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File Code: 1570

Date: March 8, 2002

Dear Mediated Settlement Partners:

Those of you familiar with the Sierra Nevada Forest Plan Amendment, Final Environmental Impact Statement (FEIS) and record of Decision (ROD), otherwise known as the Framework, may have already read the following, regarding our meeting plan amendment obligations under the Mediated Settlement Agreement (MSA). The FEIS states:

> **Sequoia National Forest Mediated Settlement Agreement**. The Sequoia National Forest Mediated Settlement Agreement, 1990, and the Presidential Proclamation, 1992, define management of giant sequoia groves until the Tahoe, Sierra, and Sequoia National Forests complete forest plan amendments governing giant sequoia grove management. Subject to funding, these forest plan amendments are scheduled for completion by 2003. With respect to the Sequoia National Forest, this FEIS meets Forest Service obligations regarding the NEPA process for livestock grazing, oak management, old growth, wildlife, fisheries, and riparian area management. Areas in the settlement agreement not addressed in this FEIS include allowable sale quantity, suitable lands, roadless areas, special areas, and off highway vehicle use (FEIS p. 2-21).

I am writing this letter to explain more fully where we believe the Framework does and does not meet our obligation to take certain provisions of the MSA through the Land Management Plan (LMP) amendment and the NEPA process. I will start by recalling the structure of the MSA itself.

Basically, the MSA does these four things:

1) It makes some land allocations on an interim basis pending LMP amendment (e.g.; giant sequoia grove delineation and management)

2) It specifies management prescriptions, standards and guidelines in some resource areas pending LMP amendment (e.g.; riparian standards and guidelines)

3) It requires collection of certain data and completion of studies

4) It provides for future dispute resolution

Of these four, the first two must go through the NEPA process as part of our LMP amendment process; the second two remain in force until Plan revision (MSA p. 3). In this letter I am dealing with the specific MSA items in the first two categories that we agreed to take through the

Sequoia National Forest

Mediated

Land Management Plan
1990 Settlement Agreement

LMP amendment process. As you will see, the Framework took care of many, though not all, of them.

The following tables detail the MSA items that are to go through LMP amendment and the NEPA process. They are taken from the comprehensive list of MSA tasks included in the appendix of each of our annual reports for the last 10 years. On Table 1, I have indicated where in the Framework a given MSA topic is dealt with most explicitly. It is very important to understand that these are not the only possible references in the Framework since there is a high degree of overlapping direction (See ROD Appendix A, p. 22-24). I have included the Framework references I felt were the most convenient sources of direction, both the place for you to start to understand provisions of the Framework in these subject areas and to see that our LMP amendment and related NEPA obligations have been discharged for these subject areas.

Table 1: The MSA and the Framework

MSA Topic	**Where Found in Framework**
Riparian Standards and Guidelines (MSA p. 5)	Framework ROD, Appendix A, p. 5-8 & 51-62
Grazing and Hardwoods (MSA p. 28-40)	Framework ROD p. 49 Framework ROD, Appendix A, p. 14, 27, 30, 31, 38, 57-62
Furbearer Standards & Guidelines (MSA p. 55-58)	Framework ROD, Appendix A, p. 1-4, 29, 39, 45
Goshawks (MSA p. 58-59)	Framework ROD, Appendix A, p. 36-37
Fisheries – Resource Aspects (MSA p. 64-66)	Framework ROD, Appendix A, p. 5-8 & 51-62
Roadless Areas (MSA p. 70-75)	Framework ROD, Appendix A, p. 33
Snag Standards and Guidelines (MSA p. 89-91)	Framework ROD, Appendix A, p. 4, 11, 28, 42
Off-Highway Vehicle (OHV) Use (MSA p. 104-108)	Framework ROD, Appendix A, p. 32, 57
Cumulative Watershed Effects (CWE) Methodology (MSA p. 110)	Framework ROD Appendix A, p. 53
Soil Standards and Guidelines (MSA p. 128-130)	Framework ROD Appendix A, p. 32
Monitoring (MSA, Appendix O)	Framework ROD p. 49, FEIS Appendix E

Table 2 displays the MSA topics not covered in the Framework. Beside each topic I have indicated where it has been dealt with elsewhere or how it will otherwise be incorporated into our Forest Plan.

Table 2: The MSA and Other Planning Documents

MSA Topic	**Where to be Dealt With**
1) Giant Sequoia Guidelines (MSA p. 6-28) Botanical Area designation for Freeman Creek Grove and watershed, (MSA p. 17, J. IV. A.)	Giant Sequoia National Monument Management Plan due April 2003.
2) Uneven Age Management in vicinity of Freeman Creek Giant Sequoia Grove and its watershed (MSA p. 18, J. IV. B.)	Giant Sequoia National Monument Proclamation – prohibits commercial logging for purpose of producing timber
3) Suitable Lands, Timber Management, and Allowable Sale Quantity (MSA p. 66-67, 78-88)	LMP Amendment or Revision
4) Bald Eagles – protect roost sites at Pine Flat Reservoir and on the Kern River (MSA p. 58, 4)	Giant Sequoia National Monument Management Plan or other LMP Amendment
5) Fisheries – Recreation Aspects (MSA p. 64-66) - Slate Mountain Roadless Area (MSA p. 66) - Riparian Demonstration Area for LKGT (MSA p. 66)	LMP Amendment or Revision Roadless Area Rule, 2000 Giant Sequoia National Monument Management Plan
6) Roadless Areas (MSA p. 70-75)	Roadless Area Rule, 2000
7) Special Areas (MSA p. 75-78)	LMP Amendment or Revision
8) Possible Adjustments to Semi-Primitive Non-Motorized area due to Sirretta Peak Trail (MSA p. 96, (4) & p. 100, (4)	Under consideration in Sirretta Peak DEIS
9) Change Recreation Management Prescription (MSA p. 104-4 & p. 108) - Designation for OHV Use } } - Other trail uses and management }	LMP Amendment or Revision Inside Monument, Giant Sequoia National Monument Management Plan; outside Monument, future LMP Amendment or Revision

10) Recommend Moses Inventory Roadless Area for wilderness classification	LMP Amendment or Revision

I hope this explanation answers your questions about the status of the MSA provisions requiring Forest Plan Amendment and NEPA process. If you have any further questions, please contact Julie Allen at (559) 784-1500, extension 1160.

Sincerely,

/s/ Juliet B. Allen "for"

ARTHUR L. GAFFREY
Forest Supervisor

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MEDIATED SETTLEMENT AGREEMENT

FOR THE SEQUOIA NATIONAL FOREST

July 1990

I. PREAMBLE

A. On February 25, 1988, the Regional Forester for the Pacific Southwest Region of the United States Forest Service made a decision to adopt a Land and Resource Management Plan ("Forest Plan," "Plan," or "LMP") for the Sequoia National Forest. His decision was based on a Final Environmental Impact Statement ("EIS") on the proposed Plan and was explained in a Record of Decision ("ROD").

B. Numerous parties appealed the decision, challenging the Plan and/or the EIS on many grounds. The appellants represent a very wide range of interests and a wide range of forest users. The appellants in each appeal are identified in Exhibit A to this Agreement. The appellants filed their various Statements of Reasons by July 20, 1988. The Forest Service filed its Responsive Statements by March 8, 1989. All appeals not otherwise disposed of were then extended pending the outcome of mediated negotiations.

C. During the fall of 1988, the Forest Service entered into an agreement with the

California Department of Fish and Game ("DFG") to settle its appeal, No. 2403. That agreement is set forth in a letter from James A. Crates, Forest Supervisor, to George Nokes, Regional Manager, DFG, dated November 15, 1988 (Exhibit B). The issues raised by DFG were also raised by incorporation in Appeal No. 2332. The terms of Exhibit B, therefore, are incorporated by this reference into this Agreement. Where any more stringent requirements are imposed by this Agreement, they will prevail over the terms of Exhibit B.

D. In December, 1988, the Forest Service hired Ms. Alana Knaster of the Mediation Institute to meet with the Forest Service and the various appellants to make a recommendation on whether the parties should attempt to negotiate a settlement and, if negotiations proceeded, to serve as mediator. During January and February, 1989, Ms. Knaster met with the Forest Service and the appellants and recommended that negotiations ensue. Subsequently, the Forest Service and appellants that chose to participate in the negotiations agreed upon Protocols to govern the proceedings. The Protocols are incorporated by reference into this agreement attached hereto as Exhibit C. Where any more stringent requirements are imposed by this Agreement, they will prevail over the terms of Exhibit C.

E. Between March, 1989 and June, 1990, the parties spent many days in face-to-face discussion and negotiation over issues raised in the appeals and an

enormous number of additional hours developing and discussing proposed solutions to identified problems. Many of those solutions require that information presently lacking be gathered and utilized, both to check the validity of Plan assumptions and to refine the Plan over time. The parties, therefore, decided to settle the Plan appeals by (1) presently disposing of some issues on the merits; and (2) setting up processes for developing needed information, monitoring Plan implementation, and addressing other issues over time.

F. The parties have differing views on many legal and factual issues raised in the appeals. A party's consent to this compromise agreement does not imply such party's concurrence in any particular interpretation of law or fact, except as otherwise expressly stated in this Agreement.

G. The parties concur that this Agreement binds them only as provided herein. The parties enter into this Agreement pursuant to compromise because of the unique factual circumstances in the Sequoia National Forest and in settlement of disputed claims to avoid prolonged and complicated litigation and to further the public interest. The parties concur that this Agreement applies solely to the issues raised in administrative appeals of the Land Management Plan for the Sequoia National Forest. This Agreement terminates at such time as the Plan is revised in accordance with 36 C.F.R. § 219.10(g).

H. In the interim period between signing this Agreement and finalizing an amendment incorporating this Agreement into the Plan, the Parties agree that the provisions of this Agreement shall be implemented according to the schedules indicated throughout this document. Such interim action conforms to NEPA direction that, until a record of decision is issued, the agency must not limit the range of choice [40 CFR 1506.1(a)(2)]. Continuing implementation of the Plan as is would destroy the option of implementing some of the provisions of the Agreement; therefore, the Parties agree to this interim direction. The Forest Service anticipates that the NEPA process, including preparation of amendments and an EIS, may take up to two years.

I. Throughout this Agreement, the Forest Service has agreed to perform certain tasks by specified dates or time periods. All parties contemplate that these deadlines are reasonable and that the Forest Service shall adhere to the deadlines. The parties recognize, however, that events arising from causes beyond the reasonable control of the Forest Service despite the due diligence and good faith efforts of the Forest Service may preclude the Forest Service from completing the specified task by the specified deadline. In such an event, the Forest Service shall, within 21 days of the specified deadline, notify all parties of its inability to complete the task within the specified time, the reasons for that inability, and the date by which the task shall be completed. Any party may challenge in court either the failure to complete the task by the specified

date or the new date set forth by the Forest Service for completion of the task. If such a challenge is made, the burden of proof shall be on the Forest Service to show that the failure to complete the task by the specified date was based on events arising from causes beyond the reasonable control of the Forest Service despite due diligence and good faith efforts and that the new date for completion is reasonable. Any cause of action contemplated by this paragraph arises only for the parties to this Agreement. The parties also contemplate that the existence of litigation against the Sequoia National Forest shall not be precluded from consideration as an event arising from causes beyond the reasonable control of the Forest Service.

II. AGREEMENTS

A. *Riparian Areas, Including Meadows*

1. The Riparian Standards and Guidelines (attached to this Agreement as Exhibit D) shall be incorporated into the Plan through Plan amendment and its attendant NEPA process.

2. *Interim*: The Riparian Standards and Guidelines as set forth in Exhibit D shall be fully implemented in the interim period before the amendment to the Plan is effective. Any timber sale contract predating this Agreement will be modified to conform to the Riparian Standards and Guidelines.

3. Landings and non-system roads that have been put to bed, are located within streamside management zones, and would be inconsistent with the Standards and Guidelines set forth in Exhibit D, will not be reopened and reused unless the Sequoia National Forest makes a specific finding, based on a project environmental document, that using such roads or landings would cause less harm to riparian resources than building new roads and/or landings.

B. ***Giant Sequoia Groves***

1. *Background*: The Parties to this Agreement state:

a. The Giant Sequoia Groves in Sequoia National Forest ("Groves") are a unique national treasure that shall be preserved.

b. The goal for the administration of the Groves shall be to protect, preserve, and restore the Groves for the benefit and enjoyment of present and future generations.

c. The Converse Basin area has been subject of significant timber harvest since the late 1800s. With the exception of designated areas to be preserved, this area of the Forest will continue to be available for commercial logging.

2. *Implementation*:

a. *Interim Protection*

(1) Until a final Grove boundary for each Grove is determined in accordance with this Agreement, that Grove, based on the most recent data for the location of giant sequoias, shall be protected, including an interim 500 foot buffer extending from a hypothetical perimeter line around the outermost known giant sequoias in the Grove. This will be a no logging, restricted mechanical entry area. For purposes of this Agreement, the following mechanical/motorized uses only will be permitted inside an interim or final Grove boundary line:

(a) expansion of the parking lot at the Trail of the 100 Giants;

(b) use of existing roads;

(c) existing use of OHVs on: i) trail #31E56 inside Deer Creek Grove, ii) trail #31E30 from Belknap to Cedar Slope inside McIntyre Grove, and iii) any established trails identified by the Forest Service as existing on the date of this Agreement, with written notice to all parties, provided however, that

OHV use is subject to final determinations made by the Trail Management Plan;

(d) Management in accordance with approved fuel load reduction plans;

(e) use of light equipment to build and/or maintain trails; and

(f) use of equipment to fight wildfires (use of heavy equipment off of existing roads will require Forest Supervisor approval)

(g) use of battery operated wheelchairs.

New mechanical/motorized uses shall not be automatically precluded within Grove Influence Zones.

(2) An additional zone of 500 feet, called the Grove Influence Zone, shall be protected from logging activities inconsistent with Section B.2.d.(1). of this Agreement prior to the identification of final administrative Grove Influence Zone boundaries.

(3) Notwithstanding subsection (2) above, where no Decision Notice

has been executed as of the date of this Agreement for a timber sale within the Grove Influence Zone, no logging plans will be approved by the Forest Supervisor within 1000 feet of the hypothetical perimeter line of the Rundel-identified grove until the Forest Supervisor has determined the Grove and Grove Influence Zone boundaries in accordance with this Agreement.

b. *Grove Management*

(1) Within this Plan period, it is desirable that the Sequoia National Forest shall inventory all giant sequoias (3 feet or larger dbh) in each Grove by size and approximate location in order to provide a suitable data base for future protection of the sequoias; the Sequoia National Forest shall request no less than $40,000 per year in its annual budget request starting FY1992 and extending through the end of the Plan period for giant sequoia inventory purposes, or until the inventory is completed. Priority for inventory of Giant Sequoia Groves will be pursuant to subparagraph (2), below.

(2) Within this Plan period, the Sequoia National Forest shall begin to inventory and evaluate each Grove for its fuel load build-up. Based on this inventory and evaluation, Groves, or parts of Groves, with risks of catastrophic fire and/or exclusion of new giant sequoia

regeneration because of unnatural fuel load build-up will be identified and prioritized for fuel load reduction treatment. Pursuant to this prioritization, the Forest Service shall begin addressing the Grove fuel load build-up problems during this plan period, with public participation and planning in accordance with NEPA.

(3) Except as set forth in section II.B.2.a.(1), there shall be no new road-building, logging or mechanical/motorized entry (except for entry on existing roads) within the final administrative boundary of any Grove during the period of time in which the Sequoia National Forest activities are covered by the 1988 Land and Resource Management Plan. For purposes of this Agreement, prohibited logging shall mean any logging activity except logging conducted for the limited and specific purpose of reducing the fuel load in the Groves pursuant to a Grove specific fuel load reduction plan and Grove specific EIS. The only salvage logging permitted in the Groves will be that logging permitted and described in the previous sentence. It is agreed that the methods to be used to remove specific trees from the Groves, as part of an adopted fuel reduction plan, shall be the most environmentally sensitive available. The objective of fuel load reduction plans shall be to

preserve, protect, restore and regenerate the Giant Sequoia Groves, without unnecessary damage to any old-growth trees in the Grove. Any logging component of a fuel reduction program in a grove shall protect the old-growth pine, fir, incense cedar and black oak components of the stand. Any tree identified for removal under this paragraph shall be so identified in the field in consultation with a forester from either the Save-the-Redwoods League ("League") or the Sierra Club ("Club").

c. *Grove and Grove Influence Zone Boundary Identification Procedures*

(1) The Sierra Club, the Save-the-Redwoods League, the timber industry ("Industry") and the Forest Service shall each designate one representative to serve on the Grove Boundary Team. The Team shall begin to identify final administrative Grove and Grove Influence Zone boundaries prior to September 15, 1990. The Team shall follow the standards and guidelines outlined in subparagraph 2 below in determining final administrative Grove and Grove Influence Zone boundary lines. The Team shall recommend final administrative Grove and Grove Influence Zone boundaries to the Forest Supervisor by December 31, 1991, subject to paragraph II.B.2.c.(4). Copies of the recommendations shall be sent to all parties, who shall have 45 days from mailing to submit

comments for the Forest Supervisor's consideration.

(2) *Standards and Guidelines for Grove and Grove Influence Zone Boundary Identification:*

(a) There will be two zones created adjacent to and external to the hypothetical perimeter line of the outermost known giant sequoia trees in each Grove. The first zone will be included within the final administrative Grove boundary. The second zone shall be called a Grove Influence Zone.

(b) Though Grove identification is a matter of interpretation, and some adjacent Groves shall be managed as if they were a single large Grove (as later described in this Agreement), the Rundel Grove identifications in the Forest Plan are used in this Agreement by name as the basis for Grove and Grove Influence Zone boundary identification.

(c) Sequoia Grove boundaries have not yet been precisely defined. Giant sequoias naturally occur in "scattered" locations outside of, or on the periphery of, aggregations of giant sequoias consensually recognized as sequoia "Groves."

(d) The final administrative Grove boundaries shall be identified to include both (i) the area within a hypothetical perimeter line around the outermost giant sequoia trees in the Grove, and (ii) a buffer area (which may differ in size for different groves, as later described) beyond the hypothetical perimeter line which shall be included in the final administrative boundary of a Grove.

(e) In determining the hypothetical perimeter line around the outermost giant sequoia trees in a Grove (which becomes the basis for identifying the interim protection zone and the administrative boundaries of the Grove and Grove Influence Zone), the following guidelines shall apply:

i) Any naturally occurring giant sequoia (1 foot or larger dbh) which is located within 500 feet of at least 3 other giant sequoias (each 1 foot or larger dbh), shall always be included within the hypothetical perimeter line; provided, however, that the Grove Boundary Team may reasonably adjust the perimeter line for a specific Grove so long as there is a rational basis for the adjustment (such as topographic features) and all participating team members

agree to the adjustment.

ii) Notwithstanding subsection (i) above, all giant sequoias consensually recognized as being included in a Grove identified in the Rundel Grove list used in the Forest Plan shall always be included within the hypothetical perimeter line. In other words, the guidelines for identifying the hypothetical perimeter line shall not be used to fragment the existing groves as identified by Rundel.

iii) Where, as described later in this Agreement, several adjacent Groves are to be managed as if they were one large Grove, the hypothetical perimeter line, as defined, shall be a single line around the outermost giant sequoia trees in the complex of Groves, taken as a whole.

(f) Boundaries shall also be identified for Grove Influence Zones (which may differ in size for different Groves, as later described), which shall be contiguous to each Grove. (See Section B.2.d. regarding management of Grove Influence Zones.)

(g) The parties agree that the Grove and Grove Influence Zone boundary guidelines are minimum protection criteria. The parties also agree that management protection such as SOHAs, roadless area management, condor nesting sites, etc., may provide for protection of areas adjacent to Giant Sequoia Groves which exceed the minimum protection described below.

(h) Further, the parties also agree that the types of management protection such as those set forth in (g) above may also minimize or eliminate issues concerning precise Grove and Grove Influence Zone administrative boundaries for many Groves, as well the presence of adjacent National Park, State, Indian, or private lands.

(i) Topographical features such as ridges may take precedence over field distance measurements in finalizing boundaries of a Grove and/or Grove Influence Zone where such features logically and physically separate giant sequoias from the general forest. However, man-made impacts such as existing roads shall not diminish the size of the Grove and/or Grove Influence Zones, unless agreed upon pursuant to subsection

(k) of this section.

(j) *Specific Grove, Grove Influence Zone, and Isolated Sequoia Tree Standards and Guidelines*

i) Black Mountain Grove: (a) The narrow corridor of general forest between the Black Mountain Roadless Area and the Black Mountain Grove in Sections 1 and 12 will be a no logging, restricted mechanical entry area. The extension of road 21S12, beyond its intersection with road 21S25 in Section 1, shall be closed to the public. (b) The balance of the Black Mountain Grove shall receive a 500 foot no logging, restricted mechanical entry zone outside of the hypothetical perimeter line around the outermost giant sequoias in the Grove within its final Grove boundary line and an added 500 foot Grove Influence Zone.

ii) Belknap McIntyre/Wheel Meadow Grove Complex: This will be treated as one large Grove in drawing the hypothetical perimeter line of outermost giant sequoias in the Grove. The Grove Boundary Team may consider a no logging, restricted mechanical entry zone that would extend north and east to Highway 190. The other boundaries of the

Grove shall include a 500 foot no logging, restricted mechanical entry zone outside of the hypothetical perimeter line of outermost giant sequoias of the Grove within the final Grove Boundary line and an added 500 foot Grove Influence Zone.

iii) The Greater Evans Grove Complex: The following Groves shall be integrated into this complex and managed as one large Grove in drawing the hypothetical perimeter line of outermost giant sequoias in the Grove: Lockwood Grove, Evans Grove, Kennedy Grove, Burton Grove, Little Boulder Grove, and Boulder Grove. There shall be a 500 foot no logging, no mechanical entry zone outside of the hypothetical perimeter line of the outermost giant sequoias in the Grove within the final Grove boundary line and an added 500 foot Grove Influence Zone.

iv) Freeman Creek Grove and Watershed: (a) There shall be no logging and no motorized vehicle use by the public anywhere in the Freeman Creek Grove Management Area as shown on the map, Exhibit E. The Sequoia National Forest shall manage this Area as a Botanic Area.

(b) All land areas outside of the Botanic Area but within the Freeman Creek watershed, west of Lloyd Meadow Road, as designated on the map, Exhibit F, shall be managed by the Regulation Class II, single tree or small group selection uneven-aged management prescription. There shall be no green timber sales scheduled in the watershed west of the Botanic Area in this planning period. Existing plantations may be managed; provided, however, that no management prescription outside and upslope of Giant Sequoias shall adversely impact the hydrology of the Sequoias. (c) The Freeman Creek Trail from North Road to the Lloyd Meadow Road shall be designated as Sensitivity Level One.

v) Indian Basin Grove: (a) There will be no logging except for safety reasons in and near the Princess Campground area south and east of Highway 180, and (b) a 500 foot no logging, restricted mechanical entry zone outside of the hypothetical perimeter line of the outermost giant sequoias in the Grove within the Grove boundary plus an added 500 foot Grove Influence Zone.

vi) The following Groves shall receive a 500 foot no logging, restricted mechanical entry zone outside of the hypothetical perimeter line of the outermost giant sequoias in the Grove within the Grove boundary line plus an added 500 foot Grove Influence Zone: Bearskin Grove, Big Stump Grove, Deer Creek Grove, Grant Grove, Landslide Grove, Long Meadow Grove, Packsaddle Grove, Peyrone Grove, Red Hill Grove, Redwood Mountain Grove, Starvation Creek Grove and Tenmile Grove.

vii) The following Groves shall receive a 300 foot no logging, restricted mechanical entry zone outside of the hypothetical perimeter line of the outermost giant sequoias in the Grove within the Grove boundary line plus an added 300 foot Grove Influence Zone: Powderhorn Grove, Alder Creek Grove, Abbott Creek Grove, Cherry Gap Grove, Mountain Home Grove and Cunningham Grove.

viii) The six hundred (600) acres of Converse Basin Grove recommended for preservation (see section B.2.e.(2) below) shall receive a 500 foot no logging, restricted mechanical entry zone outside of the preservation area.

ix) The following Groves, and their adjacent areas, are protected because of other designations and do not require precise boundary determinations for Sequoia Grove protection purposes: Agnew Grove (Wilderness Area), Burro Creek Grove (to be proposed as Wilderness), Deer Meadow Grove (protected portion of Agnew Roadless Area), Dillonwood Grove (to be proposed as Wilderness), Maggie Mountain Grove (Wilderness), Middle Tule Grove (part Wilderness and part to be proposed as Wilderness), and Silver Creek Grove (to be proposed as Wilderness).

x) Naturally occurring isolated giant sequoia trees (3 feet or larger dbh) located inside or outside of the Grove Influence Zones shall be protected by a restricted mechanical entry within an area equal to at least 2/3 the height of the tree, provided; however that only single tree selection logging is permitted in this area, so long as the giant sequoia tree is protected from unnecessary logging damage.

xi) Naturally occurring giant sequoia trees (under 3 feet

dbh) located inside of the Grove Influence Zone shall be protected from all logging operations, including specifically protecting the root system. Every reasonable effort shall be made to protect naturally occurring giant sequoia trees (under 3 feet dbh) located outside of the Grove Influence Zone from road construction, cable logging, and other logging activities. No additional buffer will be required for these trees, though the Forest Service shall make an effort to preserve them within wildlife clumps, within other small areas not logged under the regeneration mosaic silvicultural prescription, or within areas reserved to meet the seral stage diversity requirements.

xii) Any detached naturally occurring group (10 or more giant sequoia trees with at least 4 trees with a 3 foot or larger dbh) located outside the Grove Influence Zone, and not identified by Rundel as included in an existing Grove, shall be given the designation of "Grove" and given a 300 foot no logging, restricted mechanical entry zone within the Grove boundary and a 300 foot Grove Influence Zone; provided, however, that the Grove Boundary Team agrees with this designation. If the Grove Boundary Team cannot

agree, the unresolved issue shall be submitted to the Expert Panel for its determination and recommendation to the Forest Supervisor.

xiii) If previously unknown Giant Sequoia trees of any size and number outside of the interim buffer or final Grove boundary are discovered, the applicable Grove boundary and/or Grove Influence Zone shall be modified in accordance with the guidelines set forth in this section.

(k) The Grove Boundary Team may reasonably adjust final boundaries of Groves and/or Grove Influence Zones, subject to final approval by the Forest Supervisor, either to expand or contract these zones, for a specific Grove, so long as there is a rational basis for the adjustment (such as topographic features) and all participating team members agree to the adjustment.

(l) With the exception of Converse Basin, these Grove and Grove Influence Zone boundary line standards and guidelines are solely for the purpose of protecting the Groves and the adjacent areas, and are not intended as a

"release" or a management prescription for other areas of the Forest, which shall be managed or protected as otherwise provided in the forest plan and in this Agreement.

(3) If any logging is planned to occur within 1,000 feet of any interim or final Grove Boundary, a special written notice shall be sent to the appellants. This notice shall include a topographical map which specifically (1) locates the boundary of the proposed cutting unit, (2) locates the Forest Service interim or final Grove Boundary, (3) predicts the distance between the two, and (4) specifies a date and time, no sooner than 30 days, unless otherwise agreed upon, for the interested parties to accompany the Forest Service into the field to review the plan on the ground with the objective to resolve differences prior to the preparation of an EA or EIS.

(4) If Grove Boundary Te m members fail to reach unanimous agreement on permanent Grove and Grove Influence Zone boundaries for all Groves prior to December 31, 1991, or within a reasonable time thereafter, if a specific extended time period is agreed upon in writing by all team members, an Expert Panel of three people shall be formed. The Sierra Club and

Save-the-Redwoods League shall appoint one member, the Forest Service shall appoint one member (acceptable to the timber industry), and the two appointees shall choose a third Panel member. All should have a background in giant sequoia protection. The Panel will address itself to each Grove as to which the Team failed to reach agreement. The Panel will review the maps, the differing opinions of the Team Members, and will go into the field to review the matter on the ground. The Panel will make a formal, public written recommendation to the Forest Supervisor for the boundary line of each disputed Grove. The Forest Supervisor shall, upon receiving the final recommendations of the Grove Boundary Team and the Expert Panel (if one is convened), issue a Plan amendment establishing the boundaries of Groves and Grove Influence Zones.

(5) Except as otherwise provided in this agreement (see section B.2.e.(2) below, re: Converse Basin), each Grove, with final administrative Grove boundaries determined as described herein, shall remain outside the suitable land base.

d. *Complementary Management in Grove Influence Zones and Outside of Groves*

(1) Within the Grove Influence Zone, only Regulation Class II, single tree, small group uneven-aged management silvicultural prescriptions will be permitted both before and after final administrative Grove Influence Zone boundaries are identified; provided, however, that if a more protective management designation also applies to the area, or portions of the area (such as streamside management zones, SOHAs, etc.), the more protective designation shall govern what, if any, logging activity is allowed in the Grove Influence Zone.

(2) In all situations where logging or road construction is planned outside of, but upslope of a Grove, a special written notice shall be sent to all appellants during initial development of project alternatives. This notice shall explain fully the action proposed and shall include a topographical map which specifically (1) locates the proposed cutting unit or road to be built, (2) locates the Grove boundary, (3) predicts the distance between the two, and (4) specifies a date and time, no sooner than 30 days, unless otherwise agreed upon, for the interested parties to accompany the Forest Service into the field to review the plan on the ground with the objective to resolve differences prior to the preparation of an EA or EIS. The Decision document for any such activity shall include a

specific finding that the Grove will not be harmed.

(3) The Sequoia National Forest shall consider Regulation Class 2 helicopter single tree removal for logging operations outside and upslope of, and in close proximity to, a Grove.

e. *Special Area Designations*

(1) The Sequoia National Forest shall manage the Freeman Creek Grove Management Area as a Botanic Area. (See further discussion in section B.2.c.(2)(j)(iv) above).

(2) The Sequoia National Forest shall amend the Plan to provide for management of the Converse Basin Grove under Regulation Class II small group or single tree selection and shelterwood silvicultural prescriptions; provided, however, that the regeneration mosaic prescription may be used, if appropriate, in certain limited circumstances (ie. areas logged since circa 1950). No other clearcutting will be permitted in the Converse Basin Grove. Such management activity in the Converse Basin Grove must be pursuant to a plan and EIS that shall, among other things, (a) allocate the 600 acres previously recommended by the Forest Service for preservation to preservation management with a buffer,

and (b) allocate 10% of the remaining (approximately) 2400 acres (240 acres) in the Grove for preservation and regeneration of Giant Sequoias to replace trees cut at the turn of the century. This 10% should be chosen in areas where there has been significant regrowth of the giant sequoia (ie. areas where 70-100 year old giant sequoias are abundant), and no designated preservation units shall be less than 40 acres. All giant sequoias 3 feet or larger dbh in Converse Basin shall be preserved, regardless of any other permitted logging activity. Small giant sequoias may be cut along with other species.

f. *Regeneration of Cut-Over Giant Sequoia Groves*

(1) The objectives of regenerating cutover Giant Sequoia Groves will be to restore these areas, as nearly as possible, to the former natural forest condition.

(2) The Forest shall implement the regeneration plan required by the Stipulation for Entry of Judgment dated 12/27/89, in Sierra Club v. U.S. Forest Service, Case No.CVF-87-263 EDP.

g. This Agreement and the standards and guidelines which it contains shall be interpreted liberally, in the event of ambiguity, in order to

implement the purpose of protection of the Giant Sequoia Groves and Grove Influence Zones.

h. Research projects may be permitted if consistent with this Agreement. Research projects are subject to NEPA.

C. ***Grazing and Oak Management***

1. *Introduction*: Livestock grazing is subject to applicable riparian standards and guidelines. The Plan will be amended to clarify that Animal Unit Months ("AUMs") allotted under the Forest Plan will not be increased over recent historic levels of approximately 68,000 annually.

2. *Livestock Grazing in Blue Oak Savanna* -- The Plan shall be amended to change management area prescription B06 on page 4-77 of the Plan to:

a. Range

(1) Give priority to maintaining and enhancing blue oak.

(2) Develop water, fences, trails, etc., to facilitate optimum use of forage.

(3) Retain at least 700 lbs./acre residual dry matter (RDM) as the utilization standard for livestock use.

(4) Winter grazing allotments will limit browse utilization to a change of no more than 15% of preferred browse or 5% of staple species to heavily browsed conditions (form class 3 or 6). Limited browsing will maintain browse in satisfactory condition and indicate that green feed is available for wildlife during winter "green up" (inadequate green forage period).

(5) Allotment Management plans will emphasize wildlife use of mast crops.

(6) Pursuant to a contract with the Forest Service, the University of California through the Fresno Foundation California Agricultural Technology Institute, has completed and published in November, 1989 a study of reproduction and age-class frequency of blue oaks on the Sequoia National Forest. Based upon the results of this study, the Sequoia National Forest will adopt allotment specific minimum threshold levels of oak recruitment for implementation in allotment plan revisions beginning in 1991 or sooner as specified in item (7) below.

(7) The Sequoia National Forest will identify allotments where oak reproduction is at or below the minimum recruitment threshold level and will develop long-term strategies to increase recruitment of oaks into these stands. Upon renewal, allotment management plans will be used to prescribe management strategies to improve management of oak and enhance recruitment based on the University of California study of the Sequoia National Forest along with other studies. A variety of strategies will be considered to obtain an adequate recruitment of oak. The Forest Service will monitor recruitment of oak species into the stands as part of allotment plan inspections and analysis.

3. *Oak Management*-- The Plan shall be amended to change management direction on page 4-30 of the Plan under Oak Management to:

a. In mixed conifer-hardwood stands, leave at least 20 square feet per acre basal area of oaks where this currently exists.

b. Where it currently exists in pure hardwood stands maintain a minimum average of 50 square feet per acre basal area. Leave

heavy mast-producing trees in any harvest of oaks.

c. Where it currently exists, leave a minimum of 30 square feet per acre basal area of oaks in mixed conifer hardwood stands identified as key deer areas.

d. Live oak stands will not be subject to vegetative manipulations other than prescribed burning, thining for vigor, or for wildlife and watershed habitat improvement.

e. In mixed hardwood-conifer or hardwood stands, favor retention of oak trees exhibiting active use as cavity nesting sites or graineries.

4. *Black Oak*. Prescription OW6 -- The Plan shall be amended to change management area prescription 0W6 on pages 4-79 and 81 of the Plan to:

Emphasis

Livestock grazing will be emphasized in black oak woodlands. Where black oak stands are overstocked, thinning may be done to improve age structure, mast production, vigor, or to create fuelbreaks. Range improvement will be provided as needed.

Opportunities

Wood harvesting in black oaks will be permitted to improve age structure, mast production, vigor, or to create fuelbreaks. Recreation activities which are acceptable within Semi-Primitive Non-Motorized class will be emphasized. Camp and picnic facilities will not be developed. Dispersed recreation will be limited. Watershed improvements which enhance and protect range productivity will receive priority. Transportation system planning and management will favor range activities. Wildlife habitat will be managed to maintain or enhance harvest species and to maintain viable populations of oak woodland dependent species.

Fish and Wildlife

a. Provide for 1.5 snags per acre. See section J.1.c.

b. Maintain at least 50 square feet basal area per acre of oaks where it currently exists.

c. Maintain understory vegetation to provide horizontal and vertical diversity.

d. Ensure a stable or upward trend in supply of oaks.

e. There should be a good distribution of all age classes of oaks that will optimize acorn production. The desired objective is to establish good regeneration and a healthy, viable stand.

seedlings	0-20 years
saplings	21-80 years
mature and decadent	81-250 years

Range

a. Develop water, fences, trails, etc., to facilitate optimum use of forage.

b. Retain at least 700 lbs./acre residual dry matter (RDM) as the utilization standard for livestock use.

c. Winter grazing allotments will limit browse utilization to a change of no more than 15% of preferred browse or 5% of staple species in heavily browsed conditions (form class 3 or 6). Limited browsing will maintain browse in satisfactory condition and indicate that green feed is available for wildlife during winter "green up" (Inadequate green forage period).

d. Allotment Management plans will emphasize wildlife use of mast crops.

5. *Livestock Grazing of Burned Mixed Chaparral* -- The Plan shall be amended to change management area prescription MC6 on page 4-82 of the Plan to:

Fish and Wildlife

a. Provide wildlife adaptations in all water developments.

b. Consider wildlife needs for cover and edge in vegetation manipulation projects.

Range

a. Use prescribed fire as primary method to accomplish age class management.

b. Implement vegetative manipulation projects on slopes less than 40% when crown cover of browse species is greater than 70% or average height exceeds 5 feet.

c. Develop water supplies, fences, and trails where needed on

intensively treated lands.

d. Allotment Management Plans will be used to prescribe management strategies for the first three growing seasons to manage livestock grazing to promote recovery of the mixed chaparral community and maintain native plant species diversity following prescribed fire. Salting, managing water development. riding, deferring or changing season of use and drift fencing are some of the strategies to be considered for implementation following fire to maintain native plant species diversity.

6. *Effects of Prescribed Fire on Age-Class and Diversity in Mixed Chaparral* -- A Plan amendment will change management indicator species on pages 3-25, 3-26, and 3-27 of the plan to:

a. Page 3-25 -- Species associated with early successional stages: deer and California quail.

b. Pages 3-26 and 3-27, Table 3.6, "Indicator Species Used to Determine Changes in Habitat" on page 3-26 and the write-up on "Early Successional Stage" on pages 3-26 and 3-27 of the plan will be changed to include the California quail.

7. Prescription MC5 -- The Plan shall be amended to change management area prescription MC5 on page 4-69 of the Plan to:

Fish and Wildlife

a. There should be a good distribution of chaparral age classes with the objective of maintaining a healthy, viable stand.

seedlings, sprouts	1-10 years
young	11-30 years
mature/decadent	31+ years

b. Implement vegetative manipulation projects only when crown density of browse species is greater than 70% or average height exceeds 5 feet.

c. Develop water supplies on intensively treated lands.

d. Treat vegetation on slopes greater than 40% to establish a 31+ year age-class rotation.

8. Prescription MC6 --The Plan shall be amended to change management area prescription MC6 on page 4-82 of the Plan:

Fish and Wildlife

a. Provide wildlife adaptations in all water developments.

b. Consider wildlife needs for cover and edge in vegetation manipulation projects.

Range

a. Use prescribed fire as primary method to accomplish age-class management. No more than 60% of the vegetation should be in the seedling/sprout--young age-class. Slopes over 40% are allocated to provide age-classes of 31+ years and older.

b. Implement vegetative manipulation projects on slopes less than 40% when crown cover of browse species is greater than 70% or average height exceeds 5 feet.

c. More than 50% of the prescribed fires are to occur in the late summer and fall.

d. Develop water supplies, fences, and trails where needed on intensively treated lands.

9. *Type Conversion* -- References to type conversion are to be deleted from the Plan. A Plan amendment will make the following deletions:

a. Delete the statement "convert chaparral types to annual grass on slopes less than 10%" from the Fish and Wildlife Section, item 2, on pages 4-46 and 4-69, and from the Range section, item 2, on page 4-82 of the Plan.

b. Delete the statement "limit type conversions" from the Fish and Wildlife section, item 4, on page 4-44 of the Plan.

c. Delete the statement "allow type conversions in ecosystems for wildlife needs" from the Fish and Wildlife section, item 2, on page 4-72 of the Plan.

d. Delete the words "chaparral type conversions and" from Fish and Wildlife section, item 2, on page 4-82 of the Plan.

e. Delete the words "or type converted" from Vegetation sections, 1)

chaparral on page 4-9 of the Plan.

10. *Allotment Plans and Effectiveness* -- The Plan shall be amended to make the following changes:

a. To Forest-wide Standards and Guidelines add on page 4-30 of the Plan under Range: Allotment management plans will include specific information on range condition, trends, livestock grazing capacity, utilization maps and measurements, and forage and habitat allowances for wildlife and they will assess grazing impacts on wildlife, fisheries, water quality and other environmental values. Where such information is lacking from an allotment management plan, it shall be added when the plan is next amended or renewed. Management plans will develop strategies to minimize or discourage livestock use in botanical areas. Where livestock use is in direct conflict with the values for which the botanical area was established, that use will be eliminated. Where livestock grazing is shown to be beneficial for the endangered or sensitive species, it will remain.

b. Forest-wide Standards and Guidelines on page 4-30 of the plan under Riparian Areas: The Plan shall be amended to change the

last sentence to read, "Monitor the effectiveness of the Sequoia National Forest's Riparian and Wetlands Standards and Guidelines.

c. The quarterly project planning schedule shall include the allotment plans that are scheduled for renewal or amendment.

D. Allowable Sale Quantity

1. *Background*

a. Calculation of a sustainable, maximum Allowable Sales Quantity (ASQ) from a given land base requires that the Forest Service make a number of assumptions. These include assumptions about the intensity of future timber management, regeneration success, growth rates, funding levels, probable environmental impacts, and probable success of mitigation measures.

b. The Sequoia National Forest believes that the assumptions used in developing the Sequoia's yield tables and in calculating the ASQ agreed to below are reasonable ones and are conservative.

c. The conservation group appellants, however, are concerned that many of the assumptions are unproven and may be overly optimistic. In their opinion the calculated ASQ may not be

sustainable from the Plan's timber land base, and it may have to be reduced based on actual experience. The timber industry, on the other hand, considers the productive capability of the Forest to be at least twice the ASQ agreed to below.

d. All parties recognize that the assumptions used in calculating the ASQ must be examined in light of actual experience as the Plan is implemented to determine whether the ASQ is appropriate and sustainable. This question will be addressed in the Forest's annual reports and five-year Land Management Plan review. (See Section W.)

e. The ASQ calculations referred to below assume that herbicides and other forms of brush control will be used on the Forest pursuant to Regional authorization. Nothing in this Agreement implies any party's consent that use of herbicides is appropriate or waives any party's right to challenge herbicide use in the Region.

2. *ASQ.* The ASQ under the Plan for the decade beginning in 1990 shall be 750 million board feet ("MMBF") from the suitable (regulated) land base (green and salvage volumes), subject to 16 U.S.C. § 1611. The Forest may also sell during the decade 50

MMBF of unregulated salvage and other unregulated volume. Any logging of unregulated lands shall be solely for the purpose of achieving a specified wildlife, recreation, fishery, sensitive plant, or research objective; salvage; or restoration in case of a catastrophic occurrence.

3. *Short Fall in Timber Sale Program in FY 1988 and 1989.* The parties acknowledge that administrative appeals and litigation have significantly reduced the Sequoia's timber sale program during fiscal years 1988 and 1989. As a result, the two principal purchasers of timber on the Sequoia National Forest, Sierra Forest Products and Sequoia Forest Industries, represent that they currently have record low volumes under contract on the Sequoia National Forest. The shortfall in volume between the volume scheduled in the FLMP and actual volume sold in fiscal years 1988 and 1989 may be made up, if feasible, over the life of the Plan; however, any make-up volume for FY 1988 and 1989 shall be from the salvage of dead and dying trees.

4. *Existing Timber Sales Under Contract.* As of the date of the signing of this Agreement, the parties agree that any green timber sale under contract on the Sequoia National Forest shall not be subject to further challenge by any party, provided, however, that the Sequoia National Forest shall

continue to enforce the terms of all timber sale contracts. the Forest and Sierra Forest Products agree to suspend logging and related activities in units 12, 32, 33, 34, and 39 of the Scraps timber sale. (These units are within 1.5 miles of the center of a Spotted Owl Habitat Area.) The suspension shall last until the Forest has, with respect to the identified units, complied with the requirements of section D.5.b(2).

5. *Interim Timber Sale Program*. The sales listed below do not necessarily meet all of the requirements of this Agreement. Nevertheless, the parties agree that these sales may go forward, without further challenge by any party, provided that the terms and conditions set forth in a. and b. below are adhered to. The parties reached this agreement concerning the designated timber sales in a spirit of cooperation: their intent is to facilitate the Forest's orderly implementation of this Agreement while, in the interim, minimizing disruption of the local timber supply. Their intent is also to address, in an expeditious manner, important environmental concerns (particularly spotted owls and watershed conditions) that were raised in connection with the listed sales.

EA's Drafted or Issued & Subject to Appeal (FY 89-90)

District	Sale	Volume	WS > 80%	Aff. Vol.	Net Vol.
HL	Lightning*	2.0			2.0
HL	Dorsey	2.2	1		2.2
HL	Buck Rock	3.5			3.5
TR	Mountaineer	3.0			3.0
TR	Jerkey	4.5			4.5
HS	Vincent	6.0	1	.485	5.5
HS	Ranger 13%	1.7	2	.03	1.67
GH	Liebel 14%	8.5	4	.95	7.5
CM	Paloma*	5.4	1	1.07	4.3
CM	Casa-Guard	18.7	4	7.5	11.2
	Total	55.5		10.14	45.38

EA's Yet to be Drafted (FY 90)

HL	Rabbit	2.0
HL	Hyde	1.0
GH	Flat*	5.1

Total Potential Volume	**69.0**	**Total Volume Released Unconditionally**	**51.68**

* Designates FY 89 Carryover Sales

a. *Watershed Review.*

(1) For each timber sale listed above which contains units within a subwatershed above 80% of the threshold of concern, harvesting of those units shall be deferred until the Forest conducts a site specific field inspection to verify the pre-

project Cumulative Watershed Evaluation ("CWE") calculation for each watershed and to verify that the proposed project will generate the projected Equivalent Roaded Areas ("ERAs") that have been identified.

(2) The review referenced in section D.5.a(1) above will be conducted by Forest Service personnel within 60 days of the signing of this Agreement. Both the timber industry and conservation appellants will have the opportunity to designate one individual to observe the review of the field verification work. However, the Sequoia will set and manage the schedule to meet the deadline. The purpose of the review is to insure that adequate measures have been prescribed for these units for control of erosion and sedimentation, and to determine whether mitigation should be modified, or whether units should be modified or omitted, in order to protect soil and water resources.

(3) A minimum of two professionals (earth scientists or hydrologists) will field review all units in each of the affected watersheds. For each unit, the reviewer will determine one or more new Erosion Hazard Ratings

("EHR") as necessary for proper site evaluation, taking into consideration variations in slope, aspect, vegetative cover, etc. The EHR will be compared to the disturbance coefficient rating used for the CWE analysis. If the projected disturbance levels are different, a new CWE will be formulated.

(4) On sites demonstrating a high EHR, the professionals will review the mitigation listed in the Environmental Assessment ("EA") to determine if it is adequate to mitigate the concerns identified and their own professional concerns based on field review. If the mitigation is not adequate, the professionals may propose additional mitigation, modification of units, or elimination of units as necessary to address such concerns. Logging and/or roadbuilding shall not be allowed where it would cause impacts to exceed the Threshold of Concern.

(5) All proposed mitigation must be financed and completed as part of the proposed project. Unfunded WINI proposals will not constitute acceptable mitigation.

(6) Post-project monitoring will be conducted in accordance with the Sierra National Forest monitoring plan. Monitoring will be conducted both to ascertain if mitigation was implemented and to evaluate its effectiveness.

(7) Units which are (1) not subject to the watershed review requirements of sub-paragraph a., and (2) not subject to re-evaluation concerning spotted owls (see section b below), may be released for timber harvesting.

b. *Spotted Owl Review.*

(1) For the sales listed above, the Forest shall identify timber sale units within 1.5 miles of the center of a SOHA (an "adjacent SOHA" for the purposes of this Agreement). The Forest shall allow no harvesting of such units (the "affected units") until the spotted owl review provisions of this subsection b. have been completed.

(2) Affected units shall be reviewed as follows:

(a) Unless the Forest has already determined such occupancy status during the last five years, the Forest

shall conduct field work to determine occupancy status of each adjacent SOHA, (including attempting to locate any owl pairs, and a pair's nest site or major roosting site(s).

(b) The Forest shall review for compliance with Regional protocols the pre-project survey methods and analyses that were used for network and non-network owls. Any pre-project survey not in compliance shall be brought into compliance.

(c) The spotted owl biological evaluation will be brought into compliance with the requirements of section E.2.b.(2) and (3) of this Agreement.

(d) If after following the procedures set forth above, the Forest determines that there are no spotted owl pairs in the timber sale area or in the adjacent SOHA(s), it may proceed with the sale as planned unless the requirements of section E.2.b(3)(f) apply.

(e) If after following the procedures set forth above, the

Forest finds a spotted owl pair in the affected units, but not in the adjacent SOHA, the Forest shall conduct a field review to reassess the best 1000 acres of core and 650 acres of replacement habitat and to determine if the Forest should recommend adjusting the SOHA boundary to include the owl pair. If the Forest recommends a change, it shall protect both the original SOHA and the proposed SOHA pending a Regional decision.

c. With respect to the Casa Guard timber sale, the timber industry agrees to assist the Forest Service in addressing the erosion problem at Rodeo Flat and to repair water bars and side drains within the Fish Creek drainage.

d. The parties agree not to challenge the Flat, Rabbit, and Hyde timber sales, provided the following conditions are met: these sales shall be subject to the Interim Timber Sale Program Watershed and Spotted Owl requirements in section D.5.a. and b., and shall otherwise meet all requirements of this Agreement, except CWE (section N), spotted owls (section E.2.b.) and the EAs (section P). As to the EAs, the Forest shall complete the EAs in conformity

with Forest Service regulations and procedures, and shall make every reasonable effort to comply with section P below, consistent with the objective of completing the EAs for inclusion of the timber sales in the 1990 sales program. The Flat Timber Sale shall also comply with legal requirements for protection of the Mariposa Lily (per the Species Management Guide). Before issuance of the EAs for any of these sales, a representative of the conservation appellants will meet with Ken Fisk or the appropriate District Ranger to attempt in good faith to work out any problems. For the conservation appellants, the representatives will be, for Flat, Brett Matzke; for Rabbit and Hyde, John Rasmussen.

6. *Timber Industry Fund.* Beginning with FY 90, the timber industry agrees to pay $1 per thousand board feet for volume harvested into a fund that will be managed by the companies to finance watershed improvement, reforestation or recreation related projects which benefit the Sequoia National Forest. For each year, the fund shall be contributed within 30 days after the end of the calendar year based upon the actual volume of timber harvested (net scale) during the prior year.

7. The Regional Forester agrees to expedite and decide all remaining pending administrative appeals involving Sequoia National Forest timber

sales within 30 days of the date of the signing of this Agreement, or 30 days after the administrative record in the particular appeal is closed, whichever occurs later. The Regional Forester further agrees to petition the Chief or the Secretary of Agriculture to conclude any subsequent review by their own offices as rapidly as possible.

E. Old Growth, Wildlife Species, and Fisheries

1. *Background.*

   a. The Sequoia National Forest manages for old growth values in Spotted Owl Habitat Areas, riparian zones, wilderness areas, giant sequoia groves and significant portions of other areas as required for wildlife and visual values.

   b. In May 1990, the parties reviewed the Sequoia National Forest's spotted owl network and practices for compliance with Regional direction. The provisions of section 2.b. below embody the conclusions of that review.

2. *Spotted Owl Habitat Areas (SOHA)*

   a. The Sequoia NF shall review the SOHAs on the Forest. The objectives of the review will be to utilize giant sequoia groves and other unregulated areas in the Spotted Owl Network, if doing so

will maintain or improve the quality of the habitat in the network while lessening the impact of the network on the suitable land base. As part of the SOHA review, the Sequoia National Forest will consult with the Department of Fish and Game. Any changes in SOHA areas will be subject to current guidelines for habitat, distribution, occupancy, and other relevant criteria. SOHA network changes under this item will require Regional Office approval and public review.

b. *Biological Evaluations for Spotted Owls.*

(1) *Background:* The parties agree that it is important to verify an existing SOHA before any timber harvest occurs within a 1.5 mile radius from the center of the SOHA. (The 1.5 mile distance was originally adopted by the Sequoia for purposes of analysis). Verification means determining owl habitat types and quantities and owl use. For practical purposes, owl use is determined by identification of owl pairs or location of either a nest site or major roost site.

(2) For all timber sales, pre-project surveys for non-network owls must be done according to Regional protocols and documented in a biological evaluation ("BE").

(3) When any portion of a timber sale is located within 1.5 miles from the center of a SOHA (an "adjacent SOHA" for purposes of this Agreement), the spotted owl BE for the sale must include:

(a) Types and amounts of habitat available within the adjacent SOHA(s);

(b) Discussion of the results of spotted owl survey, inventory, and monitoring work done in each adjacent SOHA during the previous five years;

(c) Discussion of all other spotted owl survey, inventory, and monitoring work (including surveys for non-network owls) performed in connection with the sale.

(d) Discussion of the occupancy status of adjacent SOHA(s). Where occupancy of an adjacent SOHA has not been determined, the Forest shall conduct field work to determine occupancy. A survey for occupancy shall include attempting to locate during

the breeding season any pairs of spotted owls in the SOHA, and either the pair nest site, or major roosting site(s).

(e) Clear statements of conclusions drawn from (a)-(d).

(f) Consideration of any SOHA adjustments that might be appropriate to better incorporate known spotted owl sighting locations and suitable habitat outside the SOHA.

i) Where the Forest has been unable to verify pair occupancy in a SOHA within the last 5 years (1986-1980), and is unable to verify owl pair occupancy during two successive years either within the SOHA or within a 1.5 mile radius from the center of the SOHA, then the Forest shall review the SOHA location for the purpose of determining an alternate more effective location.

ii) The BE must be completed before preparation

of the timber sale decision document. Any recommended changes in SOHA boundaries will be forwarded to the Region. Pending Regional action on such recommendation, no logging or roading will occur that is inconsistent with the original or the proposed SOHA boundaries.

(4) All SOHA assessments, reassessments, adjustments, and readjustments shall occur independent of and without reference to timber sale boundaries.

(5) The Forest shall fully document all spotted owl determinations.

3. *Furbearers*

a. The Sequoia National Forest will manage habitats and activities for threatened and endangered species to achieve recovery objectives, and for sensitive species, to insure that they do not become threatened or endangered because of Forest Service actions (as specified in FSM 2670).

b. Sierra Nevada red fox, pine marten and fisher will be managed as sensitive species. Region 5 of the U. S. Forest Service is developing Regional guidelines and directives for furbearer management. In FY 1990 and 1991, the Forest will identify critical habitat for these species in accordance with Region 5 Draft 1989 Guidelines for furbearer, or amendment thereto, and provide interim protection of this habitat. The Forest will use biological evaluations when surveys or historical observations indicate the presence of furbearers within a proposed project area, or when the proposed project may have a potential effect on the species or their critical habitats. Biological evaluations shall be based on surveys of the project area and shall evaluate habitats within the project area in the context of the distribution of the species within the Forest. Preference, when consistent with Regional guidelines, will be afforded to the fisher in its range from 4,000 to 8,000 feet in elevation and to the marten between 8,000 and 13,000 feet in elevation.

c. The Forest Plan shall be amended to incorporate management practices, and critical and other habitats, essential to the conservation of these species after the Region finalizes the appropriate guidelines and directions. The Forest agrees to

proceed rapidly with any such Plan amendment and to publish the proposed Plan amendment within one year of the Region's final guidelines for any of the specified species.

d. The Forest acknowledges the need to determine the distribution, status and trend of these species and their habitats within the Forest for biological evaluations, interim management, and the Forest Plan amendment. The Forest will request adequate funding through the annual budgeting process to accomplish this in an expeditious manner. The Forest will negotiate with the Region to locate funds if possible for the 1990 field season to commence a systematic, intensive track plate survey of the Forest. In any event, the Region shall provide funds necessary to conduct the survey by the end of the 1991 field season. (Track plate survey will be used unless the Forest Service determines in consultation with Dr. Reg Barrett that another survey method would provide better data.) The track plate survey should include as many other species as practicable. The Forest Service will consult/confer with Dr. Reg Barrett of U. C. Berkeley in designing this survey.

e. Exhibit H identifies certain closed canopy (>40%) mature or old growth stands which may meet some of the habitat requirements

for furbearers or may have the potential of being identified as critical furbearer habitat. Until the furbearer habitat network is established, biological evaluations will be used to determine the potential effects on furbearers and the establishment/maintenance of their critical habitation and viable populations where project proposals impact the above identified areas. Where projects are proposed impacting old growth stands in Exhibit H, disclosure in the EA/EIS will show analysis of such impacts on maintaining adequate old growth resources and need to maintain these areas for furbearer habitat. The Forest Service shall consult with the Department of Fish and Game to determine whether these stands should be protected as a means of meeting the habitat/seral stage diversity requirements.

4. *Bald Eagles*

The Plan will be amended to include the following standard: Protect important roost trees and feeding areas for wintering bald eagles in the vicinity of Pine Flat Reservoir and along the Kern River.

5. *Goshawks*

The Plan will be amended to include the following standard: Protect all active goshawk nests until an approved Sequoia National Forest Goshawk

Network is established. The Forest will submit a proposed network to Region 5 by January 1, 1991 for approval. Nest protection will include 125 acres of habitat having a restricted operating season from April 1 to August 1 and will include 50 acres of undisturbed suitable habitat surrounding each active nest site. Each project area will be examined for active goshawk nests with the results reported in the environmental document for that project.

6. *Condors*. The Condor Recovery Plan is currently being revised. The following requirements shall apply until such time as the revised Condor Recovery Plan is implemented.

a. *Suitability Criteria for Evaluating Nesting Sites*

(1) All previously inventoried Giant Sequoia trees with cavities identified as suitable for use by a California condor shall be designated potential condor nesting sites. All newly discovered Giant Sequoia trees with cavities having a potential for condor nesting shall also be designated potential condor nesting sites.

(2) Until a determination is made that these potential condor nesting sites are unsuitable for use by California condors, management shall be governed by subsection b. below.

(3) Determination of cavity suitability shall be based on the criteria, found in the May 4, 1984 Memorandum by K. Jiminez-Anderson (USDA, Sequoia National Forest) entitled "Surveying Sequoia gigantea Groves for Condor Nests and Roosting Trees," with the following exceptions: the following criteria, described in the aforementioned memorandum, shall NOT be considered in determining cavity suitability (a) "perches available for young and adults to utilize while hopping in and out of nest," and (b) "fairly easy approach from the air, and space below for taking off."

b. *Management of Potential Nesting Habitat*

(1) No clearcutting shall occur within 1/2 miles of a potential condor nesting site.

(2) Construction of new permanent roads and trails for public use within 1/2 mile of any potential condor nesting site is prohibited. The spacing of temporary roads and landings shall not be any closer than three-eighths of a mile. The intent of this provision is to maintain the general forest

canopy surrounding potential nest sites so that condors will feel "safe" entering and leaving the nesting area.

(3) When California condors are released and are capable of nesting (approximately five years after release), the Sequoia National Forest in consultation with the Condor Recovery Team shall prepare and implement a road and trail closure plan. The Forest and Condor Recovery Team shall follow the standards and guidelines outlined in the sub-paragraphs (a) - (d) below in preparing this plan.

(a) All roads (except roads currently paved and those named in (d) below) and trails within .5 miles of a potential nesting site shall be closed to all use, and those within 1.5 miles shall be closed to motorized use, from January 1 through June 30 each year. This closure may be lifted after April 30 each year if the Sequoia National Foreset in consultation with the Condor Recovery Team has completed field observations, after April 15, and has concluded that condors are not actively nesting in the affected potential nesting area. The sole limited exception to

this closure shall be for Forest Service vehicles conducting administrative business that could not be postponed until after the closure season. Logging-related uses and recreation uses are specifically excluded during this closure period.

(b) If the Forest Service determines that condors are nesting in the area, roads and trails within 1.5 miles of the nesting sites shall be closed for the balance of that calendar year.

(c) Notwithstanding sub-paragraph (a) above, the following may remain open:

i) Road 21S05, for recreational use, with a seasonal restriction on the operation of heavy equipment.

ii) Road 21S94 from Camp Nelson to the gate at the Tule River Indian Reservation.

iii) McIntyre Summer Home Tract

iv) Belknap Campground

v) Redwood Meadow Campground

vi) Trail of One Hundred Giants

vii) Long Meadow Campground

viii) 23S05 White River Road

ix) Quaking Aspen Campground

x) Holey Meadow Campground

xi) If additional potential nest sites are discovered, the Forest Service in conjunction with the Condor Recovery Team shall determine if additional campgrounds, road, or other public uses may remain open.

c. *Management of Active Nesting Habitat*

Perennial and intermittent streams upstream and within 1.5 miles of an active nesting site shall not be drafted as a source of water for dust abatement, prescribed burning, broadcast burning, or any other purpose (except to fight wildfires) during the calendar year in which a nest is active.

d. *Management of Roosting Habitat*

(1) The roost sites identified in the Sequoia National Forest shall remain outside the suitable land base, and shall be designated Wildlife Habitat Management Areas.

(2) When California condors are released, the Forest Service, in consultation with the Condor Recovery Team, shall prepare and implement a road and trails closure plan. Additionally, all roads (except currently paved roads) and trails within 1/2 miles of the roost sites shall be closed to all public use.

7. *Fisheries*

a. Amend Plan, Table 4.2 on p. 4-14, under Direct Habitat Improvement, Resident Fish (Miles of Streams), Decade one--Change from 3 [miles] to 5 [miles] of the streams in need of repair

or enhancement with available access.

b. Amend Standards and Guidelines for Fish, Wildlife and Plant Habitat Coordination, Plan at 4-28, as follows:

> Restore and enhance fisheries habitat through implementation of "Rise to the Future" (an action plan for the National Forest fisheries program). Continue to identify via stream surveys all streams that are in need of fish habitat repair or enhancement and have the present use and access to justify such work, presently estimated as at least 50 miles of streams on the Forest. Complete repair or enhancement work on such streams at a rate of 10% per year so as to accomplish inventoried work within a decade, as prioritized by WINI.

c. Amend Plan Goals on p. 4-3 to add: Promote recreational opportunities by striving to increase fisheries biomass by 20% via habitat improvement projects.

d. Amend Plan Standards and Guidelines on p. 4-28 to add:

(1) Portions of Section 30 of the Slate Mountain roadless area will be removed from the suitable land base and managed to protect habitat of the Kern River Rainbow Trout.

(2) A Riparian Demonstration Area will be developed for the critical habitat for the Little Kern Golden Trout.

(3) Rainbow trout population surveys will be done in connection with stream channel surveys to comply with Forest Service guidelines for monitoring population trends of management indicator species.

(4) Base line data will be generated using stream surveys, Region 5 Fish Assessment model, and identification of beneficial uses of water in CWE analysis.

F. Suitable Lands

1. ***Background.*** The parties recognize that the Forest Service has a duty under the NFMA, 16 U.S.C. §§ 1604(k), to review the suitability of forest lands (including roadless areas) for timber production every ten years, and that the review could trigger a Plan amendment affecting land allocations.

2. The Plan shall be amended to provide: As the Sequoia NF implements the Plan, it shall identify on an on-going, site specific basis, all lands not suitable for timber harvesting due to regeneration problems, erosion or soil problems, isolation, rocky terrain, or any other reason. The soils inventory shall be consulted in this process. Suitability shall be specifically addressed in each timber sale environmental document.

3. The Plan shall be amended to remove from the suitable land base the following: Giant Sequoia Groves (except portions of Converse Basin), oak woodlands, unregulated portions of stream-side management zones, semi-primitive, non-motorized areas, and other areas so designated in this Agreement. A list of all forested land that will be excluded from the suitable timber land base under the Plan as amended in accordance with this Agreement is attached as Ex. H.

4. *Reforestation Data Review*. The Sequoia National Forest has awarded contracts for the collection of reforestation data. The data collection is expected to be completed by 12/31/90. The data gathered shall be public information. The reforestation data gathered pursuant to the contracts shall be subject to challenge as follows:

a. Any party may challenge the accuracy of any site specific

determination if the challenge is accompanied by a statement of a Registered Professional Forester ("RPF") setting forth the basis of the challenge. The Sequoia National Forest shall make a written determination regarding the specific site and shall make that determination public.

b. Any party may challenge any standard field procedure by presenting a written statement supported by a statement of an RPF setting forth the basis of the challenge. The Sequoia National Forest shall make a written determination regarding the challenged standard field procedure and shall make that determination public.

c. Nothing in this section shall limit or impair a party's ability to raise questions concerning reforestation or the accuracy of reforestation data in connection with an administrative appeal of a specific project decision and/or project NEPA document.

5. *Reforestation Report*. Within 6 months of completion of data collection, the Sequoia NF shall prepare a reforestation report. The report shall be made public pursuant to the Public Information and Report section below. The report shall include the following:

a. Description and map of areas of past reforestation efforts, including current stocking levels.

b. Statement regarding conclusions based on data; e.g., whether certain land characteristics lead to greater reforestation difficulty.

c. Determination of whether there is need to change the suitable land base.

6. *Interim*: The results of the most current surveys and examinations of nearby plantations within the planning area (at least first and third year stocking exams); e.g., the compartment or group of compartments under study, shall be set forth and discussed in the environmental documentation for the relevant timber sale.

G. Roadless Areas

1. The Plan shall be amended to incorporate all of the land use allocations and management direction set forth in this section.

2. *Hume Lake District*

Agnew Roadless Area west of Lightning Creek will be classified as unregulated. No road building or logging will occur. The area will be

managed for giant sequoias, watershed, wildlife, and roadless recreation.

3. *Tule River Ranger District*

a. Moses Roadless Area. The Regional Forester shall recommend that the mapped portions of the Moses Roadless Area (see Exhibit K) be included in the Wilderness System as provided under the Wilderness Act of 1964. Pending final disposition by the executive and/or legislative branches, the mapped portions of the Moses Roadless Area shall be removed from the available timber land base and the area will be managed to preserve its wilderness character.

b. Slate Mountain Roadless Area will be divided into regulated and unregulated areas as shown on Exhibit J. Except for possible logging and road building incidental to the proposed development of the Peppermint Mountain Resort (to be analyzed in an appropriate NEPA document), no commercial logging or timber harvest roads will be allowed in the unregulated area.[1/] Portions of Section 30 will be managed to protect habitat of the Kern River Rainbow Trout. The Coy drainage will be managed to protect the

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1. This exception does not in any way signify that the parties to this Agreement believe that the Peppermint Mountain Resort should be approved and built.

Camp Nelson viewshed and, together with the Rogers Camp saddle, to provide old growth habitat linkage between Slate Mountain and Black Mountain. Logging of the regulated area will be limited to Reg. II sanitation, single tree selection by helicopter, except that a portion will be limited to Reg. III management as shown on Exhibit J, with no roads or landings within the roadless area.

c. Black Mountain Roadless Area will be classified as unregulated. No road building or logging will occur. The Area will be managed for giant sequoias, watershed, wildlife (deer mitigation corridor, old-growth species), roadless recreation, and sugar pine gene resources.

d. Dennison Roadless Area will be classified as unregulated. It will retain its current Plan designated as a Semi-Primitive, Non-Motorized Area.

4. *Hot Springs Ranger District*

Lion Ridge Roadless Area will be divided into regulated and unregulated areas as shown on Exhibit J. No road building or logging will be allowed in the unregulated area. Logging in section 35 and the northwest corner

of section 36 will be limited to Reg. II sanitation, single tree selection by helicopter, with no roads or landings in this area. The unregulated lands will be managed for watershed, wildlife, (old-growth species and condor), and recreation.

5. *Cannell Meadow Ranger District*

a. Woodpecker Roadless Area will be classified as unregulated. It will retain its current Plan designation of Semi-Primitive, Non-Motorized. (See also Off Highway Vehicles, section L below.)

b. South Sierra Roadless Area will be classified as unregulated and managed as Semi-Primitive, Non-Motorized.

c. Rincon Roadless Area. Dispersed recreation and habitat protection for Golden Trout will be emphasized in a corridor along Durwood Creek. The corridor will be 300 feet each side of the Creek as measured from the highwater mark, and it will be unregulated. The remainder of Rincon roadless area will be classified CF7. Timber will be managed by uneven-aged management (group and single tree selection).

6. Other Roadless Areas not mentioned herein will be managed pursuant to

the 1988 LMP.

7. *EIS*. Before any roadless area is entered for the first time, the Forest will undertake public scoping to help determine the degree of interest in a proposed "first entry" project in a roadless area. If the project may cause significant adverse environmental impact, a project level Environmental Impact Statement (EIS) will be prepared. A "first entry" into an area involves ground-disturbing activities (e.g., a new road, timber sale or watershed improvement) in an area which has been heretofore roadless. A proposal to rehabilitate something already existing in the roadless area (e.g., rebuild an existing trail or reconstruct a range improvement) will not be considered a "first entry."

The EIS shall include but not be limited to:

a. Inventories and/or information on water quality; fish habitat; wildlife habitat; endangered, threatened, sensitive or rare plant, fish and wildlife species; management indicator species; soils; and erosion hazard ratings.

b. Inventory of meadows and riparian areas.

c. Inventory of timber types, using standard conventions. With respect to old growth stands considered for harvest, species mix and understory will be identified; this information will also be documented on stand record cards, using standard stand record card conventions.

d. Discussion of all reasonably foreseeable activities within the entire roadless area for the next decade and their cumulative effects.

e. Evaluation of the use of uneven-aged management.

8. An EIS will be done for first entry into the Rincon, Slate, and Lion Roadless Areas. For purposes of this Agreement, the Peppermint Mountain Resort FEIS is not considered a first entry EIS. However, within the proposed Peppermint Study Area, it is recognized as the basis for further study and NEPA process if development of that project proceeds.

9. NEPA documents on the following roadless areas shall include a discussion giving special attention to the stated concerns:

a. Cannell roadless area: site productivity, reforestation, erosion

hazard.

b. Staff roadless area: rainfall and reforestation.

H. Special Areas

The Plan shall be amended to assure management of particular areas as stated below.

1. *The trail from Cannell Cabin to Kern River* shall be designated as visual Sensitivity Level 1, with foreground Retention VQO.

2. *Salmon Creek Trail from Horse Meadow Camp to Salmon Falls* shall be designated as visual Sensitivity Level 1, with foreground Retention VQO. The Salmon Creek watershed and the area around Big Meadow shall be managed as Partial Retention to protect visual and recreational values. Timber management shall be uneven-aged only. (See Exhibit K.)

3. *Big Meadows area on the Hume Lake District* (as shown on a map attached as Exhibit M): the Forest Plan shall be amended to change the land use designation from CF 7 to CF 1. The management emphasis shall be dispersed recreation. Timber will be harvested on a Regulation Class II basis, with careful attention to protecting visual values.

Uneven-aged and even-aged silvicultural prescriptions shall be used as appropriate; however, there will be no clearcutting other than regeneration mosaic cutting. Future VQO's from roads and trails shall be Retention or Partial Retention. All Trails entering the Jennie Lakes Wilderness shall be Sensitivity Level 1 and shall have a Foreground Retention VQO.

4. *The Freeman Creek Area*. See Section B.2.c.(2)(j)(iv) above.

5. *The California Riding and Hiking Trail* shall be addressed, and appropriate visual protection shall be determined, in the forthcoming Trail Plan.

6. *Fish Creek*: Watershed restoration needs will be considered as an integral part of all project level planning within area shown on map in Exhibit M. The Sequoia National Forest is sensitive to watershed restoration needs in Fish Creek and is currently doing a WINI Survey and Fish Habitat needs survey. This is one of the priority watersheds on the Forest for evaluation and restoration. All projects proposed for this area are subject to the NEPA process, and a site-specific analysis must precede any project plan. The Fish Creek Watershed restoration project was started in 1989. Restoration efforts will continue throughout calendar year 1990,

with rehabilitation work to be focused on private land and a reduction of live stock use. The Forest Service will furnish a plan scheduling the balance of restoration work by December 31, 1990.

7. *Breckenridge*: The SOHAS and Condor roosting habitat will be protected. Project proposals for this area will be analyzed on a site-specific basis and will follow the NEPA process.

8. *Basket Peak*: The condor roosting area as covered in the existing Plan will be protected.

9. *Converse Basin Giant Sequoia Grove*: See section B.2.e.(2).

10. *Lion and Blue Ridges.* Condor roosting sites will be protected.

11. *Taylor Creek.* The Forest Service has developed a watershed restoration plan for Taylor Creek. Funds to implement the project have been requested.

12. *Fay and Caldwell Creeks.* The Forest is sensitive to watershed conditions in Fay and Caldwell Creeks. Following the Fay fire, various activities to help protect the watershed were implemented. A validation of the

effectiveness of the activities and a survey of other watershed improvement needs will be undertaken. This will be scheduled for completion prior to the midpoint of the Plan period.

13. *Rancheria Road.* The southern portion of the Western Divide Highway, known as the Rancheria Road (from the Kern/Tulare County line south to the Kern Canyon) will be managed under a foreground partial retention visual quality objective.

I. Timber Management

1. Proposed revised forest-wide Standards and Guidelines at FLMP pages 4-31 to 4-33 are displayed in Exhibit N.

a. ASQ 75 MMBF

b. 53% Regulation Class I
44% Regulation Class II
3% Regulation Class III

c. Average Rotation 145+

d. *Harvest Methods*. At the project level, harvest methods used to

implement the Plan will be prescribed based on site specific analysis. The Forplan model projects that the mix of harvest methods used (expressed as annual averages over a decade) will be as follows:

Clearcut[2/]	600 Acres	13.5 MMBF
Shelterwood	1,308 Acres	31.4 MMBF
Group Selection	868 Acres	28.5 MMBF
Intermediate		1.4 MMBF
		75.0 MMBF

However, due to recent direction from the Regional Forester, the Sequoia National Forest intends to implement New Forestry and New Perspectives (see Ex. Q) as soon as possible. The Tule River Ranger District has just been designated by the Regional Forester as a New Forestry/New Perspectives pilot district for Region 5, and training commenced in June 1990. The Forest intends to experiment with New Forestry silviculture on other districts as well while the pilot project proceeds. When New Forestry is better defined based upon the pilot project and other experience and

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2. Clearcutting shall be done as regeneration mosaic cutting wherever possible.

research, the Forest Plan may be amended, after NEPA review, to incorporate new direction about implementing New Forestry practices.

The Forest expects that implementation of New Forestry concepts will reduce clearcutting below the level projected by Forplan. The Forest will monitor and report annually in the Annual Report on the mix of cutting methods actually prescribed. Since New Forestry cutting methods do not match any of the classical silvicultural categories, they will be monitored and reported separately. If a significant discrepancy should develop between projected and actual cutting methods, the Forest Supervisor shall determine whether the Plan should be amended.

2. *Steep Slopes*: The Plan shall be amended to allow only Regulation Class II single tree selection via helicopter timber harvesting on slopes greater than 60 percent on granitic soils. The guideline on Harvest Systems (Plan at 4-32) shall be amended to provide that aerial systems will be used where slopes exceed 35 percent unless the Sequoia National Forest makes specific findings, based on environmental documentation, that an alternative is preferable. The parties recognize that some incidental timber harvesting may occur, due to the irregularity of terrain, on small

areas having slopes greater than 60 percent.

3. *Harvest Location*: The first guideline under this heading on page 4-32 of the Plan shall be amended to provide that a mix of understocked and better stocked stands will be harvested. The Sequoia National Forest will emphasize harvest and restocking of understocked stands to the extent feasible. In determining what activities should occur on understocked stands, the full range of multiple use values shall be considered.

4. *True Fir Management*: The Plan shall be amended to add the following Management Direction: During this Plan period the Forest will test the true fir cutting and regeneration practices described in a document entitled "The Development of a Policy and Guidelines for the Management of True Fir Forest Cover on the Sequoia National Forest" (1983). These sales will be closely monitored to determine if true fir regeneration is successful. When the Plan undergoes its five-year review, the Forest will prepare a written evaluation of its true fir policies based upon this monitoring. The Forest Supervisor will make a decision whether amendment of the policies, continuation or cessation of true fir logging, or other action is appropriate. A similar written report, review, and management decision will be made after an additional five years. The true fir sales tentatively scheduled through 1995 are:

	Tule River	Hume Lake	Cannell Meadow	Hot Springs
90	Jerkey Mountaineer			Vincent
91	Red Helicopter	Echo Weaver	Fish Tri	
92	McIntyre Helicopter		Durrwood Scout	Tyler
93	Mahogany Tie Helicopter		Stoney-Schaeffer	
94	Crest		Danner Helicopter South Helicopter	
95	Bench		Bull Helicopter Burnt Helicopter Fault Helicopter	

5. *Sugar Pine*: The following guidelines will be incorporated into the plan.

a. The Forest recognizes the need to maintain healthy sugar pine and infected but surviving sugar pine in order to ensure the survival of rust resistent trees so that the potential for finding a rust resistent seed source will not be lost.

b. Silviculture prescriptions shall include consideration of means of

maintaining the widest possible base of sugar pine genes. Generally, this means protecting as wide a variety of sugar pine trees as possible consistent with meeting Land Management Plan objectives and being compatible with timber harvest and related activities.

c. Continue to plant a modest mix (5-10%) of sugar pine along with other mixed conifer species, even though major gene resistant stock is not now available. This may mean collecting seed from non-tested trees in order to maintain a sugar pine seedbank. With resistant stock, this percentage could be increased.

d. Intensify the effort to collect sample cones from candidate resistant trees. The Forest has financial support from Tree Improvement, and it is a high priority.

e. Continue to protect trees that are known to carry resistance. Collect seed from these trees for the Forest seedbank.

6. *Mixed Conifer Diversity*: The Plan shall be amended to prescribe that reforestation and TSI prescriptions will generally emulate existing species composition. Variation from this guideline will be the exception and will

be discussed in an environmental document. Commercial values will not be the sole justification for increasing the proportion of high value species.

7. *Silvicultural Systems*: This section of the Plan at 4-31 shall be amended to delete references to logging in streamside management zones and in giant sequoia groves. The remainder of this section of the Plan shall be amended as necessary to be consistent with this Agreement. The following shall be added to this section of the Plan:

a. Both even and uneven-aged silvicultural systems shall be evaluated and used as appropriate at a given site.

b. *Uneven-aged management*:

(1) Uneven-aged management shall be conducted as Regulation Class II, which corresponds to an average rotation age of 140 years.

(2) The U. S. Forest Service shall use its best professional expertise to assure the success of uneven-aged management where applied. It shall ensure that prescriptions do not result in highgrading of Forest stands, and it shall use its

best efforts to overcome difficulties of uneven-aged management (e.g., record keeping, minimizing damage to unlogged trees) that are identified in Appendix G of the EIS. The U. S. Forest Service shall invite foresters with experience and expertise in uneven-aged management, including Bob Heald of the University of California Experimental Forest at Blodgett, California, and/or other experts, to assist it in its efforts to develop harvest plans, to train personnel, and otherwise to accomplish its goal of successfully implementing uneven-aged management.

(3) Both natural and artificial regeneration shall be used, as appropriate.

c. *Clearcutting*:

(1) The Sequoia National Forest is taking steps to modify and reduce the impacts of clearcutting. Examples of such practices include regeneration mosaics (see Exhibit N Appendix 1). Clearcutting shall not exceed 600 acres per year as an annual average over a decade.

(2) *Determination to Clearcut*: Clearcutting as a regeneration

harvest tool shall be used only where (a) it is determined to be the optimum method to achieve management objectives on a site-specific basis; (b) the potential environmental, biological, aesthetic, engineering, and economic impacts on the advertised sale area have been assessed, as well as the consistency of the sale with the multiple use of the general area; (c) cuts are carried out in a manner consistent with the protection of soil, watershed, fish, wildlife, recreation, and aesthetic resources, and the regeneration of the timber resource, and (d) cut blocks, patches, or strips are shaped and blended to the extent practicable with the natural terrain. Clearcutting shall not be selected as a harvesting method primarily because it will give the greatest dollar return or the greatest unit output of timber.

(3) *Clearcutting Size Limits*.

(a) On cable ground, clearcuts shall be limited to a maximum size of 15 acres unless a site-specific analysis documents reasons for exceeding 15 acres and the action is approved by the Forest Supervisor. Where feasible, smaller openings shall be used.

(b) On tractor ground, no continuous opening shall exceed ten acres in size (even though the harvested area may exceed ten acres) without the approval of the Forest Supervisor with specific reasons stated in the decision document.

(c) Reasons for exceeding size limits are: responding to an insect or disease infestation; limitations of cable logging (i.e., need to reach a corner); salvage logging of fire-damaged trees; and limitations imposed by the existing road configuration. It is the intent of the U. S. Forest Service, however, to operate within the size limits wherever feasible and to exceed them only rarely.

(d) The size and opening limits shall not apply to timber sales that have decision notices prior to the effective date of the mediated agreement of the Plan. The U. S. Forest Service shall, in its discretion, decide whether to revise these sales to reduce the size of openings based on the following factors:

i) Visual sensitivity of the area.

ii) Cash loss to the U.S. Government.

iii) Unit and road engineering costs in making adjustments.

iv) Increases in road construction and operation costs.

v) Amount of disruption to the sales program.

vi) Silvicultural prescriptions.

(4) In clearcut units, healthy and vigorous advanced regeneration will be saved wherever feasible, including on cable-logged ground.

d. *Seed Tree Method*: Seed tree cutting is the harvesting of all trees in one cut, except for a small number of seed bearers left singly or in small groups, usually 5-10 per acre. Seed tree cutting will be subject to the same size limits as clearcutting.

J. Snags and Dead Material

1. *Snags.*

a. *Inventory*. Early in the sale planning process for each timber sale, the U. S. Forest Service shall inventory existing snags within the affected compartment. Inventory results shall be displayed in the

sale environmental document.

b. The Standards and Guidelines section of the FLMP shall be amended to include the following: Logging, thinning, and site preparation activities shall be conducted so as to assure that the following minimum guidelines are met or exceeded at all times. The Plan shall be amended to incorporate these guidelines.

(1) Achieve and maintain a minimum average of 1.5 hard snags per acre on commercial forest land and in each compartment.

(a) Hard snags shall meet or exceed the following size and density requirements:

Size (dbh)	Snags/100 Acres
≥ 24	50
≥ 15 <24	100

(b) In even-aged treatment areas, clumps or aggregations of mature trees averaging 4% to 6% of the treated sale area (exclusive of riparian zones) shall be left to

provide for snags, snag recruitment, and wildlife screening. These clumps shall be established in close coordination with a wildlife biologist and should range from 1/2 acre to 2 acres in size. They shall be marked as clearly as possible on stand record cards, as well as on the ground.

(2) Protect all existing soft snags except where they are a safety hazard. Where it is not possible to protect soft snags, equivalent numbers of green trees shall be left for additional snag recruitment, or wildlife clumps shall be increased in size as per recommendation of wildlife biologist.

(3) Wherever possible, snags being actively used shall be selected for retention.

c. *Snag-Deficient Lands*. In a compartment where the snag inventory reveals a deficiency of existing snags to meet the minimum standards for hard snags, the Sequoia National Forest shall take steps to assure that at least the minimum standards will be met as soon as possible. For timber sales, at least the project area will be brought up to current standards as part of project implementation.

Such steps may include girdling live trees, removing the tops of live trees to create snags, leaving cull trees standing, or other appropriate measures. Individual live or cull trees left for wildlife shall be designated prior to harvest or other management activities.

2. *Dead Material.*

   a. Retain approximately 132 cubic feet per acre of well-dispersed down logs. Ideal size of log is 20 inches in diameter and 20 feet in length.

   b. Retain all large decomposing logs where consistent with other management and protection objectives.

   c. Leave 10% of the area of each regeneration unit with untreated slash for wildlife habitat.

   d. Utilize management techniques which will minimize charring of downed woody material left for wildlife cover and habitat.

3. *Monitoring.* Timber sales and site preparation activities shall be monitored to assure that snag and dead material guidelines are met (see Section R).

K. Demonstration/Research Sales

The Sequoia National Forest shall, on an ongoing basis, identify timber sales or other projects, such as site preparation activities, which will be used to test and evaluate new approaches to management concerns. These projects shall be known as Demonstration Projects and shall be evaluated in the Annual Reports and five year plan review document. The Sequoia National Forest shall propose at least two such projects for discussion at each annual meeting of the parties (see Section U).

L. Off-Highway Vehicles (OHV)

1. *Background*

   a. The Sequoia National Forest maintains that it made sound management decisions regarding the designation of the Semi-Primitive Non-Motorized (SPNM) areas, considering all the variables involved. Some appellants disagree. This section of the Agreement attempts to resolve those differences.

   b. The Sequoia National Forest is continuing its efforts to complete the Sequoia Forest Trail Plan. This long term effort will establish the 10-15 year trail system for the Forest, the appropriate use and mix of trails (e.g., hiking, OHV, and equestrian), and necessary trail protection.

2. *SPNM Areas*. All interested parties and the Sequoia National Forest shall explore locations for alternate trails, primarily to accommodate OHV travel, in the Sirretta Peak and Dry Meadows/Long Valley areas.

a. Sirretta Peak.

(1) The following are specific objectives for the Sirretta Peak area:

(a) The Sirretta Peak trail shall not impact significantly the Twisselmann Botanical Area or adjacent sensitive areas, including areas to the north of Sirretta Pass, such as Sirretta Meadow.

(b) The Sirretta Peak trail shall provide a loop riding opportunity.

(c) The Sirretta Peak trail shall provide a positive riding experience by being within a conifer zone setting, to the extent possible.

(d) The Sirretta Peak trail shall be designed under the

trail standards as "most difficult" or close to the "most difficult" standard as a means of controlling the amount of use.

(e) To discourage inexperienced riders from using the Sirretta Peak trail, signs reflecting the difficulty of the trail shall be posted and the trail shall be as difficult as possible on either end. This is intended to prevent riders from starting on the trail before they realize that it is beyond their ability.

(f) Any new trail shall be designed to have a minimum impact on the designated SPNM area.

(g) All parties shall be given opportunities to assist in location, analysis, and design of any proposed trail during the environmental analysis of the new trail. Field review of possible locations shall take place during the 1990 field season, if possible.

(h) Over the long term, the U. S. Forest Service shall consider the separation of OHV use and the popular

equestrian/hiker camp areas near the north end of Big Meadows in pursuing opportunities to link a north--south OHV trail through the area.

(i) The State Green Sticker grant program will consider the rescoping of previously authorized projects on the Forest if the decision is made to construct a new loop trail in the vicinity of Sirretta Peak. Further, the Forest will consider this trail to be its top priority for Green Sticker funding.

(2) The following are constraints on actions to be taken in the Sirretta Peaks area:

(a) The Big Meadows area shall not be used as an OHV staging area for trail use up to the Sirretta Peak area.

(b) Due to the sensitivity of the area, trails in the vicinity of Sirretta Peak shall not be used for competitive events of any type. This constraint is the result of this mediation and should not be considered a precedent for other areas. Competitive events

considered appropriate in a National Forest setting will be directed to other more suitable areas of the Forest.

(c) An environmental analysis shall be done to ensure evaluation of important resources, with particular emphasis on effects on soils and vegetation.

(3) All parties agree to support the process of alternative trail investigation and analysis, and state that they believe there is a real possibility of finding an alternative trail location where impacts can be successfully mitigated.

(4) If necessary, the SPNM boundary shall be adjusted to accommodate motorized use on a new trail.

(5) "Compensation credit" shall be considered for closing of the existing Sirretta Peak trail to motorized use.

(6) Interim: The following shall govern use of the existing Sirretta Peak trail until such time as an alternative loop trail is analyzed and a final decision is made. IN the absence of

unforeseen circumstances, a decision will be made within two years of entry of this Agreement:

(a) OHV's shall be allowed to continue to utilize the trail over Sirretta to the Dome Land Wilderness boundary in Trout Creek. This shall entail an exception to full implementation of the SPNM standards as established in the Plan. Specifically, continued use of OHV's on this trail shall be allowed for the interim time period. All other aspects of the SPNM management in this vicinity shall be implemented.

(b) If the final decision is to build a new loop trail, interim use will continue on the Sirretta Peak trail by OHV's until the new trail is complete.

(c) If the final decision is not to build a new trail, the Sirretta Peak trail shall be closed to OHV use at the time that the final decision is made or final appeal or litigation is concluded.

(d) Use of the existing Sirretta Peak trail shall be

monitored jointly by the Sequoia National Forest, OHV users, horse users, and other interested groups. If any of the following are identified as problems, every effort shall be made to correct or mitigate the situation. (This effort shall occur over time, not as a one-time effort). If these efforts prove unsuccessful, the U. S. Forest Service shall consider closing the trail to OHV use.

i) OHV trespass into the Dome Land Wilderness.

ii) OHV use of the Machine Creek trail.

iii) Off-trail OHV damage to the Twisselmann Botanical Area or the meadow areas in Trout Creek.

iv) Switchback cutting on trails, particularly on the south slope of Sirretta, by OHV users.

(e) Damage by non-OHV users shall also be monitored and appropriate actions taken to correct problems.

(f) The OHV groups party to this Agreement shall

develop, place, and maintain signs urging user etiquette and responsiveness in this area. In addition, they shall distribute written information on proper use and expectations in the Sirretta area. This shall be coordinated with the Sequoia National Forest.

b. *Dry Meadow/Long Valley*

(1) *Background*. A previously recognized Sequoia National Forest system trail traverses the area north of Dry Meadows to the Forest boundary. This "trail" was dropped from the system in 1984, but continues to be used by recreationists. The objective discussed here relates to deciding if this or a realigned trail in the vicinity will be placed on the Forest trail system and what use will be allowed on that trail.

(2) *Objective*. Exploration of opportunities to establish a North--South route via the Forest Trail Management Plan.

(3) *Constraints*

(a) The proposed Long Canyon Research Natural Area (RNA) shall be protected from public use.

(b) An environmental analysis shall be completed to ensure evaluation of important resources, with particular emphasis on soils, wildlife and the RNA.

(4) If a trail that can accommodate OHV use can be located through the area, the SPNM boundary shall be adjusted accordingly.

(5) Unused or abandoned segments of the old "trail" in the area shall be restored to ensure and correct resource values.

(6) *Interim*: The following outlines use on the existing "trail" (formerly Forest Service trail 34E31 north of Dry Meadow) until such time as the Forest Trail Management Plan is completed and a determination made on the long term use of this facility, including rehabilitation needs if it is to be maintained as a Forest System trail:

(a) OHV's shall be allowed to continue to utilize the "trail" from Dry Meadow north to the Forest boundary. This shall entail an exception to full implementation of the SPNM standards as established

in the Forest Plan. Specifically, this exception shall continue use of OHV's on this "trail" for the interim period. All other aspects of SPNM management shall be implemented.

(b) Every effort will be made to ensure continued use of the "trail." These efforts shall include:

i) Removing down trees blocking the "trail" and causing users to "re-route" around obstacles.

ii) Installation of drainage structures in critical locations to reduce gullying and erosion.

iii) Barricading inappropriate "re-routes" and travel that cuts across switchbacks.

iv) Installation of signs stating that it is a "most difficult" level "trail."

c. *NEPA Requirements*. Both potential trail projects are located in roadless areas, thus raising the issue of NEPA documentation. At this time, the parties do not state whether either project shall require an EIS. NEPA requirements shall be followed, and the determination of the propriety of an EIS shall be made as issues

are identified, levels of actual and potential impacts are reviewed, and the level of controversy regarding actual alternatives becomes more clearly defined.

3. *Trail Plan Considerations*. Appellants raised some issues that are best resolved in the Trail Plan. The following issues shall be dealt with more fully in the Forest Trail Management Plan:

a. Issue: Imbalance of 4-wheel drive trails compared to trails available to other users. The 4-wheel drive parties seek assurance that the Sequoia National Forest will consider more miles of 4-wheel drive trails.

Resolution: The Forest Service recognizes the limited amount of 4-wheel drive trails available on the Forest and shall analyze opportunities to develop more 4-wheel drive trails in the Trail Plan to create a better balance among all users.

b. Issue: The Sequoia National Forest will not take "credit" for the amount of trails that are closed as they move from open riding areas to use of designated roads and trails only.

Resolution: In the development of the Trail Plan, the Sequoia National Forest shall inventory all trails and roads, both open and closed. As the level and types of use change (i.e., from open area use to designated routes only), an assessment of the "cumulative benefits" shall occur. "Cumulative benefits" are the overall benefits derived from the change. As inventoried or pre-existing trails or trail sections are closed, "compensation credit" shall be assigned. "Compensation credit" represents the net benefit or value gained from the closure. One action can provide credit for another action. The credits can be held in check until needed. The banking of credits, in and of itself, does not drive the Sequoia National Forest to seek additional opportunities. The goal is to keep track of gains and losses.

c. Issue: Collaboration and cooperation is necessary to designate new trails in areas of controversy or in areas where access is needed for trail uses other than the designated emphasis (e.g., a hiking trail in an OHV emphasis area, or vice versa).

Resolution: The best method for achieving this continued cooperation is by working through the Trail Plan as it develops. All users will be asked for continued involvement in the Trail Plan.

Cooperation is one of the methods the Sequoia National Forest is planning to stress as it makes decisions on acceptable trail use and location. Specific trail location in areas of controversy can be coordinated through district personnel as they prepare and analyze new trail locations in environmental analyses.

d. Issue: There will be a long term need for cooperation among various user groups in identifying trail uses and opportunities.

Resolution: This matter was raised in the scoping phase for the Trail Plan. This Agreement is made with the understanding that, in consideration of cooperation between the parties to locate OHV routes in some areas, similar cooperation will be forthcoming to locate hiker and equestrian trails in other parts of the Forest, especially along the Western Divide between Slate Mountain and Greenhorn Summit.

4. *Plan Revisions*. The Plan shall be amended as follows:

a. Prescriptions OW5, MC5, PS5, and CF5

(1) Under Dispersed Recreation, #1

Change from: Increase opportunities for increasing public enjoyment and benefits with emphasis on hiking, equestrian

use, fishing, hunting and viewing (Note: Slight wording differences exist in various prescriptions).

Change to: Increase opportunities for public enjoyment and benefits.

(2) Under Dispersed Recreation, #4

Change from: Manage OHV use by location and period of use based on wildlife needs (e.g., excluding OHV's from key areas during fawning and nesting).

Change to: Manage recreation activities by location and period of use based on wildlife needs (e.g., excluding incompatible use from key areas during fawning and/or nesting).

b. Prescription CF5

Under Fish and Wildlife. #5

Change from: Create and/or maintain a vegetative buffer strip along OHV trails and areas designated for OHV use to reduce impacts on wildlife.

Change to: Create and/or maintain a vegetative buffer strip along trails to reduce impacts on wildlife.

c. Prescriptions BO6, OW6, MC6, PS6, and CF6

Under Dispersed Recreation, #4 (#5 on Rx OW6, MC6 and CF6)

Change from: Restrict OHV use seasonally to reduce conflicts with grazing.

Change to: Restrict or reduce recreation use seasonally to mitigate significant conflicts with grazing.

d. Prescription CF6

Under Dispersed Recreation, #6

Change from: Remove OHV trails from meadows.

Change to: Remove trails from meadows, wherever necessary to protect meadow resources.

e. Prescription CF7

Under Dispersed Recreation, #5

Change from: Provide OHV recreation opportunities when

compatible with timber activities.

Change to: Enhancement of recreational opportunities will be considered in timber sale planning, where appropriate.

f. Amend Table 4.2 on page 4-13 through 4-15 of the Plan by adding the following: References to trail mileage such as: miles open to OHV use, miles closed to OHV use, miles with seasonal closures, miles to be constructed/reconstructed/relocated are estimates. Final mileage shall be determined in the Trail Plan being developed by the Forest.

g. Recreation Standards and Guidelines, of the Plan, page 4-16. Under Recreation Opportunity Spectrum (ROS), add: Minor adjustments may be made to the ROS class boundaries based on analysis in various plans and/or projects, such as the Forest Trail Management Plan, Spotted Owl Habitat Area Management Plans, Wild and Scenic River Management Plans, and individual timber sale evaluations.

h. Add to page 4-20 of the Plan under "non-motorized:" "Cross-country travel may be restricted to prevent resource damage."

i. Strike the following from page 4-90 of the Plan: "OHV use will be allowed on designated trails if such use does not threaten values within the SIA."

M. Yield Tables

1. The U. S. Forest Service is developing new timber yield tables for the Sequoia Forest. Under existing contracts, the necessary data will be available by July 1991. The tables and all data and determinations shall be available pursuant to the Public Information and Records section below.

2. The new yield tables shall be subject to peer review before implementation, which review shall be completed as soon as possible.

3. Following peer review, and at the time of the five-year review of the FLMP (1993), the U. S. Forest Service shall make appropriate changes and determine whether the allowable sale quantity set forth in the Plan should be amended based on the new yield tables. Changes to the yield tables and determinations regarding changes to the allowable sale quantity shall be documented and the documentation made public pursuant to the Public Information and Records section below.

N. Cumulative Watershed Effect

1. *Background*. On June 9-11, 1989, the parties to this Agreement convened a panel of geologists and hydrologists to evaluate the Cumulative Watershed Effects methodology as it has been applied in the Sequoia National Forest for compliance with recently changed Regional direction (R-5 FSH 2509.22, 7/88, Amend. 1). The panel spent two days in the field examining representative sample of watersheds. They then re-assembled with the parties to present their review of the methodology and recommendations for improving the Forest's current approach to watershed evaluation and protection.

2. *Objectives of the CWE Methodology*. The CWE methodology is an index to alert managers when to be concerned about a watershed because of multiple activities in a watershed. It needs to be viewed as a developing approach with the initial model being continually refined, building upon past practices and based upon as much information as one can gather from operations and impacts.

3. *Implementation of Panel Recommendations*. In accordance with a negotiated agreement to incorporate the consensus findings of the panel into a final settlement document, the Sequoia National Forest agrees to

implement the recommendations of the CWE panel as follows:

a. *CWE Methodology*

(1) *Beneficial Uses of Water*. The Forest Plan shall be amended to incorporate the following standards:

(a) The beneficial uses that are most sensitive to watershed disturbance are fish habitat and domestic supply. The Forest shall manage any watershed in which it has identified one of these as a beneficial use to protect such use, as per RWQCB Basin Plans, using developed criteria. The Forest shall identify and protect sensitive reach(es) (weakest links) in the watershed. In all cases, the Forest shall protect soil productivity.

(b) The Forest shall determine the proper size of the watershed unit to be subject to CWE analysis based on the identified beneficial use(s). The unit size will generally range from 250 to 2,000 acres.

(c) Each project NEPA document shall identify the

beneficial uses of water and the most sensitive stream reach(es) as part of the CWE analysis.

(2) *Identification and Evaluation of Processes Within the Watershed (CWE Analysis).* The Sequoia National Forest staff will determine the controlling processes of concern (as required by FSM 2509.22, 7/88, Amendment 1) in order to assess disturbance coefficients and mitigation opportunities.

(a) Where, according to established criteria, soil erosion and sediment supply are determined to be controlling processes, CWE shall analyze change in soil erosion and sediment supply as processes independent of change in annual peak flow run-off.

(b) In assessing sediment impacts, relative changes in erosion and sediment delivery rather than only the amount of compaction shall be assessed.

(c) CWE analysis shall identify the most crucial elements in the watershed, i.e. the specific processes that are controlling the system (e.g., rain on snow events and

surface erosion).

(d) The Forest will establish a process for developing and evaluating coefficients relevant to the identified dominant processes which influence CWE on identified Beneficial Use of concern. This will include evaluating results of past activities. Coefficients will be consistent with the level and type of activity and site conditions. The Forest shall consider factors such as position of activity on slope, aspect, sensitive lands, and existing erosion when applying disturbance coefficients.

(e) When sedimentation is identified as the controlling process, the Sequoia National Forest shall modify its disturbance coefficients to include evaluation of sediment yield and transport. Where sedimentation is identified as a dominant earth-forming process by established criteria, the Forest will identify erosional processes affecting sites as mentioned in items c and d above. The Forest will identify soil condition class and evaluate it together with erodability potential to

give information on site conditions that address sediment yield.

(f) To facilitate the implementation of these requirements for bringing the Forest's CWE analysis procedures into greater conformity with regional guidelines (a-e above), the Forest, with the assistance of Region 5 Watershed Evaluation staff, will convene a workshop by October 15, 1990 to develop criteria by which to identify Beneficial Uses and controlling processes of concern and to develop a procedure for adapting Region CWE methodology to account for sediment yield, transport, and delivery applicable to conditions on the Sequoia National Forest, an accompanying field guide and a workplan for testing and refining the procedure. Participants in the workshop shall include U.S.F.S. watershed experts (either from the Region 5 office, personnel from other forests and regions, and/or experts from the Pacific Southwest Experiment Station) and independent watershed experts. The workshop work product shall be completed by December 15, 1990

and shall be used in the 1991 sales program.

Representatives of the conservation appellant group, timber industry appellant group and recreation user appellant group will be permitted to observe this workshop.

The Forest will initiate the process for applying and verifying this procedure in a set of paired watersheds on the Forest. The workshop participants will select the watersheds to be utilized after reviewing Sequoia Forest recommendations. This will require taking field measurements during the winter 1990-91 and follow-up measurements during the 1991 runoff season.

(g) In determining ERAs for any given project, the Forest shall state the assumptions that formed the basis for its calculation, including any modifications of standard ERA values that might have been made because of site-specific observations, and shall distinguish between existing and residual ERAs.

(h) Any mitigation or affirmative watershed improvement project shall not affect the ERA calculation in that watershed until such time as the mitigation or affirmative project has been successfully completed and shall apply only to the period of that mitigation.

(3) *Determination and Evaluation of Recovery Rates.* The Forest shall undertake the necessary steps to develop clear and publicly trackable methods for evaluating silvicultural recovery rates, including road construction.

(a) Until such time as there is sufficient data to establish the recovery rate in a given watershed, the Forest shall utilize a linear thirty year recovery rate. However, the Forest may use an exponential recovery rate instead of a linear recovery rate if the Forest determines surface erosion to be the predominant hydrological process impacting the streams and can provide either references or on-site inventories to support these recovery rates.

(b) If a proposed project would increase ERAs to within 20% of the threshold of concern in a watershed, the Forest will perform an on-site review to determine the actual recovery rates and to evaluate the effects of the proposed project.

(c) Where field verification is impossible, the Forest may assume a thirty year recovery rate.

(d) Where field verification is undertaken, the recovery rate should be based on a time trend in the ERA for management units. The ERA at any point in time is determined based on an on-site inspection of site conditions (percent cover, stand development, measure of soil disturbance, and compaction, development of erosion pavements, etc.), and a professional assessment of how these factors influence on-site generation of parameters of concern (peak flows, sediment, etc.).

Factors used to judge the ERA for a site will be explicitly recorded and data sheets of site conditions

(percent cover, etc.) will be maintained by the forest to allow for future changes in assessment relationships.

(e) If a site requires replanting that includes site preparation, and if the evaluations indicate that the Beneficial Uses are sensitive to site prep, then the recovery calculation will be calculated anew, using an era base that reflects site disturbance conditions following the subsequent site preparation.

b. *Data Gathering and Monitoring*

(1) *Purpose*

The purpose of establishing a CWE monitoring program and record center on the Sequoia National Forest is to implement an adaptive management program that measures the effects of alternative management practices on beneficial uses of water in the Forest.

(2) *Approach*

The Sequoia National Forest will undertake the steps set forth below to establish baseline data and to improve CWE

monitoring of the Forest.

(a) The priority watershed parameters to be monitored, as well as where to be monitored, will be evaluated at the Forest/District level. The Sequoia National Forest will make these determinations in conjunction with identification of the processes acting in each specific area, the sensitivity of sites and other variables, such as winter access. Within nine months of entry of this agreement, the Sequoia National Forest shall make a determination of its initial watershed monitoring priorities, including a description of circumstances in which particular monitoring techniques are more appropriate than others, reasons for reaching this determination, and sources of funding. This determination shall be set forth as a public document.

The parties to this agreement recognize that, for reasons of funding and workforce limitations, not all agreed upon monitoring actions are possible immediately.

(b) The Sequoia National Forest will establish representative sampling stations on a set of paired watersheds that will assess watershed conditions for the purpose of measuring watershed response to management activity over time and refine the CWE model. Sampling will include acquiring channel cross-section data, peak flow data, suspended sediment, bedload, water temperature and chemistry, and grain size distribution within the bed. Where sampling is difficult, surrogate reaches that are able to be sampled may be substituted. The Forest may utilize data from existing USGS gauging stations (continuous watershed discharge measuring stations) in the three major basins draining the Forest (Kings, Tule, and Kern) as part of this monitoring effort.

(c) The Sequoia National Forest will establish photo stations at each of the gauging stations and shall establish several additional stations at extremely sensitive channel sites or at sites near recent management activities.

(d) The Sequoia National Forest will collect data on fish habitat conditions and fish populations from available sources as part of its watershed sampling stations monitoring effort.

(e) The Sequoia National Forest will do stream channel surveys for all streams covered by the relevant CWE, including fish habitat information following Regional direction, as set forth in R5 document R-5 FS Handbook 3/89, Chapter 2, Fish Habitat Assessment.

(f) At the project level, the Sequoia National Forest will measure soil movement through site condition evaluation, through on-site erosion surveys with sediment traps, or other methods.

(g) The Sequoia National Forest will monitor implemented WINI project effectiveness.

(h) The Sequoia National Forest shall establish a record center for watershed information in conjunction with

the public information and records section described in section V. The record center is important for the ongoing development of the CWE methodology on the Forest, for passing on information to succeeding forest hydrologists, and for improving public access to information used by managers in their decision-making. The record center shall house the information enumerated in section N.3.b. above, as well as the following additional watershed information:

i) CWE Calculation Sheets by Watershed for analyses of completed projects.

ii) Management Archaeology (history of human actions in the watershed).

iii) WINI Updated Annually.

iv) Documentation of Recovery Rates for Analysis of completed Projects.

v) Range Condition and Trend Reports; Actual Use Records; and Utilization Records.

vi) Data from "barometer watersheds".

vii) Snow melt hydrology.

viii) Stream channel analyses measured against distance from the site of disturbance.

The Sequoia National Forest may elect to house the watershed information in District offices on the Forest. The Forest shall designate an individual or individuals who shall have responsibility for ensuring that the files are updated twice a year. Where records are not maintained in the Forest Supervisor's office, an index shall be maintained indicating where information is housed.

c. *Field Techniques*

(1) The Sequoia National Forest will continue to evaluate channel stability inventories in conjunction with fish habitat

surveys where fisheries are determined to be the beneficial use. The Forest will use this information to validate or review exiting analyses for optimum fish habitat.

(2) The Sequoia National Forest shall maintain a separate, regular reviewed inventory of the factors that are aggregated to develop their stream channel stability rating.

d. *Threshold of Concern, Mitigation, and Cessation of Management Activities*

(1) The Sequoia National Forest shall keep all Watershed Improvement Needs Inventory projects in working order and shall conduct all inventories during NEPA project planning. The Forest shall ensure that the funding for all watershed improvement projects that are designated in the NEPA document as necessary for reducing unacceptable environmental impacts, or which are included as part of the CWE evaluation as necessary to bring a project under threshold of concern, is available prior to implementation of the project. All other proposed projects shall occur commensurate with funding.

(2) The Forest will implement mitigation measures adopted to balance project impacts during the project implementation phase and will monitor these projects during project monitoring phase.

(3) The Sequoia National Forest shall conduct Best Management Practice Implementation and Effectiveness Evaluation monitoring to evaluate BMP effectiveness, attainment of project objectives, and maintenance needs. This monitoring program shall be designed so that the range of site conditions and practices on the Forest are included. Stratification according to these conditions and replication are important considerations in designing the monitoring program, but a 100 percent sample is not required. Specific criteria for the design of this effectiveness monitoring program shall be developed by the experts convened by the Sequoia staff (see section N.3.a(2)(f)) in concert with Region 5. If the Forest fails to initiate effectiveness monitoring within one year of completion of any timber sale scheduled for monitoring, then the Forest shall not approve additional timber sales in the watershed of influence until the effectiveness monitoring for that sale has been

completed. Additional effectiveness monitoring shall be conducted at appropriate times to evaluate major events.

(4) At the end of the three years following adoption of this Agreement, the Forest agrees to obtain an independent review of their Best Management Practice Implementation and Effectiveness Evaluation monitoring for three timber harvesting projects selected by the reviewers from the list of sales monitored during this three year time frame. The experts shall evaluate the efficacy of the monitoring approach utilized as well as the representativeness of the sales selected by the Forest for monitoring.

(5) During project planning, when the consumed and projected ERAs for any watershed reach 80% of the total available ERAs for that watershed, then the Forest must conduct a site-specific field inspection to verify the pre-project CWE calculation for that area and to verify that the proposed project will generate the projected ERAs that have been identified. The Forest will identify mitigation to ensure that if a project goes forward, the Threshold of Concern shall not be exceeded.

(6) Any management decisions to exceed the TOC should be justified by long-term watershed or other overriding objectives, e.g. salvage of timber in a burn might be justified even through it exceeds the TOC if it allows installation of WINIs, reduces the potential for an insect infestation, or can remove snags or mobile in-stream debris that represents a hazard to human health.

(7) During the three years following acceptance of this agreement, there will be no additional management activities in any watershed that has reached the Threshold of Concern, other than mitigation or improvements, until such time as the watershed has recovered to 80% of the Threshold of Concern.

(8) At the end of the three years, the Forest shall undertake an independent review of its CWE methodology to determine if it has been adequately validated based upon field review and if the Sequoia's CWE methodology is meeting Regional guidelines. If it is determined that the methodology has been validated and is meeting regional guidelines, then the

Forest may undertake projects in watersheds that have reached TOC as long as ERAs do not exceed the TOC subject to the conditions in (5) and (6) above.

(9) Grazing impacts will continue to be addressed through stream channel surveys. Improvements to documentation will include comments in the remarks section where disturbance to stream banks occur from hoof sheer or other factors, whatever the cause.

e. *NEPA Documentation*

Each project NEPA document shall, as part of the CWE analysis, display the management history of the area and describe how it has impacted the watershed(s).

O. Soil Quality Standards

1. *Background*

a. The parties disagree as to the value, efficiency, and effects of broadcast burning.

b. Organic matter will be maintained at a level necessary to protect the soil from excessive erosion as determined from site

investigations.

c. Soil and water resources will be protected through the use of Regional Soil Standards currently being developed.

d. Protection of forest soils is a primary goal of forest management and, based on that understanding, the standards in the following sections will be implemented.

2. The Plan shall be amended to incorporate the Soil Quality Objectives and Soil Quality Standards set forth in the Draft FSH 2509.18 Soil Management Handbook (FSH 1989, R-5, Supp. 1) dated September 1988 (attached as appendix to Monitoring Plan) as interim direction pending finalization. Any more stringent standard set forth in the Plan or this Agreement shall govern.

3. The Plan shall also be amended to include the following standards to protect Forest soils:

a. Site preparation measures will be devised to retain substantial ground cover and still reduce the risk of catastrophic fires.

b. Silvicultural prescription shall be designed to maintain soil organic matter and provide for the continual recruitment of coarse woody debris.

c. After site prep, as much organic material as possible shall be left on the ground for soil protection, consistent with fire protection, wildlife, reforestation and other resource needs as specified in project NEPA document.

d. Jackpot burning, gross yarding, and/or lop-and-scatter shall be evaluated as alternatives to broadcast burning as a means of reducing slash and for site preparation. These options shall be discussed in each timber sale EA or EIS. Consistent with reduction of clearcutting and other appropriate considerations, the Forest Service shall reduce the amount of broadcast burning on the Forest.

e. Where broadcast burning is prescribed, the environmental documentation and decision notice shall include documentation of specific justification for the practice. The prescription shall have an objective of leaving ground cover commensurate with the erosion potential of each specific site. Slope will be considered

within the site analysis. Each broadcast burn shall be monitored to determine whether the prescribed ground cover objective has been met, and the monitoring results shall be included in the annual report required by the Monitoring Plan and Five Year Review sections below.

P. ***Information in Timber Sale Environmental Assessments (EA's) and Environmental Impact Statements (EISs)***

1. *Background*. Some appellants believe that past EA's and EIS's for Sequoia Forest timber sales, as well as the Plan and EIS, lacked sufficient information regarding environmental impacts of proposed actions. The following is designed to affirm Sequoia National Forest's responsibilities under NEPA as projects are implemented pursuant to the Plan. The specific provisions below are further elaboration of those responsibilities.

2. *Procedural Requirements.*

   a. Notice of preparation of an EA or EIS shall be sent to all parties to this Agreement as well as other interested parties.

   b. Where possible, the U. S. Forest Service shall consult with interested parties, including representatives of citizens' groups, when laying out cutting units. The parties agree that such

consultation may help avoid time-consuming appeals of timber sales.

c. Anyone who so requests during the scoping process will be notified when cutting units for the various alternatives have been tentatively located and provided appropriate maps. In appropriate cases, for example, if significant public interest is expressed, the Forest will conduct a field trip at this stage of project development. The Forest Service will provide reasonable notice of a field trip. The Forest Service will use its best efforts to assure that between the time the tentative maps are available and the time the Decision Notice is issued, the project site will be accessible for field review.

3. *Substantive Requirements*. In addition to requirements specified in 40 CFR 1500 et seq. the EA or EIS shall include as applicable, but not be limited to, a discussion of the following:

a. Related projects within the timber compartment, including, but not limited to, past timber sales, years of previous cuts, reforestation history (including backlogs), probable future timber sales in the area, and a map of proposed cutting units and existing plantations.

b. Statement of ERA's in the watershed, including but not limited to, the number currently available, the threshold of concern, the number of ERA's to be used by the proposed project, and the number of ERA's estimated to be used for reasonably foreseeable projects in the watershed.

c. Documentation of CWE analysis as described in Section N.

d. Identification of each stream and stream reach, whether perennial or intermittent, that is important for fisheries, and designation of applicable streamside management zone. These streams and stream reaches shall also be documented on stand record cards as these cards are prepared.

e. Statement of estimated cost of sale, including but not limited to, estimated cost of reforestation (including multiple plantings, if reasonably foreseeable), project-related mitigation, and roads. The expected source of funding for each such cost shall be stated.

f. Statement of estimated revenues from the sale.

g. Refinement of order 3 soil map data as necessary to analyze soil

stability and erosion hazard.

h. Stand information, including but not limited to, proposed silvicultural treatment, existing pest problems if applicable, estimated volumes, forest type in the cutting unit, the location and estimated acres of old growth habitat to be cut and to be retained, species of trees to be cut, and the species of trees to be replanted. Detailed prescriptions will be completed for each stand after a Decision is issued. Detailed prescriptions include a detailed description of the stand.

i. Protection strategy, as appropriate, for streamside management zones, wetlands, and meadows, with respect to such management activities as road crossings, cable corridors and harvest units. Maps included as appropriate.

j. Identification of Class 1, 2 and 3 streams and statement of specific riparian standards and guidelines applied to each riparian zone affected by proposed project. Class 4 streams will be identified during project layout and protected according to the Riparian Standards and Guidelines.

k. Statement of mitigation, including but not limited to, a description of planned actions, expected funding, proposed time frame, and a map reflecting mitigation projects.

l. Identification of any land within the sale area that is unsuitable for timber harvesting and a statement of the reasons for unsuitability.

m. Discussion of productive condition of soil; how standards for soil cover, soil porosity, and organic matter will be met.

n. Discussion of methods to reduce slash, including for example, jackpot burning, gross yarding, lop-and-scatter, and broadcast burning (see Section O.3).

o. Statement of site specific effects of proposed project on changes in water quality, changes in water yield, channel degradation, sedimentation, and effects on downstream sedimentation, and effects on downstream fish habitat.

p. See also, as relevant, the following sections of this Agreement:

E.2.b (spotted owl surveys)

E.5 (goshawk surveys)

F.2 (ongoing suitability review)

F.6 (reforestation history--interim requirement)

I.7.a. and c.(2) (site-specific determination of cutting method)

I.7.c.(3) (justification for exceeding clearcut size limits)

J.1.(a) (snag inventory)

N.3.a.(1)(c) (beneficial uses of water and most sensitive stream reaches)

N.3.e (management history as part of CWE analysis)

O.3.d and e. (alternatives to broadcast burning)

Q.3 (improvement of data base--inventories and surveys)

T.2.a (project mitigation and restoration work).

Q. Improvement of Data Base

1. *Background*. The Sequoia National Forest recognizes the need to gather additional information regarding the resources of the Forest.

2. *Policy*. The Sequoia National Forest shall give priority to fulfilling these information needs in a timely manner. The Sequoia National Forest shall give priority to inventories and surveys of areas where land-disturbing projects are proposed.

3. With the exception of sales specified in Section D.5, the Forest shall not

approve an EA or EIS until the information specified below, if relevant to the decision, is developed for the area of effect for each resource:

a. Watershed Improvement Needs.

b. Riparian and Meadow Inventory.

c. Stream channel surveys for all streams covered by the relevant CWE, including fish habitat information following Regional direction, as set forth in R5 document R-5 FS Handbook 3/89, Chapter 2, Fish Habitat Assessment.

d. Rare and sensitive plant surveys.

e. Wildlife habitat surveys on sensitive, threatened, and endangered species, as well as indicator species.

f. Snag survey.

g. Archeological surveys.

h. Information on range condition, trends, livestock grazing capacity, and forage and habitat allowances for wildlife.

4. *Specific Information Requirements*

a. *Background*. In order to assess the status of forest resources and to properly predict the probable effects of future management, the Sequoia National Forest must improve its data base.

b. *Funding Priority*. The Sequoia National Forest agrees to seek

budgets annually that are sufficient to develop the information listed in Section c below:

c. *Required Information*

(1) *Watershed Improvement Needs Inventory.*

(a) Will be updated and computerized on a compartment basis commensurate with timber sale project planning.

(b) Will be updated annually thereafter.

(c) Will identify needed actions by project name, number, or other appropriate identifier.

(2) The Forest Riparian and Meadow Inventory will be constructed from project planning analyses and as appropriated funds are available.

(3) Stream channel surveys, including fish habitat condition, will be completed as proposed timber sales and other projects are being evaluated and, for other areas, as appropriated funds are available.

(4) Fish habitat inventory following Region 5 direction set forth in R5 document R-5 FS Handbook 3/89, Chapter 2, Fish Habitat Assessment: Survey fisheries and aquatic-riparian habitat to assess the condition and trend where active land management is planned to predict and monitor environmental impacts and make informed management decisions. Surveys will be done in accordance with Region 5 direction which includes aquatic vertebrate survey of specific species, age class and numbers by seine, snorkel, visually and/or electroshocking.

(5) Habitat needs of sensitive species: spotted owl, goshawk, willow flycatcher, great grey owls, furbearers (sierra red fox, pine marten, fisher, and wolverine) as per recovery plans or other applicable regional guidelines.

(6) Information necessary for the monitoring of MIS and sensitive species.

(7) Population census and habitat needs for threatened and endangered species per recovery plans: peregrine falcon, bald eagle, condors, Little Kern Golden Trout.

(8) Botanical Investigations for sensitive plant species as per Forest Service Manual 2609.25.

(9) Current ecological status of the land for each grazing allotment.

R. Monitoring

1. The Plan shall be amended to include the Monitoring Plan as set forth in Exhibit O. The Sequoia National Forest shall conduct a monitoring program as set forth in that Exhibit. The Forest agrees to seek budgets annually that are sufficient to fully implement the monitoring program.

2. The following additional requirements apply:

a. A monitoring report shall be prepared for each timber sale (1) at the time timber sale contract work is completed and (2) after site preparation.

b. A monitoring report for a timber sale shall report on at least the following: compliance with each Plan standard for soil productivity (soil cover, soil porosity, and organic matter); compliance with

BMP's; compliance with standards for snags and for dead-and-down material; compliance with riparian standards and guidelines; and achievement of other mitigation measures identified in the project document. A selected sampling of timber sales shall be subject to additional monitoring pursuant to section N.3.d(3) and (4).

3. Program Monitoring shall include monitoring of wildlife habitat trends in accordance with the Tri-Forest Plan; provided, however, that the Forest shall commence its monitoring efforts under the Tri-Forest Plan immediately rather than waiting for the Sierra and Stanislaus Forests to adopt their final Forest Management Plans.

4. The Sequoia National Forest Management Team's annual report on the Forest's monitoring effort as detailed in the Monitoring Plan shall be included in the Annual Report (see Section W).

S. ***Implementation of Agreement***

1. The Sequoia National Forest shall give priority to initiating the Plan amendment process. In the interim, the actions, standards and guidelines specified in this Agreement shall be implemented.

2. The Tule River Indian Tribe has a strong interest in employment

opportunities, both public and private, that might be generated by Sequoia Forest management. All parties hereto recognize this interest. Sierra Forest Products and Sequoia Forest Industries agree to give preference to Tule River and other Indians with respect to training and employment opportunities to the maximum extent allowed by law. The Sequoia National Forest agrees to assist the Indians by providing them maximum possible employment opportunities in the full range of forest management activities.

3. Within two weeks of the effective date of this Agreement, the Forest Supervisor will issue a directive to inform all personnel about this Agreement and to emphasize the importance of full compliance with the Agreement and proposed amendments to the Plan starting immediately. Included in such directive, or in one or more separate directives from the Forest Supervisor, shall be the following, within 45 days of finalization of the Agreement:

   a. Explanation to all persons involved in preparation of timber sale environmental documents of the minimum analysis and documentation requirements set forth or cross-referenced in section P.

b. Explanation to all persons who enter or use information on stand record cards of the requirements in sections J.2.a.2 and P.3.d that wildlife clumps and stream reaches important for fisheries shall henceforth be identified on stand record cards.

c. Explanation to all persons involved in timber management of the amended Plan standards and guidelines concerning riparian areas, actions near giant sequoia trees or groves, hardwood retention, wildlife species, timber management, snags and dead material, and soil quality (set forth in portions of sections A, B, C, E, I, J, and O).

Copies of these directives shall be provided in draft form to counsel for the appellants for ten days so that they may make suggestions. Copies of the final directives shall be sent to all appellants.

T. Budget

1. *Background*. Some parties are concerned that the budget assumptions in the Plan are unrealistically high, and that the Plan will never be fully funded. There is a concern that implementation of mitigation measures, monitoring programs, and restoration and habitat improvement work, among others, will not receive sufficient funding, particularly in light of

the timber management practices anticipated and planned for many areas of the Forest. Therefore, the parties agree that the budget and project funding level shall be monitored and Forest activities adjusted in accordance with the following:

2. *Process*

a. Each EA or EIS on a timber sale, road construction project, or other proposed projects shall include a separate list of proposed project mitigation measures and restoration and/or improvement work based on the text of that document. The list shall state which are mitigation measures relied upon to support a decision and thereby covered by the timber sale contract and which need to be done but are not necessary to support the decision. It shall also include the information shown on the sample form (Exhibit Q, "Mitigation Form"). For timber sales this list shall be updated at least (1) after timber sale contracts are sold (to indicate which mitigation measures will be covered by K-V funds); (2) the year for which appropriated dollars are requested; and (3) as project-related mitigation actions are completed.

b. As soon as the decision to approve the project is made, all listed restoration or enhancement measures not to be performed as an

integral part of the project (i.e., measures not covered by the timber sale contract) shall be assigned to the appropriate resource function and entered on the WINI or other appropriate inventory of action needs (habitat improvement needs, trail improvement needs, etc.). For each resource function such action needs shall be identified on the inventory by project name, number, or other appropriate identifier.

c. Each resource function will be responsible for funding these enhancement and restoration needs out of current budget dollars as available and/or for requesting appropriated funds. An annual account of the status of these needs shall be kept by each resource function and shall be available for public review.

d. All mitigation required to support a FONSI shall be funded out of the timber sale contract and project dollars, including appropriated funds. If full funding is not available, the project shall be modified or postponed until such funding is sufficient. Restoration and enhancement activities, which by definition are not required to support a FONSI, shall be accomplished as funding is available.

e. Starting in FY 1991, the Forest Service shall include in the annual

report on Plan implementation (see Section W) information on:

(1) Projects which have been completed, including all associated mitigation and restoration actions and their estimated costs.

(2) Projects completed except for associated restoration and enhancement work, and the estimated cost of completing such work.

3. As a general matter, the Sequoia National Forest agrees to seek balanced resource budgets sufficient to meet all its obligations under the Plan and this Agreement. The Regional Forester agrees that disaggregation of Regional budgets will not be done strictly on a prorata basis of line item appropriations tied to commodity outputs, such as timber harvest levels, but will take into appropriate account the cost of funding the multiplicity of obligations required by the FLMP and this Agreement.

*U. **Multiple Use Liaison Committee and Fact-Finding***

1. The Appellants shall convene a meeting of the parties to this Agreement, including the Forest, to discuss management of the Forest pursuant to the implementation of this Agreement and the Plan. The parties assembled for this purpose shall be referred to as the Multiple Use Liaison

Committee (hereafter the Liaison Committee). The Appellants will schedule two meetings at six month intervals during the first year following entry of this Agreement and annually thereafter until the issuance of a new Sequoia National Forest Land Management Plan.

2. Each Party shall be represented by a person or persons empowered to represent that party fully, but in no case shall the number of persons representing each party exceed the number which served on the Negotiating Committee. Each party shall designate a contact person who shall serve for a minimum of one year to provide ongoing communication between that party, the Forest, and other members of the Liaison Committee.

3. The general purpose of the meetings of the Liaison Committee is to continue the cooperation among the parties begun in the mediation process, to assess new information and to review the effectiveness of the Agreement and Plan. Its purpose will not be to renegotiate the harvest levels, land base or level of effort to be expended by Forest personnel in managing each of the multiple uses protected by the Plan.

4. The Appellants shall attempt to schedule meetings to accommodate as many parties as possible both with respect to location and time. Any

party may choose not to attend.

5. The agenda for the Liaison Committee shall include consideration of the following work outputs as they are prepared pursuant to this Agreement.

   a. The Annual Report, including a minimum of two Demonstration/Research Projects.

   b. The Giant Sequoia Grove boundaries and management plan proposals.

   c. Proposal for the realignment of SOHAs.

   d. Relevant studies and management guidelines for furbearers (as they evolve).

   e. Study on the reproduction and age class of Blue Oaks.

   f. Proposed management regimes for Siretta Peak and Dry Meadow Long Valley OHV trails.

   g. Results of the independent reviews of CWE model verification and

mitigation effectiveness monitoring.

h. Status of employment in private sector timber harvesting and public sector forest management activities of the Tule River Indian Tribe.

i. Proposed volunteer projects to address reforestation failures, habitat damage or erosion problems (see 7 below).

j. The Five Year LMP Review.

6. In addition, each party may submit items for discussion at the meeting. The meeting agenda shall include an opportunity to discuss as many items as practical. The Forest shall prepare a draft agenda in consultation with the contact persons and shall distribute the agenda in advance of the meeting. The first agenda item at each meeting will be to finalize the order of items for discussion.

7. As part of an ongoing cooperative effort to address the on-the-ground needs of the Forest, the parties agree to a partnership to jointly identify restoration projects that cannot be undertaken by the Forest because either financial or budget constraints that would be in the best interest of

the forest to implement in an earlier time frame. The timber industry agree to contribute to the fund on an annual basis based upon their level of use of the forest. See Section D.5.f. The grazing industry agrees to match this contribution on an in-kind basis. The other parties may match this contribution either in dollars or in-kind on these restoration projects. The Multiple Use Liaison Committee shall identify projects that might be undertaken through the combined resources of the parties and propose a schedule that accommodates as many parties as possible for working on these projects under the supervision of Forest personnel.

8. The parties recognize that there are likely to be differences of opinion regarding implementation of this Agreement because of the complexities of forest management. To ensure a timely response to concerns about impending potential violations of the Agreement that are not subject to a NEPA and administrative appeal process, and to prevent perceived violations from escalating to litigation, a party shall present an allegation of such a potential or perceived violation of the Agreement, in writing, to the Forest Supervisor who shall respond within 5 working days to this report, unless unforeseen circumstances preclude a response within 5 working days. In such a circumstance, the response shall be provided as soon as reasonably possible. If this response does not satisfy the claimant, then the Forest shall convene a conference call of the contact

persons to discuss the issues with respect to adherence to the agreement and/or possible remedies. If the party is still dissatisfied, then it may initiate whatever remedies are available under current law. In the event that the alleged violation requires immediate injunctive relief, the party need not await the Forest Service's response before seeking such relief.

9. *Fact-Finding.*

a. If the parties are unable to reach a negotiated agreement as a result of the conference call discussed in paragraph II.U.9 above, the parties may agree that the matter be submitted for fact-finding to the full extent permitted by law. The fact-finder shall be chosen by the parties.

b. The fact-finding procedure shall be conducted in an expeditious and cost-effective manner according to rules and a timetable which shall be set out by the fact-finder after consultation with the parties to the fact-finding. Except for good cause shown by a party to the fact-finding, or if the fact-finder requests an extension and the participating parties agree to the fact-finders's request, the timetable shall result in a decision within 30 days of the appointment of the fact-finder.

c. Because of the financial constraints on many of the participating parties, the parties to this Agreement shall attempt to identify potential fact-finders in advance of any dispute from a list of professionals to be supplied by the Administrative Conference of the United States, which maintains a list of fact-finders in each Region of the U.S. who are willing to provide their services pro-bono. (Travel/per diem must be defrayed by the participating parties). Unless the participating parties agree otherwise, the parties participating in the fact-finding agree to share equally the cost of the fact-finder to the full extent permitted by law. Each participating party will pay its own costs, expenses and attorney fees.

V. Public Information and Records

1. Completed NEPA documents (including all referenced specialist reports), monitoring reports, Annual Reports, completed allotment plans, annual update of WINI, quarterly EA planning schedule, and other final reports such as the Reforestation Report (see Section V) shall be available for public review, in a designated room, during normal working hours, at the Sequoia National Forest headquarters in Porterville, California. The intent is to increase the availability of information including completed District NEPA documents, specialist and monitoring reports, etc., for

quick access by the general public.

2. The records and information shall be maintained in a manner conducive to easy access.

3. Any party may recommend improvements to the availability of the records specified in "1" above to the Forest Supervisor.

W. Annual Report and Five Year Review

1. The U. S. Forest Service shall prepare an Annual Report describing implementation of the Plan generally, its progress and problems in implementing the Plan, and reporting specifically the following:

   a. The Annual Report shall include a description of information gathering and monitoring work required by the Plan that could not be accomplished, its estimated cost and why; a status report on accuracy of and refinements to CWE analysis based on that year's planning and monitoring; a status report on BMP effectiveness.

2. Additionally, the Sequoia National Forest shall describe how the Plan is expected to be implemented in the coming year, including expected projects and budgets.

3. The Annual Report shall be made public and shall be sent to the parties at least three weeks before the date of the yearly meeting of the parties.

4. The Sequoia National Forest shall also make public its written 5 year review of the Plan, which shall address, inter alia, whether the Plan should be amended based on information obtained over the previous 5 years. Such topics as budget deficiencies that have affected Plan implementation, relation of yield table assumptions to field observations, changes in FORPLAN assumptions, review of timber management techniques, monitoring results, or effectiveness of BMP's and Standards and Guidelines shall be discussed as they apply.

X. Enforcement

1. Any party may pursue its legal or administrative remedies at any time. The right to enforce this Agreement is vested only in the parties to this Agreement.

2. In the event that any party brings a civil action to enforce any portion of this Agreement, venue shall be proper in the Federal District Court for either the Northern or Eastern District of California, and no party shall challenge for improper venue any action brought in either court.

3. The parties involved in an administrative appeal may agree to mediate or otherwise negotiate the resolution of the appeal. Each party involved in the dispute resolution process agrees to pay an equal share of the cost of such resolution. Costs will be limited to cost of a mediator and the mediator's associated expenses (if used), supplies and meeting facilities, unless otherwise agreed to in advance of expenditure. The negotiation period shall be no more than four weeks unless all parties to the negotiation agree to extend the period.

Y. NEPA Compliance

1. The Plan shall be amended to reflect this Agreement as soon as possible. It is recognized this could take as long as two years.

2. The Plan amendment shall require a Supplement to the LMP EIS. It is understood that since this new round of NEPA process is open and public, the decision may not conform to this Agreement verbatim.

3. If the Plan is not amended substantially in conformity with this Agreement, the Agreement is voidable at the option of any party. As to any party that chooses to void the Agreement, the present appeal is reinstated.

III. ADDITIONAL MATTERS

A. *Matters Resolved*

1. The appeal of the Forest Plan, EIS, and Record of Decision filed by each of the undersigned appellants is hereby withdrawn. Each appellant agrees to notify the Chief of the Forest Service of the withdrawal of his/its appeal.

2. Each appellant agrees to support implementation of this Agreement through the adoption of Plan amendments examined in a supplemental EIS and through appropriate public involvement in other Forest Service actions described in this Agreement. Each appellant agrees not to appeal the Plan amendments required by this Agreement provided such amendments implement this Agreement without material change. This agreement not to appeal such Plan amendments does not apply to any amendments for which this Agreement does not specify the content of the amendment, even though the Agreement refers to a process that might result in a Plan amendment (e.g., eventual determination of specific giant sequoia boundaries, or adoption of a specific furbearer habitat network).

3. If the interim direction is not implemented or the Plan is not amended substantially in conformity with the Agreement, the Agreement is voidable as to that party at the option of any party other than the Forest Service. As to such party that chooses to void the Agreement, that party's present appeal is reinstated. The USFS may void the Agreement if any party fails to acts substantially in conformity with the requirements of this Agreement. If the USFS voids the Agreement, all appeals are reinstated.

4. Each party agrees to review the Proposed Draft Amendment to the Plan during the public review period and to identify to the Sequoia National Forest in writing any provisions that are not in substantial conformity with the Agreement.

5. Except as provided in paragraphs 1, 2, and 3 above, and in any other paragraph in which specific timber sales for 1990 are settled, the appellants reserve their rights to initiate and pursue appeal or judicial review of any Forest Service actions, including, but not limited to, any future amendment or revisions of the Plan.

B. *Amendment of Plan.* The provisions of law governing Plan Amendments

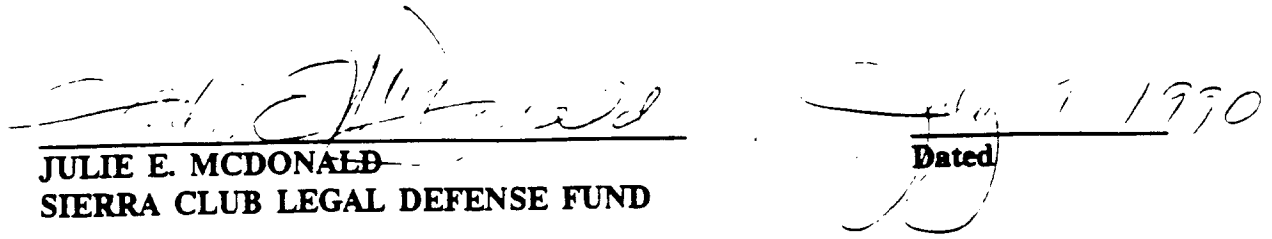
continue to apply to the Sequoia National Forest Land Management Plan, and the Forest shall consider amendments to the Land Management Plan in the event of circumstances not contemplated by this Agreement or in the Land Management Plan.

C. *Modification of Agreement*. This Agreement may be modified upon written approval of all the parties hereto. The parties agree to discuss proposed changes to this Agreement in good faith, including those changes proposed by the Forest Service based on changed conditions or new information.

D. *Authority to Enter Agreement*. Each signatory to this Agreement certifies that he or she is fully authorized by the party he or she represents to enter into this Agreement, to execute it on behalf of the party represented and legally to bind that party.

E. *Integration*. This Agreement constitutes the entire agreement among the parties and may not be amended or supplemented except as provided for in the Agreement.

IT IS SO STIPULATED



JULIE E. MCDONALD
SIERRA CLUB LEGAL DEFENSE FUND

Dated

ATTORNEYS FOR

SIERRA CLUB

SOUTHWEST COUNCIL, FEDERATION OF FLYFISHERS

THE WILDERNESS SOCIETY

NATURAL RESOURCES DEFENSE COUNCIL

IT IS SO STIPULATED

R. Brett Matzke — 7/9/90

BRETT MATZKE — **Dated**
GOVERNOR, REGION 4 CALIFORNIA TROUT, INC.
CONSERVATION CHAIR, KAWEAH FLYFISHERS

ON BEHALF OF

CALIFORNIA TROUT, INC.

KAWEAH FLYFISHERS

IT IS SO STIPULATED

JOHN K. VAN DE KAMP, Attorney General
ANDREA SHERIDAN ORDIN, Chief Assistant Attorney General
THEODORA BERGER, Assistant Attorney General
KEN ALEX, Supervising Deputy Attorney General

KEN ALEX, Supervising Deputy Attorney General — Dated

ATTORNEYS FOR

PEOPLE OF THE STATE OF CALIFORNIA, EX REL.
JOHN K. VAN DE KAMP, ATTORNEY GENERAL

IT IS SO STIPULATED

JAMES A. CRATES
FOREST SUPERVISOR
SEQUOIA NATIONAL FOREST
(advisory signature)

7/10/90
Dated

PAUL F. BARKER
REGIONAL FORESTER
PACIFIC SOUTHWEST REGION

July 19, 1990
Dated

ON BEHALF OF

UNITED STATES DEPARTMENT OF AGRICULTURE, FOREST SERVICE

IT IS SO STIPULATED

Bradlee S. Welton — 7/7/90

BRADLEE S. WELTON
ATTORNEY AT LAW

Dated

John B. Dewitt — July 9, 1990

JOHN B. DEWITT
SECRETARY/EXECUTIVE DIRECTOR
SAVE-THE-REDWOODS LEAGUE

Dated

ON BEHALF OF

SAVE-THE-REDWOODS LEAGUE

IT IS SO STIPULATED

LEE J. CHAUVET
DEPUTY DIRECTOR
OFF-HIGHWAY MOTOR VEHICLE RECREATION DIVISION

Dated: 19 July 90

ON BEHALF OF

CALIFORNIA DEPARTMENT OF PARKS AND RECREATION

IT IS SO STIPULATED

for NICOLA LARSON
CHAIRPERSON

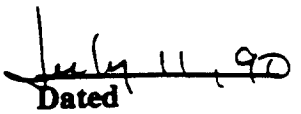
10 July 90
Dated

ON BEHALF OF

TULE RIVER INDIAN TRIBE

IT IS SO STIPULATED

BRUCE HAFENFELD



Dated

ON BEHALF OF

HAFENFELD RANCH

CALIFORNIA CATTLEMEN'S ASSOCIATION

IT IS SO STIPULATED

Tim Ryan
TIM RYAN
PRESIDENT

July 19, 1990
Dated

ON BEHALF OF

PHANTOM DUCK CLUB

IT IS SO STIPULATED

R Schiller

RONALD SCHILLER

7-18-90

Dated

ON BEHALF OF

HIGH DESERT MULTIPLE-USE COALITION

IT IS SO STIPULATED

Patrice Davison
PATRICE DAVISON

7-19-90
Dated

ON BEHALF OF

CALIFORNIA ASSOCIATION OF FOUR WHEEL DRIVE CLUBS

IT IS SO STIPULATED

Suzanne Schettler

SUZANNE SCHETTLER

July 23, 1990

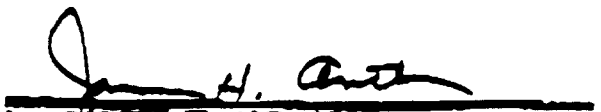
Dated

ON BEHALF OF

CALIFORNIA NATIVE PLANT SOCIETY

IT IS SO STIPULATED

SEQUOIA FOREST INDUSTRIES

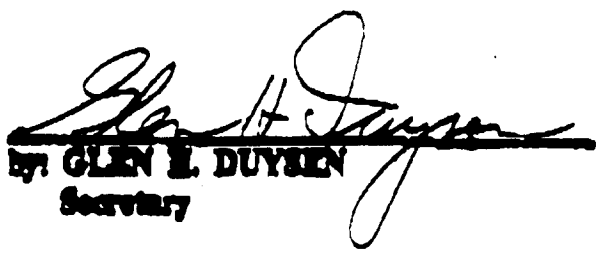


July 10, 1990

By: JAMES H. ANTHONY
Executive Vice President/
General Manager

Dated

SIERRA FOREST PRODUCTS

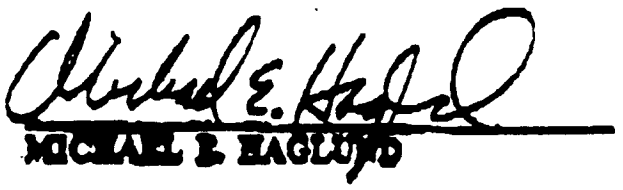


July 10 1990

By: GLEN H. DUYSEN
Secretary

Dated

EAGLUND & KIRTLEY



July 10, 1990

MICHAEL E. EAGLUND

Dated

Attorneys for

SIERRA FOREST PRODUCTS and

SEQUOIA FOREST INDUSTRIES

IT IS SO STIPULATED

Jerry Counts 7/18/90

JERRY COUNTS **Dated**

ON BEHALF OF

AMERICAN MOTORCYCLE ASSOCIATION DISTRICT #37

EXHIBITS AND APPENDICES

TO

MEDIATED 1990 SETTLEMENT AGREEMENT

SEQUOIA NATIONAL FOREST

LAND MANAGEMENT PLAN

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Exhibit A

LIST OF APPELLANTS

United Four Wheel Drive Association

Sierra Club, et al.

Scenic Shoreline Preservation Conference, Inc.

Save-the-Redwoods League

Tule River Indian Tribe

California Native Plant Society

American Motorcyclist Association, District 37

Sierra Forest Products, et al.

Phantom Duck Club

California Association of 4WD Clubs

California Off-Road Vehicle Association

California Attorney General for the People

High Desert Multiple-Use Coalition

Exhibit B

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
SEQUOIA NATIONAL FOREST
900 W. GRAND AVE.
PORTERVILLE, CA 93257
(209) 784-1500

REPLY TO: 1920

DATE: November 15, 1988

Mr. George Nokes, Regional Manager, Region 4
California Department of Fish And Game
1234 East Shaw Avenue
Fresno, CA 93710

Dear George:

I appreciate the efforts of Rod Goss and your staff in working toward the resolution of the California Department of Fish and Game's appeal of the Sequoia National forest Land and Resource Management Plan.

We acknowledge your concerns and are willing to propose amendments to the Sequoia Land and Resource Management Plan described as in this letter as resolutions of your appeal (2403). These amendments are subject to NEPA and NFMA analysis including public disclosure environmental analysis and documentation, and issuance of a decision notice.

The following documentation includes specific discussion on each appeal point from the meetings. Notes from each of the four meetings by the team are designated by an (M1) through (M4), followed by a formal resolution proposal. Negotiation team members included from Fish & Game: Rod Goss and Stan Stephens; from the Sequoia National Forest: Gordon Heebner, Resource Officer; Jay Probasco, Hot Springs District Ranger; Terry Kaplan-Henry, Hydrologist; Steve Anderson, Hume Lake District Wildlife/Range Conservationist; Tom Henry, Facilitator.

A. Aquatic Resources Issues

Appeal point #1: Unrealistic fisheries benefits

(M3) Steve stated that the Forest has an on-going Fishery habitat improvement program and cited use of a 20-person crew as an example of on-going work. Jay felt that by greatly improving the Forest's Standards and Guidelines, the ability to achieve the Fishery benefits is greatly improved. Stan agreed with Jay's point, but also pointed out that there is not adequate Watershed Improvement Needs Inventory (WINI) documentation and that the Forest needs to get the WINI up-to-date. and on-line. Steve pointed out that Fish & Game personnel can help the Forest and WINI program immensely by providing documentation of projects when they encounter them in the field. The team as a whole felt that they could move on to more specific appeal points, and pending resolution of the remainder of the Fishery points, this "all-inclusive" point could be settled. The team agreed to move on.

(M4) Based on the agreed-upon resolution of specific points on Standards and Guidelines and other points related to Fisheries, the team agreed that this point was resolved.

PROPOSED RESOLUTION: Based on the agreed-upon resolution of appeal points #2,3,5,6,7,8,9, and 10 of the Aquatic Resources and the adoption of Revision IV of the Riparian Standards and Guidelines, the team agreed that this point was resolved.

Appeal Point #2: Non-specific Standards and Guidelines For Aquatic Protection.

(MB) The team agreed that the key to this appeal point is that the BMP's (and Standards and Guidelines) must be aggressively monitored in order to ensure that they have been adequately implemented and have been effective. Gordon, Steve, and Jay discussed the increased monitoring going on with BMPs and Standards and Guidelines. This discussion was very useful to Stan, who was not fully aware of the rate or method of monitoring. Some examples cited were direct cross-referencing of BMP's with the Timber Sale Contract (BMP handbook), checklists of Standards and Guidelines for use in Sale Administrator inspections, and regularly scheduled monitoring trips to each district by the Forest Management team. Steve recommended that language be added in the LMP monitoring plan as a separate line item that directs that BMP's and Standards and Guidelines be aggressively monitored and that the FS also improve monitoring of site preparation activities. Stan and Rod agreed that with this more aggressive and more fully documented approach to the use and effectiveness of BMP's and S & G's, this appeal point could be resolved.

PROPOSED RESOLUTION: Formal resolution of this point is three-fold:

1) The team agreed that the Forest has improved BMP monitoring for implementation and effectiveness.

2) The Forest will adopt Revision IV of the Riparian Standards and Guidelines as an interim measure pending analysis and adoption of a Forest Plan Amendment through NEPA process.

3) Monitoring of aquatic resources will be included in the pending PSW/ Tri-Forest Monitoring Plan.

Appeal point #3: Non-specificity of Aquatic Habitat Improvement Measures.

(MB) Steve stated that the Forest has been doing about three miles of habitat improvement work per year and that the "30 miles per decade" is reasonable to accomplish. Rod pointed out that page 4-14 of the Plan says we will do it, but what Standards and Guidelines will the Forest hold itself to to assure Fish and Game (and the rest of the public) that the work is done (i.e. type of structures, etc)? Gordon stated he did not feel it was appropriate to reference the specific funds to accomplish annual or programmatic work (such as "Rise to the Future", Challenge Grant $, etc.) when these funds cannot yet be counted on to provide consistent sources of funding. In getting back to the specific Standard and Guideline to provide direction for accomplishing programmed work, Stan offered the "increase biomass by 20%" as a standard to shoot for in proposing projects. This figure is directly from the RPA goals. The team agreed that this figure provides a crisp link from national programs to the Forest Plan and then to project level planning. There were several reservations from the team about the appropriateness of this standard for all projects. After discussion, the team agreed that "20% biomass increase" could be an effective project objective and can serve well as a key element of the Forest monitoring plan, but that there are numerous other project objectives which would drive Fishery habitat improvement projects. Some other objectives

mentioned were: increase recreational use; maintain gene pools; correct existing resource problems; mitigation for proposed activities. Gordon emphasized that Biologists must be clear in establishing objectives in order to help the Forest prioritize projects, and that the objective should not just to increase biomass, but rather to promote some aspect of the Fishery habitat or program, with biomass being a key "indicator" of effectiveness where appropriate. Steve offered to add language in 4-3 and 4-7 of Management Direction in the Plan.

PROPOSED RESOLUTION: Formal resolution of this point is to add the following proposed language:

Pg. 4-3 of the LMP (Wildlife, Fish, and Plant Goals):

6) Promote recreational opportunities by striving to increase fisheries biomass by 20 percent via habitat improvement projects.

Appeal point #4: Impacts of Projected Recreational Use.

(M3) The team agreed that this was an "all-inclusive" appeal point and that its resolution hinged on the successful resolution of other more specific points. The team agreed to move on and reconsider this later.

(M4) Based on agreed-upon resolution of specific appeal points on Standards and Guidelines and other Fishery-related points, the team agreed that this point was resolved.

PROPOSED RESOLUTION: Formal resolution of this point is two-fold:

1) Clarification that angling is estimated to be associated with 40% of current overall recreational use. There is expected to be an increase of 3% in angler use per year.

2) Resolution of appeal points #2 and #3 will provide effective measures to mitigate the effects of planned increases in recreational uses upon trout populations.

Appeal point #5: Protection and Monitoring of Nontrout Aquatic Resources.

(M3) There was no recommendation of which species are proposed by Fish and Game to monitor in the non-trout habitat, and Rod and Stan were unclear at this time as to the specific species that are indicator species. Rod pointed out that at the lower elevations (below the trout habitat), cattle grazing is the activity which could impact the habitat. Regarding the non-trout habitat above trout populations, the Forest position is that full implementation of BMP's and Standards and Guidelines would adequately protect habitat in the lower elevation non-trout habitat. Rod and Stan agreed that this was appropriate. The team then discussed the interpretation of information in the Plan. The Plan does note that one-half of the streams on the Forest are non-trout habitat. Gordon and Steve pointed out that this "one-half" refers to streams above existing trout populations, at the higher elevations. The language in the appeal point interpreted this "one-half" as being primarily below the trout population. The team discussed adding some indicator species (such as an amphibian) to the monitoring plan. Rod stated that adequate monitoring and protection of the lower elevation non-trout habitat can be adequately covered by use of the LMP Standards and Guidelines being developed, as well as

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considering a new guideline to protect habitat in the Blue Oak-Savannah type ~~for~~ from cattle grazing (along with related monitoring). Rod and Stan agreed that with our new LMP Standards and Guidelines, monitoring plan, and an adequate guideline for the Blue Oak/Savannah type, this appeal point could be resolved.
PROPOSED RESOLUTION: Resolution of this point is two-fold:

1) Interim adoption of Revision IV of the Riparian Standards and Guidelines.

2) On-going development of PSW/Tri-Forest Monitoring Plan.

Appeal point #6: Non-specificity of Aquatic Monitoring Methods

(M3) The team agreed that with the agreed-upon changes in the existing Forest monitoring plan and the pending work on the Tri-Forest monitoring plan with PSW and Fish & Game, that we will be providing adequate monitoring.

PROPOSED RESOLUTION: Based on the current development of the PSW/Tri-Forest Monitoring Plan, this point is resolved.

Appeal point #7: Mitigation of Livestock Impacts on Aquatic Resources.

(M3) The team agreed to work on resolution of this point in conjunction with appeal point #27, which deals with forage allocation as well as impacts from livestock.

(M4) The team reviewed the rough draft of Revision IV of the Forest Riparian Standards and Guidelines. The focus of the review and discussion was on two new guidelines: #7- "Forage and Utilization" and #8- "Woody and Herbaceous Vegetation in Riparian and Wetland Ecosystems". The titles were wordsmithed by the group to reflect a broader focus. Gordon discussed with the group the current efforts by Fish and Game and PSW to jointly develop management direction, a mountain meadow inventory system, and evaluation criteria to help determine project needs in meadows. The team agreed that these products will provide needed direction and "tools" for Biologists in the field, but that the final product may be a long way off. The team made some wording changes in Standard and Guideline #8, in which the reference to Fisheries was strengthened. The team also recognized the lack of specific implementation direction to reestablish or enhance meadows which had been impacted from past activities. The following addition was proposed to add to the "Implementation" section of the Standard and Guideline: "Re-establish vegetative cover structure conditions which enhance Fish and Wildlife, as identified in the Forest Riparian Wetland Inventory. Establish demonstration areas for habitat establishment or enhancement in cooperation with California Department of Fish and Game". This last sentence on development of demonstration areas was agreed upon by the team to initiate an immediate and positive meadow management program on the Forest pending the final product being jointly developed by PSW and Fish and Game.

PROPOSED RESOLUTION: Resolution of this point is three-fold:

1) Interim adoption of Revision IV of the Riparian Standards and Guidelines.

2) Expected development of a Mountain Meadow Inventory System (PSW, Tri-Forest, and Fish and Game).

3) Resolution of appeal point #13 of Terrestrial Resource Issues.

Appeal point #8: Aquatic Baseline Information

(M3) The point of this appeal is that Rich Standage, former Sequoia Forest Fisheries Biologist, stated in his "Analysis of the Management Situation" that 70% of the streams on the Forest are in fair or good condition; however, the Plan altered the specific language he used from "fair and good" to "medium and high". Stan stated that this change in the language misrepresented the on-the-ground condition. Jay recommended that the Plan language be changed to conform to the language used in Standage's document since it was the primary basis for the Plan's analysis of the Fishery situation. The team agreed to this change. Rod stated that he felt this was an easily resolvable pcint.

PROPOSED RESOLUTION: Resolution of this point will be the addition of the following language in the LMP:

Paragraph 3 on page 3-18 of the plan will be amended as follows:

> Delete sentence #4. Insert "Habitat quality of trout streams on the Forest was estimated to be 32% in good condition, 39 % in fair condition and 29% in poor condition. This assessment is based on a comparison with a fishery in the Golden Trout Wilderness.".
>
> Sentence #6: change "...medium or low ratings..." to "...fair or poor ratings...".

Appeal point #9: Aquatic Protection Guidelines Resources.

(M3) The team agreed that Revision III of the Standards and Guidelines provides good protection of riparian zones. The team reviewed a rough draft of Revision IV. A key addition is inclusion of a guideline on meadow protection for woody and herbaceous vegetation, as well as the existing guideline on protecting streambanks. The team agreed that with the pending revision of the Riparian Standards and Guidelines and the Monitoring Plan, this point is resolved.

PROPOSED RESOLUTION: Resolution of the point is two-fold:

1) Interim adoption of Revision IV of the Riparian Standards and Guidelines.

2) On-going development of PSW/Tri-Forest Monitoring Plan.

Appeal point #10: Effects of Even-age Timber Management Upon Aquatic Resources.

(M3) The team agreed that resolution of appeal points regarding adequate Riparian Standards and Guidelines and a Monitoring Plan would resolve this point.

PROPOSED RESOLUTION: Same as appeal point #9 (of Aquatic Resources Issues).

B. Terrestrial Resource Issues

Appeal point #1: Monitoring of Management Indicator Species.

(M2) The team agreed that the Plan did not have adequate monitoring. Steve handed out to the group a monitoring plan developed by Bea Anderson (Wildlife Biologist) and Ken Anderson (Range Conservationist). The team reviewed it, and Rod stated that it was very close to what he was looking for. He stated that Fish and Game wants PSW and the three Forests to interact for a complete plan that includes the research capabilities that PSW can provide. Rod stated that if we (FS) can agree that PSW will give us direction and that we will follow that direction, that is all Fish & Game can reasonably ask. Gordon stated that in November of 1988, work is to begin on a Tri-Forest/PSW monitoring plan, and he recommended that Fish & Game be a part of the team effort. The team agreed tc this. The objective of the cooperative monitoring plan effort should be to develop a plan to meet needs of all agencies involved. The team agreed that the Monitoring Plan developed by Anderson and Anderson is adequate, with changes as recommended by Steve. Steve will add specific elements of the habitat that should be monitored closely now. These elements are: Riparian Zones; Hardwood component (for gray squirrels and other key species); Snags (using the Guild approach); Old growth. With these additions, the team agreed the existing plan would be adequate until a PSW/3-Forest/Fish & Game Plan could be developed. For formal resolution: Rod will review the changes Steve will make at the next meeting. If these are agreeable, this appeal point will be dropped. An additional action item: Gordon will contact Gordon Yamanaka to establish a timetable to complete the Monitoring Plan.

(M3) Steve and Gordon informed the group that the three forests and PSW would be meeting on November 10, 1988 to begin work on the monitoring plan. Stan Stephens discussed his serious concerns about the poor references made to the Fishery resource and feels more emphasis should be included. Steve stated that Stan should attend the upcoming meeting and the team concurred. Rod feels that the agencies are definitely on the right track for a comprehensive monitoring plan. Based on Steve's additions to the existing Sequoia Forest monitoring plan as discussed in meeting #2, Rod is willing to drop this appeal point. Rod also added that Blue Oak reproduction should be added as a key monitoring element of the hardwood component, as it is key to the appeal by the California Native Plant Society.

(M4) Rod discussed the "loose end" on Goshawks he had identified at the close of meeting #3. Rod stated that this point was not recognized when Julie and he discussed and verified the 30 appeal points over the phone. He feels that the LMP Standards and Guidelines do not adequately protect the Goshawk. He referenced a study by Bloom (conducted for Fish and Game), which states that the current 50 acre no-cut area around existing sites is not inappropriate. The report does, however, state that with the limited amount of knowledge for Goshawks, a more conservative approach of 125 acres of no-cut may be more appropriate. Rod stated that this may be more of a regional issue, since all Forests are following the regional guide (Rainbow Book). Steve stated that he talked with Jim Shevock about this point and Jim had indicated that the Region would probably stick to the current guidelines. Rod stated that we need to protect known site locations in all areas, as well as in SOHAs, wildernesses, etc., and that protection from disturbance during the nesting period is highly critical to prevent abandonment. This protection is in addition to protection of the habitat surrounding the nest site, which is addressed by the current guidelines. Jay recommended that until the Forest can establish its Goshawk network, the Forest should retain the 50 acre core zone and also restrict

disturbing activities within an additional 75 acres around the nest until the fledging period is over. The team agreed that this is an acceptable approach, but also encouraged heavy monitoring of known sites.

PROPOSED RESOLUTION: Resolution of this appeal point is three-fold:

1) The Forest will add the following specific habitat elements to the LMP monitoring plan: riparian zones; snags; hardwood component; old growth.

2) Resolution of appeal point #5 of Terrestrial Resources Issues (Snag Management) for adequate protection of Pileated Woodpecker habitat.

3) Delete last paragraph of Old Growth Habitat pertaining to Goshawks on page 4-29 of the LMP and substitute the following:

> "Protect all active goshawk nests until an approved Forest goshawk network is established. 125 acres of habitat will have a restricted operating season from April 1 to August 1 and include 50 acres of undisturbed habitat around each active nest site.

This issue is resolved pending development of a joint monitoring plan involving PSW and the Tri-Forests (Sierra, Sequoia, Stanislaus).

Appeal point #2: Deer Population Projections.

(M1) Resolution of #2 is directly tied to #18. The team agreed to work on #18 and re-visit this "all-inclusive" point after resolution of other more specific appeal points.

(M4) At the end of meeting #4 (after agreeing on tentative resolution of all specific appeal points), the team reviewed point #2. Rod stated that with the revised and/or new LMP Standards and Guidelines as currently agreed upon by the team, this point is resolved.

PROPOSED RESOLUTION: Resolution of this point is five-fold:

1) To improve provisions for winter range forage, add the following language in the LMP:

Pg. 4-77 Prescription for B06 (Range section), 3):

> Retain at least 700 lbs./acre residual dry matter (RDM) as the utilization standard for livestock use.

Pg. 4-67 Prescription for OW5 (Range section), 2):
Pg. 4-77 Prescription for B06 (Range section), 4):
Pg. 4-80 Prescription for OW6 (Range section), 3):

> Winter grazing allotments will limit browse utilization to no more than 15% of preferred browse or 5% of staple species in heavily browsed condition (form class 3 or 6). Limited browsing will maintain browse in satisfactory condition and indicate that green feed is available for wildlife during winter "green up" (inadequate green forage period).

Pg. 4-67 Prescription for OW5 (Range section), 3):
Pg. 4-77 Prescription for BO6 (Range section), 5):
Pg. 4-80 Prescription for OW6 (Range section), 4):

Allotment Management Plans will allocate emphasis for use of mast crops to wildlife.

2) To improve provisions for summer range forage, add the following language in the LMP:

Pg. 4-32 Forest-Wide Standards and Guidelines (Timber Management; Regeneration Methods section), add paragraph 5 as follows:

-- Retain summer forage for deer where preferred browse species occupy a timber site after harvest:

Specifics

a. Determine the brush control needs on a site specific basis.

b. Consult with a Wildlife Biologist when planning brush control measures.

c. Maintain brush complexes with preferred browse species at ~~no more than~~ approximately 20% of the area.

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3) To improve meadow cover, add the following language in the LMP:

Pg. 4-28 Forest-Wide Standards and Guidelines (Fish, Wildlife, and Plant; Habitat Coordination section), add paragraph 4 as follows:

-- Inventory all meadows and riparian areas to determine areas lacking cover for wildlife and utilize fencing, down logs, willow or aspen plantings and brush piles to improve areas identified as poor habitat.

4) To reduce recreational impacts on wildlife, change the following language in the LMP:

Pg. 4-38 Forest-Wide Standards and Guidelines (Facilities and Energy; Facilities section), delete c) under paragraph 2 and replace with the following:

(c) Close roads not needed for recreational access and/or provide for adequate screening to minimize impacts on wildlife.

5) To provide travel corridors and fawning areas for deer, the Forest will on an interim basis implement Revision IV of the Forest's Riparian Standards and Guidelines.

Appeal point #3: Bald Eagle Protection.

(M1) Rod stated that the Plan provides only reactive protection, and that we need to be pro-active in providing habitat protection. Gordon stated that the pro-active part of the FS role in managing Bald Eagles is our compliance and implementation of the Recovery Plan of the US Fish and Wildlife Service. In regards to monitoring, it is currently defined in the FLMP as a cooperative

effort with PSW and the three Forests. The team recommended adding new language to our existing forest monitoring plan, stating clearly that we will implement the monitoring plan for the Recovery Plan for Bald Eagles. A key to assurance of no impact on the eagles by this plan (from Fish & Game perspective) is that no new physical developments are proposed.

(M2) After reviewing the Sierra Forest Plan language, the team agreed to add language to the prescription for Veg Types Blue Oak- Savannah and Oak Woodland for protection of the Bald Eagle.

PROPOSED RESOLUTION: Add the following language to the LMP:

Pg. 4-29 Forest-Wide Standards and Guidelines (Fish, Wildlife, and Plants; General section, add paragraph 9:

-- Protect important roost trees and feeding areas for wintering bald eagles at Pine Flat Reservoir and along the Kern River.

This addition is proposed to be added to the section on Forest-wide Standards and Guidelines rather than Prescriptions as noted in the meeting documentation.

Appeal point #4: Riparian Habitat Protection.

(M1) The team was in agreement that Revision IV of the Forest Riparian Standards and Guidelines is adequate from a NEPA standpoint, but that the language must be clear that management in riparian zones shall be for the enhancement of riparian-dependent species only. Terry Henry will provide additional language in the S&Gs to clarify and resolve this point. Terry read a rough draft to Rod and Rod agreed in principle to her proposal. Adoption of Revision IV will lead to resolution of this appeal point.

(M2) No further work was pursued on this. Terry will have the revised Riparian Standards and Guidelines available for the third meeting for review by Rod and Fish and Game Fisheries representatives.

(M3) See documentation under #7.

PROPOSED RESOLUTION: See resolution of appeal point #2 of Aquatic Resources Issues. The Forest will adopt Revision IV of the Riparian Standards and Guidelines on an interim basis pending final revision and adoption through the Forest Plan amendment process.

Appeal point #5: Snag Management.

(M1) Steve discussed applicability of research by Raphael & White, in which 3 1/2 snags per acre are recommended as ideal. He pointed out the large amount of areas set aside within and adjacent to the Forest, such as National Parks, SOHAs, wilderness, and riparian zones. Based on these set-aside areas, the Forest can appropriately apply a lower snag average and still maintain population viability. Rod responded that the 1 1/2 snags per acre refers to hard snags only, and assumes that all soft snags are retained. He stated that hard and soft snags are separate elements of wildlife habitat and should be managed as separate components. The FS has the ability to save all soft snags on tractor ground, but cable ground is a different story- only hard snags are being left. Gordon suggested that maybe FS should increase the percent of mature timber left in wildlife clumps to compensate for the falldown in soft snags on cable ground. The team had an open discussion about this possibility

and developed a rough draft of a guideline. Rod continued to encourage the FS to increase awareness of field personnel to the habitat needs and to encourage innovation as a key to further success.

(M2) Rod began the discussion by inquiring as to the source of the size class distribution per 100 acres as proposed in the Plan. According to research by Chapel, pileated woodpecker average snag size is 30 inches. Rod stated that the 20 inches listed in the Plan is minimum use size and is not acceptable as an average. Rod also referenced Evelyn Bull's study in Northeastern Oregon, where the average diameter of 105 nest trees is 32 inches. The team agreed to raise the minimum diameter of the large snags to be saved from 20 inches up to 24 inches, recognizing that larger sizes will be necessary to truly meet habitat needs of numerous species (besides the pileated woodpecker) using these large snags. Rod also referenced research of Raphael and White which showed the average diameter of trees used for other-than-nesting is 16 inches, well above the 10 inch minimum diameter listed in the Plan. Gordon recommended a change from the minimum of 10 inches to 16 inches (anything larger than 15 inches for field use). The team adopted this change and then was in consensus about the recommended changes. The changes are: 50 snags per 100 acres greater than or equal to 24 inches in diameter; 100 snags per 100 acres greater than 15 inches in diameter. The team then discussed the extent of pileated woodpecker habitat and whether this guideline should be applied on the forest as a whole. As the mixed conifer and Red fir vegetative type is habitat (Ward Thomas, reference), the team agreed that it is appropriate to apply this guideline forest-wide. A final key to the team's discussion and agreement is that the Forest will be managing for the mean recommended diameters (>16" and >24") and larger. Steve raised the concern that snags <16 inches won't "count" in our snag management; he then referenced field data by Steve Self which indicates that most of the Forest exceeds the newly agreed-upon guideline, and hence the 10"-16" snags are of no great consequence in meeting the snag guideline.

PROPOSED RESOLUTION: The following language changes to the LMP are proposed:

Pg. 4-29 Forest-Wide Standards and Guidelines (Fish, Wildlife, and Plants; Snag and Down Log Section), delete paragraph 2 (a,b,c) and replace with the following:

-- Maintain a minimum average of 1.5 hard snags per acre on commercial forest land in each compartment.

a) Hard snags should meet or exceed the following size and density requirements:

Size (dbh)	Snags/100 Acres
>24	50
>15	100

b) In even-age treatment areas, clumps or aggregations of mature trees averaging 4% to 6% of the treated sale area (exclusive of riparian zones) will be left to provide for snags, snag recruitment, and wildlife screening. These clumps will be established in close coordination with a Wildlife Biologist and should range from 1/2 acre to 2 acres in size.

-- Protect all soft snags except where they are a safety hazard. Where it is not possible to protect soft snags, green trees will be left for additional snag recruitment or wildlife clumps will be increased in size.

Chapter 7, FEIS Appendices, Appendix J-8; add the following

Harvest unit: That part of a management stand that is actually harvested including wildlife clumps. The harvest unit does not include uncut riparian buffers along perennial streams.

Appeal point #6: Silviculture.

In clarifying the specific points of the appeal, Julie Allen and Rod Goss identified several specific items. These specific items precede the following meeting notes.

"State-of-the-Art Reforestation"

(M1) Rod stated that the issue is not really "What is 'State of the Art', but rather that "State of the Art" reforestation is not clearly linked to the Plan's Standards and Guidelines. Rod recommended that for resolution, more clear language needs to be added where reference is made to "State-of-the-Art" that clearly displays an awareness of the impacts on other resources and the use and mitigating effects of Standards and Guidelines on the effects.

(M2) In terms of formal resolution of this point, Rod suggested additional language to the Plan directly stating that application of "State-of-the-Art reforestation" includes use of Standards and Guidelines intended to buffer the effects on other resources. Steve will develop language to meet this need.

"Residual Vegetation in Plantations"

(M1) Rod stated a need for F&G to be assured that brush remaining in a plantation (acceptable from a silvicultural standpoint) is designed to help meet deer habitat needs, rather than an unpredictable mix. Desirable species mix should be developed from input by Wildlife Biologist. Steve stated that despite "State-of-the-Art" reforestation, there is brush in every opening. Rod confirmed this and accepted, but emphasized that "State-of-the-Art" should include residual brush mixes by design, not by accident. Action Item: Rod will develop a rough draft guideline which will help silviculturists in conjunction with biologists design residual brush complexes which will make projected deer population increases more realistic, since projections are partially dependent on early successional browse in new openings.

Based on an acceptable guideline for helping to assure a desirable mix of browse species in plantations, Rod stated that both points #12 and #18 could be resolved.

(M2) Rod reviewed the first meeting notes and stated that they accurately reflected his position. He distributed a rough draft of a Guideline on leaving preferred browse in plantations during release operations. The team generally supported points 1 through 4 of his draft, and stated that point 5 would need further discussion as to whether it was a viable option. The specifications of points 4 and 5 of the draft guideline are from the North Kings Deer Herd Study. Gordon emphasized that a list of preferred browse species should be available to Silviculturists. Two sources are the N. Kings Deer Herd Plan and the Forest Range Handbook. Steve mentioned that in consulting with his district Silviculturist (Don Fullmer), control during establishment of the plantation (first five years) is critical. Beyond that, it is easier to live with brush competition. Jay stated that control is more critical than timing depending on the brush complex. Tom stated that point 4 of the guideline indicates that brush levels would be at a minimum of 20%, and

with less-than-100% control of non-preferred browse, plantations can easily have 30% brush cover or more. Rod stated that he would accept 20% total brush cover as a guideline, with preferred browse selected over other species during prescription development.

(M4) The proposed guideline on retaining brush in plantations was presented briefly to the Forest Silviculturists and further clarification and discussion is needed before final acceptance of the guideline. The team agreed to postpone formal work on this point, but discussed several key points: 20% of the area in brush cover is more appropriate that 20% crown cover, and; the Silviculturists feel the language of the guideline should recognize that tree survival and growth have a priority over brush in plantations, and that meeting the brush retention guideline should not threaten plantation establishment standards. Rod made it clear that this guideline is not an "either/or" situation and that close coordination with the Biologist and innovative thinking are key elements to meeting all resource objectives. The team agreed that the final guideline should contain a clear "objective" statement and that the Forest Silvicultural group should meet to get the wording down. As the guideline is currently stated, appeal point #18 is resolved.

PROPOSED RESOLUTION: See resolution of appeal point #2 (Section 2) of Terrestial REsource Issues.

#19 and #20- "Dead and Downed Material"

(M1) The problem here was that there was no follow-through from the meeting of the three Forest Supervisors, Staff officers, and Fish & Game where consensus was reached on dead retaining dead and downed material. The only documentation the team had was notes that Gordon had of the meeting. Steve recommended that the FS add language to the Plan incorporating the agreements of the meeting, as well as saving all soft snags and retaining downed material in an uncharred condition as much as practical. This resolution was agreeable to the team. Rod's comments were positive in that he recognizes the difficulty in saving snags in many situations (such as broadcast burning). He encouraged the FS to continue to encourage innovation and flexibility in trying new methods, knowing we will lose some and win some. The Dead and Down guideline is just that - an average.

(M2) Steve provided the team with a rough draft of a guideline for retention of dead and downed material. The team reviewed and changed some of the language. After wordsmithing, the guideline was accepted as resolution of this appeal point.

PROPOSED RESOLUTION: Resolution of appeal points #2 and #5 of the Terrestrial Resource Issues and the addition of the following language to the LMP:

Pg. 4-29 Forest-Wide Standards and Guidelines (Fish, Wildlife, and Plants; Snag and Down Log Management section), add the following:

-- Retain all large decomposing logs where consistent with other management objectives.

-- Leave 10% of each regeneration unit with untreated slash for wildlife habitat.

-- Utilize management techniques which will minimize or eliminate charring of downed woody material left for wildlife cover and habitat.

These changes clarify the ambiguity of "state-of-the-art reforestation and address the retention and management of dead and downed material.

Appeal point # 7: Meadow Management.

(M4) Rod agreed that this appeal point is resolved based on Revision IV of the Forest Riparian Standards and Guidelines and adequate allocation of forage for wildlife uses. Rod stated that the team took a pro-active and long-term approach rather than a short-term solution such as cessation of meadow use by livestock.

PROPOSED RESOLUTION: This point is resolved by the resolution of appeal point #2 of the Terrestrial Resource Issues.

Appeal point # 8: Species Diversity.

(M2) Rod recognized that not all T&E or sensitive species can be tracked or formally monitored, such as the wolverine, pine marten, fisher, and others. Gordon pointed out that the "Guild" approach to monitoring should track the habitat for all species relying on a particular habitat type. Rod agreed to this point. The Forest does maintain sighting records for many of the species not monitored individually. Steve pointed out that sensitive plants are monitored in response to project proposals. Rod agreed that this was appropriate. Rod said he would check back with his Data Base personnel and Botanist. He stated he would be willing to drop this appeal point based on the new LMP Standards and Guidelines being developed or revised as well as an adequate monitoring plan.

PROPOSED RESOLUTION: This point is resolved based on pending development of the PSW/Tri-Forest Monitoring Plan.

Appeal point #9: Energy Development.

(M1) Rod stated that there are no guidelines whatsoever to help guide energy development. The team agreed to Rod's recommendation that the Forest review the Standards and Guidelines for energy development contained in the Sierra LMP and either customize them or incorporate "as is".

(M2) Gordon read the language from the Sierra NF Draft Plan. His concern is that the language is somewhat unclear and could lead to considerable work and expense on the part of the Forest simply to issue a preliminary letter triggering formal responses and studies by a project proponent. Gordon will check with the Hydro coordinator on the Sierra to clarify the intent of the guideline.

(M3) Gordon reviewed the guideline from the Sierra NF Draft Plan and stated that he was willing to accept the wording as is except for the reference to setting Fish and Wildlife objectives for Class I watersheds. He was very unsure about who even does this work. The team agreed that the wording with Gordon's recommended deletion is acceptable and the appeal point would be resolved.

PROPOSED RESOLUTION: Add the following language to the LMP:

Pg. 4-37 Forest-Wide Standards and Guidelines (Facilities; Energy Section), add the following:

- -- Seek flows and habitat conditions below new hydroelectric projects which maintain fishery and wildlife resources near naturally occurring conditions.

-- -- During re-licensing of hydroelectric projects, seek flows and habitat conditions more favorable to fish and wildlife on projects where habitat has been degraded by the project

Appeal point # 10: Standards and Guidelines, General.

(M1) Rod proposed that the team table this discussion, as resolution of other points may clear this one up without dealing with it specifically. The team agreed.

PROPOSED RESOLUTION: This appeal point is resolved by a combination of clarification and resolution of points pertaining to specific Standards and Guidelines.

Appeal point # 11: Capability to Carry Out Planned Activities.

(M2) The team agreed that staffing is a problem. Jay and Gordon pointed out that staffing is increasing, as the Forest is currently hiring a Fisheries Biologist, and an assistant to a zone Wildlife Biologist has been hired. The team was unclear as to a clear point of resolution. Rod stated that he would be willing to drop the appeal point based on continued efforts by the Forest to increase staffing levels. Wording to the effect that "We (FS) agree with the need for adequate staffing levels to implement necessary monitoring requirements, and we will pursue adequate staff".

PROPOSED RESOLUTION: Based on the discussion of current staffing levels and projected increases, this point is resolved. Higher staffing levels are anticipated and national emphasis appears to be shifting in favor of wildlife and fisheries funding.

Appeal point #12: Vegetation Type Conversions.

(M1) Rod stated that the California Native Plant Society was a key initiator of this appeal point and shows up as a central point of their appeal. The key point is that type conversions are essentially proposed in the Plan and therefore must be justified in the Plan, according to NFMA. The project level is not the place to justify type conversions. Jay commented that it appears there are two options: 1) Amend the plan to include appropriate justification for conversions, or 2) defer proposed type conversion from the Plan. The team agreed that Jim Shevock should be consulted as to his response to the Cal. Native Plant Society about his response before we resolve this point. Rod requested that if the Plan eventually does include justification for type conversions, that there be language to provide standards and guidelines for buffering the impacts on wildlife.

(M2) No further information was introduced. Gordon had attempted to contact Jim Shevock on his response to the California Native Plant Society, but had no response to share as yet. Gordon will provide input by next meeting.

(M3) Gordon stated that after a lengthy discussion with Jim Shevock, he is recommending that proposed type conversions be dropped from the Plan. He stated that in one alternative, the Forest would increase water yield by

converting 3,000 acres of chapparral. This proposal was inadvertently carried over to the Recommended Alternative, although it shouldn't have. The team agreed that based on the exclusion of type conversions in the Plan, this appeal point is moot.

PROPOSED RESOLUTION: A minor Plan amendment deleting all references to proposed type conversions from the Recommended Alternative will be initiated.

Appeal point # 13, Forage Allocation.

(MB) Rod discussed with the group the value of high mountain meadow habitat to seasonal deer use, such as fawning cover. He referenced data from the North Kings Herd Study which linked the health and success of the deer population and fawn survival to the amount of cover available in the early season. He then pointed out that the management prescription for the CF7 type allocated primarily all forage to livestock and said that this was unacceptable given the essential role that early season cover and forage provides the deer population. Steve stated that 50% use is the upper level for livestock use, and when that level is reached, livestock are removed in order to provide adequate habitat for wildlife species. Rod recognized this use level, but stated that the 50% left over was not adequate habitat or forage for riparian-dependent species. He feels that livestock and wildlife needs should be co-equal, rather than forage allocated primarily to livestock. Jay noted that needs of riparian-dependent species should be adequately met before allocation of resources to other uses. Jay made this point in reference to the new Riparian Standards and Guidelines, in effect stating that livestock grazing should not compromise riparian-dependent species. The team agreed to a Plan language change: on page 4-87, delete the phrase "primary use", and insert language to the effect that livestock forage allocation must be compatible with LMP Standards and Guidelines and needs of riparian-dependent species. Jay summarized by noting that the team had agreed on two of three critical habitat elements for deer, which are dependent upon vegetation within the conifer zones: 1) leaving desired brush species in plantations, and; 2) leaving a buffer strip around perennial streams and meadows. The other key element which the team was currently working on was vegetation within the meadows and streamside zones. Rod agreed with this summarization by Jay. Gordon pointed out that the Forest is identifying demonstration areas, and he would like Fish and Game Biologists to identify critical habitat within these areas for project work. The team agreed that the long-term solution for adequate forage allocation for both livestock and wildlife was the work currently underway with PSW and Fish and Game. The team agreed that an interim resolution had three key elements which the team had agreed to: 1) Improved Standards and Guidelines; 2) New plan language in the Conifer zone management prescription, and 3) demonstration areas, especially in key deer habitat.

Rod then moved the discussion to the Blue Oak/Savannah, Black Oak/Woodland, an Pinyon/Sage vegetative types, and pointed out that again, forage allocation was primarily for livestock use. He would like to see adequate allocation for wildlife needs, as the forage and habitat are critical to healthy deer populations. He feels that livestock cannot be kept on from February to December and still provide for wildlife. He would like a more equitable allocation. Rod stated that the recommended range of 400-600 pounds of mulch retention as a minimum to be left is inadequate, as commonly the lower end of the range becomes the standard, especially in tough years when all users need the higher rates. He noted that the Los Padres and Stanislaus have higher minimum rates (700 pounds). Jay recommended that the Forest adopt a minimum of 700 pounds on all three vegetative types, and the team agreed that this higher mulch rate was appropriate for adequate wildlife forage allocation. Gordon

notes, however, that the Forest carries only 800 AUMs on the Pinyon/Sage type and the higher mulch rates would not apply well to this type. Steve recommended keying to a particular species for proper timing to end livestock grazing rather than a mulch standard. Rod agreed that because of the low use and uniqueness of this vegetative type, a different standard would be appropriate. The Fish and Game appeal cited problems in the Pinyon/Sage type from over-grazing. After discussion, the team agreed that these problems are primarily on BLM land and hence were not pertinent elements of the appeal point.

After resolving the amount of mulch to be left, the team began discussion on the season of use. Rod recommended a February-May season. The basis for this is to prevent overuse of the forage and resulting overuse of the brush forage, which is critical to deer population in the latter part of the season. Jay pointed out that livestock management revolves around management of the allotments and that the Forest needs to establish a goal to work towards, recognizing that it cannot be reached overnight. He stated that the Forest should work toward a goal of getting livestock off the range early enough to provide adequate acorn and brush for the deer and other species. Rod then stated that with the increased residual mulch rates and a goal of early-off to provide adequate acorn crops for wildlife, that we can monitor brush and feed utilization carefully. Based on these agreed-upon elements, Rod felt that the Forest was moving in the right direction and that the point about adequate allocation was resolved. The team agreed to this. Jay reiterated that in allotment plan review and revision, the Forest must consider adequate provision for acorn crops and residual mulch for wildlife-dependent species.

Rod then raised the point about early-on allotments, in which livestock essentially graze through the winter or very early spring months (October-December or January). He stated that he is very concerned with this policy, as the livestock utilize all the green grass. Rod appeared to urge for a stop to this particular practice. Gordon was very clear that he did not support a blanket approach to this problem, as the problem was more site-specific and is very limited in scope. Gordon suggested that in the allotments on the Greenhorn district, overuse is avoided by monitoring and so a blanket approach is not merited. Jay suggested that if our current approach is keeping overuse from occurring, then maybe the Forest could formalize this approach in a Guideline to provide more direction to all the allotments and/or units. Jay suggested that the Forest look at the methodology Wayne Nelson applies on his allotments on the Greenhorn district and see if it is applicable to the Forest. These kinds of "early on" allotments represent only four of the 50+ allotments on the Forest, and so it seems reasonable to look forward to an acceptable resolution to this last element of the appeal point. Jay, Gordon, and Steve agreed to meet next week to review the Greenhorn approach and give consideration to a Guideline to provide for adequate forage allocation between livestock and wildlife on these allotments. Rod was very agreeable to this approach. Rod's primary concern is that livestock seems to be given primary allocation on many vegetative types which provide key wildlife habitat. An equitable resolution (to Rod/Fish&Game) must provide equal consideration of wildlife which are dependent upon those resources.

The team recognized that it had discussed resolution on all of the key points of the whole Fish and Game appeal as summarized and agreed to over the phone between Julie Allen and Rod. Rod notes that there were a few "loose ends" in the appeal which need to be addresssed prior to development of a document capturing and proposing the formal resolution of the appeal points.

(M4) The team agreed that the notes from the previous meeting accurately stated the discussions and positions. Gordon, Steve, and Jay met on October 26, 1988 to continue work on a rough draft guideline for the "early-on"

allotments. As discussed earlier, the intent of the guideline is to help ensure that there is adequate forage for deer while providing for winter livestock grazing. Steve proposed the following guideline:

"In Blue Oak-Savannah and Oak Woodlands, no more than 15% of preferred browse or 5% of staple browse species will be heavily browsed (form class 3 or 6). Limitation on browsing will maintain browse in satisfactory condition and be an indication that adequate green feed is available for wildlife during the inadequate green feed period."

Steve also recommended the inclusion of the following language in Management Direction for the Blue Oak/Savannah and Oak Woodland vegetative types: "Wildlife use will be the emphasis for use of mast production."

Rod stated that acceptance of this guideline meant additional monitoring by the Forest in allotments grazed during the winter. Steve acknowledged this additional monitoring need. Use of this guideline will be in management of the allotments, so that monitoring of the use may be directly and immediately linked to adverse impacts if that is the case. The Forest can respond by (for instance) reducing number of head, removing stock, etc....

Rod then discussed two minor sub-points of the "Forage" appeal point. The first was that the Plan has proposed increased AUMs under the Recommended Alternative. Gordon stated that this was not the case. Steve referenced the Plan, stating that the current level is approximately 68,000 AUMs annually and the Plan projects no increase. Gordon stated that the Forest is headed toward maintaining this level with no planned increase. Rod stated that Decade 2 shows an increase, which could occur theoretically in year 11 of the Plan (first year of Decade 2), and that some of the language of the Plan implies a planned increase. Steve noted that by applying Standards and Guidelines and by accomplishing habitat improvement projects, the Forest can increase its grazing capability, but that there are no plans to increase. The major and immediate benefit of increasing grazing opportunities would be to reduce pressure on riparian zones and meadows, as well as other areas. Steve referenced page 3-42, where language clearly states that no increases in AUMs are proposed. Rod agreed to the discussion and stated that this sub-point was clarified and resolved.

Rod's second point was the ambiguity of the allocation of forage which would be available in plantations. Gordon stated that the Forest is not assigning any AUMs to these areas and that there is no intention to increase AUMs due to an increase in available forage in plantations. The immediate effect would be to spread the cattle over a larger area, once again reducing overall grazing pressure and impacts.

PROPOSED RESOLUTION: Resolution of this point is two-fold:

1) Resolution of appeal point #2(a) of Terrestrial Resources Issues (guidelines for mulch retention and browse utilization).

2) The following language changes are proposed:

Pg. 4-85 Management Area Prescription CF6 (Emphasis section): delete second sentence.

Pg. 4-87 Management Area Prescription CF6 (Range section): delete 2).

Pg. 4-86 Management Area Prescription CF6 (Fish and Wildlife section): add to 2) delete "...fisheries..." and replace with "...riparian dependent species...".

Appeal point # 14, Old Growth Retention.

(M1) Steve Anderson stated that this lack of clear language was an error in word processing, in that the proper reference of "five percent of each vegetative type/seral stage combination..." was included in the text of the Plan EIS but was not carried through to the text of the Plan. Steve will provide new language for the Plan text to correct this.

(M2) Rod agreed with the notes from the previous meeting. Steve will provide correct language for inclusion into the Forest Plan.

PROPOSED RESOLUTION: Make the following changes in the LMP:

Pg. 4-32 Forest-Wide Standards and Guidelines (Timber Management; Diversity section): delete second guideline and replace with the following:

-- Provide for an array of early and late successional stage habitat over time in each ecosystem. A minimum of 5% of the total area of each vegetative type in forested lands will be maintained in each seral stage/habitat type combination. Allocation of habitat type/seral stage combinations will be done on a compartment basis.

Appeal point # 15: Unexercised Riparian Water Rights.

This point is moot, as the "Hallet Creek" decision confirmed that the Forest Service had rights for on-forest uses but no rights to divert water to maintain minimum flows.

C. Additional Issues in "Statement of Additional Reasons"

Appeal point # 16: Hardwood Management.

(M2) Steve pointed out that in the Blue Oak-Savannah (BO2) and Oak Woodland (OW1 and OW2) vegetative types, the Forest could increase the optimum carrying capacity of hardwoods in these areas. Steve recommended that on page 4-44, hardwood carrying capacity be raised to "50 square feet of basal area per acre". This recommended change is consistent with research by Hurley. This change would be applied to all three of the above listed vegetative types. The team agreed to this change, as no proposals for manipulation of the vegetative types are anticipated during the life of this plan. The guideline does provide for direction if projects are proposed, rather than excluding any proposal within the prescription for the areas. In veg types OW6 and BO6, the current guidelines are to retain 20 square feet basal area of hardwoods. The team agreed to raise this recommended level to 50 square feet, or if levels are currently below this, to retain the current levels. Steve pointed out that page 4-10 contained language that states "...Blue Oak will not be harvested...." The team agreed that this was too restrictive, in that under certain circumstances, it would be desirable to harvest Blue Oak (to promote regeneration, for instance). The team agreed to this change, and also agreed to add language in the prescription for the Blue Oak that any harvest will favor mast-producing trees. Steve agreed to develop these Plan language changes. Steve and Gordon will contact Tom Beck on the Stanislaus and inform him of our proposed changes.

The team then began discussion on hardwood retention levels in treatment (harvest) areas in the conifer forested zones. Steve noted that the current retention levels are 20 square feet per acre averaged over a timbered compartment, and that these levels provide a medium-to-high level of habitat. Rod pointed out that the 20 square feet needs to be in mast-producing oaks to provide for adequate habitat. Rod then discussed with the group the value of extremely high use of acorn-producing oaks, and that the bottom line is that 'We need all we can get because they all get used'. There is a direct correlation between the increased availability (and use) of acorns and the health and vigor of the deer herd in terms of fawn survival and winter fitness. Steve concurred that oaks are vitally important and felt that the current guideline is adequate. Gordon then recommended additional language to the existing guideline that the existing 20 square feet should be in mast-producing oaks, averaging 80 years and older. The team agreed to this recommendation. Although not a part of this appeal point, Gordon emphasized the need in our Plan to recognize the need and direction for providing regeneration of oaks, especially in the mixed conifer-hardwood type. He emphasized the point that oak stocking levels should be applied on a compartment basis, rather than a unit-specific basis, as numerous land managers are attempting to do. He suggested adding language to the CF7 prescription to provide direction in regenerating oaks (especially in overstocked stands). The team then discussed the technology available to protect and manage for oaks. Oaks on tractor-loggable ground can be left. The problem is on cable-yarded ground that is subsequently broadcast-burned for site preparation. The team agreed that intensive efforts must be made on cable ground to save hardwoods, especially where they occur in clumps. The team also discussed the need in area-specific environmental analyses that Wildlife Biologists (both FS and Fish & Game) need to be specific as to the critical areas for oak management. Rod stated that he will accept 20 square feet of mast-producing (80 years and older) oak retention levels for compartment planning, and that the burden of proof will be on the Biologists to point out areas where increased levels are necessary, such as holding areas or migration corridors. In these areas, the team agreed that an increased level of 30 square feet per acre would be appropriate. Gordon also recommended that the word "indicator" be deleted from the first paragraph on page 4-30. As formal resolution, the team agreed to add/change language to the hardwood retention guideline requiring 20 square feet of 80 years-and older-oaks be retained per acre. In key areas, 30 square feet should be retained as a guideline.

PROPOSED RESOLUTION: The following changes in LMP language are proposed:

Pg. 4-30 Forest-Wide Standards and Guidelines (Fish, Wildlife, and Plants; Oak Management section): delete the first guideline and replace with the following:

-- In mixed conifer-hardwood stands, leave at least 20 square feet per acre basal area of oaks where this currently exists.

-- In pure hardwood stands maintain a minimum average of 50 square feet basal area per acre. Select for leaving heavy mast-producing trees in any harvest of oaks.

-- Leave 30 square feet basal area of oaks in mixed conifer-hardwood stands identified as key deer areas.

Pg. 4-30 Forest-Wide Standards and Guidelines (Fish, Wildlife, and Plants; Oak Management section): in last guideline, delete "...indicator...".

Pg. 4-10 under 6) Woodlands, delete "Blue oaks will not be harvested."

Your signature will constitute your recommendation of this agreement and withdrawal of the California Department of Fish and Game's appeal of the Sequoia National Forest Land and Resource Management Plan. Upon receipt of the signed agreement, I will take action to make the proposed changes. This document shall be made part of the record in the Sequoia National Forest Land and Resource Management Plan appeal number 2403.

I appreciate your willingness to work with the Sequoia National Forest personnel to resolve this appeal.

Sincerely,

JAMES A. CRATES
Forest Supervisor
Sequoia National Forest

11/22/88
Date

* George A Nokes

GEORGE NOKES
Regional Manager
Region 4, California Department of Fish and Game

11/18/88
Date

*note change on appeal point 2-2.

FS-6200-28(7-82)

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EXHIBIT C

PROTOCOLS SEQUOIA NATIONAL FOREST PLAN MEDIATED NEGOTIATIONS

A. Purpose and Goals

The purpose of these negotiations is to resolve issues and concerns raised in the appeals of the Sequoia Forest Plan through mediated negotiations involving appellants,intervenors and The Forest Service to the mutual satisfaction of all the participants.

The goal of the negotiations is to reach consensus on the specific content and wording of proposed amendments to the Plan. For those issues that require further study or implementation of a planning process, the parties will agree upon a specific plan of action including a feasible timeframe and reference points for reviewing the progress in carrying out the plan of action.

The Forest Service is committed to using any consensus reached in these negotiations as the basis of proposed changes to the Sequoia Forest Plan. The Appellants agree to support consensus outcomes by withdrawal of the appeals that formed the basis for the negotiations at the end of the negotiations process. Appellants agree not to file new appeals on changes formally adopted by USFS that are based upon consensus items.

B. Structure

1. Participants in the Sequoia Forest Plan Mediated Negotiations shall include representatives of appellants, intervenors and USFS, Sequoia Forest staff. See attached list.

2. Alana Knaster, President of The Mediation Institute, Los Angeles, California shall serve as mediator in this process.

3. Each appellant, intervenor or interest caucus will appoint a minimum number of designated representatives to be seated at the table. These designated representatives shall constitute the Negotiating Committee.

4. Individual appellants or intervenors may joint with other appellants or intervenors to form an interest caucus. Appellants who cannot participate in the negotiations in a full capacity, may authorize another appellant group or member of its interest caucus to communicate its interests and positions. The full Negotiating Committee shall be kept appraised when such designation occurs.

Each appellant, intervenor or interest caucus may also include other team members who they believe are necessary and appropriate to represent their interest and who may attend all sessions. These team members may be designated to participate on technical

sub-committees. Team members who are not seated at the table may be called upon to elaborate on a relevant point by a designated representative, but they may remain at the table only for that purpose.

5. Alternates may substitute for designated representatives in the event that they cannot attend a negotiations session. However, it is the responsibility of the designated representatives to fully brief that alternate. Alternates must have full authority to represent the position of their group at negotiating session.

If more than one third of the designated representatives from the Negotiating Committee cannot attend a scheduled session, then that session shall be postponed.

6. Sub-committees may be established to address particular issues or tasks that either require additional technical expertise or are better handled in a small group setting. Such working groups may include either designated representatives or team members. There will be no more than one representative per interest caucus on a sub-committee. Not all appellants, intervenors and interest caucuses need to participate on each working group. The decision to participate or not is the prerogative of that group.

The sub-committees are not authorized to make decisions for the full Negotiating Committee. They are responsible for making recommendations on possible solutions to resolve controversial issues under consideration.

7. Each appellant intervenor or interest caucus shall name a contact person who shall be responsible for coordinating communication between and during meetings with team members, other members of the Negotiating Committee and with the mediator.

C. Decision-making Process

8. The Negotiating Committee and all sub-committees shall operate by consensus. "Consensus" is defined as an agreement of all the designated representatives or designated sub-committee members.

9. Designated representatives are expected to represent the concerns and positions of their caucus and to ensure that any agreement reached is acceptable to their constituents who may not be directly participating in the negotiations.

Sub-committee members have the responsibility of ensuring that any position taken has maximum assurance of broad acceptability to the caucus they represent.

10. Any member of the Negotiating Committee or the mediator are permitted to call for a confidential caucus deliberation.

11. The mediator may assist in intra-group communication as requested and may be asked to participate in confidential caucus deliberations.

12. The participants may reach a consensus that resolves most but not all of the issues that are being negotiated If this occurs, the parties may agree to have their consensus proposals incorporated into Plan amendments. They will then eliminate remaining areas of disagreement and how they will pursue those differences outside the process.

D. Scheduling

13. A tentative schedule of meeting dates will be established at the first negotiating session to enable participants to arrange their schedules.

14. Meeting agendas for negotiating sessions and sub-committee meetings will be developed by consensus. Meeting agendas may be amended by the mediator with the concurrence of the Contact Persons.

15. Meetings of any sub-committees may be scheduled between negotiating committee sessions or in conjunction with such sessions. All Negotiating Committee members will be informed of sub-committee meetings.

E. Confidentiality

16. All parties agree to negotiate in good faith throughout the negotiations process. Specific offers or other statements made during the negotiations may not be used by any participant for other purposes including pending or future litigation.

17.Documents, offers and notes presented to the mediator or to the Negotiating Committee shall be considered an offer or attempt to compromise and shall not be admissible or discoverable by the negotiators. These documents, offers and notes are protected from disclosure by the mediator and by any participant under California Code 1152.5 which reads as follows:

a) Subject to the conditions and exceptions provided in this section,when persons agree to conduct and participate in a mediation for the purpose of compromising, settling or resolving a dispute:
(1) Evidence of anything said or any admission made in the course of the mediation is not admissible in evidence and disclosure of any such evidence shall not be compelled in any civil action in which, pursuit to law, testimony can be compelled to be given.

(2) Unless the document otherwise provides, no document prepared for the purpose of or in the course of or pursuant to, the mediation or copy thereof, is admissible in evidence and disclosure of any such document shall not be compelled, in any civil action in which pursuant to law, testimony can be compelled to be given.

(b) Subdivision (a) does not limit the admissibility of evidence if all persons who conducted or otherwise participated in the mediation consent to its disclosure.

The parties to the Sequoia Plan Mediation Process agree to the provisions enumerated above. Excepted from this prohibition are:

1. documents otherwise available to the public under the freedom of information act

2. records, files or documents prepared by the Forest Service which constitute extractions, compilations or summaries of public information that is available to the public under FOIA.

3. FORPLAN runs prepared or produced by the Forest Service at the request of the Negotiating Committee or any subcommittee.

The Forest Service agrees that it will produce a reasonable number of FORPLAN runs at the request of any single party . The results of these runs need not be disclosed to the rest of these parties unless they are subject to public disclosure under FOIA. USFS will provide sufficient technical assistance to any interest group that wishes to request one or more FORPLAN runs to allow the group to frame its requests properly.

Confidential material may be discussed within any participant's organization to the extent such discussion is necessary to formulate negotiating positions. Such documents may be distributed for discussions, but collected at their conclusion.

18. Sessions will not be recorded nor will formal minutes be kept. The mediator shall provide notes of the meeting to summarize progress in the negotiations.

F. Meeting Privacy and the Press

19. All negotiations sessions including meetings of subcommittees shall be closed to the public , since they are considered to be settlement talks by the parties participating.

20. The Negotiations are confidential and shall not be discussed with the press. except to state that the process is proceeding and the participant is bound by confidentiality. No discussion characterizing positions will be held with any non-

participant group, government agency or public official about the negotiation process even if a member should withdraw from the negotiations. Generally, press inquiries will be referred to the mediator.

Protection of Participants

21. Personal attacks on individuals that impute their motives or behavior are unacceptable. Any such attack shall constitute grounds for terminating participation of the offender from the remainder of that negotiation session. He or she shall be replaced by an alternate at the table.

Withdrawal from the Process

22. Any appellant, intervenor or interest caucus may withdraw from the negotiations without prejudice by giving notice to the mediator,and stating its reasons for withdrawing. Remaining parties will determine whether it is in their interest to continue negotiating in the absence of the withdrawing party.

Determining Progress in the Negotiations

23. The Reviewing Officer agrees to extend the administrative appeal process until April 30.. On or before April 30th, all the members of the negotiating committee shall evaluate whether they have made sufficient progress in the negotiations to request a further extension.suspension. Should they decide to proceed, the negotiations shall be extended until May 31.

Pre-conditions

See attached document

Exhibit D

RIPARIAN AND WETLANDS STANDARDS AND GUIDELINES

SEQUOIA NATIONAL FOREST

1ST MEDIATION DRAFT AMENDMENTS
(in bold print)

FEBRUARY 22, 1990

FROM REVISION IV (4/4/89)

Approved by: _____
JAMES A. CRATES
Forest Supervisor
Sequoia National Forest

The direction contained herein is dynamic and will be critiqued and updated as new resource management data is collected, experience is gained, and monitoring results are analyzed. Revisions will occur through interagency interdisciplinary involvement using the NEPA process and/or Land Management Plan amendments. Sequoia National Forest personnel are committed to conscientious management, improvement, and protection of riparian areas.

RIPARIAN AND WETLANDS STANDARDS AND GUIDELINES

SEQUOIA NATIONAL FOREST

Riparian ecosytems and wetlands are among the most valuable and sensitive resource complexes of the Sequoia National Forest. These areas have an importance to fish, wildlife, riparian plant species, water quality, livestock grazing and recreation disproportionate to their limited extent.

The Sequoia National Forest Land and Resource Management Plan, in accordance with laws and policies, directs the Forest to establish management zones for areas influencing riparian and wetland ecosystems. In accordance with this direction, Standards and Guidelines have been prepared.

GOAL

The goal of the Sequoia National Forest Riparian and Wetland Standards and Guidelines is to emphasize management, improvement, and protection of riparian and wetlands areas during the planning and implementation of land and resource management activities affecting streamcourses and meadows.

OBJECTIVES

The objective of riparian and wetland management is two fold: To manage, improve, and protect these areas while implementing land and resource management activities; and to manage riparian and wetlands ecosystems as an integral component of adjacent land, recognizing their unique values.

STANDARDS

The following standards are not subject to change at the Forest level as they reflect Public Law and commensurate Forest Service Manual direction.

1. Manage riparian areas under the principles of multiple use and sustained yields, while emphasizing protection and improvement of soil, water, vegetation, and fish and wildlife resources. Give preferential consideration to riparian dependent resources when conflicts among land use activities occur. [FSM 2526.03-2]

2. Delineate and evaluate riparian areas prior to implementing any project activity. [FSM 2526.03-3]

3. Give special attention to land and vegetation for approximately 100 feet from the edges of all perennial streams, lakes, and other bodies of water. This distance shall correspond to at least the recognizable area dominated by the riparian vegetation [36 CFR 219.27e; FSM 2526.03-5].

4. Provide protection where resource management activities are likely to seriously and adversely affect water conditions or fish habitat. [NMFA, P.L. 94-588]

5. Facilitate the determination of sound vegetation manipulation practices based on watershed conditions and land capability--rather than decisions based solely on silvicultural characteristics and the public demand for goods. [NFMA P.L. 94-588]

6. Correct existing and prevent potential water quality problems through the implementation of Best Management Practices (BMP's) as contained in Water Quality Management for the National Forest System Lands in California, a State of California Water Resources Control Board (SWRCB)/USDA Forest Service Cooperative Agreement. [Clean Water Act, P.L. 92-500, Section 208]

   This agreement contains the following provisions from NFMA P.L. 94.588:

   a. Protection of streamcourses from detrimental changes in temperature. (BMP 1.8)
   b. Protection of streamcourses from blockage. (BMP 1.19)
   c. Protection of streamcourses from detrimental deposits of sediment. (BMP 1.19)

7. Avoid long and short term adverse impacts associated with modification of floodplains and wetlands. Minimize, to the extent practicable, destruction, loss, or degradation of wetlands (E.O. 11988 Floodplain Management and E.O. 11990 Protection of Wetlands). (BMP 1.18)

8. Conduct monitoring of...individual management practices, to determine how well objectives have been met and how closely management standards and guidelines have been applied (NFMA, NEPA, FSM 1922.7, 36 CFR 219.12k).

GUIDELINES

These guidelines are to be implemented whenever Forest riparian vegetation and wetlands are likely to be impacted by Management actions. This will occur during project plan development anytime a proposed activity falls within 250 feet of a streamcourse and/or meadow.

Pre-existing uses shall continue. When site-specific conflicts are identified (as specified by law and Forest Service direction) and documented in the Forest Watershed Improvement Needs Inventory (W.I.N.I.), they will be handled on a case by case basis. Using these guidelines[1], use conflicts (e.g. recreation, new or inventoried trails, livestock use, roads, etc.) shall be analyzed to quantify the degree of impacts and justify corrective actions. In resolution of conflicting uses, compensation credit shall be considered and consideration documented.

The resulting prescriptions are intended as a general guide and may require modification to suit individual sites through interdisciplinary processes and line decisions during project-level environmental assessments and/or environmental impact statements. They will be annually monitored on all projects and updated periodically.

1 STREAMBANK STABILITY

Objective: Maintain streambank integrity.

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[1]The statement of objectives and accompanying explanation for guidelines 1 through 8 apply to all forest uses. The implementation sections for guidelines 1 through 5 were developed primarily to address new activities or projects.

Explanation: Low, overhanging streambanks held together by root mass and other vegetation provides cover and habitat for fish and wildlife. This environment represents a dynamic, unstable condition, where chunks of streambank occasionally fall and add sediment to the stream. Management activity that diminishes the root masses or vegetation bordering these areas tend to result in a loss of fish and wildlife habitat, and create a major source of sediment within the stream system.

Implementation: Identify all stream reaches with undercut or raw streambanks. Layout management activity to protect and maintain vegetation and streambank integrity within 50 feet of unstable streambanks. Designated stream crossings are an exception and should be determined with the aid of appropriate personnel which will be determined by the complexity of the situation. Stream crossings on Class I and II streams should be done in consultation with California Department of Fish and Game.

Improvements such as development of water troughs, watershed improvement projects, rerouting trails, stream crossing structures, and construction of barriers to protect unstable and/or sensitive stream banks will be designed to minimize impacts on the streambank.

2. VEGETATIVE COVER

Objective: Provide adequate vegetative cover, vertical diversity and habitat for a wide variety of riparian dependent wildlife species.

Explanation: Retention of conifers, snags, hardwoods and riparian vegetation adjacent to streams, springs, seeps, bogs, and meadows is important to maintaining the diversity and abundance of riparian wildlife. Stand structure, canopy cover, flora, woody debris, litter, and availability of water are the primary elements that determine wildlife diversity and abundance.

Implementation: Establish a management zone that is a minimum 100 feet horizontal distance on both sides of perennial streams and Class II and III intermittent streams and around meadows; 100 feet horizontal distance on both sides of Class III intermittent streams where necessary for fish spawning, rearing, or migration; 50 feet on both sides of other intermittent streams, seeps, springs, and bogs; and maintain riparian vegetation on ephemeral streams. Vegetative cover within these zones is to be managed for the protection or enhancement of riparian dependent resources. Vegetative manipulation may occur within this zone with the intent of improving riparian dependent resources. Projects must meet concurrence with earth scientist, wildlife and fisheries biologists. Timber harvesting will not be scheduled within the vegetative cover zone. Timber could be removed in this zone for wildlife or fisheries improvement projects.

Designated cable corridors and road crossings are exceptions and are to be determined by appropriate specialist. Cable corridors will be minimized

and will not exceed twenty feet in width. Proposed new crossings of Class I and II streams will be identified in environmental documents. Consultation should occur with outside agencies when crossing Class 1 or Class 2 streams. Road and trail crossings will be designed to cross drainages as "quickly as possible" to minimize construction parallel to streamcourses within SMZ's.

3. STREAM SURFACE SHADE

Objective: Maintain stream surface shade through vegetation retention to protect streams from detrimental changes in temperatures. (BMP 1.8)

Explanation: Maintenance of vegetation and trees within 50 feet of fisheries, or intermittent streams feeding into fisheries, is extremely important for blocking summer solar radiation and preserving suitable stream temperatures. The dissolved oxygen content of water decreases with increased stream temperature resulting in waters less habitable for fish populations. Streams with prolonged temperatures above $70^{\circ}F$ cannot sustain a viable trout fishery and spawning is severely limited above $57^{\circ}F$.

Implementation: Where management activity for enhancement of riparian dependent species is proposed within 50 feet of a perennial stream and intermittent streams affecting fisheries, baseline data will be established by use of a device designed to measure the average total solar radiation. The goal of this guideline will be to maintain an average minimum of 65% blockage of available July/August solar radiation within the affected project site. Designated cable corridors and road crossings are exceptions and are to be determined with appropriate personnel input. Monitoring will require a similar set of readings to determine the effects of management activities on stream shading.

4. INTERCEPTION OF SEDIMENT

Objective: Protect streamcourses from detrimental deposits of sediment.

Explanation: A sufficiently wide strip of land that is relatively undisturbed by groundbase machinery can act as an effective filter and infiltration zone to capture sediment from upslope management activities. Groundcover creates the tiny ponding spaces and hydraulic roughness that slows runoff and allows sediment to fall out of suspension and be deposited before it reaches the stream.

Implementation: Maintain a protective ground cover of duff, litter, plants, downed woody debris, and slash within a filter strip.

Where percentage of ground cover resulting from management activity are below 50%, an interdisciplinary analysis is required to develop appropriate mitigation to negate environmental consequences. Designated stream crossings are an exception to this direction.

Groundcover percentages in filter strips affected by management activities can be estimated by the use of photo guides. Treatments designed to increase the efficiency of this filter strip may include the establishment of living plants, introduction of litter, slash, or other treatments as identified.

Table 1 gives filter strip widths necessary for the interception of sediment in slope distance (feet) from the apparent high water mark of the channel. Both sides of the drainage need to be evaluated independently for appropriate filter strip widths when effected by management activity.

Table 1
FILTER STRIP WIDTH IN SLOPE DISTANCE (FEET)

STREAM CLASS	FILTER STRIP WIDTH BY % SLOPE					STREAM ORDER
	<30%	>30%	>40%	>50%	>70%	
MEADOWS	100	150	200	250		-
I	100	150	200	250		4+
II	100	100	150	200	1.5x	3-4
III	50	100	100	150	DISTANCE	2-3
IV	≤50	≤50	75	100	TO SLOPE	1-2
IV	≤50	≤50	≤50	≤50	BREAK	1-0

The standard 50 foot filter strip when applied to Stream Class IV (Order 0, 1, and 2) should be determined based on existing ground conditions. Approval of distances of less than 50 ft. will be in concurrence with earth scientists or fisheries biologists.

5. STREAMSIDE MANAGEMENT ZONE DESIGNATION

Objective: To designate a streamside management zone along streams and wetlands that will be managed for protection and enhancement of riparian and wetland ecosystems.

Explanation: The Streamside Management Zone is not a zone of exclusion, but a zone of closely managed activity. Management may occur within riparian zones but not to the detriment of riparian dependent resources. In these areas riparian dependent resources will receive the primary emphasis.[3]

This zone acts as an effective filter and absorptive zone for sediment, maintains shade, protects aquatic and terrestrial riparian habitats, protects channel and streambanks, and promotes floodplain stability (BMP 1.8). Guidelines 1 through 4, which discuss management of the previously mentioned topics need to be evaluated to assess the extent and level of activity prescribed for a specific streamside zone or wetland (see Table 2). Streamside Management Zones vary by Stream Class, percent slope and stream type (perennial, intermittent, or ephemeral) to meet management objectives.

Implementation: Streamside Management Zones will be established and maintained for all streamcourses and wetlands affected by management activities. Project plans will be designed to include site-specific prescriptions for the prevention of sedimentation, stream damage, and the protection of riparian dependent species. Table 2 displays the appropriate

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[3] Pacific Southwest Region Land Management Planning Direction, March 1, 1982, Revised Jan. 15, 1984 pg. 4-28 (Rainbow Book).

Management Requirements and Constraints with respect to stream type and Class.

Landings and non-system roads that have been put to bed, that are located within streamside management zones, and that would be inconsistent with these Riparian Standards and Guidelines, will not be reopened and reused unless the Sequoia National Forest makes a specific finding, based on a project environmental document, that using such roads or landings would cause less harm to riparian resources than building new roads and/or landings.

Table 2

Management Requirements and Constraints with respect to Wetlands, Stream Type, and Order.

		PERENNIAL/INTERMITTENT			INTERMITTENT/EPHEMERAL	
				SPRINGS, BOGS, SEEPS		
	WETLANDS	CLASS I	CLASS II	CLASS III	CLASS IV	
	(MEADOWS)	ORDER 4+	ORDER 4-3	ORDER 3-2	ORDER 2-1	ORDER 1-0
SUMMARY OF GUIDELINES 1-4						
PROTECTION OF UNSTABLE STREAMBANKS		<----------50FT---------->				
MAINTENANCE OF VEGETATIVE COVER	<----------100FT---------->			<--50FT[1]-->	<---MAINTENANCE OF EXISTING RIPARIAN VEGETATION--->	
PROTECTION OF STREAM SURFACE SHADE		<----------50FT---------->				
INTERCEPTION OF SEDIMENT	<----------LIMITED GROUNDBASE MACHINERY[2]---------->					
	100-250+ FT	100-250+ FT	100-200+ FT	50-150+ FT	≤50-100+ FT	≤50+ FT
MANAGEMENT ACTIVITIES						
TRAILS/ROAD/SKID PATTERNS	INAPPROPRIATE LOCATION	APPROPRIATE PERSONNEL INPUT				
LANDINGS	<----------INAPPROPRIATE LOCATION----------					
CABLE YARDING	<----------FULL SUSPENSION---------->				PARTIAL SUSPENSION	PARTIAL SUSPENSION IF POSSIBLE
FALLING	<----------DIRECTIONAL FALLING TO SKIDDING PATTERN---------->					
HARVEST REGULATION	<----------UNREGULATED---------->			<----------REGULATION CLASS I-III----------		
CULTURAL PRACTICES (MECHANICAL)	<----------MAINTAIN GROUND COVER REQUIREMENTS #4----------					
PRESCRIBED FIRE	<----------MAINTAIN GROUND COVER REQUIREMENTS GUIDELINE #4----------					

Note: Where confusion exists in determining the level of protection for a stream, stream class is used over stream order, i.e., a perennial, Order 1 stream will be classified as a Class III streamcourse and managed for riparian dependent species. A stream of this type will receive a minimum of 100 ft. management zone.

1/ 100 feet for Class III intermittent streams important to fish migration, spawning and travel corridors.

2/ Limited groundbase machinery refers to designated crossing and access to watershed restoration or wildlife/fisheries enhancement projects.

6. MEADOW HYDROLOGY

Objective: Maintain or re-establish hydrologic characteristics of meadows to retain their ecologic and physical character. (BMP 7.1; BMP 7.3).

Explanation: Meadows are openings in a forest, usually at higher elevations, that are exceptionally productive in herbaceous plants. Their productivity results from continuous or seasonally high soil-water content.

Meadow ecosystems are as stable as the surrounding vegetation. What occurs on the drainage area above it, therefore, greatly affects what occurs on a meadow. The hydrologic character is maintained by a balance of surface and subsurface flows. Management activities have the potential to alter the hydrology through interception of subsurface flows, concentration of surface flows, increases of surface flows, and changes in the water table.

Changing the hydrologic balance can result in gully erosion, headcutting, changes in herbaceous species composition and encroachment of woody species.

Implementation: Activities that take place on or within 250 feet of a meadow require site specific investigation during project planning to describe the risk of altering the hydrologic characteristics. Proposed management activities need to consider direct and indirect effects on the meadows hydrologic character. Activities will be evaluated through an ID team process including consulting with cooperating agencies, individuals and permittees.

An initial assessment will be conducted to determine if erosion is occurring in the meadow from readily identifiable sources. If erosion is occurring identify activities which are the cause. Existing adverse conditions will be identified through the Watershed Improvement Needs Inventory (WINI) (FSH 2509.15, form FS-2500-7). Plans will be developed from prioritized WINI inventories to re-establish hydrologic characteristics and riparian habitat. Native plant species will be given preference when seeding is required in meadow and riparian habitats.

Effects from offsite activities will be evaluated by tracking past management activities and assessing stream channel stability. Use the Sequoia NF Cumulative Watershed Effects Working Guide, 1987 (FSH 2509.22 Sequoia Supplement #1) and Pfankuck Stream Reach and Channel Stability Inventory rating system (BMP 7.8).

7. FORAGE UTILIZATION

Objective: Maintain or re-establish vegetative cover within wetlands to retain site productivity (BMP 8.2; BMP 8.3).

Explanation: Vegetative cover in mountain meadows provides forage, contributes to biological and aesthetic diversity, promotes water infiltration, and filters sediment.

To maintain vegetative cover, the physiological needs of the plants must be met. The factors effecting plant growth and vigor includes soil moisture, nutrients and solar radiation.

Accumulation of needed carbohydrate reserves depends upon the balance between respiration and photosynthesis. After grazing, the leaf area left and age of the leaf tissues largely control a plant's photosynthetic capacity. Leaf blades older than 28 days generally have a much reduced photosynthetic capacity. Grazing treatments that maintain an abundance of young leaves may give as great or greater carbohydrate storage and herbage production as protection from grazing.

Perennial plant species require carbohydrates to grow. During winter, carbohydrate levels remain constant as plants are dormant. Reserves decline rapidly during spring growth and build up during maturation. Studies suggest early grazing is detrimental when reserves are being spent to produce spring growth or near the time of flowering. Late season grazing of emerging shoots can also reduce carbohydrate storage.

Implementation:

A. Livestock will not be permitted to graze in meadows until Kentucky bluegrass heads begin to emerge; and/or Nebraska sedge flowers are almost open. (BMP 8.2)

B. Allowable Use Factors will be established for each key meadow to assure maintenance of vegetative stability and site productivity.

C. Cattle will be distributed in a manner consistent with moderate forage utilization within meadows. Plant height/weight ratios will be used to monitor the results. (BMP 8.3)

D. Grazing will cease in time to permit regrowth sufficient to store carbohydrates for initial spring growth (as specified in individual allottment plans).

S. Woody and Herbaceous Vegetation in Riparian and Wetland Ecosystems

Objective: To maintain and protect woody and herbaceous vegetative cover, vertical diversity and habitat for fish and wildlife in riparian and wetland ecosystems.

Explanation: Woody and herbaceous vegetation provides habitat for a variety of wildlife and fish within riparian and wetland ecosystems. The structure of this vegetation provides fish and wildlife with valuable thermal and hiding cover.

Livestock grazing on palatable species has the potential to influence the amount of woody and herbaceous vegetation in these ecosystems. There is the need to manage livestock within riparian and wetland ecosystems.

Implementation: Determine the distribution, vegetative structure, condition and trend of riparian areas and wetlands by developing a Forest Riparian Wetland Inventory.[4] Identify riparian and wetland areas impacted from past forest management activities in Allotment Management Plans and Watershed Improvement Needs Inventory (WINI) (FSH 2509.15 form FS 2500-7, BMP 7.1). Plans will be developed to maintain or re-establish riparian and wetland ecosystems. Effectiveness monitoring of projects will occur.

Allotment management plans will identify management strategies needed to maintain or re-establish vegetative structure conditions that maintain and/or re-establish fish and wildlife habitat in key areas. These areas will be identified in the Forest Riparian Wetland Inventory. Develop demonstration areas for habitat re-establishment in concert with California Department of Fish and Game.

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[4] CDF&G and PSW are currently working on defining parameters that are essential to wildlife in wetland ecosystems. Their study will include direction on what factors should be inventoried, a monitoring plan and evaluation criteria.

APPENDIX 1

Glossary

Bog:
Wet spongy ground, with soil composed mainly of decayed vegetative matter.

Compensation Credit: (needs to be defined)
When actions are taken to remove, modify, or reduce, pre-existing use in order to benefit the environment (i.e., wildlife habitat, vegetation, soils, viewsheds, etc.) these benefits are noted and applied to the NEPA/CEQA process when these uses are relocated or replaced in a less impacting manner or location.

Dependent Resources:
Those resources directly dependent upon riparian and wetland ecosystems for their existence, including water quality, fish, riparian dependent wildlife, riparian related aesthetics, and riparian vegetation.

Duff and Humus:
Decomposed organic plant material that accumulates as a result of litter fall.

Ephemeral Streams:
1. Defined channels that follow slight depressions in the natural contour of the ground surface.

2. Carry surface runoff and hence flow during and immediately after periods of precipitation or the melting of snow.

3. May or may not have riparian vegetation.

Filter Strip:
A sufficiently wide strip of land with relatively undisturbed ground cover that acts as an effective filter and infiltration zone to capture sediment from upslope management activities.

Floodplain:
That portion of a stream valley adjacent to the channel, which is built of sediment during the present regime of the stream and which is covered with water when the stream overflows its banks at flood stage (Wildland Planning Glossary, PSW, 1976).

Ground cover:
Low growing vegetation, fragments, and fine organic matter such as litter, duff and twigs in contact with the soil surface.

Guideline:
Guidelines are designed to give management direction to implement the Standards under normal management conditions.

Intermittent Streams:

1. Carry water most of the year, but ceases to flow during the dry season because evaporation and percolation into bed and banks exceeds available flow.

2. Have well-defined channels. Channels with active scouring or washing are included even though they may flow only during or immediately after periods of precipitation or the melting of snow.

3. Normally lack litter indicating streamflow sufficient to move material during runoff.

4. May or may not have riparian vegetation.

Litter:
Organic plant material that falls on the ground and has minor decomposition. Plant parts are easily identified and often species may be identified.

Perennial Streams:
1. Normally flow yearlong, except during periods of extreme drought.

2. Have well-defined channels and show signs of washing and scouring.

3. May or may not have riparian vegetation.

Regulation Classes:

Regulation Class I prescriptions are even-aged management prescriptions for existing timber stands with full timber yields expected. These represent harvest regimes on lands not otherwise constrained that result in optimum timber production in volume and/or value.

Regulation Class II prescriptions are management prescriptions under "special conditions" for existing timber stands. Reduced timber yields would be expected. These represent harvest regimes on lands designated to meet non-timber objectives that result in a mean rotation longer than optimum for timber production. Generally other values are accounted for by constraints on harvest rates, not by modifications to yield tables.

Regulation Class III prescriptions are for existing stands which are equivalent to the former "marginal timber yield" categorization. Timber outputs resulting from prescriptions in this class will be regulated as a separate, non-interchangeable component of the allowable sale quantity.

Unregulated: Timber on commercial forest land that is not considered part of the annual harvest because other resource values are greater (e.g., recreation, aesthetics).

Riparian Ecosystem:
A riparian ecosystem is a transition between the aquatic ecosystem and the adjacent terrestrial ecosystem. It is identified by distinctive soil characteristics, vegetative communities and associated animal life found in close proximity to streams, watercourses, lakes, meadows, and springs. The ecosystem exists because the water supplied is in excess of that available to the adjacent uplands, and is sufficient for the growth of mesic (water-loving) vegetation such as willows, sycamores, and alders.

Riparian Vegetation:
Mesic (water-loving) vegetation such as willows, sycamores, and alders. Grasses, shrubs, sedges and rushes may also makeup riparian vegetation.

Seep:
Small spring, pool or other place where water has surfaced.

Slash:
Woody material left on the ground resulting from management activity.

Standard:
Standards are performance criteria based on Public Law and Forest Service Manual direction. A principle requiring a specific level of attainment, a rule to measure against.

Stream Classification System:

Stream classification is a means of identifying resource values and beneficial uses associated with streams. Once values and uses are recognized, stream protection guidelines can be established for use in the planning and management of these lands. Within project areas, all streams and segments thereof must be classified.

Stream classification is based upon an evaluation of the following factors: (1) flow characteristics (perennial, intermittent, or ephemeral stream types); (2) present and foreseeable instream and downstream values associated with waters of the stream; and (3) characteristics of the stream environment.

1. Class 1, Highly Significant. These are either perennial or intermittent streams, or segments thereof, which meet one or more of the following criteria:

   a. Are habitat for large numbers of resident and/or migratory fish for spawning, rearing, or migration.

   b. Furnish water locally for domestic or municipal supplies.

   c. Have flows large enough to materially influence downstream water quality.

   d. Are characterized by major fishing or other water-oriented recreational uses.

   e. Have special classification or designation, such as wild, scenic, or recreation rivers.

   f. Are habitat for threatened or endangered animal species, or contain plants which are potential or viable candidates for threatened or endangered classification.

2. Class II, Significant. These are either perennial or intermittent streams or segments thereof, which meet one or more of the following criteria:

a. Are used by moderate numbers of fish for spawning, rearing, or migration.

b. Furnish water locally for industrial or agricultural use.

c. Have enough water flow to exert a moderate influence on downstream quality.

d. Are used moderately for fishing and other recreational purposes.

3. Class III, Moderately Significant. These include perennial or intermittent streams, or segments thereof, which meet one or more of the following criteria:

a. Are habitat for few fish or spawning, rearing, or migration.

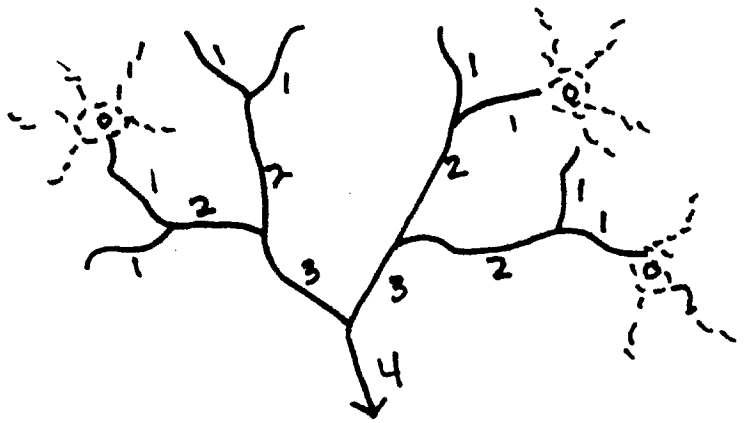
b. Are rarely used for fishing or other recreational purposes.

c. Have enough water flow to exert minimum influence on downstream water quality.

4. Class IV, Minor Significance. These intermittent or ephemeral streams, or segments thereof, not previously classified.

Stream Order Classification:

"First order" streams are unbranched drainages found usually but not exclusively at the head of drainage basins. "Second order" drainages are formed when two or more first order reaches come together and so on as illustrated below.



Zero order drainages occur in the headwaters of first-order drainages as an extension of the channel. A zero-order drainage is an unchanneled basin above the channel head and may or may not contain riparian vegetation. These basins can be extremely subtle features identified only by careful inspection in the field. These types of drainages are the site for long-term accumulation of sedimentary debris and of convergence of shallow groundwater during storms. (Reneau and Detrich, 1987; Detrich and Dune, 1978; Okunishi and Iida, 1981). Not all channels have zero order basins at their head. (Area of shallow groundwater convergence around 0 order basins are shown as dotted lines in above diagram).

Streamcourses:

A natural configuration in the land surface which transports water in a perennial, intermittent or ephemeral circumstance (BMP Handbook).

Streamside Management Zone:

A strip of land adjacent to a stream channel which includes all of the riparian ecosystem and may include a band of contiguous terrestrial ecosystem land. It is a strip of land managed to protect riparian area dependent resources and both on-site and downstream aquatic ecosystem values and uses. The width of the strip is variable. It is defined by an on-site investigation of the existing physical/biological environmental conditions and identification of the riparian area dependent resources and aquatic values and uses requiring protection. Its delineation is applicable to intermittent and ephemeral as well as perennial streams, and to wetlands, bogs, seeps, wet meadows, and other areas of land where riparian area dependent resources and/or aquatic ecosystem values and uses are to be protected (BMP 1.8).

Wetlands:

Areas that require saturated or seasonally saturated soil conditions for growth and reproduction such as swamps, marshes, bogs, sloughs, glades, meadows, floodplains, mud flats, and natural ponds. Generally, the water table stands at or above the land surface for at least part of the year.

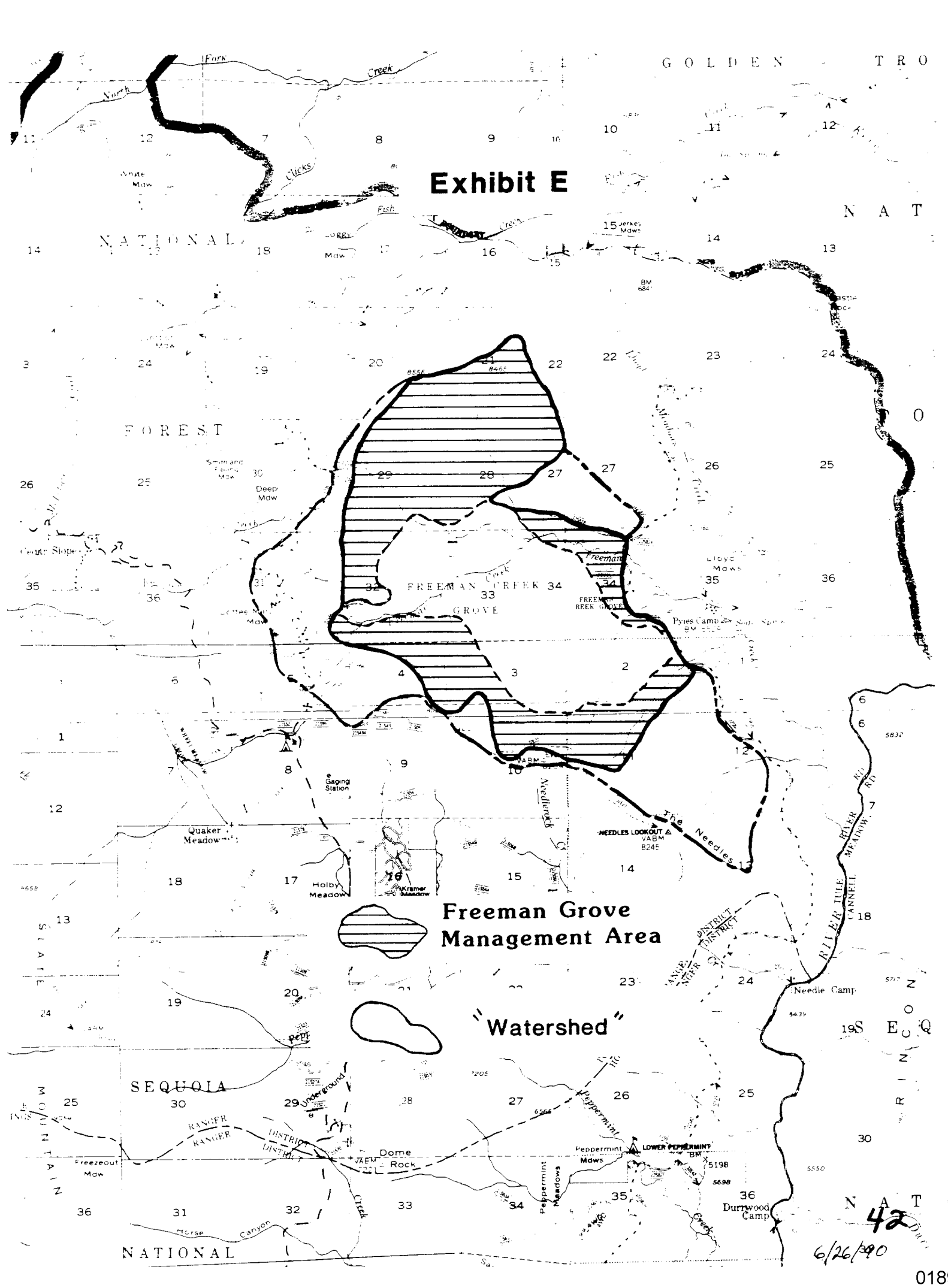


Exhibit E
Freeman Grove
Management Area
"Watershed"
FREEMAN CREEK
GROVE
The Needles
NEEDLES LOOKOUT
Quaker Meadow
Holby Meadow
Kramer Meadow
Needle Camp
Durrwood Camp
Dome Rock
Peppermint Mdws
Peppermint Meadows
Freezeout Maw
Horse Canyon
Deep Maw
Cedar Slope
Pyles Camp
Lloyd Mdws
Gaging Station
RIVER RANGER DISTRICT
TULE RIVER
CANNELL MEADOW
NATIONAL FOREST
SEQUOIA
GOLDEN TROUT
WILDERNESS

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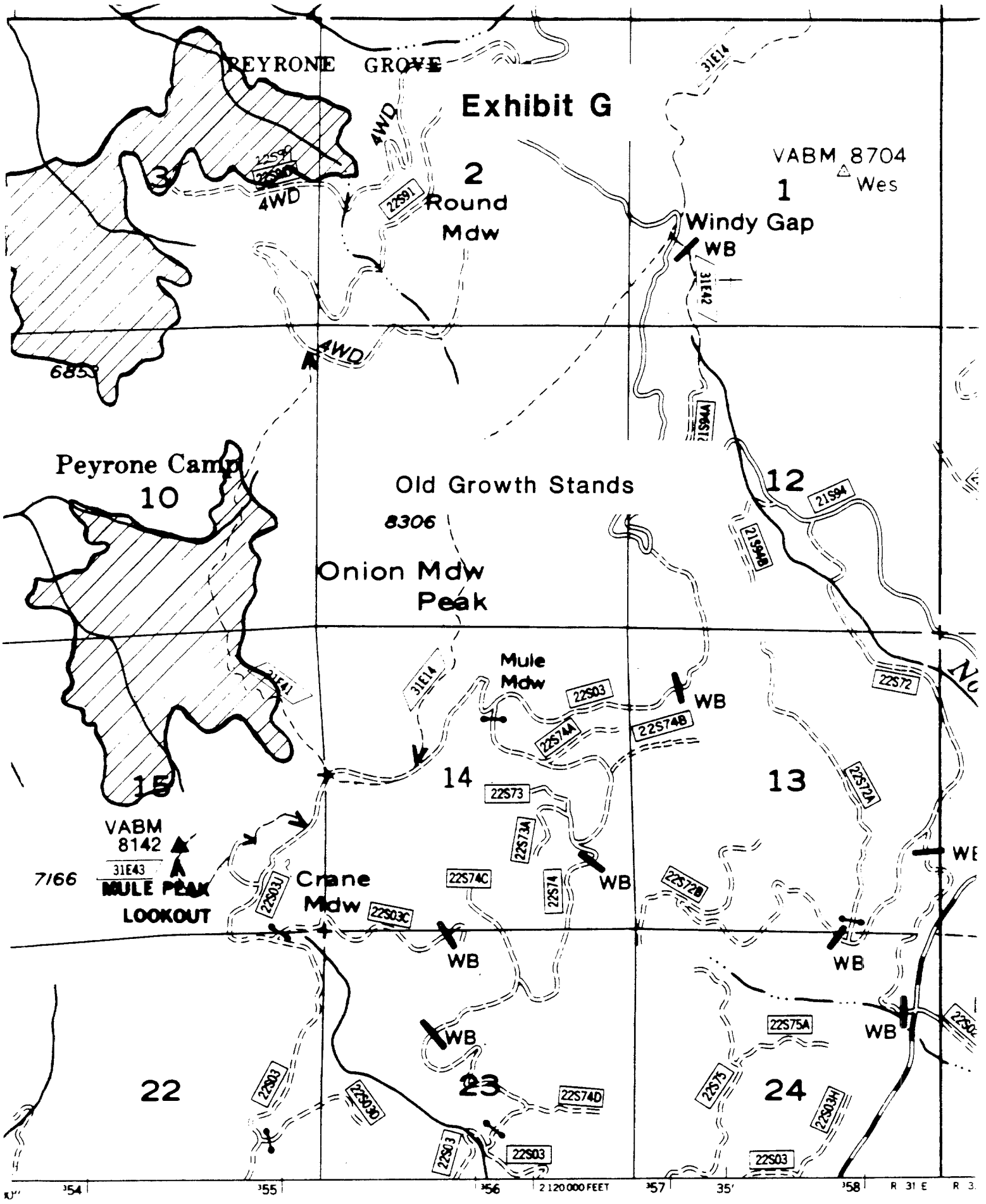
Exhibit F

NO EXHIBIT TEXT



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Sheet 1 of 4

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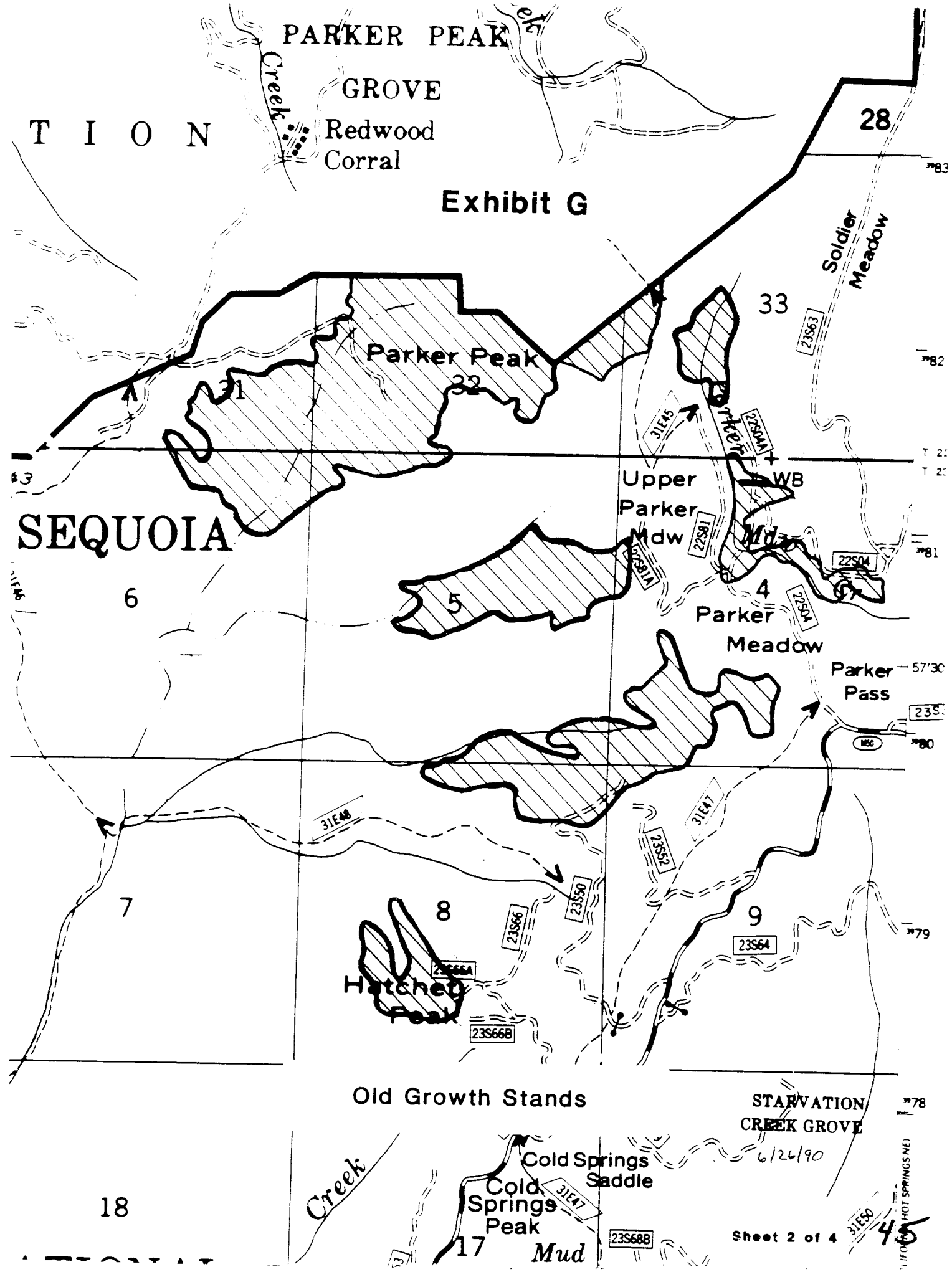
PARKER PEAK
GROVE
Redwood
Corral
Creek
T I O N
Exhibit G
28
Soldier
Meadow
33
Parker Peak
22
31
Upper
Parker
Mdw
WB
Parker
Meadow
Parker
Pass
SEQUOIA
6
5
4
7
8
9
Hatchet
Peak
Old Growth Stands
STARVATION
CREEK GROVE
6/26/90
Cold Springs
Saddle
Cold
Springs
Peak
18
17
Mud
Creek
Sheet 2 of 4
45
23S63
23S04A
23S81
23S04
23S53
23S52
23S50
23S66
23S66A
23S66B
23S64
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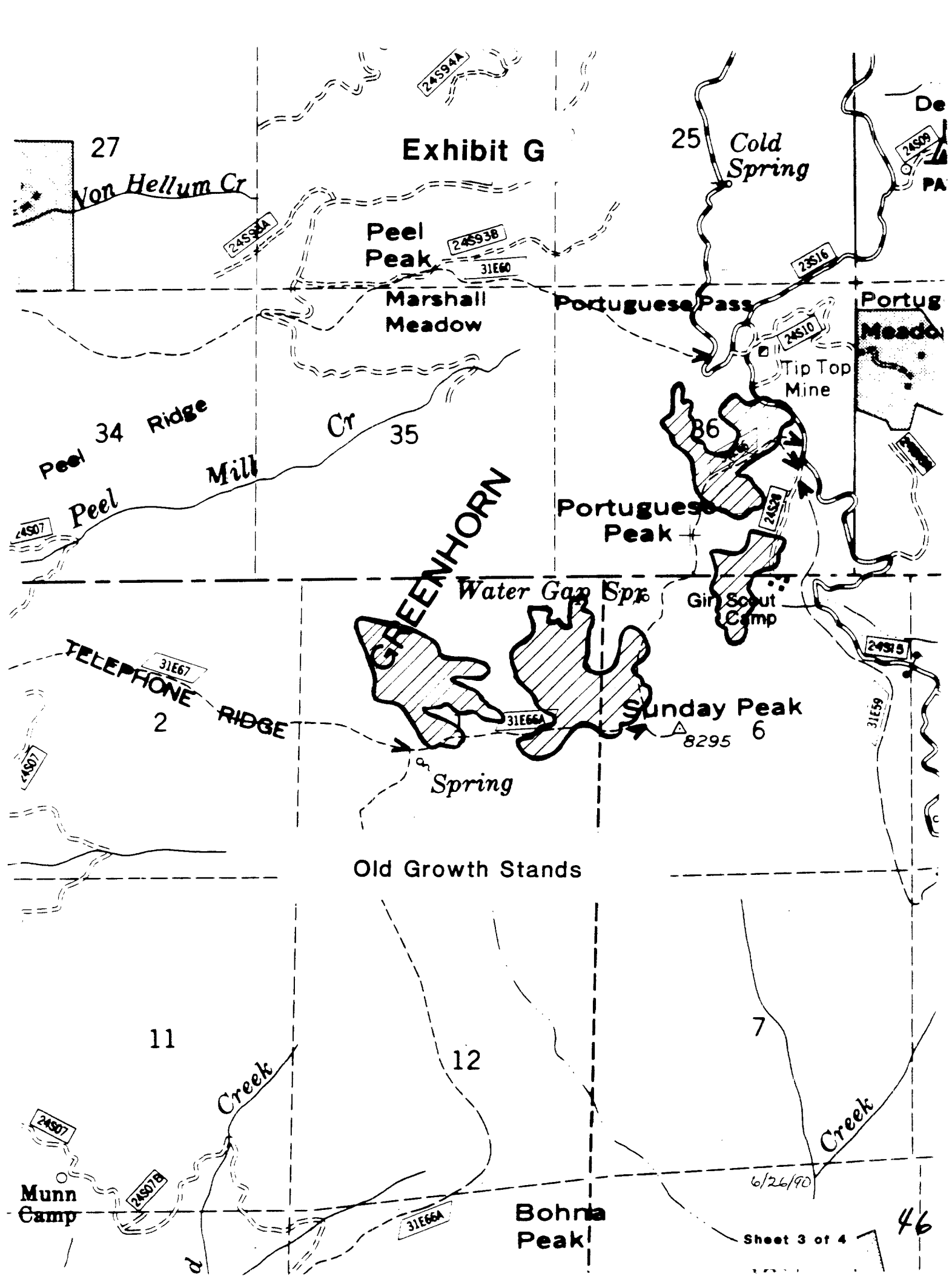


Exhibit G
27
Von Hellum Cr
25
Cold Spring
Peel Peak
Marshall Meadow
Portuguese Pass
Tip Top Mine
34
Ridge
Peel
Mill
Cr
35
36
Peel
Portuguese Peak
GREENHORN
Water Gap Spr
Girl Scout Camp
TELEPHONE RIDGE
2
Sunday Peak
8295
6
Spring
Old Growth Stands
11
12
7
Creek
Creek
Munn Camp
Bohna Peak
6/26/90
Sheet 3 of 4
46

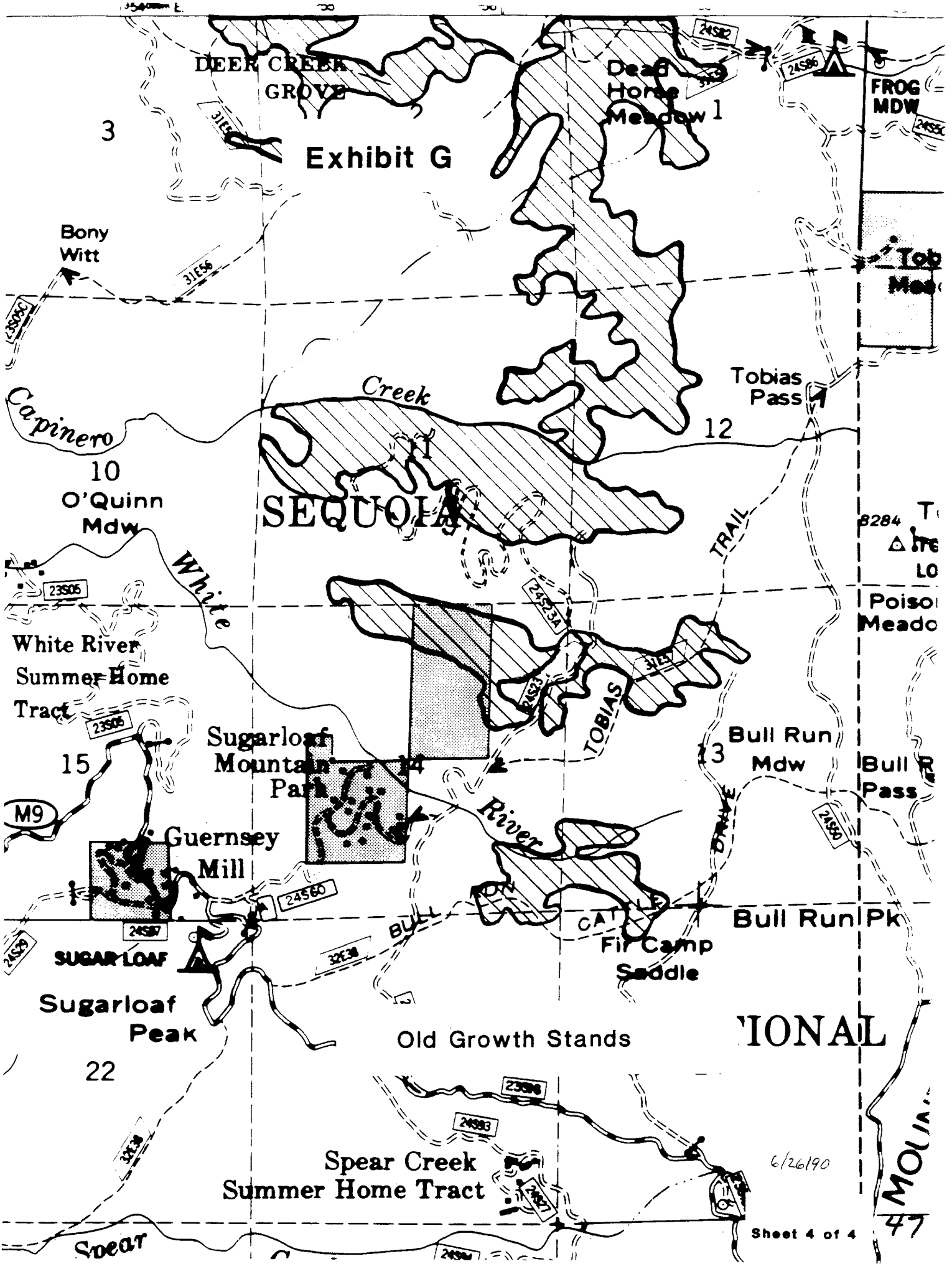

DEER CREEK GROVE
Dead Horse Meadow
FROG MDW
Exhibit G
Bony Witt
Tobias Pass
Creek
Capinero
O'Quinn Mdw
SEQUOIA
TRAIL
White
White River Summer Home Tract
Sugarloaf Mountain Park
TOBIAS
Bull Run Mdw
Bull Run Pass
River
Guernsey Mill
BULL
CAT
Fir Camp Saddle
Bull Run Pk
SUGAR LOAF
Sugarloaf Peak
Old Growth Stands
Spear Creek Summer Home Tract
6/26/90
Sheet 4 of 4
Spear

Exhibit H

MEDIATION AGREEMENT
SEQUOIA NF 3-14-90

COMMERICAL FORESTLAND EXCLUDED FROM ASQ (UNREGULATED)

1. Giant sequoia outside of wilderness and SOHA's: 10,887 ac.
2. SOHA's outside of wilderness and roadless: 58,892 ac.
3. HSRD Condor area: 2,120 ac.
4. Additional condor roost areas: 3,000 ac.
5. SMZ:
   a. Stream order I & II: 10,268 ac.
   b. Stream order III & IV (riparian vegetation only): 1,208 ac.
   c. Meadow Management Zones: 2,612 ac.
6. Black oak occupying suitable conifer sites: 18,600 ac.
7. SPNM outside of wilderness and SOHA's: 6,472 ac.
8. Steep and rocky: 24,100 ac.
9. Agnew west of Lightning Creek: 3,859 ac.
10. Moses: 5,526 ac.
11. Black Mountain: 2,116 ac.
12. Dennison: 2,391 ac.
13. Woodpecker (Sirretta Peak): 7,967 ac.
14. South Sierra: 2,464 ac.
15. Lion Ridge (partial): 1,581 ac.
16. Freeman Grove influence: 2,736 ac.
17. Converse Basin: 240 ac. (an additional 600 ac. is in Kings River SMA)
18. Peppermint Ski Area (outside of Roadless): 3,753 ac.
19. S. Fork Peppermint Creek: 682 ac.
20. Kings River SMA: 2,670 ac.
21. Corridors:
    a. Durrwood Creek in Rincon: 490 ac.
    b. Cannell Trail: 469 ac.
    c. Salmon Creek Trail: 335 ac.
    d. Buck Rock area (General's Hwy. and trails leading into wilderness): 1,192 ac.

TOTAL ACRES EXCLUDED: 176,630

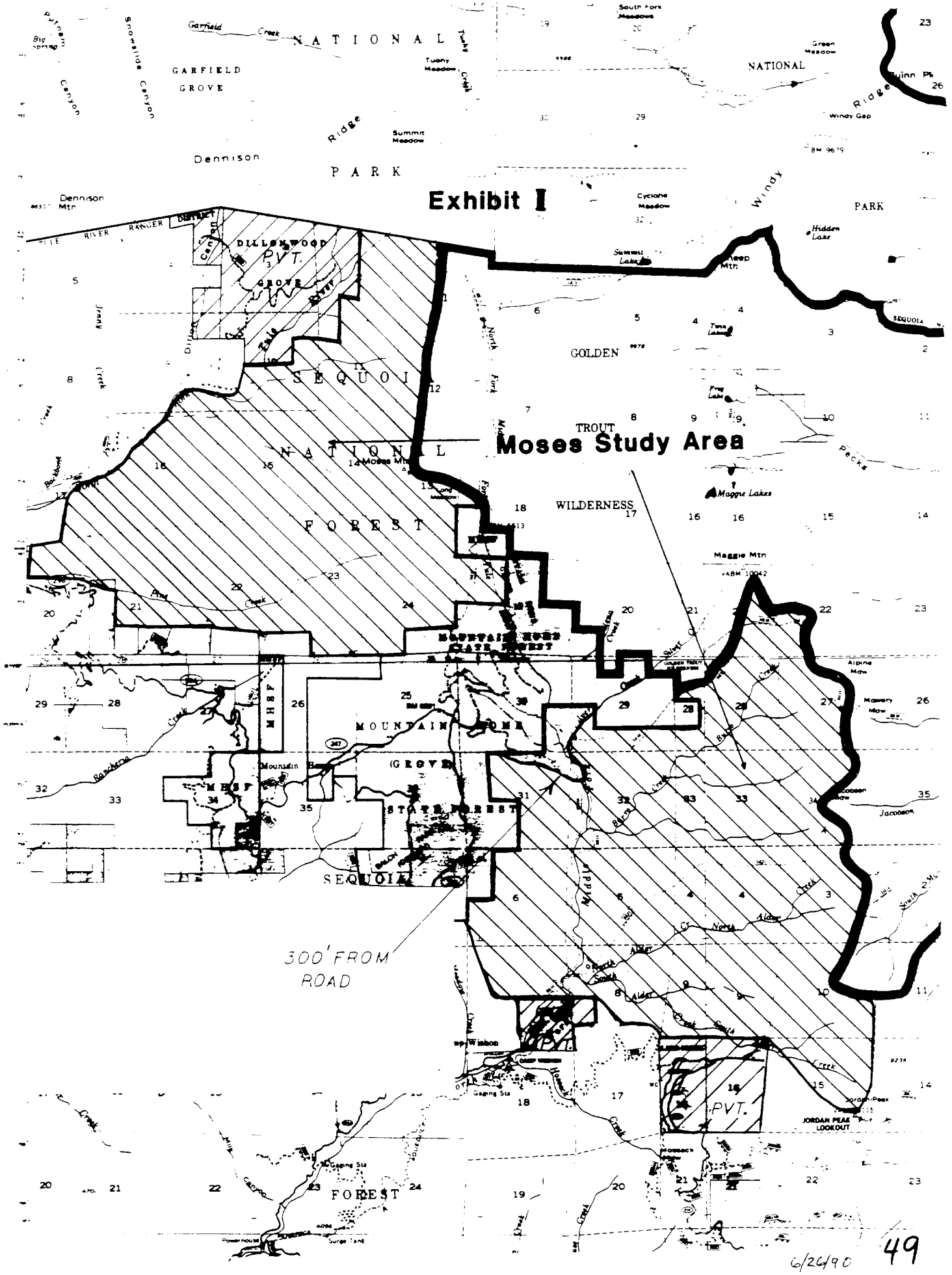
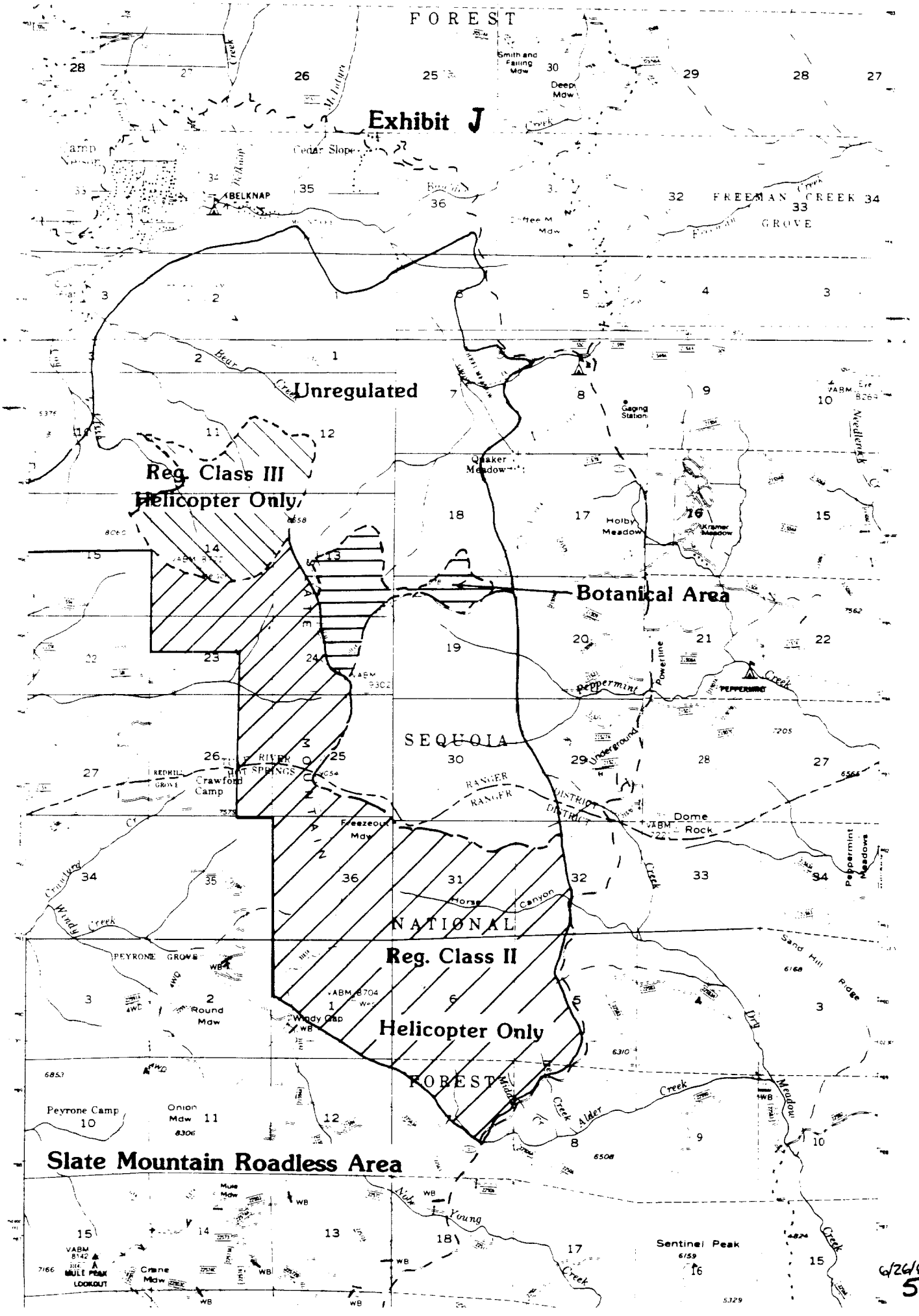


Exhibit I
Moses Study Area
NATIONAL
GARFIELD
GROVE
Garfield Creek
Dennison
PARK
Dennison Mtn
DILLONWOOD
PVT.
GROVE
SEQUOIA
NATIONAL
FOREST
GOLDEN
TROUT
WILDERNESS
Moses Mtn
Maggie Lakes
Maggie Mtn
MOUNTAIN HOME
STATE FOREST
MHSF
Mountain
SEQUOIA
300' FROM
ROAD
Middle
Wilson
Gaging Sta
PVT.
JORDAN PEAK
LOOKOUT
FOREST
Powerhouse
Surge Tank
6/26/90
49



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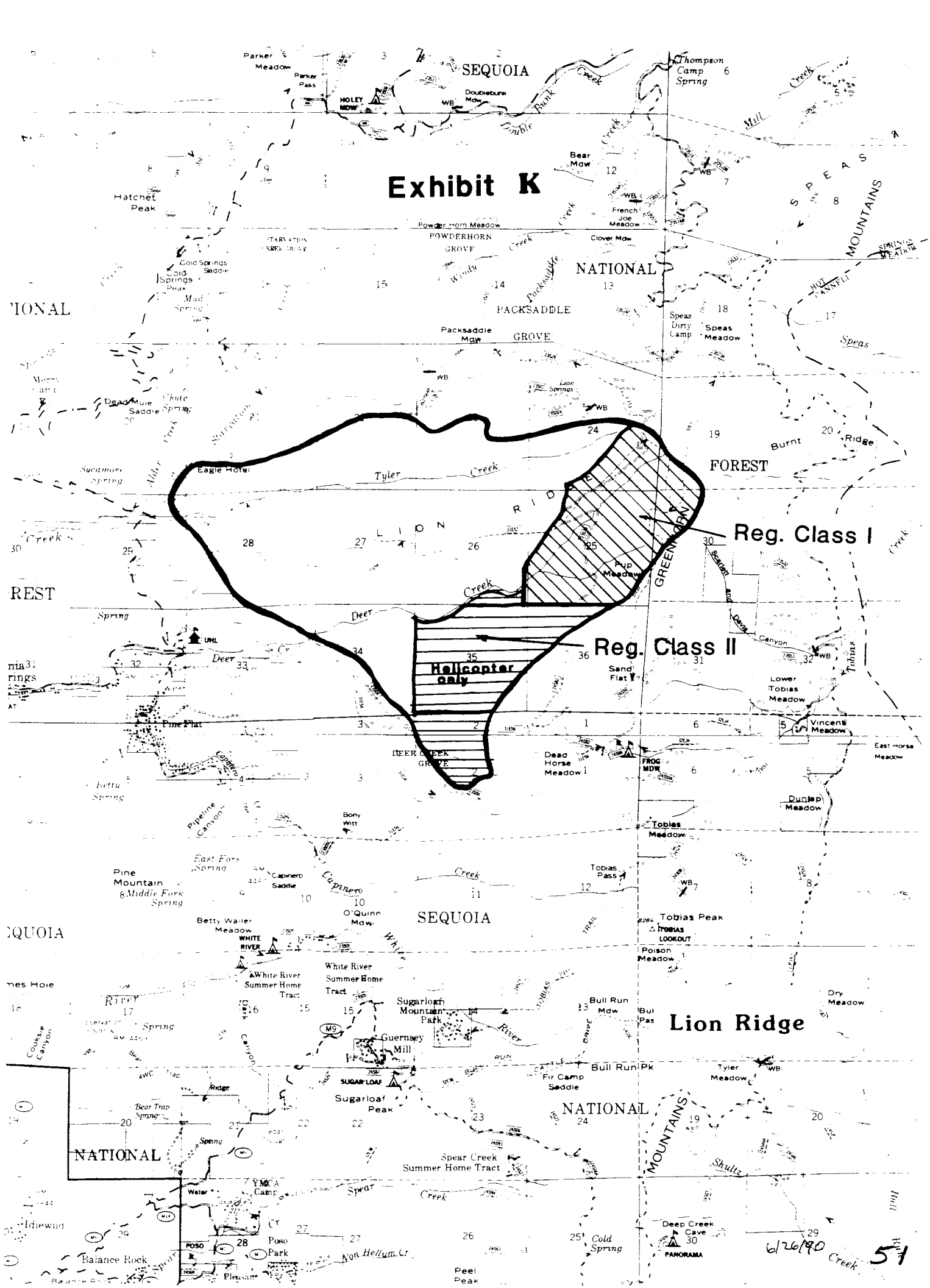
Exhibit K
Reg. Class I
Reg. Class II
Helicopter only
Lion Ridge
SEQUOIA
NATIONAL
FOREST
GROVE
MOUNTAINS
Eagle Hotel
Tyler Creek
Deer Creek
Pine Flat
Dead Horse Meadow
Tobias Meadow
Tobias Peak
Sugarloaf Peak
Guernsey Mill
Bull Run Pk
Fir Camp Saddle
Spear Creek Summer Home Tract
Balance Rock
Deep Creek Cave
6/26/90
51

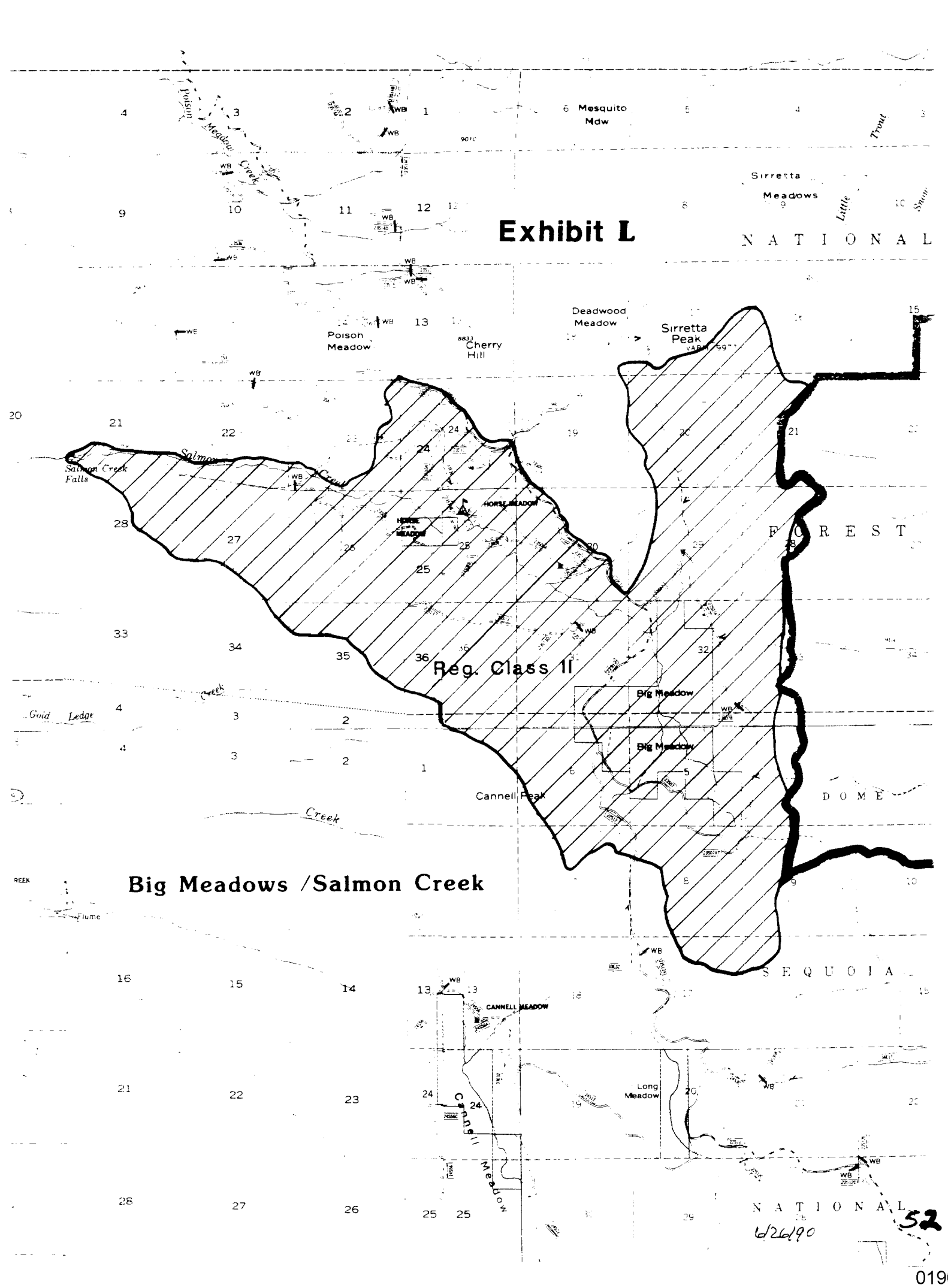
Exhibit L
Reg. Class II
Big Meadows /Salmon Creek
Mosquito Mdw
Sirretta Meadows
Deadwood Meadow
Sirretta Peak
Poison Meadow
Cherry Hill
Salmon Creek Falls
Horse Meadow
Big Meadow
Big Meadow
Cannell Peak
Cannell Meadow
Long Meadow
NATIONAL FOREST
SEQUOIA NATIONAL
DOME
Trout
Little
Snow
Poison Meadow Creek
Creek
Gold Ledge
Flume

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6/26/90

Exhibit M

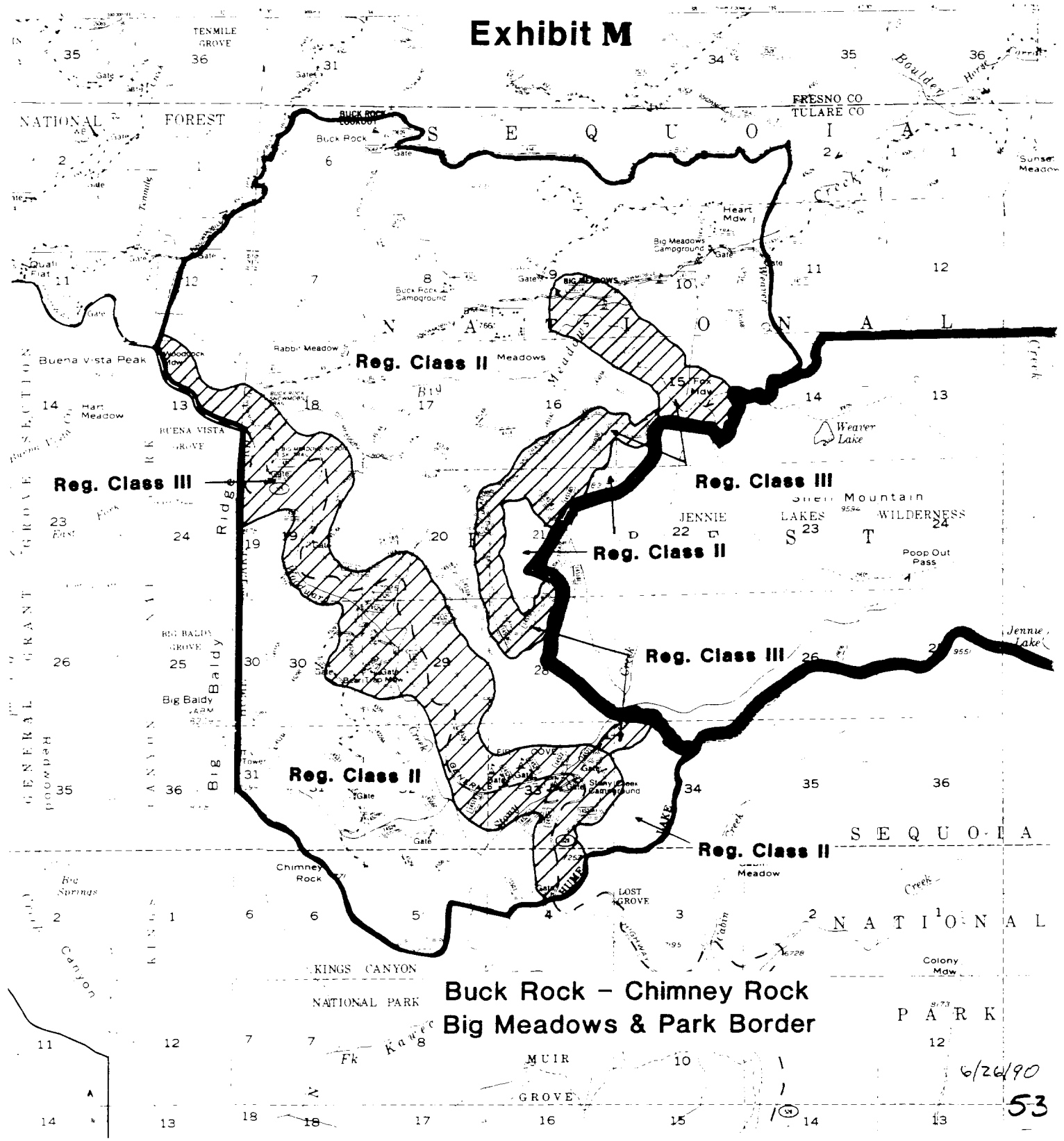

Reg. Class II
Reg. Class III
Reg. Class III
Reg. Class II
Reg. Class III
Reg. Class II
Reg. Class II
Buck Rock – Chimney Rock
Big Meadows & Park Border
6/26/90
53

EXHIBIT N

The Forest-wide Standards and Guidelines for Timber Management at pages 4-31 to 4-33 will be amended as follows:

A. Silvicultural Systems

1. Both even-aged and uneven-aged silvicultural systems shall be evaluated and used on the Forest as appropriate to a given site.

2. Uneven-aged management:

a. Uneven-aged management shall be conducted as Regulation Class 2, which corresponds to an average rotation age of 140 years.

b. Both natural and artificial regeneration shall be used, as appropriate.

c. Openings created by group selection shall be limited generally to two acres. Larger openings will be allowed only where necessary to achieve specific silvicultural goals that are stated in the applicable NEPA document, and only if approved by the Forest Supervisor.

d. Apply uneven-aged management single tree selection, as the principal silvicultural system within foreground of roads, trails, and high use sites that are Sensitivity Level 1.

e. Generally apply uneven-aged silvicultural systems in Sensitivity Level 1, middleground areas. Allow even-aged silvicultural systems in such areas only when harvest practices and related activities:

a) Do not visually detract from a Class A landscape feature or an identified focal point;

b) Are screened by terrain;

c) Occur at or near a perpendicular angle to the direction of travel;

d) Occur in low variety landscapes.

f. Apply even-aged management or uneven-aged management within middleground view of roads, trails and high use sites that are Sensitivity Level 1. The system to be selected will meet the assigned Visual Quality Objective and the silvicultural requirements of the site.

g. Apply uneven-aged management, single tree or group selection, as the principal silvicultural system within foreground of Sensitivity Level 2 roads and trails, Sherman Pass Viewshed, Salmon Creek-Big

Meadow area and other areas to be agreed upon in negotiations over special areas. Within these areas, even-aged prescriptions are allowed only where terrain, stand characteristics, operational factors, or non-timber objectives make this necessary and justified by the project environmental analysis.

3. Clearcutting and Other Forms of Even-aged Management:

a. The Forest is taking steps to modify and reduce the impacts of clearcutting. These steps include such measures as retention of existing reproduction where feasible, identification and retention of wildlife clumps within cutting units, retention of snags and dead-and-down material, and greater retention of slash and ground cover than has been customary. One example of the Forest's new approach is the use of a modified form of clearcutting called "Regeneration Mosaic" cutting, which is defined in Appendix 1.

b. Determination of Clearcut: Clearcutting as a regeneration harvest tool shall be used only where (a) it is determined to be the optimum method to achieve management objectives on a site-specific basis; (b) the potential environmental, biological, aesthetic, engineering, and economic impacts on the advertised sale area have been assessed, as well as the consistency of the sale with the multiple use of the general area; (c) cuts are carried out in a manner consistent with the protection of soil, watershed, fish, wildlife, recreation, and aesthetic resources, and the regeneration of the timber resource, and (d) cut blocks, patches, or strips are shaped and blended to the extent practicable with the natural terrain. Clearcutting shall not be selected as a harvesting method primarily because it will give the greatest dollar return or the greatest unit output of timber.

c. Size limits:

(1) On cable ground, clearcuts and seed trees cuts shall be limited to a maximum size of 15 acres unless a site-specific analysis documents reasons for exceeding 15 acres and the action is approved by the Forest Supervisor. Where feasible, smaller openings shall be used.

(2) On tractor ground where clearcutting or seed tree cutting is used, no continuous opening shall exceed ten acres in size (even though the harvested area may exceed ten acres) without the approval of the Forest Supervisor with specific reasons stated in the decision document.

(3) Limit regeneration areas requiring reforestation to 25 acres without approval of the Forest Supervisor.

(4) Reasons for exceeding size limits are: responding to an insect or disease infestation; limitations of cable logging (i.e., need to reach a corner); salvage logging of fire-damaged trees; and limitations imposed by the existing road configuration. It is the

intent of the USFS, however, to operate within the size limits wherever feasible and to exceed them only rarely.

d. In clearcut units, healthy and vigorous advanced regeneration will be saved wherever feasible, inlcuding on cable-logged ground. Clearcutting shall not exceed 600 acres per year annual average per a decade.

B. Harvest System

1. Use a variety of logging systems to harvest forest products. Use ground-based systems (such as tractors) on slopes of less than 35 percent, and aerial systems (such as highlead, skyline, or helicopters) where slopes exceed 35 percent, unless the Forest Supervisor makes a specific finding, based on the environmental documentation, that an alternative is preferable.

2. On slopes greater than 60 percent, timber harvesting will be limited to Regulation Class 2 single tree selection via helicopter.

C. Regeneration Methods

1. Plant all regeneration areas requiring reforestation except where natural seeding is prescribed. Regeneration by natural seeding will be applied primarily in the true fir type and in areas where uneven-aged silvicultural practices are prescribed.

2. Save viable existing reproduction where feasible and incorporate into silvicultural prescriptions for new stands.

3. Utilize current state-of-the-art regeneration techniques, including controlling pests, such as gophers, and controlling competing vegetation.

4. To assure long-term site productivity, meet regional soil standards. Existing draft regional standards shall be followed until final standards are adopted.

D. Harvest Location

1. A mix of understocked and better stocked stands will be harvested. The Forest will emphasize harvest and restocking of understocked stands to the extent feasible. In determining what activities should occur on understocked stands, the full range of multiple use values shall be considered.

2. Make logging slash and dead and down material available for firewood thoughout the Forest. Make some green material available for firewood.

E. Diversity

1. In order to maintain Forest diversity, particularly within the mixed conifer forest type, reforestation and timber stand improvement prescriptions shall generally emulate existing species composition. Variation from this guideline will be the exception and will be discussed in an environmental document. Commercial values will not be the sole justification for increasing the proportion of high value species.

2. Provide for an array of early and late successional stage habitat over time in each ecosystem. A minimum of 5% of the total area of each vegetative type in forested lands will be maintained in each seral stage/habitat type combination. Allocation of the habitat type/seral stage combinations will be done on a compartment basis.

3. Design vegetation treatments to provide for edge, corridors of cover, and enhancement of special habitat features such as meadows for wildlife.

F. True Fir Management

1. During this Plan period, the Forest will test the true fir cutting and regeneration practices described in "The Development of a Policy and Guidelines for the Management of True Fir Forest Cover on the Sequoia National Forest" (1983), incorporated into this Plan as Appendix 2. All true fir sales will be closely monitored to determine if true fir regeneration is successful. When the Plan undergoes its five-year review, the Forest will prepare a written evaluation of its true fir policies based upon this monitoring. The Forest Supervisor will make a decision whether amendment of the policies, cessation of true fir logging, or other aciton action is appropriate. A similar written report, review, and management decision will be made after the additional five years. The following true fir sales are tentatively scheduled for sale between now and 1995:

G. Sugar Pine Management

1. Silvicultural prescriptions are to consider means of maintaining the widest possible base of sugar pine genes. Generally, this means protecting as many sugar pine trees as possible while meeting Land Management Plan objectives and being compatible with timber harvest and related activities. Current direction regarding sugar pine retention is set forth in Appendix 3.

2. Continue to plan a modest mix (5-10%) of sugar pine along with other mixed conifer species, even though major gene resistant stock is not now available. This may mean collecting seed from non-tested trees in order to maintain a sugar pine seedbank. With resistant stock, this percentage could be increased.

3. Intensify the effort to collect sample cones from candidate resistant trees. This is a high priority.

4. Continue to protect trees that are known to carry resistance. Collect seed from these trees for our seedbank.

H. Integrated Pest Management

1. Apply the principles of integrated pest management to the control of competing vegetation, animal pests, and diseases. Consider a full range of management strategies and techniques before prescribing treatment designed to reduce damage from any forest pest. Strategies include indirect control (which focuses on increasing host resistance to pests) and direct control (which seeks to reduce pest populations). Techniques include biological,

chemical, mechanical, manual, and prescribed fire in prescriptions considered in the control of pest damage. Control of competing vegetation will be within the scope of Regional direction based upon an approved environmental impact statement.

I. Giant Sequoias. Delete this whole section.

Exhibit O

CHAPTER 5

MONITORING AND EVALUATION REQUIREMENTS

A. PURPOSE

The purpose of monitoring and evaluation is to provide information on the results and progress of Forest Plan implementation so that:

- Necessary changes in the management practices can be instituted; and,

- Indicated plan amendments/revisions can be made.

B. MONITORING AND EVALUATION SYSTEM

The total monitoring system on the Forest consists of a wide variety of actions. The monitoring plan presented in this document consists of those special activities that focus on evaluating the broad aspects of plan implementation. Other monitoring consists of reports, reviews and records that occur as a routine part of Forest management. Actions not duplicated in this plan include such things as: individual and annual fire reports; management attainment reports; annual timber management action plans, reviews and reports; budget and financial management documents; recreation information management reports; environmental analysis reports; activity reviews; audits; and general management reviews.

Monitoring and evaluation are separate, sequential tasks. Monitoring is designed to observe and record the results of both natural processes and actions permitted by forest land and resource management plans. Evaluation looks at those results, determines how well those results meet forest plan direction, and identifies measures to keep the plan viable.

There are three distinct levels of monitoring: 1) implementation monitoring, 2) effectiveness monitoring, and 3) validation monitoring. Each is defined as follows:

Implementation Monitoring: Implementation monitoring determines if plans, prescriptions, projects and activities are implemented as specified in the project level environmental document (e.g., EIS). Implementation monitoring answers the question: "Was the required measure performed on the ground as specified in the project environmental document?"

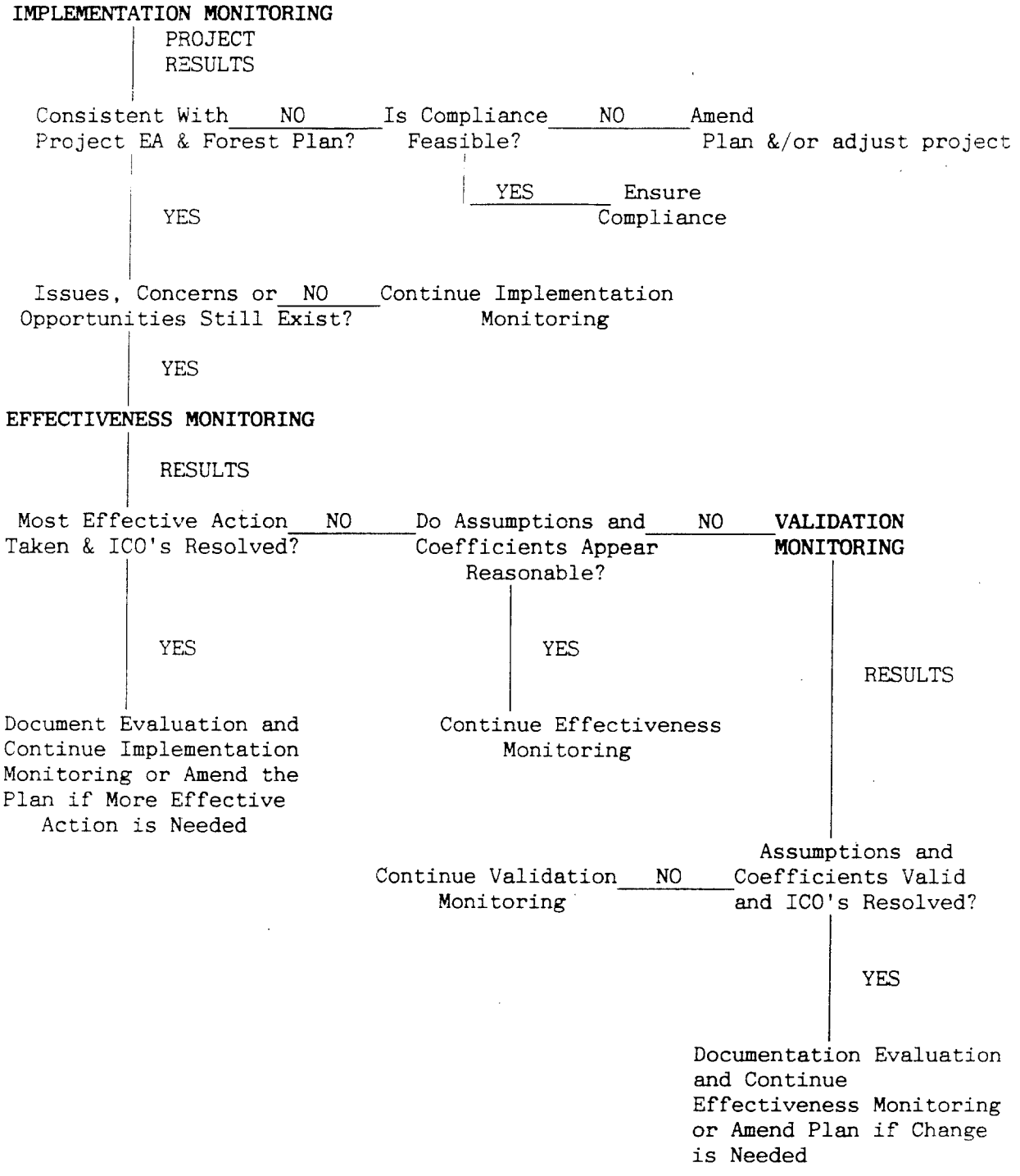
Effectiveness Monitoring: Effectiveness monitoring determines if prescriptions and management activities meet management direction, objectives, and the standards and guidelines. This level of monitoring is conducted on a limited basis as determined by resource values and risks, and public issues. Effectiveness monitoring is done only after determining that the plan, prescription, project, or activity to be monitored has been implemented according to the plan's direction. Effectiveness monitoring answers the question: "Did the required practice actually work?" If the answer is "yes", no further monitoring need be done. If the answer is "no", the appropriateness of the mitigation must be evaluted. Until that determination is made, other activities in the same watershed may or may not be halted depending on the characteristics and scope of the problem and its context.

Validation Monitoring: Validation monitoring determines whether the initial data, assumptions, and coefficients used in development of the plan and required practices are correct; or if there is a better way to meet forest planning regulations, policies, goals, and objectives. Validation monitoring is generally done only when effectiveness monitoring results indicate that a given practice may not be working. The primary exceptions are in fields such as wildlife where broad population trends must be evaluated.

Exhibit 5-1 displays the process for evaluating monitoring results from each monitoring level. There is a direct, sequential relationship between the levels. This relationship is designed to focus initial attention at the implementation monitoring phase.

Exhibit 5-1

EVALUATION OF MONITORING RESULTS
FOR FOREST PLAN IMPLEMENTATION



C. MONITORING REQUIREMENTS

The planning regulations at 36 CFR Part 219 require monitoring to:

1. Compare planned versus applied management standards and guidelines to determine if management objectives are achieved [36 CFR 219.12(k)].

2. Quantitatively compare planned versus actual outputs and services [36 CFR 219.12(k)(1)].

3. Determine significant changes in land productivity [36 CFR 219.12(k)(2)].

4. Determine planned cost versus actual costs associated with carrying out prescriptions [36 CFR 219.12(k)(3)].

5. In cooperation with State Fish and Wildlife agencies, determine population trends of the management indicator species and relationship to habitat [36 CFR 219.19(a)(6)].

6. Evaluate effects of National Forest management on adjacent land, resources, and communities and the effect of activities on adjacent lands on the National Forest [36 CFR 219.7(f)].

7. Determine if lands are adequately restocked [36 CFR 219.12(k)(5)(i)].

8. Determine, at least every ten years, if lands identified as unsuitable for timber production have become suitable [36 CFR 219.12(k)(5)(ii)].

9. Determine whether maximum size limits for harvest areas should be continued [36 CFR 219.12(k)(5)(iii)].

10. Ensure that destructive insects and disease organisms do not increase to potentially damaging levels following management activities [36 CFR 219.12(k)(5)(iv)].

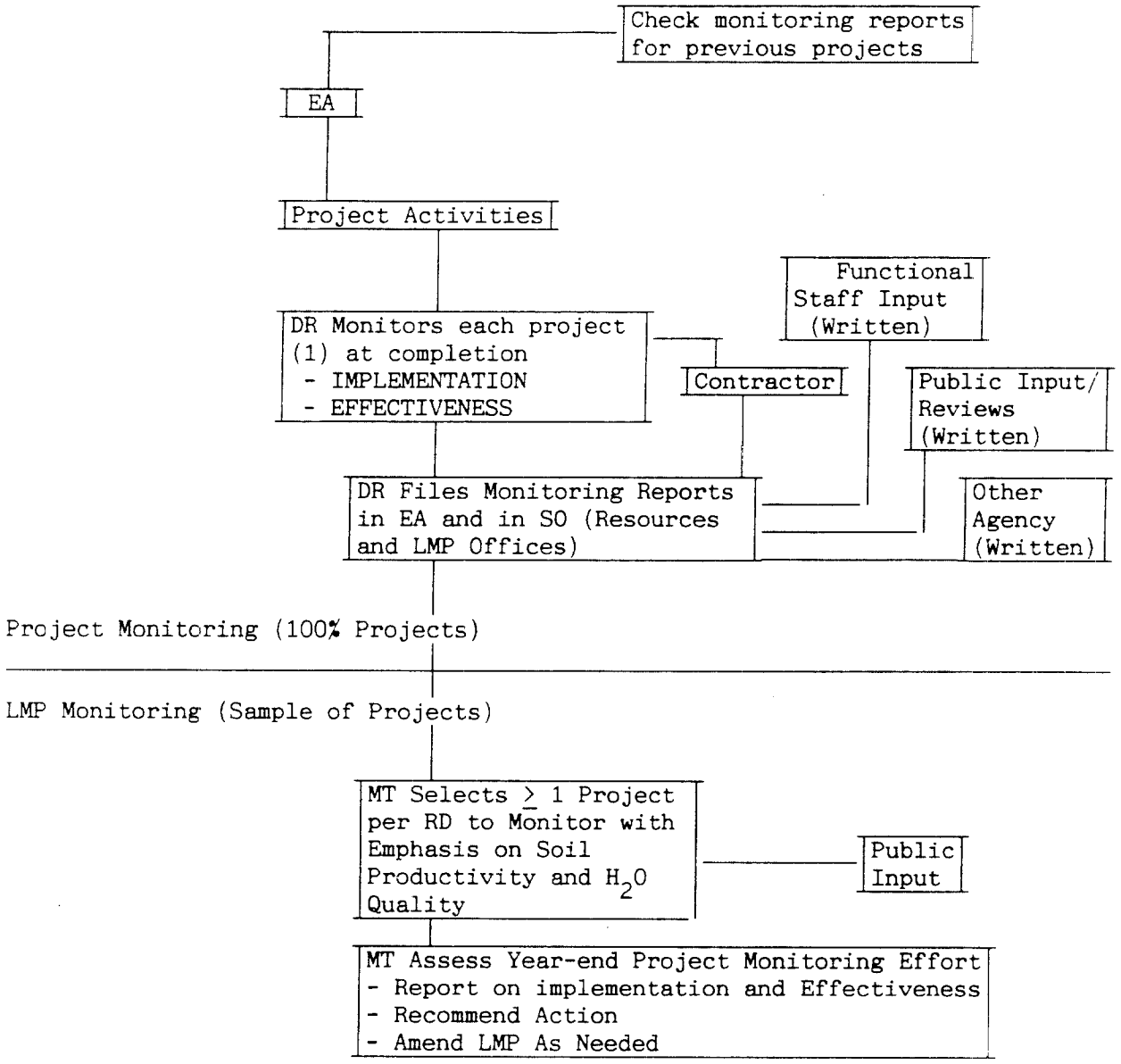
D. THE TWO PART APPROACH TO MONITORING

In order to structure a monitoring system that was simultaneously responsive to the requirements discussed above and project-oriented, a two part approach to monitoring and evaluation is adopted for the Sequoia National Forest's Land Management plan.

1. Project Monitoring

The major part and centerpiece of the monitoring effort focuses on in-the-field project monitoring. Exhibit 5-2 details this process for all management activities affecting water, soil or vegetation (e.g., fuels management, timber sales, etc.).

Exhibit 5-2: Project-Based Annual LMP Monitoring



(1) Includes management activities affecting air, water, soil, and vegetation such as timber sales, grazing allotment management, fuels management, site preparation, etc.

In summary, the District Ranger is responsible for ongoing and post-project review of all projects. He/she performs implementation monitoring and coordinates effectiveness monitoring. In the case of a timber sale, harvest activities and subsequent site preparation are to be monitored separately. With input from the public, other agencies, in-house Forest staff and/or contractors, the Ranger files a monitoring report on each project which is kept at the district office. Copies are filed in the Supervisor's Office, as well to facilitate public review of them. Annually the forest management team selects a sample of completed projects drawn from each district. The Management Team monitors the monitoring effort, as well as the management results on-the-ground. Projects are to be selected with an emphasis on soil productivity and water quality. At year's end, the management team reports on both the monitoring effort and on-the-ground results. Evaluation of results and recommendations for Plan amendment, or changes in practices and policies, are made at this time.

Table 5-3 shows in detail those items that shall be monitored as appropriate to a given sample project. The heading "Assessment Process" simply identifies the monitoring process to be followed at each of the three phases of monitoring. Precision is the exactness or accuracy of measurement techniques. Validity is the expected probability that information acquired through sampling will reflect actual conditions. Both precision and validity are qualitatively rated as either high, moderate, or low. The accuracy for precision and validity levels are:

Level of Precision/Validity	Expected Accuracy
High (H)	Within $\pm$ 10%
Moderate (M)	Within $\pm$ 33%
Low (L)	Within $\pm$ 50%
N/A	Cannot be established.

Minimum monitoring frequency simply specifies how often and at what sample size the assessment will be made. The responsible staff is, in each case, the member of the forest management team who is responsible for the assessment. The standard indicating further action is the "trigger" for further monitoring procedures. Estimated average annual costs are shown for each assessment process. If a practice is already part of on-going forest management and thereby already budgeted, it is labeled "SOP" for "standard operating procedure".

2. Program Monitoring

The second part of the forest plan monitoring process responds to specific requirements of NFMA that must be done on a forest-wide basis and to the need to monitor some aspects of the forest's program on a forest-wide basis. These include such items as actual versus planned levels of output and costs and evaluation of the maximum size of harvest areas. These shall be monitored as appropriate and, except where noted, reported every five years. In addition, every ten years, land identified as unsuitable in the forest plan will be re-evaluated for suitability (using the same or updated methodology as shown in Appendix C) and a report of results made.

a. Cost and Output

A national Program Development and Budgeting Review Team has been established to compare FLMP planned (estimated) implementation costs and outputs with actual costs and outputs. Their charter is as follows:

(1) "Level" or gain better equity among Regions for financial schedules that fund the land management plans for the period 1990 to 2000.

(2) Improve our ability to develop cost-effective program budgets that reflect national priorities among Regions at less than full LMP funding while recognizing Regional equity and other managerial objectives.

(3) Improve our ability to carry through with decisions made during the program development process.

(4) Carry out congressional direction.

(5) Implement our plans.

(6) Gain efficiency and consistency in achieving our agreed-upon objectives and targets.

(7) Develop consensus among Regional Foresters so that they can support a national NFS PD&B process.

At the present time, the Timber Sale Program Information Reporting System (TSPIRS) provides financial information covering the forest timber program for any given year. It covers timber revenue and associated costs, socioeconomic effects and accomplishments, and future benefits and costs resulting from that year's program. All Program Information Reporting System (ALLPIRS) is being tested nationwide at this time. It will be implemented to provide financial information for all the resource programs.

Until the new financial monitoring systems are in place, annual monitoring of LMP implementation costs will consist of (1) reviews of annual budget submittals for the Forest and their relationship to the

broad funding categories shown in LMP as a reflection of the balanced program contained in the LMP; (2) reviews of the annual budget allocations to the Forest and their relationship to broad LMP funding categories as a way of assessing whether actual allocations are directing management activities in a way that implements (or deviates from) the LMP. Whichever is available, the interim system or the developing system will be used to determine if amendment to the LMP is required at the five year FLMP review.

Regarding output monitoring, until the new output monitoring system is in place, the annual Management Attainment Report, which shows how many/much of various selected activities/outputs have been accomplished in a given year, shall be used as the basis of annual output comparisons with FLMP direction. Whichever is available, the MAR system or the new system will be used to determine at the five year FLMP review whether the FLMP needs to be amended.

b. Resources

(1) Forestwide CWE - To be added as per final version of Settlement Agreement.

(2) Tri-forest Wildlife Plan - This plan and its monitoring provisions are incorporated by reference.

c. Adjacent Lands - The effects of management activities on adjacent lands shall be analyzed in site-specific NEPA documents and monitored on a project basis under the appropriate resource heading as listed on Table 5-3.

d. Data Bases

The forestwide data bases containing timber stand and CWE information are to be updated as part of the analysis process.

(1) CWE - The inventory of ERA's is updated for each compartment when the CWE analysis for a given activity is done.

(2) Timber Stands - The timber stand inventory for each compartment shall be updated annually on a project basis starting in 1991.

TABLE 5.3: LMP MONITORING PLAN (Project)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST ($)
AIR QUALITY: Air Quality Maintenance					
A. MONITORING OBJECTIVE: To conduct management activities within the air quality regulations mandated by federal, state, and local governments.					
1. Implementation: Determine if appropriate smoke management techniques to reduce emissions, minimize impacts, and meet prescription objectives are implemented.	High	Two projects/ District/Year	District Ranger	When assessment indicates departure from smoke management techniques that meet the objectives of the burn.	1,000 (SOP)
2. Effectiveness: Photographic tracking of smoke plumes, manual photos, personal observations, and notations monitoring the transport and dispersal of smoke.	Moderate	Two projects/ District/Year	District Ranger	When assessment indicates smoke transport outside that predicted in the burn plan.	4,000 (New Cost)
3. Validation: Review smoke management plans and photographic tracking to evaluate smoke management techniques.		Two projects/ District/Year	Forest Resource Officer	When assessment indicates smoke management techniques (not unpredictable environmental change) is responsible for failure to predict smoke transport.	4,000 (New Cost)

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TABLE 5-3: LMP MONITORING PLAN (Project-based)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST ($)
CUMULATIVE WATERSHED EFFECTS					
MONITORING OBJECTIVE: To protect beneficial uses of water from the cumulative effects of multiple land management activities.					
1. Implementation					
Determine if Cumulative Watershed Effects (CWE) analysis is/was performed and documented in a project NEPA document for all projects affecting water quality and beneficial uses in all specified sub-watershed(s) in watersheds of influence. Determine if analysis conforms to direction in Sequoia National Forest CWE working guide consistent with current R-5, FSH 2509.22, Chapter 20.	H/H	Annually during post-project reviews and inspections for 2 completed projects per district per year.	Forest Resource Officer and Timber Management Officer	Determine if the CWE analysis accurately reflects watershed conditions. Determine if the project NEPA document reflects mitigation responsive to watershed needs and mitigation meets its own objectives after accomplishment.	15,000 (SOP)
2. Effectiveness					
Determine if CWE analysis was effective in identifying potential problem areas and targeting required mitigation responsive to concerns relative to water quality and beneficial uses.	H/M	Annually during post-project reviews and inspections for 2 completed projects per district per year.	Forest Resource Officer and Timber Management Officer	Determine if mitigation alleviated concerns and if problem areas were accurately identified.	15,000 (SOP)
3. Validation					
Determine if factors used in CWE analysis accurately quantify site conditions, disturbance, and affected environment. Determine if predicted long-term effects to soil and water from management activity are reasonably evaluated.	M/M	As post-project monitoring indicates need and/ or R&D efforts dictate needs to change	Forest Resource Officer	Recruit help from earth scientists internally or externally, depending on need, severity, and scope of the of the problem or to help identify problem. Regional expertise may be needed to evaluate the method used for validation based on Regional perspective.	

SEQUOIA NATIONAL FOREST

TABLE 5.3: LMP MONITORING PLAN (Program)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST ($)
DEVELOPED RECREATION USE: Management of Developed Recreation Sites and the Effect on Health, Safety and Resources					
Monitoring Objective: Ensure safety, health, and environmental protection at developed recreation site.					
A. Implementation and Effectiveness: Assess the level of safety, health, and impact on natural resources from developed recreation. Utilize BMP's 4-1, 2, 3, 4, 5, 6, 7, 9, and 10 and the BMP assessment forms R5-2525-II-Rec 21 and 22 to assess the implementation and effectiveness of monitoring these recreation activities.	H/H	Annually in monitoring report and in EA's for all new or reconstructed recreation projects.	District Ranger	If projects or monitoring reports do not reflect appropriate BMP's or if measured results do not meet BMP standards. If results do not meet BMP standards.	$15,000
B. Validation: In cases where effectiveness monitoring indicates questionable effectiveness of prescribed standards, validation monitoring will determine if changes or assumptions need to be made. Study and evaluate recreation facilities not meeting standards, and adjust management to meet acceptable standards.	H/H	As indicated by results of effectiveness monitoring.	Forest Recreation Officer		Unknown

SEQUOIA NATIONAL FOREST

TABLE 5.3: LMP MONITORING PLAN (Program)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST ($)
FACILITIES: Transporation system management and maintenance.					
Monitoring Objective: Determine effectiveness of transportation system management.					
1. Implementation: Determine if transportation system is in compliance with Forest Plan and meeting resource objectives.	High	Ongoing	Forest Engineer	When assessment indicates departure from Forest Plan and resource objectives.	$500
2. Effectiveness: Evaluate the transportation system's effectiveness in meeting established road management objectives.	Moderate	Annual	Forest Supervisor	When review of road management objectives indicates variation.	$2,000
3. Validation: Review non-compliance of road management objectives with Districts. Review to determine if objectives should be changed.	Moderate	Annual	Forest Supervisor	Variability in road management objectives that may be more appropriate.	$2,000

TABLE 5-3: LMP MONITORING PLAN (Project)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST ($)
FISHERIES					
I. MONITORING PROGRAM					
A. MONITORING OBJECTIVE: Ensure the maintenance of suitable habitat to provide viable fish populations.					
1. Implementation					
Ensure that R-5 Minimum Management Requirements, FLMP Guidelines, Riparian Standards & Guidelines and Best Management Practices are being implemented as designed in project NEPA document.	H/H	Sample 5 projects per year.	Forest Resource Officer	When assessment indicates departure from requirements contained in project EA's.	5,000 SOP
2. Effectiveness					
Determine if project plans and prescriptions achieve their stated objectives, guidelines and requirements for the protection and/or enhancement of suitable fish habitat, utilizing the R-5 Habitat Assessment and Fish Habitat Relationship programs.	M/M	Sample 5 projects per year.	Forest Resource Officer	When the R-5 Habitat Assessment and the Fish Habitat Relationship programs indicate a 20% change in fish habitat capability for a specific stream.	50,000 SOP
3. Validation					
Determine if assumptions used to formulate guidelines and habitat capability models are achieving the FLMP goals and objectives by utilizing the Fish Habitat Relationship program to model all fish habitat on the Forest.	M/M	10 years	Forest Resource Officer	10% deviation from the 1990 RPA goal.	1,500
Assess fish population trends to validate Fish Habitat Relationship Program model.					

SEQUOIA NATIONAL FOREST

TABLE 5.3: LMP MONITORING PLAN (Program)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST ($)
LITTLE KERN GOLDEN TROUT:					
Monitoring Objective: Maintain suitable habitat to ensure viable populations.					
A. Implementation:					
1. Ensure that provisions in recovery plans are carried out.	High	Annually	Tule River District Ranger	As per Recovery Plan	2,000
B. Effectiveness:					
1. Population indices	Moderate	Every 5 yrs	Tule River DR in cooperation with CDF&G	As per Recovery Plan	500
2. Habitat monitoring	Moderate	Every 5 yrs	Tule River DR in cooperation CDF&G	As per Recovery Plan	500
C. Validation: R5 Fish Habitat Assessment Program	Moderate	Every 10 yrs	Forest Resource Officer	As per Recovery Plan	2,000

SEQUOIA NATIONAL FOREST

TABLE 5.3: LMP MONITORING PLAN (Program)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST ($)
RECREATIONAL USE OF TRAILS: Effects of OHV and Other Trail Users on Land and Other Natural Resources					
Monitoring Objective: Evaluate effects of trail construction, maintenance, and use by OHV's, horses, hikers, and other on natural resources.					
A. Implementation: Develop standards to measure impacts of trail use in the Trail Plan. (BMP 4-8 sets implementation direction)	M/M	Annual review of standards used in monitoring report.	Forest Rec. Officer	If standards are not being applied in project analysis, design, or monitoring report.	$1,000
Develop standards modeled after BMP's used for road construction and maintenance (to be developed in the Trail Plan).	M/M	All new projects and sample of maintenance projects annually.	Forest Rec. Officer		
B. Effectiveness: Determine effectiveness of prescribed standards compared to planned objectives. Determine if a change is needed in the Trail Plan.	M/M	All new projects and a sample of other existing trail facilities annually.	District Ranger	If impacts exceed the ability to manage and maintain trail use within prescribed standards at a reasonable cost.	$5,000
Review all new construction and sample maintained and other existing trail facilities to determine if they meet the standards.					
C. Verification: In cases where effectiveness monitoring indicates questionable effectiveness of prescribed standards, validation monitoring will determine if changes or assumptions need to be made.	H/H	As indicated by results of effectiveness monitoring.	Forest Rec. Officer	N/A	Unknown
Install research plots/studies to measure impacts, evaluate results, and adjust standards to reduce impacts to acceptable levels.					

SEQUOIA NATIONAL FOREST

TABLE 5-3: LMP MONITORING PLAN (Project)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST ($)
RANGE MANAGEMENT					
A. MONITORING OBJECTIVE: Provide for the health and vigor of rangeland vegetation.[1]					
1. Implementation					
Monitor ecological change on all allotments where vegetative change is prescribed in the Allotment Mgmt. Plan (AMP) by photo transect method as described by Frost, W.E., McDougald, N.K., Smith, E.L. and Clawson, W.J. Procedures for Measuring, Analyzing and Interpreting Vegetation Trend in Riparian Area. University of California Range Science Report No. 23, August 1989.	M/M	3-5 yrs.	Forest Resource Officer	Deviation from prescriptions in AMP.	12,000
1. Effectiveness					
Inspections to monitor the effectiveness of management practices on intensively managed allotments for compliance with AMP. (Option-add "This includes range readiness, forage utilization & livestock distribution.")	H/H	Annually 50% all AMP's	Forest Resource Officer	Deviation from standards set in FSH and Manuals, and AMP direction.	5,000 (SOP)
3. Validation					
Measure species frequency and cover in transects as set forth in Frost, W.E., McDougald, N.K., Smith, E.L. and Clawson, W.J. Procedures for Measuring, Analyzing, and Interpreting Vegetation Trend in Riparian Areas. University of California Range Science Report 23, August 1989.	M/M	As determined by Eff. monitoring.	Forest Resource Officer	When interpretation of statistical comparison indicates that a change has occurred in relation to the vegetative objectives adjust AMP management practices.	3,000

[1] Inventory needs include inventory of each allotment to determine current ecological status of the land and revision of allotment management plans to comply with revised Forest Service direction ("Change on the Range").

TABLE 5-3: LMP MONITORING PLAN (Project)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST ($)
SENSITIVE PLANTS[1, 2]					
MONITORING OBJECTIVE: Ensure that LMP goals, objectives, standards and guidelines provide protection for plants listed on the R-5 Sensitive Plant List.					
1. Implementation: Inspect project activity to assure compliance with requirements specified in species management guides and/or project NEPA document.	H/H	Annually 2 projects per District.	Forest Resource Officer	When review team detects deviation from species management objectives as shown in project NEPA document.	2,000 (SOP)
2. Effectiveness: Inspect known locations of sensitive plant populations to determine if effects of project on plant habitat were accurately predicted and mitigations effective.	H/H	Same as above.	Forest Resource Officer	When reviewing officers detect any change in the species habitat that may be detrimental to its continued existence.	3,000 (SOP)
3. Validation: Conduct a botanical investigaton (R-5 FSH 2609.5, 3/88) and if necessary revise Species Management Guide to reflect required changes. Apply new guidelines for future project planning.	H/H	As effectiveness monitoring indicates the need.	Forest Resource Officer	When botanical investigations indicate population trend is approaching decreasing/increasing viability of the species.	2,000

[1] Inventory needs include a botanical investigation for 26 sensitive species in order to determine their status and the significance of each individual population. Priorities for development of Species Management Guides are listed in Section 1.14 of R-5 FSH 2609.25, Threatened and Endangered Plants Handbook.

[2] Species population trends will be monitored in conjunction with species management guides at the rate of at least one per year based on available funding.

SEQUOIA NATIONAL FOREST

TABLE 5-3: LMP MONITORING PLAN (Project and Program)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST ($)
SENSITIVE WILDLIFE SPECIES[1]					
A. MONITORING OBJECTIVE: Ensure that LMP goals, objectives, standards, and guidelines provide senstive species habitat to sustain viable populations.					
1. Implementation					
Inspect project activity to assure compliance with project NEPA document regarding protection of sensitive species habitat.	H/H	Annually two projects per District.	Forest Resource Officer	When review team detects deviation from species management objectives, as per project NEPA document.	TBA
2. Effectiveness					
a. Inspect habitat identified project NEPA document to determine if project effects on species habitat were accurately predicted and mitigations effective.	H/H	Same as above.	Forest Resource Officer	When the reviewing officer detects any change in the species habitat that may be detrimental to viability.	2,000 SOP
b. Determine if project effects and prescriptions achieve LMP objectives by utilizing the Wildlife Habitat Relationship computer program to model the long-term effects.	M/M	Minimum 3 years.	Forest Resource Officer	When long-term effects indicate habitat capability is declining and may not sustain viable populations.	2,000 SOP
c. Perform population census on the following species as directed by the R-5 Species Management Guides.					
(1) Spotted Owl Determine nesting success and population viability of forest network.	M/M	As determined by the USF&WS and U.S. Forest Service (Washington Office).	Forest Resource Officer	Downward trends in nesting success as determined by Regions 5/6 RD&A.	130,000 SOP
(2) Goshawk Determine nesting success and establish network of nest sites to assure species viability.	M/M	Annually until network is established and every 3 years thereafter.	Forest Resource Officer	Deviation from FLMP Guidelines and R-5 Minimum Management Requirements.	7,000 SOP
(3) Willow Flycatcher Survey potential nest sites associated with projects supplemented with data from Riparian ecosystem monitoring for avian guilds.	M/M	Annually for 5 years and every 3 years thereafter.	Forest Resource Officer	Deviation from R-5 Minimum Management Requirements and FLMP Guidelines.	SOP funds are included in wildlife validation monitoring section.

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST ($)
(4) Great Grey Owls Determine nest sites and nesting success. Data will be collected while gathering spotted owl information.	M/M	Same as above.	Forest Resource Officer	Same as above.	SOP funds are included in spotted owl monitoring section.
(5) Furbearers Assess available habitat for Pine Marten, Fisher, Wolverine and Sierra Red Fox with proposed projects.	L/L	As directed by the Regional Forester.	Forest Resource Officer	Deviation from R-5 Minimum Management Requirements.	10,000
3. Validation Determine if the direction in R-5 Minimum Management Requirements and Forest Plan provide habitat to sustain viable populations of sensitive species.	M/M	Whenever effectiveness monitoring indicates a need.	Forest Resource Officer	When changes in species habitat and/or populations are altered in a manner that may affect the viability of the species adjust practices and/or guidelines.	2,000

[1] Inventory needs include a biological investigation for 7 listed species in order to determine population density and habitat needs.

SEQUOIA NATIONAL FOREST

TABLE 5-3: LMP MONITORING PLAN (Project)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST ($)
SOIL					
I. MONITORING PROGRAM					
A. MONITORING OBJECTIVE: Ensure that management practices and prescriptions maintain inherent long-term soil productivity.					
1. Implementation					
Determine if project plans and prescriptions are implemented as designed and documented in project NEPA document.	H/H	Annually during pre- and post-harvest and pre- and post-site prep. project reviews and inspections for 2 completed projects/district.	Forest Resource Officer and Timber Management Officer	Departure from contract or NEPA document requirements.	15,000 (SOP)
2. Effectiveness					
Determine if plans and prescriptions are effective in meeting the objectives and S&G's specified in project NEPA documents and Forest plan. Key soil properties to observe are compaction, erosion, puddling, displacement and severity of burn.	M/M	Annually on post-project harvest and site prep. reviews for 2 completed projects/ district.	Forest Resource Officer and Timber Management Officer	Long-term soil productivity standards are being met when at least 85% of an activity area is in acceptable soil condition (Draft R-5 FSH 2509.18 Soil Mgt. Handbook, Sept. 1988, Supp. #1). The following defines acceptable soil condition for 85% of the area (FSH 2509.18). 1. Soil cover is present in amounts that prevent accelerated erosion rates from exceeding soil formation rates over time, i.e., the kind, amount and distribution of soil cover is guided by the R5 Erosion Hazard Rating. 2. Soil porosity is at least 90% of its natural condition. 3. Soil organic matter is present in amounts sufficient to prevent significant short or long-term nutrient cycle deficits, and avoid adverse physical soil characteristics.	10,000 (SOP)

SEQUOIA NATIONAL FOREST

TABLE 5-3: LMP MONITORING PLAN (Project)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST ($)
				a. Soil organic matter is at least 85% of natural conditions in the upper 12 inches. b. Large woody material is available, is about 5 to 20 logs per acre in contact with the soil surface. Size should be 20 inches in diameter and 20 feet long, of all decomposition classes. c. Litter and duff covers approximately 50 percent of the disturbed area, less than 3 inches in diameter and in contact with the soil surface. Annual litter fall may be used to compensate for litter removed during management.	
3. Validation					
Determine if CWE coefficients, S&G's and management requirements maintain long-term soil productivity. Utilize monitoring methods discussed in Chapter 2 of FSH 2509.18 - Soil Management Handbook, 10/87.	H/H	Whenever effectiveness monitoring indicates a need.	Forest Resource Officer and District Ranger	When detrimental changes in soil properties over an activity area exceed 15% of the acceptable soil condition, consider adjusting practices and/or guidelines to prevent significant impairment (FSH 2509.18, 10/87).	

SEQUOIA NATIONAL FOREST

TABLE 5-3: LMP MONITORING PLAN (Project and Program)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST ($)
THREATENED AND ENDANGERED SPECIES					
I. MONITORING PROGRAM					
A. MONITORING OBJECTIVE: Assure that all National Forest System habitats and activities for threatened and endangered species are managed to achieve recovery objectives, so that special protection measures provided under the Endangered Species Act are no longer necessary. Threatened and endangered species include Condors, Peregrine Falcon, Bald Eagle and Little Kern Golden Trout.					
1. Implementation					
Determine that project plans and prescriptions are implemented as designed, consistent with the Biological Evaluations.	H/H	Annually. Two projects per District.	Forest Resource Officer	Deviation from Recovery Plan or FLMP Standards, Guidelines or MMR's as interpreted through project NEPA document.	TBA
2. Effectiveness					
a. Determine if implemented plans and prescriptions achieve the objectives of the Recovery Plan. Utilize the Wildlife Habitat Relationship computer program to model the long term effects.	M/M	10 years	Forest Resource Officer	(same as above)	TBA
b. Perform population census on the following species as directed by Recovery Plans.					
(1) Peregrine Falcon Helicopter survey of Kings River, Tule River, Kern River and ground check of superior nest sites to determine reproduction success.	M/M	Annually for 5 years; then every 3 years.	Hume Lake District Ranger	Deviation from direction in Recovery Plan.	7,000 SOP
(2) Bald Eagle Survey of suitable habitat to determine changes in wintering populations.	L/L	As directed by Bald Eagle Recovery Team.	Hume Lake District Ranger	Report census data to Recovery Team for evaluation.	500 SOP
(3) Condors Monitor known nest & roosting sites to determine occupancy.	M/M	Project Basis as established by Condor Recovery Team	Forest Resource Officer	Deviation from direction in Recovery Plan.	2,000 SOP
(4) Little Kern Golden Trout Determine success of re-establishment program in Little Kern River watershed through R-5 Habitat Assessment Program.	M/M	5 years	Tule River District Ranger and CDF&G	Deviation from LKGT Management Plan.	
3. Validation					
Determine if direction in Recovery Plan is meeting goals and objectives of the Endangered Species Act.	H/H	Whenever effectiveness monitoring indicates a need.	Forest Resource Officer	When trends in T and E habitat and/or populations indicate changes significant enough to affect species recovery, coordinate with USF&WS' Division of Endangered Species and CDF&G for Recovery Plan revisions.	1,000 SOP

SEQUOIA NATIONAL FOREST

TABLE 5-3: LMP MONITORING PLAN (Project and Program)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST ($)
TIMBER					
A. MONITORING OBJECTIVE: Determine regeneration success.					
1. Implementation: Determine whether site was planted in accordance with R-5 Silvicultural Handbook and project NEPA document.	H/H	Two completed projects per District per year.	Managment Team/ Timber Mgt. Officer	Indicator of variance from silvicultural prescription is Notice of Non-Compliance with planting contract.	20,000 (SOP)
2. Effectiveness: Determine survival and stocking by 1st and 3rd year plantation exams following regional standard method (FSM) and compilation into forestwide report.	H/H	Two completed projects per District per year.	Timber Mgt. Officer	Survival or stocking levels fall below minimum Regional standards.	10,000 (SOP)
3. Validation: Validate (1) the assessment of the operational environment (Silvicultural) Practices Handbook) by a certified silviculturist and (2) appropriate regeneration techniques suitable to site conditions were used.	H/H	As indicated by results of stand exams or variation from standards.	Timber Mgt. Officer/ District Ranger	If validation confirms capability and suitability, then stand is replanted. If validation indicates stand is not capable and suitable, then remove from land base.	40,000
B. MONITORING OBJECTIVE: Determine if growth rates of young timber stands are meeting FORPLAN projections.					
1. Implementation: Determine current growth rates.	M/M	Every 10 years through Forest Inventory.	District Ranger	Current annual net growth projections will not provide for 23 MMCF by decade 16 (FLMP, C-6).	5,000
2. Effectiveness: Compare Table 3 of "6th Annual Forest Vegetation Management Conference Proceeding, 1984," by John Fiske, and Small Trees Model as appropriate growth and yield models to field inventory.	M/M	Every 10 years.	District Ranger/ Timber Mgt. Officer/ Planning Officer	Stand growth fails to meet minimum Regional stocking levels and height/diameter growth.	0
3. Validation: Reviewing growth model assumptions and projected yields by analytical comparison of actual to expected rates of growth.	M/M	When effectiveness monitoring indicates growth rate is less than projected rate.	District Ranger	Same as above.	2,500

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST ($)
C. MONITORING OBJECTIVE: Determine effectiveness of red fir regeneration methods.					
1. Implementation: Utilize 1983 Sequoia National Forest guidelines for regeneration in red fir type, first and third year stocking exams.	H/H	Annually	District Ranger	Prescriptions for regeneration of red fir type do not follow 1983 guidelines.	1,000
2. Effectiveness: Determine stocking of red fir regeneration units.	H/H	5 years after reforestation.	District Ranger	Stocking level is below minimum for red fir type.	1,000
3. Validation: Whether red fir regeneration is occurring to meet reforestation assumptions of plan.	H/H	When effectiveness monitoring indicates that minimum stocking is not being achieved.	District Ranger	Validation confirms that red fir regeneration guidelines are ineffective.	2,000
D. MONITORING OBJECTIVE: Maintain regulation to achieve the desired age class distribution.					
1. Implementation: Timber harvest schedule according to Timber Management Plan (LMP, App. 6).	H/H	Every 5 years.	Forest Timber Management Officer	Annual harvest acreage by type of harvest does not meet an average annual upper limit of: regeneration 600 acres; shelterwood 1,308 acres; selection 868 acres.	0
2. Effectiveness: Determine amount of acres allocated to harvest type from annual Programmed Harvest Statement.	H/H	Every 5 years.	Forest Timber Management Officer	Average annual for the decade acres harvested exceed 600 acres regeneration; 1,308 acres shelterwood; and 868 acres selection (FLMP, C-4).	1,000
3. Validation: Determine that management direction of 70% even-aged harvest and 30% uneven-aged harvest is appropriate.	H/H	When effectiveness monitoring indicates average annual acres harvested have exceeded standards.	Forest Timber Management Officer	Same as above.	5,000

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES STANDARD FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST ($)
E. MONITORING OBJECTIVE: Verify the capable-available-suitable land base for project under study.					
1. Implementation: Evaluate tentatively suitable land base during compartment analysis. Document as appropriate in project NEPA document.	H/H	Annually Every project	District Ranger	Lands analyzed do not appear to meet suitability criteria.	10,000
2. Effectiveness: Identify unsuitable portions. Document in NEPA document. Adjust LMP data base.	H/H	Annually Every project	District Ranger	Tentative CAS lands cumulatively may not provide average annual allocation acreage (standard described in "D") or greater than the 75 MMBF of ASQ (standard described in "C").	10,000
3. Validation: Determine validity of suitable land base. Adjust LMP data base as required.	H/H	As indicated when effectiveness monitoring shows standards not being met. Minimum every 10 years.	Forest Timber Mgt. Officer/ Planning Officer	Same as above.	2,000
F. MONITORING OBJECTIVE: Maintain tree species representation of natural stands in regenerated stands.					
1. Implementation: Application of silvicultural prescriptions having objective of maintaining timber type being harvested as analyzed in project NEPA document.	H/H	2 projects/ district/year,	Forest Timber Mgt. Officer/ District Ranger	Silvicultural prescription produces type conversion without justification.	5,000
2. Effectiveness: Determine if implemented silvicultural prescriptions are resulting in maintenance of timber type.	H/H	2 projects/ district/year, 5 years after reforestation.	Forest Timber Mgt. Officer/ District Ranger	Plantation surveys indicate that a timber type is not maintained.	10,000
3. Validation: Verify silvicultural prescriptions for maintaining timber type.	H/H	5 years after reforestation as required	Forest Timber Mgt. Officer/ District Ranger	Validation confirms that prescriptions were ineffective.	10,000

SEQUOIA NATIONAL FOREST

TABLE 5-3: LMP MONITORING PLAN (Project)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST ($)
WATER					
MONITORING OBJECTIVE: To ascertain that project activities maintain or improve water quality at an acceptable level.					
1. Implementation					
Use R-5 BMP monitoring assessment process (in draft) to record the implementation of management practices.	H/H	Two projects per district per year.	Forest Resource Officer	Departure from NEPA project or contract requirements.	10,000 (SOP)
2. Effectiveness					
Use R-5 BMP monitoring assessment process (in draft) to determine the effectiveness of management practices.	M/M	Annually monitor same two projects per district as monitored during Implementation Monitoring.	Forest Resource Officer	Failure to meet objectives stated in project NEPA documents and R-5, FSH 2509.22, 3/88, R-5 Supplement 1 (BMP Book) Chapter 10.	10,000 (SOP)
3. Validation					
Determine the changes needed in Best Management Practices to provide adequate protection for the beneficial use of the water.	M/M	As defined by BMP Effectiveness Evaluation Process (BMPEEP)	Forest Resource Officer	Non-point source: If BMP is inadequate to protect documented beneficial use as identified through Effectiveness Monitoring. Point source: Deviation from water quality standards.	2,000

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SEQUOIA NATIONAL FOREST

TABLE 5-3: LMP MONITORING PLAN (Project)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST ($)
WETLAND & RIPARIAN AREAS					
MONITORING OBJECTIVE: Ascertain that riparian and wetland ecosystems are protected when implementing land and resource management activities.					
1. Implementation					
Determine if Riparian and Wetland Guidelines are being implemented as designed in project NEPA document.	H/H	Two projects per year per district.	Forest Resource Officer	Departure from Riparian and Standards and Guidelines as specified in NEPA project requirements.	
2. Effectiveness					
a. Riparian Dependent Vegetation: Determine if implemented management activities are effective protecting and/or enhancing wildlife habitat in riparian and wetland areas (see Wildlife Monitoring).	M/M	Annually monitor same two projects per district as monitored during Implementation Monitoring.	Forest Resource Officer	Failure to meet vegetative objectives established in the appropriate NEPA documents.	
b. Water Quality: Determine if the R-5 BMP monitoring assessment process (in draft) is effective in the protection of the riparian and wetland ecosystems (see Water Monitoring).	H/H	Same as above.	Forest Resource Officer	Departure from NEPA project or contract requirements and failure to meet objectives established in Riparian and Wetland Standards and Guidelines and FSH 2509.22, 3/88, R-5 Supplement.	
3. Validation					
a. Riparian Dependent Vegetation: Monitor to determine if habitat conditions are consistent with species needs thru:					
(1) Assessing riparian dependent species, using Avian Guild techniques as described in Three Forests Monitoring Plan.	M/M	Annually for 5 years to establish baseline; then once every 3 years.	Forest Resource Officer	20% decline in avian species associated with wetlands and riparian ecosystem.	
(2) Utilizing R-5 Fish Habitat Assessment Process.	M/M	10% of forest streams annually.	Forest Resource Officer	20% decline in fish habitat capability.	
(3) Measure species frequency and and cover in transects as set forth in Frost, W.E., McDougald, N.K., Smith, E.L., and Clawson, W.J. Procedures for Measuring, Analyzing and Interpreting Vegetation Trend in Riparian Areas. University of California Range Science Report No. 23, August 1989.	M/M	3-5 yrs.	Forest Resource Officer	Deviation from prescriptions in AMP.	

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ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST ($)
b. Water Quality: Determine whether changes are needed in Management Practices to provide adequate protection of fish and other dependent species.	M/M	As Effectiveness Monitoring indicates need.	Forest Resource Officer	If BMP's and Riparian and Wetland Standards and Guidelines are inadequate to protect riparian areas as identified through effectiveness monitoring.	

SEQUOIA NATIONAL FOREST

TABLE 5-3: LMP MONITORING PLAN (Project)

ASSESSMENT PROCESS	EXPECTED PRECISION/ VALIDITY	MINIMUM MONITORING FREQUENCY	RESPONSIBLE STAFF	GUIDELINES INDICATING FURTHER ACTION	ESTIMATED AVERAGE ANNUAL COST ($)
WILDLIFE[1]					
MONITORING OBJECTIVE: Maintain species diversity and habitat capability.					
1. Implementation					
Ensure Minimum Management Requirements (MMR's) and S&G's are being implemented as designed in project NEPA document.	H/H	2 projects/ district/year	Forest Resource Officer	Departure from or non-compliance w/LMP S&G's and project MMR's as defined in project NEPA document.	20,000 (SOP)
2. Effectiveness					
Use forest-wide vegetation inventory to assess status of vegetative seral stages and then utilize Wildlife Habitat Relationship program to model projected changes in Management Indicator Species.	M/M	10 years	Forest Resource Officer	Failure to meet species diversity and habitat capability objectives as specified in project NEPA document.	1,500
3. Validation					
Determine if assumptions used to formulate guidelines and habitat capability models achieve the goals and objectives of the FLMP:	M/M	Once every 3 years after baseline Inventory is completed.	Forest Resource Officer	20% decline in species associated with 4 critical habitats as indicated by Wildlife Habitat Relationship Program.	4,000
Assess population trends for species that utilize old growth, black oak, blue oak, snag and riparian habitats with avian guild monitoring techniques developed by PSW and identified in the Three Forest Monitoring Plan.	M/M	10 years	Forest Resource Officer	Same as above.	1,000

[1] Inventory needs include population of each Management Indicator Species (mule deer, pileated woodpecker, gray squirrel) at cost of $50,000 per year for 5 years and distribution of blue oak to determine current ecological status at cost of $4,000 per year (SOP).

FOREST SERVICE HANDBOOK
SAN FRANCISCO, CALIFORNIA

September 1988

FSH 2509.18 - SOIL MANAGEMENT HANDBOOK

Region 5 Supplement No. 1

POSTING NOTICE.

Page Code	Superseded (Number of Sheets)	New

Digest:

2 - Provides Regional soil quality standards as specified in FSH 2509.18 Section 2.2. Places responsibility with Forests to insure that prescriptions for land disturbing activities include measures for maintaining the productive capacity of the soil. Provides guidance for selecting methods that mitigate potential adverse effects, assess soil conditions, and correct soils with diminished productive capacities.

ANDREW A. LEVEN
Assistant Regional Forester for
Range and Watershed Management

2.02 - OBJECTIVES.

1. To provide soil quality standards that help managers to carry out soil disturbing activities without significantly affecting the productive capacity of the soil.

2. To provide procedures for evaluating the productive capacity of the soil, mitigating management effects, and rehabilitating deteriorated soil conditions.

2.03 - POLICY. Utilize soil quality standards in planning and conducting all soil distrubing activities.

2.04 - RESPONSIBILITY

2.04b - Forest Supervisors. Forest Supervisors shall:

1. Provide training in the application of soil quality standards to approppriate Forest Service and non-Forest Service personnel.

2. Assess the extent to which soil quality standards are being met.

3. Evaluate effectiveness of soil quality standards and procedures and recommend adjustments to the Regional to the Regional Forester.

2.04c - District Rangers. District Rangers shall:

1. Insure that prescriptions for soil disturbing activities include measures for maintaining the productive capacity of the soil.

2. Conduct post activity evaluations to determine if soil quality standards have been met, and apply rehabilitation measures as needed.

2.05 - DEFINITIONS.

1. Acceptable soil condition following soil disturbing activities occurs when soil properties are not altered to the extent to cause significant changes in the productive capacity of the soil.

2. Activity Area is the total area disturbed by soil disturbing activities.

3. Soil disturbing activities include (DEFINE)

4. Tillage is the mechanical treatment of compacted or puddled soils to restore desireable tilth.

2.06 - REFERENCES.

1. Alexander, E. B. 1980. Bulk densities of California soils in relation to other soil properties. Soil Sci. Soc. Am. J. 44: 689-692.

2. Alexander, E. B., and R. Poff. 1985. Soil disturbance and compaction in wildland management. USDA Forest Service, Pacific Southwest Region, Earth Resources Monograph 8. 157 p.

3. Duffy, P. D., and D. C. McClurkin. 1974. Difficult eroded planting sites in northern Mississippi evaluated by discriminant analysis. Soil Sci. Soc. Am., Proc. 38: 676-678.

4. Helms, J. A. 1983. Soil Compaction and Stand Growth - Final Report to USDA Forest Service. Univ. Calif., Berkeley. 97 p.

5. Zisa, R. P., H. G. Halverson, and B. B. Stout. 1980. Establishment and early growth of conifers on compacted soil in urban areas. USDA Forest Service Res. Paper NE-451, 8 p.

2.2 - SOIL QUALITY STANDARDS. - SEE TOP OF NEXT PAGE

Soil quality standards identify threshold values beyond which change in soil properties could result in significant change or impairment in the productive capacity of the soil.

These standards may not apply equally well to all sites and practices in the Region. On-site evalautions by soil scientists are used to determine if deviations from the standards are needed and if they meet soil quality objectives.

Soil quality standards are met when at least 85 percent of an activity area is in acceptable soil condition. Acceptable soil condition exists when:

1. Soil cover is present in amounts that prevent accelerated soil erosion rates from exceeding soil formation rates over time.

The kind, amount and distribution of soil cover needed to retard soil erosion is guided by the R5 Erosion Hazard Rating method and locally adapted standard erosion models and measurements.

2. Soil porosity is at least 90 percent of its natural condition.

3. Organic Matter is present in amounts sufficient to prevent significant short or long-term nutrient cycle deficits, and to avoid adverse physical soil characteristics.

The kinds and amounts of organic matter are guided below and by local analyses.

A. Soil organic matter is at least 85 percent of its original total in the upper 12 inches of the soil.

B. Surface organic matter is present in the following forms and amount

(1) Large woody material, when available in forested areas, is about 5 to 20 logs per acre in contact with the soil surface. Desired log size is greater than 16 inches in diameter and about 40 cubic feet. Volume is about 200 to 800 cubic feet per acre (includes partially decayed and unmerchantable logs). Weight per unit area is highly variable due to the degree of decay, but is approximately 3 to 15 tons per acre. This guideline may be waived in strategic fuelbreak areas and small openings.

(2) Litter and duff occurs over approximately 50 percent of the disturbed area. When present, woody material is mostly less than 3 inches in diameter and in contact with the soil surface. Weight per unit area is highly variable due to the type of material and degree of decay. Amounts are approximately 2 to 15 tons per acre. In areas lacking woody material, amounts are approximately 0.5 to 2 tons per acre.

The presence of living vegetation that contributes significant annual litter fall can be used to compensate for conditions when immediate post-disturbance litter and duff coverage is less than 50 percent.

THE NUMERIC VALUES AND RATIONALE FOR POROSITY AS AN INDEX TO THE EFFECT OF COMPACTION ON PLANT GROWTH HAVE RECEIVED INTERDISCIPLINARY REVIEW. THE VALUES FOR ORGANIC MATTER ARE PRELIMINARY AND HAVE NOT RECEIVED INTERDISCIPLINARY REVIEW.

2.21 - RATIONALE.

Soil is a nonrenewable resource because it takes hundreds to thousands of years to form an inch of soil. Land management activities alter the soil in varying degrees. These changes may or may not significantly affect the productive capacity of the soil. Soil quality standards are used to characterize the significance of potential soil productivity changes.

Soil productivity is maintained when soil properties are not altered to the extent to cause significant changes in the long-term productive potential of the soil. Information is provided to help managers evaluate the productive condition of the soil, and to carry out land management activities without significantly affecting soil productivity.

There are many soil characteristics that can be altered by management activities and affect soil productivity. For simplification, porosity, and organic matter are used as surrogates to represent other factors. Porosity is used to reflect changes due to compaction and puddling. Organic matter is evaluated in three different ways: As surface cover for erosion prevention and nutrient cycling, as large woody material for nutrient cycling, and as soil organic matter to reflect nutrient status, soil moisture supply, soil displacement, and other physical and chemical properties.

61.11 - Soil Porosity. Many land management activities have the potential to adversely affect the growth of plants by compacting the soil. These activities include camping, grazing, picnicing, off-road vehicles, reforestation, timber harvest, and other forms of vegetation management.

There are enough field observations and information in the literature to demonstrate that soil compaction can adversely affect the growth of plants. Although precise quantification of changes in soil properties and plant growth is not available, enough is known to develop reasonable standards and procedures. In most cases, methods are available to avoid, mitigate, or rehabilitate the adverse effects of soil compaction.

The relationships between plant growth and soil bulk density are very complex. Generally the relationships are nonlinear; that is, incremental increases in bulk density does not necessarily cause incremental decreases in plant growth. The incremental effect is different for different plants, soils and environments. Most of the available data suggests that compaction becomes increasingly detrimental for each successive increment in a series of equal, absolute increases in bulk density. Increments of increase, based on a percentage of the initial bulk density, actually become greater in absolute value as the initial bulk density increases (Exhibit 1).

To set limits of allowable bulk density increases that are responsive to effects on plant growth, the increments of allowable increase should become smaller in absolute value as bulk density increases. This is accomplished by basing the allowable increments on decreases in total soil porosity (Exhibit 1). An allowable decrease of 10 percent appears to be a reasonable fit for bulk density changes and potential significant effects on plant growth. For comparison, a 10 percent decrease in total soil porosity corresponds to a 33 percent increase in bulk density for a soil with an initial bulk density of 0.6, a 15 percent increase for a soil with an initial density of 1.06, and a 10 percent increase for a soil with an initial density of 1.3. The relationship of bulk density increases to a 10 percent decrease in soil porosity are shown in Exhibit 2.

Total porosity is used because practical methods for discriminating between different pore sizes are not available. It includes all sizes of soil pores. However, most of the porosity decrease would be attributed to a reduction in macro pores.

61.12 - Organic Matter.

61.12a - Soil Cover is the soil erodibility factor commonly modified by management activities. It is also the most easily manipulated factor for reducing the potential for erosion. In addition to low growing vegetation and rock fragments; fine organic matter such as, litter, duff, and twigs less than about 3 inches in diameter in contact with the soil surface provide the most effective ground cover for preventing erosion. Conditions under which ground cover needs exceed 50 percent is guided by local application of the Region 5 Erosion Hazard Rating system. The purposes of soil cover are to provide enough protection to prevent soil loss from exceeding the rate of soil formation, to avoid sedimentation that would adversely affect water quality, and to avoid decreases in the supply of nutrients. An approximate coverage 50 percent fine organic matter over the soil surface serves as a guide for maintaining short-term nutrient supply. Microorganisms that convert organic and inorganic nutrients into forms available for plant growth and that also degrade chemical compounds are mostly located in the duff and upper few inches of soil. Litter and duff can serve to minimize microorganism population reductions in hot openings.

61.12b - Large woody material. As a factor in the nurtient cycling process, large woody material has been under study in the Pacific Northwest and Intermountain regions for about 15 years. Leaving large woody material for purposes of wildlife habitat and soil productivity has been taking place in Region 6 for about 4 years. Although specific research is lacking in California, there is enough information to form prudent guidelines for practical use. The role of large woody material in maintaining soil productivity is to provide hot summer survival habitat for microorganisms, small animals and insects that convert nutrients into available forms or spread nitrifying bacteria and other goodies. Organic debris factors may be more important in California than in other regions because of hotter summer temperatures.

61.12c - Soil Organic Matter. Soil organic matter content is associated with nutrient supply, soil water availability, soil aggregate stability,

infiltration and resilience from compression. Consequently, changes in soil organic matter content can serve as an index to the condition of a number of interrelated factors. It also is relatively easy to observe and measure. Soils vary in organic matter content and distribution. In some soils the organic matter is concentrated in the upper few inches; whereas, in other soils it gradually decreases with depth or is nearly evenly distributed. These differences in organic matter accumulation influence how a soil may or may not be adversely affected by surface soil displacement. The more soil organic matter is concentrated close to the surface, the less tolerance there is for loss of soil organic matter. For a common basis, the total soil organic matter in the upper 12 inches of soil will be used for evaluation. Over 50 percent of all tree root length occurs in the upper 12 inches of soil (Powers, 1984), the vast majority of which would be feeder roots.

Values for organic matter are preliminary. They will be revised through interdisciplinary review and field use. Research will also help to revise and validate these values.

61.2 - ASSESSMENT. Measurement and/or visual sampling methods are used to evaluate soil porosity and organic matter conditions. Sampling methods to guide assessments on a project or Forestwide basis are contained in Earth Resources Note _____ (being written).

Soil compaction may be assessed visually through the use of surface condition indicators or by observation of the soil using a tile spade. Both methods need to be initially and periodically calibrated against measurements of bulk density taken with a nuclear gauge, core samples, or one of the irregular hole methods. Bulk density is converted to total porosity by formula or graph.

Soil cover and large woody material are evaluated by visual methods. Soil organic matter is evaluated by a combination of laboratory data extrapolation, field measurements, and visual methods.

In practice, visual observations are the most common form of soil compaction assessment. Measurement and detailed sampling are used mostly to calibrate visual methods, and to investigate situations where visual methods are inadequate.

61.3 - MEASUREMENT.

61.31 - SOIL POROSITY. Initial bulk densities are measured where ground disturbing activities are to take place (after the fact assessments may use similar undisturbed adjacent areas). The allowable compacted bulk density can be taken from the graph in Exhibit 3, or calculated with the following formula.

$$Dbc = 0.1\ Dp + 0.9\ Dbi$$

Where Dp is the mean particle density, and Dbi and Dbc are the initial and the compacted bulk densities, respectively.

Assuming that the particle density is 2.65 Mg/m3, the allowable compacted bulk density can be taken from the solid line in Exhibit 3. Making allowances for soil organic matter, which has a density of about 1.35 Mg/m3, has little affect

on the calculated allowable compacted bulk density of inorganic soils (dashed line in Exhibit 3).

Details for measuring bulk density and the areal extent of soil disturbances are contained in Chapter 3 of FSH 2509.18.

61.32 - Organic Matter.

61.4 - MITIGATION.

61.41 - Soil Compaction. A variety of practices and techniques are available to land managers that minimize or eliminate the risk of soil compaction and puddling. Not all practices discussed here are suitable for all sites. But quite often, some practices are used in combination to more effectively control the risk of compaction and puddling. These management practices can be grouped in three categories: (1) practices that reduce compaction effects, (2) practices that confine compactive forces to designated areas, and (3) practices that avoid compactive forces.

61.41a - Reducing Compaction Effects. These practices can help to maintain acceptable soil conditions for extensive areas (e.g., 85 percent of an activity area). Ways to reduce compaction effects include, controlling compactive forces, absorbing compactive forces, and operating when soils are less susceptible to adverse compaction and puddling effects.

1. Controlling Compactive Forces. The amount of compaction is primarily related to the load applied to the soil and the number of trips equipment make over the same area.

The depth to which soil becomes compacted is primarily a function of the amount of dynamic load applied to the soil. Reducing surface pressure (e.g., same machine weight, but larger surface area in tracks or tires) may not greatly reduce the degree of compaction in the surface soil, but the lower limit of compacted layer will be nearer to the soil surface. Thus improving amelioration possibilities. Machines of significantly different weight and surface area cause significantly different degrees of soil compaction; whereas, differences between types of machines are more subtle. Although the degree of compaction caused by similar-size crawler tractors, low ground pressure equipment, and rubber-tire tractors is about the same, crawler tractors can compact the soil to greater depths, and rubber-tire tractors can take more trips to do a comparable amount of work. The relationship of equipment size and type on soil compaction are shown in Exhibit 4.

The degree of compaction is primarily associated with the number of trips equipment makes over the same area. In tests, maximum density is achieved after about 20 trips. However, about 90 percent of the compaction is achieved

after only about the first 4 or 5 trips with large equipment and about __ percent with smaller equipment (Exhibit 4). CHECK NUMBERS***

Adjusting equipment size and/or the number of trips can be used to minimize compaction of areas where extensive ground equipment operations are planned (e.g., site preparation and clearcut skidding). Combining these practices with operating over slash further reduces the potential for soil compaction (See Section 61.41, item 2).

2. Absorbing Compactive Forces. Compactive forces can be partially or completely absorbed by operating equipment over slash or snow.

3. Operating When Soils are Most Resistant to Adverse Compaction.

61.41b - Confining Compaction Effects.

61.41c - Avoiding Compaction Forces

61.5 - Rehabilitation

Exhibit P

Mitigation & Restoration Requirements

Based on Project EA

I. Mitigation to be performed as integral part of project (e.g., included in timber sale contract provisions):

Action*	Responsible Staff	Inventory[1]	Est. Cost	Source of Funding	K-V $[2] Assured	Funds Rec'd	Projected Completion Date	Date Action Completed

II. Additional Mitigation/Restoration Measures

Action*	Responsible Staff	Inventory[1]	Est. Cost	Source of Funding	K-V $[2] Assured	Funds Rec'd	Projected Completion Date	Date Action Completed

---

* Indicate with an asterisk those actions relied upon to support a FONSI.

1. The "Inventory" entry would indicate which project list, such as the WINI, would carry the mitigation project until completed.

2. The "K-V $ Assured" column would be filled in (yes or no) when the timber sale purchase price was known.

EXHIBIT Q

NEW PERSPECTIVES IN FORESTRY

Definitions: (Personal interpretations based on presentations at "A Conference on New Perspectives in Forestry, June 11-12, Mt. Hood Community College)

NEW PERSPECTIVES, or NEW PERSPECTIVES IN FORESTRY: Management of wildland ecosystems so that all of the natural physical and biological complexities contained within large land areas are maintained in perpetuity.

NEW FORESTRY: Physical activities, usually resulting in production of a commodity, designed to meet objectives and constraints determined by NEW PERSPECTIVES analysis.

These terms are sometimes used interchangeably, although there seems to be a concensus that NEW PERSPECTIVES implies the concept and NEW FORESTRY implies the practice.

The framework for "new perspectives" in California is described in Regional Forester Paul Barker's public announcement on February 8, 1990. He said, in part:

"...Over the next 10 years we must solve a growing list of global environmental concerns that include deforestation of tropical forests, extinction of wildlife, toxic waste, pollution of air, oceans, and rivers, global warming, and destruction of the ozone layer that protects our atmosphere...

Success in meeting the environmental challenge of the 1990's will depend on finding a balance between the needs of people and the integrity of the environment...

The ENVIRONMENTAL AGENDA for the National Forests in California has three major objectives--PRESERVATION, BIODIVERSITY, and SUSTAINABLE DEVELOPMENT FOR PEOPLE..."

The concept is old, but the emphasis on preservation and biodiversity is new. This is what is meant by "new perspectives in forestry". It is a way of looking at the natural environment as a collection of interrelated ecosystems; which, if maintained in good working order, are capable of producing commodities and amenities for the use and benefit of humans beings.

Thus the terminology "new perspectives", or "new perspectives in forestry", means that we will start with an objective of keeping the ecosystem operating in good health. Commodity and amenity benefits can only be sustained if the ecosystem remains in good health.

This is where the terminology "new forestry" comes in. "New forestry" is the combination of physical activities designed to implement the concept of "new perspectives". There is no new technology associated with "new forestry", just

the application of existing technology to somewhat modified or different management objectives.

One practical application of "new forestry" is the practice espoused by Dr. Jerry Franklin (formerly US Forest Service, Pacific Northwest Region) designed to maintain a semblance of vertical diversity after logging in old-growth timber. Vertical diversity starts at the forest floor with organic debris, upon which certain fungi and micro-organisms are dependent, and ends in the crowns of the tallest trees, upon which certain birds and mammals depend. If components of the existing ecosystem are allowed to remain, then the newly regenerated timber stand will have a "biological legacy" upon which to build. Thus some of the larger and older trees, as well as snags, "gill pokes" and some logging slash, are allowed to remain rather than being logged or "cleaned up" in preparation for reforestation. This allows some old-growth characteristics to remain within a stand managed for timber production; and it greatly reduces the time needed to develop an overall old-growth structure within a regenerated stand.

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
SEQUOIA NATIONAL FOREST
900 West Grand Avenue
Porterville, CA 93257-2035
209-784-1500

REPLY TO: 2470 DATE: March 1, 1989

SUBJECT: Nomenclature, Timber Stand Regeneration

TO: Management Team, Sequoia National Forest

As a result of local, regional and national concern over the use of the term "clearcutting", the Sequoia National Forest will adopt the descriptive terminology "REGENERATION MOSAIC" when:

1. All, or nearly all, of the merchantable timber is removed from a timber stand in a single harvest cut; and

2. proper execution of the stand management prescription depends upon advanced reproduction that was established before the harvest cut.

You should be aware that there is a great deal of controversy surrounding the coining of new forest terminology. For this reason we will need to be very consistent and systematic in the use of "REGENERATION MOSAIC". The following rules will be strictly observed:

1. Use only when the stand is under a form of even-aged management.

2. Use only if at least 20%, but not more than 80%, of the gross regenerated stand area will be stocked with advanced reproduction having the capability of growing into mature timber crop trees.

3. Use only when aggregations of advanced reproduction are at least 1/20th acre in size, and there is an average of at least one aggregation per acre.

4. Use only when residual merchantable trees are no larger than 18" DBH; and they account for no more than 10% stocking of the gross regenerated stand area.

5. Use only when the stand management prescription depends upon artificial regeneration (tree planting) to supplement stocking by advanced reproduction.

When one or more of the above rules are violated, some terminology other than "REGENERATION MOSAIC" applies. For instance (rule #2): If less than 20% of the area is stocked with advanced reproduction, call it CLEARCUTTING; if more than 80%, call it the OVERSTORY REMOVAL step in the shelterwood method of regeneration.

Please note that we will continue to use standard forest terminology as appropriate. Do not avoid the term CLEARCUTTING if it applies to the conditions you wish to describe.

The terminology "REGENERATION MOSAIC" was chosen from a list of 25 suggestions collected from throughout Region Five of the Forest Service. Some of these have been in common use for a long time (Tahoe Clearcut, Overstory Removal), others have been used in official documents to describe the process (Clearcutting with Advanced Reproduction and Planting) and others were deliberate creations to bridge the communication difficulty between technical forestry definitions, practical application and the general public. The chosen terminology falls into the later category.

The rationale for choosing "REGENERATION MOSAIC" has three components:

1. Both terms, regeneration and mosaic, are defined in "Terminology of Forest Science" (F.C. Ford-Robertson, Society of American Foresters, 1971).

> REGENERATION: The renewal of a tree crop, whether by natural or artificial means.
>
> MOSAIC: (ecology) An arrangement of plant communities in a mosaic pattern, in contrast to zonation.

Our use will be compatible with these definitions.

2. Both terms are easily recognized by the general public. With appropriate background information, the meanings are easily transferred to the technical context of reforestation.

3. REGENERATION MOSAIC describes the practical result of a certain type of timber harvest. At the same time it provides a convenient terminology where previously none existed.

The search for adequate terminology in this particular area has included extensive discussions within the Management Team and other peer groups on the Sequoia National Forest. It has also included soliciting opinions from other National Forests in Region Five, the Regional Office, the Washington Office and from a committee of forestry school silviculturists currently working on revisions to the "Terminology of Forest Science". I am confident that our new terminology is compatible with existing and probable future forest terminology usage and definitions.

JAMES A. CRATES
Forest Supervisor
Sequoia National Forest

cc: Ray Weinmann, ARF Timber Management
John Helms, University of California, Berkeley

101.a.

THE DEVELOPMENT OF A POLICY
AND GUIDELINES FOR THE
MANAGEMENT OF TRUE FIR FOREST
COVER ON THE SEQUOIA NATIONAL FOREST

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THE DEVELOPMENT OF A POLICY AND GUIDELINES FOR THE MANAGEMENT OF TRUE FIR FOREST COVER ON THE SEQUOIA NATIONAL FOREST

NEED FOR POLICY AND GUIDELINES

The timber management plan under which the Sequoia N.F. is now operating was written in 1961, before any significant amount of research or experience was accumulated on the management of the true fir forest type. It provides only very general direction to manage the type under Unit Area Control harvest methods, which implies that regeneration will be required. (This is in contrast to the eastside pine type in which insect risk selection was directed.) No specific guidelines for reforestation and cultural treatments are given, although planting is mentioned.

Since 1961 both research and experience have shown that the management of the true fir type is considerably different from the mixed conifer and westisde pine, in which context it was originally considered. By the early 1970's it became apparent that the regeneration practice of "clearcut, pile and burn" used more or less routinely within other forest types was not routinely successful in the true fir. Because of this, other R-5 Forests have recognized specific harvest and silvicutural prescriptions for the true fir type in their more recent timber managemant plans. At this time the Sequoia has no such plan, and it is expected to be at least another year or more before the new Land Management Plan is operational. However, timber sales are being prepared within the true fir type and District planners have recurring questions on what kind of cutting and long term management prescriptions are appropriate.

WHAT WE KNOW ABOUT TRUE FIR MANAGEMENT 1/

1. From a growth and yield point of view, the fir species are very desireable. Red fir in particular is capable of maintaining spectacular growth rates for very long periods of time when compared to other Sierra conifer species.

2. The true fir type is found at higher elevations and on frigid soils, generally above 7500 feet in the southern Sierras. Snowpack is heavy and access is difficult during the critical spring planting season.

3. Gophers are endemic and nearly always present chronic problems in stand establishment.

4. Natural regeneration under shelterwood, seed tree, strip clearcutting and very small patch cutting has been shown to be reasonably successful in the short run. It remains to be seen if subsequent steps in the prescriptions will be successful. These include overstory removal from shelterwood and seed tree cuts, and expanding strips and small patches so that the complete stand is finally regenerated in the clearcutting methods.

1/ Refer to Appendix 1 for a sample of references used in this discussion.

5. Stocking of naturally established fir seedlings tends to improve over a span of several years, probably reflecting the need for a fortuitous combination of seed crop and weather conditions as much as adequate seedbed preparation.

6. Planted fir have shown very erratic survival rates. Not all of the reasons for this are known, but the following factors either have been demonstrated or are strongly suspected:

   a. Nursery practices influence the capacity of a seedling to regenerate roots after planting. Until very recently the relationship between nursery "lifting" date, storage and root growth capacity was only suspected. Work is still continuing in this area, but enough is now known to be pretty well assured that we made some horrible mistakes in the past.

   b. Unlike ponderosa pine, root growth of fir species begins very quickly after exposure to temperatures above 38°F. If root growth is initiated before planting the seedling is almost certain to die. Poor cold storage facilities or failure to plant within a few hours after removing from storage is sure to result in poor survival.

   c. Also unlike ponderosa pine the fir species have very little ability to control transpiration of water. Unless the seedling is in good vigor when planted, it can very easily dehydrate before root growth is sufficient to supply the water demanded.

   d. Mortality beyond the first growing season is much more a problem than with pine species. This is thought to be related to site adaptation. If so, then present seed collection zones may be inappropriate, and a certain randomness of survival is inevitable.

   e. The planting "window" for most fir sites is extremely short, often a matter of a few days. The object is to get the seedling in the ground after the snow melts, but before weather warms to the point of creating severe moisture stress. In some years when there is an exceptionally late spring followed by a hot summer, there may not be an acceptable window at all. In other years with an early spring and mild summer, unusually high seedling survival can be expected.

   f. A nursery disease, charcoal root rot, has been known to infect otherwise healthy looking seedlings. When planted out in relatively warm soil, the root rot quickly kills the seedling; but when planted in colder soils the rot is inhibited and has little effect on survival.

7. White fir is the natural climax species in the mixed conifer forest type, but it also mixes with red fir on colder soils at higher elevations.

CRITICAL DEFICITS IN SCIENTIFIC KNOWLEDGE

The predictability of management decisions on the long term productivity in the true fir forest type is restricted by voids in the body of current scientific knowledge. Namely:

1. EFFECTS OF HARVEST AND CULTURAL ACTIVITIES ON ECOSYSTEM NUTRIENT BALANCE

   Because of the low temperatures and skeletal soils usually found in the true fir type, a large proportion of total nutrients on the site (N, P, K, etc.) are held by vegetation and litter. If these nutrients are removed, as in logging; or lost, as in site preparation; then the productivity for timber growth can be reduced. There are some disturbing indications that artificial fertilization may be required on many true fir sites if productivity is not to be reduced significantly.

2. SPECIES CONVERSION

   Jeffrey pine has been planted on sites formerly occupied by red fir because of a higher initial survival rate. In some cases snow has severly damaged these plantations, and in other cases not. Even if this phenomenon were explained there still has been no analysis of long term growth and yield or economic implications. In fact, yield tables do not exist for Jeffrey pine per se. Performance has been assumed to be similar to the eastside pine type described by Meyer (Technical Bulletin No. 630). The inclination to plant mixtures of other conifers on sites formerly occupied by pure red fir is strictly intuitive at this time.

3. THE NEED FOR SHELTERWOOD

   What we know is that shelterwood cutting is an effective way to regenerate fir species; what we don't know is why. Conventional wisdom assumes shelterwood provides needed shade. But some researchers think that a ready seed source and/or protection from drying wind may be even more important factors. + frost protection

Research and administrative studies in these areas are to be encouraged.

MANAGEMENT IMPLICATIONS

Natural regeneration of the true fir type is reasonably well assured if:

1. Seed producing trees are available and properly distributed.

2. Time is not a criterion.

3. Seed or shelter trees do not blow down or die before seedlings are established.

4. Seedbed preparation and overstory removal methods are feasible within physical and administrative constraints.

On the other hand artificial regeneration is not well assured, even when these well recognized necessary steps are taken:

1. Adequate site preparation and control of competing vegetation.

2. Careful administration of nursery practices.

3. Continuous refrigeration of planting stock after lifting.

4. Gopher control.

5. Good planting technique.

Obviously, neither natural nor artifical regeneration can guarantee sucessful stand re-establishment within five years of harvest as required by the 1976 National Forest Management Act, and anticipated by FORPLAN in setting harvest levels for long term sustained yield.

It is for this reason that other National Forests in the Sierras are entering the era of intensive fir management with plans to combine natural and artificial techniques (see Appendix 2). All have backup plans for anticipated failures. The most conservative is represented by the Sierra N.F. that intends to plant immediately after site preparation, even though the harvest method is designed to favor natural regeneration. The most daring is expressed by the Tahoe, where in many cases artifical regeneration will be relied on entirely. In case red fir planting fails, that forest is prepared to convert to other, and presumably more reliable, species such as western white pine, Jeffrey pine, and white fir.

SEQUOIA INTERIM DIRECTION

Until the Forest LMP is approved and directs differently, the following guidelines will be applied to timber-intensive management of the true fir forest type. 1/

A. HARVEST PRESCRIPTIONS 2/

1. On terrain where mechanical site preparation is feasible and stand structure allows, seed step is the preferred regeneration harvest prescription.

2. On steep ground where prescribed fire is the most feasible site preparation method, and/or logging methods cannot assure seed tree protection, strip clearcutting is the preferred regeneration method. Strip clearcutting is the second preference on other terrain.

3. When neither seed tree nor strip cutting are applicable, then small (1/2 to 1 1/2 acres) patch cutting is preferred.

4. When none of the above are feasible, then small clearcut blocks (5 to 10 acres) are acceptable. North and east exposures are preferred over south and west.

5. Prescriptions should take advantage of thinning and sanitation harvests where appropriate. Legitimate intermediate harvests are expected only rarely, especially when cable yarding is employed.

6. Also rarely expected is the overstory removal prescription. To qualify as overstory removal, the residual stand must contain "desired" stocking (3/) of releasable (4/) understory on at least 70% of the area after harvest and fuel treatment. A harvest that resembles an overstory removal, but does not meet the stocking criteria, is in reality a clearcut with some salvable understory.

7. Shelterwood and shelterwood preparatory prescriptions will be allowed only if the need is fully analyzed in the timber sale environmental assessment.

1/ True fir sites are those that qualify for a stratum label of RXX.

2/ Refer to Appendix 3 for a rationale in choosing these guidelines.

3/ FSM 2472 R5 Supp. 232.

4/ Helms, J.A. and Standiford, R.B. 1982. Release of Advance Growth Mixed Conifer Species in California Following Overstory Removal.

B. REGENERATION TARGETS

If 120 years is chosen as the rotation age under even-age management (see Appendix 4), then the nominal proportion of intensively managed land area to be regenerated within each decade is:

10/120 = 8.3%

The inventory (1/) of true fir strata listed as capable, available and suitable for intensive timber management is:

DISTRICT	R1X	R2X	R3G	R3P	R4G	R4P	TOTAL
HL	0	0	314	677	1315	3645	5952
TR	0	79	3215	3076	4039	1247	11656
HS	0	15	622	100	139	351	1227
GH	0	0	0	0	0	0	0
CM	0	44	1209	1994	1070	10999	16216
TOTAL	0	138	5360	5847	7463	16242	35050

Therefore, approximately 8.3% of 35,050 acres or 2,909 acres should be scheduled for regeneration in the next ten years.

Because of relatively advanced age (135 to 200 years) and/or poor stocking and growth, all strata, except R2X which contains negligible volume, will be considered equal in priority for regeneration harvest. Assuming each stratum is harvested at a rate of 8.3%, one half of which is seed tree with 12 MBF/ac residual, and the other half is strip, small patch or clearcut; the present decade regeneration harvest for the Sequoia Forest can be calculated as follows:

R3G

Clearcut harvest volume = 49.0 MBF/ac.
Seed tree harvest volume = (49.0 - 12.0) = 37.0 MBF/ac
Average regeneration harvest = (49.0 + 37.0)/2 = 43.0 MBF/ac
Acres to regenerate = 8.3% x 5360 = 445 ac
Volume of regeneration harvest = 43.0 x 445 = 19,135 MBF

1/ FORPLAN data base, Appendix 5.

R3P

Clearcut harvest volume = 23.8 MBF/ac
Seed tree harvest volume = (23.8 - 12.0) = 11.8 MBF/ac
Average regeneration harvest = (23.8 + 11.8)/2 = 17.8 MBF/ac
Acres to regenerate = 8.3% x 5847 = 485 ac
Volume of regeneration harvest = 17.8 x 485 = 8633 MBF

R4G

Clearcut harvest volume = 56.2 MBF/ac
Seed tree harvest volume = (56.2 - 12.0) = 44.2 MBF/ac
Average regeneration harvest = (56.2 + 44.2)/2 = 50.2 MBF/ac
Acres to regenerate = 8.3% x 7463 = 619 ac
Volume of regeneration harvest = 50.2 x 619 = 31,074 MBF

R4P

Clearcut harvest volume = 23.8 MBF/ac
Seed tree harvest volume = (23.8 - 12.0) = 11.8 MBF/ac
Average harvest volume = (23.8 + 11.8)/2 = 17.8 MBF/ac
Acres to regenerate = 8.3% x 16242 = 1348 ac
Volume of regeneration harvest = 17.8 x 1348 = 23,994 MBF

Using acreage figures from Appendix 5, District and compartment targets are likewise calculated. The results are listed in Appendix 6. These targets provide a starting point for the timber sale planning process. They are to be refined in the Position Statement by use of compartment analysis procedures.

C. OTHER

1. No targets are assigned for intermediate harvesting. These are to be derived using compartment analysis procedures in the Position Statement.

2. When prescribed natural regeneration is not yet present three years after harvest, planting is required.

3. Planted trees should be a mixture of species, at least 50% being red fir.

4. Refrigerated storage is required for planting stock. Planting stock should not be exposed to temperatures in excess of 35°F for more than four hours before planting.

5. The starting date for allocations of the "present" decade is 1976. This is the year in which the photography upon which land base is calculated was taken. Stratum changes that have occured since 1976, and affect compartment allocations, should be explained in the timber sale Position Statement or Environmental Assessment.

APPENDIX 1

REFERENCES

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APPENDIX 2

TRUE FIR MANAGEMENT PHILOSOPHY ON SELECTED CALIFORNIA SIERRA NEVADAN NATIONAL FORESTS

PLUMAS

Regenerate by strip clearcutting and "small" openings per Don Gordons recommendations, will supplement natural with planted stock where necessary. Encourage soil nutrient assessment to determine need and prescription for fertilization based on Al Stangenbergers 1979 PhD dissertation.

TAHOE

Regenerate by any method dictated by site and vegetation. Clearcutting is acceptable up to about 20 acres in size. Shelterwood/seed tree cutting will remain an important portion of regeneration method. In case of RF plantation failures, Tahoe is prepared to convert to WF, WWP, and JP.

ELDORADO

Natural regeneration is favored. If not regenerated within two years RF seedlings will be planted.

STANISLAUS

Regenerate 50% by shelterwood, 50% by "small" clearcuts and strips. All land above 8400 feet elevation will be designated special management area with low intensity of timber management, therefore RF performance is less important than at lower elevations.

SIERRA

Regenerate with shelterwood or strips and small (approx. 5 acres) clearcuts. Underplant immediately after site prep, don't wait for natural regeneration to fail.

All of the above plan to require the true fir land base to provide its "fair share" of regeneration acres and volume. In other words allocations will be made in the next decade to put the RF component on the path toward regulation. All plan even-age management except where resources other than timber control.

///

APPENDIX 3

HARVEST PRESCRIPTIONS

1. SEED TREE (5-10 trees/ac)

   Preferred because of demonstrated reliability for natural regeneration. Silvicultural treatments apply to whole stands rather than aggregations, making logistics somewhat more simple than strip and small patch cutting. Usually not applicable to steep ground because of difficulty in protecting seed trees during logging and site preparation. Also steep ground follow-up cultural treatments are expensive because of constraints on the use of machinery.

2. STRIP CLEARCUTTING (2-3 chains wide)

   Demonstrated reliability for natural regeneration, but complex in design. Initial strip must be coordinated with plans for subsequent strips, approximately five, to be cut over a period of 50 to 100 years. Usually the only harvest method applicable to steep ground.

3. SMALL PATCH CUTS (1/2 to 1 1/2 acres)

   Demonstrated reliability for natural regeneration if maximum width is kept to four chains or less. Similar to strip cutting in design complexity. Usually not applicable to steep ground because of damage to uncut blocks during logging and cultural treatments.

4. CLEARCUT (5 acres or larger)

   This is the least desireable of regeneraion harvest methods, even though it is the easiest to execute, because it relies entirely on artificial regeneration with demonstrated erratic results. Sometimes unavoidable because of stand structure or condition.

5. SHELTERWOOD (10-30 trees/ac)

   Has not been shown to have any advantage over seed tree prescriptions for natural seedling establishment, and it has greater risk for seedling damage during overstory removal. Theoretically useful when seed trees are not present, but some shade and wind protection is desireable for planted trees. The need for this kind of protection is debatable.

6. SHELTERWOOD PREP

   The value of this prescription is highly theoretical. Growth is reduced because the stand is deliberately left in an understocked condition for a long period of time while windfirmness and seed bearing capacity is developed in future seed trees. Rarely applicable to intensively managed Forest land.

7. COMMERCIAL THINNING

Appropriate in those stands or aggregations where basal area approaches or exceeds "normal." Usually insignificant in terms of total compartment volume. Layout must take into account means for minimizing damage to the residual stand.

8. SANITATION

Occasionally applicable on tractor ground, rarely so on cable. When there is sufficient bona fide "risk" volume (per Ferrell, PSW-39) there is usually enough decadance to justify a high priority for regeneration.

9. OVERSTORY REMOVAL

Generally applies only to future seed tree removal harvests. In natural stands the understory is often inadequate in density or distribution, diseased, suppressed or likely to be damaged in logging.

APPENDIX 4

TRUE FIR MANAGEMENT SYSTEM

Even-age management is the most probable final LMP direction for productive timber lands other than those scheduled for special management emphasis. The rationale for this conclusion is contained in all current R5 timber management plans and will not be justified further here.

Even-age management usually implies that entire stands, five acres or larger in size, will be regenerated all at the same time. But true fir strip and small patch cutting can create units of regeneration less than five acres. The final regenerated stand may therfore contain several aggregations of even, but unequal, age. True fir even-age management, then, can deviate from the classical concept in response to ecology of the species.

As an approximation to final management direction, a rotation age of 120 years will be used. This rotaion is about 20 years shorter than that required for maximum mean annual increment under intensive management. (1/) It is also about 20 years longer than that needed to maximize present net worth at a reasonably high interest rate.

A rotation age of 120 years results in a regeneration harvest, on the area regulated Forest, of 8.3% of the productive land base per decade. Present constraints in FORPLAN prevent more than 14% of the land base from being regenerated because of watershed and other resource values. Regenerating at the minimum rate (8.3%) necessary to regulate in the shortest time (120 years) is well within anticipated LMP constraints. In fact the rate of regeneration harvest could nearly be doubled with no adverse environmental consequences. Accelerating the regeneration harvest beyond that needed for regulation (at least for a few decades) is actually desireable for economic efficiency. However, because of uncertainties in obtaining regeneration, and complexities in executing silviculture prescriptions, it is not prudent to attempt more regeneration than necessary to start the true fir forest type on a path toward regulation. When experience proves that risks are acceptable this conclusion should be reviewed and revised if necessary to increase net values from forest management.

1/ RAM-PREP, 12 April 1982 run date, R5 site class 3. Maximum of: (Intermediate + final harvest volume) ÷ rotation age.

APPENDIX 5

RED FIR TIMBER MANAGEMENT DATA BASE

ACRES IN LEVEL 1 "OTHER"

Dist.	Compart.	R1X	R2X	R3G	R3P	R4G	R4P	TOTAL
HL	1				213		681	894
	2			218	166	330	58	772
	3			96	132	456	1240	1924
	4				48	7	615	670
	5				94	291	561	946
	6					19	105	124
	7				24	212	386	622
	Total	0	0	314	677	1315	3645	5952
TR	6			320	194	538	77	1229
	8			1004	1070	282	302	2658
	9		70	285	47	415	147	964
	10		9	1416	1675	2781	688	6569
	12				90	23	33	146
	14			190				190
	Total	0	79	3215	3076	4239	1247	11656
HS	1		15	49	52		16	132
	2			442	30		131	603
	3			72				72
	12			59		37	60	156
	15				18	34	144	196
	16					68		68
	Total	0	15	622	100	139	351	1227
GH		0	0	0	0	0	0	0

APPENDIX 5

RED FIR TIMBER MANAGEMENT DATA BASE

ACRES IN LEVEL 1 "OTHER"

Dist.	Compart.	R1X	R2X	R3G	R3P	R4G	R4P	TOTAL
CM	2			214	725	165	1003	2107
	3			56	38	760	607	1461
	4		21				331	352
	6				27	36	104	167
	7			513	382	176	1707	2778
	8			138	406	97	1716	2357
	9						89	89
	12			64	146	29	741	980
	13						31	31
	14			137	77	434	1696	2344
	15			87	34	31	328	480
	17		13		134	91	506	744
	18		10				1293	1303
	19						37	37
	29				10	54	494	558
	30				15	97		112
	37						316	316
	Total	0	44	1209	1994	1970	10999	16216
Grand Total Acres		0	138	5360	5847	7463	16242	35050
Cunits/Ac		---	20.1	77.5	38.2	88.6	37.7	---
MBF/Ac		---	12.6	49.0	23.8	56.2	23.8	---

APPENDIX 6

10-YEAR COMPARTMENT REGENERATION TARGETS

DIST.	COMPT.	R3G ACRES	R3G MBF	R3P ACRES	R3P MBF	R4G ACRES	R4G MBF	R4P ACRES	R4P MBF	TOTAL ACRES	TOTAL MBF
HL	1			18	320			57	1015	75	1335
	2	18	774	14	249	27	1355	5	89	64	2467
	3	6	347	11	196	38	1908	103	1833	160	4284
	4			4	71	1	50	51	908	56	1029
	5			8	142	24	1205	47	837	79	2184
	6					2	100	8	142	10	242
	7			2	36	18	904	32	570	52	1510
	Total	26	1118	57	1015	110	5522	303	5393	496	13048
TR	6	27	1161	16	265	45	2259	6	107	94	3812
	8	83	3569	89	1584	23	1155	25	445	220	6753
	9	24	1032	4	71	34	1707	12	213	74	3023
	10	118	5074	139	2474	231	11596	57	1015	545	20159
	12			7	125	2	100	3	53	12	278
	14	16	688							16	688
	Total	268	11524	255	4539	335	16817	103	1833	961	34713
HS	1	4	172	4	71			1	18	9	261
	2	37	1591	2	36			11	196	50	1823
	3	6	258							6	258
	12	5	215			3	151	5	89	13	455
	15			1	18	3	151	12	213	16	382
	16					6	301			6	301
	Total	52	2236	7	125	12	603	29	516	100	3480
GH	--	0	0	0	0	0	0	0	0	0	0
CH	2	18	774	60	1068	14	702	83	1477	175	4021
	3	5	215	3	53	63	3163	50	890	121	4321
	4							27	481	27	481
	6			2	36	3	151	9	160	14	347
	7	43	1849	32	570	15	753	142	2528	232	5700
	8	11	473	34	605	8	402	142	2528	195	4008
	9							7	125	7	125
	12	5	215	12	214	2	100	62	1104	81	1633
	13							3	53	3	53
	14	11	473	6	107	36	1807	141	2510	194	4897
	15	7	301	3	53	3	151	27	481	40	986
	17			11	196	8	402	42	748	61	1346
	18							107	1905	107	1905
	19							3	53	3	53
	29			1	18	4	201	41	730	46	949
	30			1	18	8	402	26	463	35	883
	37										
	Total	100	4300	165	2937	164	8233	912	16234	1341	31708
FOREST		446	19178	484	8615	621	31174	1347	23977	2898	82944

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United States Department of Agriculture | Forest Service | Sequoia National Forest | 900 West Grand Avenue Porterville, CA 93257-2035 209-784-1500

KEN

Reply To: 2410 (2470)

Date: November 21, 1989

Subject: Sugar Pine Management

To: Management Team

As you are all aware, an increasing number of sugar pine trees are being infected with white pine blister rust. Region 5 Tree Improvement and PSW, in cooperation with their counterparts elsewhere, have identified at least two genetically transmitted mechanisms of rust resistance. There are probably other mechanisms that remain to be identified. The understanding and application of these resistance mechanisms is progressing rapidly; and we can help ensure that this progress continues.

I want to be sure that the Sequoia National Forest will continue to contribute its maximum potential to the on-going research. We can do this by maintaining a good selection of sugar pine to support research needs. For this reason I am establishing the following policy in regard to the management of sugar pine:

1. Silviculture prescriptions are to consider means of maintaining the widest possible base of sugar pine genes. Generally this means protecting as many sugar pine trees as possible while meeting Land Management Plan objectives and being compatible with timber harvest and related activities.

2. Continue to plant a modest mix (5-10%) of sugar pine along with other mixed conifer species, even though major gene resistant stock is not now available. This may mean collecting seed from non-tested trees in order to maintain a sugar pine seedbank. With resistant stock, this percentage could be increased.

3. Intensify the effort to collect sample cones from candidate resistant trees. We have financial support from Tree Improvement on this. It is a high priority for us.

4. Continue to protect trees that are known to carry resistance. Collect seed from these trees for our seedbank.

The logic in #1, above, is that even trees showing signs of blister rust infections may harbor the so-called "slow-rusting," or unknown genes of value to resistance. The slow-rusting mechanism may well provide a better long term solution to resistance than the major gene effort that is being emphasized now.

If a tree is about to die, we should capture its commercial value at this time. If a tree is likely to live until the next harvest entry, we will assume that it may have value to research. We should not harvest the tree at this time.

The reason for planting untested stock, as in #2, is that some of the stock may indeed be resistant. Presumably seed was collected from non-infected trees, which increases the chances of resistant progeny. Also, we don't want to accidentally encourage the "virulent" strain of rust that is thus far confined to the Happy Camp area on the Klamath Forest. One explanation for the occurrence of the virulent strain relates to the hypothesis that a mutation of the disease may have developed in, or been sustained by the presence of, a major gene resistant plantation. So, there may be good reasons for keeping some rust susceptible sugar pine in the forest.

This policy is to take effect immediately. Do not, however, apply it in situations where it would either change previously documented decisions (eg: require a change in a Decision Notice) or would cause loss of previous investments (eg: timber already marked or under contract).

JAMES A. CRATES
Forest Supervisor