STEP 6. RECOMMENDATIONS

The purpose of Step 6 is to provide management recommendations based on the ecosystem analysis process performed in the previous 5 steps. Monitoring activities are identified that are responsive to the issues and key questions. Data gaps and limitations are also identified.

Interdisciplinary analysis of the watershed was used to establish treatment priority areas (Maps 9-13) and recommendations. Some recommendations, such as use of prescribed fire, should be applied over large areas such as a subshed. Other recommendations, such as those relating to riparian areas, may be very site specific. Recommendations for improving conditions are divided into five categories as follows: Erosion Processes/Hydrology, Vegetation, Water Quality, Aquatic Resources/Stream Channel, Species and Habitats and Human Uses.

The goal of these recommendations is to guide the general type, location and sequence of appropriate management activities within the watershed based on the analysis. The objectives of these recommendations are to:

1) Reduce soil erosion and improve soil productivity and water quality.

2) Increase the overall vigor of forest stands.

3) Create vegetative patterns that more closely resemble the range of vegetative patterns that would occur based on the inherent disturbance regime.

4) Create vegetative conditions that enhance the many uses that occur.

5) Improve riparian ecosystems.

6) Improve hydrologic function and channel conditions.

7) Maintain and/or improve terrestrial and aquatic species and their habitats.

8) Provide for human needs.

Erosion Processes/Hydrology

A. Soil Resources

Meet Forest plan and BLM Healthy Rangelands standards and guidelines for detrimental soil impacts on a cumulative effects basis. Emphasize treatment areas identified on Map 10. Subsoil, seed, fertilize and mulch where necessary to reduce compaction and increase infiltration. Seed with native species as appropriate and depending on availability.

Reason: Soil impacts are estimated to exceed Forest plan standards and guidelines, i.e. 30-45%, by as much as 200% in some areas. Compacted soil in timber harvest units has been identified as the greatest soil resource impact. Reduced infiltration from soil compaction affects vegetation growth and hydrologic functioning of the watershed.

Increasing infiltration by subsoiling would restore soil productivity and decrease accelerated drainage from compacted soil.

B. Road Management

High open road density is a critical issue for the area. Transportation system planning and access to timber stands should be initiated for the watershed. A comprehensive transportation system plan, logging system plan and access schedule is needed for all timber stands as well as other resource values such as recreation and fire protection. The ability to accomplish any restoration or resource management objectives depends on the transportation system and access management. Impacts to soil resources, stream sedimentation and disturbance to wildlife and their habitats must be reduced to maintain or increase resource productivity.

1. Road Density (Applies to Element 3 of WQMP)

Road management should emphasize rehabilitation of existing roads to provide cross drainage and reduce compacted soils. It should also emphasize closing roads to reduce open road densities. If roads are needed in the future, use closure with adequate cross drainage in lieu of road obliteration. Closed roads should be treated for the entire road length at the time of closure. Open road density on deer and elk seasonal ranges should be managed within 1.0 to 2.0 mi/mi^2 in accordance with recommendations from the Interior Columbia Basin Ecosystem Management Plan to provide habitat security conducive to the resident deer population and the expanding elk population.

Reason: Reducing the open road density will help meet wildlife security needs, reduce soil erosion and sedimentation, lower peak flows and delay seasonal runoff, improve spawning substrates and create less stream bank erosion from unnaturally high flows.

2. Road Obliteration (Applies to Element 3 of WQMP)

Obliteration implies the utilization of a subsoiler or tracked excavator to obliterate the road prism and restore the natural hydrologic flow of the hillslope. Subsoiling is the shattering of the compacted roadbed to restore soil condition. A minimum of 80% of the entire roadbed should be in a shattered condition. **The pattern of subsoiling should be a J-hook that results in a water bar and allows water to drain off the road and back to an undisturbed soil surface**. Spacing of J-hooks should be those recommended below for drainage structures. On obliterated roads and trails which are not outsloped and J-hooked, water bars should be constructed at the spacing shown below. Also utilize blocking, erosion seeding and logging slash where feasible to help control access and minimize erosion. Emphasize road obliteration within 300 feet of perennial, intermittent and ephemeral streams.

Reason: Roads have been shown to contribute to the hydrologic efficiency of the watershed by providing high drainage densities and increased drainage efficiency. Subsoiling of roads and providing frequent drainage onto the upland soil areas will restore soil productivity and decrease runoff efficiency. Water will move through the soil at a natural rate, remain in the uplands longer into the year and be available later in the season for stream flow.

3. Cross Drainage (Applies to Element 3 of WQMP)

Provide the appropriate number and spacing of cross drains on skid trails, skid roads and temporary roads. Table 53 is a guide for cross drain spacing.

Table 53. Cross Drain Spacing

Gradient Percent	Cross Drain Spacing (Feet)
0-5	200-160
6-10	160-120
11-15	120-100
16-20	100-60
21-30	60-40
31-45	40-25
46+	25

Roads that will have continued use should have broad-based dips constructed. Dips should be installed on a spacing recommended in the Fremont National Forest Guide to Erosion Control on Forest Roads and Trails (Spacing = 400 feet/%Slope +100 feet). Broad-based dips should be designed with an adverse grade on the downhill side and, where possible, should be armored with aggregate to prevent traffic from cutting through the structure.

Roads that are blocked at the entrance should also have drainage structures installed along the entire length of the road. Broad-based dips or water bars are recommended on the spacing of 400 feet/%Slope +100 feet. Culverts should be pulled or inventoried and maintained on a schedule.

> Reason: Providing the appropriate cross drain spacing on roads and skid trails will help to keep water and eroded soil in the uplands. This will improve water quality by reducing unnaturally high levels of sediment and maintaining water longer in the uplands to be used by vegetation and be available for stream flow later in the season.

4. Buffers on Roads

Emphasis should be placed on buffering roads with culverts and getting water off of the road prior to ephemeral, intermittent or perennial streams. A 300-foot minimum buffer area between the stream channel and road is recommended. This distance can be reduced to 100 feet for roads with broad-based dips and for roads along intermittent nonfish-bearing streams and ephemeral streams. Individually, evaluate roads within 300 feet of streams to determine if subsoiling is necessary. Roads that are well revegetated and well drained may not require subsoiling within this zone. However, it is expected that most roads in this zone will require subsoiling. Emphasis should be given to perennial streams with numerous stream crossings.

> Reason: Studies have shown that most sediment from roads is trapped within 300 feet of roads with culverts and within 100 feet of roads with broad-based dips. Obliterating roads within the above ranges and reducing road crossings would eliminate the majority of road related sediment to stream systems.

C. Canopy Cover

Coordinate with silviculturists and wildlife biologists to treat forested areas that have dense understories of conifers and high basal area. As much as possible, stay within the historic range of variability for canopy cover over areas of 1,000 acres or smaller. Discourage clearcutting except in small patch cuts or where absolutely necessary to control insect and disease considerations. Provide minimum canopy of 20% in blocks of ponderosa pine and 35% in blocks of mixed conifer and lodgepole pine.

Reason: By managing within the range of the natural canopy closure, peak flows would remain closer to reference conditions. This will help to decrease effects of scour on stream banks.

Vegetation

A. Upland (Forested) Vegetation

1. Reduce stand density to a level that falls between the Upper (UMZ) and Lower Mangement Zones (LMZ) for plant associations (Table 54). Higher densities may be necessary in some specific cases to meet wildlife habitat needs identified under Species and Habitats recommendations.

Table 54. SDI (Stand Density Index) Management Zones by Plant Association

Plant Association (Hopkins 1979)	LMZ	UMZ
Ponderosa Pine (PP)		
CPS314, CPS212	108	161
CPH311, CPS215, CPC211, CPS211, CPS112	103	153
CPS311, CPS213	98	146
CPS211, CPS217*	100	150
CPS217	86	128
CPF111	71	106
CPS214	113	168
CPS311	110	164
Pine Associated (CW)		
CWS313 (PP), CWS114 (WF)**	108	161
CWS313 (WF), CWS114 (WF)**	281	370
CWC411 (PP)**	86	128
CWC411 (WF)**	188	281
CWC311 (PP)**	114	170
CWC311 (WF)**	188	281
CWH211 (PP)	191	285
CWS117 (PP), CWS112 (PP)	108	161
CWS115 (PP)	115	172
CWH111 (PP)	120	179
Lodgepole Pine (LP)		
All (CL) plant associations	114	170

* The two different management zones result from this plant association being described in both Hopkins' Plant Associations for the Fremont National Forest and Volland's Plant Associations for the Pumice Zone. They are the same plant association but on different soils and have a different productivity index.

** These are different SDI management zones for ponderosa pine and white fir depending on the dominance of the species within the plant association.

Reason: These management zones are based on calculations by Cochran (1994) which combine both GBA (Growth Basil Area) and SDI (Stand Density Index) assumptions to determine the upper and lower management regimes within stands to minimize mortality induced by insects and disease. Density managed between these zones increase vigor of the stand and reduces density-related mortality by allowing for growth into unoccupied growing space. Many acres are at risk of substantial change from density-related mortality because they exceed the upper management zone. The high risk is in stands which have a remaining overstory of large diameter trees and a dense understory as well as the evenaged stands that are overstocked. Stands managed between the upper and lower limit have the greatest opportunity to meet management objectives required by various resources and maintain overall stand vigor.

2. Treatment of forest cover should emphasize reduction of multi-storied stands where the stand structure is unstable due to unnatural disturbance regimes and is likely to undergo significant change in the next decade or two (Map 12). These stands are typically lodgepole pine where nine inch trees exceeds thirty per acre and pine associated below 6,000 to 6,500 feet in elevation. These stands should be moved toward a more open condition where canopy cover is in the range of 20 to 35% and basal area is reduced to an average of 80 square feet with a range of 60 to 100 square feet. Higher canopy cover and basal area may be necessary to meet wildlife habitat needs under Species and Habitats recommendations. The risk of maintaining the higher density level must be an integral decision for stand treatment, based on probability of stability, cost of meeting management objectives and species habitat needs.

Reason: Forest cover is experiencing change at a rapid rate because of an abnormal disturbance pattern. Lodgepole is beyond maturity and the normal replacement cycle. Many of the pine associated stands are too dense and the white fir understory is out competing the large trees. Analysis indicates that a large change in multi-storied stand structure will likely occur within the next drought cycle.

3. Both mechanical harvest and pretreatment of forest cover for reintroduction of fire on a more natural disturbance regime should be emphasized. Management of the large tree component along with felling of small stems and a reduction in fuel bed depth should be used to control the intensity of underburning. Underburning should be emphasized first in pine stands and second in pine associated stands below 6,000 foot elevation.

Reason: Stands that are overstocked with trees larger than 21 inches and a dense understory will continue to suffer increased mortality even with some removal of competing understory vegetation. These stands should be the highest priority for treatment if the objective is to maintain the large tree component as long as possible. Harvest of overstocked large trees needs to occur even though current direction is to the contrary.

4. Treatment of existing evenaged pine and pine associated stands should favor the development of large diameter ponderosa pine. Replacement of the large tree component in these stands should occur as quickly as possible using commercial thins.

Reason: Past harvest activity, including timber cut on private land has reduced the amount of large diameter pine trees. The watershed has been entered in many places three times to remove the large tree component which is now below the level needed to meet the desired condition for wildlife values.

5. Vegetation treatments must consider the economic viability of wood product removal both with mechanical harvest and prescribed fire. Market condition will dictate the mix of sales to accomplish density management. An inventory of potential treatments should be developed and stored in an easily retrievable database. The offering of saleable material must be able to respond to quickly changing market conditions.

Reason: Density management will be accomplished both with mechanical harvest and prescribed fire. Treatments of this type are usually thins that remove smaller, low-valued wood products. Even with a mix of large trees, economics must be part of any treatment prescription if management objectives are to be accomplished. In many cases, material being sold is of marginal value or not in demand. The likelihood of timber removal generating trust fund dollars for other restoration efforts such as wildlife habitat improvements will probably not happen in the Lakeview Sustained Yield Unit. Sales must be offered that will utilize timber harvest to accomplish as much restoration as possible.

6. In areas of declining forest health, utilize thins from below, sanitation salvage and clearcutting to minimize the potential for significant increase in adverse impacts to stand development and growth from mistletoe, insects and disease. Multi-storied stands should be reduced to a more simple stand structure of three layers that will meet most other resource needs. Pine associated and true fir that are entered should have all cut stumps larger than ten inches treated with Borax to reduce the spread of Annosus during harvest. Stumps have to be treated within 24 hours.

Plantations, regeneration units, or old overstory removal units that have scattered remaining large trees should be scheduled to have these trees removed. Many times these trees were left from previous high grade logging and represent the dysgenic selection of the poor end of the gene pool. If these trees are left for other resource values they should be killed standing as soon as possible.

Young and intermediate sized stands of ponderosa pine and pine associated trees should be scheduled for thinning, depending on market conditions, within the next decade to maximize growth and sustain vigor. Stands that are vigorously growing must be cultured to meet the needs for large diameter trees.

Reason: Mistletoe spread and the potential to incur damage to pine stands is the greatest in single species stands with multilayered canopy. The overall Hawksworth rating needs to be reduced to 1 or 2 in infected stands to minimize the impact of dwarf mistletoe.

7. As prescribed fire is used to move systems to a more natural disturbance regime, burned areas should be evaluated after 10 years to determine the schedule for reburning. Areas scheduled to be burned should be coordinated with resource specialists to determine priorities

for treatment or retreatment (Map 11). They should be evaluated for effectiveness in meeting structure and other resource objectives.

Reason: By moving toward an inherent fire disturbance regime, the potential for catastrophic loss of resource values may be reduced. Maintenance of vegetation, a reduced fire hazard and restoration of other resource values can be achieved at a lower cost. Regeneration of shrub stands with prescribed fire should lead to a more sustainable situation in the long term but there may be a change of stand structure in the short term.

8. All vegetation treatments will be approved by a certified silviculturist.

Reason: Forest Service direction requires that vegetation treatments of all kinds be approved by a certified silviculturist. There are many ways at times to accomplish vegetation management objectives. Most certified silviculturists have been trained to formulate alternatives to meet management objectives and can provide expertise in all arenas of vegetation management.

B. Rangeland

1. Begin to implement prescribed fire as a vegetation management tool on the areas identified on Map 11.

Reason: Restore fire as a natural disturbance agent on a return interval within the historic range of variability or a modified regime where necessary to meet other resource needs.

2. Identify sites, especially big sagebrush and aspen, where juniper control is needed. Develop a juniper management plan for the watershed. Determine the type and extent of control needed based on vegetation objectives for these sites. Recommended methods for juniper control include: cutting, prescribed burning, girdling and mechanical treatments, where appropriate. Establish free use firewood cutting areas in juniper stands. Many factors determine the best method to control juniper. Factors include the amount of understory, topography of the site and size of the juniper. On many sites, junipers have become big and thick enough that prescribed burning alone is not effective. On these sites, it is necessary to consider other methods such as selectively cutting trees.

Reason: Juniper is invading big sagebrush and aspen, changing the nature and condition of these sites.

C. Noxious Weeds

1. Emphasize prevention of the spread of noxious weeds as the preferred control measure in both timber and range management activities. Preventing the spread of noxious weeds can be achieved through a variety of methods, including: washing of heavy equipment in between projects, regular washing of field vehicles (especially underneath), periodic inspection of material sites to insure weed free material, requiring weed free hay for recreational horses, reseeding disturbed areas with certified weed free seed to prevent invasion.

Reason: The noxious weed control EA for the Fremont National Forest/Lakeview District BLM is scheduled to be revised in 1998. It will provide specific requirements for control of noxious weed populations.

2. Continue to expand the weed program to treat and/or monitor all known weed populations. The control program needs to expand to include all landowners so weeds can be effectively controlled.

Reason: Weed populations continue to expand every year and therefore the effort to contain and/or eradicate them must also continue to expand. Through education and outreach employees and the public can be instructed how to identify and report new weed populations.

3. Continue to work with the weed advisory group for Warner Valley to coordinate inventory and treatment programs for maximum effectiveness.

Reason: The weed advisory group for Warner Valley can improve control through coordination and cooperation, and can also apply for grants and other funds available to groups. A grant would provide the funds to treat an entire population of weeds within the valley instead of the individual treatments being done now.

D. Riparian

1. In riparian areas that are in a state of decline due to forest health problems, conduct stocking level control to reduce the SDI between the upper and lower management zones. This will improve the vigor of the residual stand. Plan, in cooperation with silviculturists and resource specialists, those activities that will restore the riparian zone to meet resource objectives. Treatments that remove logs should be restricted with the objective of minimizing soil disturbance. This will require low impact ground based systems or advanced systems such as low ground pressure skidding equipment with one end suspension, cable systems with suspension, aerial systems or winter logging on frozen ground. Treatments within riparian zones that require advanced systems will have to be economically sound to accomplish any restoration objectives.

Reason: Riparian zones that do not meet resource objectives will require restoration treatments. Logging in these zones to accomplish the objectives will require a minimum of soil disturbance to reduce soil erosion potential and subsequent sediment in stream systems.

2. Manage for more acres of aspen and cottonwood habitat than presently exist on the landscape to help move the diversity and distribution of woody deciduous plant communities toward the historic range of variability (Map 12). Aspen and cottonwood should be managed to provide a variety of seral conditions from early to late. This will require a continuing inventory and long-term silvicultural treatment plan to accomplish resource objectives.

Manage pure aspen stands to maintain the dominance of aspen stems in both the mature and earlier seral stages. At least one-third of the existing mature stands will be converted to a younger age class and managed as replacement stands. Mature stands in poor condition will receive priority for treatment. Manage mixed aspen stands to maintain the present basal area ratio of aspen in the stand. Mixed stands of aspen in the poorest condition will have highest priority for treatment.

Aspen stands that are in a state of decline due to conifer encroachment, lack of regeneration or grazing pressure require treatment to restore the aspen component. Removal of conifers, establishment of reproduction through coppice sprouting and control of grazing should be

utilized to improve the clones. Stand disturbance to stimulate reproduction can be accomplished by mechanical methods such as felling and yarding, prescribed fire or a combination of both. Slash treatment and logging systems must be a prime consideration when merchantable conifers are removed from aspen clones. Aspen treatments must be planned in an interdisciplinary team process considering all resource values.

Clones that are no longer able to regenerate vegetatively will require silvicultural treatments and site preparation to provide adequate site conditions for planting aspen and cottonwood cuttings. If possible, cuttings should be obtained from the parent clone. Follow the requirements of the Fremont National Forest Native Species Guide for utilizing material from existing clones.

Fencing will be required to protect aspen and cottonwood sprouts or cuttings from livestock and big game use. Exclusion of livestock should occur until the sprouts are over six feet tall. In elk areas, exclusion should continue until sprouts are over 12 feet tall.

Reason: In general, aspen and cottonwood stands are in decline. Additional aspen will help meet the habitat needs and possibly improve the population performance of associated wildlife species. Aspen stands are generally our most diverse plant communities in terms of both plant and animal species composition and productivity.

E. Sensitive Plant Species

1. Follow standards and guidelines set forth in the Forest plan and individual species' conservation strategies for management of threatened, endangered and sensitive plant species.

Reason: Management direction.

F. Cultural Plants

1. Continue consultation with Native Americans to insure their traditional collecting can continue.

Reason: Consultation is necessary to protect these sites and build better relationships with Native Americans.

2. Protect native food plants used by the Northern Paiute peoples. Increased vehicle and human activity could be causing soil erosion and noxious weed infestation problems. There could be a need for future road closures and increased weed control.

Water Quality

A. Implement items in Element 3 of the Water Quality Management Plan (WQMP) for the Deep Creek watershed on National Forest System lands. The following eight recommendations only apply to the USDA Forest Service per the WQMP.

1. Implement the grazing terms and conditions of the USFWS biological opinion for the Deep Creek watershed.

2. Pursue cooperative programs with adjacent landowners to reduce stream temperature and erosion/sediment transport resulting from historic and current land management practices.

3. Manage riparian vegetation to restore or maintain structure, age and composition consistent with site potential. The goal is recovery of stream temperatures by increasing shading from vegetation and narrowing the stream channel morphology.

Riparian vegetation objectives should be measured by similarity of current riparian vegetation to the potential late ecological status riparian community/composition. The objective is to have at least 60% of the green line community types in the late ecological status (consistent with the riparian vegetation RMO for Alternatives 4 and 6 of the ICBEMP, 1997). The tool that will be used to determine the percent of the species within this ecological status is the Riparian Ecosystem Classification Project for the Fremont National Forest (due for completion in 1998).

4. Utilize Best Management Practices (BMPs) for grazing and roads identified in the biological opinion.

5. Develop and utilize BMPs for timber and fire management.

6. Emphasize decompacting soil in logged timber units. Also, hydrologically decomission roads to desyncronize effects of peak runoff.

7. Emphasize planting willows and cottonwood to provide shade where appropriate.

8. Emphasize implementation of recommendations in the watershed analysis to help achieve water quality restoration objectives of the WQMP. These are identified by indicating that they apply to Element 3 of the WQMP.

B. Other Water Quality Recommendations

1. Consider changing grazing systems and combining allotments to improve livestock distribution and timing of grazing. This could be achieved by combining allotments to take advantage of a larger land base. (Applies to Element 3 of WQMP)

> Reason: Livestock grazing has impacted riparian areas throughout the watershed. Present deferred and deferred rotation systems are rated as poor to fair for riparian resources (Platts 1991). Switching to a system that is more favorable to riparian systems (i.e. rest rotation) may help to improve riparian conditions including shading and bank stability.

2. Partnerships (Applies to Element 3 of WQMP)

Develop partnerships with private landowners to improve stream/riparian conditions. Place particular emphasis on providing habitat conditions to meet the State water quality stream temperature standard of 17.8ºC mean 7-day maximum temperature. Continue with existing working agreements.

> Reason: Improving stream temperatures through these areas will help achieve habitat objectives throughout the entire stream length.

3. Best Management Practices (BMPs) (Applies to Element 3 of WQMP)

Apply site-specific BMPs to activities with the potential to affect soil productivity and water quality and quantity. Emphasis should be given to Pacific Northwest Region BMPs and use of site-specific BMPs.

Reason: BMPs will help to meet water quality objectives.

4. Public Water Supply

Identify the drainage area above the potable water collection area for the Town of Lakeview and create a management plan for the area. Emphasize meeting the terms of the Safe Drinking Water Act for municipal water supply.

Reason: This will provide a positive step towards ensuring a long term source of drinking water for the Town of Lakeview.

Aquatic Resources/Stream Channel

A. Large Woody Debris (LWD)

Large woody debris (LWD) in forested reaches should be restored to historic levels shown in Table 41. Achieve at least the 50th percentile. Work with silviculture to develop unevenaged stands within RHCAs for all streams where historic cutting has occurred or where forest health is of concern.

Reason: Large wood has been identified as lacking in some streams. Providing large wood to the channel will enhance sediment retention of tributary streams and help to improve water quality in fish-bearing streams.

B. Channel Morphology (Applies to Element 3 of WQMP)

1. Restore streams to the desired natural channel morphology. Rosgen stream channel types G and F should be moved toward channel types C and E, as appropriate. Rosgen parameters for width to depth ratios and sinuosity should be used as target objectives.

2. Reduce bank erosion levels to less than 20% on all C and E channels and less than 10% on all A and B channels.

3. Improve site conditions for meadow riparian vegetation by raising water table levels through stream channel restoration. Raise water tables in alluvial depositional areas.

Reason: Degraded G and F type channels are typical in alluvial depositional and some meadow areas. Restoration will decrease sediment and improve base flow.

C. Pool Habitat

Implement habitat management and restoration treatments that help achieve at least the 50th percentile for pool frequency and deep pools.

Reason: The number of pools per mile can be increased by lowering sediment input to the stream channel, improving quantities of large wood, improving stream channel morphology and by physically constructing pools through habitat improvement projects. Improving pools per mile and pool depth will result in improved fisheries habitat.

D. Floodplain Restoration (Applies to Element 3 of WQMP)

Improve beaver habitat along both perennial and intermittent streams to enhance floodplain restoration. Encourage willow, aspen and cottonwood development within the floodplain. Methods may include constructing grade control structures to raise the water table, planting willow wattles along reaches of the stream channel and encouraging regrowth of willow through grazing management.

Reason: Enhancement of beaver habitat will allow beaver to establish in marginal habitat areas and help in floodplain restoration. Benefits of beaver ponds include a raised water table, increased summer flow, sediment trapping behind beaver dams, refugia for native fish and improved wildlife habitat.

E. Riparian Habitat Conservation Areas (RHCAs)

RHCAs are portions of watersheds where riparian-dependent resources receive primary emphasis and management activities are subject to specific standards and guidelines. These areas should be managed to meet interim riparian management objectives as identified in the Inland Native Fish Strategy (INFISH) or the Interior Columbia Basin Ecosystem Management Project (ICBEMP) when it replaces INFISH. Timber, roads, grazing, recreation, minerals, fire/fuels, lands and general riparian management areas are addressed in INFISH.

Examples of allowable management activities in RHCAs are burning to provide enhanced diversity of vegetation, felling of trees to provide a diverse age structure and limited end-lining of some trees from the exterior of RHCAs. Skidding, landings or machine piling of slash should not be permitted along lengths of intermittent or perennial streams. Activities within these areas should be reviewed by the watershed specialist. Recommended RHCAs are shown in Table 55:

Table 55. Recommended RHCAs

Type of Aquatic Ecosystem	Total Width (Both Sides) RHCA (ft)	Stream (ft)
Perennial Fish-Bearing Streams	300	600
Perennial Nonfish-Bearing Streams	150	300
Intermittent Fish-Bearing Streams	300	600
Intermittent Nonfish-Bearing Streams	50	100
Springs, Marshes, Lakes, Meadows greater than 1 acre in size	150	300
Springs, Marshes, Lakes, Meadows less than 1 acre in size	50	100

Perennial Stream. Normally flows year long, except during periods of extreme drought. Has well-defined channel and show signs of washing and scouring.

Intermittent Stream. Carries water most of the year, but ceases to flow during the dry season because evaporation and percolation into its bed and banks exceeds the available stream flow. Has well-defined channel showing scouring or washing.

Reason: RHCAs provide the managed habitat for riparian-dependent resources. Soil, water and fisheries benefit from buffer widths that provide sediment filtering from upland management. Vegetation management provides shade and a long-term source of large wood to the stream channel.

F. Fisheries

Review existing culverts that are fish barriers to determine if they should remain or be removed.

Reason: Fish barriers may block redband trout movements in some of the headwater streams.

H. Restoration and Improvement Projects

Implement projects identified on Map 9 from the Watershed Improvement Needs Inventory (WIN):

1. Control erosion and stabilize 1.4 miles of Camas Creek managed by the Forest Service through use of large wood, boulders and willow plantings.

2. Armor headcuts and install checkdams in Willow Creek to control downcutting and restore the function of the floodplain.

3. Reanchor and possibly add more juniper to the banks of Dismal Creek to help prevent bank erosion.

4. Introduce large wood to Mud Creek, through the use of explosives, to improve habitat. (This is a KV project.)

5. Subsoil Cove Timber Sale.

Species and Habitats

A. Terrestrial

1. Threatened, Endangered, and Sensitive Species

a) Northern Bald Eagle (Threatened)

If bald eagle nest or roost sites are identified in the future develop a Bald Eagle Management Area (BEMA) plan to protect or enhance this habitat. Use prescribed burning, mechanical treatments, road management and prey base enhancement to meet the objectives to restore or enhance bald eagle habitat.

Reason: Prescribed underburning and/or mechanical treatment would be used to reduce stand densities, fuel loads, white fir competition and maintain ponderosa pine nest/roost

stand and tree characteristics. Prescribed underburning would also reduce the risk of catastrophic stand-replacing crown fires.

Road closures or activity restrictions would improve habitat security for nesting and roosting eagles within the BEMA and increase the probability of successful fledgling production.

Enhancing habitats to increase prey base populations, particularly waterfowl, fish and deer, would increase prey availability and improve eagle survival and productivity.

b) American Peregrine Falcon (Endangered)

If peregrine nesting activities are identified on Fish Creek Rim or on National Forest System land, initiate a peregrine falcon management plan to protect or enhance nesting, foraging and security habitat. Utilize prescribed burning, road closures and activity restrictions to maintain/enhance habitat.

Temporary or permanent road closures and other activity restrictions would be used to maintain solitude within one mile of active nest sites during the courtship, nesting and fledging period from 2/1 through 8/15.

Reason: Prescribed burning would be used to enhance peregrine hunting opportunities above the rim by improving small mammal and terrestrial ground nesting bird habitat. Management activities and public access may be impacting nesting peregrines if an active nest exists at one of these sites.

c) Western Sage Grouse

Sage grouse habitat should be enhanced through Section 7 compliance on livestock grazing activities for Warner suckers and could be accelerated through the use of prescribed fire and spring and reservoir livestock exclusion (fence and pipe water to outside troughs). Design prescribed fires to minimize loss to winter and security cover (leaving a mosaic of burned and unburned islands of sagebrush) and establish a variety of sagebrush seral stages to meet the entire life cycle needs of grouse.

Reason: To improve sage grouse nesting and brood rearing habitat by providing dense nesting cover and releasing forbs for grouse brood availability to increase grouse productivity.

d) California Bighorn Sheep

Use prescribed burning (Map 11) and current livestock management to enhance California bighorn sheep habitat. If crucial lambing areas are detected and disturbance is causing reduced lambing success, further activity restrictions (Fish Creek Rim is already covered by interim management of wilderness study areas) may be needed to provide additional solitude to the nursery.

Reason: Native perennial bunchgrass, such as bluebunch wheatgrass, will benefit from periodic prescribed fires and shrub succession will also be set back, both desirable conditions for bighorn sheep. Reduced disturbance around lambing areas may increase lamb survival.

2. Keystone Species

a) Big Game

1) Manage forage, cover and road densities on deer and elk ranges to provide habitat conditions necessary to meet ODFW's herd management objectives over the long term.

2) Security habitat

Design forest-thinning treatments to provide a variety of spacing conditions, including no cut leave patches of dense structure. Treated stands should retain an interspersion of cover and forage where leave patches intended to provide thermal and/or hiding cover are two to 26 acres in size.

A reduction in hiding cover may exist for deer and elk with the loss of shrubs from prescribed burning, however, burning would be carefully planned to minimize these effects. Prescribed burning will provide early successional plant communities beneficial to foraging deer, elk and pronghorn and by design retain interspersed patches of late seral sagebrush/bitterbrush for security cover.

Activity restrictions may need to be addressed in the future as more wintering and fawning/calving/kidding areas are identified. These restrictions will be in coordination with ODFW biologists and may be in the form of a winter cooperative road closure from 11/1 through 4/30 or restricted use from 5/1 through 7/1 to minimize disturbance in deer, elk or pronghorn parturition areas.

3) Edge Habitat

Maintain the quantity and quality of edge habitat. Utilize prescribed fire and selective thinning to maintain or enhance edge habitat. In existing small burns and regeneration harvest units (<80 acres), maintain one to 25 acre forage patches on sites near the edges of units. In more extensive burn areas, maintain one to 40 acre forage patches in a mosaic. Priority areas for treatment include those sites where browse forage species are decadent (especially bitterbrush and mountain mahogany), forage productivity has declined because of an increase in forest cover (including juniper expansion), and/or preferred forage species occur. These openings will help maintain early seral foraging habitat for a longer period of time during forest stand development.

4) Forage Habitat

Reduce thinning slash and stem density in areas where herbaceous and woody understory forage plant growth is limited. Place an emphasis on hand piling or burning treatments, but restrict mechanical methods in order to meet soil objectives.

Consider forage seeding obliterated roads, skid trails and landings to increase the forage base.

Utilize prescribed fire (Map 11) to increase the quantity, quality and species diversity of foraging habitat. The potential exists for short-term declines in mule deer populations as habitat is treated with prescribed fire. These treatments may temporarily reduce bitterbrush and sagebrush densities over the short term, but will improve shrub age class diversity, plant

density, vigor and productivity over the long term. Prescribed burning will also improve elk forage as well as early spring green-up of grass and forb production for mule deer.

Bitterbrush and mountain mahogany retention areas will be identified in the burn plan in coordination with USFS, BLM and ODFW biologists. Burn areas will be chosen where native grass/forb/shrub seed source is adequate and exhibits the best chance for bitterbrush and mountain mahogany reestablishment/rejuvenation. Prescribed burns will be monitored to determine the most appropriate fire return interval.

Reason: A combination of treatments and protection of existing habitat features will provide forage and cover in a more favorable ratio, while reductions in road densities will increase security and make available more acres of useable habitat.

b) Beaver

Maintain and restore beaver habitat, both deciduous and herbaceous forage species and water availability near active and historic dam sites where these factors may be limiting recolonization or productivity.

Raise the water table in riparian areas where channel downcutting has occurred.

Continue Section 7 compliance-driven livestock management and/or control livestock stocking rates, season of use, grazing systems and access to critical riparian areas to restore forage species and water availability near active and historic dam sites and along stream reaches of potential habitat.

Implement a multi-year beaver transplant program in areas of potential and/or formerly occupied habitat where riparian vegetation recovery and water levels are adequate to provide at least marginal resources for survival. Multiple transplants over several years at a single site may be necessary until beaver successfully restore habitat conditions to suitable year-round occupancy.

Reason: Restoration of beaver habitat will increase the area of wetland habitats and associated plant and animal diversity and productivity, improve water and sediment storage and transport and nutrient cycling and decomposition.

c) Nongame Species

Maintain shrub-steppe species habitat through the introduction of prescribed fire (Map 11) with a return interval designed to provide shrub habitat in a variety of seral classes beneficial to associated animals. Continue current livestock grazing management to build up fine fuels necessary to carry a fire and protect seedling establishment. Use prescribed fire and selective cutting in aspen stands and areas of juniper invasion.

Reason: Maintain or enhance habitat for species dependent on shrub-steppe or riparian habitat types.

3. Management Indicator Species Associated with Late and Old (LOS) Forest Cover

a) Late/Old Seral Forest Habitat

1) Manage for a late/old seral forest habitat closer to the natural range of historic variability at the subshed level if feasible.

2) Manage for increased patch sizes of interior LOS habitat.

3) Manage for a diversity of stand densities (basal area, trees/acre, dbh) both within and among stands to provide diverse habitat conditions.

4) Manage for an old-growth restoration zone (600-1,200 feet) surrounding presently dedicated and "other" old growth (Map 13) where feasible to buffer and increase forest interior habitat to a level closer to the range of historic variability. Design and implement prescriptions to develop and maintain late/old seral forest characteristics within the zone. Manage forest habitat so that at least 25% of the total recommended LOS forest provides interior "core" habitat. Core area patch size should average at least 225 acres. The minimum size of one or more core areas should be determined (refer to Data Gaps).

5) Manage for larger additional or replacement old-growth stands within 1.5 miles of existing dedicated and "other" old-growth stands where the distance between these stands presently exceeds 1.5 miles. Select stands most resistant to natural disturbances over the long term, which have the most suitable habitat for the species of interest and are distributed throughout the subsheds. Some of the most stable and suitable lands occur around riparian areas, on north and east aspects, and at higher elevations.

6) Implement non-uniform thinning (Map 12) and prescribed burn (Map 11) treatments where possible to control understory stocking levels, reduce fuels, develop multi-storied stands, restore open park like ponderosa pine stands where appropriate, and culture the development of large diameter live trees and future snags and logs.

7) Establish Interim Riparian Habitat Conservation Areas and manage forest stands within these areas to conserve LOS forest as a network of corridor habitat (Map 13). Again, implement non-uniform thinning and prescribed fire treatments where necessary to control understory stocking, reduce fuels, develop canopy gaps, restore open park like ponderosa pine stands where appropriate, and culture the development of large diameter live trees and future snags. When appropriate within this LOS forest corridor, implement small patch regeneration treatments to restore stands of shade intolerant deciduous species such as alder, willow, aspen and dogwood.

8) Manage all "other" late/old seral habitat mapped in the inventory completed in 1994 to conserve its character as interior and corridor habitat.

9) Design and implement forest management prescriptions featuring progressive or cluster treatments from existing scattered nuclei (particularly existing shelterwood, seed tree, overstory removal and partial cut units) to reduce risks to LOS forest cover associated with edges, gaps, fragmentation and the amount of maintained roads. Cluster treatments are simply aggregations of similar treatments adjacent to areas already existing on the landscape to create larger, more homogeneous patches in order to reduce fragmentation. Progressive treatments occur where a central patch(es) or strip(s) is progressively enlarged by continuous cutting.

10) Maintain or restore connectivity between all remaining other LOS stands and dedicated stands (Map 13). Specific desired conditions for connective habitat are described in the

"Forest Plan Amendment for Interim Standards" under "Interim Wildlife Standards" in the Forest plan.

11) Maintain or restore the abundance and distribution of large diameter snags, large diameter live LOS trees and large down logs in all forest stands. To accelerate the development of large diameter trees, mechanical and prescribed fire treatments should be implemented where appropriate to thin overstocked stands. Retention and recruitment of large trees should be a priority in stands dominated by younger age classes.

12) Manage for a higher basal area of large diameter white fir (>15" dbh) in true mixed conifer plant associations above 6,500 feet elevation in general, and down to 6,000 feet elevation on some north and east aspects. Priority areas would be occupied and historic pileated woodpecker foraging and nesting sites, and occupied or suspected marten habitat. Canopy closures in forest stands where foraging is evident should be managed at >60%. Manage to maintain >five trees per acre that are > 20" dbh.

13) Maintain or restore open park like stands of LOS ponderosa pine with average tree diameters >20" dbh (10 to 40 trees/acre) for white-headed and Lewis woodpeckers and pygmy nuthatch. A desirable condition would be trees >2" dbh comprising >40% of the total basal area at a density of >eight trees/acre. Implement mechanical and prescribed burn treatments to reduce stand densities. Thin overstocked understories, reduce accumulated duff, and culture patches of non-uniform multi-storied pine understories and large diameter live trees and future snags.

> Reason: The goal is to develop a late/old seral forest network that protects and enhances the habitat effectiveness of the remaining late seral forest ecosystem to sustain associated MI wildlife species by restoring historic characteristic landscape scale features. Conservation of late/old seral forest habitat representation rather than preservation of individual patches is the objective. A proposed late seral patch and linkage system is shown on Map 13. A review of stand conditions to determine their suitability as late seral patches should be conducted.

b) Goshawk

1) Manage to protect active and historic nest stands and treat replacement stands and PFAs to develop and/or restore preferred habitat conditions for goshawk nesting and rearing, and to provide prey species habitat needs.

2) Maintain 30 acres of the most suitable nesting habitat surrounding all active and historic nest trees. Within a 1/2 mile radius of active or historic nest sites, maintain at least two 30 acre areas of the most suitable nesting habitat surrounding documented historic nest trees, and three 30 acre areas as potential replacement (alternate) nest sites. Defer active and historic nest areas from timber harvest.

3) Replacement nest stands needing improvement should be treated with thinning from below (variable or non-uniform spacing) using either mechanical means or prescribed fire to promote faster tree growth and crown development, open the understory and reduce risk to insect, disease and stand-replacement fire. Lop and scatter slash that cannot be burned. On the forest, every documented nest site is considered "historically active" whether or not it has been monitored for activity in the past five years. Suitable habitat as defined in the Forest plan must be present at the nest site.

4) Designate a 400 acre "Post-fledging family area" (PFA) consisting of the most suitable habitat around every known active nest site. Manage to maintain or restore the late/old seral structural characteristics of forested stands within at least 60% of the PFA. Maintain a minimum canopy cover of 50% in ponderosa pine and 60% in pine associated and lodgepole pine. Create scattered openings two acres or less where necessary. Leave three to six large diameter reserve trees per acre in clumps in the openings. Use either mechanical treatments and/or prescribed fire to treat dense understories, promote large tree growth, crown development, understory herb and shrub development, and more open stand conditions for hunting and prey availability. Thin to non-uniform spacing. Lop and scatter slash that cannot be burned.

5) Maintain solitude in the active nest areas and PFAs during the breeding, nesting and fledging period (March 1 - September 30), or during period of occupancy as determined from field observations, to improve the probability of successful fledgling production.

6) Retain five to seven and 10-15 tons/acre of woody debris, greater than 3" diameter in ponderosa pine and pine associated forest types, respectively, to provide habitat for prey species within territories.

Reason: The northern goshawk is listed as a Species of Concern by the U.S. Fish and Wildlife Service. Minimizing disturbance and maximizing habitat potential will aid in preventing further reductions in population numbers, as well as a trend toward federal listing.

4. Dead Wood Habitat Management Indicator Species

a) General

1) In all stands of ponderosa pine and pine associated forest, design future timber harvest treatments to maintain or restore snags and green tree replacement trees (GTRs) greater than or equal to 15" dbh at 100% maximum population potential (mpp) of primary cavity excavators. For lodgepole pine, maintain snags and GTRs greater than or equal to 10" dbh at 100% mpp of cavity excavators. Proper management application and specific desired conditions for snags and down logs are described in the "Forest Plan Amendment for Interim Management Direction Establishing Wildlife Standards for Timber Sales" in the Forest plan.

In addition, the desired condition for snag and GTR densities and distributions to achieve 100% mpp for cavity excavators was interpreted by the Fremont National Forest on 8/30/93 to be as follows:

The following is the standard for "...snag and green tree replacements of greater than or equal to 15" dbh at 100% potential population levels for primary cavity excavators". One clarification is that this is not 100% of population potential as defined by the Forest plan.

DBH	Height	Trees/Acre
Pine Associated		
15"+ (20" preferred)	20'+	3 dead + 2 green
10"+ (12" preferred)	20'+	1 dead + 3 green

DBH	Height	Trees/Acre
	Lodgepole Pine	
12"+	15'+	1 dead + 1 green
10"+	15'+	1 dead + 1 green

2) Manage snags and GTRs in dispersed clumps rather than individual trees uniformly scattered over the landscape. As a minimum, manage for one clump per five acres consisting of both dead and green replacement trees. This is based on the smallest home range size of primary cavity excavator species in the current literature. Manage snags and GTRs in the same species composition as representative of the stand.

3) Manage for a large proportion (>50%) of standing snags >33 feet in height. Retain spike-topped and lightning-scarred trees that provide alternate nesting substrates.

4) In snag deficient areas, where feasible and appropriate, create snags from live trees and/or manage adjacent forest stands for higher densities to partially compensate for the deficient areas. Implement top-blasting, girdling and/or injection to create snags, with girdling being the least preferred method.

5) Culture GTRs in early and mid-seral stands to develop future large diameter snags at the desired species composition and densities for the full stand rotation.

6) Protect down logs and snags with fuel breaks and/or burn prescriptions where necessary to maintain the desired densities and size classes when implementing prescribed burn treatments.

7) Stands identified for snag retention will be entered into a GIS database to develop a permanent record of size, species composition and location.

Reason: Many wildlife species rely on moderate to high levels of down logs and snags for nesting, roosting and feeding. Large down logs are a common and important habitat component of most LOS structural forests. Past management practices have greatly reduced the number and availability of snags and down logs in managed stands.

Human Uses

A. Human uses should continue to focus around outdoor recreation activities such as camping, firewood gathering, fishing, hunting, hiking, horseback riding, off-highway vehicle (OHV) riding, mountain bike riding, cabin renting, snowmobiling and cross-country skiing.

Recreation activities involve camping at developed and dispersed campgrounds (forest camps), hiking on trails in the high country around Crane Mountain, seasonal hunting and fishing. The needs of campers at the developed sites should be adhered to while at the same time giving the forest user as much of a primitive recreation experience as possible.

B. Road closures and roadless areas will enhance the outdoor experience of dispersed forest users that are hiking and camping in the back country by giving them more of a feeling of being alone in a semiprimitive wooded environment.

C. Opportunities in the developed campgrounds need to be expanded to ready for the increased use of the next few decades. The concepts of accessibility need to be applied to these developed areas.

D. Improve habitats for deer and elk to increase hunting opportunities for these species in the future.

E. The trail system that is now in place fills present day needs. However, a look to the future might show a need for an expanded system that would go out of the campgrounds into the major trail system that goes along the spine of the Warners.

F. Signing and interpretive activities would add to the experience of the forest user.

G. The numerous sensitive archaeological sites need to be protected and used for ongoing scientific research.

H. OHV development in the area should be looked at and surveyed for future possible use.

I. Range

1. Swift response and proper fence maintenance by the agencies and permittees should continue where cattle are detected in protected riparian exclosures and pastures.

Reason: To ensure riparian exclosures and pastures receive proper rest and do not incur any significant grazing.

2. Allotment evaluations need to continue and be done in a systematic manner to insure that grazing management is meeting objectives.

Reason: Allotment evaluation is a formal document that insures that data being collected is summarized and analyzed. This analysis insures the allotment management plan is being followed and that it is the proper management for the resources. This process provides an opportunity to evaluate impacts on resources and make changes in management when appropriate.

3. Every opportunity to better coordinate private and public land management should be explored and utilized. This would include grazing associations, weed boards and watershed councils.

Reason: Private and public lands are often intermingled and impacts from activities can not be separated. Therefore, any opportunity to coordinate management should be explored.

4. Incorporate juniper control and prescribed burn plans into allotment management plans (AMP) whenever possible.

Reason: Incorporating prescribed burns and juniper control into AMPs would promote implementation and better post treatment management of the treatment area.

Monitoring Needs

A. Vegetation

1. Utilization pattern mapping is being done every year on the grazed areas and trend transects with photos are being read every five years. There will continue to be periodic evaluations of monitoring data to determine trend of the allotment.

2. Better coordinate and expand our riparian monitoring to include quantifiable vegetation data. Establishing permanent vegetation transects in riparian areas would document changes in riparian vegetation over time. Recent changes in management have resulted in changes in vegetation and it is important to document these changes.

3. Establish both research studies and vegetation monitoring on prescribed burn sites to document changes in vegetation over time and determine short- and long-term impacts of burning on different sites. These studies would document benefits and impacts of burns and help determine what burns should be done in the future.

4. Establish both research studies and vegetation monitoring in juniper control projects to document changes in the sites, determine if objectives are being met and to document how effective the control is over the long term. Research is also necessary to determine which areas should be controlled in the future and which techniques are the most effective. Vegetation monitoring studies will help evaluate short-term impacts and determine which management strategies should be used in the future.

5. Continue annual range utilization mapping and trend studies to determine condition and trend of vegetation. Expand these studies as much as feasible. This monitoring is critical to evaluate the annual impact of grazing on vegetation and other resources to determine if grazing management is meeting objectives of the allotment management and annual operating plans. These studies are also used to determine long-term vegetation trends under different management strategies.

6. Do some spot checks on the Ecological Site Condition Inventory (ESI) transects to determine if there is any change in ecological condition ratings over the last 10 years. The reason for spot checks (sampling) is the large number of ESI transects in the area.

7. Continue to inventory threatened and endangered plants for new populations and monitor existing populations of sensitive plants. Existing populations need to be monitored to insure current management is properly protecting these plants. Monitoring could also identify other factors that might be impacting these populations. Inventory for new populations can help protect these populations or can result in plants being removed from the list.

8. Continue airplane compliance and ground checks of riparian areas to insure exclosures and riparian pastures receive proper rest. Airplane compliance checks of riparian areas once a week is a fast and efficient way to determine if cattle are in the wrong location. Compliance checks combined with quick ground checks have detected cattle in protected riparian areas before they have done any significant grazing.

B. Water Quality

Implement monitoring items in Element 3 of the Water Quality Management Plan (WQMP) for the Deep Creek watershed on National Forest System lands.

1. Use monitoring to determine the ecological status and potential natural vegetation of key areas in each pasture.

2. Complete monitoring reports to the USFWS by February 1 each year as outlined in the biological opinion.

3. Complete long-term effectiveness monitoring as outlined in the biological opinion.

4. Complete effectiveness monitoring reports to the USFWS during the life of the consultation. These include:

a) A report addressing the relationship between stubble height and utilization and incidence of use on willows by March 1, 1999, and

b) Results from effectiveness monitoring sites by 2001 and again in 2007 .

C. Aquatic Resources/Stream Channel

1. Establish reaches for monitoring redd counts for redband trout. Reaches and redd counts are being conducted across the forest in conjunction with U.S. Fish and Wildlife Service requirements.

D. Human Uses

1. Monitor archaeological site integrity.

2. The effects of cattle and fire on cultural plants need to be monitored.

Data Gaps

A. Vegetation

Stand inventory of species, volume and numbers.

Site-specific inventory of aspen and cottonwood groves including location and condition.

Timber removal and logging plan for the forested portion of the watershed.

Further definition of the historic or stable LOS vegetation pattern, i.e. "How much was there?"

Further definition of the inherent fire disturbance regime.

Continued investigation of the pine associated community type to determine stand characteristics associated with a frequent fire regime.

Inventory noxious weed sites.

B. Aquatic Resources/Stream Channel

Perform a genetic study of redband trout in tributary streams. The study should be conducted to determine the level of introgression that has occurred within the watershed. Stocked rainbow trout have potentially introgressed with native redband trout. Maintenance of native fish meets requirements of the Federal Land Management Policy Act (FLMPA) and National Forest Management Act (NFMA) for maintaining resource values of aquatic species. Knowledge of genetically pure fish populations could help in planning of future projects.

Initiate population inventory (census) for redband trout. This species has been petitioned for listing. The data is inadequate to determine the status of this species and a population estimate would help establish the need for legal protection. This inventory would complement the data gap on genetic determinations.

C. Wildlife

Current beaver colony locations.

Sage grouse use of forested lands.

Structural stage acres by vegetation type by subshed under current conditions.

Goshawk locations and condition of home ranges.

Acres and condition of LOS aspen.

Current snag and down log numbers and distribution.