TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

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FORESTRY RESOURCE PLANNING

There is an increasing importance of resource planning on forest land in California. The demand for goods and services from forest land is causing a need to be more aware of multiple use values in the planning process.

Equally important is the incorporation of the use and management of forest land into a total conservation program.

There is a multitude of information on forest land planning in various references. This technical note was prepared to make available one source of useful information on resource planning on forest land.

There are several forestry planning aids attached for you ready reference.

Attachment 1--Items to consider in forest land planning in California.
Attachment 2--Ten elements of planning.
Attachment 3--Items to consider in different levels of conservation planning.
Attachment 4--Items to consider with different Forestry Enterprises.
Attachment 5--Forestry Planning Policies - National Forestry Manual, pages 535-6 through 535-10.
Attachment 6--Forest Planning and Application - National Forestry Manual pages 536-1 and 536-2.
Attachment 7--Woodland Management Plans - Walter G. Thompson, U.S. Forest Service.

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Attachments

Attachment 1

TEN ELEMENTS OR STEPS TO FORESTRY PLANNING

1. Provide Information

   (a) Explain how SCS can give the landowner soils information pertaining to productivity and limitations, erosion hazard, equipment limitations, windthrow hazard, seedling mortality, plant competition, trees occurring on the site, and trees to plant.

   (b) Explain the zig-zag transect. How it works, the information to be gleaned from it, use of woodland information stick.

   (c) Explain how ULSE can be used to forecast erosion, and the effects of road design.

   (d) Explain California Forest Practice Rules.

   (e) Make the landowner aware of forestry assistance available from other sources including the Tree Farm Program.

   (f) Set up a case file as necessary.

2. Request Assistance

   (a) Ask the landowner to become a district cooperator if he/she is not already.

   (b) Letter from the landowner requesting technical assistance.

   (c) Document verbal requests in the Conservation Assistance Notes.

   (d) If unsure how to proceed, contact your SCS forester.

3. Determine Objectives

   (a) Determine the landowner's objectives and expectations.

   (b) Explain how good forest management can enhance other land use objectives--fish and wildlife, water quality, recreation, aesthetics.

   (c) Record objectives in notes.

4. Provide Resource Inventory Data

   (a) Make soils information available to the landowner.

   (b) Conduct a zig-zag transect with cooperator, if possible. Use increment borer to determine ages of timber stand(s).

   (c) Make a reconnaissance of critically eroding areas and document them.

(d) Make a grazing survey, if the forest land is grazed.

(e) Evaluate fish and wildlife habitat.

(f) Inventory potential and existing access road sites, including landings and skid trails if appropriate.

(g) Inventory aesthetic resources.

(h) Record findings and observations on map(s) of the property.

(i) Request assistance if needed from other specialists for range, fish and wildlife, and recreation considerations.

5. Interpreting, Analyzing, and Evaluating Resource Inventory Data

(a) Explain in detail the data in the published soil survey.

(b) Explain the alternatives available to the landowner resulting from the zig-zag transect.

(c) Explain the types of equipment that will keep damage to the resource base to a minimum.

(d) Develop cost/return data to assist the landowner with the decision making.

(e) Develop USLE data for soils on the property. This data can then be used to develop planning alternatives.

6. Developing and Evaluating Conservation Alternatives

(a) Use data from the soil surveys, the zig-zag transect, ULSE information, cost return data, and range surveys to assist the landowner by showing him/her alternatives.

(b) Alternatives should address the essential practice for the following Sub-systems when appropriate:

erosion control
agricultural waste
fish management
range management
recreation management
watering development
wildlife management
excess water removal

Practices that may be needed under the Forest Management System:

fencing
firebreak
livestock exclusion
prescribed burning
tree planting
access roads
direct seeding
improved harvesting
woodland improvement
pruning
site preparation
forest land erosion control system

See Section III and IV of the Technical Guide for a complete list of practices by subsystems and practice standards and specifications.

7. Make Decisions

   (a) Based on data gathered in the field, assist the landowner with making decisions that will protect the forest resource base, increase wood production, and enhance environmental quality.

   (b) If additional forestry operations are decided upon, give the landowner the names of local consultants.

8. Document Decisions

   (a) Record the landowner's decisions on essential and other practices in the case file, and his/her reasons for the decisions.

   (b) Incorporate other resource plans from industry, consultants, and/or California Department of Forestry into one plan.

   (c) See the Introduction to Section III of the Technical Guide and the California Supplement to the National Conservation Planning Manual, Part CA506.31(b) for information on recording decisions and conservation assistance notes.

9. Implement Decisions

   (a) Record practices applied, when they are started, and when they are completed.

10. Re-evaluate and Update

   (a) Follow-up, check success or failure of practices applied.

   (b) Document successes and failures.

PLANNING SPECTRUM

Suggested items that might be included in a forestry plan.

Minimum Folder Content	Full (Blue) Folder Content
(Minimal documentation of a plan)	
Decisions for all essential and other practices must be recorded in Conservation Assistance Notes. A plan may take the form of a letter or other prepared material such as a written report--more formal. All All plans are to include all "E" practices by CTU and a map of some kind is needed and should include a named road or legal description to aid in locating of the CTU. Record oral decisions. Decisions are to be documented in the Conservation Assistance Notes.	Inventories: Zig-zag transect (per stand) Range Wildlife USLE Access roads--needs Soils Recreation (both commercial and non-commercial) Interpretations: Soil interpretations Allowable cut Grazing units Begin to develop maps (include overlays) Alternatives Cost/return analysis USLE Address all "E" practices Critical area treatment Forestry job sheets Soil Record decisins

Attachment 3

TEN ELEMENTS OR STEPS TO PLANNING

1. Provide information
2. Request assistance
3. Determine objectives
4. Provide resource inventory data
5. Interpret, analyze, evaluate resource inventory data
6. Develop and evaluate conservation alternatives
7. Make decisions
8. Document decisions
9. Implement decisions
10. Re-evaluate and update

PLANNING SITUATIONS

A. Christmas Tree Information

(1) On-site investigation (2, 3, 4, 5, and 6, 7, 8[1/] = 108) either whole property or CTU.

(2) Notes--show request, alternative discussed--irrigation, species, assistance available, list information provided, show objectives.

(3) Map--could include conservation and soils.

B. Oak/grass woodland (2, 3, 4,[1/] etc.)

(4) Zig-zag transect--Cons 8
Range inventory--Range 417
Access roads needs--record in notes
Erosion control needs--record in notes
Wildlife need--record in notes
Watering developing needs--record in notes

(5) Determine volumes--allowable cut--record in notes
Initial stocking rates--if grazed--record in notes
Develop soil/site information--record in notes
Develop map(s)

(6) Economic cost/returns--record in notes
Account for all "E" items--record in notes
Develop alternatives--record in notes

(7) Decisions
Select alternatives--record in notes

(8) Document decision--Take 108
May be on whole property or CTU

C. Complete Plan (Blue Folder Plan)

When--Tree Farm Plan, CFIP Plan, Vegetation Management Plan, CRMP, Forestry Industry Landowner Assistance Program, Forest Practice Timber Harvest Plan, LTA's. FIP and where needed or requested by land user. See California Supplement, Part CA506.31(b).

Contents - Zig-Zag Transect(s) - Cons 8,

(4) INVENTORY

417 - Range Inventory
Wildlife habitat inventory
Soils map and data
USLE inventory
Access needs
Recreation (income and non-income producing)

1/ Elements of Planning (see attachment 1)

(5) INTERPRETATIONS

Soils
Begin to develop maps (include overlays)
Volume/yields
Allowable cut
Grazing potential

(6) Cost/return for each alternative
USLE for each alternative
Address all "E" items
Develop alternatives
Prescribe critical area seeding mixtures
Forestry job sheets

(7 & 8) Make and record decisions
Take 108

D. Farmstead and Feedlot Windbreak

(1 & 2) Basic information

(3) Request for assistance

(4) Location map

(5) Soils information

JOB DOCKET

Species selection - recommended and chosen
Irrigation needs
Planting plan
Follow-up or management requirements

(6) Inventory of potential problems--show in notes
Analysis--show in notes
Alternatives include all "E" practices--show in notes

(7 & 8) Make and record decisions
Take 108

E. Field Windbreak include as an element in RMS for cropland

PART 535 - FORESTRY POLICIES

§535.12 Forestry planning policy.

(a) Planning. The success of the forestry phase of the conservation program depends on the landowner considering forest land a part of the total operating unit. To give wooded areas the same consideration and attention that is given to any other land use, the land owner or operator needs a plan that provides:

- A system for managing the forest that is consistent with and coordinated with other farm or ranch operations.

- An annual or periodic income in accordance with owner's objectives.

- Other values such as erosion control, recreation, wildlife habitat, forage production, and environmental enhancement.

(b) Service to land users. Service to land users is provided in accordance with the National COnservation Planning Manual (Part 506, Subpart C) and may include:

535.11(e)

(e) Competency. Each state conservationist is responsible for a program of training in forestry in his or her state. SCS employees must be able to identify common trees and shrubs. They must be proficient with common forestry tools and practices needed to help owners evaluate forest land. They must know how to help a cooperator understand and/or determine the following:

- Significance and importance of soil-woodland interpretations including measures to overcome soil limitations.

- Needed erosion control measures.

- Productive capacity of the land.

- Density (stocking) and average diameter of the forest as related to the needed for adequate growing space.

- Species of trees present or to be planted and the relative desirability of those species for the land user's objectives.

- General condition of the growing stock.

- Need for access roads.

- Choice of a grazing system when appropriate.

- Other significant factors such as extent and causes of apparent damages, wildlife habitat, watershed values, and recreation potentials.

--Alternative opportunities for improvement of forest resources.

--Availability of other forestry services.

(f) One conservation plan. (1) SCS recognizes the role of State forestry organizations. State service foresters working under the direction of State foresters may assist landowners in developing detailed forest management plans and in applying forestry practices with or without a formal plan. It is SCS policy to maintain close working relationships with State forestry organizations.

(2) SCS recognizes that erosion and sediment control activities are a major SCS responsibility on forest land as well as on other land. The major responsibility for forestry practices, however, rests with State forestry agencies unless responsibilities are assigned to SCS through State agreements.

(3) SCS employees are to inform cooperators about the availability of public or private professional forestry services outside of SCS and encourage cooperators to use those services. Duplication of effort is to be avoided. A single conservation plan should be developed with the cooperator that reflects non-SCS as well as SCS assistance. The conservation plan is the common-action plan for coordinating all planning and application activities.

(1) Soils information and interpretations for forest land and other applicable land uses.

(2) Soil erosion and sedimentation control assistance on forest land.

(3) Alternative uses and available cost-return information.

(4) A record of the decision of the land owner or operator that indicates:

- Land that is to remain in woodland.

- Land that is to be converted to woodland.

- Woodland that is to be converted to other land uses.

- Woodland that is to be used for purposes other than the production of a wood crop.

- The treatment planned for the forest land, including erosion control and wood production practices.

- Needed conservation alternatives for erosion control and wood production.

(5) Follow-up to assist the cooperator in applying planned conservation practices.

(c) Services provided by SCS when not available from State forestry agencies. When agreements have been developed, SCS personnel are authorized to provide forestry services beyond the normal assistance in conservation planning. Besides giving assistance on erosion control measures, properly trained personnel may provide cooperative assistance on the following: (1) servicing ACP forestry practice referrals, (2) limited tree marking, (3) common insect and disease control methods, and (4) location of logging roads. Estimating timber volume should be avoided. Nevertheless, there may be occasions when volume estimates are needed to establish cutting cycles for planning purposes. Also, estimating tree volume on a few individual trees for demonstration activities is acceptable. In states where prescribed burning is an acceptable practice, SCS involvement is limited to planning assistance. Standards and specifications are to be in accordance with State forestry standards and State regulations.

(d) Special services as a part of training. SCS personnel are authorized, if properly trained and qualified, to teach land users the principles of certain forestry management services such as selecting trees to be cut for forest improvement or harvesting.

(4) If the land user already has a prepared forest management plan, a detailed field examination of the land, other than examining it for potential erosion, may not be needed. The conservationist is to review the contents of the plan with the cooperator and record the decisions on treatment and alternatives so that all planned actions are reflected in one plan. If no forest management plan exists, the SCS personnel are to follow standard SCS inventory and planning procedures.

§535.13 Windbreak planning policy.

(a) Authority for providing windbreak services to land owners and operators is delegated to the Soil Conservation Service by the Assistant Secretary for Natural Resources and Environment in 7 CFR 2.62(c). Within the Department, SCS has technical leadership responsibilities for windbreaks planted under ASCS and SCS cost share programs.

(b) Success in the application of windbreak practices is directly related to land owners and operators becoming aware of the benefits of such practices. Because windbreaks can be used to protect soil resources, control snow deposition, conserve moisture, conserve energy, beautify an area, provide wildlife food and habitat, and protect homes, crops, orchards, and livestock, there are substantial opportunities for for their establishment. Windbreak practices when coordinated with other conservation practices can result in significant economic, aesthetic, recreational, and environmental benefits both to the landowner and the community.

(c) Under the departmental authorities delegated to the Soil Conservation Service, SCS is to provide land owners and operators with the following:

(1) Soil interpretations that include the hazards of wind erosion; alternative erosion control practices such as crop residue use, minimum tillage, stripcropping, and windbreaks; and growth information on adapted tree and shrub species.

(2) Information on the availability of trees and shrubs for windbreak purposes, methods of establishment of windbreaks, and cost of establishment and maintenance.

(3) Information on crop benefits, energy savings, reduction in soil losses, feed savings, human and livestock comfort, benefits to wildlife, and the enhancement of the natural beauty of an area.

535.13(c)(4)

(4) Information on USDA cost share programs that are available for the establishment of windbreaks.

(5) Assistance in the design and layout of windbreaks in accordance with SCS standards and specifications.

(6) Assistance in the renovating or improvement of existing windbreaks in accordance with SCS standards and specifications.

(d) It is SCS policy to ensure that adequate soil-windbreak interpretations and technical information are available to land owners and operators. SCS develops soil-windbreak interpretive information and windbreak standards and specifications for all SCS field offices with a need or potential need for such information. SCS monitors the status and trends of farmstead, feedlot, and field windbreaks as part of an ongoing effort to collect resource information.

PART 536 - FOREST AND WINDBREAK PLANNING

SUBPART A - FOREST PLANNING AND APPLICATION

§536.00 General.

This part describes national forestry planning procedures with owners and users of forest land. SCS policy and procedures for conservation planning are contained in the National Conservation Planning Manual.

§536.01 Forest conservation planning.

(a) The procedures described in this part are designed to help in the examination of forest areas in the course of conservation planning work. The following items are the national procedures to be followed in planning forest conservation programs with owners of forest land.

(b) These procedures may not be applicable if a forest management plan has already been prepared (see §535.12(f)(1) through (4)). They also do not apply to forest industry land, large ranches, or forest enterprises on State or Federal land. (See §536.05.)

(c) The land owner or operator should participate in the field examination. They need to know their forest resources to make decisions on land treatment.

§536.02 Office planning.

(a) Study the soils map. Check the technical guide for related woodland interpretive information. The guide gives the potential forest productivity and any limitations or hazards. The guide should show the kinds of trees likely to be present, which species are most desirable for wood production, and which species have particular wildlife or aesthetics values.

(b) Study the aerial photo. Use a stereoscope if one is available. Locate drainagways, streams, ridges, and other features that might affect the use of the land. Locate logging roads and other disturbed areas on the photo. These should be visited for planning necessary erosion control measures.

(c) Outline, on the map, those areas that need on-site examination. Apparent differences in cover, changes in aspect or soil, and natural barriers are used to make tentative field separation. Forested areas are not necessarily "fenced in" as are cropland and pasture. A boundary of a forest is usually determined by a change of soil or forest condition or by a natural barrier.

536.02(d)

(d) Plan a route of travel with the cooperator that will enable you to see each of the areas delineated. The divisions you make at the office are only tentative. The field examination may reveal a need for fewer or more divisions. In either case, planning your route can save you and the cooperator much time in the field.

(e) Be prepared for the field examination. Have the necessary tools, such as the woodland information stick, compass, increment borer, and woodland planning sheets.

(f) Be proficient in using the woodland information stick, zigzag transect, and woodland planning worksheet. Remember, the information stick and zigzag transect systems are guides--not all forest need a detailed inventory. Use judgement: sometimes a visual estimate of forest condition and treatment needs is adequate.

§535.03 Field planning.

Visit each designated forest and record necessary data on the woodland planning worksheet. With the landowner, determine forest land treatment needs.

§536.04 Land use treatment discussions.

(a) Using the forest information you have recorded, discuss land use with the cooperator. Determine the cooperator's primary interest. Most forest areas lend themselves to multiple use. Discuss possible uses and help the owner make decisions that will protect the forest resource base, can increase wood production, and enhance environmental quality.

(b) As a minimum objective, help the owner to know the forest resource and to seek professional help whenever tree cutting is anticipated. Encourage owners to install erosion control and forestry practices when needed. Record the landowner's decisions in the conservation plan.

§536.05 Planning with forest industry and other large units.

(a) Forest industry operations usually have adequate technical forestry expertise. SCS generally limits assistance to:

(1) Soil-woodland site information and interpretations.

(2) Erosion control assistance.

(b) Detailed records of forest inventory and forest management decisions or conservation alternatives are usually not needed.

Attachment 7

WOODLAND MANAGEMENT PLANS

Walter G. Thomson[1]

A well-developed plan for the management of a woodland is essential for obtaining optimum benefits from that land. It correlates the resources, such as land and its products, labor, capital, and equipment, for the most beneficial uses to the woodland owner.

BASIC ELEMENTS OF A WOODLAND MANAGEMENT PLAN

Basic Objectives and Land Use Decisions

The objectives of management may vary considerably with the character and condition of the woodland and the aims and circumstances of the owner. Therefore, the objectives should be clearly written out to serve as a guide for the development of the plan. Objectives might be:

1. Growing forest products for use on the farm.
2. Protection of watershed for domestic water supply.
3. Providing personal or commercial recreational opportunity.
4. Maintaining a wildlife habitat.
5. Income from production and sale of timber of special forest products, such as Christmas trees.
6. Any combination of these or other objectives.

Once these objectives are clarified, the plan can be developed with elements aimed at meeting them.

Information Needed for Planning

Information for the management plan should include the following:

1. Acres of forest land. Total acreage and acres by age class and cover type.
2. Density of stocking--spacing according to species and diameter class.
3. Growth rate, rings per inch, and annual growth in percent of total tree volume (growth percent).
4. Productivity of the land. Possible annual harvest.

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5. Availability of markets by products.

6. Recreation potential--note special recreational values.

7. Wildlife potential--opportunity for special habitat development.

8. Watershed protection values--soil characteristics, springs, lakes, or streams needing protection.

9. Development needs--roads, drainage, fencing, etc.

Maps of the Woodland and Overlays

Maps and overlays are needed to show the following information:

1. Boundaries--fences and markers.

2. Location and legal description.

3. Cover type timber by species and age, brush, cutover, etc.

4. Physical features, such as streams, rock outcrops, swamps, soils types, etc.

5. Improvements, such as roads, buildings, dams, bridges, drainageways, etc.

6. Administrative divisions such as blocks or compartments.

7. Contours, if essential to management.

8. Work progress shown on outline maps.

Inventory

Inventory information answers the question: What is on the area at the beginning of the planning period? It includes:

1. Volumes by species and size classes by management units.

2. Types of products--volume in sawlogs, poles, pulpwood, number of Christmas trees, etc.

3. Areas ready for intermediate or final harvest, reforestation, or other activity.

4. Areas of other use possibilities, such as recreation, wildlife habitat, watershed protection, etc.

Growth and Yield Calculations

These calculations form the basis for budgeting the amount and time of thinning and harvest operations.

1. The present rate of growth is figured by the percent of volume by tree or acre (growth percent), and the volume per acre.

2. Future growth calculations or estimates are based upon species, degree of stocking to be obtained, age class, and products the plan is aiming toward.

Present and Future Market Situation

1. Products now saleable by class of product, species, etc.

2. Possible future markets by product, species, etc.

3. Population statistics--travel patterns and other special knowledge demanded for special uses such as recreational development.

Plan of Operations

The plan is based upon the basic information already mentioned and can be considered as a budget of time and type of activity. It includes:

1. Specific action planned in each management unit or compartment for next 2 to 10 years:

   - Specific jobs and projects to get done.
   - Cost and time estimates for each job.
   - Schedule by priority and specific time of year.
   - Kind and quantity of products to be harvested.
   - Cutting cycle to follow.
   - Harvesting plans--See article in this handbook, "A Tree Cropping System" by Fergerson and Thomson, pages 48-51.

2. Protection measures needed--against brush encroachment, fire, insects, animal damage, disease, and trespass.

3. Recreational, wildlife, or watershed protection measures needed or planned by time and place.

Record Keeping

Record detail will vary with intensity of management and owner's needs. For maximum value, record all activity in each management unit by time, cost, and results obtained. This would include such items as:

1. Planting date and species, survival checks, and replanting.

2. Thinning and pruning schedules.

3. Harvesting by kind of product, quantity, quality, and value.

4. Capital investment such as roads, structures, and others, including dates, costs, and depreciation.

5. Taxes and other overhead items.

6. Equipment cost use, repairs, and depreciation.

7. Income from recreational use, special products, and other sources.

8. Other pertinent information useful to owner or manager.

Provision for Revision

The woodland management plan must include a provision for revising work or operating plans annually or periodically.

HOW TO OBTAIN BASIC INFORMATION NECESSARY FOR MANAGEMENT PLANS

The following methods are helpful in obtaining data:

Consult Professional Forester

Most woodland owners are not foresters, and it is not possible to make foresters of them in a few easy lessons. However, they can become skilled in many forestry field practices. Local foresters are available to help them develop these skills.

The forester can teach the woodland owner how to:

1. Trace the outline of his property--an outline map.

2. Trace detail from aerial photos in the offices of the County Assessor, the Agricultural Stabilization and Conservation Service, or the Soil Conservation Service.

3. Divide area into logical units by paint-marking trees or by using stakes.

4. Measure trees--height and diameter.

5. Use volume tables to convert these measurements into volumes per tree and per acre.

6. Get degree of stocking or volumes per acre and per tract by tallying trees or taking sample plots.

7. Differentiate between principal species on the area.

8. Recognize major defects and decay systems in trees.

9. Use forester tools he can buy or borrow, including increment borer, for determining annual rings per inch.

10. Determine growth rate by measuring width of growth rings. Steps are:

    - Determine volume of tree now.
    - By ring measure and count, get tree volume estimates 5 or 10 years from now.
    - Deduct present volume from estimated future volume, divide by inter vening years, and get board foot volume growth per year on that tree. This can also be expressed in growth percent of initial volume.