1999

Preliminary Analysis of the Management Situation Summary, Wasatch-Cache National Forest, April 1999

United States Department of Agriculture, Forest Service

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Preliminary Analysis of the Management Situation

Summary

Wasatch-Cache National Forest
April 1999

Acknowledgements

The members of the Wasatch-Cache National Forest Planning Team would like to express their appreciation for the Forests that have preceded us in this process. In particular, the Southwest Idaho Ecogroup (Boise, Payette, and Sawtooth National Forests). We have used a tremendous amount of the work they have put into their Preliminary Analysis of the Management Situation (USDA Forest Service, 1997b) and have included it in ours. In a few cases, only minor modifications in some discussions were made in order to make their words fit our situation.

We would also like to thank members from the planning teams on adjacent Forests (Ashley, Caribou, and Uinta National Forests) for their coordination efforts in helping us make this an integrated approach to land management planning.
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"The nation behaves well if it treats the natural resources as assets which it must turn over to the next generation increased, and not impaired in value."  Theodore Roosevelt

chapter one
Chapter 1 Beginning the Forest Plan Revision

Introduction

This chapter describes why and how the Wasatch-Cache National Forest (WCNF) is revising its Forest Plan. It also discusses the intent of the Analysis of the Management Situation in the revision process. Other explanations in this chapter include what the Forest intends to analyze in the revision process, based on the need to change current Forest Plan management direction. Public involvement and collaborative planning strategies are also discussed.

This document represents the beginning of our public participation process for the revision effort. Although not required at this stage of the process, we feel public participation at this early phase is critical. We want to be sure our identified needs for change in the Forest Plan reflect public concerns as well as our own. We also want to reach an understanding about what we will and will not be able to address in this revision effort.

Forest Plan Revision

The National Forest Management Act (NFMA) of 1976 (NFMA P.L. 94-588) required each National Forest to develop National Forest Land and Resource Management Plans (Forest Plans), and to update or "revise" them when conditions have significantly changed or at least every 15 years. The Wasatch-Cache National Forest completed its current Forest Plan in 1985 (USDA Forest Service 1983). To comply with NFMA a revision needs to be completed by the end of 2000. In 1987, Congress prohibited expenditure of funds on formal Forest Plan revision. In 1998, prohibitions were lifted for 14 national forests nationwide. The Wasatch-Cache National Forest was one of the 14 forests. These actions have combined to create an extremely short timeframe (21 months) for our revision effort. All six National Forests in Utah will be revising their Forest Plans within the next three to four years, as all existing plans will be running up against NFMA's 15 year deadline.

Over the last decade we have learned a great deal about where our plans were adequate, and where they were lacking. Nationally, the agency undertook a comprehensive study on the adequacy of Forest Plans and published its findings in A Critique of Land Management Planning (USDA Forest Service 1990). Locally, each National Forest produced Forest Plan monitoring reports (WCNF 1992) and engaged in other assessments to determine how well plans were working as tools to help manage these public lands. Employees' day to day use of Forest Plans has provided valuable insight about the type of direction that is most useful in Plans.

In light of this learning and with revisions pending, efforts were made in the 1990s to help solve problems with and improve forest plans. In 1995, a major push was made to change the existing forest planning regulations [36 Code of Federal Regulations (CFR) 219] to implement some of the findings of the 1990 Critique, as well as to incorporate other new agency thinking (Federal Register 1995). Most recently, in December 1997, the Secretary of Agriculture convened an inter-disciplinary Committee of Scientists (COS) to review and evaluate the Forest Service's planning process for land and resource management and to identify changes that might be needed to the planning regulations. Their recommendations were published March 1999 (Committee of Scientists (COS) 1999). While this work has not yet resulted in finalizing new regulations, it can help us refine our thinking about what makes a good Forest Plan. Comments about forest plans by individual citizens, environmental organizations, commercial interests, and communities have also been considered. In this "revision" round of forest planning, the Forest Service intends to build on experience and incorporate new science to develop more useful and appropriate plans than those written in the 1980s.

National and Regional Guidance

Efforts continue at the national level to change the current NFMA planning regulations. Until a decision is made, this revision will be guided by NFMA regulations (36 CFR 219). Recommendations of the Committee of Scientists will be carefully considered and included as much as possible, consistent with the NFMA regulations.

Recommendations in their synopsis specifically include the following:

- Ecological sustainability provides a foundation upon which the management for national forests and grasslands can contribute to economic and social sustainability (Synopsis, pg xvi).
- Public lands rest in a mosaic of land ownerships, and so public land management must be integrated into a broader regional landscape. Consider the larger landscape in which national forests and grasslands are located in order to understand their role in ensuring ecological sustainability and contributing to human uses and values (Synopsis, pg xxi).
- Establish collaborative relationships that provide opportunities and incentives for people to work together to contribute to forest planning in meaningful and useful ways. Land and resource planning must provide mechanisms for broad-based, vigorous, and ongoing opportunities for open dialogue (Synopsis, pg xxvii).
- Make "desired future conditions" and the outcomes associated with them the central reference points for planning (Synopsis, pg xxx).
- Planning is dynamic and ongoing because the social values and scientific knowledge that guide decision making will change with time (Synopsis, pg xiv).
- Monitoring needs to be given very strong emphasis in the new approach to planning. Adaptive management and learning are not possible without effective monitoring of actual consequences from management activities (Synopsis, pg xxxv).

In March of 1998 the Chief of the Forest Service outlined a broad-based natural resource agenda for the Forest Service. Although not specifically directed toward forest planning, it sets clear priorities for scientists and managers holding them accountable to the American people for the health of the land. It requires that special attention be given to four key emphasis areas: watershed health and restoration, sustainable forest management, national forest roads, and recreation (USDA Forest Service 1998).

A recent letter from the Regional Forester (2/12/99) outlines his expectations for forest plan revisions in the Intermountain Region. These expectations include:

- Focus on most critical land use issues.
- Keep analysis commensurate with issues and Forest Plan decisions.
• Make every effort to ensure timely and effective communication and relationships in the revision.

Analysis of the Management Situation

In initiating Forest Planning or beginning revision our regulations require that an analysis of the management situation (AMS) be prepared. The intent of the AMS is to set a context within which the Forest Plan decisions will be made. That is, the AMS needs to develop a reference framework of information about the conditions of the land and r-plexes' uses of it so that a range of options for the future can be constructed to address public needs and issues, management concerns, and resource opportunities.

Most often, AMS produced during the first round of planning in the 1980s were lengthy documents that recounted a lot of pertinent information relevant to the decisions that had to be made. The Wasatch-Cache National Forest completed an AMS of this type in 1982 as part of the forest planning process. Considering that Forest Plans were being newly developed, the wide breadth of the 1982 AMS was appropriate.

Now, to meet the needs of revising a Forest Plan rather than creating a new one, the AMS will be more focused on providing information on where and why we think there is a need to change or establish management direction. It paints a picture highlighting the current biological, physical, and social setting and key parts of what we expect would happen if no change were made to the current Forest Plan. It helps define the decision space and provides the foundation for developing a range of alternatives in the Environmental Impact Statement (EIS) to be completed for the Plan Revision.

Benchmark Analysis

Benchmarks used in forest planning are parameters that define the maximum and minimum amount of resource production that can reasonably be expected under management alternatives. NFMA regulations require that benchmarks used to develop alternatives be displayed in an AMS. Benchmarks developed and analyzed in the original AMS (USDA Forest Service 1982) were reviewed and found to still be valid. Therefore, the WCNF Revision Team will not be conducting new benchmark analyses at this time. Table 1-1 displays benchmarks in the current Forest Plan for average annual outputs.

Scope of the Analysis

An Updated View of Forest Planning

During the first era of forest planning, we developed plans that included both broad direction for large areas and detailed, site-specific management direction. Often the broad direction was too general to be very helpful for making future decisions and provided no clear desired future condition. On the other hand, many objectives, standards and guidelines were too site-specific, such as directing a course of action which was more appropriately decided after site-specific analysis has been done and disclosed.

<table>
<thead>
<tr>
<th>RESOURCE</th>
<th>MINIMUM OUTPUT</th>
<th>MAXIMUM OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developed Recreation (Thousands of Recreation Visitor Days)</td>
<td>0</td>
<td>4,570</td>
</tr>
<tr>
<td>Dispersed Recreation (Thousands of Recreation Visitor Days)</td>
<td>0</td>
<td>6,311</td>
</tr>
<tr>
<td>Wilderness Use (Thousands of Recreation Visitor Days)</td>
<td>0</td>
<td>490</td>
</tr>
<tr>
<td>Permitted Grazing Use (Thousands of Animal Unit Months)</td>
<td>0</td>
<td>97,312</td>
</tr>
<tr>
<td>Live Saw Timber Offered (Thousands of Cubic Feet)</td>
<td>0</td>
<td>9,675</td>
</tr>
</tbody>
</table>

Now we believe that a forest plan should be similar to establishing zoning requirements for a city. A city may create a plan deciding which sections are residential, industrial, or commercial and what rules are applicable; for example, no new homes in industrial areas, or no restaurants in residential areas. The city plan makes broad decisions for the whole city but does not decide the exact design for each home and when it will be built. These are site-specific decisions.

Similar to city planning, once programmatic or broad decisions in Forest Plans are established, future site-specific project decisions are then made based on Forest Plan direction. Site-specific decisions determine exactly when, where, and how projects—such as trail construction and timber sales—will occur.

Continuous Assessment and Planning

The planning of the early 1980s required that each Forest build a plan from scratch. This effort required big budgets, many employees, and took a long time. It literally became an all-consuming task for the Forest Service. As the time has come to revise these first generation plans, a planning philosophy evolved to fit the realities of the budget and work force available and to reflect the dynamic nature of planning. We refer to this as Continuous Assessment and Planning or CAP.

It is important to remember that the Forests are proposing changes to plans that have already been developed and implemented. Therefore, there are years of experience with what direction is working and what needs to be changed. Rather than start over and also because we have a tight time schedule and limited budget, we intend to repair the most critical items first. Less critical items will be repaired as time and funding allow and at scales that make sense for the particular issues involved.

In revising the forest plan, we will focus on those areas that must be reviewed in accordance with federal regulations, and on critical issues identified through new information, monitoring, and public concern. The regulations allow for this: "The Forest Supervisor shall determine the major public issues, management concerns, and resource use and development opportunities to be addressed in the planning process." [36 CFR 219.13(b)]. Through the revision process, those portions of the Plan identified as needing change, and as important and appropriate at this time, will be addressed. Budget considerations will also be used to validate that alternatives developed are appropriate for detailed consideration. Other issues that are better addressed at a later time or a different scale may be deferred. This will allow us to focus now on the most compelling needs for change in Forest Plan direction.

Table 1-1 Benchmarks in current Forest Plan for average annual outputs
Determining Needs for Change

Five sources were used to identify the initial Needs For Change items:

- Results of the Forest Plan monitoring report (USDA Forest Service 1992);
- Comparison of regulatory, manual, and handbook requirements with current Plan direction;
- National direction, policy and initiatives;
- New information from research; and
- Comments received from employees who have been implementing the Plans.

Revision Team specialists compared the initial list of Need For Change topics against the six decisions made in forest plans to identify which topics were planning-related versus which were project-level issues. The six types of decisions made in Forest Plans are listed and described briefly below (36 CFR 219.11 and 219.17).

Six Decisions Made in Forest Plans:

1. Forest Goals and Objectives. A goal is a concise statement that describes a desired condition to be achieved some time in the future. It is normally expressed in broad, general terms, without any specific date for attainment. An objective is a concise time-specific statement of planned results that move toward pre-established goals. An objective forms the basis for further planning to define the precise steps to be taken and resources to be used in achieving identified goals.

2. Forest-wide Standards and Guidelines. A standard is a required course of action or level of attainment designed to promote achievement of goals and objectives. A guideline is the preferred or advisable course of action designed to promote the achievement of goals and objectives.

3. Management Area Delineations and Management Area Direction. A management area is an identifiable unit of land that provides focus and emphasis for management direction. Management area direction defines how the area will be managed by incorporating goals and objectives with a desired future condition. The desired future condition will explain the biological, physical, and social conditions envisioned for the area.

4. Identification of Lands Not Suited For Timber Production. Lands identified as not suited for timber production are examined at least every 10 years to determine if they have become suited.

5. Monitoring and Evaluation Requirements. Forest Plans must establish monitoring requirements through which implementation is evaluated.

6. Recommendation For Official Designation of Wilderness. During Forest Planning, the Forest Service must evaluate and consider roadless areas for their potential as Wilderness Areas. The Forest Service may recommend a roadless area to Congress for Wilderness designation if the area meets various wilderness criteria. Congress retains the final authority for designating Wilderness Areas.

Results of 1992 Monitoring and Evaluation Report

National Forests monitor and evaluate land management activities to determine how well objectives have been met and how well standards and guidelines have been applied. The Wasatch-Cache completed a Forest-Wide monitoring report in 1992 (USDA Forest Service 1992). The report highlighted changed conditions since the Forest Plan was approved and made recommendations where appropriate.

Provided below is a summary of the conclusions of the most recent Forest-Wide Monitoring and Evaluation Report.

- Resource inventories lacked quality information or were outdated.
- There was a discrepancy between recreation goals and current conditions. Developed recreation site program needed to emphasize maintaining existing facilities prior to building new facilities.
- Riparian area direction was limited and very general.
- Timber Volume Objectives were inaccurate because of problems with timber volume conversions, timber availability assumptions and technical concerns with implementation.
- Water quality monitoring strategy needed strengthening.
- An accurate assessment of relationships between resources is lacking. A new emphasis on integrated resource management was needed.
- The Forest Plan was never fully funded and there was no indication of priority work to be accomplished with available budgets. Our program of work needed to be prioritized to allow for funding shortfalls.
- The Monitoring Plan was too general to ensure Forest Plan direction was being accomplished. An improved monitoring plan was needed.

Management Direction that Needs to be Changed or Established

Upon review of existing documentation, the Revision Team made a preliminary determination to change or establish new management direction in the following potential Forest Plan revision topics. These topics are described in detail in Chapter 4 of this document.

Topic 1 - Wild and Scenic Rivers. This topic is required and includes updates and protecting those rivers identified as eligible for inclusion into the Wild and Scenic Rivers system.

Topic 2 - Roadless Areas/Wilderness Recommendations. This topic is required and includes identification of roadless areas, evaluation of their suitability as wilderness and those recommended to Congress for wilderness designation.

Topic 3 - Appropriate Timberlands. This topic is required and describes identification of lands appropriate for timber management.

Topic 4 - Rangeland Capability and Suitability. This topic is required and includes rangeland capability and rangeland suitability.

Topic 5 - Biodiversity and Viability. This topic includes rare and unique species and ecosystems; threatened, endangered, and sensitive species; successional stages; snags and old growth; vegetation composition, function, and structure; fragmentation, connectivity, landscape linkages, habitat edge, and horizontal and vertical diversity.
Topic 6 - Watershed Health. This topic addresses riparian area and aquatic resource management, including rangeland and recreation influences.

Topic 7 - Road Management/Access Management. This topic includes application of the national transportation policy (currently being developed) for deciding where and when to build new roads and management of the existing road system.

Topic 8 - Recreation Niche, Capacity and Zoning. This topic includes the unique role of the Forest in providing recreation opportunities and defining the desired future for recreation for areas: on the Forest with consideration of appropriate social and biophysical use levels.

Additional Topics. Two additional state-wide analyses are underway that propose amending the current forest plans for all six national forests in Utah. Although both analyses are scheduled to be completed in 1999 prior to our revision completion, we recognize them as two additional topics that will need to be incorporated into our revision.

The first proposes to amend plans to provide management direction that maintains and/or restores functioning habitats that are key to sustaining a persistent population of the northern goshawk--its prey on Utah’s National Forests. Amended management direction is needed because current Forest Plans allow actions that may degrade habitat components important to sustaining a persistent population.

The second analysis proposes to amend plans to provide management direction that restores or maintains fire-adapted ecosystems through wildland fire use and prescribed fire while continuing to suppress unwanted wildland fires. The Forests also propose to revise, replace or delete forest plan direction that hinders the use of fire to achieve these goals. This action is needed because forest plans do not contain direction on using fire to restore and sustain ecosystems. In the case of the WCNF, current forest plan direction limits the use of fire.

Strengthening Current Management Direction

Additional proposed changes are described in Chapter 4 under the section, “Strengthening Current Management Direction”. These are important changes to the Plan that involve relatively simple alterations or additions to current direction in order to address changed conditions or deficiencies identified since the Plan were developed. It is not anticipated that most of these changes will require detailed analysis or alternative development in the Revised Forest Plan EIS. Some of these items may be fully addressed through the revision process and others through amendment after the revision is complete.

Coordination with Tribes

The Ouray-Ute, Skull Valley Band of the Goshutes, and the Shoshone-Bannock tribes are recognized as sovereign nations. As a result, these tribes have unique relationships with federal government agencies. Forest Service policies and management activities will be planned and implemented in ways that respect the tribes’ sovereignty, needs, and rights. Collaboration with these tribes will focus on developing meaningful relationships to understand and incorporate tribal cultural resources, needs, interests and expectations.

Intergovernmental Coordination

Coordination with our government partners (federal, state, and county) will be more proactive than it was in the development of the original Forest Plan. The intent is to have early and active involvement in sharing ideas and shaping strategies. Because the Wasatch-Cache is also adjacent to many other land ownerships we recognize the need for national forest planning to take into consideration local land use plans (state, county, city, other) either in place or currently being developed.

Utah governor, Mike Leavitt, issued an executive order in May 1996 to help rapidly growing communities protect the many values (recreation opportunities, scenery, wildlife habitat, agriculture, and watersheds) of Utah. Governor Leavitt (1996) stated:

Part of the heritage of Utah is the patchworks of green that dot our landscapes, the ponds where our children fish and ice skate, the fields where we grow crops and learn the value of hard work, the wide open pastures where wildlife roam.

He went on to say that:

As we plan for the future, we have the opportunity and the responsibility to protect this sacred heritage. There is only one chance to protect open space. When it’s gone it’s gone. If we plan carefully now, we can build homes and save open lands. It is our duty to protect our land so that our children and grandchildren can enjoy the beauty and traditions we have known.

These statements by the governor are truly congruent with our thoughts on planning for the forest. More continuous interaction and communication among federal, state, county and local officials will improve planning direction for all lands.

In December 1998, several Western governors came together to discuss principles for environmental management in the West. They focused on common principles underlying the most promising approaches and successful solutions to a wide range of environmental problems. These principles form the basis of a new shared doctrine for environmental management the governors call Enlibra. The word Enlibra was coined by the western governors to symbolize balance and stewardship.

The doctrine speaks to greater participation and collaboration in decision making, focuses on outcomes rather than just programs, and recognizes the need for a variety of tools beyond regulation that will improve environmental and natural resource management (Western Governors’ Association 1999).

We plan to integrate the spirit of Enlibra as we work closely with state and local governments on the plan revision.

Public Participation and Collaborative Planning

We know a successful forest plan revision depends on public understanding and contribution to this effort. We will encourage your participation from the beginning as we provide ongoing
opportunities for discussion throughout our revision effort. Of course, our desire for working together will have to be balanced with the need to move forward and meet tight time frames.

There has been much discussion in recent time among Federal agencies about collaboration. We view collaborative planning not as consensual decision-making; but, rather a shared understanding and learning from one another. We recognize we cannot eliminate the controversy inherent in some public land issues but collaborative planning will allow us to better understand each other and appreciate the choices and trade-offs that must be made. It also allows us to learn from others new and creative ideas that we may not have thought of previously.

One area of potential confusion is how collaboration influences the decision-making process. The authority for making Forest Plan decision rests with the designated federal officials, in this case the Regional Forester and Forest Supervisors. These decision-makers are responsible for ensuring appropriate public participation and making sure that no group has undue influence or unfair access to the decision process (the 1972 Federal Advisory Committee Act). In 1995 Congress updated the law to allow intergovernmental partners (tribal, state, federal, local) to have access to decision makers in providing advice and seeking consensus in government decision-making. The law also controls how decision makers obtain advice from the public, but does not limit how the public chooses to give advice. The primary guidance is that if the decision maker solicits advice from the public, it must involve all interested parties and not allow any group undue influence.

"We shall never achieve harmony with land, any more than we shall achieve absolute justice or liberty for people. In these higher aspirations the important thing is not to achieve, but to strive." Aldo Leopold, Round River

chapter two
Chapter 2 Ecosystem Management Framework and the Forest Plan Model

Introduction

In the 15 years since our current Plan was developed, we have learned much. Our experiences implementing the Plan along with significant advances in scientific thinking about land management have resulted in two types of need for change. First, actual management direction needs to change in some areas referred to as "topics" in Chapter 1 and described in more detail in Chapter 4. Second, the basic framework and organization of the Plan need to change. This chapter is designed to describe the framework, how it differs from how the existing Plan was framed, and why the new framework is necessary. This chapter is also designed to show how the new Forest Plan model is organized and how it differs from the existing Plan.

Ecosystem Management and Need for Change

One of the primary forces affecting forest plan revisions as "needs for change" is the focus on ecosystem management and sustainability as the overarching objective of National Forest stewardship. We feel that the concept of ecosystem management, while complex, is important enough to not attempt to oversimplify.

In the early 1990's the Forest Service chartered a group of managers and researchers to develop a "white paper" on an ecological approach to management. As a result of this white paper, James Overbay, then Deputy Chief for National Forest System, identified the need to "embrace the concept of managing ecosystems to sustain both their diversity and productivity and to chart a course for making this concept the foundation for sound multiple-use, sustained-yield management" (Overbay 1992). In striving for consistency across the Forest Service as well as with federal and state agencies and with the private sector, Overbay selected the term "ecosystem management" from several being used at the time to describe this ecological approach to management. In 1997, an interdisciplinary Committee of Scientists was convened "to review and evaluate the Forest Service's planning process for land and resource management and to identify changes that might be needed to the planning regulations" (COS 1999). As a result of this committee's work, an emphasis was placed once again on sustainability. As noted in their report:

...for the past 100 years, we, as a nation, have been attempting to define what we mean by "sustainability," in part through our grand experiment in public forest ownership. In the process, we have broadened our focus from that of sustaining commodity outputs to that of sustaining ecological processes and a wide variety of goods, services, conditions, and values.

What are the Principles of Ecosystem Management?

Overbay (1992) noted that we must take an ecosystem approach to multiple-use, sustained-yield management. So what is ecosystem management and how does it differ from how we have managed National Forest lands in the past? Ecosystem management has been variously defined, but it is simply using the best ecological, economic, social and managerial principles in managing ecosystems to restore or sustain ecosystem integrity, and to provide for the values, products, uses, and services for the long term. The Report of the Ecological Society of America Committee on the Scientific Basis for Ecosystem Management (Christensen and others 1996) defined the principles of ecosystem management as Sustainability, Goals, Sound Ecological Models and Understanding, Complexity and Connectedness, Dynamic Character of Ecosystems, Context and Scale, Humans as Ecosystem Components, and Adaptability and Accountability. A brief summary of these principles follows.

Sustainability. Sustaining ecosystems for generations in the future is a precondition of ecosystem management rather than an afterthought. Sustainability means that we must manage for options and opportunities of both commodities and non-commodities into the future. As noted above, the focus of sustainability has been broadened from that of sustaining commodity outputs to that of sustaining ecological processes and a wide variety of goods, services, conditions, and values.

Goals. Desired future conditions should be explicitly defined in measurable terms that can be monitored. Goals should focus on sustaining ecosystem processes while, at the same time, identify those goods, services, conditions, and values that can be provided within the bounds of sustainable ecosystems.

Sound Ecological Models and Understanding. Ecosystem management is based on sound ecological principles and focuses on ecological processes and functions. It is based on the best science at all scales, from the broad landscape to the level of the organism.

Complexity and Connectedness. Ecosystems are complex with a vast array of interconnections. Biological diversity (the diversity of life and its processes) and the complex, of ecosystems are critical to ecosystem processes and functions. Complexity and diversity also impart resistance to and resilience from disturbance. Wherever we simplify ecosystems by

1Section 4 of the Multiple-Use Sustained-Yield Act of 1960 defined those terms in the following way:

Multiple-Use - "Multiple use" means the management of all the various renewable surface resources of the National Forests so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that som.: land will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.

Sustained-Yield - "Sustained yield of the several products and services" means the achievement and maintenance in perpetuity of a high-level annual or regular output of the various renewable resources of the National Forests without impairment of the productivity of the land.
planting or managing for a single species or only a few species, we reduce the ability of those ecosystems to resist disturbance or to bounce back following disturbance.

**Dynamic Character of Ecosystems.** Ecosystems are dynamic in nature. We need to acknowledge natural disturbance processes (e.g., fire, wind, avalanche, succession, etc.) and consider them as we develop desired future conditions and the management actions and strategies we use to achieve those conditions.

**Context and Scale.** Ecosystem processes occur over a variety of scales in space and time. There is no single spatial scale or time scale "appropriate" for management. For any issue we must "zoom in and zoom out" to give consideration to the nested and interrelated resources, species, communities, or ecosystems we are attempting to manage. In addition, we should look at the many and complex relationships the Forest has with individuals, communities, businesses, and governments (Federal, State, Counties, etc.) and how they use the lands within and around the Forest.

**Humans as Ecosystem Components.** Humans not only pose the greatest, most significant challenge to sustaining ecosystem processes and functions, but they are also an integral part of ecosystems. Human population growth is perhaps the single most critical impact on sustainability of both resources and opportunities within ecosystems. We must all be involved to both identify and achieve sustainable goals.

**Adaptability and Accountability.** Adaptability and accountability are central principles of ecosystem management. Our knowledge is never complete and changes frequently. As our understanding changes we must be able to adapt our management practices to reflect the new knowledge. As Christensen and others (1996) noted:

"Our own impacts on this planet's ecosystems make such adaptive management all the more compelling. The earth's ecosystems are being modified in new ways and at faster rates than at any other time in their nearly four billion year history. These new and rapid changes present significant challenges to our ability to predict the inherently uncertain responses and behaviors of ecosystems."

**Forest Service Natural Resource Agenda for the 21st Century**

As noted in Chapter 1, in March of 1998 the Chief of the Forest Service outlined a broad-based natural resource agenda whose focus was to bring people together to "find ways to live within the limits of the land." This Agenda embraces the Principles of Ecosystem Management and as previously stated includes four key emphasis areas including: watershed restoration and maintenance; sustainable forest ecosystem management; forest roads; and recreation. The following discussions of those emphasis areas are derived from the USDA Forest Service (1998) report titled "Charting our Future... A Nation's Natural Resource Legacy."

**Watershed Restoration and Maintenance - A watershed is simply the land area drained by a single network of streams. For example, the Big Cottonwood watershed covers the entire land area whose streams ultimately pour into Big Cottonwood Creek. A healthy watershed has a steady flow of pure, clean water that sustains all living things, including people. In order for a watershed to be healthy it must have healthy stream systems and soils that do not contribute excessive amounts (above the natural levels) to those streams. They must meet the needs for quality habitat for dependent animals and fish. In addition, healthy watersheds supply values for people such as drinking water, recreation, and other uses while not compromising watershed health.**

**Sustainable Forest Ecosystem Management -** Sustainable forest management connects the health of the land to people and communities, transcending the boundaries of ownership and management to take advantage of what each forest owner can offer toward achieving sustainability. Forest track sizes are becoming smaller and more fragmented leading to diminished wildlife habitat, reduced access, and degraded water quality. Sustainable forest management, therefore, provides goods and services without compromising the broad array of values for generations to come.

**Forest Roads -** Few natural resource issues in recent years have attracted as much public scrutiny as the management of the forest road system. Though less costly to build and maintain than most public highways, forest roads can have adverse impacts on watersheds, especially if poorly maintained. Few marks that we leave on the land are more lasting than the roads we build. Yet roads are needed for the goods and services that Americans expect from the national forests.

**Recreation -** America's national forests and grasslands offer the single largest source of outdoor recreation opportunities in the United States. From downhill skiing, to backcountry expeditions, to family outings, our national forests provide an incredible range of outdoor opportunities. The Forest Service must meet the Nation's growing need for outdoor recreation in a manner that protects the health, diversity, and productivity of the land.

**How does Ecosystem Management Differ from Management in the Past?**

The Forest Service has managed ecosystems for decades, so how is ecosystem management different? There are some sectors that fear that "ecosystem management" is just another buzzword to explain business as usual (Donnelly 1995) while others fear that it will result in the Forest Service abandoning its "multiple use" management of National Forest lands. While these are reasonable fears, neither is true. Ecosystem management is different than how we've conducted our business in the past in three important ways:

1. Rather than focusing only on the small, localized scale, we look at the appropriate scale depending on each resource and/or issue and we look more at those interactions with and integration of associated resources and/or issues;
2. We focus more on properly functioning ecosystems for sustainability over the long term (composition, structure, patterns, and functions) and less on maximizing production from ecosystems over the short term; and
3. Because ecosystem management requires that we look beyond administrative boundaries we must focus more on collaborating with other Federal, State and local governments in establishing goals and in creating a vision of desired future conditions.
While ecosystem management has important differences from how we have managed national forest lands in the past, as noted above we are still managing under the Multiple-Use, Sustained-Yield Act. We have, however, placed a much greater emphasis on sustaining ecological processes and a wide variety of goods, services, conditions, and values rather than focusing primarily on sustaining commodity outputs.

Steps Required to Implement Ecosystem Management

In a 1994 report titled *Ecosystem Management: Additional Actions Needed to Adequately Test a Promising Approach* (RCED 1994), four steps/actions were identified as practical and required in order to implement ecosystem management. They include: 1) delineating ecosystems; 2) understanding their ecologies; 3) making management choices; and 4) adapting management on the basis of new information. Figure 2-1, adapted from this report, shows the relationships between ecosystem management concepts and these practical steps and actions. In Chapter 3 we more closely address the relationships between these practical steps and actions and those proposed by the Wasatch-Cache National Forest to implement ecosystem management.

Delineating Ecosystems. The first practical step of ecosystem management involves the delineation of ecosystems at scales that are consistent with the principle of "context and scale". In looking at the Wasatch-Cache National Forest, we recognize both biophysical and human (social, economic, and political) characteristics and relationships. The biophysical characteristics of the Forest include the land, water, vegetation and wildlife, etc. while the human characteristics include the people and the communities, counties, and states in which they live and how they relate to and effect the Forest. Any delineation of biophysical ecosystems is artificial because there are connections, interactions, and movements of wildlife, water, air, and vegetation, etc. that do not correspond to lines drawn on a map. While it is somewhat difficult to delineate the biophysical ecosystems, the human ecosystem is even more difficult to draw lines around. We recognize that delineations of human population areas are even more artificial than biophysical boundaries, and can ultimately be redrawn depending on how one looks at those areas. These delineations, however, do serve a purpose. They provide a means to help us understand and communicate the many and varied relationships as well as historic responses of the land to management actions, and a means of predicting future impacts and responses.

All living things, including humans, respond to their environment at each of these different scales. Many species of bird spend a portion of their life cycle in tropical environments, migrating north only as the seasons change from cold to warm. Other animals will move from low elevations off the forest to high elevations as winter turns to spring and summer. Still others spend their entire lives in a relatively small geographic area. Some species of plants occur on a wide variety of habitats from low elevation to the alpine. Others have more restricted requirements and may only occur on hot, dry sites or only in the alpine while others may be restricted to only one geologic formation with strict water or nutrient requirements in a restricted part of the Forest.

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**Figure 2.1 - Relationships between practical implementation steps and actions and ecosystem management principles.**

Not only do people and different species live and respond to environments at different scales, but our management actions have different potential effects at different scales. Each "ecosystem" can be seen as "nested" within multiple larger ecosystems. For example if we decide to suppress fire in a particular watershed (resulting in continued older plant communities which favor certain wildlife and bird species) the net effect is dependent on the conditions in the adjacent watersheds across the entire landscape. If they all have older plant communities our decision may result in a "surplus" of this type of habitat and a "shortage" of younger plant communities and the habitat they provide. If the adjacent areas all have younger plant communities, maintenance of this watershed in an older condition may be critical to species depending on this area for the older habitat provided. So, to understand the implications of any action we plan, we must "zoom in" to look at the site involved and also "zoom out" to learn about the context of neighboring ecosystems.
ecosystem conditions involved. This multi-scaled consideration is a key part of ecosystem management. It is a function of the complexity and connectedness principle of Ecosystem Management mentioned above.

Understanding whatever degree possible how complex these ecosystems are, helps the land manager to maintain the diversity and resiliency of the biological world at all scales - from the genetic and species level to the community and ecosystem level.

Understanding Ecosystems’ Ecologies. Once the geographic and human ecosystems are delineated, we need to understand something about the ecology and human characteristics based on the best information available. This will help us understand more about the integrity of those ecosystems, how they are functioning, the human relationships to those ecosystems, and how they can be maintained or restored. For the biophysical world we need to learn about 1) ecosystems’ composition, structure, patterns, and functions (how they work), 2) current conditions and trends, 3) minimum level of integrity and functioning needed to maintain or restore ecosystems to a healthy condition, and 4) the effects of human activities on ecosystems.

Making Management Choices. After we gain an understanding of an ecosystem’s ecology, land managers must 1) identify the desired future ecological conditions, 2) the types, levels and mixes of activities than can be sustained while still achieving these conditions, and 3) how these activities will be distributed over time and over the landscape. This requires that we coordinate among other federal agencies, state, local and tribal governments, the public, and the Congress.

Adapting Management to New Information. Just as ecosystems are continually changing over time, our understanding of their ecology and, therefore, our management choices will change over time as well. Our scientific understanding of how different ecosystems work and how they are affected by human activities is incomplete and continues to increase with continued research. We must be able to modify our management on the basis on new information so we can better accommodate the needs of people while ensuring that desired ecological conditions are being achieved.

Why do we need an Ecosystem Management Framework for Plan Revision?

The current forest plan was not created with this new scientific understanding and knowledge. It lacks the integrated, multi-scale focus on the principles of ecosystem management and lacks the critical focus on sustainability. The ecosystem management framework will help set the stage for the way we look at the forest and the decisions we will make. It establishes limits, to some degree, as to what we will and won’t address in the Forest Plan revision. The framework will also have a big influence on how we define and describe Desired Future Conditions. In addition, it is a new way of looking at what we do, broadening our focus from that of sustaining commodity outputs to that of sustaining ecological processes and a wide variety of goods, services, conditions, and values.

Forest Plan Model

The Forest Plan We Envision

Work has been ongoing in the Intermountain and Northern Regions of the Forest Service (Forest Planning Framework 1999 Draft) to refine the model for what a Forest Plan accomplishes. The recent Committee of Scientists Recommendations (COS 1999) also provide insights into needs for change in the model. Today, with the emphasis on ecological sustainability and collaborative planning, we envision a WCNF Forest Plan which:

- Provides clear desired future condition descriptions- a "visualization of the future landscape".
- Reflects the principles of ecosystem management and sustainability.
- Builds proposed pathways from the current state to the desired future.
- Preserves options for the future.
- Shows how relevant policies and decisions tie together and relate to affect the management of this National Forest.
- Provides a framework within which future more site specific decisions can be made.
- Considers the broader geographic, political, economic, and social landscape and the special role the Forest contributes to sustainability in that context.
- Is built from collaborative relationships with others who have relevant information, knowledge, expertise, and interest.
- Is adaptable to new scientific understanding of natural and social systems as well as to changing societal conditions and values.
- Includes meaningful monitoring requirements for evaluation of outcomes including making changes as necessary.
- Integrates budget realities.
- Recognizes that some issues, like developing conservation strategies for the-ranging species, need to be addressed at a regional (more than a single National Forest) scale while others such as developing travel management plans need to be addressed on smaller landscape scale (less than a single National Forest).
• Is the result of open public debate and clear disclosure of divergent interests and of difficult choices about what this National Forest will be and provide in the future.

Forest Plan: Updating the Model and Needs for Change

To build a Plan with the characteristics listed above will require some shifts from traditional thinking about the content and design of the Plan. Our original plans attempted to make decisions for nearly every forest acre for a ten to fifteen year period. Every potential resource use was addressed— an ambitious undertaking to say the least. We spent a great deal of time and energy on modeling and analysis while falsely assuming there would be little need for future analysis. Over time we have learned that conditions continually change and so does our knowledge. We now recognize we must make scale specific decisions with the latest information based on current needs and issues. These needs are impossible to predict ten years out in great detail for a large area such as an entire National Forest. Yet we also know that we cannot piecemeal long-term decisions about land uses because of the potential cumulative effects of individual actions and because of the need to address issues which are broader scale than a typical site-specific analysis. Exacting are needs for habitat connectivity and desirability of particular vegetation patterns across large landscapes over time. We now know that conflicts about land use arise as social conditions and values change. To help solve this dilemma we need to working closely with interested parties continually rather than once every ten years or so.

Originally included in the Plan were monitoring requirements which were not directly linked to goals and which were beyond our capability to conduct. Monitoring requirements were "functional" (i.e., focused on a single resource or discipline) rather than integrated and therefore neglected the complexity and connectedness principle of ecosystem management. We were unable to effectively use this monitoring for meaningful evaluation of outcomes related to Plan goals. All of this learning has provided a springboard for an updated planning model.

We now see that it makes more sense to address issues and decisions at appropriate scales. The Forest Plan provides a broad framework of zoning decisions and can be amended through future analyses tied to particular issues and timing needs. This framework of zoning decisions must include more clear direction on what the desired future is for the land (a land vision with goals and objectives to move toward that vision). Much less detail about the "hows" of managing the land will be included in the revision. This kind of guidance needs to be flexible and easily changeable with new scientific knowledge and is better addressed in guidebooks and strategies referenced by the Forest Plan. This implies less emphasis on long lists of specific standards and guidelines and more emphasis on those standards and guides that are essential to moving toward specific goals.

The Revision also must lay out a monitoring plan for measuring progress toward meeting goals as well as identifying actions to make corrections when needed. Whatever we plan, it must be within the capability of the land to sustain uses over time. This updated way of thinking about Forest Plans implies that they will look different and will need to be much more "adaptable" than the Plans we prepared fifteen years ago.

Maps and Zoning: Needs for Change in Delineating Ecosystems

As outlined in the Ecosystem Management Framework, implementation requires delineating ecosystems. Forest planning also requires delineations to show decisions about what uses are appropriate where. Different issues about land use are best addressed at different scales—there is no single scale which is appropriate for all issues. Scale considerations for human versus biophysical issues often overlap, however they are seldom identical (See Chapter 3, "Delineating Ecosystems").

The primary land delineation used in the current Forest Plan is the Management Area. We believe the Management Areas as delineated are less useful than they could be given today's understanding of ecosystems from both a social and biological standpoint. Many of the Management Areas are extremely large and not easily recognized by people as distinct places. They have little relationship to ecological units such as watersheds and so are not effective for examining actions and their effects. For example the Wasatch Front Management Area stretches from Little Cottonwood Canyon on the south all the way to Wellsville and Logan on the north. It includes 11 distinct watersheds and about thirteen distinct adjacent local communities. This large of an area does not lend itself to effective planning for watershed functions or development of clear desired future condition descriptions. When information is combined for such a large area it becomes so general it is not as helpful to land managers nor meaningful to forest users as it should be.

Improved mapping at three scales reflective of ecosystems and specific issues is an identified need for change in the Forest Plan revision. At the broad scale the Wasatch-Cache National Forest boundary will define the area of revision decisions. This area must be considered in the context of decisions and guidance from other planning for Northern Utah, Southwest Wyoming, and Southeast Idaho. At the mid scale "Geographic Units" will be delineated as logical subdivisions of the Forest. These will consist of mountain ranges and portions of mountain ranges with similar land capabilities. We may develop some level of desired future descriptions for these as well as goals, objectives, standards, guidelines, and monitoring requirements that are appropriate at this mid-scale. This will prevent the need to repeat management direction over and over and will allow us to address issues and needs that cross multiple management areas. At the fine scale Management Areas will be delineated for the purpose of defining distinct, easily recognizable places that we can all see and describe. We propose that Management Areas be drawn primarily along watershed boundaries. See Appendix A for a map of proposed Management Areas. Integrated desired future condition descriptions will be developed for each management area along with related goals, objectives, standards, guidelines, and monitoring requirements.

Integration is necessary to bring together all of the considerations for the various resources (such as soil, water, vegetation, wildlife, and human use) so that they best fit the capabilities of the land along with the needs of the people.

Management Prescriptions: Needs for Change in Making Management Choices

The third step required to implement ecosystem management is making management choices. Once we have areas defined on maps and have begun to identify potential desired futures for those areas, we want to provide a general picture of what kinds of activities are allowed and not
allowed there: the "zoning" for specific parts of a management area. We expect that most management areas will have multiple zones with prescriptions for types, levels, and mixes of activities based on the capability and suitability of the land. In order to efficiently describe these prescriptions for what is allowed/not allowed in a given area we will use Management Prescription Categories (R4 Deskguide Reference Southwest Idaho 2/99 draft document). The list of Prescription Categories is displayed below. For details about the themes and activities generally allowed/not allowed, see Appendix B.

<table>
<thead>
<tr>
<th>Number</th>
<th>Management Prescription Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Wilderness</td>
</tr>
<tr>
<td>1.1</td>
<td>Existing Wilderness</td>
</tr>
<tr>
<td>1.1.1</td>
<td>Desired Condition Class I</td>
</tr>
<tr>
<td>1.1.2</td>
<td>Desired Condition Class II</td>
</tr>
<tr>
<td>1.1.3</td>
<td>Desired Condition Class III</td>
</tr>
<tr>
<td>1.2</td>
<td>Recommended Wilderness from new Plan Revision</td>
</tr>
<tr>
<td>2.0</td>
<td>Special Management Areas</td>
</tr>
<tr>
<td>2.1</td>
<td>Wild and Scenic Rivers</td>
</tr>
<tr>
<td>2.1.1</td>
<td>Wild classification</td>
</tr>
<tr>
<td>2.1.2</td>
<td>Scenic classification</td>
</tr>
<tr>
<td>2.1.3</td>
<td>Recreational classification</td>
</tr>
<tr>
<td>2.2</td>
<td>Research Natural Areas</td>
</tr>
<tr>
<td>2.3</td>
<td>Scenic Byways</td>
</tr>
<tr>
<td>3.0</td>
<td>Protection of Aquatic, Terrestrial, and Hydrologic Integrity is Emphasized</td>
</tr>
<tr>
<td>3.1</td>
<td>Preservation Emphasis</td>
</tr>
<tr>
<td>3.2</td>
<td>Restoration Emphasis</td>
</tr>
<tr>
<td>4.0</td>
<td>Multiple Resource Uses Where Recreation is Emphasized</td>
</tr>
<tr>
<td>5.0</td>
<td>Multiple Resource Uses Where Forested Vegetative Management is Emphasized</td>
</tr>
<tr>
<td>5.1</td>
<td>Emphasis is on maintaining or restoring forested ecosystem integrity while meeting multiple resource objectives, which may include timber management.</td>
</tr>
<tr>
<td>5.2</td>
<td>Emphasis is on maintaining or restoring forested ecosystem integrity while managing timber for growth and yield.</td>
</tr>
<tr>
<td>6.0</td>
<td>Multiple Resource Uses Where Non-Forested (Rangeland) Vegetative Management is Emphasized</td>
</tr>
<tr>
<td>6.1</td>
<td>Emphasis is on maintaining or restoring non-forested ecosystem integrity while meeting multiple resource objectives, which may include livestock forage production.</td>
</tr>
<tr>
<td>6.2</td>
<td>Emphasis is on maintaining or restoring non-forested ecosystem integrity while managing for livestock forage production.</td>
</tr>
<tr>
<td>7.0</td>
<td>Intermingled Public/Private Lands</td>
</tr>
<tr>
<td>7.1</td>
<td>(Primary emphasis identified under prescription 3. 4. 5. 6. or 8)</td>
</tr>
<tr>
<td>7.2</td>
<td>Intermingled private or public lands in an urban or town interface.</td>
</tr>
<tr>
<td>8.0</td>
<td>Concentrated Development Areas (strong economic emphasis)</td>
</tr>
</tbody>
</table>

Further development and refinement of these categories will be coordinated with neighboring National Forests so that management direction can be compared across boundaries in the future. We will be working to improve the usefulness of the categories this summer and will use them to map and compare current Forest Plan direction to proposed action for Plan revision. Figure 2-2 is an example of the use of management prescription categories across two adjacent management areas.

![Figure 2-2 Example of management prescription categories applied to two adjacent management areas. Note that management prescriptions cross management boundaries.](image)

Monitoring: Needs for Change in Adapting Management to New Information

The final step in implementing ecosystem management is adapting management to new information. This step is consistent with the NFMA requirement for monitoring and evaluation and the tie to research needs. (36 CFR 219.28) It provides for evaluation of progress toward goals/outcomes and information about possible needs for course corrections. The need for improved design and implementation of monitoring has been identified repeatedly (5-Year Monitoring Report 1992) and is possibly the single most important need for change if we are to benefit from our experience in land management over time. "...the only way in which learning is possible is to observe if the system responds as envisioned." (COS Recommendations 1999)

Given the complexities and many unknowns involved in both biophysical and human ecosystems, the ability to learn and adapt is a must. The revised Forest Plan will include monitoring which is designed to establish simple indicators with broad public acceptance; establish indices...
of measurement that are readily collected, appropriate for the purpose and objectives and vary appropriately by scale; and provides for meaningful evaluation of outcomes and action in the event of needed adjustments in resource management.

"Watershed maintenance and restoration are the oldest and highest callings of the Forest Service. The agency is, and always will be, bound to them by tradition, law and science. The national forests truly are, the headwaters of the Nation."  
Mike Dombeck
Chapter 3 Wasatch-Cache National Forest Ecosystem Management Framework

Introduction

In this chapter we describe how the ecosystem management framework will be applied at the forest scale. Figure 3.1 again displays those "practical steps/actions" from Chapter 2 for implementing ecosystem management including Delineating Ecosystems, Understanding Ecosystems' Ecologies, Making Management Choices, and Adapting Management to New Information. To this we have added more specific steps that we will use through the revision process that will help us to better incorporate the principles of ecosystem management in the forest plan. This chapter includes sections on delineating ecosystems and understanding their ecologies.

Delineating Ecosystems

Because the planning regulations tell us that decisions must be made at the Forest administrative boundary level, we must use the Forest Boundary as one broad scale. Of course we recognize the artificial nature of this scale so we will also be looking at broad, mid, and fine scales for both the biophysical and human dimensions. Both the biophysical scales and the human (social, economic, and political) scales vary with activity and/or issues. As shown in figure 3-2, there are similar and somewhat parallel scales for the biophysical and human dimension at the broad and mid scales. It is at the small scale, or management areas, where the biophysical and human dimensions meet. Note that at each scale the boundaries cross forest boundaries and ownership boundaries. This does not indicate that we will make decisions on lands other than those managed by the Wasatch-Cache National Forest, but rather indicates that we will look at uses and activities both on and off the forest when making management choices.

Delineating Ecosystems - Broad Scale. At the broad biophysical scale the Wasatch-Cache National Forest is a part of three large geographic units (sections) - the Uinta Mountains, Overthrust Mountains, and Bonneville Basin Sections (Figure 3-2) as defined by McNab and Avers (1994). Each Section has its unique geology, climate, vegetation, wildlife and associated ecologies. We are focusing specifically on the Wasatch and Bear River Ranges of the Overthrust Mountains Section and on the Stansbury Mountains portion of the Bonneville Basin.

For the human dimension at the broad scale, we have chosen to look at northern Utah, southwestern Wyoming, and a portion of southeastern Idaho (Figure 3-2). This encompasses counties and communities in near proximity to the Wasatch-Cache National Forest. While the Utah portion of the forest is much larger, government entities and forest users in each of these states are affected by our decisions. The Wasatch-Cache National Forest has a tremendous diversity in the size of adjacent communities, from the heavily populated areas from Provo to Ogden, to the small communities of Randolph, Utah and Mountain View, Wyoming.

Delineating Ecosystems - Mid Scale. The Uinta Mountains, Overthrust Mountains, and Bonneville Basin were further refined at the mid-scale based on elevation, plant communities, geological and ecological processes and natural disturbance patterns. Ecological "subsections" were delineated and described (maps and descriptions of all subsections are on file at the Wasatch-Cache National Forest). Figure 3-2 shows an example of those delineations for the Uinta Mountains. This mid-scale delineation allows for a means to address relationships across the landscape within appropriate, ecologically similar areas and to address cumulative effects for various issues at this scale. Each of the adjacent National Forests has been delineated at the Section and Subsection scale which are independent of political boundaries and which allows us to look cumulatively across borders as well as within the Wasatch-Cache National Forest.

At the mid scale, some useful concepts have already been developed for organizing social and economic information in delineating human ecosystems. For northern Utah, the Quality Growth Efficiency Tools Technical (QGET) Committee study (1997) described the Greater Wasatch Area as including 10 counties (Box Elder, Weber, Morgan, Davis, Summit, Salt Lake, Wasatch, etc.)...
Utah, Tooele and Juab) along the front and back of the Wasatch Mountains. QGET further subdivided this area into Metro Counties, Wasatch Back, Tooele/Grantsville, Northern Utah County and Southern Box Elder County. We are supplementing this delineation by adding other areas: the Cache-Franklin Area of northern Utah and Southern Idaho, Rich County of northern Utah and the Rural Area of southwestern Wyoming and northeastern Utah. Figure 3-2 shows a portion of southwestern Wyoming and northeastern Utah and how it relates to the broad and fine human scales. QGET (1998) has compiled data, developed models, and made projections of population, demography, and economy aimed at understanding growth and related problems for Utah and the Greater Wasatch Area.

Delineating Ecosystems: Fine Scale. Management Areas as we are proposing them, are the union between the biophysical and human dimensions as the finest scale used in forest plan revision. As we focused on where biophysical and human scales come together we found that canyons (watersheds) provide that sense of place for the people that use the Forest as well as an area where we have the ability to focus on cumulative effects for various biological as well as social impacts on the ground. We are, therefore proposing watersheds (or in some cases, groups of watersheds) as our new management areas. Note that watersheds cross the subsection, or mid-scale, delineations rather than being nested within them. That is because we expect the fine scale to address different issues (primarily watershed conditions and human use and activities) than the mid-scale. Management areas are the scale at which detailed Desired Future Conditions (DFCs) for the biophysical and the human dimensions will be described. Appendix C includes maps and rationale for the proposed management areas on the Wasatch-Cache.

Understanding Ecosystems' Ecologies

Biophysical Conditions and Trends

This section gives readers a general description of the biophysical context within which the Wasatch-Cache will be making forest plan revision decisions. Information was gathered from the Sub-Regional Assessment of Properly Functioning Conditions for Areas Encompassing the National Forests of Northern Utah (USDA Forest Service 1998).

The Ecosystem Management principle of sustainability implies our ability to define and measure where ecosystems are now as compared to their historic range of variability. The concept of "historic range" recognizes that ecosystems are dynamic in nature and that disturbance and change is a common component. Areas that are within their historic range of variability are said to be in "properly functioning condition" (PFC). An assessment of PFC of vegetation cover types on National Forest lands in northern Utah (Ashley, Uinta and Wasatch-Cache National Forests) was completed in 1998 (USDA Forest Service 1998). Historic reference conditions for this area, including the Wasatch-Cache National Forest, were based on fire history studies, historical records, and documentation of historic uses of these lands both prior to and after the establishment of the National Forest System. Consistent with the ecosystem management principle of humans as ecosystem components, we include Native American actions (such as setting fires), prior to the settlement of Europeans, in the picture of historic reference conditions. These ecosystems did evolve sustainably with humans as integral parts. Ecological conditions were assessed by looking at four distinct aspects or ecosystem features: 1) Composition- the species list; 2) Structure- the layers and ages of species; 3) Patterns- the patchwork of species
and ages across the landscape; and 4) Functions- processes and how they occur and interact on the land.

The PFC Assessment completed for the northern Utah national forests focused primarily on changes in patterns over the landscape (e.g. aspen cover types being replaced by various conifer cover types or sagebrush grasslands being replaced by piney-juniper) through the control of fires over the past 50 to 100 years) and on changes that have occurred in age class diversity (structure) and species composition. From these changes we infer changes in the way these ecosystems function.

The primary impacts to ecosystems in northern Utah National Forests that have caused ecosystems to no longer be within their range of historic variation are the exclusion of fire through suppression, historically high livestock grazing levels, and the damping and diversion of water. In addition, impacts to streamside, also known as riparian, ecosystems have resulted from livestock grazing as well as from the building of roads and from heavy recreation use. Fire exclusion has resulted in a reduction in age class diversity of most shrub- and tree-dominated cover types. Probably most significant is the greater than 60 percent reduction in the number of acres of aspen communities on the Wasatch-Cache National Forest. Heavy livestock grazing resulted in a loss of protective ground cover which had severe impacts to watershed conditions through soil erosion and impacts to the riparian ecosystems. In addition, livestock grazing resulted in a large change in plant composition allowing for the invasion of non-native species and/or an increase in less palatable native species. The damping and diversion of streams has had a large impact on the stream environment. Dams have created barriers to the movement of fish while diversions have resulted in the complete loss of water from some streams and abnormally high sustained flows in others.

A summary of the PFC assessment (Table 3-1) shows some obvious areas where conditions across landscapes are no longer properly functioning based on current vegetation conditions. Those areas with a high deviation from historic range of variability are considered to be non-functioning or poorly functioning while those with a moderate deviation from their historic variability may still be functioning, but at risk. Some of the most notable communities at risk are the seral aspen (over 65 percent of the seral aspen communities on the Wasatch-Cache National Forest have been, or are rapidly being, replaced by conifer tree-dominated communities), seral aspen-lodgepole, Engelmann spruce, interior Douglas-fir, tall forb, riparian, and aquatic ecosystems. The oakbrush communities, while noted as having a low to moderate deviation from historic conditions, have been protected, to the degree possible, from fire. Because this has resulted in a build up of fine fuels, and because more and more homes are being built up to the edge of the oakbrush communities, there is an ever-increasing threat to property and safety from even larger wildfires in the future. Appendix D has more detailed summary of the PFC assessment.

**Human Dimension Conditions and Trends**

This section gives readers a general description of the human context within which we will be making forest plan revision decisions. Information was selected from a tremendous body of historic, social, and economic data and is not intended to be comprehensive. It covers, in a generalized way, the following topics: Baseline Social and Economic Information; History and Origins of Population and some Effects on Landscapes; Northern Utah and Southwest Wyoming Today; State, County and Community Variability; Population Growth; Demography; Increasing Diversity; Local Economic Success and the National Forest. Each of these factors influenced how we have managed the forest in the past, how we manage today, and will influence how we will manage in the future.

**Baseline Social and Economic Information.** The Wasatch-Cache National Forest administers national forest systems lands in nine northern Utah counties (Box Elder, Cache, Rich, Weber, Morgan, Davis, Summit, Salt Lake, Tooele) and Uinta County Wyoming. Pertinent information related to a portion of this area has been developed in the last two years by the QGET Committee in coordination with the Utah Governor’s Office.

<table>
<thead>
<tr>
<th>Subject Area (Cover Type)</th>
<th>Wasatch Mountains</th>
<th>Bonneville Basin</th>
<th>Uinta Mountains</th>
<th>Caribou National Forest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpine</td>
<td>Low-Mod</td>
<td>Low</td>
<td>Low</td>
<td>*</td>
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<td>Limber Pine/Bristlecone Pine</td>
<td>Low</td>
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<tr>
<td>-High Elevation Spruce</td>
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</tr>
<tr>
<td>-Spruce-Fir</td>
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<td>*</td>
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<td>Mod-High</td>
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<td>Mod-High</td>
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</tr>
</tbody>
</table>

* Subject Area not present in assessment area.
of Planning and Budget. The State of Wyoming similarly provides economic and demographic information which can be readily accessed on the Internet (imi.state.wy.us). In addition, historic, economic, and social information was recently compiled by the northern Utah National Forests for the counties of northern Utah and southwest Wyoming in Social and Economic Assessment (1995).

Because the Forest Supervisor’s office is in Salt Lake City, Utah’s capitol city, the Forest plays a key role for coordination with the State of Utah. The State of Utah has acted as a catalyst for other major planning efforts on the Wasatch Front, hoping for integration of local goals and interactions. There is, however, still competition among counties and cities to attract new business. In addition to our relationships with various levels of government within the State of Utah, we also have similar relationships with governments in the State of Wyoming.

**Subject Area not evaluated in this assessment due to lack of substantial distribution in the assessment area.**

History and Origins of Population and some Effects on Landscapes. Native American prehistoric remains from an Archaic "Desert culture" period have been found in cave deposits (as old as 8000 B.C.) around the Great Salt Lake (Jennings 1978). Archaic peoples subsisted wholly on hunting and gathering wild plant and animal foods. During the subsequent Fremont period (500-1250 A.D.) some small villages were established with partial dependency on horticulture of recently introduced cultigens (corn, beans, etc.) domesticated hundreds of years earlier in Central America.

A variety of Indians were present when the Europeans arrived including northern Ute, Paiute, and Shoshonean people. These Indians depended on hunting, fishing, some farming, and the domestic horse, which had recently been acquired from Spanish occupants to the south. Until the latter 19th century, human occupation of the region in and around the Wasatch-Cache had no discernible impact on the local biophysical setting. While Indian and early white settlers may have occasionally lit fires to create forage and cleared some lands, these impacts were relatively minor with respect to natural disturbances and did not have a negative impact to wildlife or the native plant communities. The population of Utah as a whole was under 200,000 until about 1890 (May 1987 p. 123).

Permanent white settlement in Utah came when the Mormon pioneers arrived in the late 1840s. Prior to this time, the Spanish had sent the exploratory Dominguez-Escalante expedition as far north as Utah Valley in 1776, and Anglo trapper/traders were common in the region from the 1820’s. Early on these trappers began to decimate beaver populations and other fur bearing species. Most of the 19th century trappers and Mormon settlers were transplanted Americans from the eastern states or had European origins in the British Isles, Scandinavia, or elsewhere in northern Europe. Descendants of the early northern European settlers make up the majority of Utah’s current population. Southern and eastern Europeans tended to arrive somewhat later, near the turn of the twentieth century.

Population growth and urban and rural development proceeded throughout the second half of the 19th century and the first half of the 20th, based on agricuclure (grain, fruit, livestock), mining (copper, silver, heavy metals), and commerce, especially rail transport by the 1870s. During the period from pioneer settlement through the early part of the 1900’s, the effects of settlement on the forests, grasslands, soils, and water quality became much more pronounced. Deforestation (for development and for building the transcontinental railroad), overgrazing, boom and bust mining efforts, water development and manipulation, fire exclusion, etc. greatly impacted natural processes and at times resulted in catastrophic impacts (Peterson and Sprey 1980, p. 5-6). For example: mud slides in Davis County caused by overgrazing; nearly complete clearcutting of forests in the canyons above Salt Lake City for use in building homes and industry such as the mining community of Alta; impacts to watershed and water quality from silver and copper mining; tie-hacking of logs on the north slope of the Uinta Mountains which not only resulted in large clearcuts, but also had tremendous impacts to the streams in which the logs were place and flushed for miles downstream.

Most of the Forest Reserves which would become the current Wasatch-Cache were set aside in the early 1900s, and the Forest Service was established as an agency in 1905 under the leadership of Gifford Pinchot to administer these and other areas. The new agency would apply conservation techniques developed in the east and Europe to curtail the extreme exploitation of public lands (Alexander 1987).

Northern Utah and Southwest Wyoming Today. The Greater Wasatch Area and the remainder of more rural northern Utah and southwest Wyoming is an area where traditional lifestyles and values are steadfastly stressed, while new influences, demands, technology, and trends offer increasing challenges to these constructs. The urbanized Wasatch Front and associated commuter communities are thriving and experiencing rapid growth, unprecedented prosperity, and many related growing pains. Rural areas just beyond the Greater Wasatch Area appear relatively unchanged by comparison. Within the primary influence area of Wasatch-Cache National Forest, the key socio-economic factors we need to understand are: state, county and community variability; population growth; demography; increasing diversity; economic success; and how these translate into demands on the Wasatch-Cache National Forest.

When we look at the roles the Wasatch-Cache National Forest plays from a human perspective we focus not only on activities and opportunities the Forest provides, but also those present on adjacent Federal, State and other local government lands, and on private lands as well. In addition, we also view the roles other National Forests in Utah and adjacent Idaho, Wyoming, and Nevada play.

State, County, and Community Variability. There is considerable variability in the counties associated with the Wasatch-Cache National Forest. Much state and U. S. census and economic data is organized with counties as a prime component. Rich County is probably the most rural setting related to the Wasatch-Cache, and its population of 1,725 residents in 1990 was, and probably still is, the smallest. Cache and northern Box Elder Counties in northern Utah and Franklin County, Idaho are not considered part of the Greater Wasatch Area by QGET. These counties have a mix of rural/agricultural and small city/light industrial expansion lifestyles. The Forest Service and counties often interact formally when projects of mutual concern are proposed, but intergovernmental planning is not as clearly so well developed as it might be.

Wasatch, Morgan, and Summit Counties make up QGET’s fast-growing Wasatch Back, including the destination tourism center of Park City and soon-to-be center of Snowbasin, where there is a mix of more traditional residents as well as new rural upscale homes of year round and seasonal residents. Weber, Davis, Salt Lake and Utah Counties account for most of the urban Wasatch Front - currently about 1.6 million people. While Uinta County, Wyoming, is in a
different state than the others, according to county planners in Evanston, it has close economic and socio/cultural ties to the Wasatch Front (Allen Fawcett pers. comm.).

Dozens of city and town governments near the Wasatch-Cache National Forest represent the needs of their local citizens. Some of these communities are small (e.g., Mountain View, Wyoming) while others are large (e.g., Salt Lake City), but each has a relationship to the forest with a complex variety of uses, issues, and concerns. More continuous interaction and communication among federal, state, county, and local officials sought to improve planning direction for lands at each of these scales, and make it more cohesive and seamless. Goals, roles and assignments for each entity might be better understood, some cost sharing recognized, and overlap reduced.

Population Growth. Over the past several years, Utah has had one of the highest population growth rates in the country. In addition to the fact that Utah has consistently had one of the nation's highest birth rates, Utah has recently seen a higher number of people moving here because of prospering economic conditions. The population in Utah topped 2 million in 1996, with most of the increase occurring along the Wasatch Front (QGET 1997). Utah's population has grown more than 30% in the last 15 years, and has more than tripled since World War II.

While the major urban centers of Salt Lake, Ogden, Orem, and Provo have been growing, the highest growth rates and numbers are and will be in suburban communities adjacent to and between these larger cities (e.g., Draper, Sandy, South Jordan, Bountiful, Farmington, Layton) connecting once separate towns into an urban complex over 100 miles long, and only about 1/3 miles wide.

Even more notable, however, is the population growth and changes for the Wasatch Back - the populous portions of Morgan, Summit, and Wasatch Counties. (To this we might add the Ogden Valley area around Huntsville, and the southern end of the Cache Valley.) While these areas continue to be more rural in appearance than the Wasatch Front, and some residential zoning has aimed at keeping lot sizes large, population growth rates are high through immigration and natural birth and changes in these areas have been significant. Summit and Wasatch Counties will double population between now and 2020, and projections for Morgan County and the Ogden Valley are about the same. Cache County is no exception, with the county population increasing from about 50,000 in the mid-1970s to over 100,000 s-time later this year (Ogden Standard Examiner January 10, 1999.)

There is no indication that this growth rate will decline substantially in the near future. QGET projections for Utah are for over 2.7 million people by 2010 (a 35 percent increase over today's population), over 3.3 million by 2020 (a 65 percent increase in population), and more than 5.0 million in 2050 (a 150 percent increase). Many of these urban Utahns will seek outdoor recreation on the nearby Wasatch-Cache National Forest, and the social settings and biophysical conditions of these lands will be tested by this use.

Inevitable growth along the Wasatch Front will continue to place ever-increasing demands on the National Forests to provide clean water and recreation opportunities while maintaining sustainable ecosystems. The challenge is to meet a variety of demands and opportunities without negatively impacting the primary functions of the lands administered by the Forest Service. In addition to the potential for environmental impacts is the increasingly difficult task of meeting a variety of demands based on diverse and often conflicting values and beliefs about the national forest and how it should be used.

The growing population in northern Utah will also have a direct impact to water use. QGET (1987) noted that in 1995 water demand for the Greater Wasatch Area was nearly 700,000 acre feet (an acre foot is the equivalent of one foot of water covering an acre of land) with a supply of just over 850,000 acre feet. By the year 2010 the demand is expected to be equal to the current supply. In order to meet the growing demand for water, both development of new water sources and a reduction in the per capita use of water will be required.

Over the next 20-25 years air quality is projected to continue to decline. Population density is expected to increase from 72 to 119 people per square mile, time spent commuting will increase 3 to 4 times, and the amount of land converted to urban development will nearly double. The number of miles one will travel on an average weekday will increase from about 40 to nearly 77. By the year 2050 water demand will nearly double what it is today, there will be more than 400 percent increase in urban development, and population density will increase to over 220 people per square mile. And those people will travel an average of 100 miles every weekday.

Demographics. Much of northern Utah is sagebrush, oak brush, salt desert, and forested mountains, most of which are federal lands (BLM, USFS, or DOD) or Indian Reservations. Utah's population is squeezed into urban areas, which are rapidly becoming more densely populated. A QGET published statistic ranks Utah's population as the 6th most urban in the U.S. (QGET 1998 p.19). Salt Lake City and its neighboring communities along the Wasatch Front are the largest urban complex in the Intermountain West - from Denver to San Francisco, and from Phoenix to Canada.

As indicated in the previous section, while growth in northern Utah is constant, the rate of increase and location of the growth varies somewhat. The relatively flat, private lands along the Wasatch Front are filling up; agricultural lands between existing towns are being replaced with homes and commercial development. In the Wasatch Back, new employment, desires for small town atmosphere with some added amenities, better roads, and a willingness to commute to jobs along the Wasatch Front as the ensure continued expansion. In parts of the most rural counties directly related to the Wasatch-Cache (Rich County, and some rural parts of Summit County and Uinta County, Wyoming) little if any discernible growth is expected, and some localized population loss is possible, as dependency on agricultural lifeways is abandoned by younger people seeking urban jobs.

However, a trend toward filling up the Wasatch Back has clearly revealed itself over the years in which the current Wasatch-Cache forest plan has been in place. QGET mapping projections for future loss of agricultural land/urbanization show major expansions in the areas around Park City, Heber Valley, Kamas/Oakley, Coalville - Morgan, Ogden Valley, Brigham City, and Tooele/Grantville. As populations grow and people continue to build higher up on the margins of valleys, more homes are either in or adjacent to the oakbrush communities. As noted above, because of the proximity of homes to the oakbrush, and because the fine fuels associated with oakbrush have increased through the exclusion of fire from these ecosystems, there is a greater risk to property and safety from an increasing likelihood of unnaturally intense wildfire.
Increasing Diversity. While Utah’s population is often considered monocultural, this is a misperception. It is true that a majority of the population is Mormon and of northern European origin, however, significant ethnic minorities have always added complexity to the community fabric. The various histories and contributions of Native Americans, as well as other cultures are well documented (e.g. Kelen and Fuller 1988).

Adding to this mix is the recent immigration into Utah which has been steady during the 1990’s because of healthy economic conditions. Many people have relocated from elsewhere in the U.S. during the past several years seeking jobs. There has also been a surge in the Hispanic population, which is the largest minority segment of the population and has been for a number of years. Utah’s population is currently 6.2% Hispanic; by 2015, 7.8% of Utahns will be of Hispanic origin, and over 14% will be minorities. Asian/Pacific Islander, American Indian, and African American segments of the population are each expected to double their current populations by the year 2010. Non-traditional demands on National Forest resources by subsets of this increasingly diverse population (e.g. mushroom and bracken fern harvesting, extended family gatherings, and subsistence fishing) are likely to change the expectations for uses of the Wasatch-Cache National Forest.

Local Economic Success and National Forest. During the 1990’s the areas surrounding the Wasatch-Cache have enjoyed the benefits of a booming economy. Business expansion in Utah has been made easy by hospitable state and local governments, relatively low wage scales, and a generally dependable workforce. The Greater Wasatch Area is essentially at full employment; unemployment rates are currently as low as they have been in the last 4 decades. Employment growth rates (new jobs) have been added at a rate of 4 to 5 percent per year over the past 5 years, although many of these jobs are lower paying, service-oriented jobs. Wage growth rates of about 3 to 4 % have been good, although average wages still lag behind national averages, part of what attracts new employers. Commercial and housing construction development are very high, and interest rates have remained low. Real estate prices continue to rise steeply, and rental properties are full (QGET 1998; Gillam 1998).

As the population has increased from high local natural birth rates and immigration, the economic sector has proceeded similarly over the last several years. At the moment there seem to be no indicators that this trend will change.

The Greater Wasatch Area, nominally Salt Lake City, will host the 2002 Olympics. While the Olympics may only cause a minor increase in the overall development, in general the economic spirit of the area has been lifted in its anticipation. Salt Lake City and adjacent areas are busily preparing to be on the international stage. Infrastructure improvements are being made (I-15 reconstruction, light rail development, plans for a new international airport, downtown city(s) beautifications, etc.), more to accommodate the general growth, but also with an eye to 2002.

The Wasatch-Cache National Forest plays a minor, but direct role in the overall economic and employment picture, employing only about 130 full-time employees in its seven offices; almost as many seasonal, part-time, and senior citizen employees are also on the payroll. It does, however, provide a considerable part for the long-term benefits and stability of the adjacent communities.

National Forest employees are not the only economic benefit the Forest provides to the communities in which they live. The Wasatch-Cache National Forest is a tourist attraction. Five renown winter sport (and year round recreation) reside within forest boundaries. Lift tickets sales alone cannot capture the tourism dollars spent here. Most tourists also purchase meals, lodging, transportation, and often souvenirs providing local communities with numerous economic benefits.

Much more important is the role the Wasatch-Cache plays in safeguarding critical municipal watersheds, and providing winter and summer recreation, while secondarily allowing areas for livestock grazing, timber extraction, and oil and gas development. Healthy forest uplands adjacent to our cities are fundamental environmental infrastructure upon which the local quality of life is dependent. The majority of the population tends to take this for granted, and is generally much more concerned with transportation, air quality, water demand, and development issues that affect their daily urban lives (Envision Utah 1999). More examination of the social and economic aspects of Forest Service stewardship activities is provided in the topic discussions in the chapter 4.

Another economic benefit of the Wasatch-Cache to local counties, although rather insignificant, is the 25% payment to states of receipts from National Forest income authorized by the Twenty-Five Percent Fund Act of 1908. The states (Utah and Wyoming) subsequently allocate these funds to the counties based on the relative amount of national forest land area within each county for the benefit of schools and roads. County distributions of funds are not presented here, but are available. The dollars provided to Utah and Wyoming from Wasatch-Cache receipts for the past 5 years are provided below.

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<thead>
<tr>
<th>Year</th>
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<td>$213,751</td>
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<td>$14,439</td>
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<tr>
<td>1994</td>
<td>$328,999</td>
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</tr>
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</table>
"The basic point of our sustainable forest management strategy is this: not only do economic stability and environmental protection go hand in hand, economic prosperity cannot occur without healthy, diverse and productive watersheds and ecosystems." - Mike Dombeck

Chapter 4 - Making Management Choices

Introduction

The eight proposed topics to be addressed in the Revision are discussed in this chapter. Each topic, with a few exceptions, is organized using the headings: Background, Current Conditions, Current Direction and Implementation of Forest Plan Direction, Continuing Under Current Management Direction (No Action Alternative), and Needs for Change. The Background gives information on the topic such as Forest Service policy or laws that require it to be addressed during revision, or a statement of why we felt that the topic needed to be addressed at this time. The Current Condition describes the condition of the resource at the present time and what is on the ground. Current Direction and Implementation of Forest Plan Direction discusses implementation of the present Forest Plan. It has been through this direction and implementation that the Current Condition has been reached. The Continuing Under Current Management Direction (No Action Alternative) tells what will happen if there is no change in Current Direction and Implementation of Forest Plan Direction. And last, the Needs for Change identify areas where change is needed to better protect and work with the topic area being discussed.

Needs For Change Topics

Topic 1. Wild and Scenic Rivers

Background

The Wild and Scenic Rivers (WSR) Act of 1968 (P.L. 90-542) establishes objectives, goals, and procedures for Wild, Scenic, and Recreational River designation. Agency policy related to the WSR Act in land management planning requires that rivers identified as potential WSRs be evaluated as to their eligibility, with the findings documented in the Forest Plan. An eligible river must be free-flowing and possess at least one feature that is judged to be outstandingly remarkable. Additionally, it is recommended, but not required, to complete the WSR suitability studies during the Forest Plan revision process. To be found suitable, the benefits of designating the river should outweigh the disadvantages. If a recommendation is deferred on those rivers identified as eligible where the Forest Service has primary responsibility, the Forest Plan must also provide interim management direction for protection of the outstanding features. The third step, after the suitability study, is a recommendation to Congress for designation of suitable streams or stream segments as Wild, Scenic or Recreational.

Recognition of the distinction between eligibility and suitability is very important. "...eligibility is to be determined solely by hydrologic integrity and resource significance. Management is not a consideration in determining eligibility, but rather is to be considered during suitability analysis." If the two are mixed, "many rivers and streams may be found ineligible, not because they did not possess the requisite resource values, but out of concern over the potential reaction by

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1 This format is not used on some topics required under forest plan regulations, and in some topics those headings are not necessarily pertinent or they do not fit the topic area clearly.
NFMA regulations direct that, "Unless otherwise provided by law, roadless areas within the National Forest System shall be evaluated and considered for recommendation as potential wilderness areas during the forest planning process...". The Forest Service does not have the authority to designate wilderness areas, but rather evaluates and considers roadless areas for recommendation as potential wilderness areas. Formal designation of wilderness areas occurs through Congressional action. The 1984 Utah Wilderness Act also requires that a roadless inventory be completed during Forest Plan Revision.

During development of the current Forest Plan, the focus was on the legislative process for designating wilderness in Utah, therefore limited emphasis was placed on roadless values other than wilderness. Once the wilderness issue was resolved with the Utah Wilderness Act, limited focus was placed on roadless areas. It is now recognized that roadless areas have significant ecological as well as social values. The values of roadless areas are of both local and national significance.

"A growing body of scientific information demonstrates that road construction in sensitive areas, such as roadless areas, may cause species to go extinct, cause the introduction of exotic plant species, disrupt habitats, and otherwise compromise attributes that make roadless areas ecologically important and unique." (Federal Register Vol. 63, No. 18, 36 CFR 212). Roadless areas are often aquatic strongholds for fish. They also often provide critical habitat and migration routes for many wildlife species, and they are particularly important for those species requiring large home ranges.

The recognition of the values of roadless areas is increasing as population continues to grow and as the demand for outdoor recreation and other uses of the forests increases.

**Current Condition**

**Inventory Update Phase.** The Wasatch-Cache National Forest currently has approximately 583,555 acres in roadless areas. The latest inventory for the current Forest Plan was done in 1983. Twenty-two roadless areas were identified in that inventory. The current 1999 roadless inventory has been guided by the Intermountain Region Draft Roadless Area Inventory and Evaluation Planning Protocol (USDA Forest Service 1998). The roadless planning process consists of three major steps which are 1) inventory, 2) evaluation and 3) recommendation. It should be noted that the inventory (step 1) can include some types of roads and minor developments. These will be looked at in greater detail during the evaluation (step 2). We are now updating our inventory of roadless areas for the forest plan revision. During the inventory update process, changes are being made to the 1983 roadless area boundaries based on current development and impacts.

Thirty-four roadless areas have been identified in the 1999 inventory. Any acreage within the 1983 roadless areas that have since been developed have been removed in the updated inventory. The entire West Fork Blacks Fork roadless area was dropped because of insufficient acreage. Francis Roadless Area was split into two polygons because of private land and a utility transmission line, the southern polygon had insufficient acreage to qualify as roadless. A new area, Lamb Canyon on the Ogden Ranger District was judged to have insufficient acreage to qualify as roadless. The Mount Logan Roadless Area has been split into 3 separate new roadless areas, because of roads and development that occurred since the 1983 inventory. Areas that were missed or that did not qualify in 1983, but now qualify have been added to the 1999 roadless inventory. Completely new roadless areas identified in the updated inventory include Temple Peak, Mahogany Range, Boulder Mountain, and Right Hand Fork Of Logan on the Logan Ranger District; Sugar Pine, Public Grove Hollow and Rock Creek Green Fork roadless areas on the Ogden Ranger District; and the Hogsback and Lone Peak Addition roadless areas on the Salt Lake Ranger District. We are currently checking to see if any existing inventoried roadless areas need

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**Topic 2. Roadless Areas/Wilderness Recommendations**

**Background**

"Roadless Areas" refer to areas that are without developed and maintained roads, and that are substantially natural. The Wasatch-Cache National Forest has about 34 inventoried roadless areas. Roadless areas have varying degrees of wilderness characteristics. Wilderness is specifically defined in the Wilderness Act of 1964 (PL 88-577); one requirement is a roadless, undevolved condition.

Interest groups or concern that the determination may present the Forest Service with potential management issues" (Parkin 1999).

Classification of a stream or stream segment as Wild, Scenic, or Recreational is important, but in the early stages, is not nearly as important as eligibility or suitability. This is because all designated streams regardless of classification, are to be managed in a way that conserves hydrologic processes and the Outstandingly Remarkable Values for which they are found eligible" (Parkin, 1999).

**Current Conditions**

In 1993, the Inventory of Rivers on the Wasatch-Cache National Forest Eligible for Inclusion in the National Wild and Scenic river System was issued for public comment in January 1999. The inventory includes 82 rivers segmented into 96 sections (or segments) for analysis. All segments were subjected to a preliminary screening of values, and 54 segments were found that might potentially have at least one outstandingly remarkable value. The identified values of these 54 were then further scrutinized, as was their free-flowing status. Of the 54 segments in the detailed study, 50 were found to be free-flowing. Of the 50 free-flowing segments, 31 (Appendix D) were found to possess at least one outstandingly remarkable value and were considered eligible for the National Wild and Scenic Rivers System.

From letters submitted by approximately 30 reviewers of the draft inventory, it has been suggested that 5 additional streams be added as eligible, 2 be removed from eligibility, and some where the classification should be changed. These will be considered by the interdisciplinary team as the inventory is finalized.

Suitability should be addressed as soon as practical after the eligibility phase is completed. The Forest will determine when this is appropriate when considered in relation to all planning schedules and budgets.

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**Interest Groups**

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Suitability should be addressed as soon as practical after the eligibility phase is completed. The Forest will determine when this is appropriate when considered in relation to all planning schedules and budgets.

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**Topic 2. Roadless Areas/Wilderness Recommendations**

**Background**

"Roadless Areas" refer to areas that are without developed and maintained roads, and that are substantially natural. The Wasatch-Cache National Forest has about 34 inventoried roadless areas. Roadless areas have varying degrees of wilderness characteristics. Wilderness is specifically defined in the Wilderness Act of 1964 (PL 88-577); one requirement is a roadless, undevolved condition.
further updates in this (step 1) phase of the process. Current roadless areas and acreages are shown on maps and tables in Appendix E.

Most roadless acreage in the WCNF is within the State of Utah, except for 652 acres in the State of Wyoming in the High Uintas roadless area. The following roadless areas are shared with adjacent Forests:

<table>
<thead>
<tr>
<th>Roadless Area</th>
<th>Adjacent Forest/Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Uintas</td>
<td>Ashley</td>
</tr>
<tr>
<td>Widdop Mountain</td>
<td>Ashley</td>
</tr>
<tr>
<td>Mount Naomi</td>
<td>Caribou (Idaho)</td>
</tr>
<tr>
<td>Swan Creek Mountain</td>
<td>Caribou (Idaho)</td>
</tr>
<tr>
<td>Gibson</td>
<td>Caribou (Idaho)</td>
</tr>
<tr>
<td>Nobletts</td>
<td>Uinta</td>
</tr>
<tr>
<td>White Pine</td>
<td>Uinta</td>
</tr>
<tr>
<td>Stansbury Mountains</td>
<td>BLM (North Stansbury and Big Hollow WSA)</td>
</tr>
</tbody>
</table>

**Evaluation Phase.** After the inventory update is complete, we will evaluate the roadless areas for potential wilderness designation. Direction for evaluation is in Forest Service Handbook 1909.12 Chapter 7.2. Roadless areas are evaluated on tests of capability, availability and need. This evaluation involves reviewing roadless areas for their potential as Wilderness Areas including the following criteria:

- Natural Integrity
- Apparent Naturalness
- Remoteness
- Solitude/Primitive Recreation Opportunities
- Special Features
- Manageability/Boundaries
- Value and Need for Wilderness
- Value and Need for Other Resources
- Constraints and Encumbrances
- Surface and Subsurface Control
- Incompatible Wilderness Uses
- Local and National Distribution and Use of Wilderness
- Opportunities Outside of Wilderness Alternatives

Initial recommendations for wilderness designation will be included in the proposed action included in our Notice of Intent for the Plan revision EIS. This information will help in determining alternative desired future conditions, goals, objectives and potential standards and guides for the areas.

**Current Direction and Implementation of Forest Plan Direction**

Parts of seven of the original 1983 Roadless Inventory areas were designated as Wilderness under the Utah Wilderness Act of 1984. These are delineated as separate Management Areas in the current Forest Plan, each with direction to manage as wilderness in accordance with the Wilderness Act.

The current Plan does not include any specific recognition of the values of roadlessness nor does it provide direction, goals, objectives, etc. to ensure the protection of those values. Portions of several of the inventoried roadless areas are allocated to the "semi-primitive non-motorized" category of the recreation opportunity spectrum which implies no new road construction. The rest are managed for multiple uses identified in management direction for the management areas in which they occur.

**Continuing Under Current Management Direction (No Action Alternative)**

Roadless area management under current management direction has a wide range of potential outcomes. For example, areas with a semi-primitive non-motorized recreation emphasis would likely retain their current undeveloped characteristics and roadless boundaries. However, areas with other emphasis and direction could possibly receive new or additional development that would affect both roadless characteristics and the overall size of the roadless area.

**Need to Establish or Change Management Direction**

An identified need for change is specific recognition of roadless area values. The revised Forest Plan needs to include a clear description of the desired future conditions and assign management prescriptions to all areas including those inventoried as roadless. The prescriptions could range from "recommended wilderness", where activities are consistent with preserving wilderness attributes to "forested ecosystems-multiple resource goals", where activities may include road construction, timber harvest, range improvement, recreation development, and habitat improvement projects. Areas recommended for wilderness will be assigned management prescriptions to ensure protection of wilderness characteristics until Congress decides whether to officially designate them as Wilderness. For roadless areas where undeveloped characteristics are important to maintain, management direction which emphasizes protection of these values will need to be developed.

- Need to make wilderness recommendation for roadless areas thought to be appropriate additions.
- Need to develop management direction to protect roadless values where appropriate.
Topic 3. Appropriate Timberlands

Background and Current Condition

The National Forest Management Act and its implementing regulations require identifying those lands that are appropriate for timber management. Appropriate lands include forested lands outside of withdrawn areas (such as designated Wilderness) where reforestation can be assured and timber management activities can take place without causing irreversible resource damage to soils productivity or watershed conditions. Regulations require that lands identified as not suited for timber production be examined at least every 10 years to determine if they have become suited (36 CFR 219.12(k)(4)(ii)).

The Forest Plan revision process provides an opportunity to reassess the lands deemed appropriate for timber management to account for changes in land status and uses that have occurred in the past decade. Changes may result from land exchanges and acquisitions, as well as laws, regulations and agreements that affect the uses of forested lands. The current revision will use technology, such as Geographic Information Systems (GIS) data, that was not available during the original Forest Plan development.

The assessment of "appropriate" timberlands will identify "tentatively suited" lands (available forest lands that are physically suited for timber management) and "appropriate" timberlands (that portion of the tentatively suited lands considered appropriate for timber management under a given alternative). Appropriate lands may be thought of as those lands where timber harvest will be a primary tool to achieve the desired future conditions. The acreage of appropriate lands will vary between alternatives in the environmental impact statement (EIS), depending upon the management prescriptions applied within the alternative. The appropriate lands for each alternative are evaluated to determine the range of timber harvest levels for that alternative. Two terms are used to describe timber harvest levels: the Allowable Sale Quotient (ASQ) and The Long Term Sustained Yield Capacity (LTSYC). Allowable Sale Quantity is a term which is frequently misunderstood. It does not necessarily define an output level in itself; rather it is a calculated harvest level which ensures that the harvest is sustainable in the long term. The ASQ represents the maximum volume a Forest may sell from appropriate lands during each decade without exceeding the growth on those lands. Timber harvest may occur on lands other than appropriate, but in that case, the volume produced will be incidental to the management objectives and not included in ASQ. The Long Term Sustained Yield Capacity represents the maximum level of sustainable timber production that appropriate lands are capable of producing.

Since the Forest Plan was released, land exchanges have resulted in both the loss and addition of forested land. Exchanges involving the State of Utah as well as private landowners have occurred on both the Ogden and Logan Districts. These lands need to be evaluated for their appropriateness for timber management. Also, site specific project analyses have resulted in decisions which may require changes to the appropriate lands and ASQ. An example of the latter is the 3,000 acre wildlife corridor in the East Fork Smiths drainage on the North Slope resulting from the 1992 Record of Decision for the Westside EIS. Table 4-1 displays the timber volume offered and sold since inception of the Forest Plan.

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Offered (MMBF)</th>
<th>Sold (MMBF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>5.4</td>
<td>7.54</td>
</tr>
<tr>
<td>1996</td>
<td>6.6</td>
<td>1.7</td>
</tr>
<tr>
<td>1995</td>
<td>2.4</td>
<td>1.8</td>
</tr>
<tr>
<td>1994</td>
<td>5.5</td>
<td>4.6</td>
</tr>
<tr>
<td>1993</td>
<td>10.0</td>
<td>10.0</td>
</tr>
<tr>
<td>1992</td>
<td>10.0</td>
<td>10.0</td>
</tr>
<tr>
<td>1991</td>
<td>10.0</td>
<td>10.0</td>
</tr>
<tr>
<td>1990</td>
<td>2.4</td>
<td>1.8</td>
</tr>
<tr>
<td>1989</td>
<td>14.2</td>
<td>12.4</td>
</tr>
<tr>
<td>1988</td>
<td>12.4</td>
<td>12.4</td>
</tr>
<tr>
<td>1987</td>
<td>13.9</td>
<td>12.9</td>
</tr>
</tbody>
</table>

There are several reasons sales may receive no bids at the initial offering, including market conditions, and sale characteristics such as species, minimum bid price, timing restrictions, etc. All sales which received no bids have been reoffered and subsequently sold. Demand for timber is not a limiting factor in the timber program on the Wasatch-Cache.

A significant change in the market situation has occurred since the initial Forest Plan was developed. Traditionally, all the volume sold on the west forest was processed at mills in local communities. In the past 3 or 4 years, bidders from outside the local area have begun to look to the Wasatch-Cache as a source for timber, with the result that we are now selling timber to processors in adjacent states as well as local mills. Currently, logs from the Wasatch-Cache are being transported to mills as distant as Belgrade, Montana and Saratoga, Wyoming. This reflects the need for mills to expand their source areas to meet demand.

Current Direction and Implementation of Forest Plan Direction

The Five Year Monitoring Report (1992 Reference) identified several areas that need to be addressed during the plan revision, including timber availability assumptions, technical feasibility and implementation assumptions, and integrated resource analysis procedures. Currently, the Forest Plan identifies 166,000 acres of suitable (now termed appropriate) lands, much of it located within inventoried roadless areas.

The current forest plan prescribes harvesting in the lodgepole pine type, emphasizing stands that were susceptible to mountain pine beetle attack. Due to the epidemic that occurred about the time the plan was being developed, many of the trees included in growth and yield predictions were killed, resulting in an overestimate of the live volume used in growth projections and ASQ calculations.

Technical concerns centered on harvest method assumptions and implementation of Forest Plan standards and guidelines. The monitoring report found that during implementation of the plan,

2Volume sold in fiscal years 1997 and 1998 exceeds the volume offered. This reflects the reoffering and sale of volume which was not sold at the original offering.
land management prescriptions applied on the ground differed from what was proposed in the plan. For example, harvest in high elevation spruce stands was modeled to occur in two or three entries. In reality, the prescriptions currently being applied involve selection harvest, which results in lower yields per entry than the current plan. The current plan also projects growth response from thinning in dense, small diameter stands of lodgepole pine on the North Slope. Subsequent analysis has indicated that many of these stands will not respond to thinning. The monitoring report indicated that these stands should be removed from the suitable base or identified as a separate component until markets develop. In addition to the problems meeting expected outputs forecast in the Forest Plan, implementation of standards and guidelines has resulted in deferral of some expected treatments. The monitoring report identified hiding cover and leave strips adjacent to harvest units as examples of standards and guidelines which are affecting timber production on the forest.

in the process of Plan implementation, site specific analyses have revealed areas of high water tables and wet "pocket" complexes, primarily on the North Slope, that were not identified during the Forest Plan development. These areas where regeneration is difficult, or irreversible soil damage may occur if ground based equipment and road construction have resulted in areas not tentatively suited for timber management. The use of GIS will make more accurate mapping of these areas possible.

Standards and guidelines have been modified since the Plan was developed to provide habitat for sensitive species that were not addressed in the original plan. An example is the northern goshawk; guidelines are currently being developed for a forest-wide amendment that will be incorporated into the revised Plan.

The Forest Plan projected harvest on approximately 5,300 acres in roadless areas on the North Slope. In reality, harvest activity has occurred on approximately 1,200 acres of these lands. Treatments have been deferred due to the sensitive nature of roadless lands, and the need to re-evaluate management objectives for these areas.

Finally, a major change has occurred in the way we look at timber management in the years since the Plan was developed. Much of the Forest Plan reflects a less than fully integrated approach to management, with much of the focus on outputs, such as board feet. During Plan revision, we will be thinking of timber management with more emphasis on management of vegetation designed to achieve desired future conditions for specific areas.

Continuing Under Current Management Direction (No Action Alternative)

Volume outcomes for the No Action Alternative are likely to decrease from current Forest Plan projections. The current plan projects an ASQ in the second decade of 15.6 MMFB. This level appears to be unattainable and must be adjusted because of the following: more accurate mapping of the appropriate lands; implementation of standards and guidelines for sensitive species habitat (e.g. Northern Goshawk); and correction of growth and yield errors identified in the 5 year monitoring report.

Needs For Change

There is a need to reassess and more accurately map the appropriate lands as required by NFMA. Reassessment is necessary to determine the Long Term Sustained Yield Capacity and the Allowable Sale Quantity. The revised plan will project timber outcomes in terms of both regulated harvest (that occurring on lands deemed appropriate for timber management) and non-regulated harvest (that occurring as a consequence of achieving desired future condition on lands other than appropriate). Demand for small diameter material has increased recently and yield tables need to be developed to reflect the lower growth rates associated with the stagnated stands on the North Slope and to correct the growth and yield errors identified in the 5-Year Monitoring Report. There is a need to incorporate new standards and guidelines for sensitive species habitat (e.g. Northern Goshawk).

Timber outcomes will be based on the integration of goals which address the multiple values and uses of a given management area. Prescriptions applied will vary by alternative in the EIS to reflect a range of approaches to timber management.

Topic 4. Rangeland Capability and Suitability

Background and Current Condition

Rangelands are those areas typically dominated by shrublands, herbaceous vegetation (grasslands and forb communities), and those forest lands that continually or periodically, support an understory of herbaceous or shrubby vegetation that provides forage for grazing or browsing animals (e.g. aspen or some pinyon-juniper communities). In addition to providing forage, rangelands provide habitat for a large variety of wildlife.

The existing Forest Plan identified 125 grazing allotments encompassing 934,767 acres. There are currently 100 active allotments (approximately 162 permits) on the Forest covering approximately 816,852 acres, or 67 percent, of the National Forest Lands. The number of permitted animal unit months (AUMs) grazed on the Forest have declined from nearly 300,000 at the turn of the last century to less than 87,000 today. Table 4-2 provides a summary of rangeland conditions as adapted from the Rangeland Health EIS (USDA Forest Service 1996).

Under the definitions used for the existing forest plan, 454,297 acres, or 37 percent of the Forest was considered suitable for livestock grazing. "Suitable range" was defined as recently as 1993 (FSH 2209.21 - Rangeland Ecosystem Analysis and Management Handbook) as "Rangeland that is accessible and used by grazing animals, that produces forage or has inherent forage producing capabilities, and that can be grazed on a sustained yield basis under reasonable management goals." In the existing forest plan it was calculated only for areas within allotment boundaries...
and was not applied to all rangelands across the Forest. This definition has been changed as noted in the Needs for Change section below.

### Table 4-2 - Summary of range conditions for riparian acres and total suitable acres as percentages of the totals

<table>
<thead>
<tr>
<th>Setting Type</th>
<th>Acreage Category</th>
<th>Percent of Total Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Riparian</td>
<td>Undetermined condition</td>
<td>20.2</td>
</tr>
<tr>
<td></td>
<td>Estimated not moving toward FPlan objectives</td>
<td>6.5</td>
</tr>
<tr>
<td></td>
<td>Verified not moving toward FPlan objectives</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>Estimated moving toward FPlan objectives</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td>Verified moving toward FPlan objectives</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>Estimated meeting FPlan objectives</td>
<td>65.7</td>
</tr>
<tr>
<td></td>
<td>Verified meeting FPlan objectives</td>
<td>1.8</td>
</tr>
<tr>
<td></td>
<td>Total Riparian Acres (26,909)</td>
<td>100%</td>
</tr>
<tr>
<td>Suitable Range</td>
<td>Undetermined condition</td>
<td>27.5</td>
</tr>
<tr>
<td></td>
<td>Estimated not moving toward FPlan objectives</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>Verified not moving toward FPlan objectives</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td>Estimated moving toward FPlan objectives</td>
<td>8.4</td>
</tr>
<tr>
<td></td>
<td>Verified moving toward FPlan objectives</td>
<td>6.1</td>
</tr>
<tr>
<td></td>
<td>Estimated meeting FPlan objectives</td>
<td>55.2</td>
</tr>
<tr>
<td></td>
<td>Verified meeting FPlan objectives</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td>Total Suitable Range Acres (454,297)</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Current Direction and Implementation of Forest Plan Direction**

In March 1996 the Forest Supervisor signed the Rangeland Health EIS Record of Decision (ROD) which resulted in an amendment to the existing forest plan. The ROD established desired future conditions for riparian areas, rangelands, aspen and alpine areas and established maximum utilization levels for upland and aspen vegetation types (60%) in satisfactory condition. It identified the criteria to classify riparian areas (Class 1, 2, and 3) and established maximum percent utilization in riparian areas (50% for Class 1 and 60% for Classes 2 and 3) and minimum stubble heights along the greenline (immediately adjacent to the streams’ edge) by riparian class (5-6 in. for Class 1, 4-5 in. for Class 2, and 3-4 in. for Class 3). It established maximum utilization levels at 50% for browse species in big game winter range and included ground cover standards for all cover types of at least 85% of potential. In addition, the Record of Decision included both annual and long term trend monitoring plans.

### Continuing Under Current Management Direction (No Action Alternative)

Continuing under current direction will continue to see improvements in rangeland conditions as the Rangeland Health EIS ROD is implemented. Monitoring requires that all areas in unsatisfactory condition see a relative improvement in ground cover conditions of 10 percent every 10 years as a minimum (e.g. an area that currently has 60 percent ground cover must have at least 66 percent ground cover 10 years after identification of unsatisfactory conditions). Riparian areas in unsatisfactory condition must see an absolute improvement in ecological status of 5 percent every 10 years as a minimum (e.g. a riparian area with a rating of 40 percent late seral communities must have a rating of at least 45 percent late seral communities 10 years after identification of unsatisfactory conditions) and an absolute improvement in greenline status of 10 percent every 10 years as a minimum (e.g. a riparian area with a rating of 40 percent late seral communities on the greenline must have a rating or at least 50 percent late seral communities on the greenline 10 years after identification of unsatisfactory conditions).

Under current Plan direction the permitted number of Animal Unit Months (AUMs) grazed would remain somewhat constant at approximately 87,600 per year. In addition, consumption of forage by big game would stay steady or increase slightly as populations of elk continue to increase and deer decline. In the absence of Plan revision, rangeland suitability would not be addressed on a forest-wide basis. Changes in allotment boundaries or areas of the Forest being grazed would be addressed only on a site-specific basis through allotment management planning.

**Needs for Change**

- Need to reassess rangeland capability
- Need to reassess rangeland suitability

The historical use of the term range "suitability" was a mixture of the meanings now assigned to the terms "capability" and "suitability". While capability addresses the ability of the land to support livestock grazing, suitability addresses whether or not livestock grazing should occur and whether other uses should take precedence. Definitions and analysis guidance from the Intermountain Region Protocol (USDA Forest Service 1998) for determination of rangeland capability and suitability are included in Appendix F.

The needs for change include the requirement (36CFR 219) for assessing rangeland capability and suitability. These determinations will provide an opportunity to examine livestock grazing as one among numerous uses that may be appropriate for a given land area. Livestock grazing needs to be addressed as part of describing desired future conditions, and goals and objectives which ensure ecosystem sustainability. Alternatives will provide disclosure of the effects of various applications of criteria for suitability in relation to other goals and values for a given management area and across the landscape as a whole. The range of alternatives will include a
scenario in which suitability criteria continues to emphasize livestock grazing across large areas of the Forest as well as a scenario in which suitability criteria places emphasis on other uses and values while balancing livestock grazing use.

**Topic 5. Biodiversity and Viability**

**Background**

Biological diversity is the variety and abundance of life and its processes. It includes all living organisms, the genetic differences among them, and the communities and ecosystems in which they occur. Biological diversity also refers to the compositions, structures, and functions of species and habitats and their interactions. The interactions of biological and physical components operate at multiple scales, from micro-sites to regional landscapes. The goal of conserving biological diversity is to support sustainable development by protecting and using biological resources. The variety of habitats and species on federal and adjacent lands puts land management agencies in a key role for managing and protecting biological diversity. This is especially true for rare and unique ecosystems, and species that are highly valued or are considered to be on the brink of extinction (Hal Salwasser 1989). Consequently, current management direction (ESA, CFR 219.26 and 219.27, FSM 2070 and Forest Plans) for biological diversity concentrates on numbers of species and diversity of habitats.

In general, prior to human-caused disturbances, major changes in native biodiversity were a result of substantial shifts in climate, geology, or natural occurrences such as volcanos, or earthquakes. However, human influences have significantly affected ecological processes and biodiversity, and will likely continue to do so. As the human population continues to grow, there will be an ever increasing pressure on the remaining open space and the quality and diversity of habitat.

**Current Condition**

Although the current Forest Plan addresses many of the key indicators of biologic diversity, these indicators are largely described and analyzed as separate functional entities. There is little information as to how these indicators interact with one another and with natural processes, particularly at the broad, Forest-level scale.

The Forest Plan does not fully cover all biological diversity elements (course filter, fine filter, historic range of variability (HRV), etc.) defined in the Ecosystem Management Framework. The Plan tends to focus on a species-by-species approach (fine filter) rather than looking at the interactions of entire ecosystems (course filter). It is an intent to use a broader approach in revision, based in part on new information (research, new best science, etc.). This approach will address and analyze fine filter indicators (threatened, endangered, and sensitive [TES] species, management indicator species [MIS], rare and unique species and habitats), coarse filter indicators (ecosystems, vegetative communities, watersheds, etc.) and natural processes (fire, erosion, hydrology, etc.) within the integrated ecosystem management framework.

In order to maintain healthy ecosystems and the multiple values they hold, we must first address the following questions:

- What is out there? (composition, structure, diversity, relative abundance)
- Where is it? (distribution, patterns, connectivity)
- Where did it come from? (processes and disturbances, geoclimatic capability, HRV)

**Composition/Structure/Pattern/Function.** Maintenance of compositional, structural, and functional diversity and the patterns in which they exist is essential to the continued provision of ecological processes, such as regulation of hydrologic cycles, carbon and nutrient cycling, and soil processes. As noted in Chapter 3 and Appendix C, current conditions and trends in plant communities indicate that some of these communities have substantially changed from what they were historically. The current Forest Plan lacks adequate definitions and direction for desired structural stages, from openings to mature and old growth forests. An understanding of where these stages are on the landscape and how they are connected is critical for species habitat management.

Current management does not address the potential effects that revegetation with non-native species may have on overall biodiversity.

**Disturbance Processes.** Disturbance processes (fires, droughts, floods, insects, disease) are common in nature, and the character of ecosystems is heavily influenced by these agents of change and their interactions. The current Forest Plan has little recognition of the importance of the desirability of disturbance processes. The Plan does not consider or recognize the frequency, size, intensity, and severity of disturbance processes in determining vegetative conditions and how management practices have altered them. For example, with the exclusion of fire, stand and shrub densities are often much greater than they were historically, and species composition has changed, increasing the susceptibility of some vegetative communities to large-scale infestations of insects, disease, and highly damaging fires.

The six National Forests of Utah are presently developing a state-wide fire amendment to Forest Plans in which the role of prescribed fire and managed wildland fire (naturally ignited fires which are allowed to burn under specific management prescriptions to achieve a desired condition) use will be described in attaining DFC’s on the Forests. Forest Plan guidelines do not consider the positive effects of wildfire and prescribed burning on these ecosystems

Stand components for all forest and non forest cover types and structural stages need to be designed to meet management goals and objectives that also take into account expected disturbance regimes. Conifer plantations and the stands that surround them need to be managed to minimize the risk of loss due to wildfire, insects and disease.

**Soils Functions and Processes.** The physical, chemical, and biological properties of soils regulate biological productivity, hydrologic response, site stability, and ecosystem resiliency. Management direction for soils in the current Forest Plan is based only on a prevention and mitigation strategy. Scientific information on soils processes and functions and how they relate to vegetation patterns, and ultimately, to biological diversity is not reflected in the current Forest Plans.

The current Forest Plan does not consider or recognize that the sustainability of soil ecosystem function and process (erosion, long-term soil productivity) is at risk in areas where redistribution...
of nutrients has resulted from changes in ground cover (combination of organic material plus plants), composition, pattern, removal of the larger size component of wood, and uncharacteristic fire.

**Snags and Coarse Woody Debris.** Snags (dead standing trees) and coarse woody debris (downed trees) are critical elements of ecosystems. They help maintain soil productivity, provide terrestrial and aquatic habitat, and promote forest regeneration by providing micro climates conducive to tree sprouting and early growth. Snag management is covered in the present Forest Plan under Forest-wide standards and guidelines (p IV 34-35). Presently there is no guidance in the Forest Plan pertaining to coarse woody debris. The Forest Plan states that "snags should be distributed through all forested communities and age classes, aspects, slopes, and elevations". Standards and guidelines identify snag management levels in different vegetative types, the need for replacement snacks, and areas where snag management will be emphasized. Guidance needs to be developed and refined to ensure an adequate diversity of size and decay class of snacks.

**Old Growth.** Old Growth is included in the present Forest Plan under Forest-wide standards and guidelines (p IV 33-34). Old Growth is defined as a forested stand which is past maturity and is in the last stage of forest succession. There is a standard to have 10% of forested acreage designated as Old Growth distributed proportionally by elevation and vegetative types within each Road Management Unit on the forest. The Guideline is to have 2/3 of designated Old Growth possessing Old Growth characteristics, with the remaining 1/3 being managed to develop these characteristics.

Some stands currently designated as old growth are not necessarily capable of becoming old growth or they are not desirable as old growth stands. A reevaluation of old growth needs to be done.

**Rare and Unique Species or Ecosystems.** There are currently some rare and unique species or ecosystems on the Forest that require some level of management emphasis to maintain viable populations. Many of these are identified on the U.S. Fish and Wildlife Services list of candidate species and the State sensitive species list. Currently, there is little or no management direction in the Forest Plan concerning rare and unique species or ecosystems.

There is no direction on monitoring or following these rare and unique species. Region 4 of the Forest Service is working on identifying species at risk. Guidance on this will be evolving over the next few years. When completed it will be included in the Forest Plan.

**Threatened and Endangered Species.** Federally listed threatened and endangered wildlife species on Forest include the black-footed ferret (E) bald eagle (T), peregrine falcon (E), and whooping crane (E). Listed fish species include the June Sucker (E), and listed plant species include Maguire's primrose (T) (Appendix G). The US Fish and Wildlife Service is presently completing a detailed study on the lynx and Hooker's shooting star with the possibility of its being Federally listed in the near future. Current Forest Plan management direction for these species is essentially to follow recovery plans developed by the appropriate regulatory agencies, with the ultimate objective of removing the species from Federal listing once stable viable populations are established and maintained.

**Sensitive Species.** Species are designated "sensitive" by the Regional Forester because their populations or habitats are trending downward, or because little information is available on their population or habitat trends. The primary purpose of the sensitive species program is to conserve or improve habitat conditions for these species to prevent them from becoming federally listed. Currently, there are 4 mammals, 6 birds, 1 amphibian, 2 fish, and 15 plants designated sensitive which have some probability of occurring on the Forest (Appendix G). Current management direction is to follow conservation assessments and plans developed at the Regional or Forest level. Biological Evaluations are written for all proposed projects on the Forest to disclose the effects of the project on sensitive species and that information is used in the decision making process. However, because the Forest Plan was developed before the sensitive species program was initiated, there is almost no direction on sensitive species in the Plan.

The six National Forests of Utah in conjunction with other land management and wildlife resource managers have recently published a goshawk habitat assessment and recommendations for Utah (Graham et al., 1999), and an accompanying goshawk strategy and agreement (Utah National Forests, 1998). A Forest Service team is presently working on a state-wide Forest Plan amendment to show how the assessment and strategy will be implemented on National Forest system lands. This will be incorporated into the Forest Plan following the decision notice.

**Management Indicator Species (MIS).** NFMA regulations direct National Forests to identify MIS, which are, "...selected because their population changes are believed to indicate the effects of management activities" (CFR 219.19 (a) (1)). By monitoring and assessing habitat conditions of indicator species, managers can estimate effects on other species with similar habitat needs. MIS in the current Forest Plan were selected because their habitat requirements encompass a diverse range of conditions. However, monitoring and management experience with MIS since the Plan was developed have indicated that some species may not be the best indicators for the habitats they are supposed to represent, or that the chosen techniques were so complex that monitoring was not done adequately with present Forest budgets. Groups of species that use similar habitats may also be more useful as management indicators than individual species. Appendix H describes monitoring requirements from the existing Forest Plan. o f the Ashley, Uinta and Wasatch-Cache National Forests, and proposes new MIS that better represent present management strategies and needs. If adopted by all three Forests, MIS will be consistent with the exception of a few species that a Forest might identify for a specific need.

**Continuing Under Current Management Direction (No Action Alternative)**

Implementation of the current Forest Plan over the next ten years would result in a continued focus on a species-by-species approach, using short time frames rather than dealing with issues at larger spatial and temporal scales. This neglects ecosystem management principles of context and scale.

Ecosystem health would continue to change. Some forest species (like Engelmann spruce) would become more susceptible to insect and disease infestations. Sagebrush communities could continue to age as a result of fire exclusion, resulting in older more decadent stands and low diversity of age classes within this cover type. More diversity in age classes of all cover types results in a greater diversity of habitats to support more species. Riparian health would likely improve slowly over time because of implementation of guidelines identified in the Forest Plan Amendment for Rangeland Health.
Snags and coarse woody debris guidelines in the current Plan would continue to be inadequate or non-existent for maintaining functional and structural diversity, and patterns. Current direction would have an unknown effect on maintaining the diversity of plants, wildlife, and fish habitats.

Because current harvest standards and guidelines do not address natural patterns, current management would slowly address fragmentation through individual, site-specific projects (e.g., timber sales).

Because the current Plan has little or no direction for sensitive species, there is a possibility that sensitive wildlife, fish, and plant species would decline because of the piece-meal approach to viability of rare species and their habitat.

Under current Plan direction, old growth has been treated as a static entity. There is a need to focus on all age classes including valuable old growth stands.

Needs for Change

There is a need to develop vegetation management direction that provides for short and long-term biological, physical, economic and social sustainability. The current Forest Plan lacks adequate direction for potentially needed restoration, management, and maintenance of plant communities, including community structure, species composition, distribution, and patterns, and how they are influenced by soil and disturbance processes in relationship to historic and current conditions. There is a greater need to integrate management direction for all resources that result in maintaining viable species populations within the context of overall multiple use objectives. There is a need to incorporate decisions made in the statewide goshawk amendment and the statewide fire amendment into the revised Forest Plan and ensure compatibility with all other parts of the Plan.

• Need to use the broader approach as identified in the ecosystem management framework based on research and new best science.
• Need to develop direction for habitat connectivity, links between landscapes, corridors, habitat edge, and horizontal and vertical diversity (structural stages).
• Need to develop forest management direction that address appropriate stocking levels, stand structure, and species composition that incorporates the extent and frequency of all types of disturbances.
• Need for guidance on the use of native plant species (including the collection of seed) in revegetation and/or rehabilitation activities on the forest.
• Need to consider and recognize the frequency, size, intensity and severity of disturbance processes in determining vegetative conditions and how management practices have altered them. The positive effects of prescribed fire and wildfire use also needs to be recognized.
• Need for management direction that addresses important soil processes (erosion rates, mass stability, infiltration, nutrient cycling, etc.) as they relate to biological diversity.
• Need for snag and coarse woody debris guidance that help maintain ecosystem structure and function. Guidance needs to develop and refine information to ensure an adequate diversity of size and decay class of snags and coarse woody debris.
• Need to develop management direction that describes desired structure and density for each structural stage, from openings to mature and old growth.
• Need to provide integrated management guidance and direction for species and communities in which they occur (the whole instead of pieces). This includes TES, Fish and Wildlife Service candidate species, species (and habitats) at risk, MIS, and other rare and unique plant, fish and animal species.

Topic 6. Watershed Health

"Water is the most critical resource issue of our lifetime and our children's lifetime. The health of our waters is the principal measure of how we live on the land." - Luna Leopold

Background

A watershed is a land area that is drained by a single network of streams. Watersheds can refer to various scales depending upon the amount of detail needed. For example, the Logan Canyon watershed is also part of the much larger Bear River watershed. A healthy watershed has a steady flow of water that sustains all of its water-related or water-dependent species without degrading the quality of its soil despite periodic disturbances such as fires and floods. Watershed health has three requirements:
by short interval, low to moderate severity fires. Fire maintains energy, water, and nutrient cycles, forest and rangeland vegetation structure, composition, and landscape scale habitat patterns.

Exclusion of fire has caused forest and shrub densities greater than they were historically. Several years of drought has had a compounding effect on the WCNF in which fire had been suppressed for years. Increased density and weakened resiliency of the forest stands has allowed for insect infestation to occur.

Fire suppression, insect and disease, and drought conditions have resulted in less frequent, but substantially more severe and damaging fires and varies tremendously by ecosystem. The effects of severe fires are higher erosion and sedimentation rates and higher potential for landslide events. These effects have a high risk along the Wasatch Front which are municipal watersheds with high density urban communities located along the foothills of the WCNF.

Roads - Roads on the watershed take land out of production for other uses and cause erosion and sedimentation, primarily on poorly -maintain or designed roads. Many roads of varying conditions are located on the WCNF. It is estimated that only 30% of Forest Development Roads are maintained to standard at any one time. The larger, higher standard roads have erosion control features in their design. Most of the unclassified roads (smaller, back-country roads that are user-created) are not maintained by the Forest Service. The Forest Service Natural Resource Agenda has identified road management as a high priority (U.S. Forest Service 1998). A new transportation policy is currently being developed by the Forest Service and will address the reconstruction, relocation, and decommissioning of roads to help restore degraded watersheds.

During the past 15 years, some roads have been closed on the WCNF and this has reduced sedimentation to streams. Most of the problems associated with roads are due to location such as close proximity to streams or wet areas and due to soils that are highly erodible or conducive to cutting when wet. Use of all terrain vehicles (ATV) has increased tremendously on the forest and many user-created trails are located along the foothills and mountain ridges of the Wasatch Front.

Livestock Grazing - Livestock grazing has had a profound effect on the condition of the land particularly when overgrazing occurs. The main effect of grazing is loss of vegetative cover due to consumption or trampling and stream bank erosion. From the 1880 s to the 1920 s, overgrazing of rangeland occurred over the WCNF which resulted in decreased soil productivity. From the 1920 s to the present, grazing numbers have been reduced and management of grazing has been improved. The effect of this has been the maintenance of condition of the soil and improvements in ground cover conditions. However, improvement of soils productivity is slow and there are many areas where weeds dominate the plant communities because of reduced capability and poor soil conditions.

Mining - Mining activity has occurred in several areas on the Forest. The main areas affected by mining are at the headwaters of Big and Little Cottonwood Canyon near Salt Lake City, and at the head of South Willow Canyon on the East side of the Stansbury Mountains. For example, in the Big Cottonwood Mining District, mining activities were flourishing between the 1860 s and 1920 s and affected the watersheds by clearing vegetation, disturbing soils, and exposing ore deposits to water and air resulting in release of toxic metals. Mining declined after the 1920 s and

Current Condition

Effects on Watershed Health. Various factors have effects on the health of watersheds including: drought and floods; fire, insects, and disease; roads; livestock grazing; mining; and water diversions and dams. Each of these is discussed in more detail below.

Drought & Flood - Periods of drought and flooding are a part of the natural disturbance regimes of the WCNF. The ruggedness of the Wasatch Range combined with severe weather conditions produces steep mountain streams which are prone to flash floods and naturally high erosion rates. In sensitive areas, soil stability is dependent to a large degree on vegetation to slow runoff and hold the soil in place while in other areas, hydrology and landform play the dominant role.

Drought is a regular part of the climatic cycle on the WCNF. Periods of drought effect the quantity and length of time of surface water discharge and quantity of forage. Water and forage uses such as livestock grazing are affected by droughts.

Flash floods periodically cause mudflows to discharge from canyon bottoms into the valleys. These have occurred in the past as normal disturbances along the Wasatch Front as indicated by the large alluvial fans located at the mouths of the canyons. Rain on snow events and prolonged spring snowmelt have caused major flooding as seen during the 1983-85 period.

Fire, Insects and Disease - Fire has been a major influence on the structure, patterns, and function of ecosystems of the WCNF. Fire regimes prior to European settlement were characterized...
es the importance of protection or improvement and then setting priorities for funding watershed assessment plans.

**Recent Actions to Improve Watershed Health.** The healthy condition of our watersheds is one of four major emphasis areas of the Forest Service Natural Resource Agenda which states that maintenance and restoration of watershed health shall be high priorities in Forest Plans (U.S. Forest Service 1998). Restoration of the structure, composition, and function of our forests and riparian areas on the WCNF has been one focus of management for the last several years. Since the current WCNF Forest Plan was developed, many activities have occurred on the WCNF that have improved watershed conditions on the Forest. Several high lakes dams have been stabilized and rehabilitation efforts have been completed in High Lakes area of the Uinta Mountains as part of CUP mitigation. Planning efforts, such as the Rangeland Health EIS, Little Cottonwood Abandoned Mine Lands Initiative planning effort, Wasatch Front Canyons planning efforts, travel planning on several Ranger Districts, Mill Creek Canyon restoration project, South Fork Ogden River campground improvements, and Federal Energy Regulatory Commission relicensing projects review and mitigation, and instream flow requirements for ski area snowmaking water withdrawals have all included direction that will result in improved watershed conditions.

Starting in the spring of 1998, the inland west regions of the Forest Service began watershed and aquatic assessments to assist in developing management programs, priorities, and restoration strategies as part of the Inland West Water Initiative (IWWI). The assessment was a quick, coarse review of watersheds at a broad level with the purpose of identifying which watersheds are in need of protection or improvement and then setting priorities for funding watershed assessment planning and implementation.

Attributes considered during the assessment included geomorphology, water quality, watershed functions, and naturally destabilizing characteristics such as steep slopes, erodible soils, landslides. Also considered were human effects on the forest such as roads, livestock grazing, facilities, and recreation. The highest priority watersheds on the WCNF are listed in Appendix I.

**Current Direction and Implementation of the Forest Plan**

Management direction comes from several sources such as national direction, Forest Plan direction established during the 1980s planning process, and other Federal, State, and local regulations. When the original WCNF plan was developed, national focus emphasized commodity outputs as a primary need for planning. As noted in Chapter 2, we are broadening our focus from sustaining commodity outputs to sustaining a variety of goods, services, conditions and values over time. Current national direction related to watershed health has been an emphasis on prescribed fire management, insect and disease management, and watershed restoration and enhancement through the Clean Water Action Plan (U.S. EPA 1998), Natural Resources Agenda (US Forest Service 1998), and draft Unified Federal Policy for Watershed Assessment.

Soil and Water goals, objectives, and directions in the existing plan focuses on protection of water quality, inventory of soil and water resources, the protection of riparian areas, assertion of federal water rights, increasing water yields through the timber harvest program, and coordination with government agencies during flood and landslide emergencies.

Watershed protection from disturbance is very important along the Wasatch Front. The Forest Plan directs that existing water quality will be maintained on all surface waters of the National Forest to comply with State water quality standards and anti-degradation policy. The current Forest Plan addresses degradation of water quality through emphasis on restoration and protection of riparian areas (stream management zones), soil disturbance standards on both upland and riparian areas, and that all vegetative management projects consider the impacts on the soil resource.

The WCNF has three stream segments listed on the State impaired waters list (303(d) list). These are Mill Creek near Salt Lake City, Little Cottonwood Creek, and in the Wyoming part of the Smiths Fork drainage on the north slope of the Uinta Mountains. Mill Creek is listed because of stream sedimentation and has received funding through the Clean Water Act Section 319 funds. Little Cottonwood Creek is listed because zinc concentrations are exceeding State water quality standards. A multi-agency study is currently underway to evaluate the sources of metals in Little Cottonwood Creek. Smiths Fork was listed for stream sedimentation and an evaluation of stream conditions is planned.

Several lakes on the Forest are listed as impaired due to lack of dissolved oxygen or pH exceedances. The determination of the causes of these impairments have not been initiated yet. The WCNF has completed R1/R4 level II riparian surveys on 54 streams, stream stability surveys on 14 streams, chemical water quality monitoring on 34 streams, and macroinvertebrate sampling on 7 streams since 1985. This data indicates that several areas of the forest are in need of improvement in channel stability, vegetative density and structure, and riparian conditions. The primary areas are listed in Appendix I and correspond to priority watersheds as compiled through the IWWI.

The WCNF has been involved with Salt Lake City and Salt Lake County master planning and cooperated in the development of the Wasatch Canyons Master Plan. The Forest is currently involved with a revision of the master plan and is working on capacity studies for the Salt Lake City canyons for the purpose of determining how much use the canyons should receive without degrading resource conditions.
Erosion and sediment control plans have been developed and implemented on all the ski areas along the Wasatch Front. Timber sale design has been developed and implemented to protect wetlands and riparian areas and stream courses. Oil and Gas developments have been designed with pollutant and drainage control measures, and reclamation plans. Kern River pipeline had intensive BMPs applied. Grazing permits have been modified through the Rangeland Health EIS to include soil and water resources protection.

The WCNF Forest Plan directs us to inventory the soil and water resources of the Forest to develop interpretations for management. Soil surveys have been completed on most forest land on the WCNF. The Forest is redirecting this program to integrate vegetation and land forms features with soil mapping to produce an inventory of forest and range ecosystems that address management needs, concerns, and issues.

The Clean Water Action Plan (CWAP) reflects current national direction for the protection and enhancement of watersheds across the country and was developed by federal land management and resource protection agencies. Some important concepts discussed in the CWAP are presented below.

The CWAP recommends the use of a watershed approach for planning management activities on federal lands and for setting priorities for watershed rehabilitation. The scale of the watershed varies dependent upon issues and types of management activity. The CWAP states that "Historically, much of the management of rivers and watersheds has seen simple solutions applied to complex problems. Success in protecting water quality and restoring watershed conditions requires an adequate understanding of the ecological processes governing watershed functions, and ultimately water quality, in a given waterbody.

Current national direction in CWAP and Natural Resource Agenda uses a watershed approach as the first step toward identification of project priorities.

Continuing Under Current Management Direction (No Action Alternative)

In the past, watershed improvements have focused on identification of specific projects, then setting priorities for the whole list of improvements based on cost/benefit. Except for a few watersheds, a comprehensive watershed basin assessment to identify causes of resource impairment has not been used to set priorities for projects. Much of the current WCNF Forest Plan reflects a less than fully integrated approach to management that we now know is achievable in today's environment.

The current plan does not contain watershed health goals but has riparian and water quality standards and guidelines for management. This approach would continue and result in setting limits to management instead of a proactive approach which identifies the goals of watershed health and condition for a management area.

The WCNF plan contains a list of watershed improvement projects and a schedule for implementation. By continuing this approach, projects will be implemented using only cost/benefit analysis for individual projects. Improvement projects would be implemented without considering other needs in the watershed or if higher needs are in other watersheds of the Forest.

The current forest plan does not set direction for wetland protection, except indirectly through riparian management goals, standards and guidelines. Without direction on wetland protection, wetlands would be considered only when projects would require a 404 permit.

Needs for Change

- Need to set objectives and direction for using a watershed approach to land planning and watershed restoration.
- Need to develop watershed health goals for management areas.
- Need to set direction for establishing priority watersheds for restoration and for setting individual project priorities within watersheds.
- Need to set direction for protection of forest wetland

Topic 7. Road Management/Access Management

Background

Road Management is an ongoing, often controversial aspect of Forest management on the Wasatch-Cache National Forest, in the Intermountain Region, and around the nation. The Forest Service Natural Resource Agenda highlights National Forest road management as one of the most complicated issues facing the agency today. Truly, few marks we leave on the land are as lasting as the roads that are built, yet roads are needed for access to the goods and services that Americans expect from their National Forests (USDA, 1998).

The "Transportation Network" on the Wasatch-Cache National Forest is composed of private, municipal, county, state, federal, and Forest Service roads that either cross or provide access to National Forest System lands. Only those roads that are under the jurisdiction of the Forest Service and are needed to access National Forest System lands and adjoining private lands, or are needed to provide mobility for management are part of the Wasatch-Cache "Forest Development Transportation System Facilities."

Forest Development Roads are not public roads in the same sense as roads that are under the jurisdiction of public road agencies, such as Utah Department of Transportation (UDOT) or the counties. Forest Development Roads are not intended to meet the transportation needs of the public at large. Instead, they are authorized only for the administration and utilization of National Forest System lands. Although generally open and available for use, that use is at the discretion of the Secretary of Agriculture. Through authorities delegated by the Secretary, the Forest Service may restrict or control use to meet specific management direction. Permits, commercial users, or contractors also may be required to share in the cost of developing, improving, and maintaining Forest Development Roads.

The Forest Development Transportation System facilities inventory contains "classified" Forest Development Roads, and "unclassified" roads. Unclassified roads are roads that have come into
exist as they were developed through use or in some cases through construction, but were never authorized to be part of nor are they a necessary component of the transportation system. In the past, these unclassified roads were termed "temporary," "pioneer," "ghost," and/or "two-track" roads. In 1993 we added these roads to our inventory primarily to assist in road management and so that their future decommissioning (eliminating) could be carried out in a planned manner.

Current Condition

Currently, the inventory contains 1,579 miles of road, including both Forest Development Roads and unclassified roads. Road maintenance funding has been inadequate, and it is estimated that only about 30% of the Forest Development Roads are maintained to standard at any one time. This means that a large number of miles of road are in a deteriorating condition and are causing resource damage, mainly because of erosion control problems. They are all but unusable by the public because of rough, rutted surfaces, and we are losing our investment in past construction activities. Road maintenance activities are mainly focused on stabilizing and removing public safety hazards on Forest Development Roads.

There has not been adequate funding to decommission unclassified roads at more than a few miles per year. While actual decommission of roads may not have taken place, we have through project travel management planning identified as "closed" nearly 100 miles of unclassified roads on Ogden and Logan ranger districts alone. This has contributed to resource protection in some circumstances.

Current Direction and Implementation of the Forest Plan

Goal 46 promotes establishment of a road management program to develop and maintain a safe, economical, functional, and environmentally sound transportation system that serves resource elements.

A forest-wide standard states density levels will be established for each road management unit with the management areas. The following closure criteria should be considered: 1) public safety, 2) excessive soil loss or water quality degradation, 3) conflict with wildlife habitat use, and 4) others, including, roads not needed for resource management, protection of visual quality, returning an area to forest production, reducing user conflicts, reducing maintenance costs, and providing diverse opportunities for non-motorized recreation.

As a result of establishing density levels, roads were to be closed, further evaluated or left open. A road density range is displayed for each road management unit. The high end of that range was intended to represent the current road density. This implies any new roads constructed within the unit were to be obliterated or gated, or an equal amount of existing road would be obliterated or gated. The low end of the range is the amount in the road management unit needed to manage resources and uses. Road density levels were to be validated to confirm the correct density. In some cases on the forest, actual densities inventoried during project planning were found to be much higher than previously thought (i.e. above the high end of the range).

With road density standards in place, the overall miles of open, classified roads on the forest have not increased since the Forest Plan was approved in 1985. However, there are areas on the Forest where existing road density (considering classified and unclassified roads) was too high prior to 1985 and is still undesirable today.

The current Forest Plan directs the development of travel plans to manage off-road vehicle use, to protect wildlife, soil, vegetation, and to resolve recreation conflicts. It also included guidelines outlining specific areas or roads that were to be managed as open or closed to motorized use. As travel management plans have been developed by the ranger districts, this site-specific direction has needed to be amended in some areas.

Early in 1998 the Chief of the Forest Service proposed a major overhaul of the forest road policy and promised to develop a science-based forest transportation system that meets the needs of the public yet minimizes or reverses the environmental impacts often caused by roads (Federal Register, January 28, 1998). Building roads create a long-term financial commitment because they must be maintained year after year. A new policy is aimed at providing managers tools to make better informed decisions about where, when and if new roads should be constructed; to close or "decommission" old, unneeded roads as well as unauthorized ghost roads; to upgrade forest roads, as appropriate, to meet changing uses, local communities' access needs and growing recreation demands and to identify sustainable funding sources for maintaining the forest road system. This message and its importance is underscored as one of the four key emphasis areas of the Forest Service Natural Resource Agenda (March 1998).

Continuing Under Current Management Direction (No Action Alternative)

The current Forest Plan does not provide for the transportation system to be integrated but instead to be managed to serve single resource needs. The transportation system would continue under the guidance provided by the road density standards which may result in less than desirable density levels in certain areas on the Forest. Project level travel management planning could reduce undesirable levels through road closures. Project level travel management planning will continue that may require future Forest Plan amendments given the site-specific nature of current Forest Plan travel management guidelines.

Needs for Change

- Need to incorporate goals and direction of the new transportation policy as appropriate.
- Need for the appropriate forest road system to be a primary component of the desired future for a management area.
- Need goals to achieve an integrated transportation system with multiple functions not serving a single resource need.
- Need adaptive standards for road construction rather than a static, outdated list.
- Need to delete road density standards as a stand-alone requirement, rather use them as a component of desired future.
- Need to delete specific travel management guidelines and establish criteria (standards) for making future site-specific travel management decisions.
Topic 8. Recreation Niche, Capacity, and Zoning

"The doctrine of the greatest good to the greatest number does not mean that this laudable relationship has to take place on every acre." ... "If it did, we would be forced to change our municipal art galleries into metropolitan bowling alleys...[It is preposterous to hold that the objective of outdoor recreation planning should be to enable the maximum number of people to enjoy every beautiful bit of the outdoors." Bob Marshall, 1937.

Background

Recreation use on the Wasatch-Cache National Forest (WCNF) has increased significantly over the past decade. According to the Recreation Information Management report (RIM) on the Salt Lake Ranger District alone, recreation use was estimated to have increased by approximately a million recreation visitor days (RED's) from 1985 to 1997. (RIM 1985, 1997) An RED is equal to one person participating in a recreational activity for 12 hours. While forest recreation use numbers are difficult to calculate with accuracy they do indicate trends. Demographic and population studies indicate that visitation to the Forest and surrounding public lands will continue to grow. The population of Utah is expected to grow by an additional 65% within the next 20 years, most of which is projected to occur in urban areas.

As the population continues to grow, we anticipate the demand for outdoor recreation opportunities will increase at a similar or greater rate (USDA, Forest Service, 1995). As demand increases on this piece of public property we call the Wasatch-Cache National Forest, we expect the value placed on the type of recreation opportunities (skiing, hiking, camping) and "quality" experiences (enjoying nature, short lines on the ski lift, feeling safe, able to accommodate a large family picnic) will become even more important. While "quality" is difficult to define and measure it is very important to address because it is a key element in the difference between a satisfactory or unsatisfactory outdoor recreation experience. We acknowledge that a "quality" recreation experience may be different to different people. Providing a diverse range of recreation opportunities is one means to maximize the ability for many different people to obtain a quality experience. The WCNF may provide a portion of this range of opportunities.

Since all projections indicate the population growth will spill over into the Forest, the social setting (number of people, noise levels, etc.), demand, and patterns of use for outdoor recreation in our future will change. We need to re-examine the Wasatch-Cache National Forest's role as a provider of outdoor recreation opportunities and determine how to plan for future growth. How can this forest best serve public needs for outdoor recreation for the long-term?

Current Condition

The Wasatch-Cache National Forest is an urban proximate forest located adjacent to the Wasatch Front. The Wasatch Front stretches approximately from Draper to Brigham City and includes the capitol city of Salt Lake. The WCNF is one of six national forests in Utah. Additionally, there are over thirty national parks, monuments, recreation areas, Bureau of Land Management areas, and historic sites within the state that provide opportunities for outdoor recreation. The state of Utah manages another 25 parks as well as numerous historic sites. Fourteen ski resorts, located primarily along the Wasatch Front, provide numerous opportunities for winter recreation. County and city parks provide opportunities for outdoor recreation as well. Salt Lake County alone is responsible for managing 40 parks, two outdoor sports complexes, 13 recreation centers, ten swimming pools, and five golf courses.

The recreation program and resource is an inherent emphasis of the Wasatch-Cache National Forest. Although multiple use activities (grazing, timber harvest, oil and gas leasing, etc.) occur on the Forest, recreation is a primary focus and use of this forest.

The Wasatch-Cache National Forest is unique in several aspects related to recreation. First, a portion of the Forest is literally the backyard for the Wasatch Front. People can drive 15 to 30 minutes and be at a trailhead, ski area, or developed recreation facility. This portion of the forest is heavily used, year round. It is most often used for short durations of time by residents of the urban centers (Salt Lake City and neighboring cities). The road and trail access is developed to provide relatively easy access to most portions of the forest along the Wasatch Front. Opportunities for outdoor recreation and scenery enjoyment are an important part of the quality of life here.

Secondly, the Forest provides the setting for a wide spectrum of recreation opportunities (from urban to primitive on the Recreation Opportunity Spectrum - ROS) within a hour or so drive of most population centers. Four of the ski resorts on the WCNF are a 20 minute drive up either Big or Little Cottonwood Canyon offering opportunities for skiing and winter sports where you can expect to see a lot of other people participating in the same activity. On the other end of the spectrum one can drive up the Mirror Lake Scenic Byway and in about 90 minutes from Salt Lake City arrive at a trailhead that leads into the backcountry. Solitude is just footsteps away.

Finally, the Forest has some of the best snow and terrain available to offer world class winter sports opportunities (downhill and backcountry skiing, snowboarding, snowmobiling, etc.). Not only is the skiing great, but there are numerous places along the Wasatch Mountains that provide skiing opportunities within a short distance of the urban areas. An international airport provides quick and easy access to Forest recreation opportunities.

A portion of the recreation direction within the current forest plan has been implemented to date. The 5-Year Monitoring Report (USDA, Forest Service, 1992) reviewed how well the plan objectives were being met and how closely standards and guidelines had been applied in plan implementation. This report found "substantial discrepancy" in plan direction and the current condition at that time.

One of the primary discrepancies found in the report is that maintenance and operations standards at developed sites were not being met at plan direction of Condition Class I. Condition Class I, means a satisfactory rating. It is the highest rating available and is defined as safe and sanitary facility with annual maintenance not exceeding 10% of the replacement cost (Forest Service Handbook, 2309.11). Additionally, plan objectives of increasing capacity levels by 30% (either by developing new facilities or renovating existing facilities to add additional sites or areas that accommodate more people) at developed sites by the year 2020 were not on track. The main reason for not reaching these objectives is that priority setting, through budget allocations, have not been adequate to meet forest plan direction. Since the time of the monitoring report many things have changed. One of the biggest changes is the use of concessionaires. Concessionaires are private business that operate and maintain developed recreation facilities under special use
The Endangered Species Act has already made a difference in how we manage recreation in the species. Current concerns should we manage for in the and social do not impact the Maguires general direction. These have brought about different resource and social impacts and challenges that were not predictable when the existing Plan was written.

Additional direction and policy have also come into effect since the forest plan was published. The Endangered Species Act has already made a difference in how we manage recreation in the Forest. In recent years, we have seen conflicts between people and threatened or endangered species. Special management of rock climbers in Logan Canyon has been taken so that climbers do not impact the Maguires Primrose, a threatened plant species. The lynx is now being studied for possible addition to the Threatened and Endangered species list. In anticipation of this we will need to rethink how to manage some recreation to minimize potential impacts to the lynx from activities such as snowmobiling, snowshoeing, and cross country skiing. We also have gained a better understanding from new scientific research about the sensitivity of the natural environment. The ecosystem management principle of humans as ecosystem components entails tailoring recreation uses to be compatible with other values and sustainable over time.

The land has a certain capability to provide recreation opportunities, within a desired experience and social setting, for a given number of people. Since population trends are going up, the ability to provide particular opportunities may decrease, certainly the ability to provide opportunities within the same desired experience will change. As we plan we will be asking "What experiences should we manage for in the future?"

Current Direction and Implementation of the Forest Plan

In regards to recreation, the existing forest plan provides a mixture of site-specific and overly general direction. Site specific direction is too detailed for the intended purposes of a Forest Plan. Many concerns are addressed in the plan including improving and constructing more developed facilities and maintaining existing facilities and trails at a high level of quality. Additionally, the current plan supports the availability of a vast array of recreation settings (from roaded-natural to primitive categories using the Recreation Opportunity Spectrum) which provides recreation opportunities for many different types of uses. Basically there is something for everyone.

Each Management Area (MA) described in the plan addresses the various resources and their focus within the MA. However, the plan generally does not state which resource uses take precedence when conflicts arise. Where this is the case, it leaves the field manager in the difficult position of trying to "provide everything for everyone".

The Forest Service Natural Resource Agenda (USDA Forest Service, 1998) recognizes the recreation resource as one of four special emphasis areas nationally. The agenda states "the primary goal of the Forest Service is to protect and restore the settings for outdoor recreation experiences that millions of Americans have come to expect and enjoy". Recognizing the growing demand for outdoor recreation the agenda concentrates on five areas:

- Improving the setting for outdoor recreation and enhancing visitor experiences.
- Guaranteeing visitor satisfaction with services and facilities.
- Reaching out to rural and urban communities to capitalize on the social and economic opportunities associated with recreation on national forests.
- Strengthening relationships with those who cooperate with us to improve outdoor recreation for all Americans.
- Ensuring that recreation use does not impair the land's health.

Continuing Under Current Management Direction (No Action Alternative)

If we continue to manage the recreation resource as currently directed in the existing plan then we ignore a number of trends that will effect us in the future. The current plan does not address:

- The surge in population that is predicted for the near future
- Current direction focuses on developed recreation and facilities additions while much of current demand is for undeveloped or "dispersed" recreation
- Goals for various resource areas (recreation, range, timber, etc.) are not integrated. Therefore there are sometimes inherent conflicts as we try to implement the plan. The current plan does less than it could to help decision makers determine which resource uses are most appropriate in certain areas of the forest.

Needs For Change

We need to look at outdoor recreation from a broad regional scale (such as from state perspective) and determine where the Wasatch-Cache National Forest best fits in providing outdoor recreation opportunities. A pertinent planning question is "Does the WCNF have characteristics which make it uniquely able to provide certain types of recreation that are not or cannot be provided elsewhere?". The niche of this Forest in the overall scheme of outdoor recreation providers needs to be clarified. On a smaller scale we need to look at the Forest from a local perspective and see where it best fits with state, county, and private providers of outdoor recreation such as within Northern Utah.

We need to provide guidance for which resource uses take priority within a given management area (or prescription) when conflicts arise. We can accomplish some of this by using an
overlay or zoning process similar to that used in city and county planning. Some areas are commercially zoned for business, while some areas are zoned for residential living. Similarly, we could designate some areas as having high dispersed recreation value and zoning, whereas other areas could be zoned for municipal watershed protection or other priority values. Management Prescription Category 4 (Appendix B) is intended to identify those areas where recreation will be emphasized. We plan to refine this Prescription category with several sub-categories which are currently being developed.

We need to address the rapidly increasing demands for dispersed recreation. Currently use levels on some areas of the Forest are so high that resources degradation is occurring. Determining how to manage for future dispersed recreation is important in both protecting the land for future desired recreation experiences and for sustaining healthy ecosystems.

As a part of our plan revision, we intend to look at a range of scenarios to answer the hard questions about what the appropriate human use levels, both physical and social, of the Forest are. The relative degree of development versus undeveloped opportunities, the degree of commercially provided versus "do-it-yourself" recreation opportunities, and criteria to assist managers in setting priorities for development investments are all components that could be considered in the range of scenarios. Some parts of the Forest are more sensitive to increased human use and may need a more focused analysis. Other areas appear to be able to sustain current and projected use levels adequately. Use level scenarios and the accompanying land management direction can be described in desired future conditions (DFC's) for each management area.

- Need to address the trends in population growth and how the WCNF can best meet growing demands for outdoor recreation opportunities.
- Need to provide guidance for resource use preference within a management area or prescription area.
- Need to determine the WCNF niche as a outdoor recreation provider.
- Need to address management of dispersed recreation in order to sustain healthy ecosystems.

**Strengthening Current Management Direction**

This section describes changes that are needed to clarify current management direction or to create direction that supports and is consistent with Forest Service or other national direction. Since the current land management plan was signed in 1985, most areas of resource management and administration have had new Forest Service policy or regulatory direction created, or management techniques and scientific information may have been developed that need incorporation in our land management planning. Critical needs for change topics were addressed in topical discussions earlier in this document. This section describes changes that are needed to clarify, update, or enhance current management direction for topics which have not been considered by the Wasatch-Cache National Forest as its most pressing needs for change, or whose treatment will not be a primary factor in developing forest plan alternatives.

Changes in forest plans for the items in this section may be implemented in one of two ways. They may be treated during the revision process or they may be dealt with after revision by forest plan amendment, through the continuous assessment and planning process (CAP). At this time the Wasatch-Cache has not determined which means for implementation will be applied to the items in this section. That determination will be made and disclosed when the proposed action is made later this year.

**Heritage Resources**

The Wasatch-Cache Forest Plan needs changes to incorporate new management direction into the Heritage Program's goals, objectives, and guidelines. Specific direction that has been enacted since 1985 include:

1992 amendments to the National Historic Preservation Act that include 1) the development of educational and interpretive programs for public outreach and involvement (Section 110), 2) increased protection for historic properties on federal lands or lands where federal jurisdiction exists (Sections 106 and 301), and 3) consultation with appropriate Indian tribes for the management of traditional religious and cultural properties (Section 101).

The Native American Graves Protection and Repatriation Act of 1990 and its 1995 implementing regulations that require the Forest Service to consult with Indian tribes when Native American human remains and certain cultural objects are identified in the agency's archaeological collections or are discovered during the course of federal actions.

1996 Executive Order #13007 requiring federal agencies to protect and make accessible Indian, sacred sites on public lands for Indian religious practitioners. This includes consultation with Indian tribes for the identification of sacred sites, and for when federal actions or policies may restrict access to or use of a ceremonial site, or may adversely affect the physical integrity of the site.

The revised should also acknowledge the agency's 1992 change from a "Cultural Resources Program" focused primarily on compliance, to a "Heritage Program" that emphasizes a balance between protection of historic properties and public outreach for the enjoyment of American history.
Most heritage resources (usually archeological or historic sites) tend to occupy relatively small areas, compared to the size of management areas or areas to which management prescriptions might normally be applied. As such most management of and effects to these "sites" can generally be dealt with appropriately in project level analysis. Programmatic direction for some sets of sites that occupy larger areas (for example - groupings of sites from the late 19th and early 20th century tie-back period on the north slope of the Uintas Range), may be provided in desired future statements for particular management areas. Often, no forest-wide management direction is needed in a Forest Plan that goes beyond requirements stated in laws, regulations, or manual and handbook direction. While some considerable updating of the Wasatch-Cache's management strategies for heritage resources is desirable, much of this may be unnecessary in a Forest Plan.

**Air Quality**

Many of the concerns regarding air quality for the Forest Service are related to how we manage wildfires and prescribed fires. The ongoing analysis and proposal to amend Forest Plans in Utah for fire management and to reestablish fire as an integral part of the ecosystem will address this issue. Aside from this, the Forest Service plays a relatively minor role regarding air quality. The agency monitors air quality, but recognizes that most of the emissions on the Forest come from urban and industrial sources beyond the Forest's boundaries or the Forest Service's authority.

Air quality standards prescribed by the Clean Air Act, wilderness legislation, and in state and local statutes set limits within which the Forest Service must manage its activities. Current Forest Plan goals and objectives generally cover coordination and monitoring intent, although some minor changes may be desirable.

**Landownership Changes**

The current Wasatch-Cache Forest Plan includes several general goals for land ownership adjustments to consolidate lands, ensure public access, and better manage forest resources. Very specific objectives were developed in the 1985 Plan by which some of these goals might be attained. Most of these objectives are no longer valid (having been accomplished, or in some cases having become outdated). With our current model and thinking for forest planning, the development of similar new land exchange schedules is probably not of value, as we have learned that this is too dependent on budget. Many of the general goals established in 1985 are still of value. In addition, some policy changes due to new ecosystem management priorities (acquisition of lands for species or habitat protection) may need inclusion to update the current plan.

**Recreation and Non-Recreation Special Use Permits**

The Wasatch-Cache National Forest receives numerous applications each year from individuals, corporations, and other organizations who are interested in conducting activities on the Forest. There are usually a wide range of proposals for outdoor recreation outfitter-guides, summer homes, film-makers, special event operators, energy and pipeline transmission, and electronic communication sites. Some of these proposals (e.g. transmission corridors and electronic sites) may permanently affect substantial portions of the Forest, and may be dealt with through allocation by management prescription category where such uses are suitable. Other proposals are for short term, low-impact activities. A means of strengthening this direction may be through the development of systematic criteria for assessing the appropriateness of applications for some special use types in particular management areas.

In 1998 new regulations were approved that govern special use administration (36 CFR 251). Included in this policy are criteria that screen special use applications. Additional criteria for determining where and when special uses are appropriate may be developed and incorporated into management area direction when needed to address issues or meet desired conditions.

**Scenery Management System**

The current Forest Plan includes forest-wide standards that were developed under the Visual Management System, 1974. This system relied on "natural conditions" as the reference point for establishing an aesthetic value for the degree of alteration of a landscape. In 1995 the Forest Service adopted the Scenery Management System (SMS). This system provides a framework for the systematic inventory, analysis and management of the scenery resource. SMS incorporates terms and concepts of Ecosystem Management and improves the ability to integrate aesthetics with other resource values. A key component of SMS is incorporating public values and human influences when developing a description of the character of a landscape and its perceived integrity.

The new system recognizes human influences on the landscape and moves toward developing a "sense of place" by incorporating cultural influences and values. Implementation of this system may require new management direction.

**Oil and Gas Leasing**

The Forest Plan was approved prior to the passage of the Federal Onshore Oil and Gas Reform Act of 1987. This Act changed the role of the Forest Service in the leasing process and required additional analysis to determine the availability of lands for oil and gas leasing. Because of this, leasing direction in the 1985 Forest Plan was no longer valid. The Forest Plan was amended in 1994 to allow leasing on a portion of the north slope of the Uinta Mountains. There has been no further leasing analysis completed nor availability decision made for the remaining of the Forest. A means of making this decision may be through allocation of management prescription categories and generally allowed activities.
"Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed it is the only thing that ever has."

Margaret Mead

Chapter 5 Where Do We Go From Here?

This preliminary analysis of the management situation summarizes work to date from monitoring and evaluation, identification of needs for change to the Forest Plan based on new information, Forest Service Handbook and Manual direction, new laws or regulations, and working knowledge from Forest Service employees. Our next step is to take this information and develop a detailed proposed action to initiate formal NEPA (National Environmental Policy Act) analysis for Plan revision in the fall of 1999. At that time a Notice of Intent will be published in the Federal Register and formal "scoping" including future public participation will be initiated. As stated in Chapter 1, we are encouraging early public participation now to be sure our identified needs for change reflect public concerns as well as our own. Comments on this preliminary analysis of the management situation will be considered carefully as we develop the proposed action.

Proposed Action

The proposed action is the composite of land management strategies we will develop to address the needs for change. Much work needs to be completed this summer to develop details for the proposed action. The biggest part of this work will be development of proposed management direction for each newly delineated Management Area. This direction will include proposed desired future conditions, goals and objectives and standards and guidelines that are responsive to identified needs. Current Forest Plan direction which does not need to change will be retained and incorporated.

Management Prescription Categories will be used to map management emphasis zones where certain activities are allowed or not allowed. This mapping will identify specific inventoried roadless areas recommended for potential wilderness designation. It will include specific areas where protection of roadless and undeveloped values are proposed. The mapping will provide for timber production from areas identified as "appropriate" and for livestock forage production from areas identified as "suitable". Proposed management direction will provide for biodiversity through prescribed ranges of vegetation composition, structure, and pattern as well as soil processes which contribute to proper functioning of ecosystems. It will also provide for biodiversity through focus on species (threatened, endangered, sensitive) and communities (rare and unique).

Proposed Management Areas have been delineated primarily on watershed boundaries at this time to facilitate a watershed approach to planning and watershed restoration. Proposed management direction and Management Prescription Categories will include watershed health goals and criteria for establishing restoration priorities as well as protection for wetlands.

Proposed management direction will incorporate new transportation policy as it is developed. Proposed desired future condition descriptions will include the appropriate forest road system as an integral component for multiple purposes to match the values and needs of the Management Area. Proposed criteria for future site-specific travel management decisions may be included.

It is important to note that the proposed action outlined here is a proposal based on the information available today. As we work on details and consider public comments the proposal will be refined.
Alternative Development

The next step after we formally make a proposal in the fall will be the development of alternatives to the proposed action. In the revision process a reasonable range of alternatives will be analyzed. Alternatives are developed in response to issues identified in scoping. Regulations implementing the National Forest Management Act require the following alternative development process:

"The interdisciplinary team shall formulate a broad range of reasonable alternatives according to NEPA procedures. The primary goal in formulating alternatives, besides complying with NEPA procedures, is to provide an adequate basis for identifying the alternative that comes nearest to maximizing net public benefits, consistent with the resource integration and management requirements." (36 CFR 219.12(f))

During alternative development, existing Forest Plan goals and objectives, and standards and guidelines will be updated to reflect the management scenario for each alternative. They will be changed to:
- Update existing land management direction to incorporate new concepts.
- Incorporate new Management Area prescriptions and boundaries.
- Remove unnecessary and repetitive direction.
- Reflect new scientific knowledge and changes in societal attitudes, beliefs, and values.

The first step in developing alternatives is public scoping (identification of issues). The Planning Team will then begin to identify a range of alternatives that addresses significant issues. During this phase we plan to provide for as much two-way communication with interested citizens as possible. Our goal will be to develop a reasonable range of alternatives to address revision needs for change.

Works In Progress This Summer

Several major areas of work will be underway this summer to prepare details of the proposed action. You may contact us if you are interested in participating. Areas include:
- Evaluation of inventoried roadless areas for recommended wilderness designation.
- Determination of rangeland capability and suitability.
- Determination of tentatively suited and appropriate lands for timber production.
- Refinement and mapping of proposed Management Prescription Categories.

The issues that face us as we revise the WCNF Forest Plan are more complex than those that existed during original Plan development more than a decade ago. In general, American citizens' support for and concern about the environment has grown, while trust and support for governmental bureaucracy has deteriorated. People want to be more involved in the actions that affect their environment, especially their public lands. Because of this combination of circumstances, two-way communication and collaborative learning are vital elements of our revision process.

We are planning numerous activities and forums throughout the revision process, and intend to keep all interested parties informed as we proceed.

The following are some of the activities being planned. Public briefing forums will be held in various communities to initiate discussions about Plan Revision. During these sessions we will be asking for your ideas about how best to involve you and others who are interested as we move through the various planning phases. A mailing list was developed and will be continually updated to provide information and notification of public forums. The Forest's internet web pages will contain up-to-date information on this process as well as products as work progresses. Updates will also be made available through local media outlets.
Glossary and Acronyms

Sources for this glossary include: Forest Ecosystem Management: An Ecological, Economic, and Social Assessment; Report of the Forest Ecosystem Management Assessment Team (FEMAT); 1993; Region 4 Revision Desk Guide; Resource Planning Act Program Glossary 1995; and U.S.D.A. Forest Service Manual & Handbook.

abiotic
Non-living (refers to air, rocks, soil particles...).

adaptive management
A type of natural resource management in which decisions are made as part of an on-going process. Adaptive management involves testing, monitoring, evaluation, and incorporating new knowledge into management approaches based on scientific findings and the needs of society.

air pollutant
Any substance in air that could, if in high enough concentration, harm humans, animals, vegetation, or material. Air pollutants may include almost any natural or artificial matter capable of being airborne, in the form of solid particles, liquid droplets, gases, or a combination of these.

air quality
The composition of air with respect to quantities of pollution therein; used most frequently in connection with "standards" of maximum acceptable pollutant concentrations.

allotment (grazing)
Area designated for the use of a certain number and kind of livestock for a prescribed period of time.

alternative
In an Environmental Impact Statement (EIS), one of a number of possible options for responding to the purpose and need for action.

amenity
Resource use, object, feature, quality, or experience that is pleasing to the mind or senses; typically refers to values for which monetary values are not or cannot be established, such as scenic or wilderness values.

anadromous fish
Fish that hatch in fresh water, migrate to the ocean, mature there, and return to fresh water to reproduce; for example salmon and steelhead.

aquatic ecosystem
40 CFR 230.3 - Waters of the United States that serve as habitat for interrelated and interacting communities and populations of plants and animals. FSM 2526.05 - The stream channel, lake or estuary bed, water, biotic communities and the habitat features that occur therein.

ASQ (Allowable Sale Quantity)
On a National Forest, the quantity of timber that may be sold from a designated area covered by the forest plan for a specified time period.

attitudes, beliefs, and values
FSH 1909.17 Preferences, expectations and opinions people have for forests and the management and use of particular areas. Differing values and expectations have resulted in polarized perceptions that a healthy environment requires protection of lands from human influence, or increased attention to environmental quality presents a threat to employment, economy or lifestyle.

AUM (Animal Unit Month)
The amount of forage required by a one-thousand (1,000) pound cow, or the equivalent, for one month.

beneficial use
An actual or potential use that may be made of the waters of the state that is protected against quality degradation. Examples of beneficial uses include domestic, agricultural, and industrial water supplies, recreation, aquatic life, aesthetics, wildlife habitat, and salmon spawning.

biological diversity (or biodiversity)
The variety and abundance of life and it's processes. It includes all living organisms, the genetic differences among them, and the communities and ecosystems in which they occur. Biological diversity also refers to the compositions, structures, and functions of species and habitats and their interactions.

biophysical components
Refers to biological and/or physical components in an ecosystem.

biota
Living material.

BMPs (Best Management Practices)
Practices determined by the Utah Division of Water Quality, to be the most effective and practical means of preventing or reducing the amount of pollution generated by non-point sources.

board foot
A measurement of wood equivalent to a board one foot square and one inch thick. Usually expressed in terms of thousand board feet (MBF) or million board feet (MMBF).

broadcast burning
Burning forest fuels as they are, with no piling or windrowing.

candidate species
Plant and animal species being considered for listing as endangered or threatened, in the opinion of the U.S. Fish & Wildlife (FWS) or the National Marine Fisheries Service (NMFS). Category 1 candidate species are groups for which the FWS or NMFS has sufficient information to support listing proposals; category 2 candidate species are those for which available information indicates a possible problem but need further study to determine the need for listing.

Clean Air Act
An Act of Congress established to protect and enhance the quality of the Nation's air through air pollution prevention and control.

Clean Water Act
An Act of Congress which establishes policy to restore and maintain the chemical, physical, and biological integrity of the Nation's waters.
collaborative stewardship
We will care for the land and serve people by listening to all our constituents and by living within the limits of the land...commitment to healthy ecosystems and working with people on the land.

components of ecosystem management
Biological diversity, physical diversity, social diversity, and economic diversity are the four components of Southwest Idaho Ecosystem Management Framework.

composition (species)
The species that make up a plant or animal community, and their relative abundance.

connectivity
The degree to which similar but separated vegetation components of a landscape are connected.

conservation agreement
The term also refers to a requirement under Section 7 of the Endangered Species Act for Federal agencies to consult with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service with regard to federal actions that may affect listed threatened and endangered species or critical habitat.

corridor (landscape)
Landscape elements that connect similar patches of habitat through an area with different characteristics. For example, streamside vegetation may create a corridor of willows and hardwoods between meadows or through a forest.

cover type
The present vegetation of an area.

cumulative effects
Impacts on the environment that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

CWD (coarse woody debris)
Pieces of woody material having a diameter of at least three inches and a length greater than three feet (also referred to as large woody debris, or LWD).

demographic
Related to the vital statistics of human populations (size, density, growth, distribution...)

developed recreation
Recreation that requires facilities that in turn result in concentrated use of an area; for example, a campground or ski resort.

DFC (Desired Future Condition)
A portrayal of the land, resource, or social and economic conditions that are expected to result in 50-100 years if objectives are achieved. A vision of the long-term conditions of the land.

dispersed recreation
Recreation that does not occur in a developed recreation setting, such as hunting, scenic driving, and backpacking.

disturbance
Any event, such as wildfire or a timber sale, that alters the structure, composition, or function of an ecosystem.

ecological integrity
In general, ecological integrity refers to the degree to which the elements of biodiversity and the functions that link them together and sustain the entire system are complete and capable of performing desired functions. Exact definitions of integrity are somewhat relative and may differ depending on the type of ecosystem being described.

ecological function
The process through which the constituent living nonliving elements of ecosystems change and interact, including biogeochemical processes and succession.

ecological processes
The actions or events that link organisms (including humans) and their environment such as disturbance, successional development, nutrient cycling, carbon sequestration, productivity, and decay.

economic efficiency
Producing goods and services in areas best suited for that production based on natural biophysical advantage or an area’s ability to best serve regional demands of people.

economic dependency
Dependent upon the output(s) of the forest(s).

economic region
A group of communities and their surrounding rural areas that are linked together through trade.

ecosystem
A naturally occurring, self-maintained system of varied living and non-living interacting parts that are organized into biophysical and human dimension components.

ecosystem health
A condition where the parts and functions of an ecosystem are sustained over time and where the system’s capacity for self-repair is maintained, such that goals for uses, values, and services of the ecosystem are met.

ecosystem management
Scientifically based land and resource management that integrates ecological capabilities with social values and economic relationships, to produce, restore, or sustain ecosystem integrity and desired conditions, uses, products, values, and services over the long term.

eligibility (for Wild and Scenic Rivers)
A river is eligible for inclusion in the National Wild and Scenic River System if it is free-flowing and has at least one river-related value that is considered outstandingly remarkable.

described species
Designated by the U.S. Fish and Wildlife Service, an animal or plant that has been given federal protection status because it is in danger of extinction throughout all or a significant portion of its natural range.
forage
Plant material (usually grasses, forbs, and brush) that is available for animal consumption.

forbs
Broadleaf ground vegetation with little or no woody material.

fragmentation
The splitting or isolating of patches of similar habitat. Habitat can be fragmented by natural events or development activities.

free-flowing
A stream that exists or flows in a natural condition without impoundment, diversion, straightening, rip-rapping, or any other modification of the waterway.

g eocl imatic setting
The geology, climate (precipitation and temperature), vegetation, and geologic processes (such as landslides or debris flows) that are characteristic of a place; places with these similar characteristics are said to have the same geoclimatic setting.

GIS (Geographic Information System)
A computer system that stores and uses spatial (mappable) data.

goods and services
36 CFR 219 - The various outputs produced by forest and rangeland renewable resources. The tangible and intangible values of which are expressed in market and non-market terms.

habitat
The place where a plant or animal lives and grows under natural conditions.

hierarchy
A general integrated system comprising two or more levels, the higher controlling to some extent the activities of the lower levels; a series of consecutively subordinate categories forming a system of classification.

HRV (Historical Range of Variability)
The natural fluctuation of components of healthy ecosystems over time. In this EIS, refers to the range of conditions and processes that are likely to have occurred prior to settlement of the project area by people of European descent (approximately the mid-1800s), which would have varied within certain limits over time.

human dimensions
Refers to social and economic components of an ecosystem.

HUC (Hydrologic Unit Codes)
A coding system developed by the U.S. Geological Service to map geographic boundaries of watersheds of various sizes.

indicators
A measure of or surrogate for the elements of ecosystem management.

landtype associations
A grouping of landtypes that are similar in general surface configuration and origin.

lifestyle
The way people live.

management area
A land area with similar management goals and a common prescription, as described in the Forest Plan.

MIS (Management Indicator Species)
Representative species whose habitat conditions and population changes are used to assess the impacts of management activities on similar species in a particular area.

mitigation
Actions that avoid, minimize, reduce, eliminate, or rectify impacts from management practices.

monitoring
The process of collecting information to evaluate if objectives and anticipated results of a management plan are being realized, or if implementation is proceeding as planned.

National Forest Scenic Byway
A road on National Forest System Land that has been designated by the Chief of the Forest Service for its exceptional scenic, historic, cultural, recreational, or natural resources.

NEPA (National Environmental Policy Act)
An abbreviation for the National Environmental Policy Act of 1969, which requires environmental analysis and public disclosure of federal actions.

niche
A situation or activity specially suited to a Forest’s character or ability.

no action (alternative)
The most likely condition expected to exist if current management practices continue unchanged. The analysis of this alternative is required for federal actions under NEPA.

nutrient cycling
Circulation or exchange of elements such as nitrogen and carbon between non-living and living portions of the environment. Includes all mineral and nutrient cycles involving mammals and vegetation.

outstandingly remarkable value
Characteristic of a river segment that is judged to be a rare, unique, or exemplary feature that is significant at a regional or natural scale. Values can be recreational, scenic, geological, historical, cultural, biological, botanical, ecological, heritage, hydrological, paleontological, scientific, or research-related.

pattern
The spatial arrangement of landscape elements (patches, corridors, matrix) that determines the function of a landscape as an ecological system.

population
The people, wildlife, fish, or plants inhabiting a specific area.
prescribed fire
Any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and NEPA requirements must be met before ignition.

PFC (Properly Functioning Condition)
Ecosystems are in PFC when they function within their historic range of variability.

proposed action
The project or set of activities that a federal agency intends to implement, as defined in NEPA regulations.

ROS (Recreation Opportunity Spectrum)
A framework for stratifying and defining classes of outdoor recreation environments, activities, and experiences. The settings, activities, and opportunities for obtaining experiences are arranged along a continuum or spectrum divided into six classes—primitive, semiprimitive non-motorized, semiprimitive motorized, roaded natural, rural, and urban.

RVD (Recreation Visitor Day)
Twelve hours of recreation use in any combination, of persons and hours (one person for 12 hours, three persons for four hours, etc.).

resilient, resiliency
The ability of a system to respond to disturbances. Resilience is one of the properties that enable the system to persist in many different states of successional stages. In human communities, refers to the ability of a community to respond to externally induced changes such as larger economic or social forces.

roadless areas
Areas that do not have developed and maintained roads, and that are substantially natural.

scale
Defined in this framework as geographic extent; for example, region, sub-regional, or landscape scale.

scoping
The process the Forest Service uses to determine, through public involvement, the range of issues that the planning process should address.

sensitive species
Selected plant and animal species for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers or density, and significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution. Sensitive species are not covered in the Endangered Species Act.

silviculture
The care and tending of stands of trees to meet specific objectives.

snag
A standing dead tree.

structure
The size and arrangement, both vertically and horizontally, of vegetation.

subbasin
A fourth field hydrologic unit that nests within the hierarchical system developed by the U.S. Geological Survey to describe watersheds. Typically 800.00 to 1,000,000 acres in size, a subbasin is smaller than a river basin (third field unit), and larger than a watershed (fifth field unit).

succession
The replacement in time of one plant community with another. The prior plant community (or successional stage) creates conditions that are favorable for the establishment of the next stage.

suitability (for Wild and Scenic Rivers)
Evaluation of eligible rivers for inclusion into the National Wild and Scenic River System by determining the best use of the river corridor and the best method to protect the outstandingly remarkable values within the river corridor.

suited land
Forest land designated in the Forest Plan to be managed for timber production on a regulated basis.

sustainability
The ability to maintain a desired condition or flow of benefits over time.

threatened species
Designated by the U.S. Fish and Wildlife Service, a plant or animal species likely to become endangered throughout all or a specific portion of its range within the foreseeable future.

TMDL (Total Maximum Daily Load)
TMDL is the sum of waste load allocations for point sources, non-point sources, natural background, and a margin of safety. A TMDL specifies the amount of a pollutant that needs to be reduced to meet water quality standards set by the state. TMDL is used in a process to attain water quality standards that 1) identifies water quality problems and contributing pollutant sources, 2) allocates pollution control responsibilities among sources in the watershed, and 3) provides a basis for taking actions needed to restore a water body.

unwanted wildland fire
Any wildland fire not covered by a Fire Management Plan. These fires are subject to immediate suppression action.

Wilderness Areas
Areas that are without developed and maintained roads, and that are substantially natural, and that Congress has designated as part of the National Wilderness Preservation System.

wildland fire
Any nonstructural fire, other than prescribed, that occurs in the wildland. This term encompasses fires previously called both wildfires and prescribed natural fires.

wildland fire use
The management of naturally ignited wildland fires to accomplish specific preestablished resource management objectives in predefined geographic areas outlined in Fire Management Plans. Operational management is described in the Wildland Fire Implementation Plan. Wildland fire use is not to be confused with "fire use", which is a broader term encompassing more than just wildland fires.

ZOI (Zone of Influence)
The area that is economically and socio-economically influenced by Forest Service management.
Acronyms and Symbols

ASQ  Allowable Sale Quantity
AUM  Animal Unit Month
BLM  Bureau of Land Management
BMP  Best Management Practice
CFR  Code of Federal Regulations
CWD  Coarse Woody Debris
DBH  Diameter at Breast Height
DEIS  Draft Environmental Impact Statement
DFC  Desired Future Condition
EA  Environmental Assessment
EIS  Environmental Impact Statement
EPA  Environmental Protection Agency
ERU  Ecological Reporting Unit
ESA  Endangered Species Act
FACA  Federal Advisory Committee Act
FEIS  Final Environmental Impact Statement
FSH  Forest Service Handbook
FSM  Forest Service Manual
GIS  Geographical Information System
HRV  Historical Range of Variability
HUC  Hydrologic Unit Code
IWM  Integrated Weed Management
MIS  Management Indicator Species
MMBF  Million Board Feet
MOU  Memorandum of Understanding
NEPA  National Environmental Policy Act
NFMA  National Forest Management Act
NMFS  National Marine Fisheries Service
NOI  Notice of Intent
PFC  Properly Functioning Condition
PILT  Payment in Lieu of Taxes
PVG  Potential Vegetation Group
PVT  Potential Vegetation Type
RNA  Research Natural Area
ROD  Record of Decision
ROS  Recreation Opportunity Spectrum
RVD  Recreation Visitor Day
TES  Threatened, Endangered, and Sensitive (species)
TMDL  Total Maximum Daily Load
USDA  United States Department of Agriculture
USDI  United States Department of Interior
USFWS  United States Fish and Wildlife Service
WSR  Wild and Scenic River
ZOI  Zone of Influence
>  Greater than
<  Less than

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Related Web links

Committee of Scientists - www.cof.orst.edu/org/scicomm/

Ecological Society of America AD HOC Committee on Ecosystem Management - www.sdsc.edu/~ESA/execsum.htm

Envision Utah - www.envisionutah.org

Quality Growth Efficiency Tools (QGET) - www.governor.state.ut.us/dea/QGET/2.htm

USDA Forest Service - www.fs.fed.us/

Wasatch-Cache National Forest - www.fs.fed.us/wcnf/
Wasatch-Cache National Forest Proposed Management Areas

Location:

Logan
Ogden
Evanston
Salt Lake City
Park City
Provo

Wasatch-Cache NF
## Appendix A

### MANAGEMENT AREA DELINEATION CRITERIA

<table>
<thead>
<tr>
<th>Management Area</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whitney</td>
<td>Unique landscape and capability when compared to the rest of the north slope Uinta Mts.</td>
</tr>
<tr>
<td>Stillwater/Hayden</td>
<td>Use patterns (present and historic) developed recreation fish heavily stocked by DWR transportation corridors Winter use (snowmobiles) summer homes Amethyst Basin (no livestock)</td>
</tr>
<tr>
<td>East Fork Bear River</td>
<td>transportation corridor (boy scout camp) Unique DFCs are likely lower amount of developed recreation lower amount of use than Stillwater/Hayden</td>
</tr>
<tr>
<td>Uinta Mill Creek</td>
<td>checkerboard ownership Bonneville cutthroat use patterns are different from adjacent watersheds lots of recreation use</td>
</tr>
<tr>
<td>West Fork-Middle Fork Blacks Fork</td>
<td>West Fork Blacks Fork: transportation corridor (motorized) Colorado cutthroat (Brush Creek) user groups (motorized use) more dispersed recreation different landscapes different landscapes Middle Fork Blacks Fork: roadless lack of access area of concern to many publics</td>
</tr>
<tr>
<td>East Fork Blacks Fork</td>
<td>transportation corridor (trail to Ashley N.F. - nonmotorized) Wilderness user groups/portals transition range for elk/moose aspen being replaced by conifer</td>
</tr>
</tbody>
</table>

1 the term "different landscapes" refers to a difference from adjacent watersheds.
| Cutthroat/Mosslander | flat topography (relative)  
| | lots of elk summer range  
| | potholes  
| | lodgepole - different wildlife habitat  
| | different landscapes  

| West Fork Smiths Fork | Colorado cutthroat  
| | poor transportation corridor  
| | dispersed recreation use - especially high in hunting season  

| Gilbert Creek | Colorado cutthroat  
| | transportation corridor (major)  
| | dispersed recreation use  

| East Fork Smiths Fork | Developed recreation  
| | (main developed recreation access)  
| | major wilderness access  
| | culinary water supply for Bridger Valley  

| Henrys Fork | oil and gas development  
| | well developed transportation system  
| | Colorado cutthroat  
| | high density of roads  
| | high-grade road development  

| Beaver Creek Drainages | absence of Colorado cutthroat  
| | high amounts of insect and disease occurrence (40-50 percent mortality) which has resulted in different age class diversity  
| | potholes  
| | moderate wilderness use  
| | no developed recreation  
| | high value winter range (north)  
| | ungrazed by domestic livestock (south)  
| | resulting in very good elk habitat  
| | bighorn sheep habitat (north), esp. lambing  

| Burnt Fork/Thompson/Kabell | possible Colorado cutthroat  
| | very high insect and disease occurrence (about 80 percent mortality)  
| | high value summer range (south)  
| | high value winter range (north)  
| | high conifer encroachment in riparian areas  
| | no grazing on south end ➔ good elk habitat  

### Kamas Ranger District

<table>
<thead>
<tr>
<th>Management Area</th>
<th>Criteria</th>
</tr>
</thead>
</table>
| Weber | more primitive roads (less access)  
| | more primitive recreation opportunities  
| | significantly lower recreation use  
| | moderate evidence of management  
| | moderately rich wildlife habitat  
| | wetter areas  
| | marginal sheep/cattle allotments  

| Provo/Beaver | Very well developed road access  
| | less primitive recreation opportunities  
| | 17 developed campgrounds  
| | very heavily used  
| | high evidence of management  
| | some summer homes  
| | area of concern to many publics  

| Duchesne | little access  
| | mostly wilderness or non-motorized backcountry  
| | mostly very primitive recreation opportunities  
| | little evidence of management  

### Salt Lake Ranger District

<table>
<thead>
<tr>
<th>Management Area</th>
<th>Criteria</th>
</tr>
</thead>
</table>
| North Davis | unique landscape and capabilities  
| | watershed  
| | relatively minor recreation opportunities  

| South Davis | debris flow  
| | dispersed recreation  
| | watershed  

| Mueller Park | developed recreation  
| | municipal watershed  

2 Various management emphasis areas occur within this management area including: 1) Semiprimitive nonmotorized backcountry (concentrated and heavily managed backcountry recreation); 2) Motorized backcountry (concentrated and heavily managed motorized recreation); 3) Scenic Byway/Highway Corridor (concentrated, heavily managed motorized recreation); 4) Cedar Hollow (heavily used motorized recreation, ATV use); 5) Beaver (all the attributes of Scenic Byway/Highway plus rich/diverse wildlife habitat and diverse ecotypes). Cedar Hollow might fit better with a management area on the Uinta National Forest; common management direction, standards, and guidelines.
<table>
<thead>
<tr>
<th>Red Butte RNA</th>
<th>Research Natural Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emigration Canyon/Lambs Canyon</td>
<td>private land intermingled ownersheds dispersed recreation watershed elk habitat</td>
</tr>
<tr>
<td>Mill Creek (Salt Lake)</td>
<td>developed and dispersed recreation limited by fee demo area wilderness access wildlife habitat</td>
</tr>
<tr>
<td>Big Cottonwood Canyon</td>
<td>high developed recreation high dispersed recreation ski areas public/private land ownership municipal watershed</td>
</tr>
<tr>
<td>Little Cottonwood Canyon</td>
<td>developed recreation dispersed recreation (fewer access points than in Big Cottonwood Canyon) ski areas land ownership municipal watershed</td>
</tr>
<tr>
<td>Stansbury Mountains</td>
<td>unique landscapes (west desert ecosystem) most use still primarily tied to Tooele County not based on watershed boundary</td>
</tr>
</tbody>
</table>

**Ogden and Logan Ranger Districts**

<table>
<thead>
<tr>
<th>Management Area</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wasatch Front</td>
<td>Front: urban interface fire protection watershed protection dispersed recreation <strong>North Fork:</strong> rural interface fire protection fire differences because of different vegetation otherwise similar recreation to the Front</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wheeler/Strawberry</th>
<th>watershed protection winter recreation Snowbasin resort large wetland area below resort culinary water supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Grove</td>
<td>wildlife winter range motorized dispersed recreation grazing</td>
</tr>
<tr>
<td>Pineview/South Fork</td>
<td>Intensive developed recreation</td>
</tr>
<tr>
<td>Middle Fork</td>
<td>wildlife winter range nonmotorized dispersed recreation</td>
</tr>
<tr>
<td>Causey</td>
<td>Reservoir: water activities <strong>Ridges:</strong> wildlife winter/summer ranges nonmotorized dispersed recreation watershed protection Wasatch/Mountains: motorized dispersed recreation wildlife summer range grazing</td>
</tr>
<tr>
<td>Woodruff</td>
<td>TES fisheries grazing motorized dispersed recreation herd units -summer range water quality</td>
</tr>
<tr>
<td>Bear</td>
<td>livestock grazing unique landtypes (vegetation stringers) and cover types motorized dispersed recreation Bear Lake east drainages unique wildlife use patterns private land interface</td>
</tr>
<tr>
<td>Location</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Curtis:                | summer range  
timber/vegetation management  
sheep grazing  
motorized dispersed recreation  
snowmobile activity  
**Hardware:**  
winter range  
Hardware Ranch  
motorized dispersed recreation  
**Left Hand Fork:**  
elk management for Hardware  
dispersed recreation use  
grazing patterns  
common transportation system  
watershed, scattered ownership |
| Cache Valley Front     | viewshed  
high access from valley (urban interface)  
water supply to Cache Valley  
travel corridors to high countries  
big game winter range |
| Logan Canyon           | Scenic Byway  
major travel corridor  
developed recreation corridor  
common watershed  
common vegetation types |
| Wellsville Mountains   | unique mountain range  
wilderness and adjacent lands |
Appendix B  Management Prescriptions

<table>
<thead>
<tr>
<th>Number</th>
<th>Management Prescription Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Wilderness</td>
</tr>
<tr>
<td>1.1</td>
<td>Existing Wilderness</td>
</tr>
<tr>
<td>1.1.1</td>
<td>Desired Condition Class I</td>
</tr>
<tr>
<td>1.1.2</td>
<td>Desired Condition Class II</td>
</tr>
<tr>
<td>1.1.3</td>
<td>Desired Condition Class III</td>
</tr>
<tr>
<td>1.2</td>
<td>Recommended Wilderness from new Plan Revision</td>
</tr>
<tr>
<td>2.0</td>
<td>Special Management Areas</td>
</tr>
<tr>
<td>2.1</td>
<td>Wild and Scenic Rivers</td>
</tr>
<tr>
<td>2.1.1</td>
<td>Wild classification</td>
</tr>
<tr>
<td>2.1.2</td>
<td>Scenic classification</td>
</tr>
<tr>
<td>2.1.3</td>
<td>Recreational classification</td>
</tr>
<tr>
<td>2.2</td>
<td>Research Natural Areas</td>
</tr>
<tr>
<td>2.3</td>
<td>Scenic Byways</td>
</tr>
<tr>
<td>3.0</td>
<td>Protection of Aquatic, Terrestrial, and Hydrologic Integrity is Emphasized</td>
</tr>
<tr>
<td>3.1</td>
<td>Preservation Emphasis</td>
</tr>
<tr>
<td>3.2</td>
<td>Restoration Emphasis</td>
</tr>
<tr>
<td>4.0</td>
<td>Multiple Resource Uses Where Recreation is Emphasized</td>
</tr>
<tr>
<td>5.0</td>
<td>Multiple Resource Uses Where Forested Vegetative Management is Emphasized</td>
</tr>
<tr>
<td>5.1</td>
<td>Emphasis is on maintaining or restoring forested ecosystem integrity while meeting multiple resource objectives, which may include timber management.</td>
</tr>
<tr>
<td>5.2</td>
<td>Emphasis is on maintaining or restoring forested ecosystem integrity while managing timber for growth and yield.</td>
</tr>
<tr>
<td>6.0</td>
<td>Multiple Resource Uses Where Non-Forested (Rangeland) Vegetative Management is Emphasized</td>
</tr>
<tr>
<td>6.1</td>
<td>Emphasis is on maintaining or restoring non-forested ecosystem integrity while meeting multiple resource objectives, which may include livestock forage production.</td>
</tr>
<tr>
<td>6.2</td>
<td>Emphasis is on maintaining or restoring non-forested ecosystem integrity while managing for livestock forage production.</td>
</tr>
<tr>
<td>7.0</td>
<td>Intermingled Public/Private Lands</td>
</tr>
<tr>
<td></td>
<td>(Primary emphasis identified under prescription 3. 4, 5, 6, or 8)</td>
</tr>
<tr>
<td>7.1</td>
<td>Intermingled private or public lands in an urban or town interface.</td>
</tr>
<tr>
<td>7.2</td>
<td>Intermingled private or public lands in a rural interface.</td>
</tr>
<tr>
<td>8.0</td>
<td>Concentrated Development Areas (strong economic emphasis)</td>
</tr>
</tbody>
</table>

1 Bold numbers appear on Management Area Maps.
### Management Prescription Categories and Generally Allowed Activities

**Summary Table**

<table>
<thead>
<tr>
<th>Management Prescription Category</th>
<th>Generally Allowed Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number</strong></td>
<td><strong>Name</strong></td>
</tr>
<tr>
<td>1.1.1</td>
<td>Existing Wilderness- Desired Condition Class 1</td>
</tr>
<tr>
<td>1.1.2</td>
<td>Existing Wilderness- Desired Condition Class 2</td>
</tr>
<tr>
<td>1.1.3</td>
<td>Existing Wilderness- Desired Condition Class 3</td>
</tr>
<tr>
<td>1.2</td>
<td>Recommended Wilderness</td>
</tr>
<tr>
<td>2.1.1</td>
<td>Wild Rivers</td>
</tr>
<tr>
<td>2.1.2</td>
<td>Scenic Rivers</td>
</tr>
<tr>
<td>2.1.3</td>
<td>Recreation Rivers</td>
</tr>
<tr>
<td>2.2</td>
<td>Research Natural Areas</td>
</tr>
<tr>
<td>2.3</td>
<td>Scenic Byways</td>
</tr>
<tr>
<td>3.1</td>
<td>Aquatic, Terrestrial, &amp; Hydrologic Integrity</td>
</tr>
<tr>
<td>3.2.1</td>
<td>Municipal Watershed Emphasis</td>
</tr>
<tr>
<td>3.2.2</td>
<td>Aquatic Habitat Emphasis</td>
</tr>
<tr>
<td>3.2.3</td>
<td>Terrestrial Habitat Emphasis</td>
</tr>
<tr>
<td>4.0</td>
<td>Recreation Emphasis</td>
</tr>
<tr>
<td>5.1</td>
<td>Forested Ecosystems - Multiple Resource Goals</td>
</tr>
<tr>
<td>5.2</td>
<td>Forested Ecosystems - Timber Growth and Yield</td>
</tr>
<tr>
<td>6.1</td>
<td>Non-forested Ecosystems - Multiple Resource Goals</td>
</tr>
<tr>
<td>6.2</td>
<td>Non-forested Ecosystems - Forage Production</td>
</tr>
<tr>
<td>7.1</td>
<td>Urban Intermingled Public/Private Lands</td>
</tr>
<tr>
<td>7.2</td>
<td>Rural Intermingled Public/Private Lands</td>
</tr>
<tr>
<td>8.0</td>
<td>Concentrated Development Areas</td>
</tr>
</tbody>
</table>

1Existing direction for motorized recreation is contained in each forest’s travel map. The travel maps identify “off-trail and off-road travel restrictions” and “on-trail opportunities”. The forest plan revision and amendment process does not propose changes to the existing travel maps.
MANAGEMENT PRESCRIPTION CATEGORIES - Summary Descriptions

1.0 - WILDERNESS

THEME

This prescription includes areas designated by Congress as Wilderness and areas recommended by the Forest Service for Wilderness designation. Management emphasis is on maintaining wilderness attributes, including natural appearance, natural integrity, opportunities for solitude, opportunities for primitive recreation, and any identified special features.

MANAGEMENT EMPHASIS YOU WILL SEE

The area is managed to allow natural processes to prevail in adherence with the 1964 Wilderness Act and the 1984 Utah Wilderness Act.

1.1.1 Existing Wilderness - Desired Condition Class I

This area in existing wilderness is 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 efforts and spend extra effort to leave no trace. Encounters with others are rare.

1.1.2 Desired Condition Class II

This area in existing wilderness is characterized by predominately unmodified natural environment. Human induced change is evident but will recover. Outstanding opportunities for solitude and unconfined recreation exist. Encounters with others are more frequent than Class I.

1.1.3 Desired Condition Class III

This area in existing wilderness is characterized by predominately 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.

1.2 Recommended Wilderness

These areas are recommended for wilderness status that have gone through the Forest Plan Revision Roadless inventory, evaluation and recommendation analysis as required by the National Forest management Act (NFMA) planning regulations and the 1984 Utah Wilderness Act. Congress retains the final authority for designating wilderness areas. For areas recommended as wilderness, wilderness characteristics must be protected until Congress takes final action (FSH 1909.12,7.31).

GENERALLY ALLOWED ACTIVITIES

<table>
<thead>
<tr>
<th>Prescription</th>
<th>Timber Harvest</th>
<th>Road Building</th>
<th>Motorized Recreation</th>
<th>Grazing1</th>
<th>Fire Use/Suppression2</th>
<th>Recreation Development3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.1.1.3</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Limited</td>
<td>No</td>
</tr>
<tr>
<td>1.2</td>
<td>No</td>
<td>No</td>
<td>Limited</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

1 As allowed under the 1984 Utah Wilderness Act

2 Fire use is equivalent to prescribed fire (management ignited) and wildland fire (prescribed natural fire). Suppression has two categories: full suppression (control) and modified (confine, contain, monitor).

3 Recreation development as used in these descriptions refer to major structural public use areas such as campgrounds and trailheads. Minor facilities for comfort and convenience such as trails and outhouses are not considered recreation development.
2.0 - SPECIAL MANAGEMENT AREAS THEME

THEME

This prescription includes areas that have been or will be administratively or Congressionally designated for the conservation of specific values. These areas are Wild and Scenic Rivers and their corridors, Research Natural Areas, and National Scenic Byways. Management emphasis is on maintaining or restoring those values for which the area was established.

MANAGEMENT EMPHASIS YOU WILL SEE

2.1 Wild and Scenic Rivers: Rivers include land corridors that extend 1/4 mile from each bank. Rivers and their corridors, including those recommended for study, are managed to protect their free-flowing waters and existing or potential outstandingly remarkable values. Any developments that affect these values are prohibited (this includes hydropower developments).

2.1.1 Wild classification
2.1.2 Scenic classification
2.1.3 Recreational classification

2.2 Research Natural Areas: Manage existing and proposed Research Natural Areas to protect their unique qualities. Vegetation manipulation is prohibited except in cases where these activities help perpetuate the unique ecosystem.

2.3 Scenic Byways: Manage National Scenic Byways (Logan Canyon and Mirror Lake Highway) to protect and maintain their outstanding scenic quality.

GENERALLY ALLOWED ACTIVITIES

<table>
<thead>
<tr>
<th>Prescription</th>
<th>Timber Harvest</th>
<th>Road Building</th>
<th>Motorized Recreation</th>
<th>Grazing</th>
<th>Fire Use/Suppression</th>
<th>Recreation Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1.1</td>
<td>No</td>
<td>No</td>
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<td>Limited</td>
<td>Yes</td>
<td>Yes</td>
<td>Limited</td>
<td>Limited</td>
</tr>
<tr>
<td>2.1.3</td>
<td>Limited</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Limited</td>
<td>Yes</td>
</tr>
<tr>
<td>2.2</td>
<td>No</td>
<td>No</td>
<td>Limited</td>
<td>No</td>
<td>Limited</td>
<td>No</td>
</tr>
<tr>
<td>2.3</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Limited</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.0 MULTIPLE RESOURCE USES WHERE AQUATIC, TERRESTRIAL, AND HYDROLOGIC INTEGRITY ARE EMPHASIZED

THEME

This prescription includes lands where management emphasis is preserving, maintaining or restoring quality aquatic, terrestrial, and hydrologic conditions. Although other uses and activities may occur, the primary emphasis is providing high quality fish habitat, wildlife habitat, and watershed conditions that meet desired conditions. Commodity production occurs as part of activities designed to improve or maintain habitat or watershed conditions.

MANAGEMENT EMPHASIS YOU WILL SEE

3.1 - Emphasis is on maintaining existing quality aquatic, terrestrial, and hydrologic conditions through limited management activity. This emphasis could include areas where habitat and resource values, though not at desired conditions, are important and require protection. Other uses and activities may occur provided they do not prohibit attainment of objectives for the areas. These lands are not a part of the suited timber base.

Because of the importance of these areas for meeting immediate habitat objectives, the strategy is to take a very low risk approach to management for this planning period (10-15 years). The tools associated with this prescription are of lower intensity and can provide for maintenance of existing conditions through natural processes and minimal management activities. This prescription would not prove the management activities normally associated with extensive restoration of physical and biological components. Management activities are designed to pose low risk of sediment delivery and low risk of adversely affecting the hydrologic regime, riparian areas, and important terrestrial habitat.

3.2 - Emphasis is on restoration and/or maintenance of quality aquatic, terrestrial, and hydrologic conditions through moderate management activity. This emphasis would include areas where habitat and resource values are not at desired conditions, are important and should be more actively restored and/or rehabilitated. Other uses and activities may occur provided they do not prohibit attainment of objectives for the areas. These lands are a part of the suited timber base, but may require forest and/or rangeland vegetation treatments to improve overall.

The importance of these areas is for meeting mid- to long-term habitat objectives, the strategy is to take a low to moderate risk approach to management for this planning period (10-15 years). The tools associated with this prescription are of moderate intensity and can provide for improvement of existing conditions through natural processes and moderate management activities. As with 3.1, this prescription would not provide the management activities normally associated with extensive restoration of physical and biological components. Management activities are designed to pose low risk of sediment delivery and low risk of adversely affecting the hydrologic regime, riparian areas, and important terrestrial habitat.

3.2.1 Municipal Watershed Emphasis: Manage to maintain or improve soil productivity and watershed conditions. Where improvement is needed, it is achieved by implementing watershed improvement projects, and by applying soil and water conservation practices to land-disturbing activities.
3.2.2 Aquatic Habitat Emphasis: Manage for quality habitat to provide for recovery of metapopulations of rare fish and riparian-dependent species. Improve or maintain conditions to meet desired conditions of habitat for threatened, endangered, sensitive, or management indicator species.

3.2.3 Terrestrial Habitat Emphasis: Manage upland habitat to provide for quality habitat and recovery of plant and animal species. Improve or maintain conditions to meet desired conditions of habitat for threatened, endangered, sensitive, or management indicator species.

GENERALLY ALLOWED ACTIVITIES

<table>
<thead>
<tr>
<th>Prescription</th>
<th>Timber Harvest</th>
<th>Road Building</th>
<th>Motorized Recreation</th>
<th>Grazing</th>
<th>Fire Use/Suppression</th>
<th>Recreation Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Limited</td>
<td>Limited</td>
<td>Limited</td>
<td>Limited</td>
<td>Limited</td>
<td>Limited</td>
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<tr>
<td>3.2.1-3.2.3</td>
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<td>Yes</td>
<td>Limited</td>
<td>Yes</td>
<td>Limited</td>
<td>Limited</td>
</tr>
</tbody>
</table>

1 Vegetation management (timber harvest, thinning, fire use/suppression, etc.) is used to maintain or restore healthy ecosystems with emphasis on fish habitat, wildlife habitat, and watershed conditions. Wood products are produced to support habitat and watershed objectives.

2 Emphasis is on reducing adverse impacts from roads. Road density and design will be compatible with watershed and habitat objectives.

3 Livestock use in suitable areas and accompanying management practices need to be compatible with desired aquatic, terrestrial, and hydrologic conditions.

4.0 - MULTIPLE RESOURCE USES WHERE RECREATION IS EMPHASIZED

THEME

This prescription includes lands managed for dispersed and developed recreation. Recreation is an important use and may be the dominant influence on the ground. A wide spectrum of recreational settings are provided. Facilities are constructed and maintained, and areas for motorized and non-motorized recreation opportunities are designated. Landscape elements may be altered by human activities and developments. Recreation is managed to ensure maintenance of watershed health including water quality. Recreation resource uses are emphasized; however, other resource uses are allowed to the extent that they do not significantly compromise recreation resource values. Human use and presence range from subtle to obvious. Commodity production may occur as a result of activities designed to achieve recreation goals and objectives.

Further subdivisions of this category haven't been drafted at this time. We plan on involving the public to help with this effort in the near future.
5.0 MULTIPLE RESOURCE USES WHERE FORESTED VEGETATION MANAGEMENT IS EMPHASIZED

THEME

This prescription includes lands that are predominantly forested. Emphasis is on maintaining and restoring forest ecosystem health to achieve sustainable resource conditions, while providing favorable conditions for commodity and non-commodity outputs.

MANAGEMENT EMPHASIS YOU WILL SEE

5.1 Emphasis is on maintaining or restoring forested vegetation to achieve multiple resource goals and objectives. Management area direction also includes timber resource goals and objectives but achievement of high yields is not the primary purpose. Management activities encompass the full range of land and resource treatment activities.

5.2 Emphasis is on timber growth and yield. Forested landscapes range in appearance from near natural to altered where management activities are evident. Goods and services are provided within the productive capacity of the land, and ecological functions are maintained. The quantity of goods and services produced may or may not fully meet demand. Amenity values are provided for by management area direction.

GENERALLY ALLOWED ACTIVITIES

<table>
<thead>
<tr>
<th>Prescription</th>
<th>Timber Harvest</th>
<th>Road Building</th>
<th>Motorized Recreational</th>
<th>Grazing</th>
<th>Fire Use/Suppression</th>
<th>Recreation Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Yes1</td>
<td>Limited2</td>
<td>Yes</td>
<td>Yes</td>
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<td>Yes</td>
</tr>
<tr>
<td>5.2</td>
<td>Yes3</td>
<td>Yes4</td>
<td>Yes5</td>
<td>Limited</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Vegetation management (timber harvest, thinning, fire use/suppression...) is used to achieve a broad range of multiple use objectives, with emphasis on maintaining or restoring healthy ecosystems and reducing the potential for large stand-replacing fires. Emphasis is not on timber growth and yield.
2 Road densities and design are compatible with primary management objectives.
3 Road densities and design are compatible with timber growth and yield management objectives.
4 Livestock grazing needs to be compatible with timber management objectives.
5 Fire use/suppression needs to be compatible with timber growth and yield objectives

6.0 - MULTIPLE RESOURCE USES WHERE NON-FORESTED (RANGELAND) VEGETATION MANAGEMENT IS EMPHASIZED

THEME

This prescription includes lands that are predominantly non-forested. Management focuses on non-forested plant species composition and structure to achieve sustainable resource conditions, while providing favorable conditions for commodity and non-commodity outputs.

MANAGEMENT EMPHASIS YOU WILL SEE

6.1 Emphasis is on maintaining or restoring non-forested vegetation conditions to achieve ecosystem health. Management encompasses the full range of land and resource treatment activities. Forage production for livestock use may be limited to meet requirements for wildlife, riparian, water quality, or other objectives.

6.2 Management emphasis on suitable grazing lands is for forage production for livestock. Goods and services are provided within the productive capacity of the land, and ecological functions are maintained. Non-forested landscapes range in appearances from near natural to altered where management activities are evident. The quantity of goods and services produced may or may not fully meet demand. Amenity values are provided for by management area direction.

GENERALLY ALLOWED ACTIVITIES

<table>
<thead>
<tr>
<th>Prescription</th>
<th>Timber Harvest</th>
<th>Road Building</th>
<th>Motorized Recreational</th>
<th>Grazing</th>
<th>Fire Use/Suppression</th>
<th>Recreation Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1</td>
<td>Yes1</td>
<td>Limited</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>6.2</td>
<td>Yes2</td>
<td>Yes3</td>
<td>Yes5</td>
<td>Limited</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Timber management objectives need to be compatible with grazing management objectives.
2 Road densities and design are compatible with management objectives.
3 Emphasis is on managing vegetation composition and structure for forage utilization by livestock. Livestock use in suitable areas is managed to ensure that range is in satisfactory condition and/or with an upward trend.
7.0 - INTERMINGLED PUBLIC/PRIVATE LANDS

THEME

This prescription addresses National Forest System lands that are intermingled with lands owned or managed by others. The prescription is applied in areas where management on National Forest System lands influences or is influenced by the proximity of other lands. Management emphasis is to cooperate with adjacent landowners in managing for diverse interests. Another important management consideration is the cumulative effects to ecosystems from combined activities on National Forests and adjacent lands.

MANAGEMENT EMPHASIS YOU WILL SEE

Whenever a 7.1 or 7.2 prescription is used, there is also an underlying prescription that identifies a primary emphasis in that management area. For example, a 6.1 prescription area may also have a 7.2 prescription attached if intermingled land ownership in the 6.1 area creates a compelling need to cooperate with adjacent landowners. The 6.1 prescription provides the primary management emphasis, and the 7.2 prescription signifies the need to coordinate land management strategies with adjacent landowners.

The 7.0 management prescription category is divided into two subcategories.

7.1 - Intermingled private or public lands in an urban or town interface. Emphasis is on protecting natural ecosystem components from degradation while allowing for high levels of day use. Trespass for extractive or construction activities will not be allowed. Access for recreation to the National Forest System lands will be kept open, and specific public access points will be identified to assure access as well as to limit resource degradation. Adjacent private property will be protected from fire.

7.2 - Intermingled private or public lands in a rural interface. Emphasis is on protecting natural ecosystem components from degradation while allowing for moderate use. Trespass for extractive or construction activities will not be allowed. Access for recreation to the National Forest System lands will be kept open, and specific public access points will be identified to assure access as well as to limit resource degradation. Adjacent private property will be protected from fire.

GENERALLY ALLOWED ACTIVITIES

8.0 - CONCENTRATED DEVELOPMENT AREAS

THEME

This prescription includes lands managed for concentrated development and use.

MANAGEMENT EMPHASIS YOU WILL SEE

Uses and facility development dominate the landscape and often require extensive site alterations. Features may include oil and gas production sites and various non-recreation special uses (utility corridors and communication sites) not contained in concentrated recreation areas, such as administrative sites. Emphasis is on maintaining or restoring the existing facilities and uses.

<table>
<thead>
<tr>
<th>Prescription</th>
<th>Timber Harvest</th>
<th>Road Building</th>
<th>Motorized Recreation</th>
<th>Grazing</th>
<th>Fire Use/Suppression</th>
<th>Recreation Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.0</td>
<td>Limited</td>
<td>Yes</td>
<td>Limited</td>
<td>Limited</td>
<td>Limited</td>
<td>Yes</td>
</tr>
</tbody>
</table>

1 Any motorized recreation must be carefully coordinated with adjacent owners for compatibility with their needs and management area objectives.

2 Any grazing or timber activities must be carefully coordinated with adjacent owners.
Appendix C

Summary of Properly Functioning Conditions in Northern Utah National Forests

Properly Functioning Condition Assessment of Vegetation Cover Types

In order to understand where we are in relationship to the ecosystem management principle of sustainability we must be able to define and measure where we are in relationship to the historic range of variability. The concept of "historic range" recognizes that ecosystems are dynamic in nature and that disturbance and change is a common factor of ecosystems. Areas which meet this criteria of sustainability are said to be in "properly functioning condition" (PFC). A detailed assessment of PFC of plant cover types on National Forest lands in northern Utah (Ashley, Uinta and Wasatch-Cache National Forests) was completed in 1998 (USDA Forest Service 1998). Historic reference conditions were based on fire history studies and records and on documentation of historic uses of these lands both prior to and after the establishment of the National Forest System. Consistent with the ecosystem management principle of humans as ecosystem components, we include pre-European settlement human interventions (such as setting fires) in the picture of historic reference conditions. These ecosystems did evolve in a sustainable manner with humans as an integral part. Vegetation conditions were assessed by looking at four distinct aspects or ecosystem features: 1) Composition- the species list; 2) Structure- the layers and ages of species; 3) Patterns- the patchwork of species and ages across the landscape; and 4) Functions such as the nutrient and water cycles, the way animals move within and between landscapes, etc.

A summary of the PFC assessment (Table 1) shows some cover types that have a high deviation from historic range of variation. These are considered areas where conditions across landscapes are no longer properly functioning based on current vegetation conditions. These cover types are those we feel management should take more immediate action to try to restore natural functions.

The PFC Assessment completed for the Wasatch-Cache, Uinta, and Ashley National Forests focused primarily on changes in patterns over the landscape (e.g. aspen cover types being replaced by various conifer cover types or sagebrush/grasslands being replaced by pinyon-juniper through the control of fires over the past 50 to 100 years) and on changes that have occurred in age class diversity (structure) and species composition and how these affect the functions of the ecosystems. From these changes we infer changes in the functions of these ecosystems.

The following discussions by ecological Section focus on composition, structure, pattern and function and on those that have changed the most from historic reference conditions.

Assessment Summary for Stansbury and Sheep Creek Mountains portion of the Bonneville Basin Section

The primary impacts to the Bonneville Basin have been from historic grazing impacts as well as from the exclusion of fire and the diversion of the limited water resource. Riparian areas have also been impacted from road building and from recreation uses.
Composition: the species list. Probably the most change in plant and/or animal composition has resulted from the introduction of non-native grass communities, both perennial species such as crested wheatgrass which was planted to increase livestock forage, and annual species such as cheatgrass which increased early in the century from historically high grazing pressures on these arid ecosystems.

Table 1 Deviation (Low, Moderate, High) from Historic Range of Variations for the Bonneville Basin, Uinta Mountains and Wasatch Mountains of Northern Utah and for the Caribou National Forest.

<table>
<thead>
<tr>
<th>Subject Area (Cover Type)</th>
<th>Wasatch Mountains</th>
<th>Bonneville Basin</th>
<th>Uinta Mountains</th>
<th>Caribou National Forest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpine</td>
<td>Low-Med</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Limber Pine/Bristlecone Pine</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Engelmann Spruce-Subalpine Fir</td>
<td>*</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>-High Elevation Spruce</td>
<td>Med-High</td>
<td>Med-High</td>
<td>Low-Med</td>
<td>Low</td>
</tr>
<tr>
<td>-Subalpine fir</td>
<td>Med-High</td>
<td>Med-High</td>
<td>Low-Med</td>
<td>Low</td>
</tr>
<tr>
<td>-Mixed Conifer</td>
<td>Med-High</td>
<td>Med-High</td>
<td>Low-Med</td>
<td>Low</td>
</tr>
<tr>
<td>Aspen</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Lodgepole Pine</td>
<td>Low-Med</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Mountain Mahogany</td>
<td>Low-Med</td>
<td>Low-Med</td>
<td>Low-Med</td>
<td>Moderate</td>
</tr>
<tr>
<td>-Birchleaf (Alderleaf)</td>
<td>Low-Med</td>
<td>Low-Med</td>
<td>Low-Med</td>
<td>Moderate</td>
</tr>
<tr>
<td>Gambel Oak</td>
<td>Low-Med</td>
<td>Low-Med</td>
<td>Low-Med</td>
<td>High</td>
</tr>
<tr>
<td>Maple</td>
<td>Low-Med</td>
<td>Low-Med</td>
<td>Low-Med</td>
<td>High</td>
</tr>
<tr>
<td>Mountain Brush</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Tall Forb</td>
<td>High</td>
<td>Med-High</td>
<td>Med-High</td>
<td>High</td>
</tr>
<tr>
<td>Sagebrush Grasslands</td>
<td>Low-Med</td>
<td>Low-Med</td>
<td>Low-Med</td>
<td>Moderate</td>
</tr>
<tr>
<td>-Mountian Big Sagebrush</td>
<td>Med-High</td>
<td>Med-High</td>
<td>Low-Med</td>
<td>Moderate</td>
</tr>
<tr>
<td>-Sphted Big Sagebrush</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>-Wyoming Big Sagebrush</td>
<td>*</td>
<td>*</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>Riparian</td>
<td>High</td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>-Stream Canyon</td>
<td>High</td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Aquatic</td>
<td>Med-High</td>
<td>High</td>
<td>Med-High</td>
<td>Med-High</td>
</tr>
</tbody>
</table>

* Subject Area not present in assessment area.
** Subject Area not evaluated in this assessment due to lack of substantial distribution in the assessment area.

Patterns: the patchwork of communities and ages across the landscape. In the Bonneville Basin portion of the Wasatch-Cache National Forest the Sagebrush/Grasslands cover type has been the most highly altered from historic levels being replace by Pinyon-Juniper and non-native seeded grass cover types. The Pinyon-Juniper type has increased over historic levels because of the change in natural fire frequencies and intensities. Past grazing levels altered the fine fuels by replacing the native perennial grasses with cheatgrass - an early growing annual grass that cures early in the summer. While fires are often more frequent now than historically, cheatgrass provides very flashy fuels that often cause fires to move quickly through and area and do not kill the overstory trees. Some of the areas of Pinyon-Juniper and Sagebrush cover types were treated and seeded to crested wheatgrass and other non-native grasses in the 1960’s. Some of these areas are currently being invaded by some of the native grass and forb species while the sagebrush is slowly returning to these areas. Riparian areas in the Stansbury Mountains have also been highly altered. Many channels have been dried up through projects that remove water from the streams. Recreation impacts in some of the canyons are also the cause of high alterations to riparian ecosystems. Because water is a premium in the west desert mountain ranges, these changes have perhaps had more significant effects than in areas where water is generally more abundant.

Functions: how the systems work. Hydrologic functions have changed because junipers use more water from the site than did the sagebrush/grasslands that once dominated the overstory. Cheatgrass, which germinates early and creates a near total dominance in the herbaceous layer has also changed the hydrologic function. Because of its highly competitive nature, cheatgrass often keeps native perennial species from becoming established thus changing how water is used by plants in the ecosystem. Also, some area where topsoils have been lost through erosion because of historic grazing levels, soils are no longer capable of growing the kinds of species that once occurred on these sites.

Assessment Summary for Wasatch and Bear River Range Portions of the Overthrust Mountains Section

Historic livestock grazing, fire exclusion and an ever-growing population along the Wasatch Front have caused the greatest impacts in the Wasatch and Bear River Ranges of the Overthrust Mountains Section. Road construction in and along riparian corridors and the damming and diversion of water have also had significant impacts.

Composition: the species list. Like the Bonneville Basin, much of the change in composition in the Wasatch and Bear River Ranges has been from the introduction of non-native grasses. While cheatgrass has increased significantly, many of the watersheds along the Wasatch Front were terraced and vegetated with smooth brome to combat the impacts of historical sheep grazing. In addition, many of the historic Tall Forb Communities have been severely grazed and are no longer capable of supporting the native perennial species that once dominated those sites. Historic grazing impacts have also resulted in a change of composition within Aspen Communities; today western coneflower and sawleaf groundsel, while both natives, are found in much higher abundance than historically occurred.

Structure: the layers and ages of species. Change of seral-aspen communities from aspen-dominated to conifer-dominated communities. Spruce-fir being replaced by subalpine fir. White conifers are no longer interrupted by fires at the same frequency and/or intensity as they occurred in the past.

Structure: the layers and ages of species. Nearly all plant cover types have been altered through the exclusion of historic natural fire regimes as well as from historically high grazing pressures. Tree-dominated landscapes have become older and natural succession from species like aspen to
fir increasing at the expense of Douglas-fir. Pinyon-juniper communities, especially on the Uinta NF. Riparian ecosystems lost to road construction, channelization of streams and rivers, grazing impacts, etc. In addition, there has been an overall loss of age-class diversity (many being skewed toward older age-classes) in nearly all cover types because of fire exclusion and/or historic grazing levels. Most Notable may be the aging of the oak community along the Wasatch Front which is resulting in a build up of fine fuels and an increased likelihood for large fires with a potential for extensive loss of property. Livestock grazing has resulted in a significant loss of the Tall Forb communities which have been replaced with tarweed flats in many cases.

Patterns: the patchwork of communities and ages across the landscape. Fire exclusion has played a large role in patterns of communities being outside historical levels. A significant portion of the Seral Aspen type of the Wasatch and Bear River Ranges has been replaced by various conifer-dominated communities because of fire exclusion. In addition, the bigtooth maple cover type has increased, especially in what were the oak draws where soil moisture levels are suitable for maple expansion. Livestock grazing has also resulted in a change in cover type patterns over the landscape. The extent of the Tall Forb cover type is possibly as little as half of what it was historically. Patterns in riparian ecosystems have been altered by a variety of causes including historic grazing impacts, high recreation use and development, and road construction. Most canyons on the forest have roads adjacent to riparian areas and historically it was common to channelize streams and rivers in order to build roads.

Functions: how the systems work. With changes in composition, structure, and patterns on the landscape have come changes in hydrologic functions, and in direct and indirect effects on biological diversity. Direct impacts come from increases of non-native invaders and noxious weeds while indirect effects come from changes in wildlife habitats as diversity of structure and patterns have changed over time. The loss of topsoil from Tall Forb and other sites has caused a change in hydrologic functions because of historic grazing along the front. In the early part of the 20th century, terraces were constructed in many watersheds and revegetated with non-native species to reduce the amount of erosion caused by years of extremely high sheep grazing along the Wasatch Front. Riparian and aquatic functions have been altered by dams, water diversions, road construction, livestock grazing and recreation used and development.

Assessment Summary for the Uinta Mountains Section

The Uinta Mountains have been impacted over the past 100-150 years by tie-hacking (cutting logs for railroad ties), grazing, fire exclusion, and by modern-day logging. Tie hacking also had significant impacts to the riparian channels as log jams were first created, then dynamited to cause the logs to flow to the low country where they were processed. In addition, road construction, water diversions, and dams have also had significant impacts to riparian ecosystems.

Composition: the species list. Species composition has not been nearly as altered as Wasatch and Stansbury Mountains. The Tall Forb cover type, which covered only minor acres and which is limited to the extreme western portion of the Uinta Mountains has almost entirely been replaced by annual tarweed flats as a result of historically high grazing levels. Other impacts from livestock grazing can be seen where orange sneezeweed has increased significantly near the Whitney portion of the Forest.

Structure: the layers and ages of species. Perhaps the greatest change in structure in the Uinta Mountains has been the change from aspen-dominated and aspen-lodgepole dominated communities to conifer-dominated communities. In addition, however, there has been an overall loss of age-class diversity (many being skewed toward older age-classes) in nearly all cover types because of fire exclusion, which has also caused many forested ecosystems to be more susceptible to insect and disease.

Patterns: the patchwork of communities and ages across the landscape. Fire exclusion has also had a significant effect on the patterns of seral aspen, lodgepole-aspen, and spruce-fir communities. The continuing loss of aspen to conifer-dominated communities is evident throughout the lower elevations on the north slope of the Uinta Mountains.

Functions: how the systems work. Hydrologic functions have been altered by the building of dams, water diversions, tie-hacking, and historic livestock grazing levels. Use of small clearcuts in the lodgepole pine ecosystems, which resulted in unnatural patterns on the landscape have also had an impact on hydrologic function. The replacement of aspen by conifer ecosystems has not only impacted the hydrologic function in this range (conifers transpire water year round, while aspen transpire primarily in the spring and summer months), it has also had an important impact on biological diversity by altering the historic patterns of vegetation.
Appendix D

Preliminary Classification of 31 Eligible Stream Segments on the Wasatch-Cache National Forest

| Seg # | Major Drainage Basin | River Segment | ORVs
|-------|-----------------------|---------------|-----
<p>| 21    | Henrys Fork - Henrys Fork Lake to Trailhead | 8.1 | X X - - - X X X W |
| 22    | West Fork Beaver Creek - Source to Forest Boundary | 10.2 | Y - - - X - X * |
| 23    | Middle Fork Beaver Creek - Beaver Lake to Confluence with East Fork Beaver Creek | 11.2 | Y - - - - - X * |
|       | <strong>Blacks Fork Drainage</strong>                              |               |      |
| 25    | West Fork Blacks Fork - Source to Trailhead | 11.8 | Y X - - - X - X * |
| 25.4  | East Fork Blacks Fork - Source to confluence of Little East Fork | 9.7 | Y - - - X - X W |
| 25.6  | Little East Fork - Source to Mouth | 9.3 | Y - - - X - X W |
| 25.7  | Blacks Fork - Confluence or West Fork and East Fork to Meeks Cabin Reservoir | 2.7 | Y - - - - - X - - R |
| 27    | West Fork Smiths Fork - Source to Forest Boundary | 14.6 | Y - - - - - X - - S |
| 28    | East Fork Smiths Fork - Red Castle Lake to Trailhead | 11.9 | Y X X - - - - X W |
|       | <strong>Bear River Drainage</strong>                               |               |      |
| 30.2  | Hayden Fork - Source to Mouth | 12.4 | Y X - - - - - - X R |
| 30.3  | Stillwater Fork - Source to Mouth | 11.8 | Y X - - - - - - X * |
| 30.4  | Ostrler Fork - Source to Mouth | 3.8 | Y X - - - - - - X W |
| 30.5  | Left Hand Fork, right Hand Fork, and East Fork Bear River - Alpsee Lake and Norice Lake to near Trailhead | 13.6 | Y X - - - - - - X W |
| 30.7  | Boundary Creek - Source of Confluence with East Fork Bear | 4.3 | Y - - - - - - - - X W |
| 35    | High Creek - High Creek Lake to Forest Boundary | 7.1 | Y - - - - - - - - X W |
|       | <strong>Blacksmith’s Fork Drainage</strong>                        |               |      |
| 38.3  | Leftband Fork Blacksmith’s Fork - Source to Mouth | 15.1 | Y X - - - - - - - - R |
|       | <strong>Logan River Drainage</strong>                             |               |      |
| 39    | Logan River - Idaho State Line to Confluence with Beaver Creek | 6.6 | Y - - - - - - X - - S |</p>
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Length (mi)</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Value 3</th>
<th>Value 4</th>
<th>Value 5</th>
<th>Value 6</th>
<th>Value 7</th>
<th>Value 8</th>
<th>Value 9</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>39.1</td>
<td>Logan River - Confluence with Beaver Creek to Third Dam</td>
<td>20</td>
<td>Y</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>39.3</td>
<td>Beaver Creek - Idaho State Line to Mouth</td>
<td>6.5</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>39.4</td>
<td>White Pine Creek - Source to Mouth</td>
<td>5.9</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>W</td>
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<tr>
<td>39.5</td>
<td>Temple Fork - Source to Mouth</td>
<td>5.6</td>
<td>Y</td>
<td>-</td>
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<td>-</td>
<td>-</td>
<td>X</td>
<td>-</td>
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<td>39.6</td>
<td>Spawn Creek - Source to Mouth</td>
<td>3.8</td>
<td>Y</td>
<td>-</td>
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<td>-</td>
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<td>X</td>
<td>-</td>
<td>W</td>
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<td>39.8</td>
<td>Bunchgrass Creek - Source to Mouth</td>
<td>5</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>W</td>
<td></td>
</tr>
<tr>
<td>39.9</td>
<td>Little bear Creek - Source to Mouth</td>
<td>4.5</td>
<td>Y</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>W</td>
<td></td>
</tr>
<tr>
<td>40.2</td>
<td>Middle Fork Weber River - Source to Mouth</td>
<td>6.9</td>
<td>Y</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>W</td>
</tr>
<tr>
<td>40.7</td>
<td>Beaver Creek - Source to Forest Boundary</td>
<td>6.5</td>
<td>Y</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>Provo River - Trail Lake to U35 Bridge</td>
<td>8.9</td>
<td>Y</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>R</td>
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<tr>
<td>41.1</td>
<td>Provo River - Trail Lake to U35 Bridge</td>
<td>8.9</td>
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<td>X</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>R</td>
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</tr>
<tr>
<td>42.1</td>
<td>Left Fork of South Fork Ogden River - Frost Canyon/Bear Canyon Confluence to Causey Reservoir</td>
<td>4.5</td>
<td>Y</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>W</td>
<td></td>
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<tr>
<td>43</td>
<td>Willard Creek - Source to Forest Boundary</td>
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<td>-</td>
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Key:
- Y: Yes
- X: Outstandingly Remarkable Value
- : No Outstandingly Remarkable Value
- W: Wild
- S: Scenic
- R: Recreational
- *: Wild Inside of Wilderness; Scenic Outside of Wilderness
## Appendix E

### 1999 Roadless Area Numbers and Acreage

**Version: 04/05/99**  
**Wasatch-Cache National Forest**

<table>
<thead>
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<td><strong>TOTAL ACREAGE:</strong></td>
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<td><strong>746,433</strong></td>
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</table>

1983 GIS acres show original roadless area acres calculated with newer GIS technology.
Wilderness acres reflect those acres from 1983 inventory that became designated wilderness.
1999 acres reflects current status of new roadless inventory.
1 - Not included in 1983 Inventory.
2 - Split from 1983 Inventory due to roads and/or development.
3 - Insufficient Acreage, dropped from 1999 roadless analysis.
   West Fork Blacks split into 2 polygons both of which have insufficient acreage.
   Francis split into 2 polygons, the southern polygon had insufficient acreage.
   Lamb Canyon area, a new area had insufficient acreage to qualify.
4 - Part designated as Wilderness in 1978 or 1984.
5 - Contiguous with Caribou National Forest roadless area which has 7,300 acres in their 1996 inventory.
6 - Contiguous with Caribou National Forest roadless area, which has 8,320 acres in their 1996 inventory.
7 - Split into 2 polygons of 5,429 and 2,206 acres each.
8 - Contiguous with Uinta National Forest roadless area, which has 1,297 acres in their 1998 inventory. Uinta did not have in their 1983 inventory.
9 - Contiguous with BLM WSA North Stansbury (6,800 acres) and Big Hollow (4,300 acres).
10 - Acreage count in 1983 excluded 73,859 acres (High Uintas Primitive Area) and 33,859 acres from 1967 Addition. It is presumed these acres were not counted as it was assumed these acres were a "given" to become wilderness.
11 - Rest of High Uintas Wilderness acreage is on the Ashley National Forest.
12 - Rest of Lone Peak Wilderness acreage is on the Uinta National Forest.
13 - Contiguous with Ashley National Forest roadless area. Ashley did not have in 1983 inventory. 1999 inventory not done yet.
14 - Contiguous with Ashley National Forest. 1999 inventory not done yet.
15 - Contiguous with Uinta National Forest roadless area, which has 4,983 acres in their 1998 inventory.
16 - Contiguous with Caribou National Forest roadless area, which has 28,077 acres in their 1996 inventory.
17 - Excludes areas of insufficient acreage (Less than 5,000)
SALT LAKE RANGER DISTRICT
1999 ROADLESS AREAS
Step 1 - Inventory
White Pine - 0419004
Twin Peaks - 0419006
Mount Olympus - 0419007
Mount Aire - 0419008
Farmington - 0419010
Stansbury Mountains - 0419012
Hogback - 0419026
Lone Peak Addition - 0419027

NOTE: Inventory step can include some type of roads and development. These will be looked at further during the evaluation step.
Step 1 - Inventory Spring 1999
Step 2 - Evaluation Summer 1999
Step 3 - Proposed Recommendation Fall 1999

For further information, see R4 Roadless Inventory Desk Guide or contact:
Michael Barry (801) - 524 - 3929
NOTE: Inventory step can include some type of roads and development. These will be looked at further during the evaluation step.

Step 1 - Inventory  Spring 1999
Step 2 - Evaluation  Summer 1999
Step 3 - Proposed Recommendation  Fall 1999

For further information, see R4 Roadless Inventory Desk Guide or contact:
Michael Barry (801) 524-3829
NOTE: Inventory step can include some type of roads and development. These will be looked at further during the evaluation step.
Step 1 - Inventory Spring 1999
Step 2 - Evaluation Summer 1999
Step 3 - Proposed Recommendation Fall 1999
For further information, see R4 Roadless Inventory Desk Guide or contact:
Michael Barry (801) - 524 - 3929
EVANSTON RANGER DISTRICT
1999 ROADLESS AREAS
Step 1 - Inventory
West Fork Blacks - 0419021
High Uintas - 0419022

LOCATION:

KEY:
- New 1999 Areas
- 1983 Areas Updated
- Wilderness
- Areas Checked/Deleted
- Evanston District

NOTE: Inventory step can include some type of roads and development. These will be looked at further during the evaluation step.
Step 1 - Inventory Spring 1999
Step 2 - Evaluation Summer 1999
Step 3 - Proposed Recommendation Fall 1999

For further information, see R4 Roadless Inventory Desk Guide or contact:
Michael Barry (801) - 524 - 3929
NOTE: Inventory step can include some type of roads and development. These will be looked at further during evaluation step.
Step 1 - Inventory  Spring 1999
Step 2 - Evaluation  Summer 1999
Step 3 - Proposed Recommendation  Fall 1999

For further information, see R4 Roadless Inventory Desk Guide or contact:
Michael Barry (801) - 524 - 3929
OGDEN RANGER DISTRICT
1999 ROADLESS AREAS
Step 1 - Inventory
Mollene Hollow - 0419015
Willard - 0419016
Lewis Peak - 0419017
Upper South Fork - 0419018
Burch Creek - 0419019
Sugar Pine - 0419031
Public Grove Hollow - 0419032
Lamb Canyon - 0419033
Rock Creek-Green Fork - 0419034

LOCATION:

KEY:

- New 1999 Areas
- 1983 Areas Updated
- Wilderness
- Areas Checked/Deleted
\_/ Ogden District

NOTE: Inventory step can include some type of roads and development. These will be looked at further during the evaluation step.
Step 1 - Inventory Spring 1999
Step 2 - Evaluation Summer 1999
Step 3 - Proposed Recommendation Fall 1999

For further information, see R4 Roadless Inventory Desk Guide or contact:
Michael Berry (801) - 524 - 3829
LOGAN RANGER DISTRICT
1999 ROADLESS AREAS
Step 1 - Inventory
- Swan Creek Mountain - 0419001
- Gibson - 0419002
- Mount Naomi - 0419012
- Mount Logan North - 0419013
- Mount Logan South - 0419029
- Mount Logan West - 0419030
- Wellsville Mountains - 0419014
- Temple Peak - 0419023
- Boulder Mountain - 0419024
- Mahogany Range - 0419025
- Right Hand Fork Logan - 0419028

LOCATION:

KEY:

- New 1999 Areas
- 1983 Areas Updated
- Wilderness
- Logan District

NOTE: Inventory step can include some type of roads and development.
Step 1 - Inventory Spring 1999
Step 2 - Evaluation Summer 1999
Step 3 - Proposed Recommendation Fall 1999

For further information, see R4 Roadless Inventory Desk Guide or contact:
Michael Barry (901) - 524 - 3929
Appendix F

Rangeland Capability and Suitability

The following discussion on capability and suitability is from the Protocol for Rangeland Capability and Suitability Determinations for Forest Plan Revisions (USDA Forest Service 1998). It includes criteria that will be used to determine capability and some of the criteria suggested in the protocol that could be used to address suitability for livestock grazing on national forest lands.

Analysis for Determination: The determination of rangeland capability and suitability is a two-step process. The first step is determination of those lands that are capable of being grazed. The second step, through the forest planning process, identifies which of those capable lands are suitable for grazing under various management scenarios. Therefore, "capable" acres will remain constant for all alternatives and "suitable" acres will likely vary by alternative. The following definitions from the Protocol clarify the distinction between these two terms.

Capability: "the potential of an area of land to produce resources, supply goods and services, and allow resource uses under an assumed set of management practices and at a given level of management intensity. Capability depends on current conditions and site conditions such as climate, slope, landform, soils and geology, as well as the application of management practices, such as silviculture or protection from fire, insects, and disease."

Suitability: "the appropriateness of applying certain resource management practices to a particular area of land as determined by an analysis of the economic and environmental consequences and alternative uses foregone. A unit of land may be suitable for a variety of individual or combined management practices."

Rangeland capability represents the biophysical determination of those areas that can sustain grazing. Capability is determined by assessing biophysical characteristics conducive to livestock grazing. Rangeland capability for revision of forest plans can be determined either through an aggregation of planning unit determinations or applying capability criteria at the forest scale, or a combination of the two. The capability analysis and determination in Forest Plans is not a decision to graze livestock on any specific area of land nor is it a decision on livestock grazing capacity.

Once capability is determined, the next step in the planning process is to determine rangeland suitability. Rangeland suitability is a forest plan decision and represents the integration of capability with the appropriateness of grazing livestock on a particular area of land considering such things as economics, social concerns, and grazing compatibility with other land uses. Suitability analysis and determination may lead to a decision to graze livestock on a specific area in the Forest Plan.

Criteria for Rangeland Capability: The Wasatch-Cache National Forest will use the following criteria to identify capable rangelands. These criteria are consistent with those being used by adjacent Forests (Uinta, Caribou, and Ashley National Forests). The determination of capability is made considering the whole of the criteria rather than any one criterion alone.
• Areas with less than 30% slopes for cattle and less than 45% slopes for sheep.
• Areas producing more than or having the potential to produce an average of 200 lbs. of forage/acre/year on an air dry basis over the planning period.
• Areas with naturally resilient soils (not unstable or highly erodible soils).
• Areas where ground cover (vegetation, litter, rock > ¼ in.) is sufficient to protect soil from erosion. The minimum percentage cover will be 60% unless local data is available for use in setting more specific ground cover requirements.
• Areas accessible to livestock (without such factors as dense timber, rock, or other physical barriers).
• Areas within 1 mile of water or where the ability to provide water exists.

National Forest System lands that meet the above criteria will be considered capable of being grazed by domestic animals. The acreage of capable lands will remain constant for all alternatives in the EIS for the planning area and will be displayed.

Criteria for Rangeland Suitability: Once capability is determined, an assessment of suitability, by alternative, will be conducted to address to what extent livestock grazing would be emphasized or is compatible with management direction for a management area’s other uses and values, and which, if any, other uses would be foregone with livestock grazing. The criteria to be used for rangeland suitability will include some or all of the items included in the Regional protocol. Additional criteria will be developed where local conditions warrant. Situations listed below will generally not be considered suitable for livestock grazing depending on an overall evaluation of potential effects and opportunities to mitigate adverse effects:

• Developed recreation sites or special use sites.
• Special area designations such as Research Natural Areas.
• Administrative sites and research facilities or study sites.
• Key wildlife habitat areas (such as winter ranges).
• Important habitats for TES species (viability considerations).
• Noxious weed infestations where forage is not used by livestock or use would contribute to increase of the infestation.
• Unique habitats such as bogs, fens, jurisdictional wetlands, or rare plant communities.
• Areas where livestock grazing is impracticable due to economic considerations, either from a permittee or agency standpoint.
• Transitory range created by timber harvest activities where the associated mitigation costs to protect timber resource values is excessive.
• Areas where the social consequences and values foregone are not acceptable.

The number of acres suitable for livestock grazing, by alternative, will be displayed. The number of acres suitable will likely vary by alternative.
Appendix G

Endangered, Threatened, and Proposed Species

This list is compiled from the U.S. Fish and Wildlife Services list, "Federally Listed and Proposed (P) Endangered (E) and Threatened (T) Species and Habitat in Utah by County, As of September 1998." This list does not indicate whether or not the species exists in the County, but that there is habitat and it is within historic range of the species. It, also, does not indicate whether the habitat is on National Forest system lands.

This list is compiled from the U.S. Fish and Wildlife Services list, "Federally Listed and Proposed (P) Endangered (E) and Threatened (T) Species and Habitat in Utah by County, As of September 1998." This list does not indicate whether or not the species exists in the County, but that there is habitat and it is within historic range of the species. It, also, does not indicate whether the habitat is on National Forest system lands.

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<th>DA</th>
<th>MO</th>
<th>RI</th>
<th>SL</th>
<th>SU</th>
<th>TO</th>
<th>WE</th>
<th>UI</th>
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<td>X</td>
<td>X</td>
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| (E) Endangered                              |    |    |    |    |    |    |    |    |    |    |
| (T) Threatened                              |    |    |    |    |    |    |    |    |    |    |
| (PT) Proposed Threatened                    |    |    |    |    |    |    |    |    |    |    |

| Counties:                                   |    |    |    |    |    |    |    |    |    |    |
| BE - Box Elder                              |    |    |    |    |    |    |    |    |    |    |
| CA - Cache                                  |    |    |    |    |    |    |    |    |    |    |
| DA - Davis                                  |    |    |    |    |    |    |    |    |    |    |
| MO - Morgan                                  |    |    |    |    |    |    |    |    |    |    |
| RI - Rich                                   |    |    |    |    |    |    |    |    |    |    |
| SL - Salt Lake                              |    |    |    |    |    |    |    |    |    |    |
| SU - Summit                                 |    |    |    |    |    |    |    |    |    |    |
| TO - Tooele                                 |    |    |    |    |    |    |    |    |    |    |
| WE - Weber                                   |    |    |    |    |    |    |    |    |    |    |
| UI - Uinta (WY)                             |    |    |    |    |    |    |    |    |    |    |

Sensitive Species

The following species have been designated as sensitive by the Regional Forester in Region 4 and occur or have habitat on the Wasatch-Cache National Forest.

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<td>Spotted bat</td>
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<td>Western big-eared bat</td>
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<td>Wolverine</td>
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<td>Boreal owl</td>
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<td>Flammulated owl</td>
<td>Otus flammneolus</td>
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<tr>
<td>Great gray owl</td>
<td>Strix nebulosia</td>
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<tr>
<td>Northern goshawk</td>
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<td>Spotted frog</td>
<td>Rena pretiosa</td>
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<td>Oncorhynchus clarki pleuriticus</td>
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<td>Oncorhynchus clarki utah</td>
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<td>Starving milkvetch</td>
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<tr>
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<td>Draba maguirei var. maguirei</td>
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<tr>
<td>Burkes draba</td>
<td>Draba maguirei var. burkei</td>
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<tr>
<td>Cronquist daisy</td>
<td>Erigeron cronquistii</td>
</tr>
<tr>
<td>Maguire daisy</td>
<td>Erigeron maguirei</td>
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<tr>
<td>Logan buckwheat</td>
<td>Erigonum brevicaule var. loganum</td>
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<td>Wasatch jamesia</td>
<td>Jasemia americana macrocalyx</td>
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<td>Garret bladderpod</td>
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<tr>
<td>Arctic poppy</td>
<td>Papaver radicatum var. pygmenseum</td>
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<tr>
<td>Cache beardtongue</td>
<td>Penstemon cyananthus var. compactus</td>
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<tr>
<td>Cottom cinquefoil</td>
<td>Potentilla cotamii</td>
</tr>
<tr>
<td>Uinta greenthread</td>
<td>Thelesperma pubescens</td>
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<tr>
<td>Smith violet</td>
<td>Viola franksmithii</td>
</tr>
</tbody>
</table>
Appendix H

ASHLEY, UINTA, AND WASATCH-CACHE NATIONAL FORESTS
MANAGEMENT INDICATORS

1. INTRODUCTION

1.1 Legal Precedent and Department/Forest Service Policy

The National Forest Management Act of 1976 (NFMA) and Departmental Regulation 6500-4 directs that on National Forest System Lands, habitats for all existing native and desired non-native plants, fish, and wildlife species will be managed to maintain at least viable populations of such species. In achieving this objective, habitat must be provided for the number and distribution of reproductive individuals to ensure the continued existence of a species throughout its geographic range (FSM 2601.2). The recurring theme in (FSM 2601-2603) is the maintenance of diverse and productive habitats for wildlife, fish and sensitive plants. NFMA specifies "certain vertebrate species...shall be identified and selected as indicators of the effects of management." Designated management indicator species (MIS) must be identified in all forest planning processes and include T/E plant and animal species, species with special habitat needs, species commonly hunted, fished, trapped; and additional species selected because their population changes are believed to indicate effects of management activities on other species.

1.2 Concerns Regarding MIS

Indicator species have been used for decades as a convenient assay of environmental conditions (Thomas 1972; Zonneveld 1983). Inhaber (1976) states that biological indices give us information about the state of environmental quality not obtainable in other ways—information that may be too expensive or difficult to obtain. Nonetheless, the use of vegetation, invertebrates and vertebrates as management indicators is not without concerns.

As we identify the species to be used to monitor ecosystems we need to remember that, "...ecosystems change dramatically throughout time, have no optimal conditions, and are only healthy when compared to some desired state specified by humans. Ecosystem "health" is strictly an anthropocentric term." (Lacey 1994).

One of the main reasons in identifying management indicators species was to conduct ecological risk assessments. Lackey (1994) states, "the surrogate animals or plants represent the ecosystem or ecosystems of concern, and that a factor can be added to allow for a margin of safety—whatever the concept of "safety" means in ecology." He continues, "The approach assumes that a simple surrogate (one or a few species) will respond in the same way as an ecosystem. It does not work well in complex ecosystems, across large regions, or with chemicals that cause low-level, but persistent, ecological effects."
Arguments for avoiding wildlife MIS and guilds were identified by Vernor (1984) and others and include:

- Guild members are not necessarily alike in all the ways in which they use zones of habitat for various purposes.
- Species subdivide the habitat by specializing in diet, foraging substrates, foraging times, and the like (niche differentiation).
- Animals in the same guild may change their behaviors within or between seasons in a dissimilar fashion.
- Geographic variations in species' behaviors would require placing the same species in different guilds in different parts of its range.
- The ways in which species use their environment can vary even over shorter distances when habitat attributes differ.

Another concern, not discussed by Vernor, is the fact that any vertebrate is an indirect indicator of change in habitat. Measuring the habitat itself would be the direct indicator. Therefore, by using vertebrates, only, as indicators, there is a lag time before change in our variable (habitat) shows up in the indicator. This makes it important to monitor both habitat and vertebrates and not just vertebrates alone.

The cyclic nature of some animals, such as the snowshoe hare must also be taken into account and not mistaken for changes in habitat.

Landrers et al (1986) further cautions sometimes the density of species may increase for reasons unrelated to the environmental conditions being managed. A case in point, the aggressive nature of European starlings led to their increase in numbers not a change in environment. Game species, such as elk are especially problematic as indicators because their population density and distribution are affected by hunters, not by habitat management. Recognizing such cautionary notes managers can select management indicators that are effective and credible.

To obtain the most meaningful results with the use of management indicators we need to use a combination of animal species and habitat, make sure we have adequate sample sizes, and make serious commitment to long term monitoring.

2. BACKGROUND

When the current Forest Plans were written, each Forest identified Management Indicator Species. Selection of MIS, rationale for that selection and other information on the species are contained in the each Forest's AMS and/or Forest Plan.

There was limited coordination between Forests and identified MIS are quite different. MIS for each Forest and pertinent Forest Plan direction are listed below.

2.1 Ashley  

Management Indicators - page 2
2.3 Wasatch-Cache

Ecological Indicators Species:

- **Hairy woodpecker**: Mature conifer without understory.
- **Yellow-bellied sapsucker**: Mature aspen.
- **Warbling vireo**: Sapling aspen.
- **Gray jay**: Mature alpine fir, spruce, lodgepole pine with understory.
- **Red-breasted nuthatch**: Douglas fir, lodgepole pine with understory.
- **Pine siskin**: Pole/sapling conifer.
- **Mountain bluebird**: Grassland, forb.
- **Water pipit**: Wet meadow.
- **Vesper sparrow**: Sagebrush.
- **MacGillivray’s warbler**: Riparian shrub.
- **Green-tailed towhee**: Mountain brush.
- **Black-throated Gray warbler**: Juniper.
- **Macroinvertebrates**: Riverine and lacustrine.
- **Cutthroat trout**: Riverine and lacustrine.

High Interest Species. These species do not fully meet the criteria as ecological indicators; however, they were selected as MIS because of their Threatened or Sensitive status, social or economic factors and/or high public interest:

- **Mule deer**
- **Elk**
- **Mule deer**
- **Bonneville cutthroat trout**
- **Colorado cutthroat trout**
- **Pine martens**
- **Peregrine falcon**
- **Bald eagle**

Forest Plan Direction.

Monitoring. The plan calls for monitoring of MIS by group (big game, fish, endangered species, sensitive species, nongame species). It also outlines monitoring techniques, expected precision/reliability, measurement frequency, reporting period, and variation which would cause further evaluation and/or change in management direction. (p. V-4 - V-5)

The following table is a comparison of current management indicators.
Management indicators in Current Forest Plans of Northern Utah National Forests

<table>
<thead>
<tr>
<th>Species</th>
<th>Ashley</th>
<th>Uinta</th>
<th>Wasatch-Cache</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elk</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Mule deer</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Moose</td>
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<td></td>
<td>X</td>
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<tr>
<td>Goshawk</td>
<td>X</td>
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<td>X</td>
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<tr>
<td>Golden eagle</td>
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<td>X</td>
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<tr>
<td>Bald eagle</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Peregrine falcon</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Warbling vireo</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>MacGillivray's warbler</td>
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<td></td>
<td>X</td>
</tr>
<tr>
<td>Black-throated Gray warbler</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>Yellow-bellied sapsucker</td>
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<td>Lincoln's sparrow</td>
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<td>Song sparrow</td>
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<td></td>
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<tr>
<td>Vesper sparrow</td>
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<td></td>
<td>X</td>
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<tr>
<td>Red-breasted nuthatch</td>
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<td>X</td>
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<tr>
<td>Pine siskin</td>
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<td></td>
<td>X</td>
</tr>
<tr>
<td>Mountain bluebird</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Water pipit</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Green-tailed towhee</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Gray jay</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>3-toed woodpecker</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Hairy woodpecker</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Sage grouse                  X     X
White-tailed ptarmigan       X
Cutthroat trout              X     X
Bonneville cutthroat trout   X     X
Colorado cutthroat trout     X     X
Macroinvertebrates           X     X     X
Beaver                       X
Pine Marten                  X
Ute Ladies' Tresses          X
Clay Phacelia                X

3. CURRENT SITUATION

In general, inventory work of MIS to determine the effects of forest management practices on them has been related to sensitive species surveys needed for specific project work. The Uinta National Forest has established baseline macroinvertebrate monitoring sites. Baseline survey sections have been established for fish species throughout the Bonneville cutthroat trout range on the Wasatch-Cache. For most other species, basic and essential baseline data has never been collected. Species with the most data are the hunted species, with information coming from State fish and game agencies. The lack of emphasis expended on inventory, analysis, and monitoring is a direct function of budget and work priorities set by the forests.

4. AREAS WHERE CHANGE MAY BE NEEDED

In recent years the Forests of Region Four have been grouped into "eco-regions." The Ashley, Uinta, and Wasatch-Cache National Forests make up the Northern Utah Eco-region. Several biologists from each of the three Forests met and established criteria for changing management indicators on the three Forests. The criteria set by the biologists and the rationale include:

4.1 Change: Vertebrate indicators are most effective when monitored and analyzed in combination with vegetative indicators.

Rationale: Relying solely on a vertebrate species is not recommended because there will be too much lag time between habitat change and detectable population change in any vertebrate indicator. Natural variability in animal numbers due to weather, annual variance...
in prey/food availability, source population dynamics, and other factors will mask responses to habitat change until those responses become quite large. It is also intuitive that change in the habitat will have to reach some critical threshold before animal numbers begin to respond (even in animals which are sensitive to change). Therefore, vertebrate indicators cannot provide the “early warning” function we want from our monitoring program. Instead, we chose to identify a vegetative indicator as our first monitoring variable (effectiveness monitoring), and to use vertebrates as the secondary indicator (serving as validation monitoring).

4.2 Change: In most cases groups of species which are dependent on the habitat type, specific habitat features of concern, or each other should be selected.

Rationale: Single species indicators are not recommended because no one species is capable of representing all the important habitat functions found in a particular vegetative type. Even top level predators, which have often been selected as indicators in the past, can be misleading because most will switch to alternate prey when the preferred prey is unavailable. In such cases, the predator itself will not begin to decline in numbers until all suitable sources of prey have declined. Also, the abundance of any one species is a function of many factors besides habitat quality. Some species show cyclic population cycles, in which numbers rise to a theoretical carrying capacity and then crash due to disease and competition. Populations may also decline due to relatively short-term, high impact events such as drought, hard winters, unfavorable spring (breeding season) weather, or conditions in adjacent habitats (affecting immigration/emigration rates, predator densities, etc.). All of these things hinder our ability to interpret the results of single species monitoring efforts. To make our monitoring program more robust to external sources of variability, we chose suites of species, such as all woodpeckers, rather than individual species.

4.3 Change: Indicators must be widely distributed, easily sampled, and relatively well described in the technical literature.

Rationale: These criteria were derived in part from Landres et al.'s (1988)* critique of the indicator species concept, in which they urge managers to identify monitoring objectives and potential analytical techniques up front in order to maximize the usefulness of the data. We also wanted to be sure it was feasible to conduct all of the monitoring we were proposing, given our limited budgets and personnel. We therefore considered vegetative indicators that could be remotely sensed and quantified during the winter, with minimal field verification. We also sought out vertebrate indicators that would give us the most information possible per data point.

Birds lend themselves to monitoring because a national sampling protocol already exists, no special equipment is required, the same methods apply to all habitats, and the data obtained is representative of a broad range of ecological niches (insectivores, seed eaters, cavity nesters, cavity excavators, ground nesters, shrub nesters, tree nesters, etc.). They have the added advantage of an existing national and regional database, which will allow us to compare our results to large-scale trends. Additionally, of all the vertebrate species they present the tightest tie to vegetation linkages.

If the population changes we see are reflected in the regional data, we can be fairly sure that they are due to factors beyond our immediate control. If, however, our local populations are behaving differently than regional populations as a whole, we should look to our management practices for the cause.

4.4 Change: Indicators should be chosen for specific habitats identified as being at risk through the Property Functioning Condition process (see XXX), or where there is a high level of management activity, or where critical habitat for TES species is present. Other habitats can be grouped under broad headings and monitored less intensively.

Rationale: We envision monitoring occurring at various intervals as appropriate for each habitat. This schedule would require an ongoing and dependable investment in monitoring.

4.5 Change: The monitoring of salmonids as MIS is of limited value.

Rationale: Because salmonoids are limited in numbers or distribution or are actively sought by the public they are of limited value as MIS. With game fish the State’s management is the biggest influence because fish planting and angler pressure can have a greater influence on aquatic resources than forest management practices. This is not to say that monitoring should not take place. It is valuable in regards to protecting sensitive species and required as part of a Biological Evaluation for project specific work and to meet conservation agreement goals.

4.6 Change: The monitoring of hunted species is of limited value.

Rationale: Hunted species are generally poor indicators of forest management since hunting regulations and numbers of permits are the strongest influence on populations with habitat conditions acting as secondary determinants of big game abundance. This is especially true on summer ranges, which constitute the majority of Forest Service big game range.

4.7 Change: Species such as amphibians and mollusks may need to be added as additional information becomes available.

Rationale: There is a current lack of a mix of Aquatic Management Indicator Species. This could be the result of: (1) a general lack of knowledge of the aquatic system and what species may best represent overall health of the ecosystem, (2) the lack of understanding individual species and how changing their environment could affect individuals and populations, (3) the legal and political divisions of responsibility for management of wildlife species and habitat, and (4) if specific species were selected there would be sufficient resources to monitor these species and selected populations to affect current and future management efforts. In the future as more information becomes available for these species, it may become important to include them as indicators.
5. RECOMMENDED MANAGEMENT INDICATORS

The following are the recommended Management Indicators for the Northern Utah Eco-region. Protocol for monitoring these species will be discussed in detail in the monitoring portion of the individual Forest Plans. Nationally recognized method will be used, such as the breeding bird protocol which is used nationwide.

ALPINE (ABOVE TREE LINE)

Vegetative indicators:
- Baseline bare ground on permanent transects.
- Cover by species.

Vertebrate indicators:
- Pocket gopher, pika, Golden eagle, American pipit, black rosy finch, white-throated swift, white-crowned sparrow.

ENGELMANN SPRUCE/SUBALPINE FIR (with or without lodgepole pine)

Vegetative indicators:
- Extent and structural stages.

Vertebrate indicators:
- Red squirrel, red backed vole. Goshawk, saw-whet owl, northern flicker, three-toed woodpecker, red-breasted nuthatch, mountain chickadee, yellow-rumped warbler, pine siskin, dark-eyed junco.

LODGEPOLE PINE

Vegetative indicator:
- Extent and structural stages, including aspen component where potential exists.
  Mid structural stage -- Brownies lady-slipper (Ashley NF only)

Vertebrate indicators:
- Early structural stage -- snowshoe hare.
  Old structural stage -- Northern flicker, three-toed woodpecker, hairy woodpecker, downy woodpecker, Clark’s nutcracker, mountain chickadee, yellow-rumped warbler, red-breasted nuthatch, dark-eyed junco.
  Mid and old stages -- Red backed vole. Northern flicker, yellow-rumped warbler, mountain chickadee, dark-eyed junco, ruby-crowned kinglet, hermit thrush, olive-sided flycatcher, Williamson’s flycatcher.

WHITE FIR/DOUGLAS FIR

Vegetative indicators:
- Extent and structural stages.

Vertebrate indicators:
- Red squirrels. Goshawk, flamedulated owl, northern flicker, mountain chickadee, red-breasted nuthatch, ruby-crowned kinglet, hermit thrush, dark-eyed junco, Hammond’s flycatcher.

DOUGLAS FIR

Vegetative indicators:
- Extent and structural stage.

Vertebrate indicators:
- Red squirrel. Goshawk, flamedulated owl, northern flicker, mountain chickadee, red-breasted nuthatch, ruby-crowned kinglet, hermit thrush, dark-eyed junco.

PONDEROSA PINE

Vegetative indicators:
- Extent and structural stages.

Vertebrate indicators:
- Flamedulated owl, northern flicker, Clark’s nutcracker, hairy woodpecker, downy woodpecker, pigmy nuthatch, white breasted nuthatch, house wren, American robin, chipping sparrow.

PINYON/JUNIPER

Vegetative indicator:
- Extent and structural stages.
- Ground cover

Vertebrate indicators:
- Goshawk, red-tailed hawk, western scrub jay, Steller’s jay, pinyon jay, robin, spotted towhee, dark-eyed junco, black-throated gray warbler, juniper titmouse, ash-throated flycatcher, gray flycatcher, Virginia’s warbler, gray vireo.
MOUNTAIN MAHOGANY
Vegetative indicator:
Extent and structural stages.
Ground cover

Vertebrate indicators:
Robin, spotted towhee, black-throated gray warbler, blue gray gnatcatcher, canyon wren, black-capped chickadee, dark-eyed junco, canyon wren, green-tailed towhee.

GAMBEL OAK (OAK-MAPLE)
Vegetative indicator:
Extent and structural stages

Vertebrate indicators:
Porcupine, Cooper’s hawk, magpie, black-capped chickadee, red-breasted nuthatch, spotted towhee, blue-gray gnatcatcher, dark-eyed junco, black-throated gray warbler, Virginia’s warbler.

MOUNTAIN BRUSH
Vegetative indicator:
Extent and structural stage (canopy cover)

Vertebrate indicators:
Porcupine, Cooper’s hawk, magpie, black-capped chickadee, red-breasted nuthatch, spotted towhee, blue-gray gnatcatcher, dark-eyed junco, black-throated gray warbler, Virginia’s warbler.

TALL FORB
Vegetative indicators:
Extent of potential range
Ground cover

Vertebrate indicators:
Pocket gopher, Red-tailed hawk, robin, broad-tailed hummingbird, black-chinned hummingbird, lark sparrow.

SAGEBRUSH
Vegetative indicator:
Ground cover
Sagebrush canopy cover (based on potential, diversity and management objectives) on specific sites.

Vertebrate indicators:
Sage thrasher, Brewers sparrow, vesper sparrow, sage sparrow, green-tailed towhee, sage grouse.

RIPARIAN
Vegetative indicator:
Permanent plots (specific #). Methodology in Riparian Guidelines (Level II Inventory and Level III Monitoring - Greenline, Cross Section on select sites)

Vertebrate indicators:
Number of beaver dams (active). Pygmy owl, warbling vireo, spotted sandpiper, broad-tailed hummingbird, western tananger, yellow warbler, Wilson’s warbler, MacGillivray’s warbler, song sparrow, white-crowned sparrows, willow flycatcher.

AQUATIC (STREAMS)
Structural indicator:
Habitat surveys can also provide important monitoring links.
Width-to-depth ratio
Bank Stability

Biotic indicators:
Macroinvertebrates

Macroinvertebrates can provide a valuable insight into the existing environmental conditions. The use of macroinvertebrates can be a valuable monitoring tool which probably needs additional refining in the monitoring plan.

Sites and databases have been established on the Uinta National Forest. This monitoring should continue and does reflect ecosystem health monitoring. The analysis and timing may need to be altered to reflect budget shifts.
6. REFERENCES


Appendix I - Highest Priority Watersheds

The highest priority watershed in need of restoration as identified by Inland West Water Initiative on the Wasatch-Cache National Forest are listed below.

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<thead>
<tr>
<th>Salt Lake Ranger District</th>
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</thead>
<tbody>
<tr>
<td>- Salt Lake Front area</td>
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<tr>
<td>- Layton Front area</td>
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<tr>
<td>- Bountiful Front area</td>
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<tr>
<td>- East Stansbury Mountains area</td>
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<table>
<thead>
<tr>
<th>Kamas Ranger District</th>
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<tbody>
<tr>
<td>- Upper Provo, Soapstone area</td>
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<table>
<thead>
<tr>
<th>Evanston and Mt. View Ranger District</th>
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<tbody>
<tr>
<td>- East and West Fork Smiths Fork River</td>
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<tr>
<td>- Willow Creek</td>
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<td>- West Fork Bear River</td>
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<td>- Woodruff Creek</td>
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<td>- Big Creek</td>
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<tr>
<td>- South Fork Little Bear River</td>
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<tr>
<td>- Willard/Ogden Front area</td>
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<tr>
<td>- Perry area</td>
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<thead>
<tr>
<th>Logan Ranger District</th>
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<tbody>
<tr>
<td>- Laketown, Garden City area</td>
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<tr>
<td>- Box Elder area</td>
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