountain Region including Utah and the Uinta Mountains. Many thousands of plant collections housed at the major and minor herbaria of Utah and at other institutions including New York Botanical Garden are the basis for geographic limits, elevational ranges, geological formation and other habitat information (Atwood et al. 1991; Barneby 1984; Cronquist 1994; Cronquist et al. 1972, 1977, 1984, 1997; Holmgren et al. 2005; Welsh and Thorne 1979; Welsh et al. 2003; and Goodrich and Neese 1986). The work of Ramsey and Shultz (2004) clearly demonstrates a high density of botanical collections in Utah. This work, based on about 400,000 specimens (as of 1988) for Utah, shows the area included in the north slope of the Uinta Mountains to be comparatively densely collected. In the years since 1988 thousands of additional specimens have been added to Utah collections. These works of the past 30 years have been a driving force for extensive botanical work. Although most of the above cited works are general floras, they include plants listed as threatened, endangered, and sensitive.

Specific works for narrow endemic and other plants that have been listed as threatened, endangered, sensitive, or considered for such status include: Farrar 2002, Farrar 2004, Fertig 1997, Fertig 2000, Franklin 1988, Franklin 1989, Franklin 1990, 1991, 1992, and 1993. The work of Refsdal (1996) for southwest Wyoming and adjacent northeast Utah includes parts of the north slope of the Uinta Mountains. Some of these papers deal with plants outside but adjacent to the Uinta-Wasatch-Cache National Forest. However, they are relevant in that they help verify absence of some plants from the National Forest.

The literature cited above coupled with continuing botanical surveys on the Evanston-Mountain View Ranger District of the Uinta-Wasatch-Cache National Forest constitute current and accurate science.

Threatened Plant Species

The Utah and Wyoming Field Offices of the U.S. Fish and Wildlife Service (FWS) list the same species for Summit County and adjacent areas in Wyoming (USDI FWS 2007a; 2007b) respectively. Appendix XI of the Revised Forest Plan provides a list of plants of Federal and State Status (USDA Forest Service 2003a). No plant taxon is listed as endangered or proposed for the Wasatch-Cache Planning Area of the Uinta-Wasatch-Cache National Forest. Threatened, endangered, or candidate bird and mammal species are discussed in the Terrestrial Wildlife section. Federally listed plant species that occur or have potential to occur on the National Forest are listed in Table 7.

Table 7: Threatened Plant Species.

Common Name	Scientific Name	Status[1]	Potentially Present in Analysis Area	Suitable Habitat
Maguire's primrose	*Primula maguieri*	T	No	Restricted to Logan Canyon in the Wasatch Range
Ute ladies'-tresses	*Spiranthes diluvialis*	T	No	Not known from above about 7,200 feet elevation in the Uinta Mountains

[1] Status:
T = Listed as Threatened by the U.S. Fish and Wildlife Service under the Endangered Species Act. Species which are threatened with extinction.

Maguire's primrose is restricted to Logan Canyon in the Wasatch Range. The Wasatch Range is a separate range from the Uinta Mountains and some 150 miles from the project area. No effect to

Maguire's primrose is reasonably expected.

Franklin (1993) completed a detailed report for Ute ladies'-tresses (*Spiranthes diluvialis)*. That report documents *Spiranthes diluvialis* for elevations below 7,300 feet on the south slope of the Uinta Mountains. Recently plants of *Spiranthes diluvialis* were found growing along the Green River between the Flaming Gorge Dam and the Ashley National Forest Boundary. The lowest elevation of this allotment is about 8,400 feet or about 1,200 feet above the range of Ute ladies'-tresses. Distribution of this threatened plant species is well outside the portion of the Uinta-Wasatch-Cache National Forest for which this project is proposed. Based on this, a determination of no effect to this species or its habitat is determined for activities of the Proposed Action.

No effect to any threatened plant species is reasonably expected. Therefore, these species will not be further discussed.

Sensitive Plant Species

Of the plant species listed in the Revised Forest Plan as Sensitive, Table 8 contains a list of sensitive and recommended sensitive plant species that are known on the north slope of the Uinta Mountains or adjacent to this area. Sensitive fish species are discussed in the Aquatic and Riparian Resources section and sensitive terrestrial wildlife species are discussed in the Terrestrial Wildlife section.

Table 8: Sensitive and Recommended Sensitive Plant Species.

Common Name	Scientific Name	Probability of Occurrence	Potential Habitat in Analysis Area
Spruce wormwood (Recommended Sensitive)	*Artemisia norvegica* var. *piceetorum*	Low	Known only from upper elevations of the spruce belt and adjacent alpine areas of the main axis of the Uinta Mountains
Clustered lady's slipper (Sensitive)	*Cypripedium fasciculatum*	Low	Found in coniferous forests.
Rockcress draba (Sensitive)	*Draba globose* (*D. densifolia* var. *apiculata*)	Low	Found scattered across much of the alpine of the Uinta Mountains
Utah Ivesia (Recommended Sensitive)	*Ivesia utahensis*	Moderate	Known from alpine elevations in West Fork Blacks Fork and a few other alpine areas of the Uinta Mountains.
Arctic poppy (Sensitive)	*Papaver radicatum* ssp. *kluanense*, *P. uintaense*	Moderate	Known only at high alpine elevations in the Uinta Mountains
Echo spring-parsley (Recommended Sensitive)	*Cymopterus lapidosus*	No	Known from sagebrush, juniper, and mountain mahogany communities mostly below 6200 ft. elevation.
Uinta greenthread (Sensitive)	*Thelesperma pubescens*	No	Limited to open windswept slopes and ridges mostly on Bishop Conglomerate in lower elevations.
Starvling milkvetch (Sensitive)	*Astragaluls jejunus* var. *jejunus*	No	Known from sagebrush, rabbitbrush, and juniper communities from below 7000 ft.

Alpine cinquefoil (*Potentilla pensylvanica* var. *paucijuga*) is excluded from this analysis because this name is treated in synonymy under another species by Welsh et al. (2003), Cronquist et al. (1997), as well as USDA NRCS (2009).

Spruce wormwood (Recommended Sensitive) - This plant is known only from upper elevations of the spruce belt and adjacent alpine areas of the main axis of the Uinta Mountains. Allen Huber and Sherel Goodrich searched potential habitat for this plant on Stillwater Allotment in August of 2002, and Sherel searched again in August of 2008. No plants of this species were seen. Therefore, no impact to this species is expected and it will not be further discussed.

Clustered lady's slipper (Sensitive) - This plant is found in coniferous forests. This indicates potential habitat for this plant on the allotment. However, larger populations of this plant in the Uinta Mountains have generally been found in dense pole stands that have developed following stand replacement fire. This type of habitat is not common on the allotment. In 2002 and 2008 Sherel Goodrich searched for this plant along the canyon bottom and upper elevations of the coniferous belt. No plants of this species were found. This plant has persisted in relative high abundance concurrent with permitted livestock grazing in the Little Brush Creek and Cart Creek drainages of the Uinta Mountains. Therefore, no impact to this species is expected and it will not be further discussed.

Rockcress draba (Sensitive) - This is scattered across much of the alpine of the Uinta Mountains. Sherel Goodrich searched for this plant in alpine basins of the allotment in 2002 and 2008 where sheep are expected to graze, but did not see any plants of this species. The most likely habitat for this plant is the alpine rims at the head of the allotment. These rims are generally protected from sheep grazing by long, steep talus slopes of coarse boulders. Therefore, no impact to this species is expected and it will not be further discussed.

Utah Ivesia (Recommended Sensitive) - This plant is known from alpine elevations in West Fork Blacks Fork and a few other alpine areas of the Uinta Mountains. The potential for this plant on the allotments is on talus slopes where sheep grazing is reasonably expected to be nil. Therefore, no impact to this species is expected and it will not be further discussed.

Arctic poppy (Sensitive) - This plant is known only at high alpine elevations in the Uinta Mountains. The potential for this plant on the allotment is on talus slopes where sheep grazing is reasonably expected to be nil. Therefore, no impact to this species is expected and it will not be further discussed.

Echo spring-parsley (Recommended Sensitive) - This plant is known from sagebrush, juniper, and mountain mahogany communities mostly below 6,200 feet in elevation. Habitat, including elevation, of this plant indicates no potential for it on the Stillwater Allotment. Therefore, no impact to this species is expected and it will not be further discussed.

Uinta greenthread (Sensitive) - This plant is not known from west of Hickey Mountain (about 40 miles to the northeast). It is limited to open windswept slopes and ridges mostly on Bishop Conglomerate. Both distance and habitat indicate no potential for this plant on the Stillwater Allotment. Therefore, no impact to this species is expected and it will not be further discussed.

Starvling milkvetch (Sensitive) - This plant is known from sagebrush, rabbitbrush, and juniper communities from below 7,000 feet. Habitat for this plant is not found on the Stillwater Allotment. Therefore, no impact to this species is expected and it will not be further discussed.

b. Direct, Indirect, and Cumulative Effects to Sensitive Plants

Alternative 1 (Proposed Action)

Direct and Indirect Effects: Based on lack of plants or plant habitat and lack of sheep grazing on talus slopes, a determination of "no impact" is made for sensitive or proposed sensitive plants in relation to the Proposed Action.

Cumulative Effects: The cumulative effects analysis area is the Stillwater S&G Allotment. Since there are no direct or indirect impacts to sensitive plants, there will be no cumulative effects resulting from the

Proposed Action.

Alternative 2 (No Grazing)

Direct, Indirect, and Cumulative Effects: Same as Alternative 1 (Proposed Action).

Applicable Revised Forest Plan Standards and Guidelines

Sensitive species were evaluated to determine compliance with applicable standards and guidelines defined in the Revised Forest Plan. Results of this analysis are as follows:

(G21) For projects that may affect Forest Service Sensitive species, develop conservation measures and strategies to maintain, improve and/or minimize impacts to species and their habitats. Short-term deviations may be allowed as long as the action maintains or improves the habitat in the long term. (USDA Forest Service 2003a, page4-43)

Due to lack of habitat or lack of sheep grazing in areas where sensitive plant species have the potential to exist, no impact to sensitive plant species is expected. Forest Plan Guideline G21 is being met for sensitive plant species.

Noxious Weeds

Noxious weeds are indicators of unsatisfactory range condition and are often associated with disturbed sites. Once established, noxious weeds often out-compete native plant species, thus reducing the productivity and sustainability of rangeland vegetation. There are only five identified sites containing noxious weeds on the allotment. Three of these sites contain musk thistle (*Carduus nutans L.*), one contains Canada thistle (*Cirsium canadensis*), and the other Dyer's woad (*Isatis tinctoria* L.). The size of each of these sites is less than a tenth of an acre. Combined, these sites consist of less than ½ acre out of the total 26,700 acres found on the allotment. All of these sites are located along a roadside, which suggests a close association with vehicle traffic. Currently, there are no known noxious weed infestations inside the wilderness boundary within the allotment. All known infestations on the allotment are being treated by chemical and/or mechanical methods, in accordance with applicable State and Federal regulations.

c. Direct, Indirect, and Cumulative Effects to Noxious Weeds

Alternative 1 (Proposed Action)

Direct and Indirect Effects: All grazing herbivors such as domestic sheep have the potential to spread noxious weeds and create new infestations. This can occur either by injesting weed seed from one location and deficating in another or by transporting that seed on their coats. However, the locations of noxious weeds found on the allotment suggest a stronger corilation to vehicle traffic with little to no evidence that domestic sheep are contributing to the spread of noxious weeds in this area. Noxious weed treatment is used to control the spread of noxious weeds. All known noxious weed sites are being treated by chemical and/or mechanical methods, in accordance with applicable State and Federal regulations. Therefore, no increased weed infestation is expected to occur under this alternative.

Cumulative Effects: The cumulative effects area is defined as the Stillwater drainage within the boundaries of the Stillwater S&G Allotment. Regardless of the Proposed Action or other management

actions, all known noxious weed sites are being treated by chemical and/or mechanical methods, in accordance with applicable State and Federal regulations.

Alternative 2 (No Grazing)

Direct and Indirect Effects: As domestic sheep are currently not found to be a major contributing factor in the spread of noxious weeds, it is anticipated that weed treatments will remain relatively unchanged. All known noxious weed sites will be treated by chemical and/or mechanical methods in accordance with State and Federal regulations.

Cumulative Effects: Same as Alternative 1.

2. Ecological Status and Trend

Range analysis has been recorded on the allotment since the 1960's. A variety of monitoring and evaluation techniques have been used. Beginning in 2002, trend studies were established on 24 sites across the allotment. These sites have been re-read over time enabling us to determine current status and trend. In order to determine trend on the allotment, it is important to understand the history of the ecology of the area.

Livestock grazing is a major contributing factor in determining trend on rangelands. In recorded history, domestic livestock have grazed the allotment for at least 90 years. Past grazing use was considerably higher than today. Livestock grazing was unregulated prior to the establishment of the Wasatch National Forest. Beginning in 1906, the first steps to control livestock grazing were initiated. These early efforts focused on controlling livestock numbers and season of use.

While the control of livestock numbers and season of use was initiated shortly after the establishment of the Wasatch National Forest, livestock management continued to be very simple. Early livestock management consisted of various bands of sheep grazing different and overlapping portions of the allotment. This would have resulted in over utilization and depleted resource conditions.

From 1925 to 1960 significant changes were made. Reductions in season of use and livestock numbers were implemented throughout this time period and the first pasture rotations were developed in the 1940's.

Recent resource information collected by specialists and monitoring data (see the "Monitoring" section of this chapter) shows that the current level of livestock management is meeting or moving toward desired condition objectives identified in the Revised Forest Plan (USDA Forest Service 2003a). Management is consistent with Revised Forest Plan Standards, Guidelines, Goals, and Objectives.

Capability and Suitability

Rangeland capability is represented by "the physical attributes or characteristics of the landscape that are conducive to livestock grazing" (USDA Forest Service 2003a). Rangeland suitability is represented by those lands "that are allocated to grazing use based on decisions related to social, economic, or environmental choices and uses foregone" (USDA Forest Service 2003a). Range suitability identifies areas within the capable land base where grazing is appropriate within the context of land management considerations such as economics, environmental consequences, rangeland conditions and other uses or values of the area.

Criteria used to determine capable rangeland acres are identified in the Revised Forest Plan (USDA Forest Service 2003a). These include: rangelands that produce at least 200 lbs/acre of forage, are one mile or less from available water sources, and occur on slopes less than 45 percent.

Range analysis and field surveys conducted in the 1960's estimated that 9,700 acres or 36% of the Stillwater allotment was suitable for livestock grazing at that time. Thirty-seven monitoring points analyzed in 1965 estimated that the potential production per acre ranged from 200 pounds per acre to 2,600 pounds per acre for the suitable acres delineated in the 1960's.

The determination of Forest Service lands suitable for grazing on the Evanston-Mountain View Ranger District was made in the Revised Forest Plan (USDA Forest Service 2003a). In the 2003 Revised Forest Plan capable and suitable acres were determined for livestock grazing on the Stillwater allotment by using GIS layers found in the Forests corporate database. The 2003 Revised Forest Plan generally determined that capable acres on this allotment are also suitable. Acres were determined capable of being grazed by livestock if they produced at least 200 pounds of forage, have a slope less than 45% and are within one mile of surface water. From this analysis it was estimated that 3,695 acres or 14% of the Stillwater allotment is capable of being grazed by livestock. However, the 2003 GIS analysis did not adequately delineate the riparian, alpine and conifer vegetation types that were identified in the 1960's range analysis which produced 200 pounds per acre or more.

Suitability decisions were made in the Revised Forest Plan, and are validated and if necessary updated or revised at the project or allotment level. As the numbers of acres capable of being grazed has likely decreased from the 1960's analysis due to the increase in woody vegetation and the 2003 Revised Forest Plan analysis did not adequately delineate the capable acres found on the allotment, a more up to date analysis was performed. This recent analysis compared the 1960's capable acres and production information to recent on the ground field analysis, monitoring points and the 2003 Revised Forest Plan GIS analysis. The 1960's vegetation / capable acres layer was then combined with the 2003 capable acres layer and overlaid on 2006 NAIP imagery. Vegetation cover types were then updated and capable acres were estimated using the method described in the 2003 Revised Forest Plan combined with 1960's production information as compared to recent field analysis. This recent analysis has provided a more accurate estimate of capable range acres on the allotment, and capable acres on this allotment are also suitable. Currently, it is estimated that about 8,066 acres or 30% of the allotment is capable of being grazed by sheep. This reduction in capable acres from the 1960's analysis is a more typical trend found on mountain rangelands in the western states. This analysis updates the 1960s and 2003 capability and suitability determinations for grazing on this allotment.

Table 9: Comparison of capable and suitable acre determinations on the Stillwater Allotment.

Stillwater Allotment	Percent Suitable	Total Suitable Range Acres	Percent Capable	Total Capable Range Acres
Stillwater Allotment using site-specific information from the 1960s range analysis.	36%	9,700		
Stillwater Allotment using 2003 Revised Forest Plan information. The Revised Forest Plan did not adequately delineate riparian, alpine and conifer vegetation types.	14%	3,695	14%	3,695
Stillwater Allotment using 2008-2009 analysis and monitoring point data and consideration of the 1960's vegetation/capable acres layer, 2003 capable	30%	8,066	30%	8,066

Stillwater Allotment	Percent Suitable	Total Suitable Range Acres	Percent Capable	Total Capable Range Acres
acres layer, and 2006 NAIP imagery.				

Past fire suppression efforts have allowed the woody vegetation to increase at a higher rate than what would naturally occur with the absence of human intervention. In many areas, as woody overstory vegetation increases and encroaches into the open parks, the understory vegetation often decreases, resulting in fewer capable grazing acres. Professor Jeffery S. Munroe from Middlebury College, Vermont documented this increase in conifer cover on the Stillwater allotment through repeat photography of fifteen photographs taken by Timothy O'Sullivan in 1869 as part of the King Survey. In Munroe's article, published in the 2007 issue of the Utah Historical Quarterly, volume 75, titled "In the Footsteps of Timothy O'Sullivan," Munroe states that "Almost all of the rephotographs illustrate that the forest is denser, with trees growing closer together." Figure 3 illustrates this increase in conifer vegetation on the Stillwater allotment.

Figure 3: Middle Basin at the head of Stillwater Creek.

8/1869 Timothy O'Sullivan Courtesy of George Eastman House 8/12/2003 Jeffrey S. Munroe Middlebury College, Vermont

Stocking

Range analysis conducted in the 1960's established a tentative livestock grazing capacity for the allotment. The tentative capacity is an "experimental capacity that should be firmed up by proper use studies following the determination of the tentative capacity" (USDA Forest Service 2003b, Region 4, FSH 2209.21, Range Analysis Handbook 1981). At the time the 1960's range analysis was conducted the Stillwater allotment had already seen a 70% reduction in permitted AUMs. The allotment had also been in an established rotational grazing system for 20 years. Ninety-five analysis points, read in 1965, concluded that the vast majority of the range was in good to excellent condition with an upward or stable trend. As a result of this analysis, no additional reductions in livestock numbers or season of use were made. The tentative grazing capacity was set at the established 1,200 ewe/lamb pairs from July 11th to September 10th.

Forest Service direction for the management of grazing on the National Forests including the determination of grazing capacity has evolved over time. The 2003 Revised Forest Plan has determined that the average stocking rate or "suitable acres per animal unit month (AUM)" for Forest grazing

allotments is 4.78 acres per AUM. Currently, the grazing capacity is determined by analyzing the effects of livestock grazing on the resource in the analysis area and determining if Forest Plan standards and guidelines are being met. The Stillwater allotment is currently stocked at 10.7 suitable acres per AUM. This translates to a 55% lighter stocking rate than the average Forest grazing allotment. Current management combined with this lighter stocking rate has provided for healthy rangeland conditions with light to moderate use throughout the allotment. Monitoring indicates that the current permitted AUM's on each allotment are appropriate to achieve Forest Plan management direction (McConkey 2009).

Monitoring

In 2008, 15 upland and 9 riparian long-term monitoring sites were again evaluated across the allotment. Regional and Forest level management direction was then used to determine the current status of the desired plant communities, utilization levels and current condition and trend.

The Society for Range Management defines a desired plant community as "the plant community that has been identified through a management plan to best meet the plan's objectives for the site. It must protect the site as a minimum." The 2003 Revised Forest Plan has established that rangelands should be "dominated by desired perennial grasses and forbs, with a range of shrub cover."

All monitoring sites were evaluated by comparing the site specific species composition lists to the 2005 Region 4 Range Management Resource Value Rating Guide, (USDA Forest Service 2005, Exhibit 01), to determine the presence or absence of plant species that display a moderate to high erosion control potential. As the regional list does not include many of the plants found in the Uinta Mountains, a localized list prepared by Goodrich (September 2008) was also used in this analysis. Plant species were considered to have a high or moderate erosion control potential if the "plant has aggressive growth habits, persistent plant structure, high potential biomass and/or a good soil-binding root-rhizome-runner system in established stands." (USDA Forest Service 2005, Exhibit 01). The degree to which a plant displays these characteristics determines if a plant possesses a high, moderate or low erosion control potential. As compared to those species that possess high or moderate erosion control potentials, "Information from the Range Inventory Standardization Committee Report (1983) suggests that a value of 75% similar or greater may be used to differentiate between meeting and not meeting management objectives." (USDA Forest Service 2005, Exhibit 01). This evaluation has determined that all long-term monitoring sites on the allotment are dominated by desirable native perennial plant species, and all long-term monitoring sites contain greater than 75% desirable native plant species with high to moderate erosion control potentials. Results of this evaluation are displayed in Table 10 of this analysis.

The level of utilization, timing of grazing, frequency of use and the opportunity for plants to grow before grazing and/or regrow after grazing are all annual variables of grazing that cumulatively affect the long-term condition and trend of rangelands. As utilization is a part of these variables, the 2003 Revised Forest Plan has established specific utilization standards to address this issue. Utilization will vary on a yearly basis between the different grazing areas within the allotment. Past use records, photo point monitoring and individual site evaluations were used to determine the overall standard level of use received in a particular grazing area. This evaluation has concluded that Forest Plan utilization standards are either being met or exceeded throughout the allotment. In addition, as utilization is one of the annual variables affecting long-term condition and trend, the cumulative effects of proper utilization can also be evident in long-term site evaluations.

Applicable Revised Forest Plan Standards and Guidelines

Utilization standards were evaluated to determine compliance with applicable standards and guidelines defined in the Revised Forest Plan. Results of this analysis are as follows:

(S24) As a tool to achieve desired conditions of the land, maximum forage utilization standards for vegetation types in satisfactory condition using traditional grazing systems (rest rotation, deferred rotation, season long) are as follows (USDA Forest Service 2003a, page 4-51):

Forest Plan, Table S24: Percent utilization of key grass or grass like vegetation, by vegetation type, for rangelands in satisfactory condition.

Vegetation Type	***Condition***	***Percent Utilization Key Grass or Grass like***
Upland and Aspen	*Satisfactory*	*50*
Crested Wheatgrass	*Satisfactory*	*60*
Riparian Class I*	*Satisfactory*	*50*
Riparian Class II & III*	*Satisfactory*	*60*

**Riparian, away from greenline*

Results for Forest Plan standard S24 are displayed in Table 10 of this analysis. Forest Plan Standard S24 - met.

(S25) As a tool to achieve desired conditions of riparian areas, maximum forage utilization standards (stubble height) for low to mid elevation greenline species in Class I, II, and III (see Forest Plan Appendix VII) riparian areas in satisfactory condition are as follows: (Key species being grazed include water sedge, Nebraska sedge, and and/or wooly sedge.) (USDA Forest Service 2003a, page 4-51)

Forest Plan, Table S25. Greenline stubble height at the end of the growing season, by riparian class, for rangeland satisfactory condition.

Riparian Class	***Condition***	***Greenline Stubble Height at End of Growing Season***
Riparian Class I	*Satisfactory*	*No Less Than 5"*
Riparian Class II	*Satisfactory*	*No Less Than 4"*
Riparian Class III	*Satisfactory*	*No Less Than 3"*

Results for Forest Plan standard S25 are displayed in Table 10 of this analysis. Forest Plan Standard S25 - met.

(S26) For all rangelands, including big game winter range and riparian areas, permit no more than 50% of the current year's growth on woody vegetation to be browsed during one growth cycle (i.e., when use has reached 50% allow no additional livestock use). (USDA Forest Service 2003a, page 4-52)

Past use records, photo point monitoring and individual site evaluations have not recorded any areas where utilization on woody vegetation has exceeded 50% of the current year's growth. Overall domestic livestock grazing use on woody vegetation is classified as "light" throughout the allotment. The 2008 evaluations of sites 16-27B, 16-37, 16-40, and 26-12 noted active signs by wild ungulate use on woody vegetation, primarily willows, found in or near the plots. However, grazing use was not recorded to have exceeded 50% of the current year's growth. Conversely, sites 16-27B, 16-38, 16-39, 6-18, 16-30 and 26-12 all displayed a notable increase in woody vegetation. This evaluation has concluded that Forest Plan utilization standard S26 is being met.

Rangeland health is defined in Region 4 as either functioning, functioning-at-risk, or not functioning. As

described in the 2005 Region 4 Rangeland Ecosystem Analysis and Management Handbook, FSH 2209.21,22, Sec.20.05, rangelands are functioning when they are meeting a desired condition identified in long-term specified management objectives, standards, and/or guidelines; and have the capability across the landscape for renewal, for recovery from a wide range of disturbances, and for retention of its ecological resilience (USDA Forest Service 2005). Trend is defined as, "The direction of change in an attribute as observed over time." (SRM 1998, Glossary of terms used in Range Management) Trend on the allotment was derived by the use of both apparent and measured trend. Region 4 requires that trend be expressed in terms of "meeting", "moving toward", or "not meeting" desired conditions. Long-term monitoring has indicated that the following desired conditions described Revised Forest Plan standards and guidelines are being achieved within the analysis area:

(S7) Allow management activities to result in no less than 85% of potential ground cover for each vegetation cover type. (See Forest Plan Appendix VII for potential ground cover values by cover type.) (USDA Forest Service 2003a, page 4-37)

Results for Forest Plan standard S7 are displayed in Table 10 of this analysis. Forest Plan Standard S7 - met.

(G7) Manage Class 1 Riparian Area Greenlines for 70% or more late-seral vegetation communities as described in Intermountain Region Integrated Riparian Evaluation Guide (USDA Forest Service, 1992). Manage Class 2 Riparian Area Greenlines for 60% or more late-seral vegetation communities. Manage Class 3 Riparian Area Greenlines for 40% or more late-seral vegetation communities. (USDA Forest Service 2003a, page 4-37)

Results for Forest Plan guideline G7 are displayed in Table 10 of this analysis. Forest Plan Guideline G7 - met.

In addition to the 24 long-term monitoring points, four riparian and seven upland photo points were also re-evaluated. A summary of the re-evaluation is provided in Table 10. Overall monitoring has indicated satisfactory conditions throughout the allotment. This recent analysis coincides with the 1965 rangeland analysis and validates the 1960's suitable range determination and tentative grazing capacity. Monitoring has indicated that the current management, utilization and permitted use are at appropriate levels to achieve or exceed Revised Forest Plan management direction.

Table 10 lists the monitoring points found within the allotment, along with an evaluation of the desired plant communities, utilization and current condition and trend.

Table 10: Evaluation of Monitoring Points.

RIPARIAN MONITORING SITES			
Site I.D.	**Desired Plant Communities**	**Utilization**	**Rangeland Health and Trend Status in Relation to Forest Plan Desired Conditions / Site Evaluation**
15-27, Lower Hayden Fork	93% of the dominant native perennial plant species recorded on site, possess high to moderate erosion control potentials.	Light to moderate use, Forest Plan standard S25 – met	Functioning - Forest Plan guideline G7 – met. Five different species of willows with diverse age structures were recorded on site along with stable and active beaver dams. Continuous stream bank vegetation and large boulders armor stream banks. > 80% late seral species observed on site. > 85% ground cover observed on site.
16-27B, Stillwater Creek, Above Christmas Meadows	93% of the dominant native perennial plant species recorded on site, possess high to moderate erosion control potentials.	Light to moderate use, Forest Plan standard S25 – met	Functioning - Forest Plan guideline G7 – met. Older taller Geyers willows have died back and new shoots are becoming established. Die back is attributed to age of willows. New shoots are being actively grazed by wildlife. Livestock use estimated to be less than 20% post grazing. > 85% late seral species observed on site. > 90% ground cover observed on site.
16-30C,	86% of the dominant native	Light to moderate use,	Functioning - Forest Plan guideline G7 – met. 97.3% late-

RIPARIAN MONITORING SITES			
Site I.D.	**Desired Plant Communities**	**Utilization**	**Rangeland Health and Trend Status in Relation to Forest Plan Desired Conditions / Site Evaluation**
Stillwater Creek, Christmas Meadows	perennial plant species recorded on site, possess high to moderate erosion control potentials.	Forest Plan standard S25 – met	seral vegetation community observed and an increase in vegetative willow cover adjacent to the site was noted. > 90% ground cover observed on site.
16-37, Main Fork, Bear River (Hell Hole), (Wilderness)	100% of the dominant native perennial plant species recorded on site, possess high to moderate erosion control potentials.	Area receives prolonged periods of rest. Light use, Forest Plan standard S25 – exceeded	Functioning - Forest Plan guideline G7 – met. 100% late-seral vegetation community observed on site. Young plain leaf willows are very abundant along section surveyed. These willows are also showing signs of active wildlife use. > 90% ground cover observed on site.
16-38, Main Fork, Bear River (Middle Hell Hole)	83% of the dominant native perennial plant species recorded on site, possess high to moderate erosion control potentials.	Area receives prolonged periods of rest. Light use, Forest Plan standard S25 – exceeded	Functioning - Forest Plan guideline G7 – met. 97.8% late-seral vegetation community observed on site. Young plain leaf willows are becoming established along greenline, 4-5 years in age. > 90% ground cover observed on site.
16-39, Main Fork Bear River, Below Hell Hole	75% of the dominant native perennial plant species recorded on site, possess high to moderate erosion control potentials.	Area receives prolonged periods of rest. Light use, Forest Plan standard S25 – exceeded	Functioning - Forest Plan guideline G7 – met. Analysis recorded new willows becoming established on site between 5-6 years old. Continuous stream bank vegetation cover and large boulders armor stream bank. > 80% late seral species observed on site. > 90% ground cover observed on site.
16-40, Upper Main Fork, Bear River (Hell Hole), (Wilderness)	100% of the dominant native perennial plant species recorded on site, possess high to moderate erosion control potentials.	Area receives prolonged periods of rest. Light use, Forest Plan standard S25 – exceeded	Functioning - Forest Plan guideline G7 – met. 77.3% late-seral vegetation community observed. Greenline shows high carex cover with heavy root mass. Plain leaf willow showing signs of active wildlife use. > 90% ground cover observed on site.
16-46, Lower , East Fork Bear River	100% of the dominant native perennial plant species recorded on site, possess high to moderate erosion control potentials.	Area receives minimal grazing use. Light use, Forest Plan standard S25 – exceeded	Functioning - Forest Plan guideline G7 – met. The steep rugged topography and a dense tree and willow component, limits the amount of livestock grazing that can occur in this area. Willows display a diverse age structure and are well distributed across the site. > 80% late seral species observed on site. > 85% ground cover observed on site.
26-8A, South Middle Basin Meadow, (Wilderness)	100% of the dominant native perennial plant species recorded on site, possess high to moderate erosion control potentials.	Area receives prolonged periods of rest. Light use, Forest Plan standard S25 – exceeded	Functioning - Forest Plan guideline G7 – met. 81.4% late-seral vegetation community observed on site. Site remains relatively unchanged from previous analysis. > 90% ground cover observed on site.

UPLAND MONITORING SITES			
Site I.D.	**Desired Plant Communities**	**Utilization**	**Rangeland Health and Trend Status in Relation to Forest Plan Desired Conditions / Site Evaluation**
16-4, Wet Meadow, Above Lily Lake	99.4% of the vegetative cover consists of desirable native perennial vegetation with high to moderate erosion control potentials.	Light to moderate use, Forest Plan standard S24 – met	Functioning - Forest Plan standard S7 – met. Analysis recorded a slight increase in vegetation cover and composition and a slight decrease in the amount of bare ground. 99% vegetation and litter cover observed on site. *Forest Plan standard ground cover range at potential - Alpine, upland turf & meadow (Tufted Hairgrass) 97-100 (85% = 83-85)*
6-18, Lower Aspen, Below Lily Lake	99.2% of the vegetative cover consists of desirable native perennial vegetation with high to moderate erosion control potentials.	Moderate use, Forest Plan standard S24 – met	Functioning - Forest Plan standard S7 – met. Analysis recorded 98% ground cover with young pines and aspen becoming established on site. *Forest Plan standard ground cover range at potential - Aspen 90-98 (85% = 77-83)*
16-30, Christmas meadows, Above the road	97.4% of the vegetative cover consists of desirable native perennial vegetation with high to moderate erosion control potentials.	Light to Moderate use, Forest Plan standard S24 – met	Functioning - Forest Plan standard S7 – met. This site is located in a dry upland meadow with significant pocket gopher activity present. Ground cover has remained unchanged at 78%, species composition has increased and the amount of bare ground has remained relatively unchanged. Young aspen suckers are encroaching into the meadow adjacent to the site. *Forest Plan standard ground cover range at potential – Uinta alpine upland turf & meadow 80-100 (85% = 68-85)*
16-30B, Christmas Meadows, Above the road #2	Erosion control potential, same as site 16-30.	Light to Moderate use, Forest Plan standard S24 – met	Functioning - Forest Plan standard S7 – met. This site is located less than 100 yards from 16-30 in the same vegetation type. 2008 analysis determined that no discernable differences exist between these two sites.

UPLAND MONITORING SITES			
Site I.D.	**Desired Plant Communities**	**Utilization**	**Rangeland Health and Trend Status in Relation to Forest Plan Desired Conditions / Site Evaluation**
16-36, Upper Hells Hole, (Wilderness)	77.8% of the vegetative cover consists of desirable native perennial vegetation, 4% of the vegetative cover consists of a native biennial. Both possess high to moderate erosion control potentials.	Area receives prolonged periods of rest. Little to no use. Forest Plan standard S24 – exceeded.	Functioning - Forest Plan standard S7 – met. Ground cover has remained unchanged at 88%. Species composition has also remained relatively unchanged. Site is located on a steep side slope that would receive minimal livestock grazing use. *Forest Plan standard ground cover range at potential – Uinta Alpine erosional surface (shale) 33-85 (85% = 28-72)*
16-43, Hell Hole DECE, (Wilderness)	99.6% of the vegetative cover consists of desirable native perennial vegetation with high to moderate erosion control potentials.	Area receives prolonged periods of rest. Light use, Forest Plan standard S24 – exceeded	Functioning - Forest Plan standard S7 – met. Analysis recorded a decrease in the amount of bare ground and a slight increase in species composition. Ground cover remained relatively unchanged at 92%. *Forest Plan standard ground cover range at potential – Uinta alpine upland turf & meadow 80-100 (85% = 68-85)*
26-1, McPheter's Lake, Shale Ridge, (Wilderness)	99.6% of the vegetative cover consists of desirable native perennial vegetation with high to moderate erosion control potentials.	Area receives prolonged periods of rest. Light use, Forest Plan standard S24 – exceeded	Functioning - Forest Plan standard S7 – met. Site remains relatively unchanged. Ground cover measured 74%. *Forest Plan standard ground cover range at potential – Uinta Alpine erosional surface (shale) 33-85 (85% = 28-72)*
26-1B, Below Ryder Lake, (Wilderness)	99.7% of the vegetative cover consists of desirable native perennial vegetation with high to moderate erosion control potentials.	Area receives prolonged periods of rest. Light use, Forest Plan standard S24 – exceeded	Functioning - Forest Plan standard S7 – met. Previously disturbed sites have completely re-vegetated with native species. 93% ground cover reported. *Forest Plan standard ground cover range at potential - Alpine, upland turf & meadow (Tufted Hairgrass) 97-100 (85% = 83-85)*
26-2, McPheter's Lake #2, (Wilderness)	98.1% of the vegetative cover consists of desirable native perennial vegetation with high to moderate erosion control potentials.	Area receives prolonged periods of rest. Light use, Forest Plan standard S24 – exceeded.	Functioning - Forest Plan standard S7 – met. Site remains relatively unchanged and is located on a Precambrian shale ridge. Ground cover measured 33%. *Forest Plan standard ground cover range at potential – Uinta Alpine erosional surface (shale) 33-85 (85% = 28-72)*
26-4, Head of Middle Basin, (Wilderness)	71.9% of the vegetative cover consists of desirable native perennial vegetation, 27% of the vegetative cover consists of a native biennial. Both possess high to moderate erosion control potentials.	Area receives prolonged periods of rest. Little to no use. Forest Plan standard S24 – exceeded.	Functioning - Forest Plan standard S7 – met. This site is located on a steep shale slope on the east side of Hayden Peak. The debris field and steepness of slope (>45%) prevents grazing. Site remains relatively unchanged. 75% ground cover estimated. *Forest Plan standard ground cover range at potential – Uinta Alpine erosional surface (shale) 33-85 (85% = 28-72)*
26-5, Middle Basin CANI2, (Wilderness)	99.4% of the vegetative cover consists of desirable native perennial vegetation with high to moderate erosion control potentials.	Area receives prolonged periods of rest. Light use, Forest Plan standard S24 – exceeded.	Functioning - Forest Plan standard S7 – met. Site remains relatively unchanged and is classified as a typical Carex nigrican site. 99% ground cover observed. *Forest Plan standard ground cover range at potential – Uinta alpine upland turf & meadow 80-100 (85% = 68-85)*
26-7, West of McPheter's Lake, (Wilderness)	99.5% of the vegetative cover consists of desirable native perennial vegetation with high to moderate erosion control potentials.	Area receives prolonged periods of rest. Light use, Forest Plan standard S24 – exceeded.	Functioning - Forest Plan standard S7 – met. Analysis recorded an increase in vegetation cover and a decrease in the amount of bare ground This change coincides with the decreased pocket gopher activity recorded on site. Species composition remained the same. 86% ground cover observed. *Forest Plan standard ground cover range at potential – Uinta alpine upland turf & meadow 80-100 (85% = 68-85)*
26-9, South Middle Basin Meadow #4, (Wilderness)	99% of the vegetative cover consists of desirable native perennial vegetation with high to moderate erosion control potentials.	Area receives prolonged periods of rest. Light use, Forest Plan standard S24 – exceeded.	Functioning - Forest Plan standard S7 – met. Site remains relatively unchanged with 100% ground cover observed. *Forest Plan standard ground cover range at potential – Uinta alpine upland turf & meadow 80-100 (85% = 68-85)*
26-10, South Middle Basin Meadow, DECE, (Wilderness)	99.8% of the vegetative cover consists of desirable native perennial vegetation with high to moderate erosion control potentials.	Area receives prolonged periods of rest. Light use, Forest Plan standard S24 – exceeded.	Functioning - Forest Plan standard S7 – met. Analysis recorded an increase in vegetation composition. While bare ground and ground cover remained relatively unchanged. 98% ground cover observed. *Forest Plan standard ground cover range at potential – Uinta alpine upland turf & meadow 80-100 (85% = 68-85)*
26-12, North Middle Basin Meadow, (Wilderness)	100% of the vegetative cover consists of desirable native perennial vegetation with high to moderate erosion control potentials.	Area receives prolonged periods of rest. Light use, Forest Plan standard S24 – exceeded.	Functioning - Forest Plan standard S7 – met. Analysis recorded a decrease in the amount of bare ground and a 10% increase in the amount of plain leaf willow found on site. 93% ground cover was observed. Willows have increased despite wildlife grazing pressure. *Forest Plan standard ground cover range at potential – Uinta alpine upland turf & meadow 80-100 (85% = 68-85)*

ADDITIONAL UPLAND AND RIPARIAN PHOTO POINT MONITORING SITES		
Site I.D.	**Utilization**	**Site Evaluation**
16-4B, Ephemeral stream, Below Lily lake	Light to moderate use, Forest Plan standard S25 – met	Located on an ephemeral stream with silver sage as the dominate species. Site displays continuous stream bank coverage and point bar revegetation.
16-41, Beginning Main Fork, Bear River (Hell Hole), (Wilderness)	Area receives prolonged periods of rest. Light use, Forest Plan standard S25 – exceeded.	Site displays an increase in pocket gopher activity along stream bank. Photos also show an accumulation of organic matter in carex dominated meadow.
26-8B, South Middle Basin Meadow #2, (Wilderness)	Area receives prolonged periods of rest. Light use, Forest Plan standard S25 – exceeded.	This site is located less than 100 yards from 26-8A in the same vegetation type. 2008 analysis determined that no major vegetative differences exist between these two sites. Site is located in carex dominated meadow and displays continuous stream bank vegetative coverage with a heavy root mass.
26-8C, South Middle Basin Meadow #3, (Wilderness)	Area receives prolonged periods of rest. Light use, Forest Plan standard S24 – exceeded.	This site is located less than 100 yards from 26-8A in the same vegetation type. 2008 analysis determined that no major vegetative differences exist between these two sites. Site documents past beaver activity. A stand of bluejoint marks the location of a failed beaver dam. Presence of dam suggests a higher willow component prior to beaver inhabiting the site decades ago.
16-27, Christmas Meadow South Trail	N/A	Photo documents trail impacts from livestock operations and recreational stock use. Site was unrecognizable in 2008 as trail improvement projects have altered site.
16-29, Christmas Meadows, Below the road	Moderate use, Forest Plan standard S24 – met	This site was first established in 2002 as a utilization photo point. Site is located less than 200 yards away from 16-30 in same vegetation type. Utilization records show heavy use in 2002, moderate use in 2004 and light use in 2005 and 2007. 2008 utilization was classified as light to moderate. These photos demonstrate that heavy use is not the norm for this site and that overall proper utilization is being achieved. Site also shows significant pocket gopher activity.
16-42, Upper Hell Hole Meadow, (Wilderness)	Area receives prolonged periods of rest. Light use, Forest Plan standard S24 – exceeded.	Site display an accumulation of organic matter in carex meadow from minimal grazing use.
26-1C, Above Ryder Lake, (Wilderness)	Area receives prolonged periods of rest. Light use, Forest Plan standard S24 – exceeded.	Site displays plain leaf willow abundance and vegetative stature as influenced by site growing condition in basin.
26-3, McPheter's Lake #3, (Wilderness)	Area receives prolonged periods of rest. Light use, Forest Plan standard S24 – exceeded.	Site remains relatively unchanged. Ground cover estimated at nearly 100%. Site displays the typical vegetative structure of wetter low lying areas with deeper soils in the alpine.
26-6, High Middle Basin, (Wilderness)	Area receives prolonged periods of rest. Light use, Forest Plan standard S24 – exceeded.	Site documents patterns of vegetation that coincide with geomorphic features. Displays that sparse vegetation is associated with the convex ridges and dense vegetation is associated with the lower drainages.
26-11, South Middle Basin Meadow #5, (Wilderness)	Area receives prolonged periods of rest. Light use, Forest Plan standard S24 – exceeded.	This site is located 15 yards from 26-10 and shows a decline in the amount of bare soil which is attributed to the decline of gopher activity.

3. Livestock Grazing

In recorded history, domestic livestock have grazed the allotment for more than 90 years. Past grazing use was considerably higher than today. Livestock grazing on the allotment was unregulated prior to the establishment of the Wasatch National Forest in 1906. Livestock grazing has been permitted on the Wasatch-Cache National Forest since shortly after their establishment and has occurred continuously since that time. Beginning with the establishment of the National Forests, the first steps to control livestock grazing were initiated. These early efforts focused on controlling livestock numbers and season of use. Allotment boundaries, livestock numbers, seasons of use and grazing management practices have been adjusted many times since domestic livestock grazing has been authorized. The regulation of grazing has increased over time.

While it is recognized that livestock were grazing the allotment prior to the establishment of the National Forest, exact numbers and season of use are unknown. Prior to 1916, Forest records only indicate that domestic sheep were grazing the area. From 1916 to 1925 over 4,700 head of sheep were grazing in and around the allotment for an estimated 2,500 AUMs. This is the highest grazing use recorded for the analysis area. This grazing use coincides with the national drive to increase red meat production as part

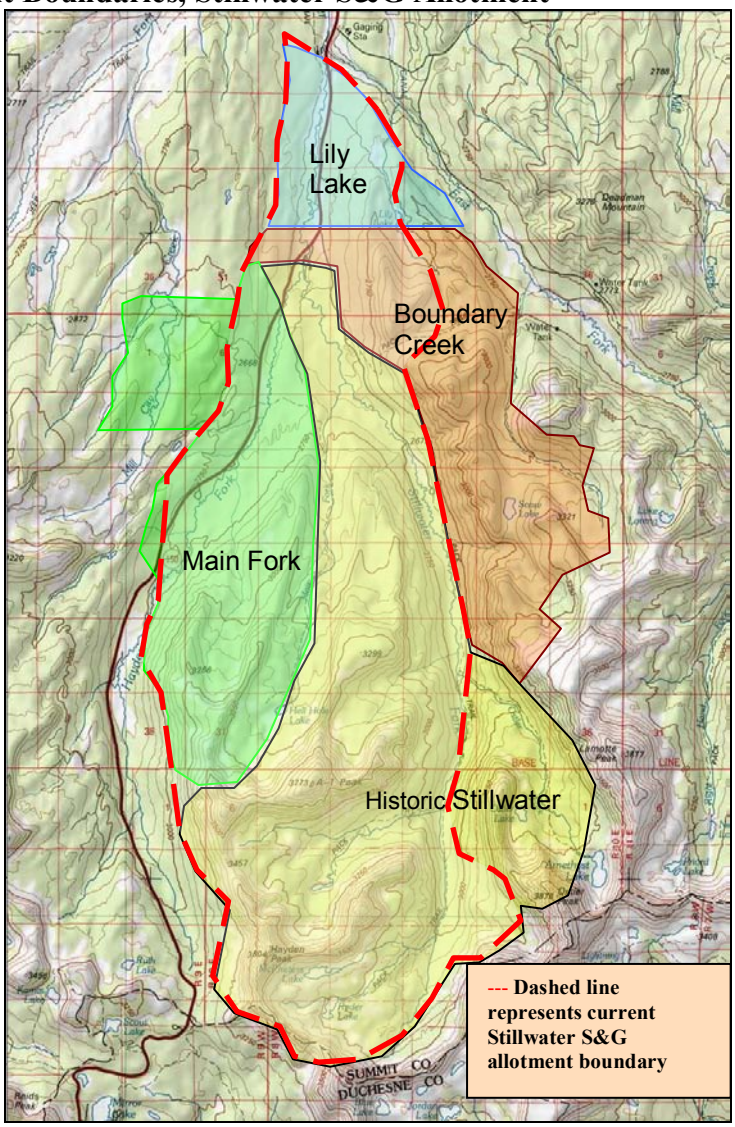
of the war effort for World War I. Between 1926 and 1960, AUMs were reduced 70% to 751 AUMs. Table 11 displays this change over time.

Table 11: Historic Livestock Numbers on the Stillwater S&G Allotment.

Time Period	Livestock Numbers	Estimated Animal Unit Months (AUMs) Per Year	Percent Reduction in AUMs from Previous Time Period
1916 -1925	4,751 ewe/lambs	2,500 AUMs	N/A
1926 - 1935	4,155 ewe/lambs	2,000 AUMs	20%
1936 - 1945	3,230 ewe/lambs	1,600 AUMs	20%
1946 - 1955	2,885 ewe/lambs	1,600 AUMs	0%
1956 - 1959	2,400 ewe/lambs	1,400 AUMs	15%
1960	1,200 ewe/lambs	751 AUMs	48%
1961 - Present	1,200 ewe/lambs	751 AUMs	0%

In addition to livestock numbers and season of use, allotment boundaries and grazing management practices have also evolved over time. In 1942, the Lily Lake allotment was added to the Boundary Creek allotment, which was eventually combined with the Main Fork allotment in 1946. In July of 1960 Forest Supervisor F.C. Koziol made an agreement with the existing permittee "that Amethyst Lake Basin will remain closed to grazing until sufficient recovery has been made to justify its use." In addition, the grazing season was shortened 10 days from September 20th to September 10th and portions of the Main Fork and Boundary Creek Allotments were added to the Stillwater Allotment. It was at this time that the Main Fork and Boundary Creek Allotments were dissolved. Figure 4 displays the changes in allotment boundaries from the 1940's to the present day.

Figure 4: Allotment Boundaries, Stillwater S&G Allotment



The Stillwater Allotment has been grazed under a multi-pasture rotational grazing strategy since the 1940's. In the early 1980's a rest rotation grazing strategy was implemented. This type of strategy involves resting certain grazing units for the entire grazing season, while rotating grazing use on the remaining units. This has resulted in grazing upper elevations, inside the wilderness boundary on the allotment, six times in the past twenty years.

Currently, the Stillwater Allotment provides essential summer, and early fall forage for a total of 1,200 ewe/lamb pairs. The Stillwater Allotment is located in Summit County, Utah. However, this area is separated from most of Summit County by the Uinta Mountains. The permittee and ranch tied to this allotment function as part of southwestern Wyoming economy in Uinta County. Agriculture has been the traditional mainstay of the economy in Uinta County, accounting for 4% of the overall job market (US Census Bureau). Currently, the ranching family which holds the grazing permit on the allotment employs 20 full time employees. Sheep, lambs and wool accounted for 2.46% of cash receipts during 2002 in Wyoming (Wyoming Agricultural Statistics 2003). Table 12 lists the ranching family permitted on the allotment along with the livestock, period of use, and AUMs.

Table 12: Allotment, Permittee, Period of Use, Livestock Numbers, Kind and Class.

Permittee	Allotment	Permit	Livestock			Period of Use		AUMs
			Number	Kind	Class	From	To	
Michale J. Sims	Stillwater S&G	Term	1,200	Sheep	Ewe/lamb	7/11	9/10	751

Early 1900's livestock management consisted of various bands of sheep grazing different portions of the allotment. Sometimes these areas would overlap, resulting in over-grazing on preferred sites (typically valley bottoms), with minimal use on uplands or non-preferred sites. Livestock would also graze the same place at the same time of year, every year or for too long a period of time. As the knowledge of the interactions between the environment and herbivores has increased, so has the management. Significant changes were made by the 1960's. Pasture rotations were developed; range improvement projects were implemented and reductions in seasons of use and livestock numbers were made. These first steps significantly improved depleted resource conditions and provided the foundation for future management.

Current grazing management incorporates plant development and/or recovery into the grazing plans. This is accomplished by using several strategies such as changing the time of year that an area is grazed, allowing long recovery periods and limiting grazing use to moderate levels. Consequently these strategies allow plants to regrow and recover from grazing before they are grazed again, or grow to full development before they are grazed. This is accomplished through management techniques designed to allow plants the ability to grow before grazing and/or regrow after grazing. Current management also involves resting certain grazing units for the entire grazing season. These periods of rest provide plants the opportunity to maximize vegetative production by completing their growth cycle. By incorporating both periods of rest and proper use, rangeland health and productivity can be optimized throughout the entire allotment. This type of management has resulted in: 1) smaller allotments consolidated into one larger allotment, 2) smaller numbers of consolidated livestock, 3) shortened season of use, and 4) improved overall distribution through management.

The following grazing management guidelines and management prescriptions described in the Revised Forest Plan may also be used when applicable to help manage livestock grazing on the allotment:

(G71) As a tool to achieve rehabilitation of upland, aspen, and riparian communities away from the greenline that are not meeting or moving toward objectives (i.e., in unsatisfactory condition), maximum allowed forage utilization will be 30 to 40 percent. (USDA Forest Service 2003a, page 4-52)

(G72) Modify grazing practices that prevent attainment of desired future conditions for vegetation and/or aquatic resources. (USDA Forest Service 2003a, page 4-52)

(G73) Delay livestock use in post-fire and post-harvest created forest openings until successful regeneration of the shrub and tree components occurs (aspen trees reach an average height of 6 feet). (USDA Forest Service 2003a, page 4-52)

(G74) Stock driveways and trailing routes will be located outside of Riparian Habitat Conservation Areas unless terrain and/or vegetation are prohibitive. When driveways and trailing routes must pass through Riparian Habitat Conservation Areas, they will be located and livestock moved through them in such a way to minimize the extent and/or severity of potential damage caused by trailing. (USDA Forest Service 2003a, page 4-52)

(G75) Annual operating instructions (and/or Allotment Management Plans) should be evaluated and additional site-specific objectives defined if needed for any or all of the following five parameters:

- *stubble height on selected key species on the greenline,*
- *stubble height on selected key species and/or the amount of bare ground within the riparian zone but away from the greenline,*
- *riparian woody browse utilization (trees and shrubs),*
- *stream bank trampling on key reaches, and*
- *stubble height and/or incidence of use on key species in the uplands. (USDA Forest Service 2003a, page 4-52)*

(Western Uintas Management Area – Rangeland/Livestock Grazing Desired Future Conditions): Bear River Area – From the Hayden Fork drainage to the east, if sheep permits for upper elevation allotments are voluntarily waived without a preference, permits will not be reissued and allotments will be closed to domestic livestock for purposes of future bighorn sheep habitat. (USDA Forest Service 2003a, page 4-190)

There is one water development that currently exists on the allotment. This range improvement structure helps implement the rotational grazing system on the allotment.

D. Aquatic and Riparian Resources (Issue 2)

1. Aquatic and Riparian Resources

The allotment is located in portions of four subwatersheds. It is located primarily in the Stillwater subwatershed and in small portions of the Bear River-Hayden, Bear River-Willow Creek, and East Fork Bear River subwatersheds. Perennial Class I streams in the allotment include: Bear River (1.8 miles), East Fork Bear River (0.1 miles), Hayden Fork (3.3 miles), Ostler Fork (0.8 miles), and Stillwater Fork (30.0 miles). The Stillwater Fork flows into the Bear River at the confluence with the Hayden Fork. Main Fork is the main tributary to the Stillwater Fork and flows into the Stillwater about two miles upstream of the confluence with the Hayden Fork. Ostler Fork flows into the Stillwater Fork about 5.5 miles above the Hayden Fork and the West Basin flows into the Stillwater Fork about 7.5 miles above the Hayden Fork. There is one Class II riparian area stream the Main Fork Stillwater Fork (4.9 miles). A GIS query and topographic map analysis identified 40 miles of perennial streams, 22 miles of ephemeral or intermittent streams, 160 acres of lakes/ponds (likely other small ponds not identified), and 50 acres of marsh within this allotment. Currently it is estimated that 1,141 acres of wetlands are associated with these hydrologic features on the allotment. Wetlands were delineated in a geographic information system using 2006 NAIP imagery and on-the-ground experience for identifying wetlands. In addition, most of the main large streams in the area have floodplains or very small areas adjacent to the stream where sediment may become deposited during high flows. These floodplains are about ten to thirty feet wide and are associated with dense deep-rooted vegetation.

Stream flows in the project area are primarily influenced by snowmelt. Peak flows generally occur from mid-May to early June and gradually recede to base flows in mid to late August. Base flows continue from this time until April, when temperatures begin to warm. Rainfall from summer storms is generally localized and results in peaks that can exceed snowmelt peaks. Stillwater Fork is about 35 feet wide near the confluence of Hayden Fork and high flows are about 175 cubic feet per second (cfs) in June and low flows are about 5 cfs in January. The channels of the Main Fork, Ostler Fork, and West Basin are about 10 feet wide near their confluences with the Stillwater Fork.

Common stream types within the analysis area are classified from Type B1 through Type C5 channels. B-type stream channels are characterized as moderately entrenched, moderate gradient, riffle dominated,

channel with infrequently spaced pools, very stable plain and profile, and stable stream banks. Boulders and cobble dominate these channels. They have steep gradients (greater than 2%), little sinuosity, very narrow width-to-depth ratios, and are tightly confined by valleys that contain them. These channels are naturally stable, but they can deliver sediment rapidly and in large volumes downstream. Given these characteristics, Type B stream channels are relatively insensitive to livestock grazing. C-type stream channels are characterized as low gradient, meandering, point-bar, riffle pool, alluvial channels with broad, well defined floodplains. Cobble, gravel or sand dominates these sections of the channels. Gradients are less than 2% with moderate to little sinuosity. The width-to-depth ratio will typically be broader than a Type B1 channel. These stretches will typically be located in large open parks and can potentially be more susceptible to grazing impacts, as the banks are not heavily armored with boulders and cobble.

Most of the streams begin in the highest elevations, over 11,000 feet. Stream gradients in these reaches are extremely steep – in excess of 20%, extremely incised and carry large volumes of water, especially during the spring snow melt and summer thunderstorms. As the streams move down the valleys into the mid-elevation zone, 8,000 to 9,500 feet, these reaches are less steep, 5 to 10%, and somewhat less incised, but still confined due to the narrowness of the valley bottoms. They carry even higher volumes of water, due to the larger watershed. As the streams move out of the mountains and off the National Forest, the gradients decrease even more, to 1 to 5%, but the meander remains minimal.

A number of water features found in the Stillwater S&G Allotment are within the 3.1a prescription, including Stillwater Fork, Hayden Fork, and Main Fork. The 3.1a prescription consists of the stream and adjacent riparian areas (or 300 feet either side of the stream whichever is greater). Under G3.1A.2, livestock grazing is allowed with the utilization standard for Riparian Class 1, and to meet site-specifically developed desired conditions (USDA Forest Service 2003a, page 4-69). A total of 27.5 miles of stream is classified as Management Prescription 3.1a within the Stillwater S&G Allotment.

The State of Utah has designated the streams draining the watersheds above the Uinta-Wasatch-Cache National Forest boundary on the allotment as Antidegradation Segments. This indicates that the existing water quality is better than the established standards for the designated beneficial uses. Water quality is required by state regulation to be maintained at this level. The beneficial uses of streams within these watersheds, as designated by the Utah Department of Environmental Quality, Division of Water Quality, are: 1) Class 2B – protected for recreation, 2) Class 3A – protected for cold water species of game fish and other cold water aquatic species, and 3) Class 4 – protected for agricultural uses. The numeric water quality standards can be found in Section R317-2, Utah Administrative Code, *Standards of Quality of Waters of the State* (Utah, State of 2006a).

a. Direct, Indirect, and Cumulative Effects to Aquatic and Riparian Conditions

Alternative 1 (Proposed Action)

Direct and Indirect Effects: Since 1993, water quality samples have been collected at the mouth of Stillwater Fork and on the Bear River below the confluence of East Fork Bear River as part of a cooperative effort between the US Forest Service and the State of Utah for the purpose of assessing the water quality of this area. The State of Utah has used this information in their reports to U.S. Congress regarding the quality of waters of the State of Utah. Water samples have been analyzed for chemical, nutrient, and metals parameters on a quarterly annual basis up to July 2002 and on a monthly basis since July 2002. Since the start of the cooperative effort, the State of Utah has determined that the waters draining these watersheds fully meet the beneficial uses for which they are classified and are currently fully supporting its beneficial uses (Utah, State of 2006b).

Water originating from the allotment flows into the Bear River drainage. This water is used for municipal purposes by the City of Evanston located 30 miles to the north. Water samples taken at the mouth of the Stillwater Fork and on the Bear River downstream of the allotment indicates that the water leaving the allotment meets drinking water standards (Water Resources Technical Report, Stillwater Allotment, Condrat 2009).

Stream and riparian conditions on the allotment were evaluated by the Forest Hydrologist during the summer of 2008. Stream banks, riparian areas and wet meadows were found to be in good condition with very stable well armored banks, dense, deep-rooted vegetation, small amounts of bare soil and minor amounts of short-term trampling. Some bank trampling by livestock was observed along the edge of a pond that is located adjacent to a historic sheep bedding area. However, no long-term adverse effects to stream banks from sheep grazing were noted during the review. A small amount of wildlife stream bank trampling was also observed with no apparent long-term adverse effects noted. The dry meadows along the Stillwater Fork showed very little evidence of sheep band trailing or grazing. A recreation trail running through this area has a 500 foot section of very wet and rutted trail; however, the poor trail conditions are thought to be unrelated to sheep trailing. The higher alpine pastures in the wilderness in West Basin and Middle Basin had no evidence of sheep trailing or grazing (Water Resources Technical Report, Stillwater Allotment, Condrat 2009).

A stream channel survey of Stillwater Fork was conducted in August 2008 for 4.25 miles starting about 0.5 miles north of the Christmas Meadows trailhead and heading south. It consisted of a description of the stream channel type, stability rating, and two 1,000-foot transects along the stream banks in the meadow 0.5 miles south of Christmas Meadows Trailhead and in the meadow 2.5 miles south of Christmas Meadows Trailhead in order to determine the amount of stream bank slumping that is occurring and if there is evidence of it being caused by livestock. The stream types in this area were Rosgen's B1, B2, B3, C3, and C4/5 (USDA Forest Service 2008d).

The two 1,000-foot transects were located on C3 stream types. The amount of slumping that was seen in Transect 1 was 102 feet out of 1,000 feet (10%) and in Transect 2 was 107 feet out of 1,000 feet (11%). There was no evidence that livestock were causing the slumping, rather the slumping was apparently natural.

The Stillwater Fork stream channel near Christmas Meadows Trailhead has many bare banks that are two to three feet in height. These stream banks were examined in the field during a stream survey of the Stillwater Allotment on August 14 (USDA Forest Service 2008d) and during a field trip on August 27, 2008. Aerial photographs from 1957 and on 2006 NAIP imagery were used to review stream channel meander and stream bar formation in this area in order to determine the rate of stream movement in the floodplain. There appears to be very little change in the position of the stream meanders and the depositional bars between 1957 and 2006 aerial photos and as described in the stream survey, it appears that sheep are not impacting the stream channel. This indicates that the stream is very stable and that recreation, livestock and other activities in the Stillwater drainage are not affecting the stream channel characteristics in the meadow areas.

Almost all wetlands that were seen during the 2008 field review appear to be in excellent condition with no signs of trampling by livestock and only small trail crossing areas. Livestock are having very little effect on wetlands. The only impacts to wetlands are from very small areas of trampling from recreation users including horses and hikers along the main trails in the allotment. Boardwalks had been placed on trails that cross several wetland areas to help protect the soil from trampling. There are also no indications that livestock are affecting the function of the floodplains associated with the streams (Water Resources Technical Report, Stillwater Allotment, Condrat 2009).

Additionally in 2008, nine riparian long-term monitoring sites and three riparian photo points were evaluated on the allotment. Regional and Forest level management direction was then used to determine the current status of desired plant communities, utilization levels, current condition, and trend. The 2008 analysis determined that resource conditions inside the analysis area were meeting or exceeding livestock grazing management objectives, standards and guidelines defined by the Revised Forest Plan. Native vegetation is present and vigorous, shrubs are vigorous and growing to their expected heights, and banks are stable. There is an accumulation of litter on the ground, as well as a diversity of plant species. Stubble height requirements were met or exceeded on all sites evaluated (See Ecological Status and Trend section). Overall, riparian habitat looks in very good condition throughout the allotment. Additional information for riparian resources can be found in the Rangeland Health section of this document.

Implementing the Proposed Action would result in maintaining or improving the current satisfactory conditions in riparian areas. Continued implementation of a grazing plan with short grazing periods and alternating the time of use would allow conditions to be maintained or improved in riparian areas. Herbaceous vegetation in these areas would be given the opportunity to grow and regrow during different times throughout the growing season. As current management is meeting Revised Forest Plan standards and guidelines for water resources, it is expected that those standards and guidelines will continue to be met.

Cumulative Effects: The cumulative effects area for this analysis is the drainages above the confluence of the Bear River and the East Fork Bear River. Several other present, past and potential future activities that occur in these drainages have the potential to effect water quality by increasing erosion and sedimentation of stream in the cumulative effects area. These other activities are recreation use such as public hiking and camping; camping and recreation use at the East Fork Boy Scout Camp; use of transportation system composed of roads and trails; the loss of vegetation during the 2002 East Fork Fire; and oil and gas development.

The effect of these other activities on water resources have not had long-term adverse effects and are not expected to impact water resources in the future. In these drainages, recreation use such as ATV use, hiking, and camping are managed to minimize the amount of soil disturbance and subsequent sediment to streams by allowing ATV use only on designated trails, providing properly maintained trails for hiking, and allowing developed camping at designated sites. Camping and recreation use at the East Fork Boy Scout Camp occur at designated sites and very little sediment appears to reach the East Fork Bear River from their activities. The transportation system composed of roads and trails have annual road maintenance such as grading of the road surface results in proper drainage of roads. The maintenance of water bars on trails help to minimize erosion of trail surface. The loss of vegetation during the 2002 East Fork Fire resulted in debris floods from two side drainages near Deadman Mountain that occurred a couple years after the fire. These debris floods initially caused sediment to enter the East Fork Bear River but have not caused further sedimentation of the stream channel. The stream water has run clear since the debris floods occurred. Very little adverse effect to water resources have occurred from oil and gas development because best management practices have been implemented such as installing proper drainage and controlling sediment from leaving the well pads and roads to minimize sediment and other pollutants from entering water bodies. There currently is very little effect of grazing on erosion and sedimentation, water quality, and wetlands in the Stillwater allotment.

Since 1993, water quality samples have been taken at the mouths of the Hayden and Stillwater forks, near the mouth of the East Fork Bear River and on the main fork of the Bear River just below the confluence of the East Fork Bear River. The results of this water quality sampling indicate that State water quality standards are fully meeting their beneficial uses. Cumulatively, very little erosion and sedimentation is occurring in the water resources cumulative effects area and Utah State water quality standards are being

met. Cumulatively, very little effect to wetlands has occurred from all activities in the Stillwater drainage. There are no known future activities in the cumulative effects area that are expected to adversely affect wetlands. The cumulative effects from the Proposed Action and Alternative 2 are about the same.

Alternative 2 (No Grazing)

Direct and Indirect Effects: The elimination of livestock grazing on the allotment would provide some minor benefits to riparian areas on the allotment for a period of time. Impacts to stream banks at the few livestock crossing points would be reduced as livestock grazing is phased out over a two year period, although recreational stock and hiking impacts would continue. Small bedding areas, such as the one noted west of Hells Hole would improve. Since all riparian areas are in satisfactory condition, there is minimal improvement that could be made due to the elimination of livestock grazing. It is expected that very little improvement to water quality would occur because there is very little indication that erosion and sedimentation is occurring from current livestock grazing. It is expected that characteristics of floodplains and municipal watersheds will not change due to the removal of livestock.

Cumulative Effects: The cumulative effects would be minor and only vary slightly from the Proposed Action.

b. Direct, Indirect, and Cumulative Effects to Wild and Scenic Rivers

In the Wild and Scenic River Suitability Study for National Forest System Lands in Utah Record of Decision (ROD) and Forest Plan Amendments (USDA Forest Service 2008a), the Forest Service has recommended that the Stillwater Fork and Ostler Fork segments, located within the allotment be considered as suitable to be designated by Congress as components of the National Wild and Scenic Rivers System. Ostler Fork has an outstandingly remarkable value (ORV) of Ecology and Stillwater Fork has a Scenic and Ecology ORV. These segments were found eligible in 1999 and recommended as suitable in 2008. In the interim, the Forest Service is required to protect the values and character of these segments until designated by Congress, or otherwise directed by other legal means. At this time, Stillwater Fork and Ostler Fork have not been designated by Congress as Wild and Scenic Rivers.

These river segments and their ORVs were found eligible and were recommended as suitable concurrent with livestock grazing. Implementing the Proposed Action would maintain and/or provide for continued improvement in rangeland health and productivity which would result in the maintanence of the Ecology ORV. Because the Scenic ORV occurred concurrent with grazing, and there have been no major changes to grazing on this allotment since it was determined suitable in 2008, there would be no impact to this ORV. Although no site-specific range improvements are proposed, future projects would need to go through additional NEPA analysis, and impacts to ORVs would be considered at that time. Current livestock grazing is not impacting the ORVs and there are no grazing activities or uses that have been determined inconsistent with a suitability recommendation that would require changes in livestock numbers and/or grazing practices. (Wild and Scenic River Suitability Study for National Forest System Lands in Utah ROD). The current level of grazing management will not affect the river segment's free-flowing condition, or impact those ORVs that have qualified them as Wild and Scenic, and with proper management of grazing these values can continue to be protected. Therefore, it is reasonable to conclude that there will be no effect on these rivers' suitability for the National Wild and Scenic Rivers System due to the continuation of livestock grazing. In addition, no other activities are currently proposed that would cumulatively affect the suitability of these river segments. (Wild and Scenic Rivers Analysis, Stillwater Allotment, Barker 2009).

Applicable Revised Forest Plan Standards and Guidelines

Aquatic and riparian resources were evaluated to determine compliance with applicable standards and guidelines defined in the Revised Forest Plan. Results of this analysis are as follows:

Standard (S2) Apply runoff controls during project implementation to prevent pollutants including fuels, sediment, oils, from reaching surface and groundwater. (USDA Forest Service 2003a, page 4-36)

For livestock grazing, the control of sediment is the main item that applies to this analysis. For this allotment the main sources of sediment that would reach surface and ground water would be from bare soils on trails. Field reviews, determined that sheep trailing is not causing soil impacts. Structural runoff controls to control sediment are not needed and the current management of livestock is adequate in controlling sediment. Forest Plan Standard S2 - met.

Standard (S3) Unclassified roads and trails will be administratively closed and rehabilitated. (USDA Forest Service 2003a, page 4-36)

During the allotment review, no unclassified roads or trails were identified that were used for grazing. Forest Plan Standard S3 - met.

Standard (S4) Place new sources of chemical and pathogenic pollutants where such pollutants will not reach surface or ground water. (USDA Forest Service 2003a, page 4-36)

This standard is applicable to those chemicals and pathological pollutants that are used to control insects such as pesticides and these substances are not used on the allotment for grazing management at this time. Forest Plan Standard S4 - met.

Standard (S5) Prior to issuance of a permit or license for activities such as mining, hydropower development, snowmaking, or water transmission facilities, instream flow determinations will be required of all future permitted and licensed activities. For existing authorized uses and activities, minimum instream flows will be established to meet the beneficial use of the stream, and will be a condition of any licensing and permit renewal. (USDA Forest Service 2003a, page 4-36)

Since water use by livestock is spread out over a large area and water use on any one water body is so little at any one time, a minimum instream flow is not recommended for this activity. For example if a band of sheep (1,000 sheep) at the same time drank two quarts of water in 10 minutes from a stream the amount of water that would be used is 0.1 cubic feet per second. Forest Plan Standard S5 - met.

Standard (S7) Allow management activities to result in no less than 85% of potential ground cover for each vegetation cover type. (See Appendix VII in the Forest Plan for potential ground cover values by cover type.) (USDA Forest Service 2003a, page 4-37)

This is discussed in detail in the Ecological Status and Trend section of this document.

Guideline (G3) Proposed actions analyzed under NEPA should adhere to the State Nonpoint Source Management Plan to best achieve consistency with both Sections 313 and 319 of the Federal Water Pollution Control Act. (USDA Forest Service 2003a, page 4-37)

Consistency is being achieved through implementation of Best Management Practices (see guideline G11) and the use of a watershed approach to management. Forest Plan Guideline G3 - met.

Guideline (G5) Do not allow activities that could result in water yield increases that would degrade water quality and impact beneficial uses. (USDA Forest Service 2003a, page 4-37)

This guideline is mainly applicable to changes in vegetation types where large plants such as conifers consume a lot of water and when these plants are removed, such as converting conifer forest to aspen or removing conifer forest through a clearcut harvest, a measurable amount of water increase may occur. Since livestock graze mainly grasses and forbs, no measurable water yield increases are expected within the watershed. Monitoring of water quality in the Stillwater Fork and Bear River show that the water flowing out of the allotments is meeting Utah State water quality standards and meeting their beneficial uses. Forest Plan Guideline G5 - met.

Guideline (G7) Manage Class 1 Riparian Area Greenlines for 70% or more late-seral vegetation communities as described in Intermountain Region Integrated Riparian Evaluation Guide. Manage Class 2 Riparian Area Greenlines for 60% or more late-seral vegetation communities. Manage Class 3 Riparian Area Greenlines for 40% or more late-seral vegetation communities. (USDA Forest Service 2003a, page 4-37)

This is discussed in detail in the Ecological Status and Trend section of this document.

Guideline (G9) Avoid soil disturbing activities (those that remove surface organic matter exposing mineral soil) on steep, erosive, and unstable slopes, and in riparian, wetlands, floodplains, wet meadows, and alpine areas. (USDA Forest Service 2003a, page 4-38)

Field reviews indicate that there are very few soil disturbances on steep slopes or in riparian areas. Forest Plan Guideline G9 - met. Additional information pertaining to this guideline can also be found in the Soils section of this document.

Guideline (G11) Use Best Management Practices and Soil and Water Conservation Practices during project level assessment and implementation to ensure maintenance of soil productivity, minimization of sediment discharge into streams, lakes and wetlands to protect of designated beneficial uses. (USDA Forest Service 2003a, page 4-38)

The U.S. Environmental Protection Agency (EPA) provides guidance for managing rangeland, pasture, and other grazing lands to protect water quality and aquatic and riparian habitat in Chapter 4E: Grazing Management of the National Management Measures to Control Nonpoint Source Pollution from Agriculture (U.S. EPA 2003). The purpose of the management measures is to: 1) improve or maintain the health and vigor of the plants, maintain a stable and desired plant community, maintain or improve water quality and quantity, reduce accelerated erosion, and maintain soil condition for sustainability of the resources; 2) exclude livestock, where appropriate and/or control livestock access to and use of sensitive areas, such as streambanks, wetlands, estuaries, ponds, lake shorelines, soils prone to erosion, and riparian zones; and 3) achieve either of the following on all rangeland, pasture, and other grazing lands not addressed above by maintaining or improving grazing lands in accordance with grazing permit requirements of the USDA Forest Service. Management measures are applied to allotments, such as open herding of livestock to prevent concentrated use, salting and bedding areas located away from water sources, and grazing setbacks from lakes. The success of these measures is indicated by stable, well-vegetated stream banks, riparian areas, and uplands throughout the allotment.

Best management practices currently being implemented include: 1) controlling the intensity of grazing by managing the duration of grazing, 2) varying the time of grazing, and 3) providing rangeland vegetation the opportunity to either grow before grazing or regrow after grazing. Site specific management practices include: 1) avoiding concentrated use and subsequent soil disturbance by limiting

the duration and placement of bedding and salting areas, and 2) locating these areas away from water sources. Forest Plan Guideline G11 - met.

Guideline (G12) Locate new actions (such as incident bases, fire suppression camps, staging areas, livestock handling facilities, recreation facilities, roads and improvements including trails) outside of Riparian Habitat Conservation Areas. If the only suitable location for such actions is within Riparian Habitat Conservation Areas, sites will be located to minimize resource impacts. (USDA Forest Service 2003a, page 4-38)

No livestock handling facilities on this allotment are located in Riparian Habitat Conservation Areas. Forest Plan Guideline G12 - met.

Guideline (G74) Stock driveways and trailing routes will be located outside of Riparian Habitat Conservation Areas unless terrain and/or vegetation are prohibitive. When driveways and trailing routes must pass through Riparian Habitat Conservation Areas, they will be located and livestock moved through them in such a way to minimize the extent and/or severity of potential damage caused by trailing. (USDA Forest Service 2003a, page 4-52)

There are very little soil disturbing activities in the riparian areas and no indication of a sheep driveway on the allotment. Additional information pertaining to this guideline can also be found in the Livestock Management section of this document. Forest Plan Guideline G74 - met.

2. Fisheries and Other Aquatic Species

Aquatic resources were analyzed for those drainages found within the allotment. Baseline conditions were determined through a review of literature and field observations. Field observations were conducted to identify and quantify fish and amphibian populations, and to characterize habitat conditions on the allotment.

A modified version of the R1-R4 Fish Habitat Survey was conducted in the Stillwater drainage in 1990 to determine habitat conditions in relation to fish. Seven reaches of stream were surveyed on the allotment. Within each habitat unit the following variables were measured: length, width, depth, and in-stream cover. In addition, water temperature was measured throughout each day. A total of 8,034 meters of stream were surveyed and habitat units quantified during this survey. The survey began at the confluence with Hayden Fork and ended at the top of Christmas Meadows. Overall, habitat conditions are good, although human induced impacts were identified. Problems identified included a lack of pools, bank disturbance, and high width to depth ratios. Most of these problems are adjacent to established campgrounds (Stillwater and Christmas Meadows) where recreational use is high.

In 2003, fish populations were monitored at numerous sites within the allotment by the Utah Division of Wildlife Resources and the Forest Service. Hayden Fork was sampled at three sites (all outside the allotment), Stillwater Fork was sampled at four locations, Ostler Fork was sampled at two sites (one outside the allotment), West Basin (tributary to Stillwater Fork) was sampled at one site, and Main Fork was sampled at two locations. A number of species were identified in these samples including rainbow trout, brook trout, Bonneville cutthroat trout, mountain whitefish, and sculpin.

Livestock grazing can significantly affect stream conditions and riparian areas. Most livestock grazing along streams occurs in areas where the valley bottoms widen. Geographic Information System (GIS) analysis has estimated that 10.7 miles of accessible water is located within capable grazing lands on the allotment. Topography and conifer cover restricts livestock grazing on most of the stream segments

within the allotment.

Sub watersheds within the allotment were analyzed to determine livestock densities per mile of accessible water. Head Months (HM) of sheep in each sub watershed was determined (USDA Forest Service 2003a, FEIS Tables B-3-6 through 17). Based on a review of the calculated densities and field observations, a density of greater than 1,300 HM's per mile of accessible water was identified as the threshold where on the ground impacts are likely to have occurred. The allotment's HM density was calculated at 119 sheep HM's per mile of accessible water, which is 90% below the threshold that would have suggested a more detailed review of the allotment. There are a number of intermittent tributaries and natural ponds/lakes within the allotment that also provide water for livestock but were not used in this calculation (Fisheries Resources Technical Report, Stillwater Allotment, Chase 2009b).

Beaver are another major influence on the streams in the allotment. Beaver dams are blown-out every so often because of the steep gradients and high water flows. This is a dynamic and natural process. Ecological changes can occur because of beaver activity. In some areas, beaver influence may help move the site to a higher ecological stage, while in other areas; they may cause the site to move to a lower stage. Beaver activity keeps the water table high, allowing willows and sedges to thrive. Beaver can also provide summer and over-wintering pool habitat for trout. However, beaver may also remove willows and aspen for dam construction. When the dams are blown-out during high run-off of spring snow melt, little vegetation remains. The willows and aspen may be entirely removed, the herbaceous vegetation often dies out due to the flooding by the pond, and stream banks may be left raw and vertical. These types of conditions provide an opportunity for noxious weeds to become established. Monitoring point 26-08C located in the wilderness below Middle Basin on the allotment illustrates this dynamic. While there are no noxious weeds found on site, a noticeable change in species composition can be detected by a stand of bluejoint that marks the location of a decades old beaver dam. The presence of this beaver dam indicates the potential impacts to a limited willow community that must have been present prior to beaver occupying the site. Without willow, beaver would not have likely built a dam in this meadow which is currently devoid of a substantial willow community. Beaver are discussed in detail in the Terrestrial Wildlife, Management Indicator Species section.

Aquatic macroinvertebrates were last sampled during the summer of 2003, in Stillwater Fork and Hayden Fork by Utah State University. Invertebrate composition indicated both are healthy streams dominated by sediment intolerant species (Fisheries Resources Technical Report, Stillwater Allotment, Chase 2009b).

A number of amphibians have been found in the Stillwater Fork Drainage including boreal chorus frogs (*Pseudacris triseriata*) and tiger salamander (*Ambystoma tigrinus*) (Thompson and Chase 2007). Boreal toads (*Bufo boreas boreas*) have also been found in nearby drainages and likely occur in the Stillwater drainage.

There were no mollusks identified within Stillwater Fork, however, two common mollusks were identified in the invertebrate sample from Hayden Fork (USU 2003).

a. Direct and Indirect Effects to Fisheries and Other Aquatic Species

Alternative 1 (Proposed Action)

Direct and Indirect Effects: Stream habitat and fish surveys identified few impacts attributed to livestock grazing. Based on this, continued grazing would result in localized minor impacts to stream banks where sheep cross. The banks above and below the crossing points would not be adversely impacted. Green line vegetation at crossing points would continue to be impeded from trending towards their site potential.

Having reviewed the allotment being analyzed, along with its fish populations and general habitat conditions, the streams within the allotment appear to be in good condition. Macroinvertebrate composition indicated Stillwater Fork and Hayden Fork are healthy streams dominated by sediment intolerant species Continued livestock grazing would have limited impacts on aquatic species including amphibians, mollusks, and aquatic macroinvertebrates (Fisheries Resources Technical Report, Stillwater Allotment, Chase 2009b).

Cumulative effects are discussed under Bonneville Cutthroat Trout.

Alternative 2 (No Grazing)

Direct and Indirect Effects: Adverse impacts to stream banks at the few livestock crossing points would be reduced as livestock grazing is phased out over a two year period, although recreational stock and hiking impacts would continue. The condition of the vast majority of the stream banks would remain unchanged. Green line vegetation would remain unchanged except at livestock crossing points. Where livestock no longer use those areas and in the absence of other natural disturbances, green line vegetation would trend towards the potential of the site.

Cumulative effects are discussed under Bonneville Cutthroat Trout.

3. Aquatic Management Indicator Species

The document, Assessment of Management Indicator Species Capability and Suitability on the Wasatch-Cache National Forest with the Management and Restoration Direction (USDA 2007) documents how the 2003 Wasatch-Cache Forests Plan identifies and restores Management Indicator Species habitat with regard to grazing.

Table 13 displays aquatic species selected as Wasatch-Cache Planning Area management indicator species, as well as their associated vegetation communities. Terrestrial MIS include northern goshawk, snowshoe hare, and beaver, and are discussed in the Terrestrial wildlife section. Current aquatic MIS trends for the Forest can be found in the annual report, Management Indicator Species of the Wasatch-Cache National Forest Planning Area (USDA Forest Service 2008b).

Table 13: Aquatic Management Indicator Species.*

Management Indicator Species	Associated Plant Community (Cover Type)
Bonneville Cutthroat Trout (*Oncorhynchus clarki utah*)	Aquatic and Riparian
Colorado River Cutthroat Trout (*Oncorhynchus clarki pleuriticus*)	Aquatic and Riparian

*MIS are on the Wasatch-Cache Planning Area of the Uinta-Wasatch-Cache National Forest.

Bonneville and Colorado River Cutthroat Trout are the two aquatic species identified as management indicator species (MIS) in the Revised Forest Plan (USDA Forest Service 2003a). Only Bonneville cutthroat trout (BCT) are present on the allotment. BCT represent aquatic and riparian habitat types. In the analysis area, possible habitat includes six perennial streams totaling 40 miles.

Hickman and Raleigh (1982) and Binns (1982) provide a good description of optimal cutthroat trout riverine habitat. They state, “Optimal cutthroat trout riverine habitat is characterized by clear, cold water; a silt free rocky substrate in riffle-run areas; an approximately 1:1 pool-riffle ratio with areas of slow,

deep water; well vegetated stream banks; and abundant instream cover; and relatively stable water flow, temperature regimes, and stream banks."

Currently occupied habitat is found spread across ten drainages (4th level hydrologic units). There are 37 cutthroat trout populations/metapopulations identified in the Wasatch-Cache Forest Planning Area. Metapopulations are defined as, "A collection of localized populations that are geographically distinct yet are genetically interconnected through natural movement of individuals among conservation populations" (Lentsch 1997). Only a few areas do not support any cutthroat trout on the Wasatch-Cache National Forest Planning Area. These are the Wellsville Mountains, the Stansbury Mountains and the Duchesne River country on the Forest.

Colorado River Cutthroat Trout (*Oncorhynchus clarki pleuriticus*)

The range of the Colorado River cutthroat trout is bounded by the Missouri, Snake, and Bonneville drainages and then the temperature gradient of the Colorado River. Historically Colorado River cutthroat trout occupied all accessible cool waters of the Upper Colorado River Drainage, including the Green, Yampa, Gunnison, Dolores, San Juan, Duchesne, and Dirty Devil Rivers (Young et al. 1996). Estimates of their current distribution have varied, but the most recent estimates suggest that CRCT now occupy about 14% of their historic native range (Hirsch et al. 2006).

The distribution and abundance of Colorado River Cutthroat Trout has declined significantly. Remaining populations occur mostly in headwater streams and lakes. It was determined that most lotic populations were in isolated, headwater streams with average annual flows less than 30 cfs (Young 1995).

The allotment is outside the historic range of CRCT. To date, there have been no documented CRCT populations found in the allotment. Therefore, there will be no effect on this species, and it will not be discussed further.

Bonneville Cutthroat Trout (*Oncorhynchus clarki utah*)

The Bonneville Cutthroat Trout (BCT) is a unique subspecies of the cutthroat trout complex native to the Bonneville Basin. During the Pleistocene, Lake Bonneville and its drainage system covered parts of Utah, Nevada, Idaho, and Wyoming. Historically, BCT occurred throughout this basin. With the final desiccation of ancient Lake Bonneville, the four major drainages to Lake Bonneville became isolated from each other, and BCT became restricted to the streams and lakes with suitable trout habitat. This range is defined by the Snake River Drainage on the north, the Colorado River on the east and south and the Nevada desert lands and drainages on the west. Historically, BCT occupied an estimated 6,258 miles of stream in the Bonneville Basin.

As European settlers expanded into the West, human activities such as water development, agricultural activities, energy development, mining, timber harvesting, grazing, unregulated fishing, and the introduction of non-indigenous species directly impacted BCT populations and altered the Bonneville Basin ecosystem. Because of the tenuous status of some BCT populations and habitat, BCT conservation efforts have been directed through federal, state and local agencies.

One hundred sixty-five conservation populations of BCT are currently known to occur, occupying about 2,062 miles of stream. In addition, 73 core populations have been identified occupying about another 478 miles of stream. These populations, as well as numerous additional BCT populations, are continuing to be analyzed for purity. Because of ongoing BCT conservation and sportfishing management, the future of this subspecies is much more secure than it was in the 1970s.

Bonneville cutthroat trout are found throughout the allotment. Livestock grazing practices can affect habitat and trend for this species. The Upper Bear River and its tributaries contain one of the largest remaining meta-population of Bonneville cutthroat trout (BCT). In 2003, numerous sites were sampled within the allotment by the Utah Division of Wildlife Resources and the Forest Service. Hayden Fork was sampled at three sites (all outside the allotment) and Stillwater Fork was sampled at four locations. Ostler Fork was sampled at two sites (one outside the allotment). West Basin (tributary to Stillwater Fork) was sampled at one site, and Main Fork was sampled at two locations. A number of species were identified in these samples including rainbow trout, brook trout, Bonneville cutthroat trout, mountain whitefish, and sculpin.

Stillwater Fork continues to support a strong population of Bonneville cutthroat trout (BCT) with estimates varying from 32 BCT per mile low in the drainage to 604 BCT per mile in the upper reaches. However, BCT numbers declined in the lower portion of the stream. While conducting fish sampling, crews found stream conditions in good condition with very limited amounts of bank disturbance attributed to livestock grazing. Brook trout were captured for the first time in West Basin in 2003. Brook trout populations have continued to expand in the Stillwater drainage. This is a concern since in most areas where brook trout and BCT populations overlap, cutthroat populations decline. The introduction of brook trout has had and will continue to have the greatest impact on BCT in the Stillwater drainage. (Fisheries Resources Technical Report, Stillwater Allotment, Chase 2009b).

Prior to stocking, Ostler Fork was a fishless tributary to Stillwater Fork. Fish were prevented access to this stream by a series of natural barriers. Both cutthroat trout and brook trout have been introduced to Amethyst Lake and have moved into Ostler Fork. Both species have done well, although brook trout appear to be expanding in numbers (population estimates included 145 BCT per mile and 589 BKT per mile in lower Ostler Fork and 0 BCT per mile and 371 BKT per mile in upper Ostler Fork). While conducting fish sampling, crews found stream conditions in good condition with very limited amounts of bank disturbance attributed to livestock grazing. The system trail along Ostler Fork was identified as a sediment source to the stream. The trail lacks adequate drainage features, resulting in water running down it for long stretches before draining into the stream. The trail along Ostler Fork leads into Amethyst Basin which is located outside the allotment (Fisheries Resources Technical Report, Stillwater Allotment, Chase 2009b).

Main Fork Stillwater Fork continues to support a strong population of BCT (145 BCT per mile low in drainage and 201 BCT per mile in the upper drainage). Habitat conditions are good with limited amounts of bank disturbance attributed to livestock grazing. Main Fork currently does not support brook trout (Fisheries Resources Technical Report, Stillwater Allotment, Chase 2009b).

Hayden Fork supports a limited but stable population of BCT with population numbers varying from 10 BCT per mile to 64 BCT per mile. While habitat conditions are good, high recreational use and a large brook trout population will likely continue to limit BCT recovery. No livestock grazing impacts were observed along Hayden Fork (Fisheries Resources Technical Report, Stillwater Allotment, Chase 2009b).

Site visits to Stillwater Fork and other streams within the allotment in the summer of 2003, found stream conditions in good condition with little bank disturbance attributed to sheep grazing. Riparian monitoring conducted in the summer of 2008, found conditions met or exceeded Revised Forest Plan grazing management direction (see Ecological Status and Trend section in this document).

a. Direct, Indirect, and Cumulative Effects to Bonneville Cutthroat Trout

Alternative 1 (Proposed Action)

Direct and Indirect Effects: Brook trout have expanded in the Stillwater drainage since 2003. Recent sampling by the Utah Division of Wildlife Resources (UDWR) and the Forest Service, have discovered a negative population trend for Bonneville cutthroat trout in streams that also contain brook trout while most populations of BCT in streams without brook trout have remained stable. The introduction of brook trout has had and will continue to have the greatest impact on BCT in the Stillwater drainage (Fisheries Resources Technical Report, Stillwater Allotment, Chase 2009b).

Site visits to Stillwater Fork and other streams within the allotment in the summer of 2003, found stream conditions in good condition with little bank disturbance attributed to sheep grazing. Riparian monitoring conducted in the summer of 2008 found conditions met or exceeded Revised Forest Plan grazing management direction. Overall, riparian conditions along fish bearing streams are good and BCT populations appear healthy despite the presence of brook trout and the effects of a prolonged drought.

The 2008 range analysis determined that the resource conditions inside the analysis area met or exceeded livestock grazing management objectives, standards and guidelines defined in the Forest Plan. In addition, stream habitat and fish surveys identified few impacts attributed to livestock grazing. Based on this, continued grazing would result in localized impacts to stream banks where sheep cross the streams. The banks above and below the crossing points would not be adversely impacted. Green line vegetation at crossing points would continue to be impeded from trending towards their site potential. Bonneville cutthroat trout redds located near crossing points may be impacted by sheep if the crossing is used in July.

In summary, continued livestock grazing using the time controlled grazing strategy may impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species for Bonneville cutthroat trout. Despite the continuing expansion of brook trout, the overall trend of Bonneville cutthroat trout population in the drainage is flat.

Cumulative Effects: The affected area for this analysis is the Stillwater S&G Allotment. Certain natural processes outside the influence of the Forest Service have the potential to result in cumulative effects to native trout, both negative and positive. It is difficult to predict effects to aquatic resources over the short or long term, whether direct, indirect, or cumulative, due to natural processes that operate on aquatic resources at this spatial scale (drought, wildfire, and flood).

Existing conditions are the result of past and ongoing management activities such as forest roads, fisheries management, recreation, and natural processes. Given the nature of these activities, the primary cumulative impacts to BCT can be summarized into the following categories:

- Recreational stock
- Past grazing practices
- Roads
- Aquatic management (non-native fish introductions)
- Recreation – fishing, hiking, camping, etc.
- Timber harvest (tie hacking)
- Oil and Gas Development
- Geophysical Seismic Exploration

Recreational stock would continue to use some of the same stream crossing as used by the permitted sheep; stream bank conditions would not be expected to improve at these sites; any future increase in recreation activity would increase adverse impacts to stream banks. Recreational stock use of crossing points would inhibit the green line vegetation from trending towards the potential of the site.

Past Grazing – Heavy grazing in the Stillwater drainage in the early 1900's likely resulted in a loss of topsoil and reduced site productivity, which would have had an effect on the stream channel due to higher extended peak flows and sediment delivery. Hoof shear and trampling likely caused excessive bank erosion.

Roads and Trails – Thirty five miles of road and motorized trail occur in the lower portions of the Stillwater drainage. However, most roads are located away from streams and have adequate buffers to prevent sediment input. A fish passage at road crossings assessment was conducted in 2006 on most Forest culverts including the two on the Stillwater Fork (Forest Roads 113 and 306) and the Bear River (Mirror Lake Scenic Byway near the Stillwater Campground). None were identified as a barrier to fish passage (Chase et al. 2006). In addition, 16.5 miles of non-motorized trail occur throughout the Stillwater S&G allotment. As with the roads, most of these are located away from streams and adequate buffers. However, portions of the Ostler Fork trail (Figure 5) are a sediment source. Another problem that was identified was a portion of the Stillwater Trail that goes through a wet meadow area. Trail conditions have degraded and become hazardous to both hikers and horseback riders. To avoid these conditions, Forest visitors have created a number of parallel trails along the main trail (Figure 6), impacting additional portions of the meadow.

Aquatic Management – Past introductions of brook trout are continuing to have impacts to BCT. Brook trout are well established in the drainage and likely influence BCT populations through predation and competition. This population of brook trout will likely continue to expand and likely represent the greatest threat to BCT in the Stillwater Fork Drainage.

Timber Harvest – Tie hacking drives in the early 1900's undoubtedly had a major effect on the channel morphology including sinuosity, bank stability, width to depth ratio, pools per mile, and large woody material on several streams in the Uintas, however, most of the Stillwater drainage was not impacted. Limited tie hacking occurred in the Main Fork and with these activities removed, the system is adjusting back to natural conditions.

Oil and Gas Development – The effect of oil and gas development on aquatic resources are very little because best management practices such as installing proper drainage and controlling sediment from leaving the well pads and roads.

Geophysical Seismic Exploration – To avoid impacts to aquatic resources the following mitigation has been developed:

- No drilling would be allowed within 100 feet of perennial streams or 50 feet of ephemeral streams.
- Locations for helicopter staging, fueling, and vehicle parking areas must be approved in advance and will not be placed in Riparian Habitat Conservation Areas (RHCAs).
- No cross country vehicle travel off existing roads and trails will be allowed.
- A fuel spill containment plan will be in place.
- Seismic exploration involving use of helicopters, blasting, or motorized equipment is prohibited in or over the High Uintas Wilderness.

With the above mitigation, no additional impacts to aquatic resources on the Stillwater Allotment are expected.

Alternative 2 (No Grazing)

Direct and Indirect Effects: Adverse impacts to stream banks at the few livestock crossing points would be reduced as livestock grazing is phased out over a two year period, although recreational stock and hiking impacts would continue. The condition of the vast majority of the stream banks would remain

unchanged. Green line vegetation would remain unchanged except at recreational stock crossing points. Where livestock no longer use those areas and in the absence of other natural disturbances, green line vegetation would trend towards the potential of the site.

This alternative may slightly improve habitat for BCT in fish bearing streams. No increase in BCT abundance would likely occur under this alternative.

Cumulative Effects: Same as Alternative 1.

4. Sensitive Aquatic Species

Of the aquatic species listed in the Revised Forest Plan as Sensitive, Table 14 contains a list of species that are known on the north slope of the Uinta Mountains or adjacent to this area.

Table 14: Sensitive Aquatic Species.

Common Name	Scientific Name	Probability of Occurrence	Potential Habitat in Analysis Area
Bonneville Cutthroat Trout	*Oncorhynchus clarki utah*	High	The Upper Bear River and its tributaries contain one of the largest remaining meta-population of Bonneville cutthroat trout (BCT).

a. Direct and Indirect Effects to Sensitive Aquatic Species

Direct and Indirect Effects to Bonneville Cutthroat Trout - Of those aquatic species listed as sensitive for the Wasatch-Cache National Forest Planning Area, only the Bonneville cutthroat trout occurs within the project area. Alternative 1 may impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species. This species is discussed in detail in the Management Indicator Species portion of this document.

Applicable Revised Forest Plan Standards and Guidelines

Fisheries and other aquatic habitat species were evaluated to determine compliance with applicable standards and guidelines defined in the Revised Forest Plan. Results of this analysis are as follows:

Guideline (G13) Any long-term crossing of stream channels containing fish habitat will provide for desirable aquatic passage. (USDA Forest Service 2003a, page 4-38)

There are no known fish barriers in these allotments. Forest Plan Guideline G13 - met.

(G21) For projects that may affect Forest Service Sensitive species, develop conservation measures and strategies to maintain, improve and/or minimize impacts to species and their habitats. Short-term deviations may be allowed as long as the action maintains or improves the habitat in the long term. (USDA Forest Service 2003a, Page4-43)

Grazing on the Stillwater Allotment may impact Bonneville cutthroat trout with implementation of the Proposed Action, but monitoring points indicate that grazing is at light to moderate levels with current grazing on both riparian and upland habitats and therefore impacts to Forest Service Sensitive fish species would be minimal to non-existent and will not likely contribute to a trend towards Federal listing or cause

a loss of viability to the population or species. Forest Plan Guideline 21 - met.

E. Terrestrial Wildlife (Issue 3)

1. Terrestrial Management Indicator Species

The document Assessment of Management Indicator Species Capability and Suitability on the Wasatch-Cache National Forest with the Management and Restoration Direction (USDA 2007) documents how the 2003 Wasatch-Cache Forests Plan identifies and restores Management Indicator Species habitat with regard to grazing.

Table 15 displays the terrestrial wildlife species selected as Wasatch-Cache Planning Area management indicator species, as well as their associated vegetation communities. Aquatic MIS species are discussed in the Aquatic and Riparian Resources Section of this document. More comprehensive and detailed terrestrial MIS information for the Forest can be found in the annual report, Management Indicator Species of the Wasatch-Cache National Forest Planning Area (USDA Forest Service 2008b).

Table 15: Terrestrial Wildlife Management Indicator Species.*

Management Indicator Species	Associated Plant Community (Cover Type)
Goshawk (*Accipiter gentiles*)	Aspen, Conifer, Mixed Conifer
Snowshoe Hare (*Lepus americanus*)	Pole/Sapling Aspen, Conifer, and Mixed Conifer
Beaver (*Castor canadensis*)	Riparian

*MIS are located on the Wasatch-Cache Planning Area of the Uinta-Wasatch-Cache National Forest.

Northern Goshawk (*Accipiter gentiles*) – represent aspen, conifer and mixed conifer-aspen vegetation types. The range of the northern goshawk is circumpolar. In the West it is found from Alaska through the Rocky Mountains to New Mexico. The goshawk is a forest habitat generalist that uses a wide variety of forest ages, structural conditions, and successional stages. While all forested landscapes are used to some extent, certain forest cover types appear to be occupied by goshawks more than others (Graham et al. 1999). Cover types most often occupied by goshawks, based on sightings and nest locations, are: Engelmann spruce, subalpine fir, lodgepole pine and quaking aspen, in either single or mixed species forests. The Stillwater Allotment includes approximately 18,745 acres of cover types expected to be used by goshawk. In addition to being a Management Indicator Species, the goshawk is also a Forest Service Sensitive species.

Three components of a goshawk's home range have been identified on the allotment, including nest areas (approximately 30 acres; can have two to six alternate nests), post fledging-family areas (approximately 420 acres), and foraging areas (approximately 5,400 acres). Goshawks nest in a wide variety of forest types including aspen, coniferous, and mixed conifer forests. Northern goshawk territories are found throughout the mixed conifer/aspen belt along the north slope of the Uintas, typically nesting in mature and old forests.

The goshawk preys on large-to-medium-sized birds and mammals, which it captures on the ground, in trees, or in the air. Observations of foraging goshawks show that they hunt in many forest conditions. This opportunism suggests that the choice of foraging habitat by goshawks may be as closely tied to prey availability as to habitat structure and composition.

Specific habitat attributes used by these species include snags, downed logs and woody debris, large trees,

herbaceous and shrubby understories, and a mixture of various forest vegetation structural stages.

It was concluded in the Conservation Strategy and Agreement for the Management of Northern Goshawk Habitat in Utah that goshawk populations in Utah were viable (Rodriguez et al. 1998). This conclusion was based on the findings of Graham et al. (1999) that good quality habitat is well distributed and connected throughout the state, the absence of evidence of a population decline on National Forest System lands since 1991, and conclusions of the U.S Fish and Wildlife Service in their decision do not list the northern goshawk under the Endangered Species Act (U.S. Fish and Wildlife Service 1998).

Territory occupancy has been monitored consistently on the Wasatch-Cache since 1999. For more information see the wildlife report (Garcia de la Cadena 2009) and the annual report, Management Indicator Species of the Wasatch-Cache National Forest Planning Area (USDA Forest Service 2008b).

There are five known northern goshawk territories within the Stillwater Allotment. One is located near Christmas Meadows and has not been active since 1995. The other four are at the northern end of the allotment and consist of Lily Lake North, Lily Lake South, ATV, and Peninsula. Lily Lake North was active in 2004 and fledged three young and Lily Lake South burned in the East Fork Fire in July of 2002 and has been inactive since. Territory ATV has not been active since the early 1990's. Peninsula was active in 2004, 2005, and 2006. Foraging would not be affected in conifer or mixed conifer because these vegetation types receive very little grazing use by livestock. Potentially, impacts associated with livestock grazing would be more prevalent in aspen stands. However, recent field observations and vegetative monitoring studies have determined that livestock are having a minimal effect on aspen regeneration within the allotment.

a. Direct and Indirect Effects to Terrestrial Management Indicator Species

Alternative 1 (Proposed Action)

Direct and Indirect Effects to Northern Goshawk: Specific threats affecting goshawk occupancy on the Forest are primarily related to timber harvesting activities, fires, and the construction of roads that alter the composition and structure of mature aspen and mixed conifer stands. Goshawks prefer to forage in closed canopy forest with moderate tree densities as compared to young open forests. Goshawks will take prey from openings, although they usually hunt these areas from perches near the edge. Medium to large birds (woodpeckers, robins, grouse, or jays) and mammals (ground and tree squirrels and hares) tend to dominate their breeding season diets (Graham 1999). Although grazing could impact goshawk foraging habitat in openings, range monitoring points indicate light to moderate use providing ample forage availability to northern goshawk prey base.

Grazing can alter both the structure and species composition of grass, forb and shrub layers of quaking aspen forest which also modifies goshawk foraging habitat. Riparian areas are the most productive and valuable wildlife habitats wherever they occur. Because goshawks use riparian areas for both nesting and foraging, reductions caused by livestock grazing can negatively affect habitat for goshawk prey and reduce or eliminate foraging habitat potential (Graham 1999). Range monitoring has shown satisfactory conditions throughout the Stillwater allotment. Range monitoring has indicated that the current management, utilization and permitted use are at appropriate levels to achieve or exceed Forest Plan management direction. The majority of the monitoring points indicate light to moderate use providing ample forage availability to northern goshawk prey base and other wildlife exhibiting a dietary overlap with domestic sheep. Since the majority of the suitable habitat used by goshawks is in conifer stands, this will not be grazed by livestock thus no impact and because monitoring has shown that habitats grazed are light to moderate resulting in minimal impacts to prey, therefore implementation of the Proposed Action

would not change the northern goshawk population trend. Because the northern goshawk does not rely on a specific prey base and has a guild of species available to choose from that utilize many different habitats and may or may not be influenced by grazing, implementation of the Proposed Action will not negatively impact their ability to forage successfully.

Northern goshawk territory occupancy has been monitored consistently on the Wasatch-Cache since 1999. Based on territory occupancy from 1999 to 2007 documented in the Forest MIS report, the current trend for the northern goshawk population is considered static Forest-wide (USDA Forest Service 2008b).

Continued livestock grazing using a time controlled grazing strategy, will not adversely impact the northern goshawk as an MIS. The Proposed Action May Impact Individuals or Habitat, But Will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species.

Cumulative impacts to all terrestrial wildlife species are discussed at the end of this section.

Applicable Revised Forest Plan Standards and Guidelines

Northern goshawk was evaluated to determine compliance with applicable standards and guidelines defined in the Revised Forest Plan. Results of this analysis are as follows:

(G15) In goshawk habitat design all management activities to maintain, restore, or protect desired goshawk and goshawk prey habitat including foraging, nesting and movement. (USDA Forest Service 2003a, Page4-42)

Implementation of the Proposed Action could potentially impact northern goshawk prey base foraging habitat. Range monitoring has indicated that the current management, utilization, and permitted use are at appropriate levels to achieve or exceed Revised Forest Plan management direction. The majority of the monitoring points indicate light to moderate use providing ample forage availability to northern goshawk prey base and other wildlife exhibiting a dietary overlap with domestic sheep. There is no impact to goshawk nesting habitat since little to no grazing occurs in the conifer forest where goshawks nest, as opposed to meadows and forest openings. Forest Plan Guideline G15 - met.

Snowshoe Hare (*Lepus americanus*) – represent pole/sapling aspen, conifer and mixed conifer vegetation types. The snowshoe hare is a valuable prey species to the lynx, goshawk, and other predators. Hares mainly use coniferous forests in the higher mountainous areas. They are predominately associated with forests that have a well-developed understory that provides protection from predation and their food source. Such habitat structure is common in early seral stages but may also occur in coniferous forests with mature but relatively open overstories (Ruggiero 1999). Potential habitat for snowshoe hare within the Stillwater Allotment based on cover types is approximately 18,745 acres. In summer, snowshoe hares eat forbs, grasses, leaves of shrubs, and some woody browse. Their winter diet is restricted to smaller-diameter twigs, shrub bark and trees. For example, In Alaska the use of woody browse ranged from a high of 82% in winter, to 56% in spring, and 25% in summer (Wolff 1978).

On the Wasatch-Cache Planning Unit there are two populations of snowshoe hare. They are the Bear River/Wasatch Range population and the Uinta Mountain's population. These two populations were identified because of the large habitat gap between these mountain ranges that essentially block genetic mixing. The Stillwater allotment is considered a portion of the Uinta Mountain's population.

Uinta Mountains Population: Bunnell (2004) has estimated that within the Uinta Mountains, populations

range from 0.05 to 0.9 hares per hectare, based on methods developed by Krebs et al. (2001). Bunnell's work on the Uinta Mountains from 2001 through 2003 shows an average of 0.33 hares per hectare over the three-year period within mature vegetation types. In 2003, 61 transects (610 plots) were established across a variety of habitat types and age classes across the North Slope. A portion of Bunnell's transects were incorporated as part of the Forest MIS monitoring effort. For more information see the wildlife report (Garcia de la Cadena 2009) and the annual report, Management Indicator Species of the Wasatch-Cache National Forest Planning Area (USDA Forest Service 2008b).

Alternative 1 (Proposed Action)

Direct and Indirect Effects to Snowshoe Hare: During the summer, snowshoe hares will utilize forbs, grasses, leaves of shrubs, and some woody browse (Ruediger et al. 2000). The Canada Lynx Conservation Assessment and Strategy (LCAS) (Ruediger et al. 2000) recognizes that studies have not been done to determine potential conflicts between snowshoe hares and livestock grazing. However, studies have been done on other leporids. In a recent publication *Intensity of livestock grazing in relation to habitat use by brown hares (Lepus europaeus),* Karmiris and Nastis (2007) found that brown hares seem to prefer moderately grazed pastures with a sparse herb layer in relation to ungrazed areas, where a denser plant structure occurs. This could be explained as predator avoidance behavior, as a dense high stand of plants can be considered a disadvantage for hares to locate approaching predators. In addition, as livestock remove this coarse less palatable forage it allows plants to produce more palatable and nutritious forage in the form of regrowth. Rotational grazing can also prolong the availability of this palatable forage by continually providing new areas of regrowth and more palatable forage throughout the growing season which would be preferred by snowshoe hares. Although snowshoe hares are not associated with open habitat like brown hares in Karmiris and Nastis' study, they will use small clearcuts for travel or feeding if forested stands are nearby (Ellsworth and Reynolds 2006).

Snowshoe hare habitat will not be affected in conifer or mixed conifer vegetation types because very little grazing occurs in these areas. Monitoring shows grazing within the Stillwater Allotment is light to moderate and well within the utilization guidelines established in the Forest Plan.

The Proposed Action will continue to maintain or improve upland and riparian conditions and thus maintain habitat for snowshoe hare on the allotment. These effects are not expected to result in a change in the population numbers or trend within the analysis area or result in a significant change in overall habitat quality and population numbers or trend forest-wide.

From the analysis completed in the Forest MIS report, the snowshoe hare population was stable or displayed very little change from the fall of 2000 to the summer of 2003 for the North Slope sub-population. From the summer/fall of 2003 to summer of 2005, the data suggests an increase in snowshoe hare numbers for the North Slope population, with decreases in 2006 and 2007 (USDA Forest Service 2008b).

Cumulative impacts to all terrestrial wildlife species are discussed at the end of this section.

Beaver (*Castor canadensis*) – represent riparian vegetation types found within the allotment. Beaver occur in permanent slow moving streams, ponds, small lakes, and reservoirs. They play an important role in maintaining and enhancing riparian and aquatic ecosystems (Olsen and Hubert 1994). Beaver are important for the creation of habitat for several species of fish, big game, waterfowl, and neo-tropical birds.

In favorable habitat the density of beaver colonies ranges from 0.2 to 0.3 per square mile. Home range is greatly affected by the water system in which the colony lives with colonies in the best habitat occurring

as close as 328 yards (Ministry of Environment, Lands and Parks Resources Inventory Branch for the Terrestrial Ecosystems Task Force Resources Inventory Committee 1998).

A beaver colony is typically about five to six beavers and consists of an adult pair, the young of the year, and young of the previous year. There are two types of colonies: isolated, which occurs on small tributaries and seepages and possess a defined periphery of beaver activities, and multi-colony, in which generations of beavers have occupied an area and no clear boundaries exist.

The baseline monitoring protocol is based upon sampling (as opposed to a complete census) to estimate beaver population at the spatial scale on the Forest. To achieve an unbiased, well-distributed sample, sample units are systematically selected sections (1 section = 1 square mile = 640 acres). Only complete sections of National Forest System lands are sampled. The number of active beaver colonies is determined within each sampled section, allowing estimated beaver population abundance to be expressed as *Number of Active Beaver Colonies per Square Mile*. The number of colonies can then be converted into the number of beaver. The Forest monitoring protocol for beaver calls for resurveying sections in three-year intervals. For more information see the wildlife report (Garcia de la Cadena 2009) and the annual report, Management Indicator Species of the Wasatch-Cache National Forest Planning Area (USDA Forest Service 2008b).

In the High Uinta Wilderness of the Stillwater Allotment, willows are the only dam construction material available since aspen is essentially lacking. Beaver habitat is limited to low willow communities. Beaver dams are short lived in these habitats. The small diameter and short stems of the low willow do not provide material of sufficient quality to withstand the high spring flows and are subsequently rebuilt frequently.

In the Forest monitoring protocol for beaver, monitoring is not done above 9,500 feet because of the factors listed above. Since the lowest elevations on the Stillwater Allotment are approximately 8,000 feet there is beaver activity and habitat present.

Alternative 1 (Proposed Action)

Direct and Indirect Effects to Beaver: Implementation of the Proposed Action could impact beaver habitat within the riparian systems grazed throughout the allotment. Grazing could impact future stands of aspen and willow components that supply important forage and building materials utilized by beaver. Depending on the intensity and duration of grazing on young aspen and willows, grazing could impact regeneration and age class distribution within the allotment. But, monitoring has indicated that the current management, utilization and permitted use are at appropriate levels to achieve or exceed Revised Forest Plan management direction. Riparian areas are currently providing ample forage for beaver and other wildlife species exhibiting a dietary overlap with domestic sheep. Therefore the Proposed Action will continue to maintain or improve upland and riparian conditions and thus maintain habitat for beaver on the allotment. These effects are not expected to result in a change in the population numbers or trend within the analysis area or result in a significant change in overall habitat quality and population numbers or trend forest-wide.
Currently there are not enough years of Forest Service monitoring population data on beaver to indicate a trend Forest-wide. Therefore, until Forest Service monitoring yields data for population trends, it is assumed that the determinations made in the 1993 State of Utah Survey Report (See USDA Forest Service 2008b) remain valid for both the Wasatch/Bear and Uinta Mountains populations on the Forest. Combined, the Wasatch/Bear and Uinta Mountain units indicate an overall Forest-wide static population trend.

Cumulative impacts to all terrestrial wildlife species are discussed at the end of this section.

2. Threatened, Endangered, and Proposed Terrestrial Wildlife Species

The Utah and Wyoming Field Offices of the U.S. Fish and Wildlife Service (FWS) list the same species for Summit County and adjacent areas in Wyoming (USDI FWS 2007a; 2007b) respectively. Threatened, endangered, and proposed plant species are discussed in the Rangeland Health section. Federally listed terrestrial species and candidate species that occur or have potential to occur on the National Forest are listed in Table 16.

Table 16: Threatened, Endangered, and Proposed Terrestrial Wildlife Species.

Species	Rank[1]	Habitat in Project Area	Present in Project Area	Comments
Yellow-billed cuckoo *Coccyzus americanus occidentalis*	C	No	No	Elevations on allotment are > 8,000 feet. Yellow-billed cuckoo nests in lowland riparian hardwoods (nest 2500-6000 feet in elevation) not present within the project area. No Effect to this species or its nesting habitat, therefore no further discussion will follow.
Black-footed ferret *Mustela nigripes*	E	No	No	Listed as historical in Utah. Prairie dog habitat is not present within the project area. No Effect to this species, no habitat present, therefore no further discussion will follow.
Canada lynx *Lynx Canadensis*	T	Yes	Unknown	LAUs #35 & 36. Considered dispersers and no evidence of lynx reproducing in Utah.

[1] Rank:
E = Listed as Endangered by the U.S. Fish and wildlife Service under the Endangered Species Act. Species that are in imminent jeopardy of extinction.
T = Listed as Threatened by the U.S. Fish and Wildlife Service under the Endangered Species Act. Species which are threatened with extinction.
C = Candidate taxa for which the USFWS has on file sufficient information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened species.

Canada lynx - Canada lynx are federally listed as Threatened under the Endangered Species Act. Historically lynx have occurred on the Wasatch-Cache Planning Unit throughout the spruce-fir habitats. They most often occur in relatively remote, undisturbed areas suggesting that they may be sensitive to human disturbance. Lynx prefer large continuous stands of conifer that provide denning and foraging habitat. Home ranges of lynx are generally 6 to 8 square miles, but range up to 94 square miles. Lynx are tied closely with snowshoe hare, their primary food source throughout the year. In years of low hare populations, lynx will turn to alternate prey sources such as squirrel and grouse.

On July 3, 2003 the U.S. Fish and Wildlife Service published a Notice of Remanded Determination of Status for the Contiguous United States Distinct Population Segment of the Canada Lynx; Clarification of Findings; Final Rule (USDI FWS 2003). As for the status of lynx in Utah the Rule reads as follows:

> *Utah – There are only 10 verified records of lynx in Utah since 1916 (McKay 1991; McKelvey et al. 2000b). Nearly all of the reliable lynx reports are from the Uinta Mountain Range along the Wyoming border (McKay 1991). Four of the records correlate to the cyclic highs of the 1960s and 1970s. In 1999, 2000, and 2001 a national hair snare survey was conducted to determine the presence/absence of lynx. Samples collected from the Evanston District were sent in for analysis; results were negative for lynx hair. In 2003, DNA analysis of a hair sample collected on the Manti-La Sal National Forest documented the presence of a lynx in Utah (McKelvey in lit. 2003). Further surveys were unable to find the animal and it is suspected that it came from transplanted lynx in*

Colorado. Currently, there is no evidence of lynx reproduction in Utah. It was concluded that lynx in Utah are dispersers rather than residents, because most of the few existing records correspond to cyclic population highs, there is no evidence of reproduction. While there are indications that some radio collared lynx from the Colorado reintroduction have passed through Utah recently. There have been no confirmed sightings recently or historically of lynx in or near the project area.

On November 9, 2005, the USFWS proposed critical habitat for the Canada Lynx within the United States; no critical habitat is proposed within the project area or within Utah (50 CFR Part 17, Volume 70, No. 216). Within the USFWS Recovery Outline for the Canada Lynx (USDI FWS 2005), core areas, provisional core areas, secondary areas, and peripheral areas were identified; none of these areas have been identified to occur within the project area.

On February 25, 2009, the U.S. Fish and Wildlife Service issued a final rule to designate lynx critical habitat, and under this rule, no critical habitat designation was proposed in Utah or the Uinta-Wasatch-Cache National Forest (USDI FWS 2009).

Although there is no evidence of reproducing lynx in Utah, from time to time when lynx dispersed into Utah, there may have been some reproduction and the animals could have been considered resident until they left the state or died out. There have been no confirmed sightings in recent years. There are indications that some radio collared lynx from the Colorado reintroduction have at least passed through Utah recently. In boreal forests, major lynx prey is limited to snowshoe hares, red squirrels, grouse, and occasionally song birds (Ellsworth and Reynolds, 2006).

The Uinta Mountains are the only place in Utah that has designated Lynx Analysis Units (LAU). LAUs are established to represent the approximate home ranges of a lynx. They were established by a working group comprised of biologists from the Ashley and Uinta-Wasatch-Cache National Forests, US Fish and Wildlife Service, BLM, and Utah Division of Wildlife Resources. The potential lynx habitat was then classified as primary, secondary and non-habitat. Except for 2,671 acres in LAU 36, the Stillwater allotment falls mostly within LAU 35 (23,909 acres). Potential lynx habitat, located in LAUs #35 and 36 within the allotment are identified in Table 17.

Table 17: Potential Lynx habitat (approximate acres) within the Stillwater S&G Allotment.

LAU	Primary Habitat	Secondary Habitat	Non Habitat	Total Acres
Stillwater LAU 35	6,145	9,881	7,883	23,909
Stillwater LAU 36	312	2,359	0	2,671
Stillwater TOTAL	6,457	12,240	7,883	26,7000
Capable Domestic Sheep Use Overlap For LAUs 35 & 36	1,270 20%	4,993 41%	1,803 23%	8,066
Lynx Suitability Habitat Classification	Conifer/Aspen Conifer Spruce-Fir Willow Wet Meadow Mixed Conifer	Aspen/Conifer Aspen Bottomland Hardwood Douglas-fir Limber Pine Lodgepole Pine	Water Agriculture Alpine Barren Island Mahogany Bigtooth Maple Pinyon-Juniper Ponderosa Pine	

LAU	Primary Habitat	Secondary Habitat	Non Habitat	Total Acres
			Gamble Oak Sagebrush-Grass Tall Forb Tall Shrub/Mt. Brush	

There are no major threats to lynx habitat components associated with grazing livestock as permitted under the Forest Plan. Potential threats to the Canada lynx from grazing are associated with its prey base, the snowshoe hare. The Canada Lynx Conservation Assessment and Strategy or LCAS (Ruediger et al. 2000) discusses the following threats to lynx prey base associated with grazing at the project level:

- Decline in aspen seral species due to loss of regeneration to livestock grazing of suckers, an important winter snowshoe hare habitat component.
- Competition for available forage between snowshoe hare and livestock.
- Grazing of high elevation willow riparian willow communities, important cover and forage for lynx prey base.

As described in Table 17, the Forest corporate GIS database has identified 6,457 acres of potential primary lynx habitat within the allotment. From this total, it was estimated that 1,270 acres or 20%, overlaps capable domestic sheep habitat. This primary habitat is mostly located within the wilderness portion of the allotment which receives prolonged periods of rest within the grazing schedule (e.g., wilderness areas have only been used by domestic sheep six non-consecutive years in the past 20). These periods of rest have provided for minimal competition between snowshoe hares and domestic livestock for available forage in these areas. There are 12,240 acres of potential secondary lynx habitat on the allotment. Of that total, 4,993 acres or 41% overlaps capable domestic sheep habitat. Lynx secondary habitat within the allotment and receives light to moderate use. The remaining 7,883 acres located inside the allotment boundary is not considered to be potential lynx habitat.

a. Direct and Indirect Effects to Threatened, Endangered, and Proposed Terrestrial Species

Alternative 1 (Proposed Action)

Direct and Indirect Effects to Canada Lynx: The Canada Lynx Conservation Assessment and Strategy (LCAS) was reviewed for biological and technical information on this species. Domestic and/or wild ungulate grazing can affect the structure and composition of native plant communities, thus changing their ability to support lynx and their prey (Ruediger et al. 2000). However, denning and winter foraging habitat is for the most part not accessible to livestock; therefore, changes to vegetation due to livestock grazing will not occur in these areas. In areas where livestock grazing does occur, the management of livestock grazing using time-controlled principles has provided for light to moderate utilization and vegetative conditions that meet or exceed Revised Forest Plan Standards and Guidelines. Vegetation monitoring has also documented an increase in aspen suckers and young willows within the allotment concurrent with livestock grazing. These smaller-diameter twigs provide additional winter forage for snowshoe hares. Furthermore, the majority of the potential primary lynx habitat is located within the wilderness portion of the allotment which receives prolonged periods of rest within the grazing schedule (e.g., wilderness areas have only been used by domestic sheep six non-consecutive years in the past 20). These periods of rest have provided for minimal competition between lynx prey (snowshoe hares) and domestic livestock for available forage. Therefore, implementation of this alternative may affect, but is not likely to adversely affect the Canada lynx. Cumulative impacts to all terrestrial wildlife species are discussed at the end of this section.

Applicable Revised Forest Plan Standards and Guidelines

Canada lynx were evaluated to determine compliance with applicable standards and guidelines defined in the Revised Forest Plan. Results of this analysis are as follows:

(S8) In Lynx Analysis Units with current habitat at 30% or more in unsuitable condition, allow no vegetation management activities that would result in a further increase of unsuitable conditions. (USDA Forest Service 2003a, Page 4-39)

Current habitat in Lynx Analysis Units 35 and 36 does not exceed 30% or more in unsuitable condition, and this Proposed Action would not further increase unsuitable conditions. Forest Plan Standard S8 - met.

(S10) In Lynx Analysis Units allow no net increase in groomed or designated open over-the-snow routes or play areas. (USDA Forest Service 2003a, Page 4-39)

This Proposed Action does not change the management of snow routes or play areas. Therefore, Forest Plan Standard S10 - met.

(G18) In Lynx Analysis Units design all management activities to maintain, restore, or protect desired lynx and lynx prey habitats including foraging, denning and movement. (USDA Forest Service 2003a, Page4-42)

Implementation of the Proposed Action could potentially impact lynx prey base foraging habitat. Range monitoring has indicated that the current management utilization and permitted use are at appropriate levels to achieve or exceed Revised Forest Plan management direction. The majority of the monitoring points indicate light to moderate use providing ample forage availability to lynx prey base and other wildlife exhibiting a dietary overlap with domestic sheep. Forest Plan Guideline G18 - met.

3. Sensitive Terrestrial Wildlife Species

Of the terrestrial wildlife species listed in the Revised Forest Plan for the Wasatch-Cache National Forest as Sensitive, Table 18 contains a list of species that are known on the north slope of the Uinta Mountains or adjacent to this area. Sensitive plant species are discussed in the Rangeland Health section and sensitive fish species are discussed in the Aquatic and Riparian Resources section of this document.

Table 18: Sensitive Terrestrial Wildlife Species.

Species	Habitat in Project Area	Comments
Spotted Bat *Euderma maculatum*	Yes	No Impact. Spotted bats roost in caves, mines and cliff crevices. Since there will be no degradation or disturbance to this habitat component, therefore, there will be no impact on the species. No further discussion will follow.
Townsend's Big-eared Bat *Plecotus townsendii*	Yes	No Impact. Townsend's big-eared bats roost in caves, mines and cliff crevices. Since there will be no degradation or disturbance to this habitat component, there will be no impact on the species. No further discussion will follow.
Pygmy Rabbit *Sylvilagus idahoensis*	No	No impact. Project area not in species range. No further discussion will follow.

Species	Habitat in Project Area	Comments
Wolverine *Gulo gulo*	Yes	Habitat present. May Impact Individuals or Habitat, But Will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species.
Rocky Mountain Bighorn Sheep *Ovis canadensis canadensis*	Yes	Habitat present. May Impact Individuals or Habitat, But Will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species.
Bald eagle *Haliaeetus leucocephalus*	No	No Impact. Nesting occurs at lower elevations in the state and elevation is not conducive to winter foraging by bald eagles. No further discussion will follow.
Boreal Owl *Aegolius funereus*	Yes	Habitat present. May Impact Individuals or Habitat, But Will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species.
Flammulated Owl *Otus flammeolus*	No	No impact. Insectivorous lower elevation old forest ponderosa pine open habitat species. Very rare if present on north slope. No further discussion will follow.
Great Gray Owl *Strix nevulosa*	Yes	Habitat present. May Impact Individuals or Habitat, But Will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species.
Northern Goshawk *Accipiter gentiles*	Yes	Habitat present. May Impact Individuals or Habitat, But Will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species.
Peregrine Falcon *Falco peregrinus*	NA	No impact. Habitat exists in the Uinta High Wilderness, but no peregrines have been documented. Grazing will not impact habitat. No further discussion will follow.
Northern Three-toed Woodpecker *Picoides tridactus*	Yes	No Impact. Although habitat is present, grazing does not impact species, nesting or foraging habitat, since conifers provide both nesting and foraging habitat. No further discussion will follow.
Columbian Sharp-tailed Grouse *Tympauchus phasianellus columbianus*	NA	No impact. Project area not within species range. No further discussion will follow.
Greater Sage Grouse *Centrocercus urophasianus*	NA	No impact. Project area not within species range. No further discussion will follow.

As described in Table 18, habitats suitable to the spotted bat, Townsend's big eared bat, pygmy rabbit,

bald eagle, flammulated owl, peregrine falcon, northern three-toed woodpecker, Columbian sharp-tailed grouse and Sage grouse are not present within the analysis area or are not affected by the Proposed Action therefore, these species will not be further discussed.

a. Direct and Indirect Effects to Sensitive Terrestrial Wildlife Species

Wolverine

The wolverine is the largest terrestrial mustelid and is found in the tundra, taiga, and forest zones of North America. Wolverines are typically associated with remote wilderness areas where minimal contact with humans or development occurs. As a scavenger it depends largely on mammal carrion provided from kills by wolves and other predators. Wolverines will forage on snowshoe hare. However, because of their size, carrion of ungulate species in the winter is also necessary for their survival. Delayed implantation allows wolverines to give birth during the winter when ungulate carrion is more plentiful. Information on natal den sites in North America is limited to data collected in the tundra region where dens are easily located. This species was probably never common in Utah, but it previously occurred (and still may occur) in the high mountainous areas of the state.

The final report "*Forest Carnivores Occurrence, Distribution & Limiting Factors: Canada Lynx and Wolverine Surveys in Utah*" (Flinders et al. 2004) reports the possibility of wolverine and/or fisher tracks in the High Uintas Wilderness. Historic records of fisher occurrences on the Wasatch-Cache would indicate the tracks most probably belong to a wolverine. The Utah Division of Wildlife Resources (UDWR) Heritage database (2002) records for fisher states "Identification of this species was based on tracks believed to be a fisher seen on two occasions (1938). A photograph of the tracks was examined by Durrant (1952) who agreed with the identification. This record is considered questionable without further documentation." The tracks found in the Flinders et al. study were southeast of the project area. No surveys have been conducted for this species within the project area due to the species large home range (39 to 233 square miles) and lack of a recognized protocol. Currently, there has not been a recent or historic sighting of a wolverine in the project area.

Alternative 1 (Proposed Action)

Direct and Indirect Effects to Wolverine: Livestock grazing is not expected to impact the denning habitat for wolverines. Livestock grazing does not occur during the winter when wolverines are denning therefore there is no direct effect on denning site use or availability.

The Stillwater Allotment is located within the Hwy 150 scenic byway and is a very popular recreation area during the summer and winter. Although foraging habitat for wolverine does exist within the allotment, because of the heavy recreation activities associated with this area during the summer and winter months it is very likely that if present, wolverine would avoid use of most of the project area. Wolverine are considered wanderers and travel great distances over their home range. In fact, estimates generally suggest that it may take an area from 15 to 304 square miles to provide adequate habitat for a single wolverine. Vegetative characteristics appear less important to wolverine than physiographic structure of the habitat. Montane coniferous forests, suitable for winter foraging and summer kit rearing, may only be useful if connected with subalpine cirque habitats required for natal denning, security areas, and summer foraging (Wolverine Foundation 2009). Natal den habitat on talus slopes may exist within the High Uintas Wilderness, but grazing does not occur in these areas, nor does it occur during the winter months when this habitat is potentially utilized by wolverine. Prey base in the summer months will include snow shoe hare and ground squirrels and these species can be affected by livestock grazing, but overall range monitoring has shown satisfactory conditions throughout the Stillwater allotment. Monitoring has indicated that the current management, utilization and permitted use are at appropriate

levels to achieve or exceed Revised Forest Plan management direction. The majority of the monitoring points indicate light to moderate use providing ample forage availability to wolverine prey base and other wildlife exhibiting a dietary overlap with domestic sheep (See Table 10 - Evaluation of Monitoring Points).

Refugia may be most important in providing availability and protection of reproductive denning habitat. Life history requirements of the wolverine are tied to the presence and stability of ecosystems lacking broad scale human influence. Dispersing wolverines in Idaho traveled over 124 miles following routes across isolated subalpine habitat. They are able to move more than 20 miles in a day through rough terrain and deep snow (Wolverine Foundation 2009). Because wolverines have large home ranges, do not tolerate human disturbance and most likely spend most of their time in high elevation wilderness areas (which have only been grazed six out of the past 20 years), it is not anticipated that grazing of the Stillwater allotment will have any significant impact to wolverine or its habitat.

An opportunistic feeder, the wolverine eats about anything it can find, from berries and nuts to small animals and even big game. Its main food source is carrion, especially during winter and spring. Many deer and elk that die in winter are eventually found by wolverines, which will eat their fill of the carcass. Wolverines prey on marmots, ground squirrels, snowshoe hares, porcupines, grouse, and occasionally mice and voles. Livestock grazing is not expected to significantly reduce the available habitat for small game species within forest stands found throughout the allotment. Because of the large home range for wolverines there would be available prey species and habitat throughout their territory.

The Proposed Action May Impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. Cumulative impacts to all terrestrial wildlife species are discussed at the end of this section.

Alternative 1 (Proposed Action)

Direct and Indirect Effects to Raptors: Livestock grazing would not affect the nesting habitat for any of the three bird of prey species (goshawk, great gray owl, and boreal owl). Grazing livestock would not remove existing or potential nesting trees for any of the three species within forested stands.

All three birds of prey species are forest dwelling which means much of their time is spent in tree stands with a developed overstory. Each species however will hunt in openings within and outside of forested stands. Livestock (cattle/sheep) typically do not utilize vegetation within dominated conifer stands because of the lack of vegetation or downed woody materials which make movement difficult. Livestock will utilize the edge of the stand within a given distance from an opening if movement is easy.

Grouse, voles, mice, squirrels and snowshoe hares are species foraged upon by one or more of the forest dwelling birds. Most of the prey species are limited to older mature stands because of the understory and overstory cover. Some species could utilize meadows and other natural openings found in the stand. Grazing livestock could potentially reduce the available forage or cover habitat for some of these species. The loss in meadows and openings would likely impact the local small mammal populations within those particular areas. However, because most of these prey species are not limited to meadows or openings only the likelihood of grazing eliminating prey species from the areas is unlikely.

It can be expected that livestock utilization of vegetation in the aspen/conifer habitat types would affect the available prey habitat in these stands differently than in a conifer dominated stand. These stands typically produce more forage and do not have significant amounts of large diameter downed woody material that may limit livestock access. Grazing in the aspen/conifer habitat type decreases the amount of available forage or cover for prey species and in turn decreases the amount of prey base for the

goshawk, great-gray and boreal owl. Cumulative impacts to all terrestrial wildlife species are discussed at the end of this section.

Rocky Mountain Bighorn Sheep
Rocky Mountain Bighorn sheep are discussed in the "Big Game" section. The Proposed Action May Impact Individuals or Habitat, But Will Not Likely Contribute to a Trend Towards Federal Listing or Cause a Loss of Viability to the Population or Species.

Boreal Owl
The species breeds in North America from Canada to northeastern Minnesota, local breeding populations can be found in Washington, Idaho, Wyoming, and Colorado. Forests ranging from pure deciduous to mixed and pure coniferous composition characterize boreal owl habitat in North America. Suitable habitat on the Evanston-Mountain View Ranger District would be old-growth spruce-fir and high elevation mixed-conifer stands. Boreal owls are cavity dependant and typically use old woodpecker nests. Prey species typically consist of microtine rodents (red-backed vole), which are caught nocturnally. Red-backed voles and other small mammals are important food sources for foraging boreal owls. Habitat requirements for prey species vary from a well-developed understory to clear-cuts or natural openings. Recently there was a confirmed nesting pair on the Uinta Forest National Forest that is the first nesting pair found in Utah. There has been one confirmed Boreal owl on the Evanston District that responded to broadcast surveys and it was within a roadless portion of the West Bear Analysis Area, in the vicinity of Whitney Reservoir approximately 4 miles west of the project area. But, there are no recent or historic sightings of Boreal owls in the project area.

Alternative 1 (Proposed Action)

Direct and Indirect Effects to Boreal Owl: As previously stated, implementation of the Proposed Action would not impact large decadent conifers with cavities used for nesting by boreal owls. The availability of small mammals limits populations of boreal owls in many areas; therefore, factors that influence small mammal abundance and availability will directly influence the abundance of boreal owls. Range monitoring in the Stillwater Allotment, shows grazing by domestic sheep is at light to moderate levels, which maintains adequate forage and cover for small mammals that are prey for this species. Therefore, this alternative would not create a significant impact to the small mammal prey base habitat available to potentially foraging boreal owls. Boreal owls are dependent on small mammals and are interior forest hunters and rarely hunt in open areas.

The Proposed Action May Impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. Cumulative impacts to all terrestrial wildlife species are discussed at the end of this section.

Great Gray Owl
In North America, the great gray owl breeds from the boreal forests of Alaska, east to Ontario, and south to northeastern Minnesota, northwestern Wyoming, western Montana, Idaho, and through the Sierra Nevada's of California and Nevada. All of its range in Utah is considered range of wintering vagrants. Great gray owls use mixed coniferous and hardwood forests usually bordering small openings or meadows. They forage along edges of clearings, semi-open areas where small rodents are abundant. The long-term persistence of great gray owls south of Canada and in Alaska seems likely provided that forests of all successional stages are maintained and well dispersed on a local and regional scale. Persistence on a local geographic scale is less certain. Maintaining persistence will require special attention to the long-term persistence of mature and older forest stands on sites where natural fire is less likely to destroy the old forest and where suitable nesting platforms are abundant. These stands will be necessary to consistently produce nesting structures. Furthermore, mature and older forest likely provide important

alternate foraging habitat during periods when crusted snow prevents great gray owls from accessing their preferred rodent prey. Maintaining quality great gray owl foraging habitat should be compatible with forest management for commodity resources if management takes a long-term view. Natural meadow systems must be maintained and restored through fire management. Similarly, temporal continuity of foraging habitat must be maintained through long-term harvest planning (Hayward 1994). The great gray owl is still considered a winter vagrant on the Forest.

The great gray owl's diet consists of almost entirely small rodents. About 90% of their diet consists of pocket gophers and voles. Other small mammals taken by the owl include mice, squirrels, young rabbits, hares, rats, moles, and weasels. Also taken are birds, usually small, although there are records of Sharp-shinned hawks, ducks, and grouse. Small mammals are usually swallowed whole while larger prey is torn into pieces. The great gray owl can also detect prey under the snow by sound alone and will dive into the snow for hidden prey. Generally they hunt from a perch by listening and watching. Primarily a nocturnal and crepuscular owl but it may occasionally hunt by day on dark overcast days during the winter months, and while feeding young. There has not been a recent or historic sighting of a Great gray owl in the project area. Surveys have been done for great gray owls and boreal owls, but no responses have been documented.

Alternative 1 (Proposed Action)

Direct and Indirect Effects to Great Gray Owl: Implementation of the Proposed Action would not result in the loss of large decadent broken top conifers used for nesting by great gray owls, but could have potential impacts to the great grey owl's small mammal prey base. About 90% of their diet consists of pocket gophers and voles. Availability of nest sites and suitable foraging habitat are considered the most important factors governing habitat use by breeding great gray owls. They forage in relatively open, grassy habitat, including bogs, selective and clear-cut logged areas, natural meadows, and open forests (Hayward and Verner 1994). Range monitoring conducted in the Stillwater Allotment supports habitat use by domestic sheep at light to moderate levels, which maintains adequate forage and cover for small mammals that are prey for this species. Therefore, this alternative would not result in a significant decline to the small mammal prey base habitat available to potentially foraging great grey owls.

The Proposed Action May Impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. Cumulative impacts to all terrestrial wildlife species are discussed at the end of this section.

Northern Goshawk
The Northern goshawk is both a Wasatch-Cache NF sensitive species and a Management Indicator Species (MIS); therefore this species is discussed in detail in the MIS section of this document.

Alternative 1 (Proposed Action)

Direct and Indirect Effects to Northern Goshawk: The Proposed Action May Impact individuals or habitat, but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species. Cumulative impacts to all terrestrial wildlife species are discussed at the end of this section.

Northern Three-toed Woodpecker
Three-toed woodpeckers range across North America, including Idaho, Utah, New Mexico, and Arizona. Suitable habitat is northern coniferous and mixed forest types up to 9,000 feet. Forests containing spruce, grand fir, ponderosa pine, tamarack, and lodgepole pine are used. Three-toed woodpeckers prefer to forage in mature and over mature habitat types. Three toed woodpeckers are foraging opportunists and

abundance in populations may be in response to foraging resources. Goggans et al. (1988) observed that in central Oregon three-toed woodpeckers foraged in mixed-conifer 55% and mixed conifer dominated by lodgepole 20% of the time. These habitat types can be found in and surrounding the project area. Fire killed trees are a major source of food, and may lead to local increases in woodpecker numbers three to five years after the fire, which has been experienced in the East Fork Fire area which burned in 2002. Three-toed woodpeckers like others in its family respond positively to landscape disturbances caused by insect epidemics. These beetle-hit areas can be found throughout the Forest. Individuals have responded to broadcast surveys within the project area.

Alternative 1 (Proposed Action)

Direct and Indirect Effects to Northern Three-toed Woodpecker: Implementation of the Proposed Action will result in a determination of "No impact" on the three-toed woodpecker. The "No impact" determination is based on the fact that the three-toed woodpecker is dependent on forested habitat for both foraging on insects and nesting in tree cavities; therefore grazing will have no significance to them or their habitat.
Although habitat is present within the allotment, grazing does not impact this species nesting or foraging habitat. Therefore, it is reasonable to conclude that there will be no impact to this species from livestock grazing. Cumulative impacts to all terrestrial wildlife species are discussed at the end of this section.

Applicable Revised Forest Plan Standards and Guidelines

Sensitive species were evaluated to determine compliance with applicable standards and guidelines defined in the Revised Forest Plan. Results of this analysis are as follows:

(G21) For projects that may affect Forest Service Sensitive species, develop conservation measures and strategies to maintain, improve and/or minimize impacts to species and their habitats. Short-term deviations may be allowed as long as the action maintains or improves the habitat in the long term. (USDA Forest Service 2003a, Page4-43)

Grazing on the Stillwater Allotment may impact some Forest Service Sensitive terrestrial wildlife species with implementation of the Proposed Action, but monitoring points indicate that grazing is at light to moderate levels with current grazing on both riparian and upland habitats and therefore impacts to Forest Service Sensitive species would be minimal to non-existent. Forest Plan Guideline G21 - met.

4. Neotropical Migratory Birds

The Utah Partners in Flight (PIF) Utah Avian Conservation Strategy Version 2.0 was evaluated to determine which species occurred within the project area (Parrish et al. 2002). The ecological tenet underlying this process, that conservation actions focused on priority species will benefit other avian species (as well as other forms of wildlife), extends the benefits to most birds in Utah.

Partners in Flight list the project area occurring within the Utah Mountain Physiographic Region. This region occupies 23% of Utah's land area and is made up primarily of the Wasatch and Uinta mountain ranges and their associated valleys. Elevations range from 1,360 meters in the Salt Lake Valley at the edge of the ecoregion to 4,090 meters on King's Peak. Most of Utah's forested habitats occur within this ecoregion.

The Forest Service reads a U.S. Geologic Survey Breeding Bird Survey (BBS) (USGS Website) known as the Wasatch NF BBS, which begins at the Bear River Guard Station on Highway 150, turns onto the

North Slope Road and ends east of the East Fork of Black's Fork. This route runs about one mile north of the northern edge of the Stillwater Allotment. Since the survey was begun in 1988, 61 species of birds have been identified during surveys.

Table 19 shows species listed on the Fish and Wildlife Service's Birds of Conservation Concern (BCC) and the State of Utah's Partner's in Flight Priority Species (PIF) (Parrish et al. 2002). The species are listed for the Utah Mountains and Wyoming Basin. Only species that are known to occur on the allotment or that are possible or probable inhabitants are carried into the discussion following Table 19.

Table 19: Birds of Conservation Concern and Utah's Partner's in Flight Priority Species.

FWS BCC and PIF Priority Species	Utah Mountains	Wyoming Basin	Primary Breeding	Secondary Breeding	Winter Habitat	Present in Project Area
American avocet*		X	Wetland	Playa	Migrant	No
American white Pelican**		X	Water	Wetland	Migrant	No
Black rosy-finch**	X		Alpine	Alpine	Grassland	Possible Wilderness
Black swift**	X		Lowland Riparian	Cliff	Migrant	No
Black-throated gray warbler*	X		Pinyon-juniper	Mountain shrub	Migrant	No
Brewer's sparrow**	X	X	Shrubsteppe	High desert shrub	Migrant	Present
Broad-tailed hummingbird**	X		Lowland riparian	Mountain riparian	Migrant	Present
Ferruginous hawk**		X	Pinyon Juniper	Shrubsteppe	Grassland	No
Flammulated owl***	X		Ponderosa pine	Subalpine conifer	Migrant	No
Golden eagle***	X	X	Cliff	High desert scrub	High desert scrub	Possible Wilderness
Grace's warbler***	X		Ponderosa pine	Mixed conifer	Migrant	No; W-C out of range
Gray vireo**	X		Pinyon Juniper	Northern oak	Migrant	No
Greater sage grouse**	X	X	Shrubsteppe	Shrubsteppe	Shrubsteppe	No
Lewis' woodpecker**	X	X	Ponderosa pine	Lowland riparian	Northern oak	No
Loggerhead shrike**	X	X	High desert scrub	Pinyon Juniper	High desert Scrub	No
Long-billed curlew***		X	Grassland	Agriculture	Migrant	No
Northern harrier**	X	X	Wet meadow	High desert scrub	Agriculture	No
Peregrine falcon**	X		Cliff	Lowland riparian	Wetland	No
Pinyon jay***	X	X	Pinyon Juniper	Ponderosa pine	Pinyon Juniper	No
Prairie falcon***	X	X	Cliff	High desert scrub	Agriculture	No
Pygmy nuthatch***	X		Ponderosa pine	Aspen	Ponderosa pine	No
Red-naped sapsucker***	X	X	Aspen	Mixed conifer	Mountain riparian	Present
Sage sparrow**	X	X	Shrubsteppe	High desert scrub	Low desert scrub	No
Sharp-tailed grouse**	X		Shrubsteppe	Grassland	Grassland	No
Snowy plover***	X		Playa	Playa	Migrant	No
Swainson's hawk***		X	Agriculture	Low elevation Aspen & sagebrush	Migrant	No
Three-toed woodpecker**	X		Subalpine conifer	Lodgepole pine	Subalpine conifer	Present
Virginia's warbler***	X		Northern oak	Pinyon Juniper	Migrant	No
Williamson sapsucker***	X		Subalpine conifer	Aspen	Migrant	Present
Wilson's phalarope***		X	Wetland	Water	Migrant	No

FWS BCC and PIF Priority Species	Utah Mountains	Wyoming Basin	Primary Breeding	Secondary Breeding	Winter Habitat	Present in Project Area
Yellow-billed cuckoo***	X		Lowland riparian	Agriculture	Migrant	No

* On both lists (FWS BCC and State of Utah PIF, (Parrish et al. 2002))
** State of Utah PIF list only
*** FWS BCC list only

Black rosy-finch - This species is an altitudinal migrant that nests above treeline in the alpine tundra and winters in low elevation valleys. The black rosy-finch feeds primarily on seeds of alpine plants, with some insects. It nests in cliffs or rock talus slopes (UCDC 2009). Wintering flocks of black rosy-finches roost in large communal roosts in caves, mine shafts, on rafters of barns, and in clusters of old cliff swallow nests. Black rosy-finches are among the least studied of North American birds because of the inaccessibility of their alpine habitat generally and their nest sites on cliffs in particular. Because of their high elevation use of alpine habitat, they were not detected on the BBS.

Brewer's sparrow - The Brewer's sparrow is considered a shrub-steppe obligate that breeds throughout Utah in lowland areas nesting in sagebrush. They may breed in large sagebrush openings in pinyon-juniper or coniferous forests. Nests are typically placed between 8 to 20 inches high usually on the top half of the shrub. Brewer's sparrows are primarily insectivorous during the breeding season though their diet consists mostly of grass and weed seeds in winter. Nesting occurs in May. In the Wasatch National Forest BBS that goes through the allotment this species has been detected 11 times between 1988 and 2007 and averaged three birds per year surveyed. The high detection was 12 records in the 2006 survey and the low was one detection in 1990, 1996, and 2001. The species is declining range wide but common and stable in Utah. (UCDC 2009).

Broad-tailed hummingbird - BBS data indicates a stable population in the Uinta Mountains but state point count data indicate a downward trend throughout the state. From 1988 through 2007 the broad-tailed hummingbird was detected on the Wasatch National Forest BBS survey in the area in 13 of the years and averaged 12 per year surveyed. The high count was 19 in 1994 and the low count was 8 in 2003. They are dependent on nectar-bearing flowering plants. Broad-tailed hummingbirds feed on floral nectar and small insects, spiders, and occasionally tree sap from woodpecker (sapsucker) drillings. Insects are caught in air as well as by gleaning from foliage. Lack of nectar-bearing plants will cause the female to abandon nesting. (UCDC 2009).

Golden eagles - Golden eagles are probable visitors to the Stillwater allotment. Elevations where nesting habitat may occur are high elevation (most likely 10,000 foot plus in elevation) so nesting would be sporadic at best and associated with the mountain cliffs in the High Uinta Wilderness. Home range varies from 20 to 33 square kilometers. Golden eagles have not been detected on the BBS.

Red-naped sapsucker - The red-naped sapsucker uses aspen, mixed conifer, and mountain riparian areas. They are dependent on forested habitat for both foraging and nesting. In the Wasatch NF BBS that goes through the allotment this species has been detected nine years between 1988 and 2007 and averaged two birds per year surveyed. The high detection was five records in the 2003 survey and the low was zero detection in 1988, 1990 to 1991, and 1996.

Three-toed woodpecker - The three-toed woodpecker is found in subalpine conifer and lodgepole pine. It is a permanent resident above 8,000 feet and dependent on live and dead trees for foraging and nesting. They require soft wood for excavation because of morphological adaptations associated with three toes on each foot, therefore presence of heartrot is important. Trees with scaly bark remaining on the tree are

important to support their foraging technique. American three-toed woodpeckers require trees infested with bark- and wood-boring insects for foraging. It is considered common in Utah. (UCDC 2009) In the Wasatch NF BBS, this species was detected once in 2003 and twice in 2004.

Williamson sapsucker - These birds feed on sap, mainly from conifers, but insects are their main food source during the nesting season and they also eat berries outside of the breeding period. Sapsuckers are unique among woodpeckers in drilling neat rows of tiny holes-or sapwells-in the trunks of trees. The sap provides food for the sapsuckers and snags small insects that are eaten by hummingbirds and warblers (BirdNote 2009). Williamson sapsucker are primary cavity excavators nesting from 8,000 feet to timberline in Utah. The major vegetation types used are subalpine conifer and aspen. (UCDC 2009). In the Wasatch NF BBS that goes through the allotment this species has been detected three years between 1988 and 2007 and averaged 0.3 birds per year surveyed. The high detection was two records in the 1988 survey and the low was zero detection in 1990 to 1994, 2001 to 2003, and 2006 to 2007.

a. Direct and Indirect Effects to Neotropical Migratory Birds

Alternative 1 (Proposed Action)

Direct and Indirect Effects: Any action, or non action, that affects habitat on National Forest System lands will adversely affect some species and be beneficial to other species. This is evident when considering birds whether they are migratory or not. Grazing would have the greatest affect on ground nesting birds, especially those that nest in open meadows, shrub-lands, and aspen. Of the species listed in Table 19, the black rosy-finch is a ground nester but is in the rocky tundra and cliffs that would not be grazed by sheep and therefore not impacted. The Brewer's sparrow nests in low shrubs and could be mildly impacted if heavy grazing were to occur in the understory grasses. The red-naped and Williamson's sapsuckers could be impacted if heavy browsing of suckering aspen were to occur within the Stillwater Allotment. The broad-tailed hummingbird, golden eagle, and three-toed woodpecker nest in trees, tree cavities or on cliffs and would not be affected unless their foraging habits are interrupted or otherwise modified. Grazing in accordance with direction in the Revised Forest Plan would minimize effects on birds, including migratory birds. Vegetative monitoring conducted in the Stillwater Allotment shows grazing use by domestic sheep at light to moderate levels, and little to no grazing within suckering aspen clones was evident within the allotment. The majority of the light browsing in aspen could be attributed to big game and not domestic sheep. Therefore, implementation of the Proposed Action would have little or no impact to nesting or foraging Neotropical migratory birds within the Stillwater Allotment.

The intent for both the Migratory Bird Treaty Act and Executive Order 13186 are being met by reducing the negative impacts and incidental take of migratory bird species on the Stillwater Allotment by meeting Guidelines and Standards established in the Revised Forest Plan (Federal Register 2001). Cumulative impacts to all terrestrial wildlife species are discussed at the end of this section.

5. Big Game

The Stillwater Allotment falls within Hunt Unit 8 for deer (*Odocoileus hemionus*), elk (*Cervus canadensis*), and moose (*Alces alces*). Rocky Mountain goats (*Oreamnos americanus*) are in Hunt Units 8 and 9. Rocky Mountain big horn sheep (*Ovis Canadensis*) are in Hunt Unit 8, although habitat within the Stillwater Allotment is unoccupied. Population objectives and population estimates are displayed in Table 20. The Utah Division of Wildlife Resources determines population objectives and hunting units for big game.

Table 20: Big Game Population Objectives and Estimates in Hunt Unit 8.

Species	Population Objective	Population Estimate Post season 2006	Population Estimate Post season 2007	Population Estimate Post season 2008
Deer	6,200	4,500	4,400	4,700
Elk* (Summit)	300	120	270	270
Elk* (West Daggett)	1,300	1,400	950	1,000
Elk* (Total Summit and West Daggett)	1,600	1,520	1,220	1,270
Mountain Goats	3,000			583

* Elk Hunt Unit 8 is divided into three areas – Summit County portion, West Daggett County portion, and the 3 Corners portion. Animals in the 3 Corners portion, East of Flaming Gorge Reservoir, mix very little with the Summit and West Daggett units. In Summit and West Daggett there is mixing with some animals summering on one portion while wintering on the other. Post season counts are winter counts so with the mixing, the total of the two areas is more indicative of the total population than would be realized by separating them (Randy Woods, UDWR; pers. comm.).

Deer and Elk

Mule deer are the most abundant big game animal in Utah and are of high interest to hunters and non-consumptive users. The mule deer population in Utah has been in a state of decline for over thirty years. There are many factors contributing to this decline, but the loss and degradation of habitat have likely had the most significant impact on mule deer numbers.

Rocky Mountain elk, Utah's state animal, is the second most abundant big game species in Utah. The state's elk herd has increased substantially in the last 30 years. Elk populations have become more stable since about 1995. The most important issues in elk management are also habitat related.

The lowest elevations on the Stillwater Allotment are approximately 8,000 feet. In general, big game winter range is considered to be below 7,000 feet in elevation so the entire allotment is in summer range for big game. Table 21 shows the total area of the Stillwater Allotment in comparison to the entire North Slope Hunt Unit on National Forest System lands. Table 22 shows the total area of the allotment in comparison to all land ownerships on the Hunt Unit. The allotment represents 4% or less of the North Slope Hunt Unit on National Forest lands.

Table 21: Stillwater S&G Allotment Compared to North Slope Hunt Unit on N.F. Lands.*

	Yearlong Range (on NF)		Winter Range (on NF)		Summer Range (on NF)		Stillwater Allotment		
	Area (acres)	%	Area (acres)	%	Area (acres)	%	Area (acres)	% of Summer Range	% of total Hunt Unit
Elk	8,926	2	93,008	17	456,996	81	26,580	6	5
Deer	0	0	17,277	5	317,491	95	26,580	8	8

* Elk and deer acres from UDWR 2008 and UDWR 2006 respectively.

Table 22: Stillwater S&G Allotment Compared to North Slope Hunt Unit, All Land Ownerships.

	Yearlong Range (all land ownerships)	Winter Range (all land ownerships)	Summer Range (all land ownerships)	Stillwater Allotment		
	Area (acres)	Area (acres)	Area (acres)	Area (acres)	% of Summer Range	% of total Hunt Unit
Elk	11,421	188,691	526,500	26,580	5	4

	Yearlong Range (all land ownerships)	Winter Range (all land ownerships)	Summer Range (all land ownerships)	Stillwater Allotment		
	Area (acres)	Area (acres)	Area (acres)	Area (acres)	% of Summer Range	% of total Hunt Unit
Deer	3,925	184,585	568,054	26,580	5	4

* Elk and deer acres from UDWR 2008 and UDWR 2006 respectively.

With the number of big game animals listed in Table 20 and the percentage of the summer range on the allotment compared to the entire hunt unit, as shown in Tables 21 and 22, big game animals are spread out to the point where competition with domestic sheep for forage would not be a factor. Elk and deer tend to spend their time during the day in heavy timber and will forage at dusk and dawn.

Moose

Moose (*Alces alces*) is largest member of the deer family. Four subspecies of moose are recognized in North America. The Shiras or Wyoming moose (*Alces alces shirasi*) is found in Utah and is the smallest of the four subspecies. Mature Shiras moose bulls weigh considerably less than other moose but can still reach 800 pounds. The rut or breeding season begins in early September and lasts for several weeks, peaking in late September. Gestation for moose is approximately eight months with a peak of calving in late May. Cows usually give birth to one or two young. Calves grow rapidly and achieve sufficient size by five months of age to endure deep snow and cold weather conditions.

Historical records indicate moose were not present in Utah prior to the early 1900's. Moose immigrated into Utah from Idaho and Wyoming on their own. The first recorded sighting of a moose in Utah was in 1906 or 1907 at the head of Spanish Fork Canyon. The next reported sighting was in 1918 in the Bear River Drainage of the Uinta Mountains. Sparse reports over the next few decades were mainly from the north slope of the Uintas where a population was gradually establishing itself. It was not until 1947 that it was determined a resident herd existed on the North Slope (UDWR 2000).

On the North Slope Hunt Unit the estimated moose population in 2008 was 284 animals with a population goal of 400 (Randy Woods, UDWR; pers. comm.). Moose are consistently seen within the Stillwater Allotment especially around popular recreational riparian areas with willow such as Christmas Meadows and Lily Lake. Aspen, willows and a variety of aquatic emergent and submergent vegetation are preferred forage species for moose. Wet meadows and riparian habitat are important for cow moose and calves during the summer.

Rocky Mountain Goats

The Rocky Mountain goats are adapted to live in those highest, coldest, snowiest and most precipitous reaches of western mountain ranges. Mountain goats were introduced on Bald Mountain in 1987. The current estimated population on Bald Mountain is 30+ animals and increasing (UDWR 2005b). Mountain goats are managed on the entire Uinta Mountain Range comprising the Kamas Hunt Unit 7, North Slope Hunt Unit 8, and South Slope Hunt Unit 9. Hunting Units are comprised of four sub units that run north to south covering portions of all three units. This was done by UDWR so that hunters can be given permits to specific areas when populations need to be controlled. (UDWR 2005a) The Stillwater Allotment is in the North Slope/South Slope, High Uintas West sub unit.

The effect of mountain goat utilization on available forage resources must be closely monitored. This is especially important given the fragile nature of alpine habitats frequented by goats. Although goat densities are typically low, local areas may exhibit heavier use. The Forest Service monitors areas used by

goats to ensure that these localized areas are not over utilized. It is critical that careful monitoring be accomplished, since other ungulates use habitats frequented by goats. Where mountain goat use has been demonstrated to be in excess, the Division will cooperate with the Forest Service to manage goat populations to acceptable levels (UDWR 2005b). Currently, numbers of mountain goats, in the High Uintas Wilderness, are low and it does not appear that their presence is causing any resource issues. Because of their utilization of the most rugged terrain, there is little to no interaction or competition with domestic sheep.

Rocky Mountain Bighorn Sheep

Rocky Mountain bighorn sheep prefer remote areas in upper elevations where open meadows and mountain shrublands exist in close proximity to steep rocky escape cover. During the winter, bighorns will descend from higher elevations as the snow load limits forage availability. The amount and duration of a particular year's snow pack will influence where and for how long, bighorns will occupy lower elevations.

Bighorn sheep are native to Utah. Archeological evidence indicates they were well known to the prehistoric inhabitants of Utah, since bighorns are depicted in pictographs and petroglyphs more than any other form of wildlife. Historical records of the first white men in the state also confirm the presence of bighorns. Father Escalante noted in his journal as he crossed the Colorado River in Utah, "…through here wild sheep live in such abundance that their tracks are like those of great herds of domestic sheep". Explorers, trappers, pioneers and settlers also recorded numerous observations of bighorn sheep throughout the state. Rocky Mountain bighorns (Ovis canadensis canadensis) are generally recognized to have inhabited northern and central Utah, whereas desert bighorns (Ovis canadensis nelsoni) were found in southern Utah. Some mixing and interbreeding of Rocky Mountain and desert bighorns likely occurred where their ranges converged in Utah, making a clear distinction of historic ranges difficult (UDWR 2008).

Within the Uinta Mountains, three reintroduced winter range sub populations of bighorns exist. Two of these sub populations (Carter Creek and Sheep Creek), are found on the Ashley National Forest. The Hoop Lake sub population is located on the Uinta-Wasatch-Cache National Forest and is the closest herd to the allotment. These three sub-populations of bighorns have been known to interact with one another.

In 1989, twenty-three bighorn sheep from Whiskey Basin, Wyoming were released at "Hole in the Rock" north of Hoop Lake. This small herd, known as the Hoop Lake sub-population, presently consists of approximately 20 to 25 animals and has remained stagnant since their release. Utah Division of Wildlife Resources biologists monitor the herd and suspect the herd has remained small due to predation by mountain lions and disease within the herd in the form of lung worm resulting in high lamb mortality (C. Greenwood, pers. comm., 2009).

Other factors that can influence the viability of bighorns include: nutrition, predation, weather, fire, interspecies competition, habitat manipulation, and various diseases. One of these diseases is a respiratory diseases caused by Pasteurella. Pasteurella is a bacterium that can cause pneumonia in bighorn sheep. Much in the same way a common cold is spread, domestic sheep can transmit this respiratory disease to bighorns through direct contact and aerosolization (Garde et al. 2005). The Pasteurella bacterium does not persist in the environment (Garde et al. 2005). This respiratory disease can be fatal to bighorn sheep. While this bacterium can cause significant mortality in bighorn sheep, this bacterium can also be found in healthy bighorns (Garde et al. 2005). The Payette Science Panel found that Pasteurellaceae, other bacteria, viruses and other agents may occur in healthy, free-ranging bighorn sheep (USDA Forest Service 2006a). While this disease causes sickness in domestic sheep it rarely results in death. It is believed that as this Old World species of sheep were domesticated, artificial selection allowed these now domestic sheep to develop a resistance to these types of diseases, while the New World species of bighorn

sheep have not developed this resistance (Jessup 1985; USDA Forest Service 2006). Currently, as this disease can cause mortality in bighorn sheep, can be transmitted between bighorns and domestic sheep and bighorns and domestic sheep can come in contact with one another under range conditions, a separation either spatially, temporally or both is recommended by leading bighorn sheep disease experts (USDA Forest Service 2006; WAFWA 2007).

For the past 20 years the Hoop Lake herd has remained in the same general area as its release. However bighorn rams are known to wander many miles away from an established herd. There are currently no recorded sightings of bighorns within the Stillwater Allotment boundary. To date, summer movements into the Uinta Mountains have only brought individuals west into the Upper Henry's Fork drainage. This is approximately 18-20 air miles from the east boundary of the Stillwater Allotment. Utilizing GIS technology, the Utah Division of Wildlife Resources (UDWR) has identified 4,759 acres of potential bighorn sheep habitat, within the allotment boundary. Of that total, 297 acres or 1% overlaps with domestic sheep capable acres. Domestic sheep also graze outside of the capable acres which increases the percent overlap and opportunity for interaction.

Bighorn sheep movements will continue to be monitored by the UDWR and the Forest Service. The Revised Forest Plan will be followed to monitor utilization and trend for bighorns. The 297 acres of potential overlap and the rest of the majority of the potential habitat for bighorn sheep is located inside the wilderness boundary. These areas have only been used by domestic sheep six non-consecutive years in the past 20. During those years of use in the wilderness, domestic sheep have spent as little as five to as much as 17 days in the larger upper two units in the wilderness. Also, the Hoop Lake herd or sub population has remained stagnant for the last 20 years attributed to predation and natural disease within the herd. It does not appear that there is any anticipated change in occupancy, since the nearest boundary of UDWR occupied bighorn sheep habitat is approximately 15 air miles east of the Stillwater Allotment. Based on this analysis, it can be concluded that the Payette Principles of spatial and temporal separation of bighorns and domestic sheep are being applied on the Stillwater Allotment (USDA Forest Service 2006a). Therefore, westward movement by bighorn sheep and potential interaction with domestic sheep in the Stillwater Allotment is not anticipated in the near future.

a. Direct and Indirect Effects to Big Game

Alternative 1 (Proposed Action)

Direct and Indirect Effects to Big Game: Implementing the Proposed Action would maintain or improve result rangeland health and productivity. Continued grazing by domestic sheep will prevent forage from becoming stagnant and losing nutritional value for big game. As livestock remove coarse less palatable forage it allows plants to produce more palatable and nutritious forage in the form of regrowth. Rotational grazing can also prolong the availability of this palatable forage by continually providing new areas of regrowth and more palatable forage throughout the growing season which would be preferred by big game species. Domestic sheep capable habitat within the allotment consists of approximately 8,066 acres or 30% of the total acreage, these areas are where domestic sheep spend most of their time grazing. Theoretically, 70% of the allotment is left for big game wildlife use. While this remaining 70% may not be as productive, from a forage standpoint, it does encompass the areas big game spend a majority of their time. Spatially, domestic sheep only occupy approximately three to five acres at any one time, throughout the two month grazing season. As domestic sheep are rotated through the allotment, occupied areas are continually changing which allows minimal spatial competition in any one given area between livestock and wildlife on the 30% of the allotment used by domestic sheep. Temporally, livestock are scheduled to graze the allotment 16% of the time in any given year. Sheep camps are typically moved every five to ten days, while they graze a particular area or drainage. Using a seven day average,

livestock only spend 2% of a year in any one particular area. Wilderness areas have only been used by domestic sheep during six non-consecutive years of the past 20. During those years of use in the wilderness, domestic sheep have spent as little as five to as much as 17 days in the larger upper two units in the wilderness. If six years is multiplied by 17 days and then divided by 20 years multiplied by 365 days, this would equal a potential temporal interaction, in the wilderness, of wildlife and domestic sheep of 1% over the past 20 years on the Stillwater Allotment. This would result in minimal displacement of wildlife by livestock movement and occupancy.

Deer are browsers and have very little overlap with domestic sheep, but elk do have significant overlap and can compete for available forage along forest edges, meadows and riparian areas. As current utilization levels are meeting Revised Forest Plan standards and since only a small portion of the allotment is grazed by livestock during a grazing season, it is apparent that livestock grazing on this allotment has little or no effect on elk. Similarly, as current utilization levels are meeting Revised Forest Plan Standards and since deer and livestock forage requirements minimally overlap, it is reasonable to conclude that continued livestock grazing will have no adverse effect on deer.

Moose utilize willows, aspen and a variety of aquatic emergent and submergent vegetation which elk and livestock do not utilize. Wet meadows and riparian habitat are also important for cow moose and calves during the summer. Domestic utilization monitoring in riparian habitats has documented light to moderate use within the analysis area, allowing ample vegetation for moose. Therefore, as overlap forage utilization is minimal and domestic sheep utilization is meeting Revised Forest Plan Standards, implementation of the Proposed Action would not negatively impact moose.

Rocky Mountain bighorn sheep movements will continue to be monitored by the UDWR and the Forest Service. The Revised Forest Plan will be followed to monitor utilization and trend for bighorns. In recorded history there has been no documentation of any interaction between bighorns and domestic sheep on this allotment. The potential for interaction, on this allotment, is extremely minimal as the closest known sighting of a bighorn is 15 air miles away from the eastern edge of the Stillwater Allotment boundary. As the Hoop Lake herd has remained stationary for the past 20 years it is reasonable to conclude that additional westward expansion is not anticipated. In addition, the Hoop Lake population of bighorns has remained stable, while in relatively closer proximity to other active sheep allotments without disease transmission occurring from domestic sheep since the bighorns where first established 20 years ago. The Revised Forest Plan also has a mitigation measure that further alleviates potential future bighorn and domestic sheep interaction by closing certain domestic sheep allotments if they are waived without preference. The Stillwater Allotment is one of these allotments. Given the history, stable trend in population, spatial and temporal separation of the Hoop Lake herd from domestic sheep on the allotment, it can reasonable be concluded that bighorn sheep will not be affected by continued livestock grazing on the Stillwater Allotment.

Rocky Mountain goats are located in the High Uinta Wilderness and do not inhabit areas where sheep grazing would occur, there is enough disparity in site selection, seasonal use and forage preference that overlap is not an issue and therefore continued livestock grazing will not effect Mountain goats. Cumulative impacts to all terrestrial wildlife species are discussed at the end of this section.

6. Small Game

Small game species include ruffed grouse (*Bonasa umbellus incana*), and blue grouse (*Dendragapus obscurus*). There is habitat for white-tailed ptarmigan (*Lagopus leucurus*) within the allotment, but discussions with wilderness personnel on the District indicate that none are known to reside within the allotment boundary (Assay, pers. comm.). Snowshoe hares (*Lepus americanus*) are also considered small

game and are discussed in the Management Indicator Species section.

Ruffed grouse numbers have been fairly low but stable over the forest for several years. They prefer thickets of mixed hardwood, including aspen, and conifers. These habitats occur throughout the project area although ruffed grouse will be found mostly at the lower elevations of the allotment. In Northern Utah birds display some seasonal differences in diet. Important summer forage items consist of insects, fruits, forb seeds, and plant tissues. Fall foraging centers on rose hips and aspen leaves, while winter diets are almost exclusively deciduous plant buds, in particular aspen buds. Ruffed grouse thrive best in young seral stage forests where understory forbs and shrubs flourish.

Blue grouse are spread across the Uinta-Wasatch-Cache but not in great concentrations and are rarely seen on the North Slope. They prefer subalpine habitats, which occur throughout much of the upper elevations. They forage heavily on conifer needles and buds of shrubs. Habitat selection generally consists of dense herbaceous cover and dense insect rich herbaceous plants near riparian zones and open clearings for brood rearing. Blue grouse are unique in their seasonal migrations, in that they will migrate up in elevation onto high ridges in the winter, feeding and sustaining themselves on conifer needles until returning to lower elevations in the spring.

a. Direct and Indirect Effects to Small Game

Alternative 1 (Proposed Action)

Direct and Indirect Effects to Small Game: Those species using conifer and mixed conifer should not be affected by grazing, as very little grazing occurs in these vegetation types. There can be some effects on small game using conifer and aspen stands adjacent to and near large openings within the allotment. In these areas, it is expected that vegetative conditions will continue to meet Revised Forest Plan Standards and Guidelines. There will be a stable or upward trend in upland, meadow and riparian habitat conditions based on the range monitoring for the Stillwater Allotment which supports low to moderate utilization levels by domestic sheep. Proper utilization levels are currently being achieved on the allotment and are expected to continue to be achieved throughout the implementation of this project. Therefore, there will be minimal effects on small game species. Cumulative impacts to all terrestrial wildlife species are discussed at the end of this section.

7. Small Mammals

Small mammals that occur or are likely to occur on the allotment include various squirrels, chipmunks, shrews, mice, voles, and gophers.

Ground squirrels are highly adaptable and use a variety of environments, mostly open non-forested areas with the exception of the golden-mantled squirrel, which uses open forests. Ground squirrels primarily use plant material for food. Chipmunks and tree squirrels primarily use seeds as food and are more common in forested environments. Shrews are primarily insectivores and usually are tied closely to moist habitats with higher amounts of vegetative cover such as riparian areas and meadows. Most mice use a variety of food resources such as insects, seeds, and plant material and use a variety of habitat types. Voles primarily use plant material for food and usually are tied closely to moist habitats with higher amounts of vegetation cover such as riparian areas and meadows. Gophers use a variety of environments in both forested and non-forest vegetation types. Gophers use plant material such as roots and tubers for food. While foraging, pocket gophers will cause significant ground disturbance resulting in an increase in the amount of bare ground. They preferred dry upland sites away from wetter lowland riparian areas.

a. Direct and Indirect Effects to Small Mammals

Alternative 1 (Proposed Action)

Direct and Indirect Effects to Small Mammals: Small mammals such as tree squirrels in conifer forest within the allotment will not be affected by implementation of the Proposed Action. There could be some loss of the cover component to small mammals within meadows and openings where grazing will occur. But implementation of the Proposed Action will result in a stable or upward trend in upland, meadow and riparian habitat conditions based on the range monitoring for the Stillwater Allotment which supports low to moderate utilization levels by domestic sheep. Cumulative impacts to all terrestrial wildlife species are discussed at the end of this section.

8. Cumulative Effects to All Terrestrial Wildlife Species

Alternative 1 (Proposed Action)

Cumulative Effects to All Terrestrial Wildlife Species: Roads, vegetation management, wildfires, geophysical seismic surveys, etc. may cause cumulative effects to wildlife in the Stillwater Allotment. For analysis purposes, Lynx Analysis Units (LAUs) 35 and 36 will be used as the analysis area to determine cumulative effects to wildlife. The LAUs are representative of the home range for lynx and will easily include summer range for big game and the home range of small mammals and birds.

Roads and Trails – Roads and trails increase fragmentation of habitat across the landscape. Isolated island areas may become unsuitable habitat and effect lynx and other wildlife by increasing forest edge and changing the amount of structural complexity of the forest. There are no new roads planned as a result of implementing the Proposed Action and no increase in the number of roads per square mile, therefore there would be no measurable negative impacts to wildlife. Ruediger et al. (2000) recommends keeping road densities below two miles per square mile. Thomas (1979) recommends less than 1.5 miles of road per square mile for maintaining approximately 70% habitat effectiveness within ¼ to ½ mile of secondary roads. The existing open road densities for Lynx Analysis Units (LAUs) in the analysis area are less than one mile per square mile. Refer to Table 23. Both of the LAUs meet the recommendations for open road density. Current open road densities combined with seasonal grazing will have minimal effects to wildlife.

Table 23: Road Density LAU 35 and 36.

LAU	Total acres	Square miles	Open roads (miles)	Open road density (miles per square mile)
35	62,390	97.5	91.3	0.9
36	67,289	105	123	1.2

Vegetation Management – Vegetation management within LAUs 35 and 36 includes such activities as timber salvage, timber harvest, and will include the results of wildfire. Table 24 illustrates the current condition for LAUs 35 and 36. Acres of unsuitable habitat include management activities of the past, present, and foreseeable future.

Table 24: Lynx habitat in LAU 35 and 36.

LAU	Total Acres of Primary and Secondary Habitat	Acres Unsuitable	Post Fire Acres Unsuitable	Percentage of Unsuitable Habitat Within LAU
35	47,289	262	6,120	13.5 %
36	19,860	1,925	N/A	10 %

In Table 24, the vegetation treatments such as timber harvest and salvage within the last 10 years are recorded under the "Acres Unsuitable" and the acres associated with the East Fork Wildfire of 2003 that are unsuitable in primary and secondary lynx habitat, are represented by the 6,120 acres under "Post Fire Acres Unsuitable." Included is the acreage for timber harvest regeneration to occur within the next five years or the reasonably foreseeable future. Both LAUs will have less than 15% change to unsuitable acres within a ten year period and this includes foreseeable future vegetation treatments. The major change to unsuitable acres in LAU 35 is the result of the East Fork wildfire. The major change to unsuitable acres in LAU 36 will be the foreseeable future harvest activities associated with the Moffit Creek, Reservoir Creek, and Mill City Creek sales. These activities can change the landscape, increase fragmentation, and determine how wildlife utilizes forested areas within the Stillwater Allotment. Lynx foraging habitat can be directly affected by the loss of snowshoe hare foraging and hiding cover for approximately 15 years after harvest and regeneration. For big game, the loss of cover is offset by the increase in palatable foraging habitat from suckering aspen and an increase in understory vegetation within the first five years. Stillwater does not propose any new vegetation treatments in the form of timber harvest or salvage, so there will not be any additional impacts as a result of implementing the Proposed Action.

Recreation Activities – Cumulative impacts associated with recreation activities (e.g., hiking, camping, off-highway vehicle use, fishing, hunting, etc.) within Stillwater Allotment and LAUs 35 and 36 constitute disturbance from noise and human presence during these activities. This disturbance may displace wildlife into other areas within the allotment and the LAUs. The majority of the recreational activity is concentrated near Hwy 150 and the adjacent roads and campgrounds. Because a lot of the disturbance occurs within specified areas, wildlife in and near these areas have habituated to the level of noise and disturbance that currently exists. So within the areas of disturbance, recreational activities combined with seasonal grazing should have no measurable effects to wildlife.

Oil and Gas Activities associated with Table Top Exploratory Well – These activities are likely to increase the disturbance within this portion of LAU 35 for a longer period of time. This could create conditions where Lynx, if reestablished in the area could discontinue use of this portion of LAU 35 or could become habituated to the disturbance and continue to use the area as a travel corridor.

Geophysical Seismic Exploration – The disturbance from the underground charges and drilling is minimal. However, a helicopter is used to move equipment and personnel between locations. The helicopter activity could create potential disturbance to wildlife. With proper timing and utilization of seasonal restrictions, this disturbance will be minimized and combined with seasonal grazing will have no measurable effects to wildlife.

9. Direct, Indirect, and Cumulative Effects of Alternative 2 on all Terrestrial Wildlife Species

Alternative 2 (No Grazing)

Direct and Indirect Effects to All Terrestrial Wildlife Species: As noted in the discussion under Issue 1, there would be a short-term improvement in herbaceous vegetation conditions. This would allow wildlife to have free-choice of all available herbaceous vegetation. However, as the vegetation becomes overgrown with litter, this vegetation would become increasingly unpalatable. In addition, there would be less vegetation that would be in an active growing state, as forage plants would begin to "green-up" at a later date and would discontinue growing at an earlier date, as plants will have completed their growth cycle. What impact this will have on big game is not certain. However, it is believed that this will cause big game to concentrate on areas they are heavily grazing and in some cases move off the public lands on to nearby private lands in order to graze on actively growing, palatable plants.

Impacts under the No Grazing Alternative will be similar for all species of wildlife in those areas where domestic sheep currently graze. Recognize that the area grazed by domestic sheep constitutes approximately 30% of the Stillwater Allotment. In these areas there would be a short term improvement in rangeland health and productivity within the analysis area. Over time, unless utilized by wildlife grazers, an increase in decadence and wolfy shrubs, grasses and forbs is expected. These will continue to provide cover for many wildlife species, but at the cost of losing some of their nutritional value due to the loss of domestic grazing which stimulates regrowth and provides more palatable forage. Areas where big game graze and browse will remain the same, depending on the amount use over time. Small mammals, the prey base for some MIS and Sensitive Species, and ground nesting neotropical migrants will benefit from the increase in hiding cover to evade predators, but as previously stated, small mammals will suffer a slight reduction in the availability of nutritious palatable forage over time. Beaver benefits will be minimal to static in the riparian habitats as browsing of willows and aspen is currently insignificant.

There would be a short-term (three to five years) improvement in rangeland health and productivity. After that, conditions would level out and then stagnate, especially in the low elevation areas.
This would result in improved forage availability with a slight reduction in forage quality over time. There would be no displacement of wildlife by livestock movement and occupancy.

Cumulative Effects to All Terrestrial Wildlife Species: The cumulative effects are similar to those described in Alternative 1 (Proposed Action) accept for the effects caused by grazing which are minimal.

F. Recreation / Wilderness (Issue 4)

The Stillwater Allotment encompasses some of the heaviest used recreational areas on the Evanston-Mountain View Ranger District. The Mirror Lake Highway (U-150) provides quick and easy access to this area for visitors from the heavily populated Wasatch Front. Recreational facilities on the allotment include: 25 miles of roads for full size vehicles, 9 miles of motorized ATV trails, 16 miles of non-motorized system trails, two developed campgrounds, one trailhead and a summer home area. Many of these trails and roads were originally developed as livestock trails. In fact, most of these trails and roads are still used as stock trails by the grazing permittee. The upper end of the allotment contains approximately 12,000 acres that is located within the High Uintas Wilderness. The Wilderness portions consist of the Hell Hole Basin which drains into the Main Fork, and the West and Middle Basins which drain into Stillwater Fork.

The Stillwater and Christmas Meadows Campgrounds are the two developed campgrounds on the allotment. The summer home area located near Christmas Meadows contains 40 recreational residences. In addition to these developed areas, extensive dispersed camping occurs along the Stillwater Fork running approximately two miles north from the summer home area. The Wolverine ATV Trailhead and trail system facilitates the majority of the motorized recreational use on the allotment.

The 16 miles of non-motorized system trails that lead into the wilderness portion of the allotment includes Hell Hole, Kermsuh, and Stillwater Trails. The Hell Hole Trail is located in the Main Fork drainage and accesses Hell Hole Lake. Visitation in this area is increasing slowly (10 registered visitors in 1998 to 21 registered visitors in 2007 with a high of 81 registered visitors in 2004). During 2007 an exploratory well was being drilled below Hell Hole and the access road used by the drilling company (motorized vehicles) to get to Hell Hole followed the same alignment. This may have discouraged visitors into this area for the past couple seasons. The Kermsuh Trail leads into West Basin. Most visitors stay along the trail and in close proximity of Kermsuh Lake. Visitation in this basin is light to moderate and only receiving approximately 10% of the total Wilderness use in the Stillwater drainage (Asay, personal observation). The lower two miles of the Stillwater Trail receives significant fishing use from visitors to Christmas Meadows or residents of the summer homes. The Stillwater Trail accesses Middle Basin which contains McPheters and Ryder Lakes. Visitors tend to stay within close proximity of the trail until they reach these two lakes on the upper bench. Once visitors reach this area, they typically stay near these lakes but also frequently visit the smaller lakes just southeast of Ryder Lake which also contain fish. Visitation to this basin is relatively moderate to heavy. Middle Basin receives approximately 45% of the total Wilderness use in the Stillwater drainage (Asay, personal observation).

Visitation in the Stillwater drainage portion of the Wilderness over the past ten years has held fairly steady (1,763 registered visitors in 2008 and 1,834 registered visitors in 1998). Since registration to enter the Wilderness is voluntary, the true number of visitors is difficult to determine but is likely higher than what is shown.

The allotment contains the following Management Prescription areas related to recreation: 1) Existing Wilderness – 1.2 – Opportunity Class II, 2) Existing Wilderness – 1.3 – Opportunity Class III, 3) Multiple Resource Use, Recreation Emphasized – 4.1 – Backcountry Non-motorized, and 4) Multiple Resource Use, Recreation Emphasized – 4.4 – Dispersed motorized. Management Prescriptions are defined in the Revised Forest Plan as "management practices and intensity selected and scheduled for application on a specific area to attain multiple-use and other goals and objectives."

Wilderness character is defined in terms or degrees of being: "Untrammeled", "Natural", "Undeveloped", and providing for "Solitude or Primitive and Unconfined Recreation". "Untrammeled" Wilderness is essentially unhindered and free from modern human control or manipulation. Wilderness is considered "Natural" when ecological systems are substantially free from the effects of modern civilization. Wilderness is considered "Undeveloped" when it retains its primeval character and influence, and is essentially without permanent improvement or modern human occupation. "Solitude or Primitive and Unconfined Recreation" Wilderness is defined when an area provides outstanding opportunities for solitude or primitive and unconfined recreation. It's a measure of the experiences available to have a vastness of scale, and a high degree of challenge and risk while using outdoor skills. It's characterized by meeting nature on its own terms. (Landres et al. 2008).

The following describes three types of Wilderness Opportunity Classes:

- Opportunity Class I Areas are characterized by an unmodified natural environment. Human induced change is temporary and minor. Outstanding opportunities for solitude and unconfined recreation are available for visitors, who travel in small groups, practice excellent wilderness ethics and spend extra effort to leave no trace. Encounters with others are rare.
- Opportunity Class II Areas are characterized by a predominantly unmodified natural environment. Human induced change is evident but will recover (slowly in higher elevation areas). Outstanding opportunities for solitude and unconfined recreation exist. Encounters with others are more frequent then Class I.
- Opportunity Class III Areas are characterized by a predominantly unmodified natural environment

but impacts could persist from year to year. During peak season and in popular areas concentrated use is more common and opportunities for solitude and unconfined recreation more limited.

In the High Uintas Wilderness Management Plan, the wilderness was divided into three opportunity classes based on the wilderness characteristics defined above. The trail leading into Middle Basin and the area around McPheters and Ryder Lakes are Class III Wilderness; the rest is Class II Wilderness within the allotment. Class I Wilderness was not designated within the allotment boundary. When the High Uintas Wilderness was being divided into different opportunity classes, all areas within active grazing allotments were not considered eligible for Opportunity Class I. This "broad-brush" approach was applied due to the potential impacts to the solitude of the area. However, within the Stillwater allotment, grazing management activities that could potentially impact the solitude of the area are minimal, as current management has provided for several consecutive years of rest in wilderness areas.

Livestock grazing can displace visitors, make popular hiking trails, fishing spots, and campsites undesirable, and compete with recreational stock for forage. These impacts can affect recreational use and alter individual wilderness experiences. Recreational users and sheep grazing conflicts have been noted on registration sheets collected from the Stillwater Trailhead. Conversely, Forest Service employees have received favorable comments during encounters with visitors that seeing livestock grazing in an open meadow adds a bit of an "old west" experience to their visit. As registration sheets are voluntary and encounters with visitors are sporadic, it is difficult to quantify the public's perception of livestock grazing in the wilderness.

In a survey conducted by Colorado State University in the High Uintas Wilderness (HUW) (Johnson et al. 1997) found that: *"...the proportion of visitors who accepted livestock grazing in wilderness (43%) was similar to the proportion who considered grazing to be unacceptable (40%). Three-quarters of those who accepted grazing, however, predicated their approval on proper management to protect rangeland ecosystems. A majority of the wilderness visitors surveyed reported that encounters and livestock impacts detract from a wilderness experience."*

This same survey also found: "…that livestock seen in the distance impact visitors considerably less than livestock encounters close to visitor use areas. Findings also indicate that the presence of cowboys or sheepherders detracts far less than encountering livestock in high-use or riparian areas. This suggests that grazing will be more acceptable to wilderness visitors if riders are used often enough to prevent livestock from congregating and to keep them away from visitor-use areas." Colorado State University and printed in the International Journal of Wilderness, Volume 3, Number 2 (Johnson et al. 1997).

The Utah Wilderness Act states, "…there shall be no curtailment of grazing permits or privileges in an area simply because it is designated as wilderness (Public Law 98-428)." The Stillwater Allotment was being grazed prior to part of it being designated Wilderness and Congress felt at that time it possessed ample wilderness characteristics. Therefore Congress did not intend that livestock grazing be viewed as inherently "not in keeping" with wilderness qualities. In addition, Section 303 of the Utah Wilderness Act of 1984 noted that recreation conflicts alone would not be the determining factor in the removal of livestock from those newly established Wilderness Areas…" (USDA Forest Service 2003a, Appendix B9-3).

Congressional Grazing Guidelines (Senate Report, August 6, 1984, Utah Wilderness Bill) state, "…grazing in wilderness areas established by this Act (Utah Wilderness Act), where established prior to the date of the enactment of this Act, shall be administered in accordance with section 4(d) (4) of the Wilderness Act and section 108 of Public Law 96-560 (which is the Colorado Wilderness Act)." Section 108 of the Colorado Wilderness Act then refers to guidelines contained under the heading "Grazing in National Forest Wilderness" in the House Committee Report 96-617. These are the Congressional

Grazing Guidelines."

As stated in the fifth paragraph of the Congressional Grazing Guidelines "...there shall be no curtailment of grazing permits or privileges in an area simply because it is designated as wilderness." As stated in the Forest Service regulations at 36 CFR 293.7 (USDA Forest Service. 2003d), "grazing in wilderness areas ordinarily will be controlled under the general regulations governing grazing of livestock on National Forests. This includes the establishment of normal range allotments and allotment management plans. Furthermore, wilderness designation should not prevent the maintenance of existing fences or other livestock management improvements, nor the construction and maintenance of new fences or improvements which are consistent with allotment management plans and/or which are necessary for the protection of the range."

Guideline #1 of the Congressional Grazing Guidelines further repeats and clarifies the above paragraph: "....nor should wilderness designations be used as an excuse by administrators to slowly "phase out" grazing. Any adjustments in the numbers of livestock permitted to graze in wilderness areas should be made as a result of revisions in the normal grazing and land management planning and policy setting process, giving consideration to legal mandates, range condition, and the protection of the range resource from deterioration."

All general prohibitions and wilderness resource objectives in the Wilderness Act of 1964 (Public Law 88-577) and special orders applied specifically to the High Uintas Wilderness apply to livestock management operations within the allotment (unless specifically authorized). The Revised Forest Plan (USDA Forest Service 2003a, Appendix VI-1) has established the following direction for management of the High Uinta Wilderness. "As long as other allowed resource activities, such as livestock grazing or fire use, meet the direction in the standards and guidelines, then they are consistent with the wilderness and recommended wilderness prescription categories." (USDA Forest Service 2003a, page 4-63) Those Revised Forest Plan standards and guidelines (pages VI-3 to VI-5) that specifically pertain to livestock management in the wilderness included:

MA-01-022 - (G) Grazing of livestock established prior to Sept. 1984 shall be permitted to continue, subject to regulations. Manage allotments to protect the wilderness resources. (FSM 2324.2 - USDA Forest Service 2007)

MA-01-023 - (G) As wilderness AMPs are revised, include wilderness resource objectives.

MA-01-024 - (G) Design new range improvements to be rustic in appearance and construct only where needed to protect the wilderness resource. (FSM 2323.26a – USDA Forest Service 2007)

MA-01-025 - (S) Existing range improvements are maintained to protect wilderness resource values or are removed.

MA-01-026 - (G) Sheep salt and bed grounds are temporary and are located away from springs, streams, and lakes. Locate sheepherder camps on hardened sites where there is little or no conflict with recreation uses.

MA-01-027 - (G) Issue no new sheep and cattle grazing permits in areas currently unobligated.

MA-01-028 - (G) Coordinate management of livestock and recreation use to protect the wilderness character of the area.

MA-01-029 - (G) Regulate grazing use on and adjacent to heavily used recreation areas to prevent

deterioration of the wilderness resource and minimize user conflicts.

MA-01-030 - (S) Allow predator control only when necessary to protect threatened or endangered species or to prevent special and serious losses of domestic livestock.

MA-01-031 - (S) Direct predator control at eliminating the offending animal(s) while presenting the least possible hazard to other animals or people.

MA-01-032 - (S) Allow no aerial predator control in the High Uintas Wilderness.

Although the following standards and guides are aimed at recreational use in the Wilderness, it is important that the permittee follow these same requirements, unless specifically authorized.

MA-01-035 - (S) Condition Class 1: Occupied campsites are one mile apart. Condition Class 2: Occupied campsites are ¼ mile apart. Condition Class 3: Occupied campsites are 200 feet apart.

MA-01-036 - (S) Condition Class 1: No campsites have a site impact index (SII) over 40. Condition Class 2: No more than 10% of campsites have an SII of 50 or more. Condition Class 3: No more than 20% of campsites have an SII of 50 or more.

MA-01-038 - (S) Group size does not exceed 14 persons and 15 head of pack and saddle stock.

MA-01-040 - (G) All classes: Stock may be tethered to a tree for 2 hours or less if damage is occurring to tree or vegetation at base of tree.

MA-01-044 - (S) Prohibit campfires where the firewood supply is depleted and continued fire building threatens the wilderness qualities of the area.

Past grazing management activities have remained consistent with the above mentioned management direction in the wilderness. These activities are expected to remain consistent with future management.

Alternative 1 (Proposed Action)

Direct and Indirect Effects: Overall resource conditions on the allotment are good. However, there are a couple of small, localized impacted areas near the Ostler Fork/Stillwater Fork Trails junction and near Ryder Lake. A portion of the Stillwater Trail also has a 500 foot section of very wet and rutted trail. These impacts are currently recreation-related. Overall impacts from grazing are minimal. Only one historic, small bed ground area southwest of Hell Hole Lake was noted as having received historic, heavy grazing impacts during recent field reviews.

Implementing the Proposed Action would probably result in some recreationist-livestock conflicts. Since livestock will be managed primarily in one distinct herd and grazing periods will be short, there will be fewer opportunities for recreationist-sheep encounters and conflicts. There will be a slight increase in current recreational use levels on hiking trails, motorized trails, developed campgrounds or dispersed campgrounds. Conflicts within the wilderness will be kept to a minimum under current management as these areas are being rested for an extended period of time. As the wilderness portion of this allotment was designated as wilderness concurrent with livestock grazing, it is not anticipated that the continuation of livestock grazing will impact those characteristics that allowed for this designation.

The continuation of livestock grazing will not affect the roadless character of the area as no road construction or timber harvesting will occur as part of the Proposed Action.

Cumulative Effects: There would be minor recreationist-livestock conflicts. The level of recreational use would remain the same. Current road, trail, motorized recreation use, and oil and gas activities associated with the Table Top Well are expected to continue. There would be some short-term impacts associated with geophysical seismic exploration activities. Impacts can be minimized with reductions in helicopter use on major holidays and during the hunting season. With proper timing and utilization of seasonal restrictions, impacts can be minimized or reduced to an immeasurable disturbance to recreationists.

Alternative 2 (No Grazing)

Direct and Indirect Effects: If grazing were eliminated, there would continue to be some recreation-livestock conflicts for two years as described under Alternative 1, but after that there would be no recreationist-livestock conflicts due to removal of livestock. Since no livestock would be grazing on the allotment, there would be no opportunity for conflict with recreationists. However, it is not anticipated that recreational use would increase through the elimination of livestock grazing. Areas, such as Amethyst Basin in the wilderness, have not shown increased recreational use due to the exclusion of livestock grazing. Environmental conditions inside the wilderness will remain relatively unchanged; however, the wilderness rating in some areas on the allotment may be eligible to change from a Class II to a Class I.

The continuation of livestock grazing for two years not affect the roadless character of the area as no road construction or timber harvesting will occur as part of the No Action Alternative.

Cumulative Effects: The effects are described in direct and indirect, and there would be no additional cumulative recreation-livestock effects.

G. Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, and Departmental Regulation 5600-2 direct federal agencies to integrate environmental justice considerations into federal programs and activities. Environmental justice means that, to the greatest extent practicable and permitted by law, all populations are provided the opportunity to comment before decisions are rendered on, are allowed to share in the benefits of, are not excluded from, and are not affected in a disproportionately high and adverse manner by, government programs and activities affecting human health or the environment (Federal Register 1994).

Implementation of any of these alternatives will be consistent with this Order and will not have a discernible effect on minorities, American Indians, or women, or the civil rights of any United States citizen. Nor will it have a disproportionate adverse impact on minorities or low-income individuals. No civil liberties will be affected. Public involvement and comment was sought and incorporated into this document. The Forest Service has considered all public input from individuals or groups regardless of age, race, income status, gender, or other social/economic characteristics (see project record).

Executive Order 12898 also directs agencies to consider patterns of subsistence hunting and fishing when an agency action may affect fish or wildlife (Federal Register 1994). The decision would not alter opportunities for subsistence hunting by Native American tribes. Native American tribes were provided an opportunity to comment on the proposal (see project record).

Based on experience with similar projects on the Evanston-Mountain View Ranger District, none of the alternatives would substantially affect minority or low-income individuals, women, or civil rights. The

implementation of this project is expected to provide job opportunities in communities such as Evanston, Wyoming. Some of these communities include minority populations that may benefit from the economic effects.

H. Short-Term Uses and Long-Term Productivity

NEPA requires consideration of "the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity" (Council on Environmental Quality 2002, 40 CFR 1502.16). As declared by the Congress, this includes using all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which humans and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans (NEPA Section 101).

The Proposed Action for this Allotment will provide for yearly-sustained production of red meat and fiber through the utilization of annual forage production. Grazing may provide jobs associated with livestock management during the grazing period on public lands and possibly on private lands as livestock are moved off the allotment. Grazing provides for the use of the range environment by livestock grazing in coordination with other resource needs and uses. Currently, livestock-recreationist interactions are minimal as described in the Recreation/Wilderness section. Effects of grazing are analyzed in Chapter III and an analysis indicates no impacts to the maintenance and enhancement of long-term productivity from short-term uses. Conditions on this allotment will continue to be maintained and/or improved. As desired resource conditions are currently being achieved, it is expected that they will continue to be achieved following the implementation of the Proposed Action.

I. Unavoidable Adverse Effects

There will be no unavoidable adverse effects as a result of grazing or grazing management under Alternatives 1 or 2. The established long-term monitoring points in riparian and upland locations will be re-evaluated every five to ten years, or as needed, to analyze the effectiveness of the proposed management strategy in meeting the objectives. In addition to long-term monitoring points, short-term or annual effects of grazing will be evaluated each year. If long-term or yearly monitoring determines that management objectives are not being met, then the management actions will be adjusted. As desired resource conditions are currently being achieved, it is expected that they will continue to be achieved following the implementation of the Proposed Action. Monitoring provides information and administrative flexibility exists so that the management system, numbers grazed, season grazed, etc. can be altered if additional unexpected environmental concerns are noted through future monitoring and evaluation.

J. Irreversible and Irretrievable Commitments of Resources

Irreversible commitments of resources are those that cannot be regained, such as the extinction of a species or the removal of mined ore. Irretrievable commitments are those that are lost for a period of time such as the temporary loss of timber productivity in forested areas that are kept clear for use as a power line rights-of-way or road.

There is no irreversible and irretrievable commitment of resources associated with the Proposed Action and No Grazing Alternatives. Soil disturbance is attributable to a number of natural causes, recreationist/horses, as well as livestock grazing, however loss of productivity potential as a result of livestock grazing is not at issue because Forest Plan standards for ground cover and soil disturbance are

expected to be met. Minor impacts associated with livestock management activities would be eliminated if the No Grazing Alternative is selected.

IV. NOTICE OF PROPOSED ACTION – COMMENT SUMMARY AND FOREST SERVICE RESPONSE

This Chapter provides the Forest Service response to comments received during the Notice of Proposed Action comment period and gives reference to additional clarification in the EA (where appropriate).

Copies of the Notice of Proposed Action were mailed to approximately 86 individuals, summer home owners, groups, and Tribal, local, state, and Federal government entities. On August 25, 2009 a Notice of Proposed Action for the Stillwater Allotment was published in the *Uinta County Herald*. See Chapter I, Section E. Public Involvement for a detailed description of public involvement.

During the comment period, five responses were received which contain approximately 31 separate comments. The Forest Service Interdisciplinary Team reviewed the original letters and the comment summary and responded to that comment. The comments and response to the comment are summarized in Table 25. All summarized comments and responses are included in this Chapter for public review. Individual letters are on file in the project record.

Changes in the EA were based on comments received on the Notice of Proposed Action and further analysis by the Forest Service. Responses included clarification of subject matter and where appropriate referred to changes in the EA.

Table 25: Notice of Proposed Action – Comment Summary and Forest Service Response.

Letter #	Name	Comment	Forest Service Response
1a	Tom Parks and Pat Legant	Owners of cabin in Christmas Meadows. Favor continued grazing under Alternative 1. Support the Forest Service policy of promoting broad use of the forest under the Multiple Use Sustained Yield Act of 1960.	Thank you for your comment.
2a	Sandra Smith	Sheep were grazing directly across from their cabin. The noise and smell was obnoxious. Not opposed to sheep grazing, but thinks she is asked to put up with quite a lot since the inconvenience is of several weeks duration. Could sheep herders bypass the area where the campground and cabins are (in Christmas Meadows) and drive the sheep higher into the upper meadow?	Currently, the allotment uses a rest rotation grazing strategy that consists of following plant growth and development during the growing season. This usually involves starting in a low elevation unit, moving to the high elevation units, and then back down to the remaining low elevation units in a clockwise or counter-clockwise rotation. This system provides: • some plants the opportunity to complete their growth cycle prior to grazing,

Letter #	Name	Comment	Forest Service Response
			• the opportunity for plants to regrow and complete their growth cycle after grazing, • certain units to be rested for the entire season, • minimal resource conflicts with other uses in the wilderness, • longer periods of rest in the wilderness, and • periodic periods of rest in the lower units. By utilizing a grazing strategy that incorporates both periods of rest and proper use, rangeland health and productivity can be optimized throughout the entire allotment. See Chapter II, B.1, Unit Sequence for more details.
3a	Suzy Noecker, Wyoming Farm Bureau Federation	In support of continuing sheep grazing as a forage management tool on the Stillwater Allotment. In support of Alternative 1 – Proposed Action, and the continuance of grazing on the Stillwater allotment. The Proposed Action is supported by the condition of the rangelands within this allotment that are described in Table 1, and by the resource information gathered by specialists showing that the current level of livestock management is meeting or moving toward desired condition objectives identified in the 2003 Land and Resource Management Plan.	Thank you for your comment. Table 1 from the Notice of Proposed Action has been included in the EA. See Chapter II, B.1., Table 1: Additional Site-Specific Desired Conditions.
3b		The annual meetings described on page 6 should allow your land managers and the permittee to continue with the proper management of the allotment which has resulted in this land being successfully used for grazing since 1906.	Annual meetings are described in Chapter II, B.1.
3c		The grazing system that is in place appears to be flexible and makes sense for the landscape of this allotment. Livestock distribution techniques being used on this allotment appear to be sound as does the monitoring regime. The permittee should be included as a partner in monitoring activities taking place on the allotment and be encouraged to help determine monitoring efforts which may be needed that are not currently	Livestock distribution is described in Chapter II, B.1. As described in Chapter II, B.1, Annual and Long-Term Monitoring, During the annual meeting with the permittee, ~~the~~ specific monitoring for the year will be decided, as well as when it will be done and who will do it. Since monitoring offers the opportunity to

Letter #	Name	Comment	Forest Service Response
		taking place. There is every reason to authorize continued sheep grazing on this allotment. Monitoring results support the beneficial effects of the management strategy. The benefits of private use on this allotment satisfies more than proper range management goals; the local economy is benefited by the 20 jobs provided by the permittee's base operation and the ability to use locally available federally managed land.	educate as well as learn, the Forest Service will offer to include the permittee in monitoring efforts. These opportunities will be discussed at each annual meeting." Overall monitoring has indicated satisfactory conditions throughout the allotment. Monitoring has been occurring on this allotment, and is summarized in Chapter III, C.2, Table 10: Evaluation of Monitoring Points. Chapter I, G discusses economic effects to the permittee.
3d		Managed livestock grazing has long been recognized as a powerful tool in forage management. Proper forage management leads to increased opportunities for the use and enjoyment of our natural resources. The permittee has successfully grazed this heavily recreated allotment without conflict since the 1970's.	Chapter III, F describes there would be some recreationist-livestock conflicts under the Proposed Action and some recreationist-livestock conflicts for two years under the No Grazing Alternative until livestock were eliminated from the allotment.
3e		Local prosperity and enhancing local quality of life should be the goal of management decisions made by our land management agencies. The permittee's business satisfies these demands as well as meeting the range management goals that allow for a functioning landscape.	Chapter I, G discusses economic effects to the permittee.
3f		Much is gained by Wyoming and Utah when this land is kept working and producing; people have jobs, support other local business, and on and on; feeding the larger economy and improving life elsewhere. We feel it is important the Forest Service review policy that could add unnecessary costs of doing business to the permittee; and revise those policies. We also believe that the Forest Service should work to expand the AUM's available for grazing on lands under their management.	Thank you for your comment. This is outside the scope of the analysis for this project and would not meet the purpose and need.
4a	Kevin Mueller, Utah Environmental Congress	UEC continues to have concerns and objections with the Proposed Action. We believe the forage production potential is being over-estimated. The extent of the effects of the Proposed Action are similarly being under estimated.	See Chapter III, Section C.2 for a description of rangeland capability and suitability and stocking rates.

Letter #	Name	Comment	Forest Service Response
	(UEC)		Overall monitoring has indicated satisfactory conditions throughout the allotment. Monitoring has been occurring on this allotment, and is summarized in Chapter III, C.2, Table 10: Evaluation of Monitoring Points. The effects of the Proposed Action are analyzed in Chapter III.
4b	UEC	Adaptive management has been a cornerstone of Forest Service management approaches. For example, adaptive management's plan – implement- monitor – evaluate and repeat cycle is the backbone of the 1982 NFMA regulations, which the original and revised WCNF LRMPs rely upon. The expiring permits are based on that adaptive management approach. But the Proposed Action is described only as implementing an adaptive management approach – as if that is new. So far as we can see, nothing is new there. The current and past permits have also been based in that approach. We see the problem as more of a product of a failure to vigorously adhere and respond to the results of the adaptive management strategies and NFMA based standards that are and have been in effect for years. The problem is more of a failure to monitor and enforce legal limits as established in the LRMP. The LRMP standards have mandated for years that cattle are not allowed to graze in excess of its riparian area standards. Nothing genuinely new is proposed, so far as we can tell. The Forest –and this activity- has been required to comply with the LRMP for decades at this point, for example. Everything described can (and apparently should have) been done under the expiring permits and current LRMP. The real new thing proposed is a vigorous promise to finally start monitoring and enforcing the LRMP as should have been done in the past. We think this indicates a greater level of transparency may be needed. We recommend a component of the Proposed Action include rapid –if not real time- web-based public	This project tiers to and incorporates applicable direction from the 2003 Revised Forest Plan (see Chapter I, F). See also Chapter II, B, Tables 2 and 3 Forest Plan Standards and Guidelines that apply to this project. This is a sheep allotment. Overall monitoring has indicated satisfactory conditions throughout the allotment. Monitoring has been occurring on this allotment, and is summarized in Chapter III, C.2, Table 10: Evaluation of Monitoring Points. See Chapter III, D.1 for detailed analysis regarding aquatic and riparian resources. The Proposed Action maintains satisfactory aquatic and riparian conditions and/or improves conditions. The waters fully meet the beneficial uses for which they are classified and are currently supporting beneficial uses as designated by the State of Utah. Stream banks, riparian areas, and wet meadows are in good condition with very stable well armored banks, dense, deep-rooted vegetation, small amounts of bare soil and minor amounts of short-term trampling. There are no long-term adverse effects to stream banks from sheep or wildlife trampling. Native vegetation is present and vigorous, and shrubs are vigorous and growing to expected heights. Stubble height requirements were met or exceeded on all sites evaluated.

Letter #	Name	Comment	Forest Service Response
		updates on monitoring and enforcement results, successes, changes, and failures. Without something like this why should one be convinced conditions will change?	There is no evidence that livestock were causing the slumping on C3 stream types and that the slumping was apparently natural. Sheep are not impacting the Stillwater Fork stream channel near Christmas Meadows Trailhead. The stream is very stable. Recreation, livestock, and other activities in the Stillwater drainage are not affecting the stream channel characteristics in the meadow areas. Wetlands appear to be in excellent condition with no signs of trampling by livestock and only small trail crossing areas. Livestock are having very little effect on wetlands. No indications that livestock are affecting the function of the floodplains. The Annual Operating Instructions are posted on the Uinta-Wasatch-Cache National Forest Web site at: http://www.fs.fed.us/r4/uwc/. To navigate to the posting click on Land and Resources Management, then click on Resource Management. The AOIs are listed by district.
4c	UEC	In UEC v Troyer the 10th Circuit found that the 1982 NFMA regulations apply to projects implementing the Uinta and Wasatch-Cache LRMPs, due to the active decision to apply and go with the 1982 rules in the 2003 LRMP EIS/ROD, well after subsequent NFMA regulations had been issued (but not used). UEC v Troyer, 479 F.3d 1269, 10th Cir. 2007. The Forest is required by 36 CFR section 219.19 and 219.27 (1982) to monitor populations of all native and desirable non-native species to ensure that adequate habitat and viable populations are maintained. The 2003 Wasatch-Cache Forest Plan explicitly cites and incorporates the 1982 NFMA regulations, so they will need to be applied in the analysis and review of this decision.	The Forest Service is not required to analyze all wildlife or plant population numbers, species, and habitat. This is the intent of management indicator species (MIS). The Forest Service has analyzed the effects to threatened (T), endangered (E), proposed (P), sensitive (S), and MIS in the EA and TESP species in the Biological Evaluations and Assessments (BE/BA). The Proposed Action ensures that native plant and animal populations and distributions are maintained. Plants are analyzed in Chapter III, C. Rangeland Health and in a BE/BA (Goodrich 2008).

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		USDA Departmental Regulation 9500-4, which is in effect today, provides further direction to the Forest Service, expanding the viability requirements to include plant species. We don't see that these rules are being used or adhered to. Per the July 2009 WO Memo, the FS is apparently in the exact same transition period now. This is a project and Proposed Action that proposes to directly, indirectly, and cumulatively impact wildlife individuals and populations significantly as well as (through permitted grazing) to manipulate and alter major structural components of wildlife habitat, alter soil stability and change the vegetative cover. Before doing this significant action, the Forest needs to modify the Proposed Action such that it will not reduce native plant and animal populations and distributions to less than the minimum viable populations. Pursuant to USDA Departmental Regulation 9500-4 wildlife monitoring activities will need to be conducted to determine if you are meeting (and will still meet) population and habitat goals for all existing wildlife and plants in the area.	Fisheries and amphibians are analyzed in Chapter III, D. Aquatic and Riparian Resources and in a BE (Chase 2009) Terrestrial Wildlife are analyzed in Chapter III, E. Terrestrial Wildlife and in a BE/BA (Garcia de la Cadena 2009).
4d	UEC	Since habitat for mollusks, amphibians and tall forbs are directly impacted by current and proposed grazing levels, the Forest needs to modify the Proposed Action such that it address and resolves all direct and indirect impacts to mollusks, native amphibians and tall forb communities and their habitat.	The impacts to mollusks and amphibians are analyzed in Chapter III, D. Aquatic and Riparian Resources. Continued livestock grazing would have limited impacts on amphibians and mollusks. Overall monitoring has indicated satisfactory conditions throughout the allotment. This monitoring covers the aspen vegetation type, which in some areas includes tall forb communities within the aspen vegetation type. Monitoring has been occurring on this allotment, and is summarized in Chapter III, C.2, Table 10: Evaluation of Monitoring Points.
4e	UEC	There also needs to be a rigorous presentation and analysis of the effects to TES and proposed sensitive flora and fauna. Original surveys should be conducted in the project area. These issues should be treated as driving issues that inform the development of the Proposed Action and alternatives.	See Response to Comment 4c.

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4f	UEC	To the extent that aspen habitat is potentially present (including aspen/conifer type potential), the following becomes a central issue that should drive the analysis. Another change needed is that the Proposed Action doesn't have any clear change in direction that would respond to insufficient species diversity conditions in the aspen stands. What specific changes are being made now to address this substandard and undesirable condition? Grazing reduces the density and vigor of grasses which often out-compete tree seedlings, leading to dense stands of fire-prone small trees. This is a significant issue that needs to be used to drive alternative development. We believe that domestic livestock grazing impacts on aspen and willow regeneration needs to be identified as a significant issue that is carried forward in the EA analysis, and used do drive the development of an alternative that focuses on avoiding impacts to willow and aspen community health. Bartos and Campbell (1998b) noted a 60% decline in aspen in the six National Forests in Utah. In another study, Bartos and Campbell (1998a), noted water is lost when conifer forests replace aspen. Since about 1.5 million acres of aspen have been converted to conifers in Utah, this translates to an annual loss of water for stream flow and plant production of 375,000 to 750,000 acre-feet per year. Kay and Bartos (2000) evaluated existing aspen exclosures on some of the National Forests in Utah. These were studied to determine the effects of livestock, deer and elk on aspen regeneration and associated vegetation. Aspen within all total exclusion plots successfully regenerated without the influence of fire or other disturbance. Aspen subject to browsing by wildlife (deer) either failed to regenerate successfully or regenerated at stem densities (2498/ha) significantly lower than on total exclusion plots (4,474/ha). On combined use plots, <u>most</u> aspen failed to regenerate	Overall monitoring has indicated satisfactory conditions throughout the allotment. Monitoring is summarized in Chapter III, C.2, Table 10: Evaluation of Monitoring Points. Monitoring of aspen and willow, as shown in Table 10, demonstrates these sites are functioning and meeting Forest Plan Standards S7 and S24. It also shows increased aspen suckering concurrent with livestock grazing.

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		successfully or did so at low densities (1,012/ha). Herbivory by ungulates altered understory vegetation. Utilization by deer reduced shrubs and tall palatable forbs and favored growth of grasses. Combined use including livestock reduced native grasses and promoted introduced species and bare soil. Kay (2001) reported the results of studies of hundreds of aspen clones in the Shoshone, Simpson Park, Diamond, Desatoya and Roberts Mountains on BLM lands in central Nevada. Aspen in these areas are found to be in poor condition and many stands have not successfully regenerated in 100 years or more. Kay observed that where aspen in central Nevada has been protected from grazing, aspen has maintained its position in the vegetation community and, in fact, has actually replaced sagebrush. Exclosure data indicated that herbivory (most from livestock) has had a major influence on aspen stem dynamics and understory composition in central Nevada. All aspen stands regenerated in exclosures that excluded cattle but not deer and in canyons closed to livestock. When fallen trees blocked livestock access, aspen were able to regenerate in the protected spaces. Reductions in livestock numbers also resulted in aspen regeneration. Distance to water and slope were also factors that related to aspen regeneration or the lack of regeneration. Steeper slopes or areas further from water receive less use. Aspen stands further from water and on steeper slopes were in better condition than those nearer water or on more gentle slopes, again indicating that grazing by livestock was the operative factor causing declining health of aspen clones. While Kay cites other research indicating that wildlife have impacts on aspen regeneration, he states that in all cases where aspen is protected from livestock, it successfully regenerated and formed multi-aged stands without fire or other disturbance.	

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		Wambolt et al (2001) studied long-term recovery of big sagebrush habitats in southwestern Montana following prescribed fire. In the unburned sites they studied, perennial grass cover averaged 45.6%, ranging from 20.1% to 61.7%. Welch (in press) measured big sagebrush canopy cover, perennial grass cover and bare ground in 14 ungrazed kapukas in southern Idaho during 2000. He found sagebrush canopy cover ranged from 14 to 31% with a mean of 23.6%. Perennial grass cover ranged from 29 to 58% with a mean of 43.5%. Bare ground ranged from 1 – 21% with a mean of 8.6%. Aspen decline and lack of successful aspen regeneration are well known problems on this National Forest, and on this Ranger District. The cumulative effects of permitted livestock grazing in this area may significantly impact and impair the ability of aspen forests to perpetuate. The Proposed Action does not address this conflict among alternative uses of the available resources. In light of the above, we believe that an action alternative needs to be developed that includes: • Identification of each pasture in the analysis area that has inadequate aspen stems in the 1 to 5 foot height classes. (These are the classes most heavily impacted by sheep grazing.) • Rest from domestic grazing for each such pasture until a new cohort of aspen moves through this height class and reaches 5 feet. • Adaptively manage rest/use of each pasture after that in light of continued monitoring of aspen recruitment in the 1-5 foot height class.	
4g	UEC	The site-specific analysis for this project must include a rigorous analysis of effects to migratory birds, and use that analysis to inform the development of the Proposed Action and the range of alternatives. The Proposed Action negatively impacts migratory bird resources, and there is no evidence of efforts taken (e.g. assignment of additional mitigation measures) to avoid take. We recommend the Forest conduct a rigorous evaluation using the newest data	The effects to Migratory Birds have been analyzed in Chapter III, E.4. Grazing may cause minor impacts to nesting or foraging neotropical migratory birds. The Proposed Action would not be detrimental or cause major impacts to migratory bird species. The Proposed Action meets the Migratory Bird Treaty Act.

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		and research to minimize impacts to migratory birds (and their habitat), including a focus on species on the 2002 List of Birds of Conservation Concern and species that are listed among the Partner's in Flight Priority Species. To help meet responsibilities under Executive Order 13186, the UEC recommends that you conduct activities outside critical breeding seasons for migratory birds, minimize temporary and long-term habitat losses, and mitigate all unavoidable habitat losses. If some portion of your mitigation includes off-site habitat enhancement, it should be in-kind and either within the watershed of the impacted habitat or within the foraging range of the habitat-dependent species.	
4h	UEC	Lynx have crossed this National Forest a number of times in the last few years, and are likely to use the habitat in the allotments in the coming years as they continue to disperse from north of this identified LAU, as well as from the south (from the CO populations). We encourage the Forest to implement mitigation measures in the Proposed Action that significantly exceed the LCAS standards and guidelines, as if this was formal LAU. This is particularly important because the LCAS standards and guidelines are not sufficient in and of themselves to ensure that an effective program to recover this species and habitat actually occurs on the Forest, as required by the ESA. As indicated in the LCAS, domestic grazing pressures on lynx habitat are known to be negative and substantial.	The impacts to Canada lynx have been analyzed in Chapter III, E.2. Canada lynx are Considered dispersers and there is no evidence of lynx reproducing in Utah. Implementation of the Proposed Action may affect, but is not likely to adversely affect the Canada lynx.
4i	UEC	We believe that it is not correct that the AMP is being separated from this, or any, NEPA process. This is indicated on page three of the document being circulated by the Forest. We believe that decisions in the AMP are subject to NEPA. The EA will need to focus on decisionmaking and related options in the AMP, and not defer those more site-specific decisions to a future process not subject to the NEPA process and this EA.	The Allotment Management Plan and Annual Operating Instructions will be consistent with the decision. The following sentence was added to the EA in Chapter I, C. Proposed Action to further clarify this: "The AMP objectives will focus on implementing the best scientifically based management practices available, designed to perpetuate healthy rangeland conditions or improve rangeland health and will be consistent with this Alternative. Management direction developed in the yearly AOIs will be consistent with this Alternative."

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4j	UEC	We do believe that the issues and concerns surrounding the project are substantial enough to merit circulating the EA for the public to read or comment on prior to the issuance of a final decision. Doing this goes towards involving the public in the preparation of your EAs to the greatest extent practicable. In the big picture, doing this is certainly reasonable and fair, and we believes it works to promote better decision-making.	Scoping was initiated for this project on December 5, 2008. In accordance with 36 CFR 215.6 regulations for notice and comment, a detailed description of the Proposed Action and alternatives was distributed and a request for comments was published in the Legal Notice section of the *Uinta County Herald* on August 25, 2009. The responsible official determines the most effective timing for publishing the legal notice of the Proposed Action and opportunity to comment (36 CFR 215.5(2)). In this case the District Ranger determined it to be before the EA was complete.
5a	Dick Carter, High Uintas Preservation System	The Notice of Proposed Action has left this whole process empty by concluding that any analysis will only consider grazing as a done deal. The Forest Service should analyze whether this place should be grazed by sheep, not simply how to manage sheep grazing.	The Forest Service considered two alternatives and analyzed the environmental effects on both alternatives. These included Alternative 1, the Proposed Action and Alternative 2, No Grazing. Under Alternative 2, permitted livestock grazing would be eliminated on the allotment.
5b		Proposed Action - It is noted that, —The specific manner in which livestock grazing will occur on the allotment will be based on management direction in the AMP, and possible adaptive management direction developed each year at the annual planning meeting in the winter or spring." Make it clear that any livestock grazing decision emanating through and from annual permittee meetings and the AMP must be fully consistent, transparent, and accountable to the final decision in this Notice of Proposed Action and certainly should be subject to public review.	The Allotment Management Plan and Annual Operating Instructions will be consistent with the decision. The following sentence was added to the EA in Chapter I, C. Proposed Action to further clarify this: —The AMP objectives will focus on implementing the best scientifically based management practices available, designed to perpetuate healthy rangeland conditions or improve rangeland health and will be consistent with this Alternative. Management direction developed in the yearly AOIs will be consistent with this Alternative."
5c		Objectives - Table 1 discusses Additional Site-Specific Desired Conditions identifying a range of minimum ground cover(s) for 1-Alpine, upland turf, and meadow, 2-aspen, 3-Uinta alpine upland turf and meadow, and 4-Uinta alpine erosional surface. It then notes that the selection and application of these ground cover ranges will be the absolute minimum in every instance. You should disclose why the minimum is selected.	Members of the ID Team reviewed and revised Chapter II, B.1, Table 1, under —soil productivity" for clarification. As stated in Table 1 the objective for ground cover on established monitoring points, is to provide for an upward/static trend in percent ground cover found on those sites. The percentages for the established monitoring points are listed on Table 10 of this document and are not the minimums listed in

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			the Forest Plan. For any new monitoring points established ground cover shall fall within the range of ground cover potentials listed in Table 1.
5d		Objectives - The same holds true for the discussion surrounding Riparian Vegetation. It is noted that "healthy ground cover exists relative to the site…" Again there is no discussion or analysis as to how these specific ground cover numbers were arrived at or evaluated—70%-Class I, 60%-Class 2, 40%-Class 3.	Members of the ID Team reviewed Chapter II, B.1, Table 1, under "Riparian Vegetation" and clarified that these numbers came from the 2003 Forest Plan (page 4-37).
5e		Annual Meetings - It is noted, "The intent of the annual meeting is to determine how livestock grazing will occur on the allotment for that year." It should be stated that the intent is to determine how livestock grazing would occur on the allotment consistent with the decision made in the Notice of Proposed Action and that the public is invited to attend those meetings. We are requesting that we be notified in advance, at least a week, of when this meeting(s) will occur and that we will be allowed to sit in on these discussions pertaining to grazing.	The Annual Operating Instructions are made available to the public (see response to 4B) and the Forest Service would be happy to meet with you to discuss the allotment at any time.
5f		Livestock Numbers - It is noted, "The effects of any adjustments to livestock numbers will be monitored and evaluated. If long-term or yearly monitoring determines that resource objectives are not being met, then livestock numbers will be modified and/or other adaptive management strategies implemented to ensure that resource objectives are met." Will the changes occur within a year, 5 years, 10 years? The Forest Service should clarify that if monitoring shows a need for a notable change when these changes would take place.	This was clarified in the EA in Chapter II, B.1, Annual and Long-term Monitoring: "If an evaluation of the long-term monitoring points determines that livestock grazing is not allowing the resource objectives to be met then management actions will be taken, once that determination is made." (See EA for a list of the management actions).
5g		Unit Sequence - It is noted, "Conversely, prolonged periods of rest can result in a buildup in organic matter which can negatively effect the nutrient cycle in the Soil." This needs a clear analytical evaluation, not just a statement of fact or assertion.	This sentence has been removed from the EA.
5h		Annual and Long-Term Monitoring – It is noted that monitoring points will be set up and "evaluated every five to	This was clarified in the EA in Chapter II, B.1, Annual and Long-term Monitoring: "Established long-term

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		ten years, or as needed…" What is meant by as needed and how will that be decided? Is there any objective criteria to determine the as needed context? As noted above, when will the changes actually be made and implemented based on the monitoring evaluations?	monitoring points in riparian and upland locations will be re-evaluated every five to ten years, or when additional resource information is necessary to facilitate proper management, to analyze the effectiveness of the proposed management strategy."
5i		Alternative 2 – No Grazing – Why not phase out grazing, in this alternative, over the 10 year term of the permit rather than the proposed two years noting, that the Forest Plan desired condition is —.if. sheep permits for upper elevation allotments are voluntarily waived without a preference, permits will not be reissues and allotments will be closed to domestic livestock for purposes of future bighorn sheep habitat." This option is far more likely to occur if noted in the Proposed Action, as it should be anyway since it is clearly part of the Desired Future Conditions, and if the Forest Service phases the allotment out over the term period of the allotment. This would make the alternative realistic and something that could be implemented by the Forest Service and far more acceptable to the permittee.	Under Alternative 2 the permittee would be given two years advance notice of cancellation of the permit as provided for under 36 CFR 222.4(a)(1). It would be up to the decision-maker to phase it out over a longer period of time.
5j		Issue 1 – Rangeland Health – There is an ethical obligation to justify that not allowing sheep grazing on these rangelands will result in denigrated rangeland health. It is also incumbent to show that grazing will occur on the allotment, without sheep, from native ungulates and rodents inherent to this ecosystem.	Chapter 1, G. Issues, Issue 1, second paragraph has been clarified, and a citation added, as follows: —Grazing by herbivores can have significant effects on rangeland health and productivity. The frequency of grazing, the intensity of grazing, and the opportunity for plants to grow before grazing or regrow following grazing are factors that affect rangeland health and productivity. Grazing that occurs over too long a period of time or that allows plants to be too severely grazed or that does not allow for plants to grow before grazing or regrow after grazing during the growing season will negatively impact range plants. Conversely, plants that are never grazed, especially grasses, may become coarse and overgrown. In areas where wild ungulate grazing would not occur, this may cause several things to happen. Plants may begin to grow at a later date, as the plant growth points are covered up by

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			dead plant material. For some species of bunchgrasses over time this could result in senescence of the plant. Lack of grazing will also cause grasses to become less palatable to herbivores, as there is a larger percentage of woody material in the plant. The citation for this information is: Rhodes, B. D.; Sharrow, S. H. 1990. Effects of grazing by sheep on the quantity and quality of forage available to big game in Oregon's Coast Range. Journal of Range Management 43(3): 235-237.
5k		Issue 3 – Wildlife Habitat – It is noted, that not grazing sheep on the Stillwater rangelands may negatively impact some species such as the snowshoe hare. This needs evidence and not just assertion. The mere suggestion that ties snowshoe hare integrity, or other wildlife species, to sheep grazing seems a nit miraculous as it implies snowshoe hares are not as healthy of integral on the portions of the Uintas not grazed by sheep. This discounts ecosystem health and integrity pre-sheep and is disingenuous.	Chapter 1, G. Issues, Issue 3 states the following: —The goshawk preys on large-to-medium-sized birds and mammals, which it captures on the ground, in trees, or in the air. Specific habitat attributes used by these prey species include herbaceous and shrubby understories that can be affected by livestock grazing. Conversely, livestock grazing can stimulate regrowth and provide more palatable nutritious forage and have a positive effect for some small mammals, such as the snowshoe hare." The citation for this information is: Rhodes and Sharrow 1990 as described in response to 5i.
5l		Issues – All of the —indicators used to compare alternatives" are qualitative in nature. These indicators must also be quantitative in order to assure the magnitude, extent, duration and likelihood of Proposed Actions will or will not occur and to assure that accurate scientific information is utilized, not simple qualitative assertions.	Quantitative measurements are also discussed in Chapter III Affected Environment and Environmental Consequences. Chapter I, F. describes the use of best available science for the analyses.
5m		We are glad to see the issues of open space and economic effects to the permittee being eliminated.	Thank you for your comment.
5n		While this is a grazing decision, it can't be unhinged from the broader concerns relative to the Forest Plan. Numerous desired future conditions, goals and subgoals, objectives, standards and guidelines relative to grazing and management prescriptions must be considered as well. They include	This project tiers to and incorporates applicable direction from the 2003 Revised Forest Plan (see Chapter I, F). See also Chapter II, B, Tables 2 and 3 Forest Plan Standards and Guidelines that apply to

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		biodiversity and viability. Watershed health, soils, recreation and social concerns have all been pushed to the side. Clearly the entire context of the Notice of Proposed Action is to dismiss meaningful analysis and get on with approving grazing without a real evaluation of social impacts created and perceived by grazing in remote, roadless and wilderness environments and without a detailed and meaningful evaluation of the actual impacts of grazing over a long time frame, past to future.	this project. Chapter II, B, Table 1 describes the applicable components of the Forest Plan prescribed desired future conditions. In addition to those components, the ID Team further refined some additional site-specific desired conditions that are applicable to this project. Impacts to watersheds, soils, recreation, roadless areas, and wilderness are addressed in Chapter III.

V. CONSULTATION AND COORDINATION

The purpose of this chapter is to list those agencies, organizations, and persons who were consulted during the development of this environmental assessment. A list of others contacted through scoping is in the project file.

Interdisciplinary Team

Dan Garcia de la Cadena – Wildlife Biologist, Evanston-Mountain View Ranger District; Uinta-Wasatch-Cache National Forest, Evanston, Wyoming.

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Other Forest Personnel Consulted

Bernard Asay – Wilderness/Trails Manager, Evanston-Mountain View Ranger District; Uinta-Wasatch-Cache National Forest, Evanston, Wyoming.

Tom Flanigan – Forest Archeologist; Uinta-Wasatch-Cache National Forest, Salt Lake City, Utah.

Teresa Rhoades – Forest GIS Specialist; Uinta-Wasatch-Cache National Forest, Salt Lake City, Utah.

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Paul Flood – Forest Soil Scientist, Uinta-Wasatch-Cache National Forest, Salt Lake City, Utah.

Paul Chase – Fisheries Biologist, Uinta-Wasatch-Cache National Forest, Salt Lake City, Utah.

Charlie Condrat – Forest Hydrologist, Uinta-Wasatch-Cache National Forest, Salt Lake City, Utah.

Stephen Ryberg – Evanston-Mountain View District Ranger, Uinta-Wasatch-Cache National Forest, Evanston, Wyoming.

Grazing Permittee

Michael Sims – Evanston, Wyoming.

Other Government Agencies Contacted

Uinta County Commissioners
U.S. Fish and Wildlife Service
Utah Division of Wildlife Resources
Utah State Historic Preservation Office
Ute Indian Tribe
Wyoming State and Capitol City Coordinator

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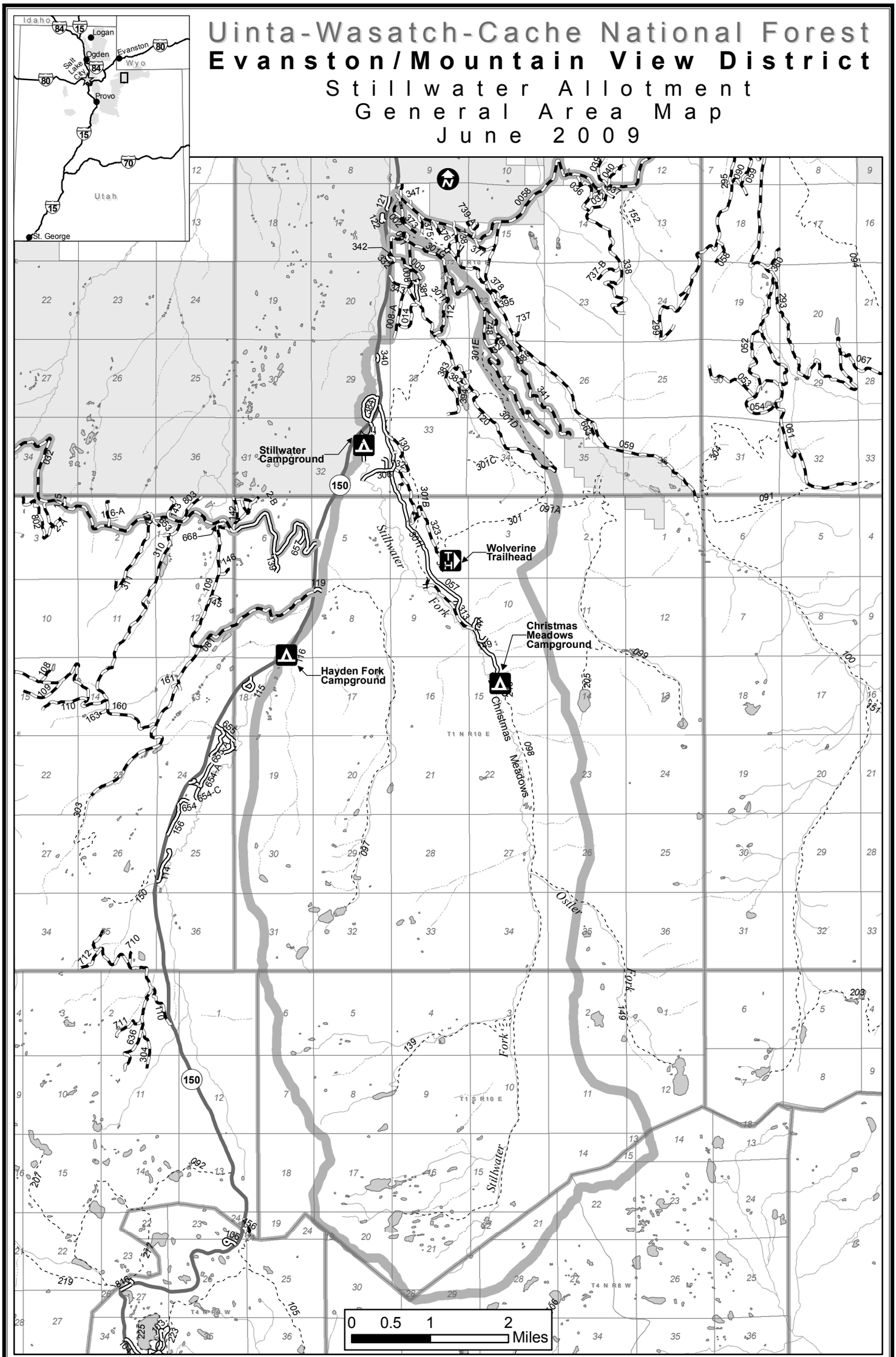
APPENDIX A – VICINITY MAP

Uinta-Wasatch-Cache National Forest
Evanston/Mountain View District
Stillwater Allotment
General Area Map
June 2009



Legend

Transportation Route

- Road Open to All Vehicles (Seasonal)
- Road Open to All Vehicles (Yearlong)
- Roads Open to Highway Legal Vehicles Only (Seasonal)
- Roads Open to Highway Legal Vehicles Only (Yearlong)
- Special Designation (Seasonal)
- Interstate
- State or US Highway
- Other
- Trail

Allotment Boundary

Township/ Sections

Ownership

PVT

UWCNF

Stream

- Artificial Path
- Intermittent
- Perennial