

Soukow Project Area
Environmental Assessment
EA OR110-01-38

Glendale Resource Area
Medford District, BLM

July, 2001

Soukow Project Area Environmental Assessment

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ENVIRONMENTAL ASSESSMENT
for the
Soukow Project Area
EA# OR 110-01- 38

I. Introduction and Need for the Proposal

The Medford District Resource Management Plan (RMP) identifies land management objectives based on a series of land use allocations. Included in the allocations are the General Forest Management Area (GFMA) and the Riparian Reserves. One of the primary objectives for managing GFMA is to provide for a sustainable supply of commercial timber, consistent with other objectives. Objectives for Riparian Reserves include contributing to meeting the objectives of the Aquatic Conservation Strategy. The Glendale Resource Area is proposing a timber sale and other projects to assist in meeting land use objectives for the GFMA and Riparian Reserves as identified in the RMP dated April 14, 1995.

The Soukow project area was delineated using watershed boundaries and is situated between 1,220 to 3,500 feet above sea level. The majority of the project area is located within the Middle Cow Creek analytical watershed (also called a “fifth-field watershed”) which was described and analyzed in watershed analysis, completed in 1998. The watershed analysis documented existing conditions within the Middle Cow Creek watershed, analyzed important ecological functions and relationships and identified key issues, inventory needs and monitoring needs. Site-specific objectives were developed and potential management actions were identified to meet those objectives.

The following Key Issues were identified for the Middle Cow Creek watershed:

- A. Fish/Aquatic Habitat/Streams
- B. Late-successional Habitat/Sensitive Species
- C. Commodity Production
- D. Rural/Urban Interface Areas
- E. Non-federal lands
- F. Fuels Reduction

The Soukow project area is a smaller set of watersheds within the fifth-field watershed. An interdisciplinary (ID) team of resource specialists reviewed current conditions within the project area in light of the larger scale context provided by the Watershed Analysis. Public comments were solicited to identify important issues, concerns, and management needs during the watershed analysis phase. In general the question was, “What management actions are needed or desired within the project area?”

In order to help answer that question, and in accordance with the National Environmental Policy Act (NEPA), a set of Significant Issues for the project area was developed by the ID team with the benefit of input from the public and other agencies. This Environmental Assessment (EA) focuses on these Significant Issues, both in terms of project design features (PDFs) and in describing environmental effects.

Significant issues identified for the Soukow project area are:

1. Fish/Aquatic Habitat/Streams
2. Late-successional Habitat/Sensitive Species
3. Commodity Production
4. Fuels Reduction / Forest Health / Wildlife Habitat / Urban Interface

The proposed action analyzed in this EA deals with all of these issues.

The BLM is proposing several types of management actions, including timber harvest, fuels treatments, road decommissioning, road construction and road maintenance. It is likely that there will be multiple decision records and decision rationale documents dealing with separate management actions. For instance, there may be separate decisions for road renovation, road improvements, road decommissioning and timber harvest. These actions are being analyzed in one environmental assessment because they are often related in and could occur within the same time frames. Analysis of effects is more effective if conducted all at once, rather than in separate analysis documents. The actions could be implemented under one contract, such as a major timber sale contract, or could be implemented using several smaller contracts or BLM road crew personnel.

II. Affected Environment

The location of the Project Area is:

Analytical Watershed (fifth field):	Middle Cow Creek
Project Area (sixth-field watershed):	Dad's Creek
County:	Josephine and Douglas
T 32S, R 7W, sec. 19, 20, 29, 30, 31, 33 ,	
T 32S, R 8W, sec. 25,	
T 32S, R 7W, sec. 3, 9.	

All of the proposed timber harvest units occur on lands designated as General Forest Management Area (GFMA) or in adjacent Riparian Reserves. Some units involve designated critical habitat for spotted owls and there are spotted owls in the project area. The entire project area is located within 50 miles of the coast, so is considered within the range of marbled murrelets, though none have been documented this far inland at this latitude. The project area has intermingled BLM and private lands owned by timber companies, private individuals and Josephine County.

This watershed is dominated by the Douglas-fir/tanoak/madrone major plant group (Tanoak series), but also has areas of mixed conifer/interior valley/grass. The area has been extensively altered by timber harvest. Riparian areas as well as uplands have been affected.

There are several Special Status species and current or former Survey and Manage wildlife species within the project area, including red tree voles (*Arborimus longicaudus*), and Del Norte salamanders (*Plethodon elongatus*). Surveys for these species were conducted according to established protocol standards current at the time the interdisciplinary team planned the project. The results and the impacts to these species are presented in the Environmental Effects section. There are no known locations of aquatic Survey and Manage molluscs in the Middle Cow Creek fifth-field watershed.

Surveys for vascular plants were conducted in June 1998 and July 1999. Three *Allotropa virgata* populations were found. *Allotropa virgata* would not be specifically protected, as it has been removed from Survey and Manage in the Record of Decision for Amendment to the Survey & Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines (2001). Some populations may be extirpated by the proposed action, although others would be protected, as they fall within areas protected for other resources.

Allium bolanderi var. *mirabile* is a Bureau Tracking species that was found within unit 31-01, in an open, gravelly area. *Asarum caudatum* var. *novum*, a Bureau Tracking species, was found in a Riparian Reserve in unit 31-07, in a small seep next to the creek. Tracking species do not require specific protection measures, but these sites are unlikely to be disturbed.

Fritillaria gentneri is listed endangered under the Endangered Species Act. It has been found in the Glendale Resource Area, but the planning area is not within its range, as determined by Andy Robinson of the USFWS. It was not found in the surveys.

All units were surveyed for Survey and Manage strategy 2 and protection buffer non-vascular plants in the fall of 1998 and spring of 1999, using existing protocols for lichens and bryophytes. Additional surveys for fall fungi were conducted in the fall of 2000 using the protection buffer fungi protocols that had become available in the fall of 1999.

Pre-disturbance surveys are required for some lichens and bryophytes, but are not required for any fungi suspected in the project area, under the Record of Decision for Amendment to the Survey & Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines (2001). The Oregon BLM list of Special Status Species also includes lichens, bryophytes and fungi. All of the Special Status fungi are Tracking species; surveys are encouraged but discretionary for tracking species (BLM Manual 6840).

Several Survey and Manage and Special Status lichens and bryophytes were listed in 2001, after the surveys were completed for the timber sale units. Surveys on the Glendale RA for lichens and bryophytes after January 1, 2001 included these species, and species that had not been found before on the Glendale RA were discovered. Also, several species are found near and suspected

to occur on the Glendale RA. Repetition of lichen and bryophyte surveys is not considered for this timber sale, however. Surveys for the newly listed Survey and Manage species are not required unless a decision notice is signed after September 30, 2003 (Record of Decision and Standard and Guidelines for Amendments to the Survey & Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines, page 23). BLM Manual 6840 requires that actions on BLM lands do not contribute to the need to list Special Status species under the Endangered Species Act. Some sites of the newly listed Special Status species may have been missed in the older surveys, and some of these sites may be affected in this project, but any possible losses should be minimal and would not contribute to listing under the ESA. For the Special Status species that are Bureau Tracking, surveys and mitigation measures are discretionary (BLM Manual 6840).

Ulota megalospora, a moss, was found in 25 (76 percent) of 33 survey units in this sale. It is widely scattered on larger tanoak (>3 inches DBH), and can very occasionally be found on canyon live oak or rhododendron. The liverwort *Ptilidium californicum* grows widely scattered on the bases of Douglas-fir in section 9. These bryophytes have been removed from Survey and Manage in the Record of Decision for Amendment to the Survey & Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines (2001). *Buxbaumia viridis* is a moss that grows on down logs in an advanced state of decay. It is currently a category D species, and protection is required.

Several fungi were found in the Soukow area:

<i>Bondarzewia mesenterica</i>	Category B
<i>Gymnopilus punctifolius</i>	Category B
<i>Otidea leporina</i>	Category B
<i>Otidea onotica</i>	Category F
<i>Phaeocollybia californica</i>	Category B
<i>Phaeocollybia dissiliens</i>	Category B
<i>Phaeocollybia kaufmanii</i>	Category D
<i>Phaeocollybia olivacea</i>	Category B
<i>Ramaria rubrievanescens</i>	Category B
<i>Sarcosoma mexicana</i>	Category F

All of these species require protection, except for the Category F species.

See Table 5 for a summary of the findings of the terrestrial biological surveys.

Fish habitat in the project area consists of Cow Creek and its tributaries Skull, Rattail, Tuller, Marion and Perkins creeks. These streams support one or more of the following salmonid species: Oregon Coast (OC) coho salmon, OC steelhead trout, coastal cutthroat trout and fall chinook salmon. Cow and Skull creeks provide habitat for anadromous fish in the project area. Oregon Coast coho salmon have been listed as a Threatened species under the Endangered Species Act.

III. Alternatives considered but eliminated from further analysis

In developing the proposed actions the interdisciplinary team began by looking at all the General Forest Management Area lands in the Soukow project area.

After preliminary analysis, several of the potential harvest units were dropped from the proposed action for a variety of reasons. The potential units are summarized in Appendix B.

One of the reasons for which units were deferred from this proposed action was to minimize potential adverse cumulative effects on small, headwater basins. These units were deferred from this proposed action, with the expectation they would remain uncut until the surrounding stands recover and grow to the point where they have recovered from a hydrologic function perspective. In this area, hydrologic functions typically recover as stands reach 20-30 years of age.

Several units were identified which would benefit from thinning, underburning or other density management treatments, but which would not generally result in commercial products being removed. For funding and administrative purposes, these units will be considered in a separate assessment document.

IV. The Proposed Action and Alternatives

A. Objectives

The ID team designed the proposed action to meet the following objectives:

- Produce commercial timber,
- Improve growth and vigor of residual trees to increase wood production in 40-100 year old stands,
- Protect special habitats,
- Maintain and upgrade roads, and reduce road densities, to reduce erosion, improve water quality, and reduce disturbance effects on wildlife.
- Reduce fire risk around private lands.
- Enhance forest health and wildlife habitat with fuels projects.

B. Overview of the Alternatives

A summary of the proposed timber harvest and other vegetation treatments is presented in Table 1. Locations of the units are shown on the attached maps.

The long-term desired future condition for harvest units is a scattered overstory of large “legacy” conifers (6-8 trees per acre) with a component of hardwoods, snags and coarse woody debris and a fully stocked second canopy of vigorous conifers. The desired future condition for the riparian reserves is a fully functioning, diverse conifer forest and riparian vegetation which closely resembles natural conditions, including a relatively closed canopy, large snags and large down logs.

In general, the Regeneration Harvest (RH) and Overstory Removal (OR) units would harvest timber, leaving at least 6-8 large conifers per acre and 3-5 large hardwoods per acre (where available) as well as snags and down logs. In some cases, additional trees would be retained to provide a source for coarse woody debris, to serve as potential snags, to compensate for trees lost to broadcast burning, to provide additional shade for seedlings, or to help retain moist conditions in talus habitat. In many cases, additional canopy would be retained to maintain habitat conditions for special status species. The RH units would be burned, if necessary, to reduce fuels, control competing vegetation, and to prepare the site for planting. These units would then be planted with nursery-grown seedlings. Units 31-01, 31-02, and 31-07 are located in a connectivity/diversity block. Regeneration harvest in this section would retain 12-18 conifers per acre, as called for in the RMP, to harvest timber while contributing to connectivity across the landscape. In the OR units, the intent is to retain existing young conifer reproduction, with possible inter-planting, rather than rely solely on planting to establish the next stand. In commercial thin (CT) units, the existing stand would be thinned to release the residual trees.

Additional treatments, such as shade-carding, mulching, providing browse protection and controlling competing vegetation may be required to ensure adequate establishment of the next forest stand. This EA addresses activities through the time when stands are considered stocked and established.

Some areas were considered for silvicultural treatment within Riparian Reserves. The objective of these proposed treatments is to reduce stand densities to increase tree vigor and to provide conditions conducive to the maintenance and establishment of pine species. Treatment would involve density management of pole-size conifers to release the residual stand and increase growth of the conifers and the creation of openings around selected large pines.

In some cases, individual trees along roads in the Project Area would be cut as salvage material, or where they pose potential safety problems to people using the road. Standards and guidelines for large coarse woody debris would be met in the area immediately around any salvaged site. The proposed management actions would directly affect existing paved roads, rocked roads and natural surface roads. There would be 0.6 to 0.8 miles of new temporary road construction in all alternatives; these would be ripped and seeded following this use. Alternatives 1 and 3 involve construction of 0.25 miles of permanent road on and near a ridge. Aggregate surfacing would be placed on 0.8 to 3.6 miles of existing roadway, under the action alternatives, to help reduce erosion from roads. All action alternatives include proposals to decommission existing roads and Jeep roads. And all action alternatives include proposals to improve drainage on existing roads. This would involve installing shallow water dips with armored outfalls below stream-crossing culverts to provide drainage should the culvert become blocked, outsloping road surfaces, installing additional culverts, replacing aging and damaged culverts and other measures, where needed, to reduce erosion potential. The intent is to prevent major road failure which results in erosion, as well as reducing future road maintenance needs. Details of road management actions are presented in Tables 2, 3 and 4.

Renovation of existing roads would consist of roadside brushing, reshaping and restoring the surface where necessary, maintaining or improving drainage structures, and supplementing rock surfacing where needed.

Under this proposal rock would be used for spot-rocking needs in specific problem areas, drainage improvement structures, and, under some alternatives, improving roads 32-7-19.1, 32-8-36, and 32-8-36.1.

The interdisciplinary team developed five action alternatives to be analyzed. The alternatives focus on an array of management approaches with different emphases and different impacts on the environment. This EA will analyze the impacts of these five alternatives, as well as a No Action alternative (Alternative 6).

The objective of Alternative 1 is to emphasize economic commercial timber harvest and production on available General Forest Management Area (GFMA) lands. No protection for Survey and Manage species is provided for. There would be protection for species listed as threatened or endangered under the Endangered Species Act.

The objective of Alternative 2 is similar to Alternative 1, except that no new permanent roads would be constructed.

The objective of Alternative 3, is to harvest timber, but would include protective measures for Survey and Manage species. Talus habitat occupied by Del Norte salamanders would be managed by retaining 40 percent canopy closure on the talus and the surrounding one site-tree buffer, prohibiting cable and tractor yarding within the talus, avoiding prescribed burning in talus where possible, and other measures described in the Project Design Features. This alternative would retain a one site-tree no-cut buffer around papillose and blue-gray tail-dropper sites, ten acres around red tree vole populations, and individual trees around isolated red tree vole nests.

The objective of Alternative 4, the Preferred Alternative, is to provide a higher level of protection of occupied talus habitat than alternative 3, by retaining at least 60-80 percent canopy closure within occupied talus and 40-80 percent in an area 120-240 m from the talus to reduce adverse edge effects. Active red tree vole nests would be protected by retaining at least 10 acres of suitable habitat, as called for in the management recommendations, dated 1 September 2000. Each active nest would be buffered by at least a 1 site-potential-tree-height buffer between the nest tree and any harvest unit. Any nest identified as a nest that potentially could hold red tree voles and which has not had absence confirmed through tree climbing, will be managed as an active red tree vole nest. Inactive nests, and locations where clumps of resin ducts were found on the ground within 100 m of active nests will be included in the reserved "habitat area." Resin ducts are the food "leftovers" that are the primary indicator of the species' presence. Survey and manage plants would be protected with a no-cut buffer of at least 100 feet, but extending further than that to help maintain micro-site conditions around the site.

The objective of Alternative 5 is to emphasize the release of existing stands, maintenance of desired conifer species with stands, restoration of roads, drainage improvement, and enhancing riparian areas. This alternative would incorporate the Survey and Manage, and Forest Plan protection-buffer species measures in Alternative 4.

A summary of the proposed vegetation treatments is presented in Table 1.

Commercial thinning within Riparian Reserves, but more than 100 feet from streams, would be conducted under alternative 5 in some units. The objective is to release the trees and promote the growth of larger conifers to accelerate development of late-successional habitat within the Riparian Reserves.

Alternative 6 - No Action Alternative

Under this alternative, the management actions described under the Action Alternatives (1-5) would not take place at this time. Since these lands are designated as GFMA lands in the RMP, timber harvest would still likely take place on these areas in the future, but would be described in a future analysis document.

Table 1. Summary of timber harvest alternatives for the Soukow Project Area. The No Action alternative is described in the text.

Unit Number	<u>Alternative 1</u>	<u>Alternative 2</u>	<u>Alternative 3</u>	<u>Alternative 4 Preferred Alternative</u>	<u>Alternative 5</u>	Comments
T 32S, R 7W						
19-6A1	OR/CT - P Cable 23 ac 345 MBF	OR/CT - P Cable 23 ac 345 MBF	OR/CT - P Cable 23 ac 230 MBF	OR/CT - P Cable 6 ac 54 MBF	OR/CT - P Cable 23 ac 230 MBF	RTVs
19-6A2	Part of 19-6A1	Part of 19-6A1	Part of 19-6A1	Defer Riparian Reserves	Part of 19-6A1	RTVs
19-6B	Regen - P Hel 10 ac 150 MBF	Regen - P Hel 10 ac 150 MBF	Defer	Defer	Defer	RTV, DNS Skull Creek is a fish stream
19-6C	Defer - not commercial size trees					DNS Skull Creek is a fish stream
20-1	Regen - P Cable/TR 4 ac 32 MBF	Regen - P Cable/TR 4 ac 32 MBF	Regen - P No-cut, 1 tree-length Cable/TR 4 ac 20 MBF	Defer	Regen - 40% can No-cut, 1 tree-length Cable/TR 4 ac 20 MBF	RTVs, PTDs Decomm. Road, Rip up mining area Cow Creek is a fish stream

Unit Number	<u>Alternative 1</u>	<u>Alternative 2</u>	<u>Alternative 3</u>	<u>Alternative 4 Preferred Alternative</u>	<u>Alternative 5</u>	Comments
20-3A	CT - P Hel 4 ac 60 MBF	CT - P Hel 4 ac 60 MBF	CT - P No-cut, 1 tree-length Hel 4 ac 48 MBF	CT - P No-cut, 1 tree-length Hel 2 ac 29 MBF	CT - P No-cut, 1 tree-length Hel 4 ac 48 MBF	BGTDs, PTDs
20-3B	Defer - Non-commercial Density Management, Consider in separate EA					
20-12A	Regen - B 7-9 tpa Cable 7 ac 35 MBF	Regen - B 7-9 tpa Cable 7 ac 35 MBF	Regen - B 7-9 tpa No-cut, 1 tree-length Cable 2 ac 21 MBF	Regen - B 7-9 tpa No-cut, 1 tree-length Cable 2 ac 21 MBF	Defer	BGTDs, RTVs
20-12B	Defer - Unit has numerous Riparian Reserves; nothing left to harvest economically					No S&M
20-12C	Defer - Non-commercial Density Management, Consider in separate EA					

Unit Number	<u>Alternative 1</u>	<u>Alternative 2</u>	<u>Alternative 3</u>	<u>Alternative 4 Preferred Alternative</u>	<u>Alternative 5</u>	Comments
29-1	CT/DM - P Cable 15 ac 105 MBF	CT/DM - P Cable 15 ac 105 MBF	CT/DM - P No-cut, 1 tree-length Cable 15 ac 75 MBF	Combined into unit 29-1-3A	CT/DM - P No-cut, 1 tree-length Cable 15 ac 75 MBF	BGTDs
29-1-3A	Part of units 29-1 and 29-3A			CT/DM - P Hel 31 ac 178 MBF	Part of units 29-1 and 29-3A	
29-2A	Regen - B 7-9 tpa Cable 15 ac 150 MBF	Regen - B 7-9 tpa Cable 15 ac 150 MBF	Regen - P 40% can Hel 15 ac 105 MBF	Regen - P 60% can Hel 15 ac 54MBF	Defer	DNS, mostly talus Temp rd from S
29-2B	CT/DM - P Hel 14 ac 112 MBF	CT/DM - P Hel 14 ac 112 MBF	CT/DM - P No-cut, 1 tree-length Hel 14 ac 112 MBF	CT/DM - P No-cut, 1 tree-length Hel 14 ac 61 MBF	CT/DM - P No-cut, 1 tree-length Hel 14 ac 70 MBF	DNS BGTDs mostly talus

Unit Number	<u>Alternative 1</u>	<u>Alternative 2</u>	<u>Alternative 3</u>	<u>Alternative 4 Preferred Alternative</u>	<u>Alternative 5</u>	Comments
29-3A	CT/DM - P Cable 38 ac 380 MBF	CT/DM - P Cable 38 ac 380 MBF	CT/DM - P Hel 38 ac 266 MBF	Combined into 29-1-3A	CT/DM - P Cable 38 ac 266 MBF	RTVs, DNS - sometalus
29-3B	Defer; low silvicultural priority - consider for underburning in separate EA					DNS Molluscs
29-7A	CT/DM - P Hel 25 ac 250 MBF	CT/DM - P Hel 25 ac 250 MBF	CT/DM - P Hel 25 ac 75 MBF	CT/DM - P Hel 29 ac 129 MBF	CT/DM - P Same as Alt. 4 Hel 25 ac 75 MBF	DNS, mostly talus Buffer slide and unstable area
29-7B	CT/DM - P Hel South end 10 ac 170 MBF	CT/DM - P Hel South end 10 ac 170 MBF	CT/DM - P Hel Entire unit 55 ac 289 MBF	CT/DM - P Hel South end 10 ac 42 MBF	CT/DM - P Hel Entire unit 55 ac 289 MBF	RTVs, DNS Molluscs Lots of brush in Riparian areas
29-10	CT/DM - P Hel 15 ac 105 MBF	CT/DM - P Hel 15 ac 105 MBF	CT/DM - P Hel 15 ac 75 MBF	CT/DM - P Hel 10 ac 84 MBF	CT/DM - P Same as Alt. 4 Hel 15 ac 60 MBF	RTV, BGTDs, DNS Lots of RR

Unit Number	<u>Alternative 1</u>	<u>Alternative 2</u>	<u>Alternative 3</u>	<u>Alternative 4 Preferred Alternative</u>	<u>Alternative 5</u>	Comments
30-10A	CT/DM - P Cable 10 ac 50 MBF	CT/DM - P Hel/cable 10 ac 50 MBF	CT/DM - P Cable 10 ac 40 MBF	CT/DM - P Cable 10 ac 38 MBF	CT/DM - P Same as Alt. 4 Cable 10 ac 40 MBF	BGTDs RTV & DNS outside unit Temp Spur
30-10B	Regen - B Cable 8 ac 40 MBF	Regen - B Cable 8 ac 40 MBF	Regen - B Cable 8 ac 32 MBF	Regen - B Cable 7 ac 54 MBF	Regen - B Cable 8 ac 32 MBF	RTV, No S&M Temp Spur
31-1	CT - P Hel Landing in sec. 31 Perm Rd construction 43 ac 215 MBF	CT - P Hel Landing on Pvt. land in sec. 30 43 ac 215 MBF	CT - P Hel Landing in sec. 31 Perm Rd construction 43 ac 215 MBF	Split into 31-1A, 31-1B, and 31-1C	CT - P Hel Landing on Pvt, in sec. 36; fix up rd #32-7-19.1 43 ac 172 MBF	DNS - PTDs Connectivity Block
31-1A	Part of 31-1			CT - P Hel Landing in sec. 31 Perm Rd construction 7 ac 32 MBF		DNS - PTDs Connectivity Block

Unit Number	<u>Alternative 1</u>	<u>Alternative 2</u>	<u>Alternative 3</u>	<u>Alternative 4 Preferred Alternative</u>	<u>Alternative 5</u>	Comments
31-1B	Part of 31-1			CT - P Hel Landing in sec. 31 Perm Rd construction 5 ac 41 MBF		DNS - PTDs Connectivity Block
31-1C	Part of 31-1			CT - P Hel Landing in sec. 31 Perm Rd construction 11 ac 40 MBF		DNS - PTDs Connectivity Block
31-2	Regen - P 12-18 tpa Hel Landing in sec. 31 Perm Rd construction 34 ac 170 MBF	Regen - P 12-18 tpa Hel Landing on Pvt, sec. 30 34 ac 170 MBF	Defer -Connectivity Block management precludes effective timber harvest, given current low stocking levels		Defer	RTVs, BGTD, DNS Marginal TPA Connectivity Block

Unit Number	<u>Alternative 1</u>	<u>Alternative 2</u>	<u>Alternative 3</u>	<u>Alternative 4 Preferred Alternative</u>	<u>Alternative 5</u>	Comments
31-7	Regen - P 12-18 tpa Hel Landing in sec. 31 Perm Rd construction 35 ac 90 MBF	Regen - P 12-18 tpa Hel Landing on Pvt, sec. 30 35 ac 90 MBF	Defer -Connectivity Block management precludes effective timber harvest, given current low stocking levels		Defer	DNS - BGTD Marginal tpa
33-3A	Regen - B 7-9 tpa Cable 13 ac 130 MBF	Regen - B 7-9 tpa Cable 13 ac 130 MBF	Regen - B Cable 13 ac 91 MBF	Defer to protect plant sites	Defer	Tuller Creek is fish stream DNS BGTDs Mine ditch S of unit
33-9	Regen - B 7-9 tpa CT - NW corner Cable Tractor SW portion 42 ac 84 MBF	Regen - B 7-9 tpa CT - NW corner Cable Tractor SW portion 42 ac 84 MBF	Regen - B CT - NW corner TR South west portion Hel 42 ac 84 MBF	CT - NW corner only P Cable 7 acres 41 MBF	CT - NW corner only P Cable 10 acres 40 MBF	DNS PTD, BGTDs Need temp rd.

Unit Number	<u>Alternative 1</u>	<u>Alternative 2</u>	<u>Alternative 3</u>	<u>Alternative 4 Preferred Alternative</u>	<u>Alternative 5</u>	Comments
T 32S, R8W						
25-2A	OR/CT - P Cable 8 ac 40 MBF	OR/CT - P Cable 8 ac 40 MBF	OR/CT - P Cable 8 ac 24 MBF	OR/CT - P Cable 4 ac 14 MBF	OR/CT - P Cable 8 ac 24 MBF	RTVs, Near owl site. Unstable near lower road Both rds need culvert, work
25-2A1	OR/CT - P Cable 4 ac 30 MBF	OR/CT - P Cable 4 ac 30 MBF	OR/CT - P Cable 4 ac 24 MBF	OR/CT - P Cable 4 ac 31 MBF	OR/CT - P Cable 4 ac 24 MBF	RTVs, Near owl site.
25-2B	OR/CT - P Cable 6 ac 30 MBF	OR/CT - P Cable 6 ac 30 MBF	OR/CT - P Cable 6 ac 30 MBF	Defer - Survey and Manage protection measures	OR/CT - P Cable 6 ac 24 MBF	RTVs, No S&M
25-2C	OR/CT - P Cable 5 ac 25 MBF	OR/CT - P Cable 5 ac 25 MBF	OR/CT - P Cable 5 ac 25 MBF	Defer - Survey and Manage protection measures	OR/CT - P Cable 5 ac 20 MBF	RTVs. DNS in RRs. Near owl site. Concern with burning snags & down logs. Unstable near lower road Both rds need culverts, work
25-3	Defer - Non-commercial Density Management; consider in separate EA					

Unit Number	<u>Alternative 1</u>	<u>Alternative 2</u>	<u>Alternative 3</u>	<u>Alternative 4 Preferred Alternative</u>	<u>Alternative 5</u>	Comments
T 33S, R 7W						
3-2A	Regen - B 50% can Cable/Hel 9 ac 180 MBF	Regen - B 50% can Cable/Hel 9 ac 180 MBF	Regen - B 50% can Cable/Hel 9 ac 135 MBF	Defer	Defer	DNS in RR Buffer on slump in south
3-2B	CT - P Cable/Hel 19 ac 190 MBF	CT - P Cable/Hel 19 ac 190 MBF	CT - P Cable/Hel 19 ac 152 MBF	CT - P Cable/Hel 4 ac 18 MBF	CT-P Cable/Hel 19 ac 152 MBF	RTVs, BGTDs
3-2C	Regen - B Cable 37 ac 740 MBF	Regen - B Cable 37 ac 740 MBF	Regen - P Cable 37 ac 555 MBF	Split into: 3-2C1, 3-2C2 and 3-3C3	Defer	RTVs, Molluscs, DNS. Concern with burning snags and down logs
3-2C1	Part of 3-2C			Regen - P Cable 10 ac 161 MBF	Defer	RTV
3-2C2	Part of 3-2C			Regen - P Cable 6 ac 119 MBF	Defer	RTVs.

Unit Number	<u>Alternative 1</u>	<u>Alternative 2</u>	<u>Alternative 3</u>	<u>Alternative 4 Preferred Alternative</u>	<u>Alternative 5</u>	Comments
3-2C3	Part of 3-2C			Regen - P Cable 8 ac 281 MBF	Defer	BGTD.
3-2D	Regen - B Hel 6 ac 60 MBF	Regen - B Hel 6 ac 60 MBF	Regen - P Hel 6 ac 30 MBF	Regen - P Hel 10 ac 182 MBF	Defer	DNS
9-3B	CT/DM - P Cable 13 ac 65 MBF	CT/DM - P Cable 13 ac 65 MBF	CT/DM - P Hel 13 ac 65 MBF	CT/DM - P Cable 7 ac 64 MBF	CT/DM - P 60-80% can on talus, 40% in rest of unit Cable 13 ac 65 MBF	BGTDs. DNS - bottom of unit
9-3D	Regen - B Cable 15 ac 225 MBF	Regen - B Cable 15 ac 225 MBF	Regen - B 40 % can of overstory Hel/Cable 15 ac 150 MBF	Regen - B Avoid talus Cable 7 ac 139 MBF	Defer	DNS - bottom ½ of unit. BGTD below unit.
9-4A	CT/DM - P Cable 12 ac 96 MBF	CT/DM - P Cable 12 ac 96 MBF	CT/DM - P Cable 12 ac 60 MBF	Defer to protect plant sites	Density Management P	DNS BGTDs Marginal CT

Unit Number	<u>Alternative 1</u>	<u>Alternative 2</u>	<u>Alternative 3</u>	<u>Alternative 4 Preferred Alternative</u>	<u>Alternative 5</u>	Comments
9-4B	CT - P Cable 8 ac 64 MBF	CT - P Cable 8 ac 64 MBF	CT/DM - P Hel 8 ac 40 MBF	CT/DM - P Cable 6 ac 41 MBF	CT/DM - P Cable 8 ac 40 MBF	RTVs. DNS - mostly talus BGTDs just outside unit
9-9	Defer - Wet areas					Wet areas
9-17A	Regen - B Cable 18 ac 270 MBF	Regen - B Cable 18 ac 270 MBF	Regen - B Hel 18 ac 180 MBF	Defer -Survey and Manage protection measures would cause regeneration problems	Defer	DNS - all talus. BGTDs & PTDs Temp spur Camp site Rock outcrops
9-17B	CT - P Cable 9 ac 72 MBF	CT - P Cable 9 ac 72 MBF	CT - P Hel 9 ac 45 MBF	CT - P Cable 6 ac 64 MBF	CT - P Cable 9 ac 45 MBF	RTV. DNS - all talus. BGTDs & PTDs Temp spur Camp site Rock outcrops
9-17C	Regen - B Cable 9 ac 72 MBF	Regen - B Cable 9 ac 72 MBF	Regen - B Cable\Hel 9 ac 45 MBF	Defer	Defer	RTVs, DNS, BGTDs

Unit Number	<u>Alternative 1</u>	<u>Alternative 2</u>	<u>Alternative 3</u>	<u>Alternative 4</u> <u>Preferred Alternative</u>	<u>Alternative 5</u>	Comments
Totals						
Number of units	34	34	31	26	21	
Acres of RH	262	262	170	65	12	
Acres of OR/CT	46	46	46	14	46	
Acres of CT/DM, CT and DM	220	220	280	238	278	
Acres of timber harvest	528	528	496	317	336	
Timber Volume (MBF)	4,832	4,832	3,338	2,012	1,640	

Legend for Table 1.

DNS = Del Norte Salamander
BGTD = Blue-gray tail-dropper slug
PTD = Papillose tail-dropper slug

RTV = Red tree vole (a Forest Plan protection
buffer species, not a S&M species)

tpa = Trees per Acre
can = canopy closure

MR = Management Recommendation

RR = Riparian Reserve
MBF = thousand board feet

OR = Overstory Removal
CT = Commercial Thin
DM = Density Management (non-
commercial)

Regen = Regeneration Harvest (generally
retains 6-8 trees per acre, unless noted)

P = Hand pile and burn
UB = Under Burn
B = Broadcast Burn

TR = Tractor
Hel = Helicopter

Table 2. Proposed road management in the Soukow Project Area.

			Alt 1	Alt 2	Alt 3	Preferred Alternative Alt 4	Alt 5
Road Number	Road Name	Length miles	Action	Action	Action	Action	Action
32-7-19.1A	Skull Creek Spur	0.81	DI/IMP	DI/IMP	DI/IMP	DI/IMP	DI/IMP
32-7-19.1B	Skull Creek Spur	1.35	DI/IMP (Rock)	DI	DI/IMP (Rock)	DI	DI/IMP (Rock)
32-7-19.8	Long Reach	2.11	REN/Gate	REN/Gate	REN/Gate	REN/Gate	REN/Gate
32-7-19.9	Bidawack	0.95	REN/DI	REN/DI	REN/DI	REN/DI	REN/DI
32-7-20 spur	Spur to Unit 20-1	0.25	DEC	DEC	DEC	DEC	DEC
32-7-20.2	Brandt Crsg Spur	0.65	REN/DI/Gate	REN/DI/Gate	REN/DI/Gate	REN/DI/Gate	REN/DI/Gate
32-7-20.2	Brandt Crsg Spur	0.22	DEC	DEC	DEC	DEC	DEC
32-7-20.3	Brandt Crossing	1.96	REN/DI	REN/DI	REN/DI	REN/DI	REN/DI
32-7-30	Brandt Cross	0.10	DEC	DEC	DEC	DEC	DEC
32-7-32	Private	0.66	REN/DI	REN/DI	REN/DI	REN/DI	REN/DI
32-8-36.1	Private	0.2	none	none	DI/IMP	None	DI/IMP (Rock)
33-7-3A	Perkins Creek	5.12	REN/DI	REN/DI	REN/DI	REN/DI	REN/DI
33-7-9	Hungry Hill Spur	0.41	REN/DI	REN/DI	REN/DI	REN/DI	REN/DI

			Alt 1	Alt 2	Alt 3	Preferred Alternative Alt 4	Alt 5
Permanent Road Construction:							
32-7-19.1	Skull Creek Spur	0.25	CONSTR	NONE	CONSTR	NONE	NONE
Temporary Road Construction:							
Temp	to Unit 9-4 B	0.26	TEMP	TEMP	NONE	TEMP	NONE
Temp	to Unit 9-17B	0.16	TEMP	TEMP	TEMP	TEMP	TEMP
Temp	to Unit 29-2 A	0.18	TEMP	TEMP	TEMP	None	TEMP
Temp	to Units 30-10 A&B	0.08	TEMP	TEMP	TEMP	TEMP	TEMP
Temp	to Units 33-9 (existing primitive road)	0.15	TEMP	TEMP	TEMP	TEMP	TEMP

Legend for Table 2:

REN	Renovation
DEC	Decommission: Rip with winged rippers, mulch and seed after use
DI	Drainage Improvement
CONSTR	Permanent road construction
TEMP	Temporary road construction

Table 3. Summary of proposed road management in the Soukow Project Area.

Road Summary	Alt 1	Alt 2	Alt 3	Preferred Alternative Alt 4	Alt 5
Temporary Road Construction (miles)	0.83	0.83	0.57	0.72	0.58
Permanent Road Construction (miles)	0.25	0	0.25	0	0
Road Decommissioning (miles)	0.57	0.57	0.57	0.32	0.57
Road Drainage Improvement (miles)	6.89	6.89	10.29	11.25	10.29
Road Improvement: Rock (miles)	1.35	0	1.35	0	3.65

High priority road for drainage improvements include:

Road 33-7-3: drainage at switchback at Milepost 2.1

C. Project Design Features

Project design features (PDFs) are specific measures included in the design of the proposed action to minimize adverse impacts on the human environment. Project design features for the proposed action are organized based on the Significant Issues identified by the ID team and described in the introduction of this EA. The reader should also be aware that there are many mandatory and discretionary management directions and Best Management Practices in the RMP that may not be repeated in this EA.

A summary of seasonal restrictions is presented in Appendix A.

If changes to the PDFs are needed during project implementation, they would be reviewed by the ID team and the Area Manager, and an amended EA would be prepared before the change is implemented.

Project Design Features Common to All Action Alternatives

Roads

Dust abatement, where needed, would be required during dry weather on roads used for hauling to prevent loss of fines in road surfacing.

Gates would be installed and roads closed year-around to protect the road surface, prevent vehicles from causing erosion and reduce harassment to wildlife. Roads identified for gating or closing and their location are shown in Table 2.

Energy dissipaters and down spouts would be installed at new cross-drain and stream culverts and at other sites where necessary to protect road fill slopes that are not adequately protected by natural materials.

Project Design Features common to all Alternatives (continued)

Crushed rock and riprap would be obtained from the following quarries if needed:

Hungry Hill	T. 33 S., R. 7 W., Sec. 9
Dad's Creek	T. 32 S., R. 7 W., Sec. 21
Sled Creek	T. 32 S., R. 7 W., Sec. 17
Slotted Pen	T. 32 S., R. 8 W., Sec, 5

The Dads Creek and Slotted Pen quarries are in Riparian Reserves; sediment-generating activities would be prohibited between October 1 and June 1 to prevent sediment from reaching streams. Quarry operations would be conducted so as to minimize soil erosion and sedimentation of streams.

Pit run rock and riprap would be obtained from the following quarries if needed:

Upper Brandt Skull	T. 32 S., R. 7 W., Sec. 29
Lost Pit	T. 32 S., R. 8 W., Sec. 35

Some blasting may be necessary in these locations.

The following design features would apply to this project for culvert installation or replacement in stream channels:

The in-stream work period would be between July 1 and September 15 of the same year in accordance with State of Oregon guidelines.

Work would be temporarily suspended if rain saturates soils to the extent that there is potential for road damage or for excessive stream sedimentation.

Bare soil areas would be seeded with approved, certified seed (weed-free) after construction has been completed. Bare soil areas would be mulched with a cereal grain straw from weed-free, certified fields.

Culverts would be designed to pass a 100 year flood in accordance with guidance in the Northwest Forest Plan.

Culverts excavated from the road prism would be disposed of in an appropriate location. Hydraulic fluid and fuel lines would be in proper working condition in order to minimize leakage into streams.

Waste diesel, oil hydraulic fluid and other hazardous materials would be removed from the site and disposed of in an approved site.

Equipment refueling would be done where there is minimal chance that toxic materials could enter a stream.

Equipment would not be stored in a stream channel overnight.

Project Design Features common to all Alternatives (continued)

When replacing bottom-lay culverts (stream channels) streams would be diverted around the work site whenever reasonably feasible in order to limit movement of sediment off-site during the low flow period. The diverted stream would not be returned to the channel and allowed to flow through the project site until all in-stream work has been completed.

Road renovation and maintenance on natural surface roads would be restricted to the dates prescribed for hauling. If the roads are deemed too wet (road surfaces are deforming and road damage or sediment production is likely) during a designated haul season (inclusive of the start and end dates), hauling would not be allowed until approved by the Field Manager.

To prevent damage to roads and potential for stream sedimentation, log or rock hauling would only be allowed during the following periods:

Paved roads	-	All year
Rocked roads	-	April 15 to November 15
Native surface roads	-	May 15 to October 15
New construction	-	May 15 to October 15

Temporary spur roads would be built, discontinuously ripped with winged rippers, water-barred, seeded, mulched and barricaded in the same year, between May 15 and October 15. Native grass seed, if available, would be used for seeding immediately after ripping. Any seed used would be certified as weed-free. See the PDF regarding seeding areas, in the Noxious Weeds section below. Pine seedlings would be planted in the temporary road into units 9-4A and B. Roads to be planted in conifers would be planted in the next spring planting season.

Approximately 0.3 to 0.6 miles of existing roads would be decommissioned (Table 3), by discontinuous ripping with winged rippers, mulching, removing culverts, water-barring, and barricading. Decommissioned roads would be seeded with grass or planted with conifers. Seed of native species would be used if available. See the PDF regarding seeding areas, in the Noxious Weeds section below.

All ground disturbed by road construction activities would be mulched and seeded with certified weed-free seed prior to autumn rains. Seed of native species would be used if available. See the PDF regarding seeding areas, in the Noxious Weeds section below.

The area of erodible earth exposed at one time by grubbing and excavation for road construction would not exceed 0.5 acre after September 15 to avoid excessive erosion during fall rains.

Project Design Features common to all Alternatives (continued)

Excess excavated material would be end-hauled to designated waste areas. Side casting of excess excavated material would not be allowed.

Road lengths proposed for rock surfacing under the alternatives are shown in Table 2. Approximately 6.9 to 11.2 miles of existing roads would have drainage improved to reduce existing and potential stream sedimentation (Table 3). This means that a shallow water dip, armored with rock, would be installed below cross-drain and draw culverts that are prone to plugging and at other sensitive locations. The road template would be outsloped where possible and roads would be water barred on steep sections.

Decommissioning of existing roads would be done between July 1 and October 15 of the same year.

Landings would be located in approved sites, and designed with adequate drainage.

Landings would not be located in Riparian Reserves.

Step landings would be re-contoured, mulched using synthetic or certified weed-free mulch and seeded following use using certified weed-free seed. Seed of native species would be used when available. See the PDF regarding seeding areas, in the Noxious Weeds section below.

Helicopter landings would be restricted to those designated in this EA, unless approved by the Field Manager. Helicopter landings would not be located within 200 feet of any stream.

Helicopter landings would be constructed and used in the same season. These landings would only be rocked if it is necessary to prevent erosion and stream sedimentation. Adequate drainage would be provided to minimize erosion. Unrocked helicopter landings would be seeded after use.

Helicopter refueling sites would not be located in Riparian Reserves and would be designed and operated to comply with all applicable state regulations.

Fish/Streams/Riparian Habitat

All activities within riparian reserves would be consistent with the Aquatic Conservation Strategy of the Northwest Forest Plan.

Project Design Features common to all Alternatives (continued)

Riparian Reserves would be established along all intermittent and perennial streams in accordance with the Medford District RMP and ROD. Reserve widths would be 200 feet on each side of non-fishery intermittent and perennial streams. Riparian Reserve width on fish bearing streams would be at least 400 feet (units 19-6C and 33-3A). Riparian Reserve width on the seeps above roads 32-7-20 (unit 29-2B) and 32-7-20.2 (unit 30-10A) would be 100 feet.

The unstable road cutslope on the north edge of Unit 29-7A and above road # 33-7-3 in section 3 SW SW unit 3-2A would be buffered with a 50-foot no-cut area.

Trees in Riparian Reserves and owl core areas that are accidentally knocked over during falling and yarding would be retained on-site for fish and wildlife habitat.

Fire lines would be water-barred to prevent movement of sediment into streams.

Directional falling away from streams and wet areas would be required within one tree height of Riparian Reserves.

Bare soil exposed from prescribed burning would meet the guidelines in the Monitoring Handbook.

Late-successional Habitat/Sensitive Species

Prescribed burning in the harvest units would be conducted to minimize damage to the reserve trees, duff and soil, and to avoid loss of coarse woody debris. Burning would be done to prepare the site for planting, control competing vegetation, reduce fire risk, enhance forest health and wildlife habitat.

When possible, hand piles would be burned as early in the fall as possible to avoid adverse effects on plants, or animals that may hibernate or nest in them. Broadcast burns and under burns would take place in spring, under slightly moist conditions, if possible, and would be designed to

- minimize the risk of control problems.
- avoid adverse impacts to nesting and hibernating/aestivating wildlife species.
- minimize consumption of soil organic matter and surface duff
- meet silvicultural objectives to prepare the site and reduce competition with conifer seedlings
- minimize the loss of large down wood and snags.

Project Design Features common to all Alternatives (continued)

Road construction and harvest units would avoid the 100-acre spotted owl core areas. Trees within the core area may be used for tail trees if necessary, but would be protected with collars to avoid damage to the trees.

Logging, hauling and road work would not be allowed within 0.25 mile of the goshawk nest sites between February 1 and July 15. This restriction may be waived in a particular year if surveys reveal that goshawks are non-nesting or that no young are present that year. Waivers are valid only until February 1 of the following year.

Snags and Down Logs

All non-hazardous snags would be retained in all harvest units and Riparian Reserves. If it is necessary to fall snags for safety reasons, they would be left on the site to provide down wood, in excess of the 120 feet standard and guideline described in the RMP.

If trees marked as reserve trees need to be felled for operations or safety reasons, they would be left on site, where possible. If yarded out of the unit, they would be returned to a site within the unit, at least 100' from the road, before the yarder is moved.

All currently down logs would be retained for coarse woody debris habitat. Large down wood (16" diameter and greater) already on the ground would be retained and protected "to the greatest extent possible from disturbance during treatment" (RMP, p. 47). Most units (all except 9-3b, 9-3d and 9-17c) had *no* large, woody material of decay classes 1 and 2. Retention and protection of green trees, snags and large down logs would be emphasized during layout, marking, timber harvest and site prep. In the units where 6-8 green trees per acre are to be retained additional trees would be marked for retention to allow for logging damage, coarse woody debris and loss during burning.

Bats

Harvest would be prohibited within 250 feet of sites containing bat roosts. This currently affects units 9-17B and 9-17C. Large-branched wolf trees would be retained where possible to provide suitable roosting habitat for bats.

Spotted Owls

Felling, yarding, helicopter flights slashing, other power equipment use, road construction and renovation, and all other heavy equipment work within 1/4 miles of any spotted owl nest would only be allowed from July 1 to February 28 of the following year, unless the owl pair is shown to be not nesting that season. This would affect units 3-2A, 3-2C, 9-4B, 31-01, 31-02 and 31-07.

Project Design Features common to all Alternatives (continued)

If an active pair is located within or immediately adjacent to a unit, the allowable work season would be October 1 to February 28, unless a Glendale Resource Area biologist determines that owl young have sufficiently dispersed. This same restriction would apply to blasting within one mile of a nest. Road construction work in T. 32 S., R. 8 W., Section 25, which would disturb spotted owls, would also be restricted during this period.

Special Status, and Survey and Manage Plants

Special Status, and Survey and Manage, vascular and non-vascular plants that require protection would be protected with at least a 100-foot buffer. Prescribed burns would not be planned for these buffers. Following management recommendations (Survey and Manage Vascular Plant Subgroup 1999), buffers would be more than 100 feet where necessary to maintain interior forest conditions, particularly for Survey and Manage species.

Noxious Weeds

Quarry operations would be conducted so that the spread of noxious weeds from the site would be minimized. If a quarry with noxious weeds is used as a source for material, the rocked sites would be monitored for two years for evidence of new weed introduction. If any new weeds are found, they would be eradicated using methods covered in the Medford District Integrated Weed Management Plan (EA OR-110-98-14).

In order to prevent the potential spread of noxious weeds onto BLM lands, the operator would be required to clean all logging, construction, rock crushing and transportation equipment prior to entry onto BLM lands.

Road construction equipment and transportation equipment would be cleaned before moving away from T. 32 S., R. 7 W., Section 32 to avoid spreading Scotch Broom, a noxious, invasive weed.

Cleaning is defined as removal of dirt, grease, plant parts, and material that may carry noxious weed seeds. Cleaning may be accomplished by using a pressure hose.

Project Design Features common to all Alternatives (continued)

Noxious weed parts would be removed from roadside brushing equipment before equipment moves from one road system to another.

Only logging and construction equipment inspected by the BLM would be allowed to operate within the project area. All subsequent move-ins of logging and construction equipment as described above would be treated the same as the initial move-in. Prior to initial move-in of any logging or construction equipment, and all subsequent move-ins, the operator would be required to make the equipment available for BLM inspection at an agreed upon location off federal lands.

Logging and construction equipment would be visually inspected by a qualified BLM specialist, to verify that the equipment has been reasonably cleaned.

Commodity Production

Tractor yarding would only be allowed between June 1 and October 15 (soil moisture permitting) of the same year to minimize the amount of soil disturbance and compaction. If the Authorized Officer determines that soils are too wet within this season, tractor yarding would not be allowed until conditions are approved.

Water bar spacing on tractor skid trails would be based on existing guidelines considering slope and soil series.

Yarding tractors would not exceed eight feet in width and would be equipped with an integral arch to raise the front end of the logs in order to minimize soil disturbance and compaction.

Blades would not be used to excavate skid trails to ensure minimal soil displacement and to help retain organic material in place.

Tractor operations would be restricted to designated skid trails and to slopes less than 35 percent, except where permitted by the Authorized Officer. Existing skid trails would be used where possible. New trails would be no closer than 150 feet apart.

Following yarding and during the dry season (before October 15), skid trails in all tractor units would be water barred and discontinuously ripped using winged rippers to reduce soil compaction, water barred, mulched with weed-free straw where necessary and then planted with conifers. Skid trails in commercial thin units would be mulched, but not planted with trees.

Project Design Features common to all Alternatives (continued)

Designated skid trails in overstory removal units would be located to minimize damage to existing regeneration. Existing skid trails would be used where possible.

Tractor and cable yarding on all commercial thinning units would not be allowed between March 1 and June 1 to prevent bark slippage on residual trees.

In cable yarding units the number of yarding corridors would be minimized to reduce the area of soil compaction and erosion. Corridors would be located at least 150 feet apart at the tail end and lateral yarding would be required.

Partial suspension would be required on all cable yarding units where possible to minimize ground disturbance and soil compaction.

In overstory removal units, trees would be felled away from residual reproduction and multiple landings would be used. These measures would be designed to prevent damage to residual regeneration.

Project Design Features specific to each Alternative

The following project design features would be implemented differently in the various alternatives.

Alternative 1.

The construction of 0.25 miles of new permanent road (extension of Road 32-7-19.1) to unit 31-02 in section 31 would occur between May 15 and October 15. The road surface would be rocked and provided with proper drainage before October 15 of the same year that construction is begun.

The native surface portion of road 32-7-19.1B (1.4 miles) would be aggregate surfaced. Drainage improvement would include removing outside berms and outsloping the road where needed, installing culverts at stream crossings, and constructing and improving water dips.

The following roads would be decommissioned:

- the spur off road 32-7-20 at MP 0.63,
- the last 0.22 miles of road 32-7-20.2, and
- road 32-7-30.

No provision would be made for protecting Del Norte habitat in Alternatives 1 and 2.

Alternative 2.

No existing native-surfaced roads would be surfaced with aggregate under this alternative. Drainage improvement would include: replacing undersized or damaged culverts at stream crossings as needed, and renovating existing water dips.

The following roads would be decommissioned:

- the spur off road 32-7-20 at MP 0.63,
- the last 0.22 miles of road 32-7-20.2, and
- road 32-7-30.

No provision would be made for protecting Del Norte habitat in Alternatives 1 and 2.

Alternative 3

Talus occupied by Del Norte salamanders would be protected as follows:

- a one-tree length protection buffer would be designated around each occupied talus site.
- within the talus and buffer, 60 - 80 per cent canopy closure would be retained,
- in helicopter units, falling and yarding within the talus sites would be allowed only between June 1 and September 30, to reduce impacts to Del Norte populations,
- in units with cable or tractor yarding, no falling or yarding would be allowed within the talus sites to avoid disturbing the talus.
- any other activities that would directly disrupt the talus layer (e.g., lateral yarding over talus, yarding corridors through talus, tractor yarding and road building) would not be allowed.
- trees adjacent to these areas would be directionally felled away from talus to minimize surface disturbance.

The native surface portion of road 32-7-19.1B (1.35 miles) would be aggregate surfaced. Drainage improvement would include removing outside berms and outsloping road where needed, installing culverts at stream crossings, and constructing and improving water dips.

Drainage improvement to roads 32-8-36 and 32-8-36.1 would include removal of outside berms, installing culverts at stream crossings, replacing undersized and damaged culverts, and construction of water dips.

The following roads would be decommissioned:

- the spur off road 32-7-20 at MP 0.63,
- the last 0.22 miles of road 32-7-20.2, and
- road 32-7-30.

Alternative 4 - the Preferred Alternative.

Occupied talus would be protected as follows:

- a 0 - 200 m buffer would be designated around occupied talus, depending on the potential for microsite degradation. Measures to prevent microsite degradation would vary, depending on slope, aspect, yarding technique, silvicultural prescription, fuels treatment, and elevation.
- within the talus and buffer, at least 60-80 per cent canopy closure would be retained.
- in helicopter units, falling and yarding within the talus would be allowed only between June 1 and September 30, to reduce impacts to Del Norte populations,
- in units with cable or tractor yarding, falling and yarding would be allowed within the talus but would disturb no more than 15 percent of the surface,
- any other activities that would directly disrupt the talus layer would not be allowed,
- trees adjacent to these areas would be directionally felled away from talus to minimize surface disturbance.

Survey and manage plants would be protected with a no-cut buffer of at least 100 feet, but extending further than that to help maintain micro-site conditions around the site.

No existing native-surfaced roads would be surfaced with aggregate under this Alternative. Drainage improvement would include: replacing undersized or damaged culverts at stream crossings as needed, and renovating existing water dips.

Drainage improvement to road 32-8-36.1 would include removal of outside berms, installing culverts at stream crossings, replacing undersized and damaged culverts, and construction of water dips.

The following roads would be decommissioned:

- 32-7-20,
- the last 0.22 miles of road 32-7-20.2, and
- road 32-7-30.

Alternative 5.

Occupied talus would be protected as follows:

- a 0 - 200 m buffer would be designated around occupied talus, depending on the potential for microsite degradation. Measures to prevent microsite degradation would vary, depending on slope, aspect, yarding technique, silvicultural prescription, fuels treatment, and elevation.
- within the talus and buffer, at least 60-80 per cent canopy closure would be retained.
- in helicopter units, falling and yarding within the talus sites would be allowed only between June 1 and September 30, to reduce impacts to Del Norte populations,
- in units with cable or tractor yarding, falling and yarding would be allowed within the talus but would disturb no more than 15 percent of the surface,
- any other activities that would directly disrupt the talus layer would not be allowed,
- trees adjacent to these areas would be directionally felled away from talus to minimize surface disturbance.

The native surface portion of road 32-7-19.1, 1.35 miles, would be improved with aggregate surfacing. Drainage improvement would include: removal of outside berms, replacing undersized and damaged culverts at stream crossings as needed, and renovating existing water dips.

The private road 32-8-36.1, would be improved with aggregate surfacing for a total of 2.3 miles. Drainage improvement would include removal of outside berms, installing culverts at stream crossings, replacing undersized and damaged culverts, and construction of water dips.

The following roads would be decommissioned:

- the spur off road 32-7-20 at MP 0.63,
- the last 0.22 miles of road 32-7-20.2, and
- road 32-7-30.

Two treatments are proposed within Riparian Reserves in Alternative 5: commercial thinning in the outer portions of some of the Riparian Reserves (units 19-6A, 25-2A, 25-2C, 29-01, 29-03A, 29-7B, and 29-10), and creating openings around some of the larger pines to maintain provide some pine regeneration in the stands.

Commercial thinning within Riparian Reserves adjacent to fish habitat would not occur within 200 feet of the stream. On non-fish streams thinning would not occur within 100-feet of non fish-bearing streams. Conifers larger than 20" dbh in Riparian Reserves would be reserved in order to preserve structural diversity and to maintain potential sources of coarse down wood. The average canopy closure in portions of Riparian Reserves planned for thinning would be maintained above 65 percent to prevent significant drying of the soil and warming of microclimate.

Within Riparian Reserves, openings created around large pines would be approximately 50-feet by 100-feet and oriented to optimize the amount of sunlight within the opening. The average canopy closure would be maintained above 65 percent between openings. Conifers larger than 20" dbh would be reserved in order to preserve structural diversity and to maintain potential sources of large down wood. Openings would not be created closer than 100 yards of each other in order to limit the amount of open canopy and would not be closer than 100 feet of the streams to minimize adverse changes to microclimate, connectivity and loss of potential sources of coarse woody debris for stream channels.

Alternative 6 - No Action Alternative

Under this alternative, the management actions described under the Action Alternatives (1-5) would not take place at this time. Since these lands are designated as GFMA lands in the RMP, timber harvest would still likely take place on these areas in the future, but would be described in a future analysis document.

Other minor management actions would continue to occur in the project area as described in the RMP and other EAs and categorical exclusions. These include pre-commercial thinning of young plantations, routine road maintenance and road repair, allowing public access for recreational and commercial purposes and conducting fire suppression activities.

V. Environmental Impacts

This section presents discussions of the environmental consequences which are site specific, or are not adequately addressed in the Final Resource Management Plan/Environmental Impact Statement BLM, dated April, 1994 (RMP/EIS) which would result from implementation of the proposed action. In keeping with the directives of the National Environmental Policy Act (NEPA), the discussions focus on impacts considered potentially significant. The level of detail and depth of impact analysis are generally limited to that needed to determine whether new significant environmental effects are anticipated.

Direct, indirect and cumulative effects were considered.

- Direct effects are site-specific and result from the immediate action, such as the harvest of a timber sale unit or the construction of a particular road. Direct effects are confined to a specific area such as a timber sale unit, a particular elk range, or a spotted owl site, and can be short term or long term.
- Indirect effects occur at a different place or time than the proposed action.
- Cumulative effects are generally not site-specific and are not readily attributable to any one action. Cumulative effects are the result of past, immediate, and reasonably foreseeable actions on a larger area, such as a watershed, regardless of ownership.

A. Direct and Indirect Effects of the Proposed Action Alternatives

1. Watershed Functioning

Soils

Timber harvest under the proposed action has the potential for raising ground water levels in soils. There are ancient and active landslide areas within the planning area. The units were designed to avoid areas of active landslides and recently active landslide areas. Slopes in proposed units are generally stable and landslide hazard within units is considered low to moderate. All units were field inspected for indications of current or potential slope instability; problem areas were deleted from further consideration or buffered where appropriate. Units that could appreciably add to an already high level of local disturbance from recent timber harvest were also dropped from further consideration (Appendix B). Based on the location of the units and landslide activity level, the potential for substantial adverse impacts on water quality and fish habitat would be low.

Soil compaction resulting from timber felling and yarding would somewhat reduce percolation of precipitation into the soil and increase potential for soil movement. Cable yarding and tractor logging would compact soil on about 7 percent and 25 percent of those units respectively. Ripping with winged rippers in tractor units (units 33-9 and 20-1) would reduce compaction of these areas by about 80 percent and restore most site productivity. Discontinuous ripping would reduce long-term erosion by increasing infiltration and would increase the amount of land available to grow conifers and other vegetation.

Helicopter yarding would result in far less site disturbance and compaction and soil movement than the use of cable and tractor yarding.

Hand piling, without burning, would minimize disturbance to talus areas and would not reduce site productivity. While broadcast burning is proposed to be done under cool, moist conditions, there is a possibility that the fire could be more intense than desired. If so, there would be a short term loss of soil productivity. Prescribed burning would improve planting access.

The potential for adversely affecting slope stability, soil compaction, and soil productivity does not appreciably differ among alternatives. Possible adverse effects of the proposed action on these factors have been adequately mitigated through application of Standards and Guidelines, and through implementation of appropriate PDFs and BMPs.

Water Quality

Sediment from road renovation, maintenance and drainage improvement, including adding and replacing approximately 10 stream culverts (none in fish habitat), as well as log hauling, could briefly result in localized turbidity and deposition during the first major rainstorms of the wet season. However, it would be a negligible, short-term effect and would not impede recovery of the streams' historic sediment regimes. Implementation of Best Management Practices and Project Design Features in this EA would minimize these sediment increases. Road renovation, maintenance, and drainage improvement would reduce current and future erosion, as well as reduce the potential of failure of the road prism, thereby substantially reducing stream sedimentation that would degrade aquatic habitat.

Alternatives 3, 4 and 5 would result in the greatest improvement in water quality and fish habitat. Improving drainage and rocking 1.4 miles of the Skull Creek Spur Road (#32-7-19.1) under Alternatives 1, 3, and 5, would substantially reduce sedimentation in Rattail Creek. The 32-7-19.1 road has outside berms along much of these road segments. Channelization of runoff water has resulted in rilling and soil eroding from the road way. Skull Creek and Rattail Creek are in close proximity to these roads. Using Road 32-8-36.1 on private land in T. 32 S., R. 8 W., Section 36 as a helicopter service landing would allow BLM to rock (Alternative 5) 2.3 miles of the Dollar Skull Road (#32-8-36) and road 32-8-36.1. Surfacing Dollar Skull Road with aggregate, under Alternative 5, would add additional sedimentation protection for Skull Creek.

Table 4. Estimated costs for renovation, drainage improvement, and rocking of two road systems in the proposed Soukow Project Area.

Road Number/Name	Cost for Renovation and Drainage Improvement	Cost of rocking unrocked portions of road	Cost of new construction
32-7-19.1 Skull Creek Spur Road	\$ 24,550	\$ 25,650	32-7-19.1 extension: \$ 6,900 (including rock)
32-8-36.1 private road	\$ 790	\$ 3,800	-

The duration of benefits to streams from rocking the Dollar Skull road, which is under private ownership, would be highly dependent on the willingness of the private commercial forest land owner to avoid winter haul and to maintain proper drainage and surfacing once road improvements under this action have been implemented.

Stream sedimentation would be reduced in some locations under all action alternatives, but it would remain moderate to high at the project level (i.e. sixth-field watershed) in the short (less than 10 years) and long terms (greater than 10 years) because not all roads in the watershed provide access to timber sale units included in proposed action alternatives. In addition many roads in the project area are not under BLM control.

There would be a short-term increase in soil movement along temporary spurs, skid trails and on cable yarding corridors before areas of disturbed soil become stabilized. However, locating temporary roads on or near ridges, decommissioning temporary roads, ripping, mulching and water barring skid trails before the wet season and establishing Riparian Reserves would reduce or prevent sediment from these activities from entering streams.

Construction of 0.25 miles of permanent road under Alternative 1 and 3, and construction of 0.6 to 0.8 miles of temporary road (under all action alternatives) would not result in stream sedimentation because none of the road locations would cross stream channels and all are on stable ground. The extension of Road 32-7-19.1 would be located high on a ridge in a very gentle slope location. There would be no new permanent road construction under Alternatives 2, 4 and 5.

There would be 0.3 to 0.6 miles of road decommissioned under all action alternatives. Decommissioning roads would have minimal effect on administrative and recreational access since these roads are generally short, dead end spurs which are no longer needed for management activities. While these roads are not contributing sediment to streams, decommissioning them would reduce road density and return that portion of the land to a vegetated condition.

Implementing Soil and Water Best Management Practices (BMPs) in the RMP, using yarding systems that minimize the exposure of bare mineral soil and avoiding road construction in Riparian Reserves under all action alternatives, would result in negligible to very low adverse effects on water quality.

Degradation of channel stability is highly unlikely under any of the proposed alternatives as stream flow would not be measurably affected (refer to Water Quantity section) and there would be no tree removal within 100 feet of streams.

No activities are proposed in Riparian Reserves in any alternative that would increase stream temperature. Thus, there would be no effect on stream temperature under any alternative.

Installing gates on two roads under all alternatives (Table 2) would eliminate vehicle use on native surface roads during winter and result in less road surface erosion and subsequent stream sedimentation. It would also reduce harassment and poaching of elk and deer.

In summary, the potential for a slight short-term increase in stream sedimentation due to road decommissioning, drainage improvement and log hauling, followed by a long term improvement in stream sedimentation is about equal under all alternatives (Table 5). Adverse effects would be local and probably not exceed one year. Alternatives 3, 4 and 5 (especially Alternative 5) would provide the greatest long-term benefits to water quality and fish habitat by reducing soil erosion from roads. Because funding for watershed restoration is minimal and declining, these management actions would provide an important funding source for improving watershed health

Water Quantity

Peak flows would not measurably increase under these proposals because:

- (a) more than 89 percent of the forested acres in each sixth field subwatershed are greater than 30 years of age (Watershed Analysis, Appendix G) and therefore hydrologically recovered from past natural and human disturbance,
- (b) road density would not increase,
- (c) some potential harvest units were deferred and others dispersed in order to minimize potential for increasing peak flows in small watersheds,
- (d) drainage improvement, including outsloping and adding water dips, on 11.2 miles of road would route more water from ditch lines on to forest soils to decrease the amount that flows directly from roadside ditches into streams,
- (e) riparian reserves would partially buffer any increases in water yield from harvest units on stream flow, and
- (f) soil depth is adequate in harvest units to allow precipitation to percolate into soil during storm events for slow release.

Summer stream flows are not expected to decrease as a result of timber harvest because tree removal in Riparian Reserves would be restricted to more than 100 feet from some streams and therefore would not stimulate growth of alder, maple or other riparian hardwoods that consume large amounts of water. In addition, Riparian Reserves would tend to utilize excess groundwater from up-slope where vegetation has been removed through timber harvest.

Riparian

Thinning in Riparian Reserves under Alternative 5 would accelerate growth of residual conifers which are generally less than 15 inches dbh, provide more suitable conditions for regeneration of pine which are declining as a result of fire suppression, and allow the forest to attain multi-storied canopy and late-seral characteristics in a shorter time period than without the action. The expected short-term adverse effects of thinning portions of Riparian Reserves include reduced small wood recruitment and warmer/drier soil and air temperatures within treated acres. This could reduce habitat suitability for some wildlife species in the short term. Changes in microclimate are not expected to influence summer stream temperature because streams in treated units are either seasonally dry or have minimal flow and because thinning would be light (i.e., maintaining at least 65 percent canopy closure), and would not occur within 100 feet of streams. Conifers in Riparian Reserves less than 100 feet from stream channels are of adequate diameter to fulfill functions of in-stream down wood and therefore do not require thinning to accelerate growth. The average tree height in Riparian Reserves proposed for treatment is about 100 feet. No trees would be cut within 100 feet of streams and 90 percent of large in-stream wood originates within about 100 feet of the channel (McDade et al.1990), so there would be no appreciable loss of potential down wood for stream channels.

Riparian Reserves would adequately protect habitat along streams and seeps (unit 30-10A, unit 29-2B) and potentially unstable areas (units 3-2A, 29-7A) during timber harvest under all action alternatives.

In summary, proposed riparian treatments would have mixed effects in the short term: reestablishment of pine with attendant warmer/drier soil and air temperatures with possible adverse effects on some wildlife species. Late successional-dependent species would benefit from the treatment over the long term, but not immediately following the operation.

Summary of effects on Aquatic Conservation Strategy (ACS) objectives

Residual impacts of logging activities that cannot be fully mitigated include compaction from cable and tractor logging and road construction, possible increased water yield from regeneration harvest unit and short-term loss of site productivity from broadcast burning. Adverse effects of these residual impacts on aquatic life and watershed functioning after full implementation of applicable Standards and Guides and BMPs would be minimal.

No aquatic habitat or watershed indicator in the National Marine Fisheries Service Matrix Checklist (Table 5) would be degraded in the short or long term at the project (sixth- field subwatershed) level under any alternative.

Table 5. Effects of Proposed Action by Alternatives on Key Stream and Watershed Factors and Indicators At The Project Scale (6th field watershed).

WATERSHED RESOURCE FACTOR	INDICATOR	RISK BY ALTERNATIVE					
		1	2	3	4 Preferred Alternative	5	6 No Action Alternative
Water Quality	Temperature (7-day max. Average)	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
	Hazardous Materials	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
Habitat Access	Physical Barriers	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
Habitat Elements	Sediment	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
	Large Wood Material	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
	Pool Character and Quality	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
	Off-Channel Habitat	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
Channel Conditions and Dynamics	Width Depth Ratio	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
	Stream bank Condition	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
	Flood plain Connectivity	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
Flow/Hydrology	Changes in Peak Flow	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
Watershed Conditions	Road Density and Location	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
	Human Disturbance	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
	Riparian Reserves	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain
	Landslide and Erosion Rates	Maintain	Maintain	Maintain	Maintain	Maintain	Maintain

Ratings: **Maintain:** The proposed action would not change the factor/indicator from its current baseline condition (i.e. Properly Functioning, Functioning At Risk, Not Properly Functioning). **Degrade:** The proposed action is expected to move the factor/indicator from “Properly Functioning” or “Functioning At Risk” toward “Not Properly Functioning” but would not cause it to measurably change baseline conditions. **Improve:** The proposed action would not change the factor/indicator from its current baseline condition, but would move the indicator toward Properly Functioning.

2. Local Public and Rural Interface Area

Closure and decommissioning of roads would restrict access to public land. Road closure would restrict access to land managers and contract silvicultural crews. Access to fire suppression crews would also be restricted. Increased costs for land treatments are expected.

Access to public land would be restricted by the installation of gates on roads and by decommissioning roads. Year-round closure of these roads to vehicle traffic would restrict the movement of hunters, sight-seers and people harvesting Special Forest Products. These restrictions are not considered to be a major problems because the vast majority of the road system in the project area would remain open and accessible.

3. Timber Resources

Alternatives that contain regeneration harvest units in addition to commercial thinnings and density management units would more closely follow assumptions made in the development of the Medford District's Resource Management Plan (RMP). During the RMP process, analysis indicated that much of the district's first decadal annual volume commitment could result from doing commercial thinnings and density management on acres available for harvest in GFMA lands. Effects to individual acres would be relatively light but many acres would be affected. After approximately one decade however, the acreage of stands suitable for thinning would decrease and would remain that way until trees within young, managed stands, resulting from past harvest operations, grew to a commercial thinning size. Until this growth within younger stands occurred, volume commitments would largely result from regeneration harvests. To distribute the effects somewhat evenly over time and over the district, assumptions were made that yielded the average annual treatment acres for harvest types as shown in Table R-1 of the Medford District RMP (p. 9). These assumptions included regeneration harvest to be done during the first decade.

Alternatives that contain regeneration harvests that retain 6-8 larger, green conifers per acre (12-18 conifers per acre in connectivity blocks) plus snags, coarse woody debris, and a limited number of hardwoods per acre where present would more closely follow RMP assumptions than alternatives that contain proposals to retain higher levels of conifers, hardwoods, snags, or coarse woody debris.

Units with proposed broadcast burning or under burning for fuels treatment, site preparations and control of competing vegetation would have the greatest probability for timely reforestation. Units with proposed slashing of competing vegetation followed by hand piling of that and logging slash followed by burning of the piles would have a lesser probability of timely reforestation. Hand piling slash would cost more and be less effective at early control of competing vegetation than broadcast burning or under burning.

Successful reforestation of shade-intolerant species such as pines within units or areas with high canopy retention (60-80 percent) for other resource values would be doubtful unless small openings were created and managed to develop these species.

Units that were commercially thinned or that received density management treatments would have increased growth and vigor on residual trees. Shade-intolerant hardwoods would be retained in the unit for a longer period of time.

Alternatives that reduced the numbers of conifers within stands through commercial thinning and density management would have the greatest probability of retaining larger pines within those stands. Where opening around existing pines were made, conditions conducive to the establishment of pine would be created. Without the creation of condition where pine can regenerate these stands would eventually lose their component of pine. This loss of pine component would occur regardless of land use allocation.

4. Special Status Species and Their Habitats; and Late-Successional Habitat

Special Status and Survey and Manage Plants

Management recommendations for the Survey and Manage species require the maintenance of late-successional forest structure, soil conditions, and microclimate around known sites, and, for some species, the prevention of snag and stump loss through prescribed fire, (USDA-USDI 1996, Castellano and O'Dell 1997).

Buffers would provide protection to plant populations which could be affected by timber harvest, pile burning and ground disturbance, and would protect interior forest microclimate. In general, no-cut buffers would be about 100 feet around plant sites, except that, for old-growth associated species that appear to require an interior forest microclimate (Survey and Manage species), buffers should be about 200 feet in units that would retain less than 40% canopy cover. Microclimate measurements show that interior conditions may not be found until 100 to over 790 feet from clearcuts or agricultural fields, depending on site conditions and weather, and the variable measured (Chen 1991, Rodrigues 1998). Some of the smaller microclimate differences appear to be irrelevant to biological systems, as edge effects on biological variables, such as plant regeneration and species composition, generally average around 200 to 250 feet, with a range of 50 to 450 feet, adjacent to cleared areas (Chen 1991, Rodrigues 1998, Jules 1997). Also, clearcuts are not proposed in this sale; the most intensive prescriptions will retain about 10-15% canopy cover, probably lessening the depth of edge effects. Thinning prescriptions retain up to 60% canopy. Based on the numbers in the literature, modified by consideration of the prescriptions, plant sites in regeneration cuts or similar cuts that retain less than 40% canopy should have 200 foot buffers, and others should be 100 feet. These are no-entry buffers, as thinning, yarding corridors or road construction would lessen the protection of microclimate and possibly disrupt mycorrhizal connections. Buffers may extend across roads, as trees across roads provide shading. Burning would generally not be done in buffers, as some plants would be killed by direct heat.

No effects to threatened or endangered plants, including *Fritillaria gentneri*, are anticipated, as the species has not been found in the planning area.

Alternatives 1 and 2:

Buffers would not occur around Survey and Manage species. Some populations of Survey and Manage plants will be extirpated by timber harvest activities. These alternatives would not be consistent with the Northwest Forest Plan.

Alternatives 3, 4, 5:

For Survey and Manage Species, buffers will occur around Category A, B, C, D and E species. Buffers will provide protection to plant populations which could be impacted by timber harvest, pile burning and ground disturbance, and would protect interior forest microclimate. No effects are anticipated to known populations of those Special Status, or Survey and Manage plants that require protection. Some populations of species that do not require protection (Tracking species, S&M category F species) may be extirpated, although others will not, as they fall within areas protected for other resources.

Alternative 6: No Action

Under the No Action Alternative, no effects would occur to Special Status or Survey and Manage vascular plants, lichens, bryophytes or fungi.

Wildlife

Effects of the alternatives on wildlife habitat for Survey and Manage, as well as Threatened and Endangered species are summarized in Table 6. The following sections provide details of the effects on these species and wildlife habitat.

Table 6. Summary of effects of the alternatives on wildlife habitat and species.

Unit #	Stand Condition	Area within 1.3 mi. of spotted owl site		Plants		Molluscs		Occupied Del Norte Talus (Unless noted, area in Unit by ac.)	Effect on Habitat Associated with Special Status Wildlife Species Adverse effects are less where trees are yarded by helicopter. (Leave trees are more numerous & more uniformly distributed.) Yarding is conventional, unless noted as "Heli yarding."
		ac.	site no.	species*	# of sites**	species	# of sites		
32-7- 19-6A		23	0906	ULME ALVI2 PHOL BOME OTON	1 1 1 1 1	-	-	In adjacent riparian only.	Alts. 1&2 would remove suitable owl habitat and degrade adjacent Del Norte habitat. Alt. 3 would degrade owl habitat. Alt. 4 would maintain it. Alt. 5 would slightly degrade habitat in first 40 years.
19-6B		10	0906	-	-	-	-	~3ac. & adjacent riparian.	Alts. 1&2 would remove suitable owl habitat & degrade Del Norte habitat. Alts. 3-5 are no action; habitat would be maintained.
19-6C		9	0906	ALVI2	1	-	-	~1ac. & adjacent riparian.	Heli yarding. Alts. 1&2 would remove suitable owl & Del Norte habitat. Alt. 3 would degrade it. Alt. 4 would maintain & 5 would degrade habitat slightly in the first 40 years.
32-7- 20-1		4	0896	-	-	-	-	-	Alts. 1, 2,3 &5 would remove suitable owl habitat
32-7- 20-3A		6	0896	-	-	PRDU ¹ PRCO	1 3	-	Heli yarding. Mollusc habitat would be degraded in Alts 1&2, maintained in Alts 3-5. Spotted owl habitat would be degraded in Alts 1-3; maintained in Alts 4&5.

¹The mollusc site may actually be immediately outside the unit, in habitat potentially affected by timber harvest.

Unit #	Stand Condition	Area within 1.3 mi. of spotted owl site		Plants		Molluscs		Occupied Del Norte Talus (Unless noted, area in Unit by ac.)	Effect on Habitat Associated with Special Status Wildlife Species Adverse effects are less where trees are yarded by helicopter. (Leave trees are more numerous & more uniformly distributed.) Yarding is conventional, unless noted as "Heli yarding."
		ac.	site no.	species*	# of sites**	species	# of sites		
32-7- 20-3B	Deferred; not commercial harvest.			OTON	3			Bottom 1/4 of unit.	Unit deferred: Habitat maintained.
32-7-20-12A		7	0896	-	-	PRCO	1	-	Mollusc habitat removed in Alts 1-2, maintained in Alts 3-5. Spotted owl habitat removed in Alts 1-4. In Alt 5 unit deferred: habitat maintained.
32-7- 20-12B	Deferred; not enough outside riparian reserve.							-	Unit deferred: Habitat maintained.
32-7- 20-12C	Deferred; not commercial harvest.			ULME	1			-	Unit deferred: Habitat maintained.
32-7- 29-1		15	0896	ULME	3	PRCO	2	4 ac. & in adjacent areas.	Alts 1&2: Remove spotted owl habitat, degrade mollusc habitat, remove Del Norte habitat. Alt. 3 degrades spotted owl & Del Norte & maintains mollusc habitat. Alts 4&5 maintain habitat.
32-7- 29-2A		15	0896	ULME	2	-	-	most of unit	Heli yarding. Alts 1&2 remove spotted & Del Norte habitat. Alt 3 removes spotted owl habitat, degrades Del Norte habitat. Alts. 4&5 defer unit: Habitat maintained.

Unit #	Stand Condition	Area within 1.3 mi. of spotted owl site		Plants		Molluscs		Occupied Del Norte Talus (Unless noted, area in Unit by ac.)	Effect on Habitat Associated with Special Status Wildlife Species Adverse effects are less where trees are yarded by helicopter. (Leave trees are more numerous & more uniformly distributed.) Yarding is conventional, unless noted as "Heli yarding."
		ac.	site no.	species*	# of sites**	species	# of sites		
32-7- 29-2B		14	0896	ULME ALVI2	3 1	PRCO	2	most of unit	Heli yarding. Alts 1&2 remove spotted owl & Del Norte habitat & degrades mollusc habitat. Alt 3 maintains mollusc habitat & degrades spotted owl & Del Norte habitat. Alts 4&5 maintain habitat.
32-7- 29-3A		38	0896	ULME ALVI2 PHCA OTON	2 1 2 6	-	-	~15	Alts 1&2 remove spotted owl & Del Norte habitat. Alt. 3 degrades this habitat. Alts 4&5 maintain habitat.
32-7- 29-3B	Deferred; low silvicultural priority.			ULME BUVI2	2 1	PRDU	1	~18	Unit deferred: Habitat maintained.
32-7- 29-7A		25	0896	ULME OTON	7 2	-	-	most of unit	Heli yarding. Alts 1&2 remove spotted owl habitat & Del Norte habitat. Alt 3 degrades this habitat. Alts 4&5 maintain habitat.
32-7- 29-7B		17 or 55 ²	0896	ULME OTON BOME	1 8 1	PRCO	2	~5 of 55ac. alts. ~3 of 17ac. alts.	Heli yarding. Alts 1&2 (17ac) remove spotted owl & Del Norte habitat & degrade mollusc habitat. Alt 3 (55ac) maintains mollusc habitat, degrades Del Norte & spotted owl habitat. Alts 4&5 (17ac) maintain habitat.

²The actual acreage within 1.3 mi. of the spotted owl site, depends on the alternative considered.

Unit #	Stand Condition	Area within 1.3 mi. of spotted owl site		Plants		Molluscs		Occupied Del Norte Talus (Unless noted, area in Unit by ac.)	Effect on Habitat Associated with Special Status Wildlife Species Adverse effects are less where trees are yarded by helicopter. (Leave trees are more numerous & more uniformly distributed.) Yarding is conventional, unless noted as "Heli yarding."
		ac.	site no.	species*	# of sites**	species	# of sites		
32-7- 29-10		15	0896	ULME OTON	1 6	PRCO	2	1	Heli yarding. Alts 1&2 remove spotted owl & Del Norte habitat & degrade mollusc habitat. Alt 3 maintains mollusc habitat, degrades Del Norte & spotted owl habitat. Alts 4&5 maintain habitat.
32-7- 30-10A		-	-	ULME OTON BUVI2	1 4 1	PRCO	1	-	Alts 1&2 remove spotted owl & Del Norte habitat & degrade mollusc habitat. Alt 3 maintains mollusc habitat, degrades Del Norte & spotted owl habitat. Alts 4&5 maintain habitat.
32-7- 30-10B		-	-	BUVI2	1	-	-	-	Alts 1-3 remove spotted owl habitat. Alts 1&2 remove Del Norte habitat. Alt 3 degrades Del Norte habitat. Alts 4&5 maintain habitat.
32-7- 31-1		74	2080	GYP ULME ALBOM RARU PHDI PHCA	1 2 1 1 3 1	PRDU	1	~10	Heli yarding. Alts 1&2 remove spotted owl & Del Norte habitat & degrade mollusc habitat. Alt 3 maintains mollusc habitat, degrades Del Norte & spotted owl habitat. Alts 4&5 maintain habitat.
32-7- 31-2		0 or 46	2080	ULME RARU	1 1	PRCO	1	12	Heli yarding. Alts 1&2 degrade spotted owl, Del Norte & mollusc habitat temporarily. Alts 3-5 defer unit: Habitat maintained.

Unit #	Stand Condition	Area within 1.3 mi. of spotted owl site		Plants		Molluscs		Occupied Del Norte Talus (Unless noted, area in Unit by ac.)	Effect on Habitat Associated with Special Status Wildlife Species Adverse effects are less where trees are yarded by helicopter. (Leave trees are more numerous & more uniformly distributed.) Yarding is conventional, unless noted as "Heli yarding."
		ac.	site no.	species*	# of sites**	species	# of sites		
32-7- 31-7		0 or 35	2080	ULME ASCAN PHCA	2 1 1	PRCO PRDU	1 1	12	Heli yarding. Alts 1&2 degrade spotted owl, Del Norte & mollusc habitat temporarily. Alts 3-5 defer unit: Habitat maintained.
32-7- 33-3A		0 or 13	2212	ULME PHCA PHKA	4 6 1	PRCO	2	3	Alts 1&2 remove spotted owl, Del Norte & mollusc habitat. Alt 3 degrades these habitat types. Alt 4 maintains habitat, except for owl habitat. Alt 5 defers unit: Habitat is maintained.
32-7- 33-9		15	2212	ULME PHDI PHCA	4 2 2	PRCO PRDU	4 1	20	NW 10 ac [CT]: Alts 1&2 degrade mollusc, removes Del Norte & spotted owl habitat. Alt 3 degrades mollusc, Del Norte & spotted owl habitat. Alts 4&5 maintain habitat. Rest of unit [RH]: Alts 1&2 remove mollusc, spotted owl, Del Norte habitat. Alt 3 heli yarding/tractor SW part; degrades mollusc habitat temporarily, degrades Del Norte & spotted owl habitat. Alts 4&5: This part of unit deferred: habitat maintained.
32-8- 25-2A		8	2080	BUVI2 ULME	1 5	(PRCO) (PRDU)	(1) ³ (1)	-	Alts 1-5. Spotted owl habitat would be removed. (See footnote 3.)

³ Though S&M molluscs were discovered in what was once part of the same "unit," the sites were approx. 0.5 mi. away. Unit no longer includes that area. So there would be no effects to S&M molluscs or Del Norte salamanders.

Unit #	Stand Condition	Area within 1.3 mi. of spotted owl site		Plants		Molluscs		Occupied Del Norte Talus (Unless noted, area in Unit by ac.)	Effect on Habitat Associated with Special Status Wildlife Species Adverse effects are less where trees are yarded by helicopter. (Leave trees are more numerous & more uniformly distributed.) Yarding is conventional, unless noted as "Heli yarding."
		ac.	site no.	species*	# of sites**	species	# of sites		
32-8- 25-2B		6	2080	ULME OTON	2 1	-	-	-	Alts 1-5. Spotted owl habitat would be removed. (See footnote 3.)
32-8- 25-2C		5	2080	ULME	4	-	-	In riparian area nearby.	Alts 1-5. Spotted owl habitat would be removed. Alts 1-2 adjacent Del Norte habitat degraded slightly. Alts 3-5 Del Norte habitat maintained.
32-8- 25-3	Deferred; not commercial harvest.			BUVI2	4			-	Unit deferred: Habitat maintained.
33-7- 3-2A		0 or 9	0907	OTLE	1	-	-	In adjacent riparians on N&S.	Alts 1-3: Spotted owl & Del Norte habitat would be degraded. Alts 4&5: habitat maintained.
33-7- 3-2B		19	0907	ULME OTON PHDI PHCA PHOL	4 4 1 2 3	PRCO	2	2	Cable & heli yarding. Alts 1&2 remove spotted owl & Del Norte habitat & degrade mollusc habitat. Alt 3 maintains mollusc habitat, degrades Del Norte & spotted owl habitat. Alts 4&5 maintain habitat.
33-7- 3-2C		0 or 37	0907	ULME GYPU BUVI2 BOME OTON PHCA PHOL RARU	7 2 1 1 3 3 1 1	PRDU	1	9	Alts 1&2 remove spotted owl, Del Norte & mollusc habitat. Alt 3 degrades these habitat types. Alt 4 maintains habitat, except that it degrades owl habitat. Alt 5 defers unit: Habitat is maintained.

Unit #	Stand Condition	Area within 1.3 mi. of spotted owl site		Plants		Molluscs		Occupied Del Norte Talus (Unless noted, area in Unit by ac.)	Effect on Habitat Associated with Special Status Wildlife Species Adverse effects are less where trees are yarded by helicopter. (Leave trees are more numerous & more uniformly distributed.) Yarding is conventional, unless noted as "Heli yarding."
		ac.	site no.	species*	# of sites**	species	# of sites		
33-7- 3-2D		0 or 6	0907	ULME	2	-	-	1	Heli yarding. Alts 1&2 remove spotted owl & Del Norte habitat. Alt 3 degrades Del Norte habitat; removes some/degrades some spotted owl habitat. Alts 4&5 defer unit: habitat maintained.)
33-7- 9-3B		8 13	2248 0965	PTCA ULME	1 2	PRCO	1	2	Alts 1&2 remove spotted owl, Del Norte habitat & degrade mollusc habitat. Alt 3 maintains mollusc habitat, degrades Del Norte & spotted owl habitat. Alts 4&5 maintain habitat.
33-7- 9-3D		0 or 12 0 or 15	2248 0965	PTCA ULME	1 3	PRCO	1	8	Alts 1&2 degrade mollusc & remove spotted owl & Del Norte habitat. Alt 3 degrades some/removes some habitat. Alts 4&5 defer unit: habitat maintained.
33-7- 9-4A		0 or 12	0965	SAME	1	-	-	In riparian within unit.	Alts 1&2 remove spotted owl & Del Norte habitat. Alt 3 degrades Del Norte & spotted owl habitat. Alts 4&5 defer unit/ maintain habitat.
33-7- 9-4B		8	0965	PTCA ULME	4 1	PRCO	2	5	Alts 1&2 remove spotted owl & Del Norte habitat & degrade mollusc habitat. Alt 3 maintains mollusc habitat, degrades Del Norte & spotted owl habitat. Alts 4&5 maintain habitat.

Unit #	Stand Condition	Area within 1.3 mi. of spotted owl site		Plants		Molluscs		Occupied Del Norte Talus (Unless noted, area in Unit by ac.)	Effect on Habitat Associated with Special Status Wildlife Species Adverse effects are less where trees are yarded by helicopter. (Leave trees are more numerous & more uniformly distributed.) Yarding is conventional, unless noted as "Heli yarding."
		ac.	site no.	species*	# of sites**	species	# of sites		
33-7- 9-17A		0 or 18	0965	PTCA ULME	2 4	PRCO PRDU	3 1	17	Alts 1&2 remove spotted owl, mollusc & Del Norte habitat. Alt 3 degrades such habitat. Alts 4&5 defer unit: habitat maintained.
33-7- 9-17B		9	0965	PTCA	5	PRCO PRDU	1 2	9	Alts 1&2 remove spotted owl & Del Norte habitat & degrade mollusc habitat. Alt 3 maintains mollusc habitat, degrades Del Norte & spotted owl habitat. Alts 4&5 maintain habitat.
33-7- 9-17C		0 or 9	0965	PTCA	9	PRCO	1	-	Alts 1&2 remove spotted owl, mollusc & Del Norte habitat. Alt 3 degrades some/removes some. Alts 4&5 defer unit: habitat maintained.

*Plant abbreviations: ALBOM *Allium bolanderi* var. *mirabile*, ALVI2 *Allotropa virgata*, ASCAN *Asarum caudatum* var. *novum*, BOME *Bondarzewia mesenterica*, BUVI2 *Buxbaumia viridis*, GYPU *Gymnopilus punctifolius*, OTLE *Otidea leporina*, OTON *Otidea onotica*, PHCA *Phaeocollybia californica*, PHDI *Phaeocollybia dissiliens*, PHKA *Phaeocollybia kaufmanii*, PHOL *Phaeocollybia olivacea*, PTCA *Ptilidium californicum*, RARU *Ramaria rubrievanescens*, SAME *Sarcosoma mexicana*, ULME *Ulotia megalospora*.

** Some sites fell outside of final unit boundaries, but were within the original surveyed unit.

Late-successional Habitat

The area's remaining late-successional habitat is found on federally administered lands only; the private holdings having been cut in recent years. Because BLM ownership is intermingled with private lands in a "checkerboard" arrangement, the late-successional forests are fragmented. This presents a problem for dispersal and migration of late-successional obligates, both locally and provincially. One local barrier to such dispersal is an area that contains a large block of private lands that spans over five square miles (around T 33S, R 7W section 5, and the sections contiguous in the cardinal directions, the Tuller Creek area). Since all units proposed for harvest are currently considered late-successional habitat. All the action alternatives--especially Alternatives 1, 2 and 3--further add to this early-successional condition and increase the barrier for movement and survival of late-successional associates. In general, the regeneration/overstory removal prescriptions completely remove the late-successional super-canopy, simplifying the structure and reducing the potential for snags and down wood. The overall effect of Alternatives 1 and 2 would be to substantially reduce the ability of the planning area to sustain late-successional associates over several decades. Alternative 3 would reduce this ability somewhat, but it would likely recover in a few decades. Because there would be relatively few regeneration harvests, Alternatives 4 and 5 would only slightly reduce this capacity.

Terrestrial molluscs. The project area is within the known or suspected range of four species of terrestrial molluscs originally listed in the Northwest Forest Plan as Survey and Manage species. These are the blue-grey tail dropper (*Prophysaon coeruleum*), the papillose tail dropper (*Prophysaon dubium*), the Oregon shoulderband (*Hemithoglypta hertleini*) and the Oregon megomphix (*Megomphix hemphilli*). Surveys required at that point in the planning of this project were completed to protocol requirements in Spring 1999. Blue-grey and papillose tail droppers were found in the project area. Findings and effects are detailed in Table 6. In general, regeneration harvests with low (<40 percent) canopy closure adversely affect the microclimate by removing canopy layers and reducing important microsite components, such as litter, duff, moss and down wood recruitment for several decades. Intensely hot broadcast burns also remove these habitat components from a site. These treatments are considered to remove suitable terrestrial mollusc habitat.

However, in January 2001, the *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* was adopted. This action removed the two taildroppers mentioned above from the Survey and Manage list. Thus, protection buffers for these two species are no longer mandatory.

Silvicultural prescriptions--even regeneration harvests--which leave at least 40 percent canopy closure or the burning of piled slash may cause the loss of some individual sites, but reduced populations of these species would be expected to persist. In addition, these stands would be expected to regain their suitability as terrestrial mollusc habitat in 10 to 20 years.

In general, Alternatives 1 and 2 remove substantial amounts of terrestrial mollusc habitat, Alternative 3 reduces its suitability temporarily and Alternatives 4 and 5 maintain this habitat.

Northern goshawks. Some parts of the project area have had goshawk sightings in recent years. The best suitable habitat in these sixth-field watersheds was surveyed for goshawks in 1999 and 2000, and none was detected.

Great grey owls. There is no habitat for great grey owls in the project area and no surveys were considered necessary. All of the alternatives should have no effect on great grey owls and no analysis was considered necessary.

Spotted owl habitat. Commercial thinning with or without overstory removal may degrade spotted owl nesting/roosting/foraging habitat to dispersal habitat (roosting/foraging habitat). Regeneration harvests remove spotted owl habitat. The recent history of the seven spotted owl nest sites within 1.3 miles of proposed units (the conventional home range radius in the Klamath Province) is mixed. In each case, habitat within the home range of spotted owl pairs in this project area would be reduced below that which is considered viable. Of these seven sites, four [Sled, Dad's South, Skull, and Cooked Hog] have been consistently occupied and regularly successful in reproducing. Two sites [Perkins and Perkins Divide]—though not obviously in worse habitat condition than those mentioned above—are consistently unoccupied. Other, unknown factors, such as the presence of predators or other, competitive species, may be operating there. One site [Baker Reuben] has obviously had most of its immediate habitat cut, and has not been occupied for several years.

Spotted owl critical habitat. Two sections, T 33S, R 7W sections 3 and 9, are designated Critical Habitat, CHU-64, for the spotted owl. One purpose of this CHU—in addition to maintaining some dispersal habitat between the large LSRs—is to maintain the remnant owl pairs. Alternatives 4 and 5 (and to some degree Alternative 3) better meet these goals, because significantly less nesting/roosting/foraging habitat is degraded or removed. In both these sections, much of the remaining suitable habitat outside the existing owl cores is contained in proposed harvest units. With the harvests proposed in Alternatives 1 and 2, suitable habitat in these sections would be reduced to the level below that needed for dispersal and maintenance of spotted owls. With the harvests proposed in Alternatives 1 and 2, suitable habitat in these sections would be reduced to the level below that needed for dispersal and maintenance of spotted owls, and likely to adversely affect critical habitat—but not result in adverse modification, because the total area of habitat designated as critical in matrix makes up “less than two percent of the amount of suitable habitat currently protected within the LSRs” [Late-Successional Reserves], (p.22) (U.S.D.I. Fish and Wildlifer Service, 1998). [USFWS. 1998. Biological Opinion for Fiscal Years 1999/2000 Programmatic consultation for timber sales in the Rogue Valley and South Coast Administrative Units (1-7-98-F-321).] Thus, with Alternatives 1 and 2, spotted owls are not likely to be able to disperse readily across the project area.

Marbled Murrelet. Because the project area is between 35 and 50 miles from the coast, it was surveyed to protocol for marbled murrelets in 1998 and 1999, as indicated by interagency agreements. No murrelets were detected. No critical habitat for the murrelet is found within the project area. Murrelets probably do not occur this far inland in this part of the Klamath Province (Dillingham et al. 1995.) [Dillingham, Colin P., Randell C. Miller, and Lee O. Webb. 1995. Marbled Murrelet Distribution in the Siskiyou National Forest of Southwestern Oregon. *Northwestern Naturalist* 76:33-39.]

Red tree voles. Ground surveys for red tree voles were conducted in 1999. Unit-by-unit sightings are summarized in Table 6. Red tree voles are dependent on Douglas-fir stands with at least 60 percent canopy closure dominated by trees at least 10 inches dbh and do not disperse between stands surrounded by non-habitat. Individual red tree vole nest trees were protected with a 10-acre reserve. Viability of red tree voles within the individual stands should be good, except in cases where the stand is isolated and the local population is subject to adverse events that may extirpate the species there. Examples of such events include fire, diseases, parasitism, predation, and wind storms. The probability that any particular "island" of remaining red tree voles is prone to extirpation by these events is directly dependent on the distance from the next occupied habitat, the degree to which the island has had its habitat quantity and quality reduced, and the degree to which connections with occupied habitat have been reduced. Unfortunately, federal lands in this area are intermingled with cut-over private lands in a checkerboard pattern and all these stands are isolated to some degree by intensively managed, private lands and the extensive road system. Much about the population biology of this species is not understood and analysis of effects remains qualitative.

Commodity Production

Alternatives that retain areas or units of 60-80 percent canopy cover would result in lower volumes realized per acre (compared to retaining a lesser amount of canopy on the same acre). More acres would have to be disturbed to achieve the annual volume commitment although, like commercial thinning, disturbance on those acres would be relatively light.

Retention of partial cut and no-cut buffers would increase logging costs.

Retention of partial cut and no-cut buffers would increase reforestation costs unless advanced regeneration were present at the time of logging.

Requirements to helicopter yard units would increase logging costs and would not disturb competing vegetation to the extent that cable operations do. As a result of the lack of disturbance to the competing vegetation at the time of logging there would be increased reforestation costs in the future to achieve comparable results.

B. Cumulative Effects of the Proposed Action

Many of the cumulative effects associated with this watershed have been addressed in the RMP/EIS for the Medford District, the Supplemental EIS for the Management of Habitat for Late-successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl. This analysis tiers to those documents. In addition, the watershed analysis for the Middle Cow Creek watershed located in the Medford District BLM office and available on the Medford District web page (www.or.blm.gov/Medford/) describes additional cumulative effects. More site specific effects for the Soukow project area are discussed here.

Past and foreseeable future projects in the fifth-field watershed include:

- High 5 timber sale - sold in 1995, logging completed in 1998.
- McCullum timber sale - sold in 1997, logging completed in 1998.
- McLawson timber sale - sold in 1998, logging completed in 2000.
- Bonnie and Slyde timber sale - sold in 1998, not awarded (Rothstein).
- Cottonsnake timber sale - planned for sale in 2002.
- Papa Cow timber sale - planned for sale in 2002 or 2003 -in the same 6th-field watershed.
- Extensive private logging and road building.

Recent stream surveys in Middle Cow Creek indicate fish habitat has been adversely affected by the loss of large wood in streams, an increase in sediment levels and an increase in water temperature from the loss of stream shading. Aquatic habitat quality is not expected to improve substantially in the Middle Cow Creek watershed in the near future. Forest practices (e.g. road construction and maintenance, tractor logging and less riparian protection than on federal lands) on private lands would continue to counter the beneficial effects generated by Best Management Practices (BMPs), PDFs and maturing Riparian Reserves on federally-managed lands.

Approximately 294 acres of forest land would be altered in vegetation size, density and species composition. This constitutes less than one percent change over the Middle Fork Cow Creek watershed. Any changes in the hydrologic regime would not be detectable. Decommissioning of 0.32 miles of road, although having a reduction within a small basin, would not substantially reduce the road density within the watershed. Drainage improvement and road maintenance would reduce sedimentation and failure of road prisms but is not likely to be detectable at the watershed scale. Reciprocal road use agreements between BLM and commercial forest landowners often limit options for BLM to decommission roads that are not needed to manage BLM lands. It would take a concerted effort of all landowners reducing impacts of roads and tractor logging under their jurisdiction to measurably decrease stream sedimentation, road density and compaction at the project scale. Riparian zones throughout the basin are expected to remain unchanged since no activities are planned within the riparian reserves.

All watershed and habitat indicators in the National Marine Fisheries Service Matrix of Pathway Indicators Checklist would be maintained in the long term at the fifth-field watershed scale (Middle Fork Cow Creek). This project is consistent with ACS objectives (ACS Consistency Analysis) and with standards and guidelines of the LRMP/RMP Biological Opinion (March 18, 1997).

When the effects of the proposed action are added to the environmental baseline and cumulative effects elsewhere in the 5th field watershed, it is concluded that there would be no substantial effects on OC coho salmon and its Critical Habitat, OC steelhead or to Salmon Essential Fish Habitat (Magnuson-Stevens Act).

Late-successional forest would not continue to function as an ecosystem on the matrix lands within this fifth-field watershed over the long term separate from the Late-successional Reserves (LSRs). These matrix lands are intended to function: 1) in the short-term to provide for the viability of local spotted owl pairs and other late-successional associates, especially in the years until the habitat in the LSRs recover some of mature stand characteristics, and 2) as riparian and other connections between the LSRs. If most or all available matrix acres on these proposed harvest areas are harvested with regeneration prescriptions resulting in low canopy closures, the first function is not likely to be satisfied.

The Northwest Forest Plan provides that late-successional forest to be maintained at 15 percent or more in each fifth field watershed (NW Forest Plan, p. C-44). The Soukow Project Area is located in the Middle Cow Creek fifth-field watershed and currently contains approximately 26,000 acres of late successional forest, or about 49 percent of federal forest lands in the watershed (Middle Cow Creek Watershed Analysis pp. 35 & 36). Since the Watershed Analysis was completed, there has been one BLM timber sale in the watershed, the McLawson Timber Sale. This sale consisted of commercial thinning harvest and had little effect on late-successional habitat. The current Soukow Project Area timber harvest would remove approximately 317 - 528 acres of late-successional habitat; the Preferred Alternative would reduce the percentage of late-successional forest on federal forest lands by less than one percent (317 acres). Two sales within the watershed, the Bonnie and Slyde and Wildcat Thin timber sales, were sold but have not been awarded pending litigation. In addition, two future sales are planned for possible sale in the foreseeable future, the Papa Cow Timber Sale in Fiscal Year 2002 and the Cottonsnake Timber sale in FY 2003. These last four timber sales are estimated to potentially remove up to roughly 1,350 acres of additional late-successional habitat which would leave the watershed with approximately 24,400 acres, or 46 percent of the federal forest land in late-successional habitat condition, still more than the 15 percent called for in the Northwest Forest Plan.

There may be a long term negative effect for old growth associated plant species due to reduction of late-successional interior forest habitat in the area as a consequence of timber harvest adjacent to the sites and buffers. Isolated populations may eventually become extinct, and habitat fragmentation could prevent recolonization. Retention of riparian reserves and areas protected for other resources should mitigate this effect. This long-term negative effect would not occur under the no action alternative.

C. Environmental Effects of Alternative 6 - No Action Alternative

Under this alternative, the impacts described in this EA would not occur at this time.

The short-term addition of a minor amount of sediment to streams as a result of road work and hauling would not occur. On the other hand, the beneficial long term effects of rocking roads and improving road drainage, and ripping roads and skid trails would also not occur. The net effect would be to allow the present levels of erosion and sedimentation to occur and increase over time; an overall adverse effect on streams and fish habitat. For instance roads 32-7-19A and B and 32-8-36, which are privately controlled, would continue to be major contributors of sediment to Skull and Rattail creeks.

The acreage of late-successional habitat would not be reduced or degraded by timber harvest, so the effects on species associated with late-successional forests would not occur at this time. Since this proposal is located on General Forest Management Area Lands, it is assumed that similar timber harvest would eventually occur on these lands, so the effects on wildlife and plants would be postponed, but not eliminated. In the long term the effects would be similar to the proposed action.

Not thinning the commercial thin units in the proposed action would eliminate the beneficial effects of improving vigor, growth and yield in these units. There is a window of time in which commercial thinning is most effective in promoting increased growth in the residual trees. If thinning is delayed beyond this window, the effectiveness of the thinning is reduced, although the amount would vary by site and depending on how long the thinning is postponed. Eventually, in 20-30 years, commercial thinning would be a less viable option compared with a regeneration harvest, and the opportunity for improving growth would have been lost. Maintaining high stocking levels on Matrix lands and within Riparian Reserves would eventually lead to the loss of the pine component within some stands in the Soukow project area. There would also be a faster decline in large hardwoods within some unit and fewer options in the future to retain large hardwoods within the stands.

VI. Monitoring

This proposal would be subject to the standard monitoring called for in the RMP. In addition, the following specific monitoring action would be taken:

1. All seeded areas or sites mulched with non-synthetic mulch, including areas of road renovation, culvert work, temporary roads, decommissioned roads, newly constructed roads and step landings would be monitored for noxious weeds for two years following seeding. Any noxious weeds new to the site would be eradicated using methods described in the Integrated Weed Management Plan.

VII. Agencies and Persons Consulted

Plans for this action have been published in several recent editions of the Medford Messenger - a quarterly newsletter of planned actions. This publication is sent to a standard mailing list of people and organizations who have expressed an interest in BLM management actions.

Landowners within 1/4 mile of the proposed action have been notified that this management action is being considered and asked for their opinions, concerns and suggestions.

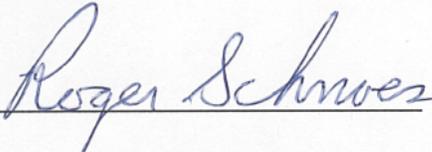
A legal advertisement will be placed in local newspapers to announce to the public that the Glendale Resource Area is requesting public comments on the proposed management action. In addition, notification of this proposal will be sent to the Oregon Department of Fish and Wildlife, the Oregon Department of Forestry, county commissioners for the affected county, several environmental groups, and representatives of the timber industry to request their comments. These announcements will be made following completion of this environmental assessment and before a decision is made.

All public input was considered by the ID team in developing the Project Area proposal and analyzing the environmental effects of this action. Changes in the preliminary plan as well as the proposed project design features may be based, in part, on information received from the public. The Field Manager will also consider all input before making a final decision concerning this proposal.

VIII. List of Interdisciplinary Preparers

<u>Name</u>	<u>Title</u>	<u>Primary Responsibility</u>
Marylou Schnoes	Wildlife Biologist	Wildlife, T/E Animals, Survey and Manage
Patty Jones	Civil Eng. Tech.	Roads, quarries
Randy Bryan	Civil Eng. Tech	Roads quarries
Jim Brimble	Forester	Silviculture, vegetation, site preparation
Bob Bessey	Fisheries Biologist	Fish habitat, Watershed, Riparian, Soils
Craig Olson	Forester	Logging systems, layout, fuels
Douglas Goldenberg	Botanist	Plants, Survey and Manage, Vegetation

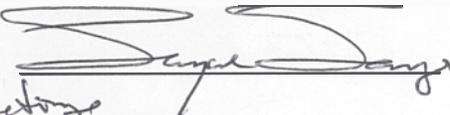
Reviewed By:



Glendale RA Ecosystem Planner
for format and adequacy

7-28-01

Date


Lynda L. Boody

Field Manager, Glendale Resource Area
Medford District, BLM

7/30/01

Date

Appendix A. Summary of seasonal operating restrictions - Soukow Project Area. Shaded blocks are the time periods when activities are allowed. For details, see the appropriate Project Design Feature.

RESTRICTIONS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Log hauling - paved roads	Shaded											
Log hauling - gravel roads				Shaded								
Log hauling - natural surface roads						Shaded	Shaded	Shaded	Shaded			
New Road Construction					Shaded	Shaded	Shaded	Shaded	Shaded	Shaded		
Quarry activities in Riparian Reserves						Shaded	Shaded	Shaded	Shaded			
Tractor Yarding						Shaded	Shaded	Shaded	Shaded	Shaded		
Cable yarding in CT	Shaded	Shaded				Shaded						
Logging and road work within 1/4 mile of spotted owl sites	Shaded	Shaded				Shaded						
Blasting without restrictions	Shaded	Shaded	Shaded						Shaded	Shaded	Shaded	Shaded
Logging unit 34 - within 1/4 of goshawk	Shaded						Shaded	Shaded	Shaded	Shaded	Shaded	Shaded
Falling and yarding in occupied talus in helicopter units						Shaded	Shaded	Shaded	Shaded			
ODFW instream work period							Shaded	Shaded	Shaded			

This table is intended as an aid in summarizing seasonal restrictions. If there is a conflict between the table and the text, the text should be considered correct.

Appendix B. Areas which were considered for analysis in the Soukow project area, Glendale Resource Area.

Area	Acres	Original analysis and comments.
32-7- 19-6	67	
32-7- 19-10	9	Withdraw from the timber base - too rocky to reforest
32-7- 20-1A	33	
32-7- 20-1B	8	
32-7- 20-1C	30	
32-7- 20-12A	7	Defer - local watershed cumulative effects.
32-7- 20-12B	16	Riparian reserves, TFO
32-7- 20-14	4	
32-7- 29-1	24	Defer part - local watershed cumulative effects; Riparian Reserves
32-7- 29-2	38	
32-7- 29-3A	54	
32-7- 29-3B	51	Deferred.
32-7- 29-7A	8	
32-7-29-B1		Deferred; Riparian Reserve
32-7- 29-7B	32	Defer - local watershed cumulative effects.
32-7- 29-9	34	Defer
32-7- 29-10	14	Defer - local watershed cumulative effects; Riparian Reserves
32-7- 29-14	19	Defer
32-7- 30-10	26	Defer - local watershed cumulative effects
32-7-30-10A		Add
32-7-30-10B		Add
32-7- 31-1	73	Connectivity Block
32-7- 31-2	45	Connectivity Block
32-7- 31-7	35	Connectivity Block
32-7- 33-3A	14	
32-7- 33-3B	15	Defer
32-7- 33-3C	4	Defer . Unit too small with two-tree buffer on Tuller Creek
32-7- 33-3D	7	Defer. Unit too small with two-tree buffer on Tuller Creek

Area	Acres	Original analysis and comments.
32-7- 33-5	16	Defer
32-7- 33-9	42	
32-8- 25-2A	34	
32-8- 25-2B	10	
32-8-25-2C		
32-8- 25-3	22	this unit became 25-2C
33-7- 3-2A	15	Critical habitat
33-7- 3-2B	47	Critical habitat
33-7- 3-2C	92	Critical habitat
33-7- 3-7	13	Defer - no commercial volume present
33-7- 9-3A	16	Critical habitat
33-7- 9-3B	12	Critical habitat
33-7- 9-3C	16	Defer - Wetland and riparian reserves
33-7- 9-3D	4	Already proposed for harvest in the Grave Creek West timber sale EA
33-7- 9-4	61	Critical habitat
33-7- 9-9	31	Critical habitat
33-7- 9-17	38	Critical habitat
33-8- 1-1	25	
Total	1,161	

***In this table, “deferred” means deferred from this proposed action and alternatives.**

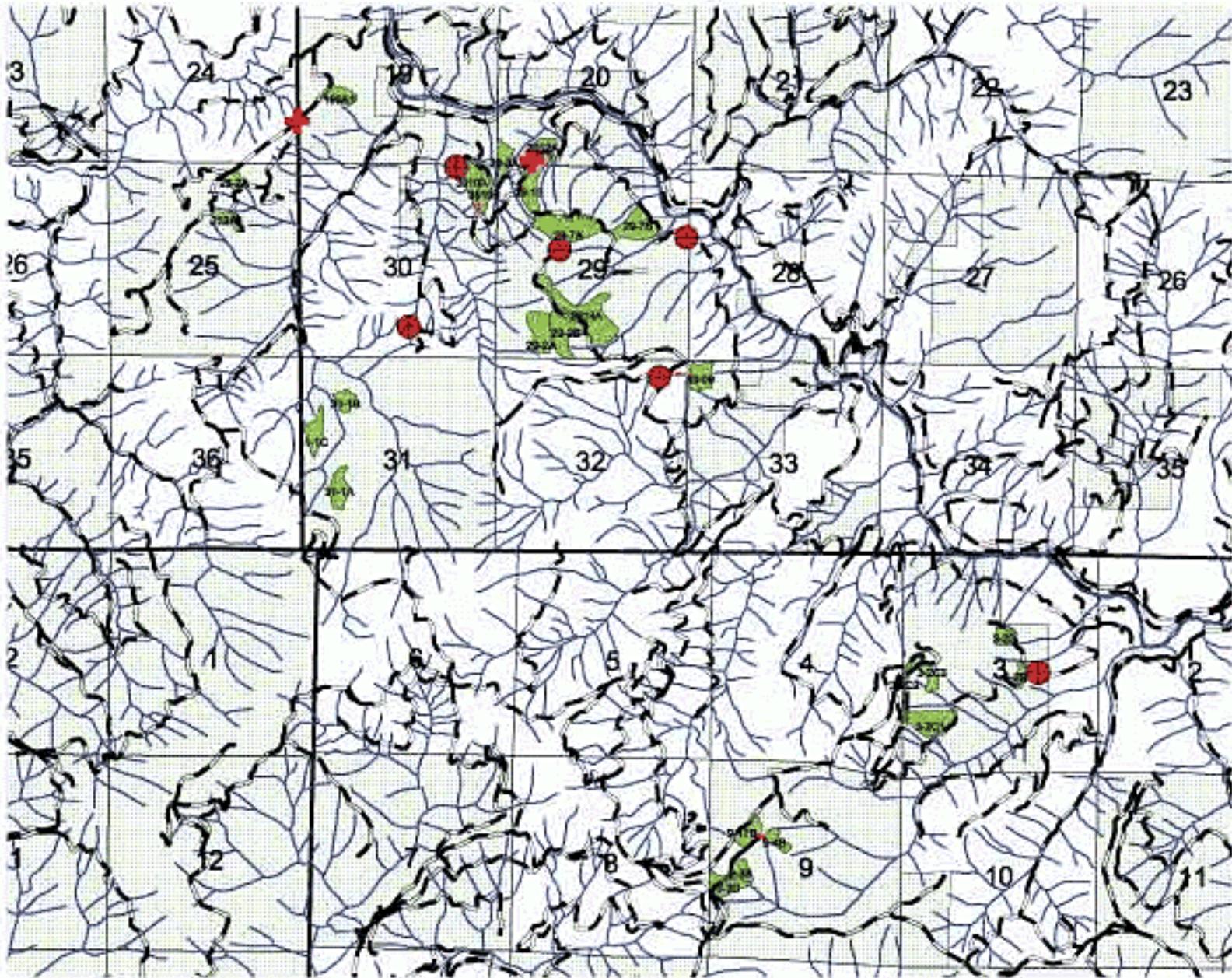
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Soukow Proposed Project Area - Map 1



T 32S

T 33S

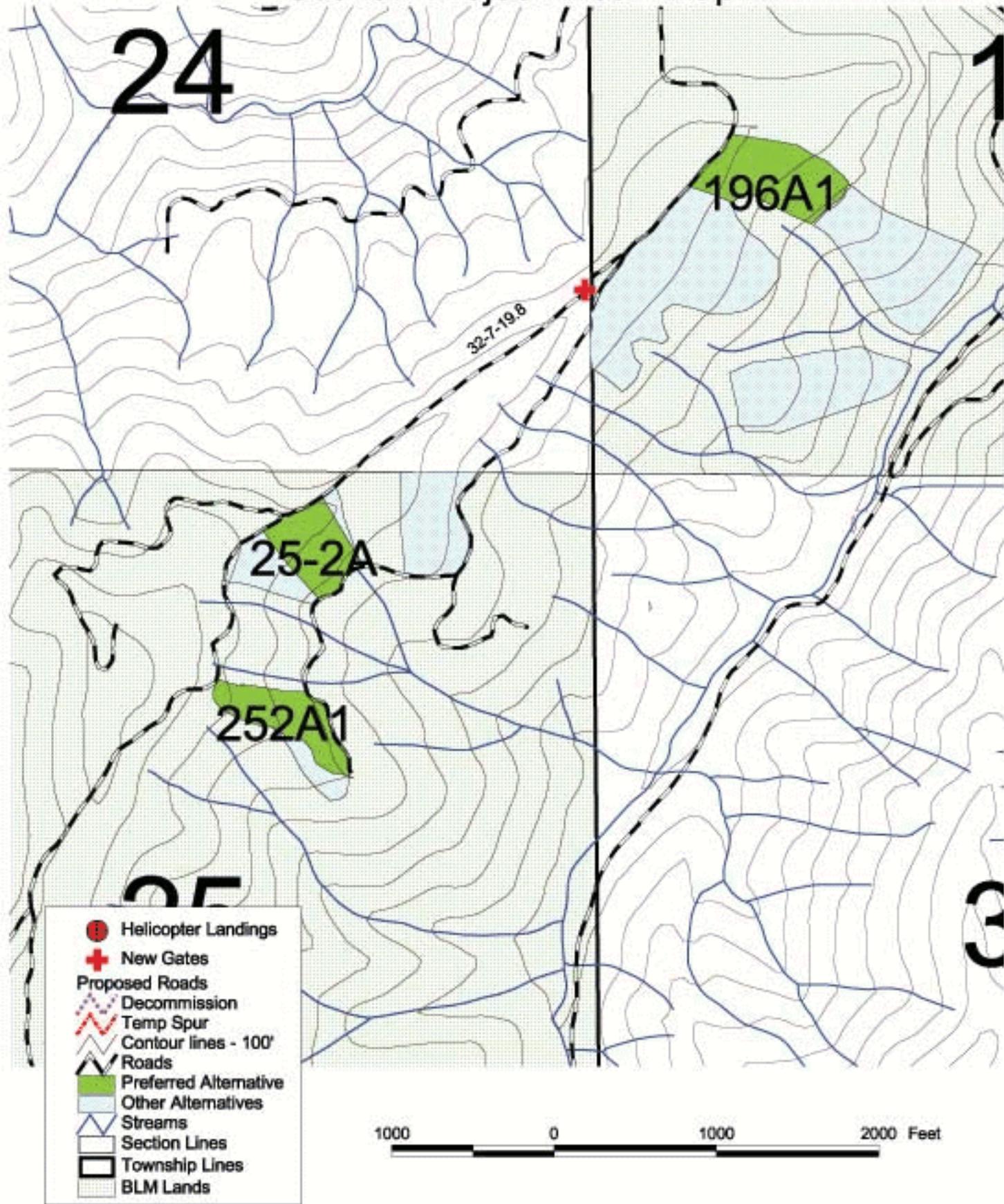
- Helicopter Landings
- ✚ New Gates
- Proposed Roads
 - Decommission
 - Temp Spur
 - Roads
- Preferred Alternative Streams
- Section Lines
- Township Lines
- ▨ BLM Lands

R 6W

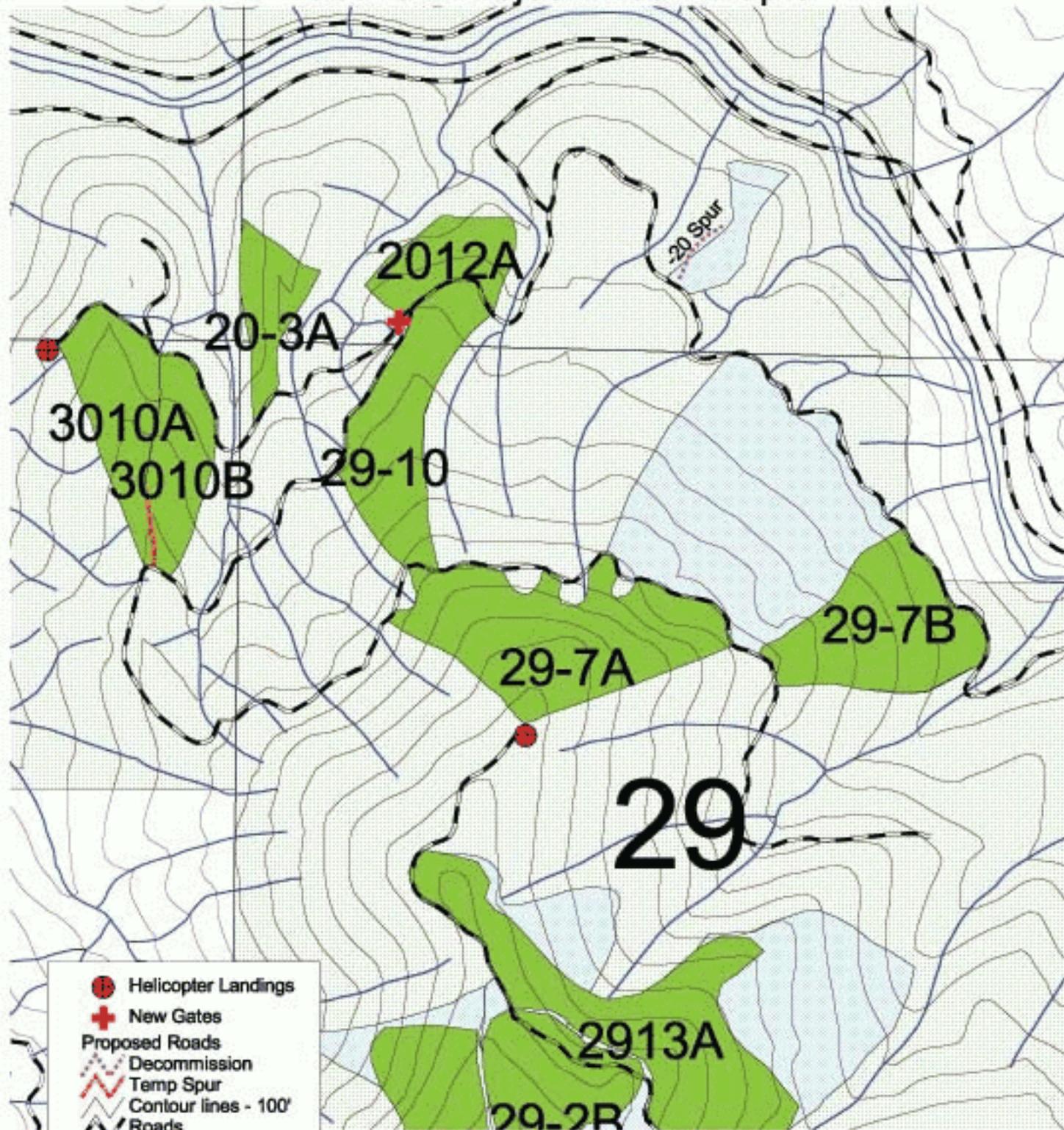
R 7W

0 1 2 Miles

Soukow Project Area - Map 2



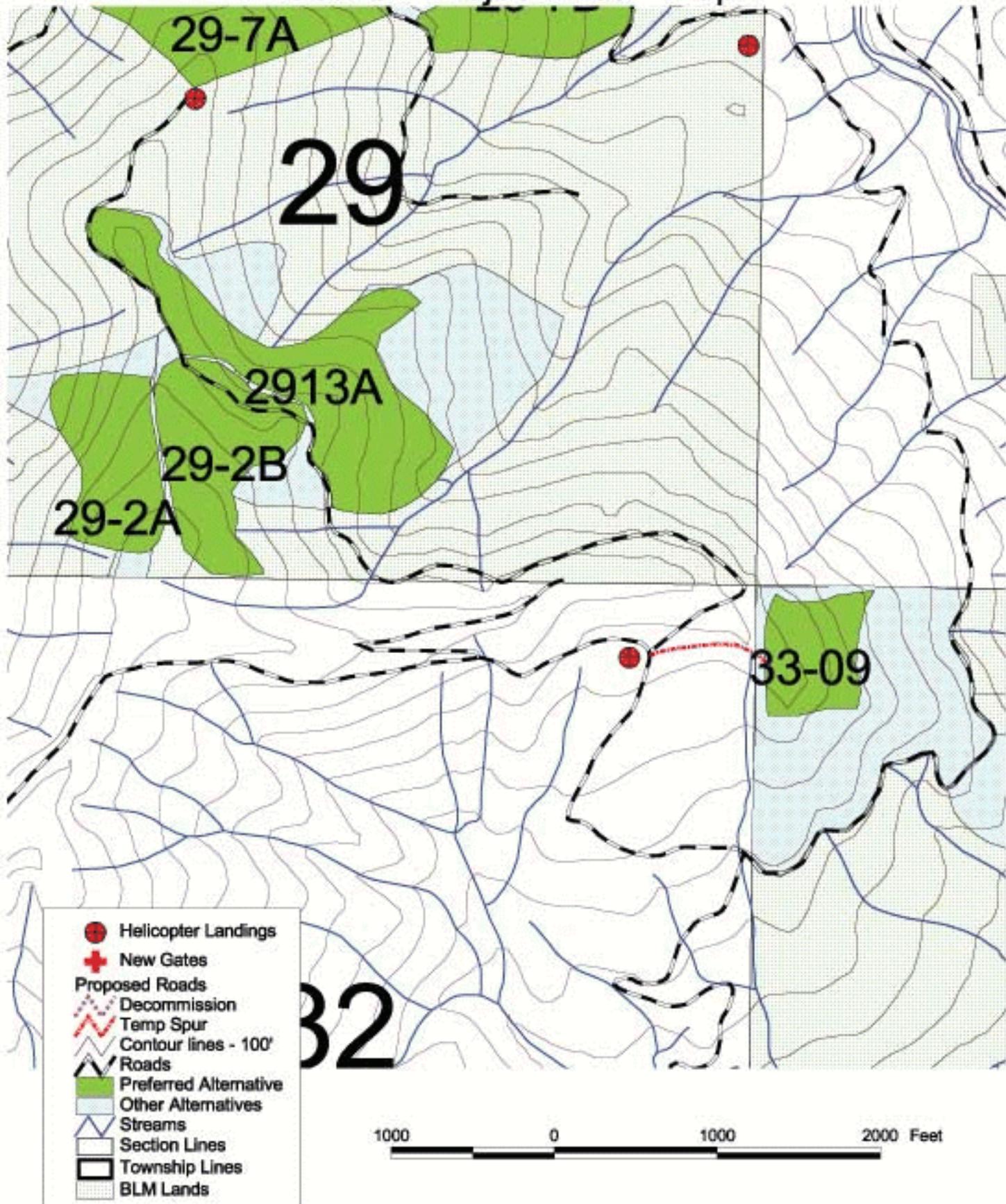
Soukow Project Area - Map 3



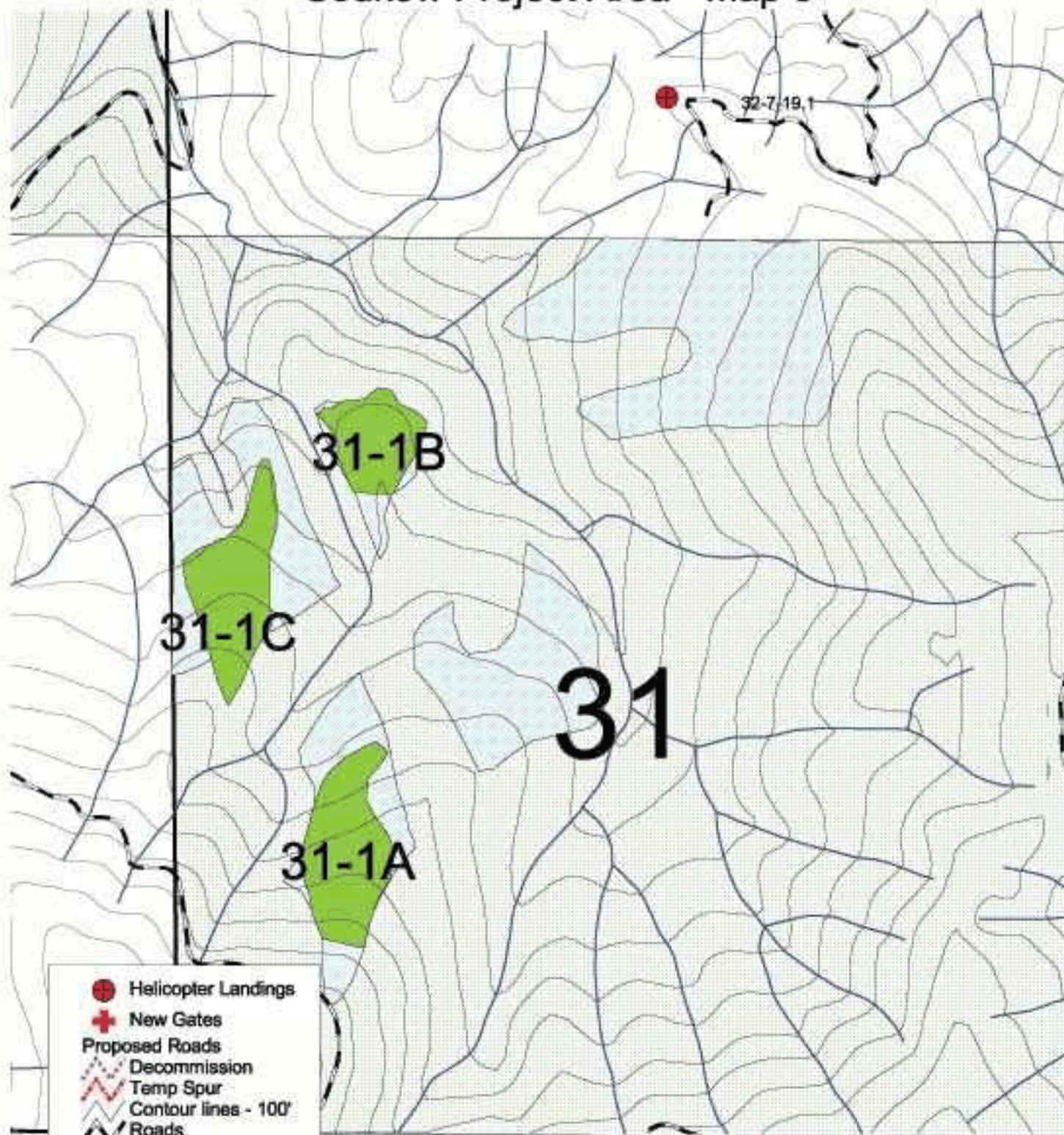
- Helicopter Landings
- ✚ New Gates
- Proposed Roads
 - Decommission
 - - - Temp Spur
 - Contour lines - 100'
 - Roads
- Preferred Alternative
- Other Alternatives
- △ Streams
- Section Lines
- Township Lines
- BLM Lands



Soukow Project Area - Map 4



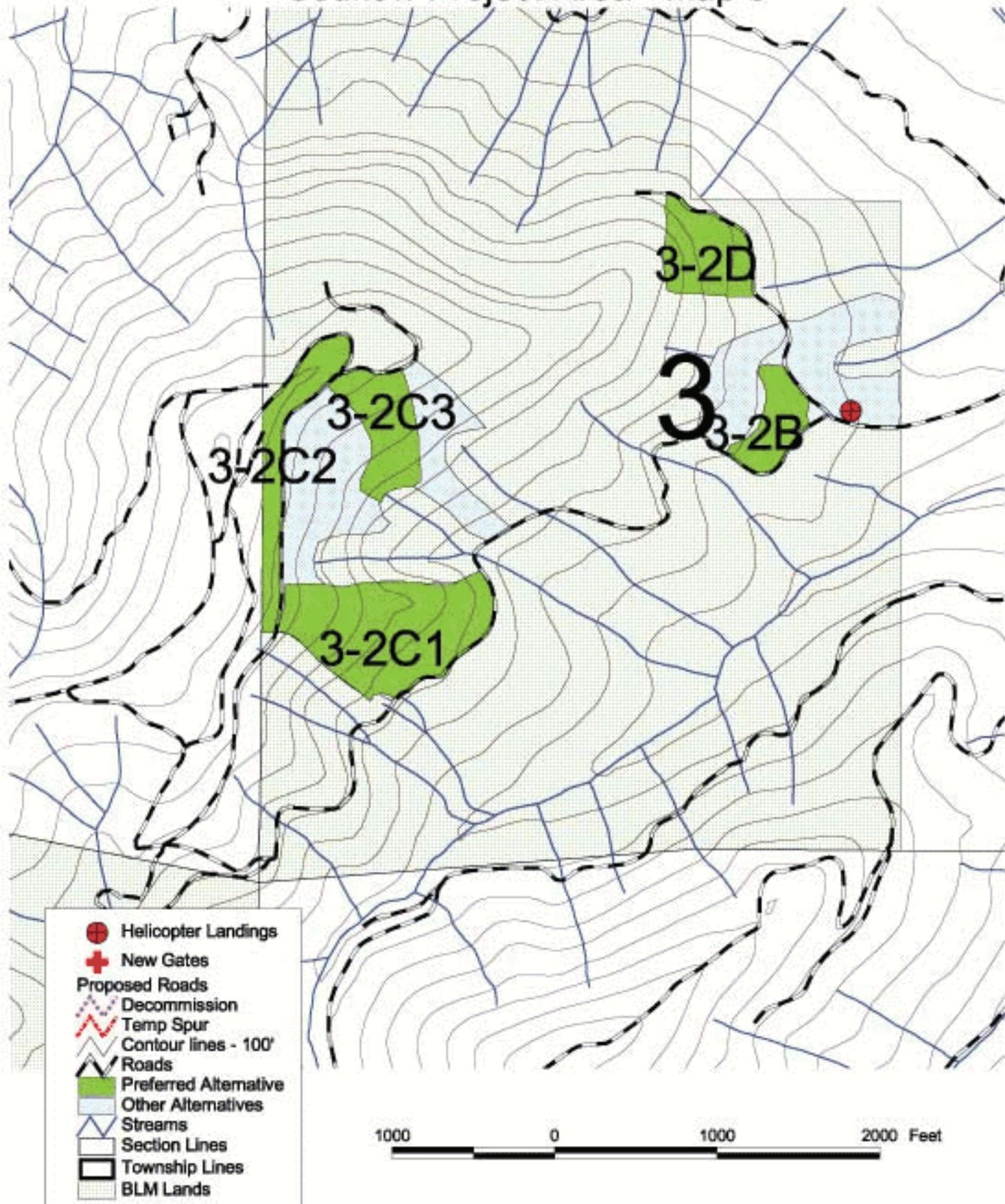
Soukow Project Area - Map 5



- Helicopter Landings
- ⊕ New Gates
- Proposed Roads
 - Decommission
 - - - Temp Spur
 - Contour lines - 100'
 - Roads
- Preferred Alternative
- Other Alternatives
- △ Streams
- Section Lines
- Township Lines
- BLM Lands

1000 0 1000 2000 Feet

Soukow Project Area - Map 6



Soukow Project Area - Map 7

