ALASKA LEGISLATURE COMMITTEE FILES, 1989-1990 8672
6512 SENATE RESOURCES

916

delaying the activity won't cause the harm.

c. *When can a stop work order or directive be used?* A stop work order or a directive can be used during the office review, during a field review, or anytime a DNR field inspector sees an operation that will violate a standard.

d. *Are directives and stop work orders effective before an activity takes place?* Yes. We are using the term "stop work order" to mean that work must stop (or cannot start) pending appeal. We are using them to apply to existing activities and proposed activities. In other words, where DNR reviews a plan and sees that significant harm will occur when the activity begins, they can issue a stop work order. If the activity is already occurring, DNR may also use a stop work order. Both a "directive" and a "stop work order" can apply to existing and proposed activities.

VARIATIONS FROM STANDARDS. The landowner or operator may propose a variation from a design standard in a specific instance. For example, if a design standard was designed to avoid landslides and in this case the design standard was unnecessary because it was solid rock and a landslide was unlikely, or the landowner could provide an alternative design that gave the same degree of landslide protection, then a site-specific variation from the standard would be appropriate. Note, however, that the landowner could not appeal the standard itself, just that its application was not necessary in a particular case to achieve protection of public resources from significant harm.

If a variation was proposed, any one of the following would apply:

(a) the agencies could agree to the variation as proposed;
(b) the agencies could modify in the landowner's proposal and the landowner could agree;
(c) the agencies could negotiate an agreement acceptable to both parties; or
(d) they could not come to agreement. If they did not come to agreement, the mandatory standard would apply; that is, the mandatory standard would be a fall-back position for both the agencies and the landowner.
(e) the landowner could appeal the agencies denial of the variation. In this case, the landowner would have to abide by the standard during the time of the appeal (and afterward, if the appeal was denied).

If an agency wanted the landowner to provide protection above and beyond the standard, it could propose a variation from the standard. If the landowner agreed, then the protection would be provided. If the landowner did not agree, then standard would apply.

COORDINATION

1. Coordination of review. DNR will be the coordinating agency for all activities pursuant to the forest practices act (distribution of information, scheduling, field logistics, project status, etc.) DNR will also be the agency charged with implementing the Forest Practices Act with the appropriate consultation, elevation, and due deference.

2. Consultation. For application of all standards to a specific project site, for all review tiers, all agencies and coastal districts (if the project will affect their district) will interact with DNR in a consultative role. Their advice is not binding on DNR but is an effective way to obtain and apply agency and local expertise to a proposal.

3. Due Deference. DNR will give due deference to DF&G and DEC as defined in 6 AAC 50.120. For decisions regarding variations to the riparian management standards, the habitat requirements shall be the paramount values within the riparian zones. If DNR does not agree with DF&G, it will prepare a written finding documenting their differences and elevating the issue as appropriate.

   DF&G also receives due deference on road location decisions within streamside zones, and DEC receives due deference on the application of water quality standards. DF&G also makes final determination of stream channel types.

   From 6 AAC 50.120: " 'Due deference' means that deference which is appropriate in the context of the commenter's expertise and area of responsibility, and all the evidence available to support any factual assertions."

   DNR will assist DEC by identifying areas and proposals where water quality issues are likely to arise. This will allow DEC to focus its limited staff resources on areas and issues where water quality if of greatest concern, reducing the need for DEC to duplicate DNR's level of field presence.

4. Elevation. A DNR decision will not occur if an agency formally requests discussion of the issue at a higher level authority. Any elevation to higher authority will be completed within 10 days. If necessary, DNR will notify the landowner or operator of the additional 10-day waiting period.

APPEALS. The appeal process would be quick (10-days or less for directives; than 5 working days or less for stop work orders); would be internal to DNR; and would not require the hiring of an appeal officer. The appeal process may be integrated into the agency elevation process.

ADMINISTRATIVE RECORD.

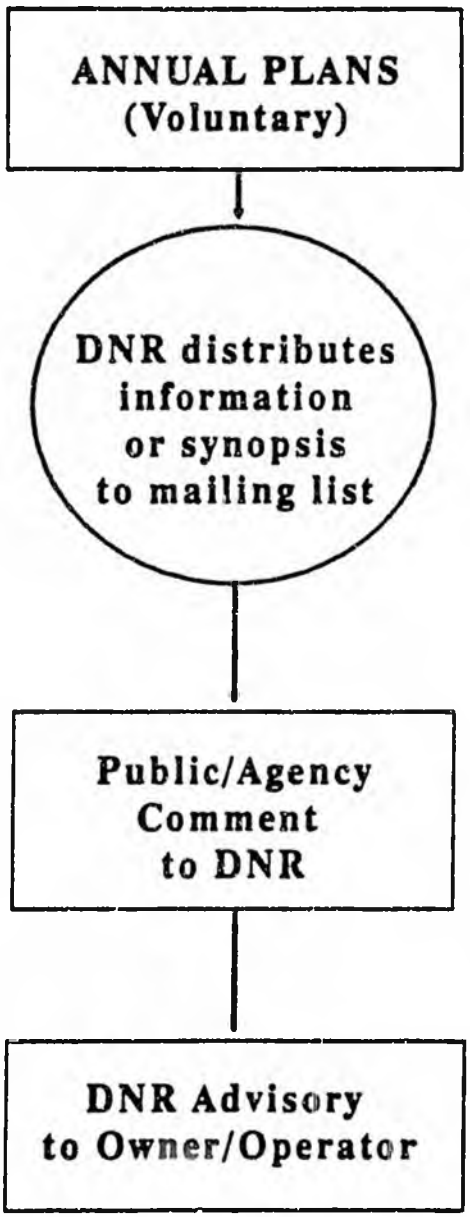
1. Documenting Decisions. All decisions would be in writing. Landowners need written decisions so they know what activities and standards they will be held to. The public and agencies need adequate documentation so that they can review agency actions.

2. Compiling Decisions. DNR will compile and index the decisions including directives, stop work orders, and variations from standards. In this fashion there will be a continuous record for the public or the Board of Forestry to review to determine whether the system is working and if it needs change. Annually, a summary of this record will be submitted to the Board of Forestry for review.

3. Confidential Data. All financial data submitted to DNR to justify compensation or for other purposes will be confidential.

THE ENHANCED FOREST PRACTICE NOTIFICATION SYSTEM
Diagram of Proposed Review Process

REVIEW OF ANNUAL PLAN



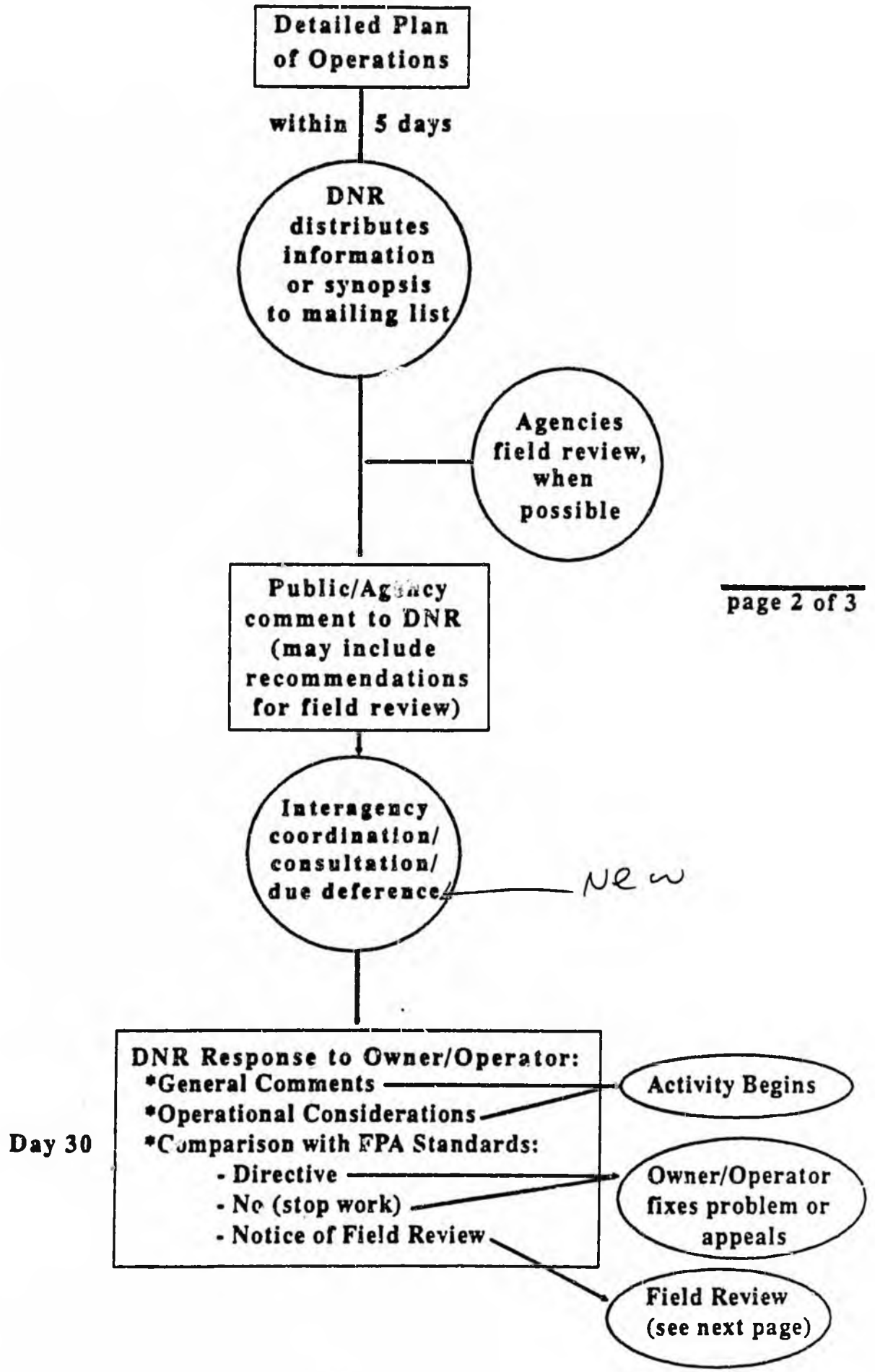
KEY

= activity

= document

REVIEW OF DETAILED PLAN OF OPERATIONS

OFFICE REVIEW:



FIELD REVIEW
(if not conducted during initial 30-day period)

Agencies Field Review Schedule based on:

*** 21-day notice by industry, weather, site conditions, reasonable access**
or
*** mutually agreed-upon time**

Interagency coordination/ consultation/ due deference — NEW

DNR response to Owner/Operator:

***General Comment**
***Operational Comments**
***Comparison with FPA Standards:**
- Directive
- stop work order

Activity Begins

Agencies Inspect

Owner/Operator fixes problem or appeals

21 days max.

Chapter 3. Enforcement

The Forest Practices Act currently provides for stop orders and civil fines. However, in the existing law, both a stop order and a civil fine require a hearing before an independent hearing officer "appointed by the attorney general from among members of the Alaska Bar Association who have been nominated by the Board of Forestry and who are knowledgeable and experienced in the subject matter [AS 41.17.139(a)]." This requirement is expensive and this hearing requires that DOF personnel have legal training that they currently do not have.

The FPA will be amended to provide the following additional enforcement remedies:

1. Violation of the Act, a regulation or an order will be a Class A misdemeanor (existing civil penalties remain available).

2. The requirement for an independent hearing officer will be deleted.

3. DNR will have the authority to issue "stop orders" for actual or threatened violations without previously providing an administrative hearing under the following conditions:

   a. there must be an imminent threat of significant harm to public resources;

   b. the order must be written, and the grounds for the order must be stated. At the hearing, the agency must rely on the same grounds stated in the order; and

   c. the order will be effective for 5 working days after the receipt of a request for a hearing, in which time an agency hearing must be held to uphold or rescind the order.

4. The FPA will require that prior to taking any enforcement action (other than an emergency action) all state agencies with enforcement authority over the matter will establish a uniform state enforcement strategy. All participating agencies must agree to the contents of that strategy. The uniform strategy could include all enforcement strategies available to the agencies. When developing the coordinated enforcement strategy, each agency retains its authority to determine the appropriate remedy under its statutes and regulations. For specific types or classes of violations, procedures to establish that strategy may be established in advance through the procedure in (5) below.

5. The agencies will write procedures for developing these strategies.

6. In developing the required uniform enforcement strategy, state agencies will accord deference to each agency's statutory authorities, and will respect these authorities to the extent consistent with the strategy's goals of avoiding inconsistent or duplicate enforcement action.

7. The FPA will provide that state agencies must comply with the uniform state enforcement strategy.

Notes from the Steering Committee Meeting:

* The hearing officer is the deciding officer; the loser may either go to court or request the Commissioner's review or reconsideration based on the existing record. (Specifically relevant to section .133 of the act.) Also, the hearing is based on the facts of the field investigation, and facts presented by the operator and agencies.

* In section .143 of the act, delete the attorney general's function. The agreement in principle will indicate that the commissioner's hearing authority will be delegated to the state forester with the ability to redelegate as appropriate.
* The enforcement remedies are possible on all land ownerships: private, borough, or state.
* There was a question of what constitutes a violation (with respect to civil fines, sec .141). The answer was that the enforcement remedies provided to DNR would use a similar definition to that provided to DEC under its Title 46.

Chapter 4. Board of Forestry

A. The Board of Forestry should be composed of seven members or representatives of the following:
   1. A member or representative of a statewide commercial fishing organization;
   2. A member or representative of a for-profit corporation established under the Alaska Native Claims Settlement Act;
   3. A member or representative of an environmental organization;
   4. A member or representative of a forest industry trade association;
   5. A professional fish or wildlife biologist who is not employed in that capacity by state, municipal, or federal governments (except for university employment).
   6. A professional forester who is not employed in that capacity by state, municipal, or federal governments (except for university employment).

   7. The State Forester is the non-voting chair of the Board.

B. The members should be selected by the governor. Terms should be staggered to provide continuity between administrations, and removal should be for cause only.

C. Appropriate technical staff shall be provided at board meetings by DEC, DF&G, DNR. Board staffing by DOF.

D. In addition to the existing duties in the Forest Practices Act, the board should provide a forum for representatives of concerned parties to discuss and attempt to resolve relevant issues concerning Alaska's forest resources. Additional duties of the Board shall include preparation of an annual report, including any dissenting opinions, to the legislature and the governor on the effectiveness of the act, the need for legislative or regulatory changes, and research and monitoring needs, based on public comment, agency input, and at least one public meeting in each region annually (i.e., Southeast, Southcentral and Interior Alaska).

   DNR, DF&G, and DEC will present an annual report independently to the legislature and the Board of Forestry, on the resources for which they have statutory expertise and make recommendations for any improvements that rectify procedural or substantive problems. (For duties of the board concerning research and monitoring, see page 63.)

E. The quorum for the operation of the board will be five voting members. Decisions may be made with one member dissenting rather than by simple majority or by unanimous consent.

F. The chair will work with the board to establish procedures for scheduling and organizing meetings. If a board member cannot attend a meeting, he may send an alternate. The alternate must, however, represent a the same constituency (i.e., be a member or representative of the environmental community; be a professional forester not currently employed in that capacity by state government; etc.)

Chapter 5. Wildlife and Planning

This chapter of the agreement describes the proposed DNR forest planning process. This planning process is the method of implementing wildlife protection during timber harvest on state land managed by the Department of Natural Resources.

As a summary, changes to DNR's forest planning process accomplish the following:

* New statutory and regulatory emphasis on wildlife habitat and other non-timber uses.
* Five-year sale schedule and enhanced public participation.
* Best interest finding under AS 38.05.035 for all sales, including increased analysis in the development of individual timber sale provisions.
* Enhanced opportunities for public participation at each of the forest planning stages.
* Planning for public lands will be required to allow for scenic quality and wildlife habitat, in addition to other considerations.
* On private lands, the landowners are encouraged to enter into cooperative agreements with DF&G to identify wildlife habitats and management options to minimize adverse impacts.

The first part of this chapter (pages 37 through 44) describes the proposed planning process. While DNR's general planning process is described, including area plans, changes are concentrated in the forest planning process: state forest plans, forest management plans, and forest management reports.

The second part of this chapter describes the intent of the committee for wildlife on state land. It is followed by proposed regulations to implement the proposed changes to the planning process, including wildlife protection during timber harvest on state land. The fourth section describes the committee's intent for wildlife on private lands.

The organization of this chapter is outlined below.

Chapter 5. Wildlife and Planning

A. Department of Natural Resources Forest Planning Process

Table of Contents

Summary

Land use plans are DNR's method for providing general guidance for land management. They have substantial agency and public involvement, generally including three rounds of public meetings.

The department receives agency and public review of timber sale design through its Forest Management Report (FMR). It includes the department's analysis and design details for individual timber sales. The FMR receives public and agency review. The FMR also serves as the Best Interest Finding for each sale.

The Five-Year Timber Sale Schedule, is a technique for getting improved public and agency review of the department's timber sale program. It is intended to give the department early warning of issues from the timber industry, agencies, and the public that may influence the individual sale design or the department's overall sale program. The schedule does not replace other planning and public notice requirements.

LAND USE PLANS
GENERAL GUIDANCE FOR LAND MANAGEMENT, INCLUDING FORESTRY

The Department uses land use plans to provide general guidance for land management, including timber harvest. The detail of the guidance can vary substantially between plans and within plans for an area. The guidance can be as general as setting out the primary management values. It can be as detailed as setting out specific timing restrictions and harvest practices, or locating areas where timber harvest is expected and where it is prohibited. The detail of the guidance depends on public and agency concern, the amount of knowledge about the issue, the type of decision required, and the amount of data and time available.

Land use plans include area plans and management plans of which state forest management plans are one example. (Other divisions and agencies also prepare plans -- for example, the Division of Parks prepares plans for state parks -- but these are not described here.)

I. Types of Plans

A. Area Plans

The Department of Natural Resources uses area plans to determine the primary management values on lands managed by the department. The area plan determines whether land will remain in state ownership or be sold. For land that remains in state ownership, the plan determines the classification, management intent, allowable and prohibited uses, and guidelines for the use of state land. For example, an area plan might determine that there are two primary management objectives for the land -- say, forestry and wildlife -- and might provide general guidelines for those two uses to be managed compatibly. In some cases very specific guidance is included.

Area plans exist or are in progress for approximately 60% of state land. Completed area plans include the Susitna, Tanana, Kuskokwim, Copper River Basin, Northwest, Prince William Sound, Prince of Wales Island, and Delta-Salcha Area Plan; and the Bristol Bay Cooperative Management Plan. The department is scheduling the Kenai Peninsula and the Central Southeast Area Plans to begin during 1989. Area plans are required by AS 38.05.065 and 11 AAC 55.030.

B. Management Plans

Management Plans are written to address issues in more detail than the land use designations resulting from an area plan. A management plan generally decides the timing, extent, location, and guidelines for land use activities. Management plans may deal with a smaller area in greater detail or provide direction for a specific land use within a larger area. Management plans are required by Title 41.17 for State Forests. On land not legislatively designated, they are done when the complexity of proposed or existing activities requires more detailed planning.

The Susitna Regional Forest Plan, currently underway, is an example of a forest management plan.

C. State Forest Management Plans.

State Forest Management Plans are management plans required by legislation for state forests. The Tanana Forest Plan and the Haines Forest Plan were completed for the state's two State Forests.

II. Description of the Planning Process

The planning process is essentially the same for area plans, management plans, and state forest plans. It is designed to ensure full participation by the public and government agencies; to provide opportunities for review and revision of the plan; and to include consideration of all comments. The process includes eight major steps.

1. Public and agencies identify issues (usually public meetings)
2. Resource information is compiled.
3. Management alternatives are prepared.
4. Alternatives are reviewed with the public (usually public meetings)
5. Draft plan is prepared.
6. Draft plan is reviewed with the public (usually public meetings)
7. Final plan is prepared.
8. Plan is adopted and implemented.

Steps one and two usually result in a published resource analysis in which resources such as Fish and Wildlife, Forestry, Minerals, Recreation and Transportation are analyzed for issues, concerns, policy, supply and demand, management options, and costs.

An interagency team is responsible for developing the plan. The Department of Fish and Game is always part of the planning team. For example, the planning team for the Tanana State Forest Plan included: Division of Forestry, Division of Geological and Geophysical Surveys, Division of Land and Water Management, Division of Mining, and Division of Parks and Outdoor Recreation; Department of Fish and Game; Department of Environmental Conservation; Department of Transportation and Public Facilities; the Fairbanks North Star Borough; and the USDA Forest Service Institute of Northern Forestry.

In addition, private citizens, citizens' groups, private organizations, and other state, federal and local agencies participate in the planning process by attending workshops and providing comments.

Area plans require between two and a half and three years to prepare, management plans are sometimes quicker. The final plan is adopted by the commissioner of DNR and guides land management actions on DNR-managed land.

III. Differences between Title 41 and Title 38 Plans.

There are essentially no differences in the planning process between land administered under title 38 (i.e., general state land), and that administered under title 41.17 (state forests). Area plans and sometimes management plans are prepared for general state land. State forest plans are always prepared for legislatively designated state forests.

IV. Other General Guidance for State Land

A. The Legislature

The legislature can determine the primary resource values for an area in legislation as when it creates a state forest, state park, state critical habitat area, or other legislatively determined area.

The legislature has created two state forests: Tanana Valley and Haines. "The primary purpose in the establishments of state forests is the perpetuation of personal, commercial, and other beneficial uses of resources through multiple-use management." (AS 41.17.200)

B. Areas where land use plans have not been prepared

Almost all state land outside of either area plans or state forests have been classified. In some cases, there was a classification for a specific purposes (i.e., to recognize a village watershed; or to allow the state to hold a timber sale). In many cases, the classification is general and gives little guidance to subsequent decisions.

DETAILED LAND USE MANAGEMENT, INCLUDING TIMBER SALE DESIGN

I. Nomenclature - Forest Management Report, FMR,.035 finding, preliminary decision, site-specific timber sale plan, and best interest finding.

Title 38, [AS 38.05.035(e)] requires that the state make available a "written finding" before most dispcsal of state interests. When a draft of this "written finding" is made available for public review, it is sometimes called a preliminary decision, draft best interest finding, or draft .035-finding. After incorporating review comments, the department signs the "written finding" and holds the timber sale. The final version of this "written finding" is sometimes called a final decision, final finding, .035-finding, or best interest finding. They are all the same thing. The mechanism that the department uses to set out this "written finding" for an individual timber sale is the Forest Management Report (FMR).

The department circulates the timber sale design for public review as part of the Forest Management Report. Therefore, the FMR is also a "site-specific timber sale plan."

II. The Forest Management Report

The draft Forest Management Report (FMR) is the Preliminary Decision document prepared for individual timber sale proposals. The FMR is required in the Division of Forestry's Policy and Procedures Manual. It is designed to exceed the requirements of AS 38.05.035 and is designed specifically for disposal that involve forest products. The FMR provides general sale identification information; location data and timber sale design information for effective notice of interested parties; land title details; conformance with other existing plans, department policies, and conformance with regulations (such as those of the forest practices act); access provisions, and a narrative section. The narrative section varies greatly in length with the complexity of the proposed sale.

Points to be addressed in this part of the FMR include the following areas:

* Statutory Authorities
* Consistency with 5-year harvest schedule
* Harvest unit description
* Access provisions
* Logging systems/constraints
* Insect and disease conditions
* Physical sale area descriptions including topography, soils, wetlands as they influence the sale design
* Stand descriptions
* Reforestation and silvicultural provisions (including reforestation cost and proposed methods)
* Whether an annual operating plan will be required
* Coastal Zone Management consistency determination (where applicable)
* Non-timber resources. For these resources the FMR process will include review and description of non-timber resources, activities, and significant impacts, unusual conditions that require special provisions in the sale design; and where appropriate, mitigation. The review of non-timber resources will address the following:
  (1) fish and wildlife habitat including:
    (a) identification and protection of important wildlife habitat such as high-density bear use areas; swan nesting areas; moose, deer, and mountain goat winter ranges; and critical marine mammal habitat;
    (b) design of harvest methods and configurations to provide natural travel corridors and escape cover;
    (c) retention of snags for cavity dependent wildlife, recognizing worker safety and fire requirements;
    (d) retention of riparian, wetland, and ocean-shoreline vegetation critical for fish and wildlife habitat;
    (e) classification of waterbodies according to physical characteristics.
  (2) uses of the forest for its recreation, tourism and related activities;
  (3) mining, mining claims, and mineral leasehold location;
  (4) gravel extraction;
  (5) uses of fish and wildlife;
  (6) agriculture, including grazing;
  (7) soil productivity and water quality;
  (8) other existing commercial and non-commercial uses;
  (9) internal/adjacent private lands;
  (10) other forest products, resources and uses the department considers appropriate.
* criteria upon which the timber sale decisions are made.
* air
* cultural/historic sites
* visual resources
* applicable public and agency comments and DNR responses (final FMR only)

Forest Management Reports are generally completed between 5 and 14 months prior to the anticipated auction date. They are advertised and available to the public. Comments to this document are evaluated and responded to in the final FMR. The final sale design, if it proceeds, is modified as needed. Field work is done to put the paper plan on the ground.

Forest Management Reports are sometimes prepared for areas where more general land use planning such as an area plan or a forest management plan does not exist. In these cases, the FMR may include some of the more general planning process steps typical of those plans. For example: scoping meetings, more complete resource inventory, management alternatives, etc. Where no higher level plan exists, the complexity and detail of the FMR, including the extent to which it includes the more general process steps, will depend on the

complexity and controversy of the proposed activities.

III. Public and Agency Review.

For large, complex, or controversial sales, agency review is conducted before the FMR is available to the public. For small sales, public and agency review may occur concurrently.

The draft FMR is available and comments taken for at least 30 days. For controversial sales, or sales where communication is difficult (e.g., some remote areas), the review period may be longer. Public meetings may be held, if needed. After changes are made in response to public or agency comments, the final FMR must, by law, be available for at least 21 days before the sale auction is held or the contact signed.

IV. Annual Operating Plans (Post Contract Signing).

Annual Operating Plans (commonly referred to as "logging plans") describe how the purchaser is going to fulfill the timber sale contract. They are not required by regulation but may be included as a contract stipulation (11 AAC 21.300). Logging plans are often required if the sale is complex. What a logging plan must address varies widely from sale to sale. The plans may be as simple as start and stop dates or may require engineering details. The plans are reviewed for consistency with the contract and must be approved by DNR prior to the operation proceeding. Approved annual operating plans become part of the sale contract.

Where annual operating plans are required by the contract there are three scenarios:

1) Where no substantial deviation from the contractual provisions are proposed and the plan meets contractual requirements, the Division of Forestry will forward a copy of the annual operating plan to DEC and DF&G so they will be alerted to any required permits from their agencies.

2) If the plan proposes actions which are consistent with the FMR, but not the contract, the logging plan cannot be approved without a contract amendment. Contract amendments must be consistent with the actions proposed and reviewed in the FMR, not result in any material change in the contract and be within the limit of changes allowed by regulation. The Division of Forestry shall solicit agency review of this proposed action from the other agencies prior to implementing the contract amendment.

3) If an action is proposed which significantly deviates from the FMR, the Division of Forestry will advertize the proposed change for public and agency review for at least 30 days. All comments shall receive a response and be considered prior to consummating the specific contract amendment and allowing implementation of the annual operating plan as amended.

   Regardless of the required level of review, DNR must approve every annual operating plan prior to the operator proceeding.

THE FIVE-YEAR TIMBER SALE SCHEDULE

The Five-Year Timber Sale Schedule, is a policy technique and scoping process for getting improved public and agency review of and input into the department's timber sale program. It is intended to give the department early review of issues from the timber industry, agencies, and the public that may influence the individual sale design or the department's overall sale program. The schedule does not replace other planning and public notice requirements.

The narrative is written with Year 5 being the year of the sale with Year 1 four years prior.

I. General Description of the Schedule

A. Years 1-3.

The objectives of Years 1 through 3 of the schedule are to identify issues early in the process; direct DNR's and DF&G's field work and data collection; to direct the environmental and economic analysis; and to inform the public and forest industry where the department's timber sale program is headed. Years 1 through 3 are primarily informational -- for both the department and the public.

B. Years 4 and 5

The objectives of these years of the sale schedule are to gather public and agency review and comment on specific timber sale design prior to Division personnel completing cruising, boundary marking, road design, harvest design, etc. Division personnel complete detailed harvest and environmental design to ensure that the sale balances the needs of the timber industry, agencies, and the public. Work will concentrate on sales in year four of the sales plan and changes that may be required in year five of the sale schedule.

During this time the draft Forest Management Report is completed and made available for public review. The report contains timber sale design information. After incorporating changes made on the basis of public comment, the final report is distributed before the sale auction. (The Forest Management Report serves as the ".035 finding," "site-specific timber sale plan," "best interest finding," or preliminary decision." See description of Forest Management Report on pages 40-42.) The sale occurs and harvest may begin during year 5.

As the five-year schedule is amended from year to year, sales will move from one year to another. However, sales with cutting units totaling greater than 160 acres must be on the schedule for two years before sale.

II. Specific Provisions of the Sale Schedule

A. Duration on the sale schedule

Sales with cutting units totaling greater than 160 acres must appear on the sale schedule for two years before they are sold. Exceptions to this requirement may be made for emergencies such as salvage, re-offerings of old sales, or providing a temporary supply to an operator to take advantage of developing markets while a larger sale is being prepared. Our intent is that smaller sales will be on the schedule, but it is not required. Every competitive bid sale must, however, comply with all public and agency review requirements (see description of Forest Management Report).

B. A 160-acre threshold?

The department needs to respond with small sales for operators who cannot always plan two years in advance. In addition, small sales generally have less impact on public resources than larger sales. The 160-acre threshold was picked to allow the department that flexibility. (Forest Management Reports and public notice will be required for less than 160-acre sales.)

C. Public and agency review.

The five year schedule will be sent for annual public and agency review. Comments will be compiled and the schedule will be amended as necessary on the basis of those comments.

D. Start-up.

To prevent this schedule from placing a one-year delay in the department's timber program, the requirement that sales be on the schedule for two years will not apply in the schedule's first year of publication. However, first year sales will comply with other requirements for agency and public review. (See description of Forest Management Report).

III. Title 41 and Title 38

The Five-year Timber Sale Schedule applies equally to land administered under title 38 (general state land), and under title 41.17 (State Forests). There are no differences.

PROPOSALS FOR STATUTE/REGULATION CHANGES

Statute and regulation changes to implement the proposed changes are listed on pages 46 and 47.

Chapter 5. Wildlife and Planning

B. Wildlife Habitat, State Lands

The forest resources of Alaska are among the most valuable natural resources of the state, and public lands furnish timber and wood products, fish and wildlife, tourism, outdoor recreation, water, soil, air, minerals and general health and welfare. On public lands, it is the objective of the state to a) provide timber for the forest products industry, b) protect, maintain, and where possible enhance fish and wildlife habitat, and c) protect, maintain, and where possible enhance[1] commercial, recreational, subsistence, and personal use and enjoyment of these resources to best meet the needs of the public.

The next two pages contain statute and regulation changes for DNR's forest management planning process that implement this intent on state land.

---

[1]Note to drafter: The words "where possible" are only meant to modify "enhance", not protect or "maintain."

Chapter 5. Wildlife and Planning

C. Forest Planning & Wildlife on State Land Proposed Statutory and Regulatory Changes

I. Proposed Statute Changes.

Forest Management Plans. This section applies only to land managed by the Department of Natural Resources and classified forestry or managed for long-term forestry.

(a) On state land, before timber harvest begins, the following will be addressed by either a forest management plan or a forest management report:
- (1) commercial timber harvest and related activities
- (2) harvest of forest products for personal use
- (3) fish and wildlife habitat including:
  - (a) identification and protection of important wildlife habitat;
  - (b) retention of riparian, wetland, and ocean-shoreline vegetation critical for fish and wildlife habitat; and
  - (c) classification of waterbodies according to physical characteristics.
- (4) uses of the forest for recreation, tourism, and related activities;
- (5) mining, mining claims, mineral leasehold location, and mineral leasing;
- (6) material extraction;
- (7) uses of fish and wildlife;
- (8) agriculture, including grazing;
- (9) soil productivity and water quality;
- (10) other resources and uses the department considers appropriate;
- (11) watershed management;
- (12) other traditional, compatible uses;

(b) Forest management plans and forest management reports for state lands will be developed in accordance with AS 38.04.065 and will reflect the standards in Sec 41.17.060(c) and regulations promulgated pursuant to Sec. 41.17.080. Forest management reports will be designed to satisfy the requirements of AS 38.05.035(e). The reports will also contain the criteria upon which the timber sale decisions are made. Forest management plans will be submitted to the Board of Forestry for review.

(c) Language describing the five-year timber sale schedule goes here. We have not written it but will leave it for the attorney general to write a draft.

(d) DNR will solicit and base its decisions on applicable and best available data, and on other information provided by participating agencies, describing the immediate and long-term effects of individual and collective forest activities on the timber base and on other resources and uses.

II. Proposed Regulations. Regulations for Section (a) above will contain the following: These regulations apply only to land managed by the Department of Natural Resources, and classified forestry or managed for long-term forestry.

The Forest Management Report will address the following:

* Statutory Authorities
* Consistency with 5-year harvest schedule
* Harvest unit description
* Access provisions
* Logging systems/constraints
* Insect and disease conditions
* Physical sale area descriptions including topography, soils, wetlands as they influence the sale design
* Stand descriptions
* Reforestation and silvicultural provisions (including reforestation cost and proposed methods)
* Whether an annual operating plan will be required
* Coastal Zone Management consistency determination (where applicable)
* Non-timber resources. For these resources the FMR process will include review and description of non-timber resources, activities, and significant impacts, unusual conditions that require special provisions in the sale design; and where appropriate, mitigation. The review of non-timber resources will address the following:
  (1) fish and wildlife habitat including:
    (a) identification and protection of important wildlife habitat such as high-density bear use areas; swan nesting areas; moose, deer, and mountain goat winter ranges; and critical marine mammal habitat;[2]
    (b) design of harvest methods and configurations to provide natural travel corridors and escape cover;
    (c) retention of snags for cavity dependent wildlife, recognizing worker safety and fire requirements;
    (d) retention of riparian, wetland, and ocean-shoreline vegetation critical for fish and wildlife habitat; and
    (e) classification of waterbodies according to physical characteristics.
  (2) uses of the forest for its recreation, tourism and related activities;
  (3) mining, mining claims, and mineral leasehold location;
  (4) gravel extraction;
  (5) uses of fish and wildlife;
  (6) agriculture, including grazing;
  (7) soil productivity and water quality;
  (8) other existing commercial and non-commercial uses;
  (9) internal/adjacent private lands;
  (10) other forest products, resources and uses the department considers appropriate.
* criteria upon which the timber sale decisions are made.
* air
* cultural/historic sites
* visual resources
* applicable public and agency comments and DNR responses (final FMR only)

Other Regulation Change: The state will attempt to notify landowners adjoining areas scheduled for timber harvest with the draft FMR. The area of notification may be adjusted during a state area plan, forest plan or management plan.

---

[2] Note to regulation drafter. The list in this clause is meant to be illustrative, but not limiting. It is meant to include whatever game and non-game species' habitats are determined important.

Chapter 5. Wildlife and Planning

D. Wildlife Habitat on Private Lands

The state will work cooperatively with the land or timber owner to protect, maintain, and enhance wildlife habitat to the maximum extent practicable, bearing in mind the objectives of the land or timber owner. The state and private forest owners are encouraged to enter cooperative agreements where they serve to facilitate cooperation.

The Department of Fish and Game and the private land or timber owner will cooperate in project planning and design to identify important wildlife habitats and voluntary management options to minimize adverse impacts on those habitats, recognizing the management objectives of the land or timber owner. Cooperative agreements referred to above should address how the department will provide assistance in the further evaluation of such habitats.

The state and private land or timber owners should develop procedures for both the identification of wildlife habitat meriting protection and the identification of appropriate compensation opportunities for private lands set aside as wildlife habitat. This may include cash payment or other compensation such as conservation easements, land exchanges, and credits for state timber sales.

To further this process the state shall provide, on a cooperative basis, educational and technical assistance, and extension services to help the land or timber owner and operator assess wildlife habitat values and to design management options to provide wildlife habitat protection and to meet the land or timber owner's management and use objectives.

Nothing in this act is intended to enlarge or diminish any responsibility of the state or any landowner to protect wildlife on private land.

Chapter 6. Forest Practice Act Standards

This section of the report outlines changes to forest practices act standards under 41.17.060 and .080.

Section 41.17.060

1. Subsection .060(b)(2) will be amended to read as follows:
   (2) environmentally sensitive areas ~~and best management practices~~ shall be recognized in the *development of regulations and best management practices that are designed to implement* ~~implementation of any~~ nonpoint source pollution control measures authorized under this chapter;

2. Subsection .060(b)(5) will be added as follows:
   (5) significant adverse effects of soil erosion and mass wasting on water quality and fish habitat shall be prevented or minimized.

3. Subsection .060(c)(6) will be amended to read as follows:
   (6) ~~where economically practiable,~~ allowance *shall* ~~may~~ be made for scenic quality in or adjacent to areas of substantial importance to the tourism and recreation industry, *and for important wildlife habitat.*

Section 41.17.080

1. Subsection (a) will be amended to read as follows:

(a) The commissioner *shall* ~~may~~ adopt regulations under the Administrative Procedure Act (AS 44.62) and AS 41.17.047 governing ~~operations on~~ forest *practices such* as ~~land with respect to~~ the following:

2. The following list replaces the list in (a)(1) through (a)(6) of the existing act:
   (1) Road construction and maintenance
      a. Road location
      b. Road construction
      c. Landing location and construction
      d. Water crossing structures
      e. Road maintenance
      f. Rock quarries, gravel pits, borrow pits, and spoil disposal areas
      g. Post operation road management (i.e., "put-to-bed")

   (2) Timber harvesting
      a. Timber harvest unit planning and design
      b. Felling and bucking
      c. Cable yarding
      d. Shovel, tractor, and wheeled skidder systems
      e. Landing clean-up
      f. Slash disposal

(3) Log transfer, sort yards, and storage facilities
   a. Location
   b. Design
   c. Construction & Maintenance
   d. Closure
   e. Log storage, rafting, and identification[3]

(4) Reforestation
   a. Site preparation and rehabilitation
   b. Urban and other lands exempted from reforestation requirements
   c. Prescribed burning

(5) Prevention and suppression of forest insects and diseases[4]

(6) Upland salvage logging

(7) Brush control

(8) Fire and flood hazard management

3. Subsection .080(c) will be amended to read as follows:
(c) The commissioner shall adopt only those regulations necessary to accomplish the purposes of this chapter, and shall avoid those which increase operation costs without yielding significant benefits to public resources.

The regulations promulgated according to this chapter will be drafted under a process outlined in Part III, Implementing the Agreement.

---

[3] Note that some regulations may go here, some maybe be submitted to the Army Corps of Engineers for their permits, and some may become lease stipulations under DNR's tideland lease program.

[4] Note to drafter, regulations promulgated under this and subsection (6) may be combined with those promulgated under the sections of the act specifically dealing with timber salvage, and with insect and disease management.

Chapter 7. Other Issues

A. Timber Management Adjacent to Private Lands

There have been cases where logging operations may have physically damage adjacent lands due to blowdown, trespass, landslides etc. The extent and likelihood of possible damages depend on topography, type of logging, risk of blowdown, whether the private parcels are surveyed, etc. Therefore, stipulations applied to logging on state land to prevent these problems will vary according to the individual circumstances.

The state involves the public in state land management decisions that affect their interests. The department, through the timber sale planning process, takes public concerns into account when locating and designing timber harvest. (See discussion of state planning process, pages 37 to 44.)

To facilitate this process, the state will attempt to notify landowners adjoining areas scheduled for timber harvest, and to provide them with an opportunity for review and comment, and to take their and other public concerns into account prior to adoption of a forest management plan or forest management report. The area of the notification requirement may be detailed during a state area plan, forest plan, or management plan.

This provision will be implemented by regulation changes in the state's forest planning process. See the bottom of page 47.

Chapter 7. Other Issues

B. Non-Timber Clearing

Timber Salvage. Timber with commercial or personal use value that will be cleared for other uses should be salvaged from state, and municipal lands, public rights-of-way, and public utility corridors. This will be accomplished by adherence to the following guidelines.

1. Before conducting or approving significant land clearing actions, state agencies, municipalities, and public utilities will determine whether the timber is worth salvaging and adopt appropriate salvage methods.

2. Major projects that involve clearing large areas of forested land will be planned by state agencies, municipalities, and public utilities far enough in advance so that schedules can be established to allow a reasonable period of time to arrange for and conduct commercial salvage of the timber. This advance planning will provide sufficient time to conduct the inventories and harvest.

Chapter 7. Other Issues

C. Insect & Disease Management

This section of the agreement has two parts: an explanation of intent, and proposed statute changes. The intent section that follows explains the purpose of statutory changes. modifications are intended to accomplish.

INTENT

It has become evident in the spruce stands of southcentral Alaska that a wide variety of conditions or actions, including poor clearing practices, can trigger infestations of bark beetles, specifically the spruce beetle (Dendroctonus Rufipennis). The attached proposed statutory section would parallel similar legislation in Oregon and California.*

Paragraph (a) of the new section extends prevention and suppression to state, municipal and private land that is currently provided only to state lands, requiring all forest clearing operations to be designed to prevent forest insect or disease outbreaks.

All landowners are identified in Paragraph (b) as responsible for the prevention and suppression of forest insect and disease outbreaks within their forest land which are a result of their forest clearing practices. This paragraph also provides that if the landowner does not contain the infestation, and biologically effective, cost-effective, and environmentally safe suppression measures are available, the state forester may implement them.

Paragraph (d) authorizes the Department of Natural Resources to enter into agreements with other public and private entities to prevent or suppress forest insects or diseases.

Paragraphs (c) enables the Department of Natural Resources to declare infested or threatened zones and thereafter to conduct detection, evaluation, and suppression activities within the outbreak area. Paragraph (e) provides for the dissolution of the zone.

Changes to the law are intended to promote the use of clearing practices that avoid creating forest insect or disease problems. In addition it will encourage suppression of infestations where 1) forest resources are threatened, and 2) suppression measures that are biologically effective, cost-effective, and environmentally safe are available.

A distinct but related issue needs amending in current regulation. 11 AAC 95.160 SLASH (d) requires that "Within Region II, when beetle brood is present in concentrations of white spruce slash with an outside bark diameter greater than five inches it must be treated by burning or some other method to destroy developing insects and prevent bark beetle build-up." Because many areas within Region I have equally significant beetle population problems, reference to Region II would be omitted. As these problems occur in white, Lutz, and Sitka spruce, mention of only one of these should be omitted. The paragraph would then read, "When the state forester determines that spruce beetle brood concentrations in downed spruce create a threat to standing timber, such material must be utilized or treated to destroy developing insects and prevent bark beetle build-up.

*California Public Resource Code, Article 5 Paragraph 4714 and
Oregon Revised Statutes 527.380.

(a) All forest clearing operations and silvicultural systems must be designed to reduce the likelihood of increased resource threatening insect infestations and disease infections resulting from such operations.

(b) No person shall conduct or approve timber clearing activities that create conditions fostering outbreaks of infestation or infection that threaten forest resources on other forest lands. Where the Commissioner finds after notice and hearing that the owner of timber or timberlands has created such conditions in violation of this subsection, the Commissioner may:

(1) require the owner at the owner's expense promptly to remove or cure the conditions fostering outbreaks of infestation or infection;
(2) require the owner at the owner's expense to undertake environmentally sound, effective, and cost-efficient actions to control the infestation or infection in the immediate vicinity of the improper timber clearing activity; and
(3) if the owner does not comply with a final order under (b)(1) or (b)(2), enter onto the land and undertake the actions so ordered and seek recovery of the costs of such actions by filing and foreclosing a lien against the property.

(c) The Commissioner may undertake surveys and appraisals to obtain pertinent data on regional insect infestations and disease conditions. Whenever the Commissioner determines that there exists an area which is infested or infected with forest insects or diseases injurious to forest resources and that the infestation or infection is of such a character as to threaten the timber or timberlands of adjacent owners, the Commissioner may declare the existence of a zone of infestation or infection, and describe and fix its boundaries.

(d) The Commissioner may enter into agreements with any owner and with any agency of government, including the federal government, for the purpose of preventing or suppressing forest insects or diseases damaging or threatening forest resources.

(e) Whenever the Commissioner determines that insect and disease control work within the designated zone of infestation or infection is no longer necessary or feasible, he shall dissolve the zone.

Chapter 7. Other Issues

D. Log Storage Area Facilities and Log Rafts

Water storage and transportation of logs are common practices in coastal Alaska. Yet both practices have generated concern regarding incremental and catastrophic loss of logs from log storage areas and log rafts.

A task force comprised of a marine engineer, logging engineer, operator, and a forest user will prepare a report defining accepted industry design standards for in-water log storage facilities and log rafting as specified below.

The report will be used in the formulation of guidelines for log rafting and in-water log storage. Some of the guidelines may be promulgated as regulations under the revised forest practices act. Some guidelines may be applied to DNR tideland permits and leases, and some may be recommended to the Army Corps of Engineers through the Alaska Coastal Management Program consistency review process or other means. In addition, the 1985 Log transfer facility guidelines agreement will be incorporated into the forest practices regulations.

Log storage facilities, log rafting, and log tow standards would be developed as follows:

1. Definitions and explanations of the role important physical factors, such as meteorological and oceanographic (wind exposure and velocity, tidal datum, current datum, etc.) affecting construction standards.

2. Definitions of applied industry technology such as stiff-leg boom, standing boom, log boom, and their appropriate application.

3. Log bundling techniques.

4. Industry requirements for all activities.

5. Industry recommended construction standards.

Chapter 7. Other Issues

E. Reforestation

This draft agreement proposes that the reforestation backlog is funded through program receipts: through allocation of 25% of receipts of timber sales on state land to DNR's reforestation program.

Chapter 7. Other Issues

F. Relationship of the FPA

to the Alaska Coastal Management Act

The current Forest Practices Act (FPA) and regulations are "the basis for Forest management standards, policies, and guidelines of the Alaska Coastal Management Act" (AS 41.17.010(6)). Since the passage of the FPA, review procedures (6 AAC 50) for coastal development activities have been added to the Alaska Coastal Management Program (ACMP) regulations. The following statutory amendment is necessary to insure that the new FPA statutes and regulations clearly serve as the basis for ACMP involvement in forestry activities on private lands by expressly making reference to the ACMP review procedures and by deleting the inappropriate reference to district planning guidelines. DNR, in consultation with DGC, will amend their existing regulations to implement this section in accordance with section 41.17.900.

The amended statutory language reads:

AS 41.17.010(6)

Subject to 16.U.S.C. 1456(f) (Section 307(f)) of the Coastal Zone Management Act of 1972, P2 92-583), the provisions of this chapter shall ~~be the basis for~~ *serve as the* forest management standards, policies, and ~~guidelines~~ *review process* developed ~~under~~ *for purposes of* the Alaska Coastal Management Act.

Chapter 7. Other Issues

G. Other

The forest practices act will be amended to include this additional language.

> Nothing in this act shall diminish the rights of Alaska Native Corporations or Alaska Natives or diminish their privileges and immunities with respect to land conveyed to them under the Alaska Native Claims Settlement Act, as amended.

Chapter 8. Funding

Funding of $1.2 million will be required to implement the act. The funding will provide the agency review and field presence necessary to strengthen resource protection using a strong forest practices act while retaining a strong timber industry. The legislature should provide that funds come from receipts derived from timber sales on state lands, 25% of which would go to reforestation. If additional funds are required, the legislature should look to funds to be derived from other sources, in light of the standing timber and other costs contributed from the forest products industry through the terms of the proposed agreement, and contributions made by other forest users.

The funding required by DNR, DF&G, and DEC are outlined in a series of memos in the appendix to this report.

Part III - Implementing the Agreement-in-Principle

Chapter 1. Legislative Changes

Legislation to implement this Draft Agreement-in-Principle is available for review. Assuming ratification by steering committee member groups, legislation will be introduced during early April with the intent that, if possible, it be passed this legislative session.

Chapter 2. Promulgating Regulations

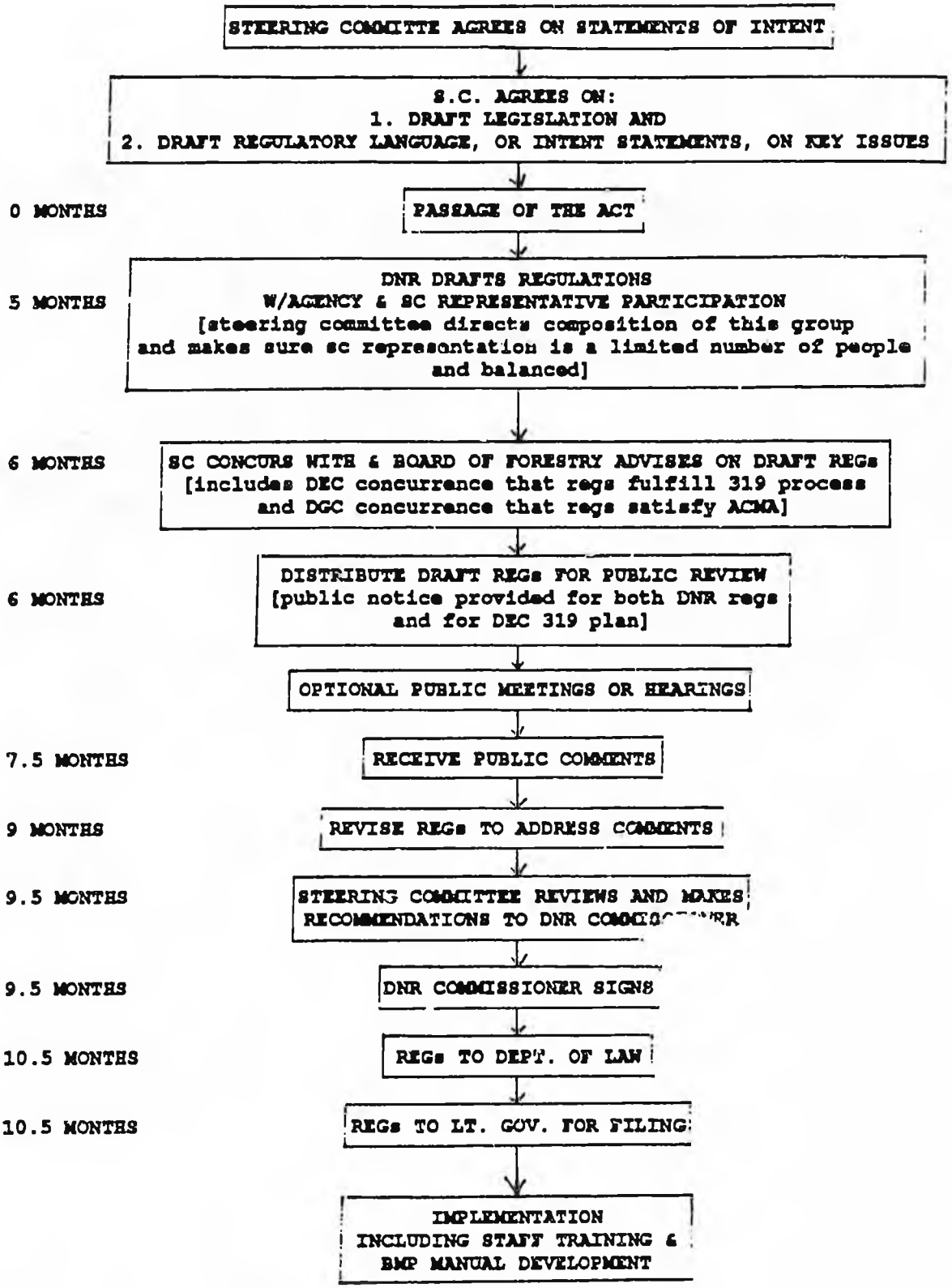
If legislation is passed this session, DNR will draft and promulgate regulations consistent with the legislation and with the final agreement-in-principle.

A process and an approximate schedule for promulgating the regulation is outlined on the following page. After passage of the act, DNR with participating steering committee representatives will draft regulations. Before distribution for public review, the steering committee will concur and the restructured Board of Forestry will review the regulations. The final regulations are intended to be in place for the 1990 operating season.

DNR and DEC will establish a working group to develop appropriate water quality based standards for incorporation into forest practices regulations. The working group will recommend to DEC how these regulations will be promulgated. These standards may also be adopted or referenced in DEC regulations.

DEC's lead role for nonpoint source pollution, and DEC's responsibilities for water quality are not changed from the provisions of existing state law.

Best management practices will be reviewed and updated in each area. Also, development and review of regulations will include consideration of boundary changes to DNR forest regions, or the creation of new subregions within DNR forest regions.



ASSUMED: - STATUTES AND REGs ARE ENFORCEABLE
- MANDATORY BMPs WILL BE IN REGs
- VOLUNTARY BMPs WILL BE IN THE BMP FIELD MANUAL

Chapter 3. Policy Changes

A. Consultation/Education/Training

ISSUE

Forest Practices Statues, Regulations and Processes are now complex and will become more complex. Several agencies are involved with their statutes and regulations; public involvement will be more extensive as time proceeds. An effective information transfer program needs to address three factors: consultation, education and training.

FACTORS DEFINED

CONSULTATION: Several avenues of communication must be developed
- * DNR with DF&G, DGC, DEC
- * DF&G, DGC, DEC with DNR
- * DNR with citizen groups and vice versa
- * Agencies with operators

EDUCATION: All involved parties must understand existing, modified and new processes. Resource managers and interested citizens must understand the resources being managed and/or protected including the public resources affected by forestry and the rights and needs of private landowners and the timber industry. All involved parties must understand the rights and responsibilities of forest practice processes.

In addition to the involved parties understanding specific processes, the general public has a need to know about Resource Management, the negotiated agreement and its results.

TRAINING: an extensive training process will be required to implement the negotiated agreement.

AUDIENCES DEFINED

RESOURCE MANAGERS: Agency and other professional managers; ie. Foresters, Biologist, etc. Throughout this paper, we are assuming that foresters, including DOF foresters need to be trained with respect to the forest practice act but also that DF&G biologists need to be trained in the needs of the forest industry and timber harvest methods.

FIELD MANAGERS: Resource Managers assigned to field operations (as contrasted with administration)

INVOLVED PARTIES: Fisherman, Environmentalist, forest industry (Administration), and others

OPERATORS: Loggers and others responsible for forest harvest operations

PROPOSALS

I. FOREST PRACTICES HANDBOOK
- A Target audience: Resource Managers and operators
- B Goal: Present a useful handbook designed for field operations
- C Format: A Forest Practices handbook could be composed of several sections

Section 1: An "English Language" version of
- a. How/where to obtain forest practices notifications and other permits
- b. A clear explanation of agency responsibilities and "Lead Agency" status

c. Addresses/phone numbers of DNR, ADF&G, DEC, DGC Central/field offices
Section 2: Forest Practices Regulations
Section 3: Appendices
a. Forest Practices Statute
b. Other Appropriate Statutes/Regulations

Section 4: A Forest Practices "manual" which would provide Division of Forestry Region-specific information. Possible topics are road construction/use/maintenance, critical wildlife information, weather, soil, fire, etc.

NOTE 1: The handbook must be written/presented in a style that encourages use by non-technicians.

The manual could be a separate volume. A combined volume would necessitate only one book... one less thing to lose or carry. A separate volume would allow greater coverage.

The manual could be region-specific, eg. through separate documents or one piece that discussed all regions.

D. Costs: An individual must collect, collate and properly prepare substantial materials. Writing and editing is needed to properly present materials. Printing/binding costs (if necessary) must be paid. All the above costs would most likely be incurred by DNR and/or ADF&G.

II. OVERVIEW WORKSHOPS

A. Target Audience: Resource Managers
Secondary Audience: Involved Parties

B. Goal: Transfer the overview of the forest practices and state forest planning process to Resource Managers and others. This will be an extensive (verses intensive) information transfer to build a sense of general understanding and philosophy.

C. Format: A series of workshops will be held. Four likely locations are: Ketchikan, Juneau, Anchorage, and Fairbanks.

D. Meeting Structure: Presentations of "Why we did this (as a group) and individuals were involved. A series of 2 or 3 panels could generally cover in a sense, the following topics: The Resources, Statutes, Regulations, Processes.

E. Costs: Workshop costs could be covered through a prorated charge. Video costs could be shared (See note 3 below) by all participants.

NOTE 1: One day workshop with 50-75 people maximum.

NOTE 2: Some general sessions would be appropriate. These could follow lunch (or later if need be). Trained facilitators with specific tasks/goals are recommended.

NOTE 3: Workshops should be video-taped for later editing into 25-30 minute presentations.

III. FIELD WORKSHOPS

A. Target Audience: Field Managers and Operators

B. Goal: Develop intensive (versus extensive) understanding and implementation of Forest Practices regulations and processes (including how it affects both public resources and the timber industry).

C. Format: Field workshops will be held at DNR - Division of Forestry Area Offices (or other appropriate places). These 1 1/2 to 2 day workshops will concentrate on Forest Practices Regulations/process implementation. The first day would be devoted to "in-office" training/assessments. The second day would be field oriented. The first workshops would occur 30 to 60 days following the closest regional workshop. A follow-up workshop would occur within six months and thereafter on an annual basis.

D. Cost: Workshop costs would be borne by participants. Transportation and per diem cost should be within existing budget abilities.

E. The Board of Forestry will be invited to all workshops.

IV. COMMUNICATION COMMITTEE

A. Target Audience: The lay public

B. Goal: 1) Build within the lay public a conceptual understanding of resource management and conflicts/trade-offs/solutions inherent in resource management. 2) Build an informed constituency that will support resource management and budgetary needs to adequately implement/enforce forest practices regulations and processes.

C. Format: DNR & DF&G public information personnel will have the responsibility to receive and edit news releases, breaking stories concerning forest practices, the revised forest practices act, and other pertinent items. Public information personnel will have the ability to steer media members to newsworthy stories, such as cooperative fire/wildlife management on a fire; solving a difficult bridge crossing; a joint reforestation/moose habitat study, etc.

Division heads will coordinate with the public information personnel to assure that they receive information in a prompt and understandable form. Public information personnel will release news to the appropriate print/electronic media in a timely and informative manner.

D. Cost: No additional cost is foreseen. Publicist orientations could be held by Division Directors' and other interested parties.

V. CROSS TRAINING

Resource management education (biology, forest management/engineering, hydrology, etc.) is highly technical and usually restricted to the primary resource being studied. Successful forest practices implementation will hinge, in part, to a more than rudimentary understanding of all resources and industries involved.

A two-part cross-training program is proposed:

A. Division Directors' will develop an agency cross-training program targeting field resource managers. The program should involve resource managers as active participants/coordinators. Certain aspects might involve university level expertise from Alaska and Pacific Northwest institutions. The State of Alaska, Board of Forestry (BOF) is a logical body to provide developmental/oversite guidance.

B. Many technical questions have been raised by the forest practices negotiations: wildlife population dynamics, hydrology, fish habitat, effect of timber harvest methods, etc. These questions have no answers, yet, and it is an exercise in futility to argue "my study against yours". A joint cooperative study committee is proposed. Each Forest Practices participant plus the University of Alaska would be offered a seat. Committee charter would be to (1) define the questions, (2) find who, if anyone, is addressing that or a similar question, (3) report findings and recommendations to the BOF.

The research function is an integral part of resource management. Research takes money. The BOF would be charged with seeking appropriate funding of project monies. Part 2 (above) is a long term project that could be best left for the State Forester and ADF&G Habitat Division to further develop.

VI. SUMMARY

The above discussion primarily addresses education,training, and information transfer. It doesn't adequately discuss consultation. It is assumed several memoranda of understanding (or one inclusive memorandum) will result from the negotiations. Those instruments should include formal understandings of who consults with whom, when and how.

A second,less formal series of consultations must occur among interested parties. This can occur partly as a function of the annual field meetings. The BOF also can play a useful role. The State forester has proposed to have BOF meetings and field trips held at regular intervals around the state. The public will be encouraged to attend and make their views known.

The above ideas can help Alaska move into the realm of cooperative resource management that will serve all the timber industry and state citizens.

VII. INFORMATION BROCHURE FOR STATE FOREST PLANNING

A. Target Audience: the general public & private timber operators.
B. Goal: 1) To better inform the timber industry, forest users, and the general public about DNR's land management process leading to timber harvest. 2) To inform the industry, and general public how to get involved in the process including comment and review, etc; to ensure that their concerns are addressed.
C. Format: Easily readable brochure or pamphlet.

Chapter 3. Policy Changes

B. Research and Monitoring

Monitoring

The Board of Forestry will coordinate the development of a plan for monitoring the statutes, regulations, and BMPs for their effectiveness in meeting state water quality standards.

The Board of Forestry will coordinate the development of a plan for monitoring the statutes, regulations, and BMPs for their effectiveness in meeting fisheries habitat requirements.

In addition, because of questions concerning the nomination process for the board of forestry, the board should review the nomination process after the first few years to determine whether members are truly representative of their interest groups; whether there is a sufficient pool of nominees to effect interested, effective board members; and whether the board is an effective forum for the discussion of forestry issues.

Research

The Board of Forestry, working with DNR, DEC, DF&G, and other affected institutions, and the forest-dependant industries shall conduct an annual survey of research and monitoring needs related to forest practices and their effect on public resources. The board shall review research proposals and shall make recommendations to the governor and the legislature to promote research projects which would address these needs.

A number of research topics have been identified. The most important research needs identified were identified by the technical committee as part of the riparian management discussion. They concern the interaction of forestry and fish.

1. Probability of riparian leave trees to provide large woody debris.
2. Probability of second growth timber to provide large woody debris.
3. Depletion/recruitment rates of large woody debris for interior Alaska streams.
4. Information on temperature sensitive streams throughout Alaska.
5. Information on winter water temperature effects on fish.
6. Second growth canopy closure effects on fish production.
7. Stand characteristics of trees next to streams: age, size, volume, species, etc.

The committee estimated that it would take from 2-5 years to conduct the research necessary to address the above items.

Other research needs have also been identified. There needs to be further research on the role of large woody debris as it relates to creation and maintenance of fish habitat, particularly in interior Alaska and certain stream types throughout the state. As other data needs are identified, they should be brought to the Board of Forestry. The board should work with the Alaska Cooperative Forestry/Fisheries Working Group and with other groups with research capabilities.

Chapter 4. Review of the Agreement

This agreement-in-principle and the recommended legislation are intended to be reviewed within three years. This three-year time is intended to allow for further research, and to gain experience implementing the act's regulatory and administrative standards -- especially the riparian standards and the enhanced notification system. It is presumed that a representative group will be convened for the review, or that the review will be conducted by the restructured Board of Forestry; in either event, this review will be done with full public input and participation.

An effective review requires that monitoring and research be an on-going part of the forest practices program. To assess the effectiveness of the riparian standards in protecting fish habitat and allowing a viable timber industry, it will be necessary to conduct the research and monitoring program outlined on the previous pages, and for the Department of Natural Resources to maintain an accessible administrative record of decisions made under the act, especially requests and decisions concerning variations from design standards (as outlined on page 29). In addition, each year DNR, DF&G, and DEC will each present an annual report, independently, to the Board of Forestry and the legislature on the research for which they have statutory expertise, and make recommendations for any improvements necessary to rectify procedural or substantive problems.

This section will be added to draft legislation:

It is the intent of this legislature that the operation of the forest practices act and regulations be reviewed within three years of the passage of this act. This three-year time is intended to allow for further research, and to gain experience implementing the act and its regulations. It is the intent of this legislature that a representative group be convened for the review, or that it be conducted by the board of forestry. In either event, it is the legislature's intent that the review occur with full public input and participation, and its recommendations be forwarded for legislative review, and for any needed changes in legislation.

Appendix A

Information List for Enhanced Notification System

We envision a two-tiered review consisting of an initial, broader scale, voluntary plan of operations and a detailed plan of operation submitted at least 30 days prior to commencement of activities.

Annual Plan

The landowner should provide an annual operating plan to the agencies and the public. While the plan is voluntary, it is useful for the agencies, the public, and the landowner. Such a plan would provide the agencies with an early look at proposed harvest activities to help them begin an early review. It would also help the agencies provide information, suggestions, and potential problem areas to the landowner. For the landowner, it is a way to get agency and public feedback to plans early in the process. For the public, it provides early notice and information.

For DNR to distribute the annual operating plan to the public, the landowner must provide either a summary or a report in distributional form (i.e., a format that can be xeroxed).

The list that follows contains the information necessary for such a plan to be useful to the agencies, and the information should be provided when known.

(1) The name and address of the landowner (and operator, if known).

(2) A map showing the approximate unit boundaries, to the extent known.

(3) The location of existing roads and anticipated location of new mainline and spur roads, sort yards, and log transfer sites.

(4) Description and anticipated location of campsites, fuel storage sites, and associated water, sewer and solid waste disposal facilities.

(5) An identification of known streams and tributaries and, to the extent possible, the classification of those streams.

(6) To the extent possible an identification of steep slopes greater than 60% where harvesting is expected to occur and measures that may be necessary to prevent mass wasting.

(7) A description of known or potential anadromous fish and wildlife habitats in the units and the management options to minimize impacts on those habitats pursuant to the act and regulations.

(8) To the extent possible, a general description of anticipated timber harvesting operations and transportation needs over a five-year period in the affected drainage where the activities are proposed.

(9) Whether the 5% cap is expected to be invoked during the detailed planning process, if known.

(10) Any other available information such as that required under the Detailed Plan Review, or any information considered relevant by the landowner.

Detailed Plan of Operations.

A detailed plan of timber harvesting operations shall be filed with the department in writing by a person who owns, leases, or otherwise controls or operates on all of any portion of any timber land and one who plans to harvest the timber thereon. The format and type of information required for the detailed plan of operations will be refined as regulations are written. The information required shall be sufficient for the agencies to adequately determine whether the planned forest activities are consistent with the Forest Practices Act and regulations, and will take into account the information needs of the public. According to current practices, DNR does not accept incomplete notifications, and the regulations will confirm this practice. The plan shall be public information.

(1) The name, address, and approving signature of the land owner.

(2) The name, address, and approving signature of the timber owner.

(3) The name, address, and approving signature of the timber operator.

(4) A description of the proposed operation and land on which the work is proposed to be done, including an orthophoto or accurate map at the harvest scale available indicating:
(a) the location of all known streams and anticipated stream crossing structures;
(b) the location of all proposed and existing roads, landings, sort yards, and log transfer facilities;
(c) roads identified to be put to bed;
(d) unit boundaries and yarding plans;
(e) areas of 60% or greater slope or other known areas with high potential for soil failure;
(f) locations where rigging is proposed to be hung through streamside buffer strips or across anadromous fish streams;
(g) upland quarry or borrow site locations;
(h) overburden or waste material disposal areas;
(i) classification of streams and their tributaries in units; and
(j) description and anticipated location of campsites, fuel storage sites, and associated water and solid waste disposal facilities.
(k) all other proposed activities.

(5) A description of the silvicultural systems to be applied, including the type of logging equipment to be used and designated areas where full log suspension will be achieved.

(6) A description, based on available information, of the methods to be used to avoid accelerated erosion and mass wasting from roads and other timber operations to be conducted within a drainage.

(7) A description of proposed measures for reforestation and drainage erosion control.

(8) Special provisions, if any, to protect fish habitat within the area of operations.

(9) The expected dates of commencement and completion of timber operations.

(10) Any other information required through regulation to meet the rules and standards of this chapter.

(11) A xeroxable summary for distribution to the public. The summary will describe the areas to be harvested, harvesting systems and roading activities, and any other information the landowner considers relevant. The summary should contain a xeroxable map showing the location of cutting units, streams, areas of

steep slopes and any other information that the landowner considers relevant.

(12) Voluntarily, special actions to protect public resources not required by the forest practices act.

(13) Operating area, planning area, riparian leave areas, and any variations from regulatory standards. If the 5% cap will be invoked, then the supporting basal area calculations.

steep slopes and any other information that the landowner considers relevant.

(12) Voluntarily, special actions to protect public resources not required by the forest practices act.

(13) Operating area, planning area, riparian leave areas, and any variations from regulatory standards. If the 5% cap will be invoked, then the supporting basal area calculations.

Alaska Loggers Association, Inc.

111 STEDMAN, SUITE 200
KETCHIKAN, ALASKA 99901
Phone 907-225-6114

April 23, 1989

Mr. Tom Hawkins
Assistant Commissioner
Alaska Department of
Natural Resources
P. O. Box 107005
Anchorage, AK 99510

Dear Tom:

The Alaska Loggers Association (ALA) Forest Practices Act Committee has reviewed the status of the proposed Forest Practices Act as it came out of the Steering Committee's meeting of April 22, 1989. We recognize that many people have put in long hours and effort in a thoughtful attempt to reach a consensus on a bill.

Regrettably, the process has not left enough time for maturation of all of the issues that need to be addressed to the point of consensus. Furthermore, the process has not left enough time for review of the proposed legislation by all of the people in our Association who would be affected by it. As you know, the people who actually do the timber harvesting are the people who will bear the burden of performing these tasks and we simply have no choice other than to share with them the requirements of the new legislation and to discuss with them in detail what it would mean to them. We would then want to come back with proposed changes. This is part of the give and take of any legislative process, and certainly part of what an Association is required to do for its members. We therefore ask for your understanding in appreciating why the Alaska Loggers Association cannot say "yes" to proceeding with this legislation in this session of the Legislature. Indeed, we believe that were the ALA to agree to it, there would not be sufficient time for the Legislature to review this important change in public policy in a manner which adequately considers the issues raised and what they will mean to State resources in the future.

Accordingly, we propose that after everyone involved with this process has had an opportunity for a much needed rest, we return to the negotiating table and continue the discussions so that we can introduce responsible, fully thought out and fully reviewed legislation in the 1990 Legislature. The unease which so many of the members of the Steering Committee seem to feel makes

Alaska Loggers Association, Inc.

it clear to the ALA that other members have the same concerns, but they are also concerned about "appearing" to be pulling out of the process. For example, we note the Southeast Alaska Conservation Council's (SEACC's) position statement on April 19, 1989, in which SEACC said, among other things,

> SEACC's participation in the consensus process was premised on completion by March 1. Seven weeks later we continue to debate. Chances for passage of this agreement in the current legislative session are poor at best.

Given our concern on timing and that of others, the ALA believes that good public policy requires the kind of careful review that the continuation of the process proposed above would bring. It is far better to have good legislation which all of the participants in the process can support seven to eight months from now than to have legislation which is not complete, has not been reviewed by our members and cannot be reviewed by the Legislature itself in a responsible manner simply for political appearances. We believe we have a greater responsibility to the public than that.

Accordingly, the ALA cannot ratify the proposed legislation at this time, but would like your response to our proposal for continuing the effort.

Yours very truly,

Donald L. Finney
Manager,

Klukwan Forest Products, Inc.
P.O. Box 34659 • Juneau, Alaska 99803-4659
(907) 789-7104 Fax (907) 789-0675

April 24, 1989

Commissioner Lennie Boston-Gorsuch
Dept. of Natural Resources
400 Willoughby Avenue
Juneau, Alaska 99801

Dear Commissioner Boston- Gorsuch:

We understand that responses from steering committee members with regard to approval or disapproval of the proposed Forest Practices Act are due today.

We have carefully considered our position and find that we cannot endorse the proposed legislation as it stands. Having said that, I must also point out that we do support a majority of the provisions of the proposed bill. The time frame allotted for this process was simply not adequate to allow all issues to be properly debated and resolved. As a consequence, a number of points which were not entirely satisfactory to a some of the participants were included simply to have something to vote on.

We have been concerned from the outset that the time frame allotted for this process was not adequate. While all participants have worked long and hard, and in good faith to achieve consensus, there was simply not enough time. A similar process in the State of Washington, after which the Alaska process was modeled, took much longer to complete.

Given that it is unlikely that this legislation can be passed in the short time remaining in this session, we see no reason why the proposed bill cannot be further refined and be ready for introduction at the beginning of next session.

We feel we have made a great deal of progress on this issue. We sincerely hope we are afforded the opportunity to bring it to a conclusion on a rational and carefully considered basis.

Sincerely,

Robert G. Loiselle
Chief Executive Officer

RGL:mm

cc: Southeast ANSCA Village Corporations

STATE OF ALASKA

STEVE COWPER, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF FORESTRY

400 WILLOUGHBY AVENUE
JUNEAU, ALASKA 99801
PHONE: (907) 465-2491

April 26, 1989

Mr. Walt Begalka
c/o Ketchikan Pulp Co.
Box 6600
Ketchikan, AK 99901

Dear Mr. Begalka:

Forest Practices negotiations have been underway for several months and people worked hard to bring the project to fruition. It is indeed sad that we didn't get there. As of 6:00PM Monday 24 April 1989, Commissioner Gorsuch declared the project dead on arrival. We had polled, throughout the day, the various key negotiating team members and found two issues on which we could not come to agreement.

The first issue dealt with Forest Practices Act treatment of the State/Federal statutory relationship. The second issue which eluded agreement was language dealing with state land riparian buffer zones. A last minute modification to expand the buffer zones was found unacceptable to some. Based on the fact that we potentially had four groups unable to achieve consensus we declared the agreement to be unobtainable.

DNR presently is assessing what we do and do not have and how we might best proceed. Commissioner Gorsuch backgrounded the Governor's office yesterday (Tuesday 25 April) and direction is expected shortly.

More as it develops.

Sincerely,

TSD6 Dick

Malcolm R. Dick, Jr.
State Forester

cc: Commissioner Gorsuch
Forest Practices Steering Committee

10-J5LH

MEMORANDUM

State of Alaska

DEPARTMENT OF FISH AND GAME

TO: Dave Redburn
Ecologist
Division of Environmental Quality
Department of Environmental Conservation

DATE: January 13, 1989

FILE NO.:

TELEPHONE NO.: 465-4105

SUBJECT: Completion of 319 RSA - Timber Harvest

FROM: Bruce H. Baker
Deputy Director
Habitat Division
Department of Fish and Game

The Alaska Department of Fish and Game has completed its evaluation of nonpoint-source pollution controls related to timber harvest and associated activities as required under the Reimbursable Services Agreement (RSA) with the Alaska Department of Environmental Conservation. The enclosed report completes the department's obligation under the RSA.

We suggest you distribute the draft 319 nonpoint-source pollution control strategy for agency review before commencing the public review.

Thank you for the opportunity to contribute to the development of the Alaska Nonpoint-Source Pollution Control Strategy. We look forward to working with you further in the completion of the statewide strategy. If you have any question on the enclosed report, please contact Lance Trasky or Glenn Seaman.

Enclosure

cc: Lance Trasky
Al Ott
Rick Reed
Glenn Seaman

DRAFT

EVALUATION OF NONPOINT-SOURCE POLLUTION CONTROLS RELATED TO TIMBER HARVEST AND ASSOCIATED ACTIVITIES

Prepared by

Alaska Department of Fish and Game
Division of Habitat

Prepared for

Alaska Department of Environmental Conservation
Division of Environmental Quality
Water Quality Management Section
Juneau, Alaska

January 1988

DRAFT

TABLE OF CONTENTS

INTRODUCTION

The Alaska Department of Environmental Conservation (ADEC) is preparing the State of Alaska Nonpoint-Source Pollution Control Strategy as mandated by Congress through the 1987 amendments to Section 319 of the Clean Water Act. The state's strategy must be submitted to the Environmental Protection Agency (EPA) for approval. The nonpoint-source pollution control strategy must identify and evaluate existing nonpoint-source pollution controls, programs and activities needed to control nonpoint-source pollution, likely sources of program funding, and evaluate and update "best management practices" to control nonpoint-source pollution. The Alaska Department of Fish and Game (ADF&G) has had considerable experience in environmental monitoring of timber harvest operations and in evaluating the potential impacts of timber operations on water quality and fish and wildlife habitat. Because of this experience, the ADEC enlisted the services of the ADF&G to contribute to the timber harvest element of the state nonpoint-source pollution control strategy.

Four tasks were assigned to the ADF&G through a Reimbursable Services Agreement with the ADEC. Task 1 required the department to prepare a brief description of the effects of nonpoint-source pollution related to timber harvest and associated activities on water quality and fish habitat. It should be emphasized that this is a summary of impacts, and is not intended to represent a comprehensive evaluation. Task 2 required the department to briefly describe federal and state regulatory programs and evaluate their effectiveness in controlling nonpoint-source pollution associated with timber operations. Under Task 3, the department prepared an evaluation of primary data gaps on the information needed to evaluate and control the impacts of nonpoint-source pollution from timber harvest operations on water quality and fish habitat. Finally, Task 4 required the department to recommend specific measures and activities to avoid or minimize timber harvest-related nonpoint-source pollution with emphasis on avoiding or minimizing the effects on fish and fish habitat.

This report has been submitted by ADF&G to ADEC in fulfillment of the timber harvest portion of the referenced Reimbursable Services Agreement.

TASK 1: ASSESSMENT OF IMPACTS

Introduction

The timber and fishing industries are both important components of Alaska's economy. The harvesting of timber resources and associated activities, if not conducted properly, can be a major source of nonpoint-source pollution of Alaska waters and have significant adverse impacts on fish habitat and fish. The department conducted a review of recent literature related the effects of timber harvest and associated activities on water quality and fish habitat. A brief discussion of our findings is provided below. This discussion is intended to be a summary of potential impacts based on recent literature. A detailed discussion by the Alaska Department of Fish and Game of information available prior to 1985 on the potential impacts of logging on fish and wildlife resources in southeast Alaska is provided in Sigman (1985). A copy of this report is included in Appendix A.

Problem Description

Forest practices such as harvesting, site preparation, reforestation, and road construction can result in significant nonpoint sources of pollution. Timber harvest and related activities have a high potential of damaging fish habitat in Alaska (Everest and Harr 1982). Sediment and turbidity has been identified as the nation's most serious threat to water quality and aquatic habitat (Lloyd et al. 1987).

Both trees and fish are renewable resources. The rotation period for merchantable conifers in Alaska is 80 to 150 years (Reed and Harms 1956, Harris and Farr 1974, Sampson et al. 1988). Depending on the species, salmon stocks complete their life cycle every 2 to 5 years. In southeast Alaska and the Kenai Peninsula/Prince William Sound area, commercial fishing contributes 40 and 44 percent of total income generated by private basic industries, and this proportion is rising (Berman and Hull 1987). With the high level of public interest in protecting water quality and fish resources, it is imperative that the impacts of timber harvests and associated activities be avoided or minimized.

Adverse Effects of Timber Harvests on Water Quality and Fish

Unlike point sources, which enter streams at discrete, identifiable locations, nonpoint sources of pollution are often diffuse. Consequently, nonpoint-source pollutants are difficult to isolate and control. Activities associated with most timber harvest

activities can cause nonpoint sources of pollution. These activities include road construction and maintenance, tree removal, yarding, petrochemical spills, silvicultural treatments (e.g., slash burning, scarification, and application of fertilizers, pesticides, and fire retardants) are nonpoint sources. Water quality parameters most affected by timber harvest and associated activities include sediment, turbidity, temperature, dissolved oxygen, dissolved inorganic substances, pH, color, and toxic substances (Brown 1983). A brief discussion of each of these parameters is provided below.

SEDIMENT

Clearcuts, logging roads, and yarding methods trails accelerate the natural process of sedimentation in forest streams by aggravating mass wasting, surface erosion, and channel scour (Brown 1983, Everest et al. 1987, Gregory et al. 1987).

Mass Wasting

Mass wasting is the dominant natural process of stream sedimentation in southeast Alaska (Swanston 1969). The frequency and yield of mass wasting are greatly accelerated by clearcutting due to deterioration of tree roots, which bind thin soils to bedrock on glacially oversteepened slopes (Rood 1984, Swanson et al. 1987). Debris torrents (i.e., rapidly moving slurries of soil, rocks, and woody debris in steep stream channels) are an extremely deleterious type of mass wasting, because the streambed is scoured to bedrock and massive debris piles can block channels and provide long-term sources of sediments (Rood 1984). Logging roads also exacerbate mass wasting, eroding at 25-344 times the rate of forested areas in the Pacific Northwest (Amaranthus et al. 1985). The principle causes of failures of logging roads appear to be overloading steep slopes with fill or sidecast material, inadequate construction, and failure to maintain adequate drainage (Rood 1984, Amaranthus et al. 1985, Krag et al. 1986).

Surface Erosion

Surface erosion on slopes is limited in undisturbed forests and clearcuts, because precipitation is transported predominantly as subsurface flow. However, surface erosion from landslide scars can be a significant source, and mass wasting is accelerated by clearcutting and logging roads. Surface erosion from roads and skid trails is a major source of fine sediments (Cederholm and Reid 1987, Everest et al. 1987). Stream sedimentation is greatest when logging roads are poorly designed, sited, and maintained; heavily used; or in areas of high precipitation (Amaranthus et al. 1985, Sessions et al. 1987, Everest et al. 1987).

Channel Scour

Channel scour is accelerated by wedges of bedload material from

mass wasting and by harvesting activities that destabilize streambanks, such as cutting trees within the floodplain, yarding trees through streams, and operating equipment within or adjacent to streams (Brown 1983, Hartman et al. 1987, Swanson et al. 1987).

In forest watersheds, channel stability depends, to a large degree, on the presence and stability of large woody debris (Bissor et al. 1987). Large woody debris is the principal structural feature of small to moderate-sized streams. Larger streams are capable of moving tree boles and root wads at high flows; however, by deflecting and slowing the current, large woody debris also stabilizes these streams by minimizing bank erosion, creating pools, and providing long-term storage for fine sediments, as well as clean spawning gravels. Clearcutting to the streambanks eliminates the source of large woody debris until the timber regains suitable size. In Alaska, this may be a century or more, depending on species, stream size, and local conditions. Streams which have lost, or have less stable, large woody debris due to logging have experienced increased bank erosion, bedload scour, riffle areas, suspended sediments, and sedimentation of spawning and rearing habitat (Bisson et al. 1987).

Adverse Effects of Sediments on Fish

Pulses of suspended sediments can be deleterious to fish either directly or through reductions in available prey (Brown 1983, Everest et al. 1987). Sediment concentrations are seldom high enough to be directly lethal to fish. However, sublethal concentrations retard fish growth and increase emigration. Juvenile salmonids experience increased stress from reductions in visibility, greater difficulty in capturing prey, and changes in territorial behavior associated with increased stream turbidity. Suspended sediments can also abrade fish gills causing further stress. Suspended sediment reduces densities and species composition of aquatic macroinvertebrates consumed by fish.

Fine sediment that settles to the streambed can also alter epibenthic productivity, and benthic macroinvertebrate densities and species composition (Brown 1983, Everest et al. 1987). Fine sediments reduce substrate permeability. Low levels of intragravel dissolved oxygen suffocate fish eggs and alevins. A high proportion of fine sediments also prevent emergence of the fry from the streambed. The effects of fine sediments are typically most pronounced in low-gradient stream segments, where most of the spawning activity occurs.

Bedload transport of coarse sediments is increased by timber harvest and associated activities. This increased transport of course sediments scours salmonid food sources (i.e., benthic invertebrates) and spawning areas (Tripp and Poulin 1986a,b; Swanson et al. 1987). Coarse sediments may extend riffle areas, filling in pools used by rearing coho salmon. In some streams at low flows, flowing water may percolate through wedges of coarse sediments, completely dewatering the channel and preventing fish

passage (Cederholm and Reid 1987, Swanson et al. 1987). Undercut banks are destabilized by course sediments, further eliminating salmonid rearing habitat.

By increasing light and warming surface and intragravel waters, the short-term effect of clearcutting has led to increased stream productivity in coastal watersheds of the Pacific Northwest (Beschta et al. 1987, Hartman et al. 1987). However, unstable channels and increased sedimentation from mass wasting, road erosion, channel scour, and loss of large woody debris has ultimately reduced populations of juvenile and adult salmonids (Hartman et al. 1987, Cederholm and Reid 1987).

WATER TEMPERATURE

Removing streamside vegetation elevates stream temperatures in summer and may lower stream temperatures in winter (Beschta et al. 1987). The acute effects of elevated water temperatures is less of a problem in southeast Alaska compared to other areas in the Pacific Northwest due to climatic and geographic conditions (Gibbons et al. 1987). However, water temperatures in some southeast Alaskan clearcuts have reached levels where salmonids were stressed. Variation in water temperatures are likely to be more problematic in some areas of southcentral and interior Alaska, where discharge of small streams is sluggish and streams are exposed to more solar radiation in summer and colder temperatures in winter than in southeast Alaska. Stream temperatures begin to return to a normal range as the riparian vegetation returns which generally occurs in 5-30 years, depending on size of stream, silvicultural treatments, and other factors (Brown 1983, Beschta et al. 1987, Hartman et al. 1987, Holtby 1988).

Slightly elevated water temperatures may have adverse affects on fish (Beschta et al. 1987, Hartman et al. 1987). In British Columbia, salmonid alevin emerged from the gravel sooner, yearling coho salmon and smolts were more numerous, and smolts emigrated earlier in streams with slightly warmer intragravel water temperatures (Hartman et al. 1987). However, the returns of adult salmon to the study area streams were lower than expected. The reduced return was believed to be related, in part, to an increase in mortality resulting from early emigrating salmon smolts in colder ocean waters. It appears that the timing and size of smolts emigrating to the sea may be critical, with the most advantageous period corresponding to the historical or pre-logging peak emigration (Hartman et al. 1987).

Although the number of yearling coho may increase as a result of removing trees along the stream, recent studies in British Columbia and southeast Alaska have shown significant declines in overwintering populations of juvenile coho, particularly when large woody debris is scarce (Heifetz et al. 1986, Johnson et al. 1986, Murphy et al. 1986, Hartman et al. 1987). Winter conditions appear to be the critical factor limiting population size. More coho

salmon spend two years rearing in fresh water in Alaska compared to one year in British Columbia or the Pacific Northwest; hence, the deleterious effects of timber harvest (particularly sedimentation and loss of large wood debris) may outweigh any short-term benefits of elevated stream temperatures and productivity (Everest et al. 1987).

DISSOLVED OXYGEN

Naturally low levels of dissolved oxygen have been implicated in fish kills in some streams in southeast Alaska (Gibbons et al. 1987). Elevated temperatures in clearcut areas aggravate the problem during summer low flows by reducing the amount of dissolved oxygen in the water. Decomposing logging slash and elevated temperatures collectively reduce dissolved oxygen in surface and intragravel waters. In swift streams, reductions in dissolved oxygen are seldom a problem because the streams are quickly reaerated (Brown 1983, Beschta et al. 1987). In slower streams, particularly the portions of streams used for spawning, reductions of dissolved oxygen have resulted in adult mortality. Dissolved oxygen levels in the spawning substrate recover much more slowly than in surface waters because of poorer intragravel circulation (Brown 1983). Logging residue, including twigs, needles, and bark, is frequently incorporated in the streambed following timber harvest operations. The biological oxygen demand for decomposition of this organic debris further depletes the dissolved oxygen required by eggs and alevins and reduces the interstitial flow of water which would normally reaerate water in the redd and carry away metabolic wastes (Brown 1983, Gregory et al. 1987, Beschta et al. 1987).

DISSOLVED INORGANIC SUBSTANCES, pH, AND COLOR

Concentrations of dissolved inorganic substances, such as nitrates and phosphates, frequently peak in streams following the first rainfall after harvest (Brown 1983). Levels of dissolved inorganic substances may follow this pattern of peaking after rains for several years. Slash burning results in higher concentrations of dissolved inorganic substances; however, post- logging concentrations rarely exceed levels that are detrimental to fish (Brown 1983). Streams may also become slightly more acidic or colored as a result of logging, but this has been a short-term, relatively insignificant problem in the Pacific Northwest. Forest fertilization, particularly addition of phosphorus, which is a limiting nutrient in southeast Alaska, can accelerate eutrophication of lakes (Norris et al. 1983). Intensively managed forests in the Pacific Northwest have been fertilized for many years and this practice is being applied more commonly in British Columbia. In Alaska, fertilizers have been used experimentally but not yet on an operational level (Koski and Walter 1981). Fire retardants are composed of similar substances as fertilizers and would have similar effects (Brown 1983, Norris et al. 1983). Fire

retardants may be used to retard fires in southcentral and interior Alaska, due to drier conditions. Intensive management of forests for timber may lead to an increased use of fire retardants in the future (Norris et al. 1983).

TOXIC SUBSTANCES

Toxic substances can be introduced into forest streams as a result of logging and subsequent silvicultural practices (Brown 1983, Norris et al. 1983). These substances include organic leachates, fertilizers, fire retardants, pesticides, and spilled petrochemicals. Organic toxins are leached from slash which is left in, or washed into, streams (Brown 1983). Some of these leachates are toxic to fish and macroinvertebrates and also increase biological oxygen demand. Reductions in dissolved oxygen will probably affect fish and invertebrates before the toxins, however. Herbicides and insecticides have yet to be used in Alaska on an operational scale (Koski and Walter 1981). However, pesticides are commonly used to facilitate regrowth of silviculturally desirable trees in forests outside of Alaska (Norris et al. 1983), and they may be used more frequently in Alaska in the future. Small petrochemical spills occur during logging activities, and these may have a cumulative effect on fish, especially in small, low-gradient streams; however, no research has been conducted on this problem.

TASK 2: EXISTING WATER QUALITY AND AQUATIC HABITAT PROTECTION PROGRAMS

Introduction

Programs which protect water quality and aquatic habitat include land use designations, such as parks and refuges, and land use laws and regulations. Portions of southeast and southcentral Alaska have been designated national parks and monuments and state parks. These land use designations are an effective means of protecting water quality and aquatic habitat from the adverse impacts of timber harvest in that they prohibit timber development in those areas. However, with the exception of Admiralty Island and Misty Fiords National Monuments, they contain few commercially viable forest lands. Other specially designated lands include national wildlife refuges and state game refuges, sanctuaries, and critical habitat areas. Although these area designations were made with the intent of protecting fish and wildlife habitats, timber harvest is not statutorily prohibited in these areas.

The primary means of controlling nonpoint sources of pollution is through federal and state land use laws and regulations. A summary of the principal federal and state water quality and aquatic habitat protection programs and their effectiveness in controlling nonpoint sources of pollution is described below.

Federal Laws

Federal laws include the National Forest Management Act of 1976, Forest and Rangeland Renewable Resources Planning Act of 1974, Endangered Species Act of 1973, National Environmental Policy Act of 1969 (NEPA), Multiple Use Sustained Yield Act, Fish and Wildlife Coordination Act, and Clean Water Act. The most pertinent of these are discussed below.

NATIONAL FOREST MANAGEMENT ACT

The National Forest Management Act of 1976 (Public Law 94-588) requires the U.S. Forest Service (USFS) to prepare plans for managing multiple uses of national forest lands. Plans were developed for the Tongass and Chugach National Forests in 1979 and 1984, respectively. The plans were accompanied by environmental impact statements, in accordance with the provisions of the National Environmental Policy Act (NEPA). The Tongass plan is currently being updated and revised. In 1986, the USFS compiled and refined existing standards, guidelines, and prescriptions for fish habitat protection in a "Aquatic Habitat Management Handbook." The handbook established criteria for stream classification, buffer

strips, and management of large woody debris and provided best management practices (BMPs) to meet the state's water quality standards.

Guidelines contained in national forest plans may be effective in protecting water quality and fish habitat on Forest Service lands from the adverse effects of individual timber sales. Region-wide, however, the USFS has been required by the Alaska National Interest Land Conservation Act to provide for harvests of 4.5 billion board feet per decade. Many of these sales require access, and the USFS is constructing more roads than it would in an unsubsidized program. Forest roads are a major source stream sedimentation, through both sheet erosion of fine sediments and mass wasting (Everest et al. 1987). Cederholm and Reid (1987) found significant accumulations of sediments in stream substrates when forest roads comprised more than 2.5 percent of a watershed. Subsidizing forest roads to meet a timber harvest quota has increased the percentage of roads on watersheds and subsequently strained efforts to protect water quality and fish habitat.

NATIONAL ENVIRONMENTAL POLICY ACT

The NEPA (Public Law 91-190) requires federal agencies to prepare detailed environmental assessments or impact statements for all major actions likely to significantly affect the quality of the human environment. The intent of the act is to identify and avoid significant adverse impacts. The requirement for public involvement in the review process is intended to ensure that the sponsoring agency becomes fully aware of the environmental impacts of proposed actions before commitments are made. The USFS prepared environmental impact statements for the Tongass and Chugach national forest plans which provided options for minimizing nonpoint-source pollution from timber harvest activities. However, the broad alternatives addressed in the NEPA documents leave the USFS with considerable latitude to interpret the dictates of the management strategy, and there are limited opportunities for state agencies and the public to influence specific management decisions. Environmental impact statements may be an effective means for public oversight of USFS planning efforts, but have had limited effectiveness in minimizing nonpoint-source pollution associated with timber harvest activities.

FISH AND WILDLIFE COORDINATION ACT

The Fish and Wildlife Coordination Act (Public Law 85-624) is intended to compel federal agency consideration of impacts to fish and wildlife in proposals and authorizations to control or modify streams or other waterbodies, including wetlands. Federal agencies are required to give full consideration to the reports and recommendations of the Secretary of the Interior and state departments of fish and wildlife. This law is not very effective in controlling nonpoint-source pollution in Alaska, because it is

advisory in nature and not directly applicable to most timber harvest activities which do not fall under the provisions of the act.

CLEAN WATER ACT

The Federal Water Pollution Control Act of 1972, Clean Water Act of 1977, and Water Quality Act of 1987 are collectively referred to as the Clean Water Act (CWA) and are administered by the Environmental Protection Agency. The CWA is applied to timber harvests primarily through state water quality certifications of the Corps of Engineers' Section 401 and 404 permits and through the state water quality standards. The Alaska Water Quality Standards (AWQS) are adequate water quality standards, but not very fully implemented (see discussed under subsequent section on the AWQS).

The most recent CWA amendments require states, in part, to 1) develop detailed water quality assessments which identify bodies of water not meeting or maintaining water quality standards and identifying the nonpoint sources, and 2) develop a management program to reduce nonpoint-source pollution. The management program may specify a variety of measures, including education and training, financial and technical assistance, interagency agreements, BMPs, and regulatory programs. Regulatory programs developed pursuant to the CWA have the potential to be among the most applicable and effective methods for protecting water quality and aquatic habitat from nonpoint sources of pollution.

State and Local Laws

State and local laws which directly or indirectly address adverse effects of timber harvest on water quality and aquatic habitat are the Alaska Forest Resources and Practices Act and its implementing regulations, water quality standards, fish habitat permits, and the Alaska Coastal Management Act, and local coastal management programs.

FOREST RESOURCES AND PRACTICES ACT

The Forest Resources and Practices Act (FPA, AS 41.17) and forest practices regulations (FPR, 11 AAC 95) are authorities which regulate forest practices on state, municipal, and private lands. They are administered by the Division of Forestry (DOF), Alaska Department of Natural Resources (ADNR). The act established the Board of Forestry, which reviews forestry regulations and proposed changes to the FPA. Activities on state and municipal lands are required to comply with regulatory and administrative provisions of the FPA and FPR. Private operators must notify DNR when harvest activities are to begin, but no permit is required.

DRAFT

The BMPs in the DOF's Forest Practices Field Manual are not mandatory. Performance bonds of $500-1,000 may be ~~required~~. The FPA requires the Alaska Department of Environmental Conservation (ADEC) to prepare plans and guidelines for use of broadcast chemicals. The DOF has the authority to inspect and investigate forest operations on state, municipal, and private lands. Violations of the act or its regulations are subject to civil penalties, not to exceed $10,000 if convicted of a violation. The Commissioner of ADNR can also issue an order to halt operations for up to 21 days to correct violations or repair damages if irreversible or irretrievable damage is likely to result without immediate action. The ADNR may seek a court injunction for noncompliance.

Although the FPA was enacted to ensure that forest management perpetuates nonfederal forest lands and minimizes adverse effects on other forest resources and uses, it has had limited effectiveness in controlling nonpoint sources of pollution associated with timber harvest activities. The FPA and FPR are ineffective in controlling pollution, in part, because private landowners do not need an state approval to begin harvest operations, inspections are not required, the regulations and BMPs are not binding, and it is very difficult to enforce and prosecute violations because of the cumbersome civil penalty procedures and staff limitations.

Forestry boards which are dominated by members with a professional or financial interest in promoting the timber industry cannot adequately protect water quality (Ayer 1973, Anderson 1977, McCrea 1984). Nine of the 14 seats on Alaska's Board of Forestry are (or are nominated by) professional foresters, timber processors or union members, and Native corporations owning commercial timber stands. The Board of Forestry has been inactive, and there has been ~~little~~ incentive to deal with forest practices which affect other forest resources and uses.

The FPA only requires private landowners to notify the DOF when operations are to commence. Notification is not as effective as a permit, because a permit could include stipulations to protect water quality that are tailored to a specific location or harvesting operation. A permit could also be revoked if the operation was not complying with permit stipulations or other enforceable standards. The FPR use unenforceable, non-binding, and undefined language (e.g., "minimize," "to the extent feasible," "should") that is subject to wide interpretation, and the state forester has the discretion to grant waivers. The BMPs in the field manual are only advisory and a violation in the FPR must occur before the standards can be enforced.

The lack of any criminal penalties and insufficient performance bonds provide little incentive to comply with the standards. An alleged violator must be served a formal written complaint, requiring the respondent to answer the charges at a hearing. Only

the hearing officer can permanently stop a violation, impose a civil fine, or direct a violator to repair damages. This system is cumbersome, ineffective, and expensive. The state is currently reviewing the provisions of the act and regulations.

ALASKA WATER QUALITY STANDARDS

The AWQS (18 AAC 70) are administered by the ADEC. The AWQS establish minimum legal pollutant thresholds. The water quality parameters most pertinent to nonpoint-source pollution resulting from forest harvest activities are sediment, turbidity, dissolved gas, pH, temperature, dissolved inorganic substances, toxic and other deleterious organic and inorganic substances, and color.

The AWQS are adequate standards, but are not fully implemented. Neither the ADEC nor the ADNR require a permit or approval of timber operations to review timber harvest activities for compliance with the AWQS. Absent a permit, the water quality standards are reactive, in that they can only be enforced after a violation and impact to water quality and fish habitat has occurred. Because nonpoint sources are diffuse and unpredictable, they are difficult to detect and enforce. Moreover, the ADEC has not in the past, nor does it currently have, adequate staff to carry out logging inspections and enforce the AWQS on timber operations.

ANADROMOUS FISH ACT

The Anadromous Fish Act (AS 16.05.870) requires individuals and government agencies to notify the ADF&G and obtain prior authorization for all instream activities that might adversely affect anadromous fish in specified waterbodies. Permits issued under AS 16.05.870 are collectively referred to as fish habitat permits. The department may require a permit for timber harvest and associated activities that may pose a direct and substantial threat to classified anadromous fish streams.

Fish habitat permits are an effective means for protecting anadromous fish from some of the adverse effects of forest practices on state, municipal, and private lands. There are significant limitations, however. Many anadromous fish streams in forested areas are undocumented. Because of the legal requirement to show direct and substantial effects, AS 16.05.870 is not routinely exercised when a pollution source lies outside of the stream or upstream from documented anadromous fish habitat. In addition, the USFS argues that the Anadromous Fish Act does not apply within national forests. The ADF&G does not agree with the USFS, as its argument contradicts findings of the Alaska Attorney General's Office (AG Opinion No. 10, 1964; AG Opinion, August 11, 1987; AG Opinion, September 9, 1988). Nevertheless, the USFS does not routinely apply for fish habitat permits when it plans and conducts forest harvests and road construction activities on the

national forests. Similar to the ADEC, time and funding limitations restrict ADF&G field monitoring and compliance activities.

ALASKA COASTAL MANAGEMENT PROGRAM

The Alaska Coastal Management Act (AS 46.40), its implementing regulations (6 AAC 50, 6 AAC 80, 6 AAC 85), and approved district coastal management programs are collectively referred to as the Alaska Coastal Management Program (ACMP). The state standards (6 AAC 80) and local district policies apply to most federal, state, and local activities requiring a land use plan or permit.

The ACMP has limited applicability and effectiveness in controlling nonpoint-source pollution. The original standards regarding timber harvests on state, municipal, and private lands were replaced by the FPA and FPR. Few local coastal districts in southeast or southcentral Alaska have promulgated comprehensive policies specific to timber harvests. Absent the ability to attach stipulations through a forest practices permitting process (because permits are not currently required), the ACMP is powerless to regulate timber harvest activities on private lands.

The USFS has argued that activities on national forests, because federal lands are excluded from the coastal zone, are not subject to the ACMP. The state has maintained that their conclusions are not valid, as the CZMA and its implementing regulations require activities on federal lands that have direct and significant impacts on the coastal zone to be consistent with the ACMP. More recently, the USFS maintained that only the ACMP timber standard, 6 AAC 80.100, applies to the consistency review of USFS activities. The Alaska Attorney General (AG Opinion, September 29, 1988, File No. 663-87-0476) concluded that all of the ACMP standards apply to USFS authorized timber operations. As a result of these disagreements, the USFS does not routinely submit all logging plans and permit approvals to state for an ACMP consistency determination. The state and USFS are attempting to resolve this issue.

Conclusions

Existing water quality and aquatic habitat protection programs have had limited effectiveness in controlling nonpoint sources of pollution resulting from timber harvest operations. The state has had limited influence over timber operations on national forest lands, and existing state regulation of nonpoint source pollution on nonfederal timber lands has generally been ineffective, because of limitations in statutory authority, staff and funding to impose or enforce needed requirements. Additional measures are needed to more effectively control nonpoint sources of pollution.

TASK 3: GAPS IN EXISTING INFORMATION

Introduction

Important gaps in available information need to be filled through biological and water quality investigations and monitoring. Few studies have been done in Alaska, particularly in the southcentral and interior regions, to assess adverse impacts of forest practices on water quality and fish habitat. Research in other states and provinces may or may not be relevant to Alaska. Additional information is needed on the following topics to facilitate the objective analysis of the adverse effects of timber harvests on nonpoint-source pollution.

Major Gaps in Existing Information

DOCUMENTATION OF FISH HABITAT

Because of inadequate staff and funding necessary to survey remote forest lands, many streams supporting anadromous and resident fish have not been documented. Recent intensive stream surveys by ADF&G on forest lands of Prince William Sound, Kenai Peninsula, and the Susitna Valley indicated that only 25-30 percent of streams with anadromous fish had been previously documented. The AWQS require equal protection for all fish producing waters. However, there is currently no systematic cataloging of streams supporting resident (nonanadromous) fish populations on forest lands in Alaska, and very few of these streams have been identified. In addition to their ecological importance, resident fish species are an important component of Alaska's rapidly expanding sport fishery. Stream surveys of roadless forested areas require the use of helicopters for access and are expensive. Stream surveys need to be conducted well in advance of any timber harvest, because the administrative procedures necessary to document a waterbody under the Anadromous Fish Act take almost a full year. Protection of fish resources on forest lands could be improved by funding and implementing a systematic stream survey program.

APPLYING EXISTING RESEARCH AND RECOMMENDATIONS IN ALASKA

Numerous studies in the Pacific Northwest and coastal British Columbia have documented adverse impacts of timber harvests on water quality and fish habitat. Notable examples of long-term studies are the Alsea River watershed (Hall et al. 1987) and H. J. Andrews Experimental Forest in Oregon, the Clearwater River (Cederholm and Reid 1987) in Washington, and the Queen Charlotte Islands (Tripp and Poulin 1986a,b) and Carnation Creek (Hartman et al. 1987) in British Columbia. Many of the findings from these and

other research projects are believed to be applicable in Alaska, while others may not be.

The chief difficulty in applying research findings from other regions is deciding which areas the differences are important and which they are not (Gibbons et al. 1987). Despite their many similarities, coastal watersheds in southeast Alaska differ in some respects from those in other Pacific Northwest states and British Columbia. For example, southeast Alaska's climate is wetter and colder, soils are thinner and less complex, slopes are steeper, parent materials are less weathered, forests are almost all oldgrowth, trees are predominantly Sitka spruce and hemlock, and a greater proportion of the juvenile coho salmon spend an extra year (i.e., two years total) rearing in fresh water.

Assessing similarities and differences where the variables are so complex will be a time-consuming task. It is advisable, however, to establish a clear understanding of the physical, biological, and regulatory conditions of other areas to assist in applying existing findings and recommendations in Alaska. This project could be accomplished by a university graduate student or a consultant with cooperation from state and federal resource agencies.

IDENTIFYING SIGNIFICANT VARIATIONS IN SEDIMENT LOADS

Sediment has been identified as the nation's most serious pollutant by the EPA and the American Fisheries Society. The AWQS for suspended sediments and fine sediments in spawning substrates allow very little variation from natural conditions. Implementing these standards, given the high variability in undisturbed watersheds, is a difficult task. Techniques need to be developed to detect elevated concentrations of fine sediments in streams affected by timber harvests activities and to differentiate these from background levels before they reach a level where stream productivity declines. This will better equip regulatory agencies to focus their effort on prevention of impacts, rather than documenting impacts after they have occurred.

Suspended Sediments

It is difficult to detect small, but biologically significant changes in suspended sediments caused by nonpoint-source pollution. Small changes in suspended sediment concentration (SSC) cannot be inferred from a few random samples taken at an unknown stream stage without controls. For example, accurately detecting a 10-20 percent change in SSC in a small stream in California would require 12,327 samples (Brown 1983). Fewer samples are needed if the threshold level is raised. To measure SSC 5 times the mean in the same stream would require only 4 samples. Relaxing the state's water quality standards to simplify detection of changes does not seem to be an advisable solution. However, if rigorous standards are to be maintained, sampling must include controls (i.e., above

and below or before and after the impact, preferably both) and be conducted at more than one location during a range of storm events (Brown 1983).

It may be possible in some instances to consider a limited area, such as a small watershed as a "point-source" (Brown 1983). Samples taken above and below a tributary's confluence with an undisturbed higher order stream, particularly while discharge is rising or at its peak, could be analyzed for statistically significant differences (Brown 1983). Roads are the biggest producer of fine sediments in logged watersheds. The "point-source" sampling method would appear to be particularly applicable for culverts, bridges, and fords. Enough samples must be taken above and below the road crossing to ensure statistical validation.

If harvest areas are widespread in a watershed or roads cross a stream at more than one point, sources of suspended sediments will be difficult to identify. In this case, there is no substitute for intensive pre- and post-harvest sampling. Lacking this information, it will be next to impossible to differentiate background levels of suspended sediments from elevated levels. Brown (1983) recommends that sampling efforts concentrate on the rising and peak stages of storm flows. Samples should include a range of storms and, if possible, more than one control watershed. Such an intensive sampling strategy is liable to be expensive. Costs could be minimized by focusing on areas where logging roads or extensive clearcuts are proposed. Because the sampling should be concentrated during the summer, field work could be conducted by seasonal employees.

In addition to having significant impacts of its own (Lloyd et al. 1987), turbidity can be used as an index of SSC (Lloyd 1987). Turbidity is easier and quicker to measure in the field (Lloyd 1987), allowing collection of more samples in a shorter period. However, the relationship between turbidity and SSC is often site- or storm-specific (Beschta 1980, Lloyd 1987). Sidle and Campbell (1985) reported a high correlation between turbidity and total suspended solids in a Chichagof Island stream. The relationships need to be determined in Alaskan watersheds of different sizes, shapes, gradients, soil types, and sediment characteristics (Brown 1983). Pending this information, turbidity can still be used as a reasonable estimator of SSC (Lloyd et al. 1987). The same sampling limitations would apply to measurements of turbidity as SSC.

Settled and Imbedded Sediments

The state water quality standard for fine sediments in spawning gravels may require a greater knowledge of factors influencing the streambed composition than is currently available (Adams and Beschta 1980). The standard specifies that fine sediments (0.1-4.0 mm) in spawning substrates may not be increased more than 5 percent by weight over natural conditions or exceed a maximum of

30 percent.

The proportion of fine sediments in streambeds is highly variable between streams, locations in the same stream, locations in the same riffle, and at different depths at the same point (Everest et al. 1987). Fine sediment content also varies between storms and at rising and falling stages within storm flows (Adams and Beschta 1980). Thus, natural variations can mask the adverse effects of timber harvests. This standard can only be enforced if a statistically significant difference can be shown between samples from the affected segment of the streambed and samples from earlier visits or adjacent, unaffected segments of the same stream.

The factors which influence the amount of fines in streambeds in Alaska needs to be better understood (Adams and Beschta 1980). Streams should be sampled at low flows, when streambed composition is relatively stable, especially in winter while eggs are present (Adams and Beschta 1980). Costs could be minimized by focusing on areas where logging roads or extensive clearcuts are proposed. By concentrating sampling effort during the winter, field work could be conducted by seasonal employees, perhaps in conjunction with measurements of suspended sediment and turbidity.

BASELINE STUDIES IN SOUTHCENTRAL AND INTERIOR ALASKA

Research conducted in southeast Alaska, other Pacific Northwest states, and coastal British Columbia is most applicable to southeast Alaska. Streams in the coastal forests of Prince William Sound or the spruce/hardwood forests of the Susitna and Tanana valleys may not have similar responses to timber harvests. Baseline studies need to be conducted in these areas, with particular attention to sources and effects of sediments and effects of canopy removal on maximum and minimum stream temperatures.

STREAM CLASSIFICATION

After noting severe post-logging impacts on some streams and not on others, Hartman et al. (1987) recommended that stream channels in British Columbia be classified to allow a range of protective measures. Washington based its forest practices regulations on stream types (McCrea 1984) and the USFS is using a stream classification scheme on the two national forests in Alaska (USFS 1986).

Toews and Brownlee (1981) and Gibbons (1984) recommend ranking systems that might be applicable throughout Alaska. However, the benefits of stream classification must be carefully assessed before it is adopted by regulation or policy. The application of less restrictive standards for small headwater streams is a major weakness of the Washington Forest Practices Act (McCrea 1984).

The ADEC and ADF&G should jointly investigate the potential for stream classification in Alaska.

DETERMINING APPROPRIATE BUFFER STRIPS

Prevention measures are the best way to avoid adverse impacts to fish habitat. Adverse effects of timber harvest and logging roads can be ameliorated or avoided by leaving a buffer strip adjacent to waterbodies. Many studies conducted in the Pacific Northwest have compared the effects of timber harvests and roads on streams with and without buffer strips. Buffer strips minimize increases in summer water temperatures (Brown et al. 1971, Brazier and Brown 1973, Beschta 1978, Beschta et al. 1987, Hall et al. 1987), sediments (Hansmann and Phinney 1973, Beschta 1978, Moring 1982, Culp and Davies 1983, Hall et al. 1987), submerged slash (Hansmann and Phinney 1973, Hall et al. 1987), and dissolved inorganic substances (Hall et al. 1987). Buffer strips minimize decreases in dissolved oxygen (Hall et al. 1987). Buffer strips maintain the source and stability of large woody debris (Toews and Moore 1982, Tschaplinski and Hartman 1983, Murphy et al. 1986, Heifetz et al. 1986, Hartman et al. 1987). Streams with buffer strips have lower densities of aquatic macroinvertebrates, but higher species diversity, compared to streams in clearcuts without buffer strips (Newbold et al. 1980, Culp and Davies 1983).

The primary benefits of buffer strips for stream water quality and aquatic habitat include shade, bank stabilization, a long-term source of large woody debris, keeping slash out of the stream, and intercepting sediments. Potential problems with buffer strips include blowdowns, the cost of forgoing harvest of trees in buffer strips, and the need for more roads. Although the benefits of buffers in ameliorating nonpoint-source pollution are well known, the size and configuration of buffer strips in Alaska forests should be studied. Some of the factors that should be considered include the following.

Blowdowns

Buffer strips are subject to windthrow. Wind is the major cause; however, contributing factors include topography, high rainfall, shallow soils, shallow water table, orientation, tree species, and tree heights (Moore 1977, Steinblums 1978). Steinblums et al. (1984) developed a predictive equation for designing stable buffer strips in Oregon's Cascade Mountains. The equation may be extrapolated to Alaska, although it is likely to be less applicable and require more professional judgement. A similar study needs to be conducted in Alaska. In southeast Alaska, juvenile salmonids prefer streams with buffer strips that have blown down to streams without a buffer strip (Heifetz et al 1986, Murphy et al. 1986). Heifetz et al. (1986) noted that their results may not apply in streams with ice cover. This study needs to be replicated in southcentral and interior Alaska.

Economic Factors

Costs and benefits of leaving trees in buffers of various widths have been compared (Sadler 1970, Gillick and Scott 1975, Dykstra and Froehlich 1976, Olsen et al. 1987, Garland 1987, Adams et al. in press). Some of the studies were limited because they only evaluated loss of spawning salmon and habitat. Rearing habitat is usually more vulnerable, because the streams are smaller, more numerous, and harder to avoid. None of the studies considered costs of rehabilitating streams which had lost their long-term sources of large woody debris. Stream rehabilitation is expensive (House and Boehne 1985). Physical, biological, and economic conditions in Alaska differ from those where these studies were conducted. A study which assesses costs and benefits of timber harvests related to water quality and aquatic habitat needs to be conducted in Alaska.

Practical Dimensions

Leaving buffer strips on headwater streams may require more roads (McCrea 1984, Garland 1987, Adams et al. in press). Logging roads contribute substantially to mass wasting on steep slopes and they may be the single largest contributor of fine sediments to streams. Buffer strips alone are incapable of preventing surface runoff from roads and ditches from reaching stream channels because sediments often enter channels at road crossings. Determining the balance between too few buffers and too many roads may be one of the biggest challenges to using buffer strips. Another consideration is "headwall leave areas," where trees are left in areas susceptible to debris torrents (Swanson et al. 1987).

The question with buffer strips is not whether they are valuable in protecting fish habitat, but what are the proper dimensions, should headwater streams be protected, and how much selective cutting within the buffer should be allowed (Barton et al. 1985, Bisson et al. 1987). The ADNR, ADEC, ADF&G, and the timber industry need to jointly develop buffer strip criteria.

UPDATING BEST MANAGEMENT PRACTICES

Because nonpoint-source pollution is difficult to measure and control using conventional water quality standards, BMPs are often cited as the best method for minimizing or avoiding adverse effects on aquatic habitats. However, BMPs can also have significant limitations. In order to preserve decision making flexibility, the agency which develops and administers BMPs generally incorporates language which leaves field personnel with discretionary authority to interpret and enforce the BMPs. Alternatively, BMPs may be voluntary, but would not assure effective protection of water quality.

The BMPs in ADNR's Forest Practices Field Manual have many of the weaknesses of those in other states, including vague language,

voluntary compliance, and no provisions for updates based on new information. The manual should be revised and updated. Since it was published in 1981, researchers and policy-makers throughout the Pacific Northwest have developed new, more effective BMPs. In the last decade, for example, researchers have determined the value of large woody debris in maintaining stream stability and providing crucial winter habitat for juvenile salmonids. These BMPs should be collected and evaluated for their relevance to Alaskan conditions. The BMPs should be compiled by an interagency (ADNR, ADEC, and ADF&G) working group and used as the basis of a new manual.

MONITORING EFFECTIVENESS OF BEST MANAGEMENT PRACTICES

Specific BMPs should be incorporated into regulation and strictly enforced. However, even when BMPs are precise and compliance is mandatory, violations can be difficult to monitor and enforce. Substantial water quality problems have occurred in other states which have relied on BMPs to protect water quality. Effectiveness of the BMPs will need to be assessed periodically through questionnaires and field studies, similar to research conducted in other states (Brown et al. 1978, Sachet et al. 1980, Sessions et al. 1987, Piehl et al. 1988). As a result of these studies, enforcement efforts could be focused on specific areas or techniques and ineffective BMPs could be identified and revised.

TASK 4: RECOMMENDATIONS FOR NONPOINT-SOURCE POLLUTION CONTROLS

Introduction

As concluded in previous sections, additional measures are needed to more effectively control nonpoint sources of pollution related to timber harvest and associated activities in Alaska. The ADF&G has developed 11 recommendations for controlling nonpoint sources of pollution associated with timber operations. The ADF&G has identified the primary and more timely actions that may be applied to control nonpoint sources of pollution. These recommendations are not intended to be all encompassing and other measures should be evaluated. For example, only three recommendations to address a few information gaps discussed under Task 3 are included in this section. The ADEC and other participants in the development of the State of Alaska Nonpoint Pollution Control Strategy should consider developing additional recommendations to address the other identified information gaps.

Recommendation 1:
Evaluate and Revise the Alaska Forest Practices Act and Implementing Regulations

OBJECTIVE

To evaluate the effectiveness of the FPA, FPR, and BMPs in controlling nonpoint-source pollution related to timber harvest and associated activities, and make appropriate revisions.

DESCRIPTION

Alaska's 1979 FPA and implementing 1983 FPR regulate timber harvest and associated activities on state, municipal, and private lands. In response to agency and public concerns, Alaska Governor Steve Cowper directed state agencies to review the act and regulations with the intent of developing and proposing revisions to the act during the 1989 legislative session. This review is currently underway and is expected to include an evaluation of the effectiveness of the act, regulations, and BMPs in protecting water quality, fish and wildlife habitat, and other uses of forest lands. The ADF&G's review of the act and regulations and the manner they have been implemented (see Appendix B, memorandum from Norman Cohen to Robert Grogan, August 29, 1988) concluded that they have had limited effectiveness in controlling nonpoint sources of pollution and providing adequate protection of water quality and fish habitat.

The primary sources of water pollution related to timber harvest and associated activities result from nonpoint sources. The ADF&G believes that several aspects of the FPA and FPR and the manner in which they are implemented must be changed to more effectively deal with nonpoint sources of pollution. A brief description of specific aspects of the act and regulations that should be evaluated and changed to more effectively control nonpoint-source pollution associated with timber harvest activities is provided below.

Standards: A number of the standards in the act and regulations are nonbinding or do not provide clear guidance to address nonpoint sources of pollution. The standards in the FPA and FPR should be reevaluated, revised, and made enforceable performance standards.

Operation Plan Review and Approval: Currently, operators on private lands are only required to notify ADNR of operations and are not required to obtain any permit or authorization prior to logging or road construction. ADNR can only recommend changes to a plan of operations, and implementation of the recommendations is the operator's prerogative. A requirement for a permit and plan review, combined with enforceable performance standards, would allow the state to require stipulations and take compliance action when necessary.

Best Management Practices: The ADNR provides voluntary BMPs in its Forest Practices Field Manual (published in 1981). These BMPs are outdated and should be reviewed, updated, and expanded. As appropriate, the revised BMPs should be integrated into the FPR as requirements rather than advisory measures.

Enforcement of Violations: The FPA sets a maximum penalty of $10,000 for violations and establishes a system where the violator appears before a hearing officer. The FPA only allows imposition of civil penalties, which are very time consuming and costly to impose, and provide little incentive for enforcement or compliance. A criminal penalty (i.e., a misdemeanor) to enable enforcement and provide an incentive for compliance or, at a minimum, retaining civil penalties without a hearing officer should be required.

Planning: Resource agency ability to evaluate and minimize potential for nonpoint-source pollution impacts could be facilitated through a change in the FPA to require long term, drainage-wide planning by landowners. This would allow the review of individual sale layouts and associated roads, landings, gravel pits, and other facilities, and an evaluation of potential cumulative impacts in the context of an entire drainage rather than in piecemeal manner.

Provide for Closer Coordination and Conflict Resolution: Currently the ADEC, ADF&G, and coastal districts act as advisors to the ADNR in providing recommendations in their areas of expertise. The ADNR is required to consult with ADF&G and ADEC on operations on state and private lands, but consultation with coastal districts is optional under the FPA. There is also no clear process for conflict resolution under the FPA. A clear process for coordination and conflict resolution already exists under the the ACMP consistency review regulations (6 AAC 50), which could be used for the FPA. Agencies and districts would also be given "due deference" in their areas of expertise and all appropriate aspects of the project would be reviewed concurrently rather than in a piecemeal manner. With the establishment of a forest practices permit, activities on private and municipal lands could be reviewed under 6 AAC 50.

AGENCIES OR PARTIES RESPONSIBLE FOR IMPLEMENTATION

The ADNR has been assigned the lead in the state's review of the FPA and FPR. The ADF&G, ADEC, and the Alaska Division of Governmenal Coordination (DGC) also play key roles. Timber interests, environmental groups, fishing groups, and coastal districts are also involved and represented on the steering committee. Once the initial evaluation is complete, the three state resource agencies and the DGC should monitor the completion and implementation of all revisions to the FPA and FPR.

AUTHORITIES APPLIED TO IMPLEMENT THE RECOMMENDATION

The applicable authorities under review are the FPA (AS 41.17) and FPR (11 AAC 95). An amendment to both the act and regulations is necessary to substantially improve the act's and regulation's effectiveness in controlling nonpoint-source pollution associated with timber harvest operations. For example, a permit requirement for operations on private lands and more enforceable performance standards would require an amendment to the FPA.

POTENTIAL CONSTRAINTS TO IMPLEMENTATION

One of the constraints to implementation of this task is the limited time available for agency, industry, and interest group staff to work on changes to FPA and FPR. A second potential constraint is that no special funding has made been available to resource agencies to fund this effort, which will likely prolong the review. Another potential constraint may be the reluctance of timber industry to accept many of measures necessary to more effectively control nonpoint sources of pollution. A requirement for permits and binding or enforceable performance standards or BMPs, for example, may be opposed by industry.

POTENTIAL FUNDING SOURCES

No supplemental funding has been provided to date for the state agencies and most parties involved in the review of the act and regulations. The most probable source for additional funding, if needed, would be a supplemental appropriation from the Alaska Legislature.

SCHEDULES OR MILESTONES

The Governor has asked state agencies and interest groups to review the FPA and implementing regulations and develop an amendment to the FPA for submittal to the Alaska Legislature by February 1989. The steering committee has not yet identified products to be developed or a schedule for the process. Providing the FPA is revised, new regulations should be drafted and submitted for public review by about December 1989.

Recommendation 2:
Promulgate Nonpoint-Source Pollution Regulations

OBJECTIVE

To develop a uniform legal basis and standards for preventing and controlling nonpoint-source pollution to ensure compliance with the AWQS.

DESCRIPTION

Most of the water pollution from timber harvest and associated activities is caused by nonpoint sources. The process for maintaining water quality under the AWQS is not effective in controlling pollution from nonpoint sources. Procedurally, the ADEC must first identify a change in water quality and then locate the source before it can take compliance action. Nonpoint sources of pollution are commonly difficult to identify, locate, and prove the cause. In effect, the AWQS are implemented on timber harvest and associated activities only after the impact has occurred, through compliance and enforcement actions. Moreover, the ADEC does not have the staff resources to carry out inspections of logging activities or to detect violations of the AWQS. Nonpoint-source violations are difficult to prosecute in court and consequently the ADEC rarely takes any legal action.

To address these limitations, the department recommends that the ADEC develop comprehensive regulations governing activities with a potential to create nonpoint sources of pollution. The statutory responsibility for protecting water quality and agency expertise necessary to develop and implement nonpoint-source regulations rests within ADEC. The regulations should apply to timber harvest activities and other activities, such as placer mining and urban runoff, not controllable as point sources. The regulations should include: enforceable performance standards; site-specific review of timber harvest plans of operations (i.e., a permit); liability for failure to comply with approved plans and permit stipulations; extensive coordination with other agencies; and agency field inspection.

A new program to regulate nonpoint-source pollution of forest lands need not be cumbersome nor lengthen the time necessary to review a project. The review of timber harvest and associated activities on forest lands could be made in conjunction with the review under the FPA and FPR. Appropriate coordination among state agencies and with coastal districts would be accomplished through the 6 AAC 50 review process.

AGENCIES OR PARTIES RESPONSIBLE FOR IMPLEMENTATION

The ADEC would have the primary responsibility for the promulgation and implementation of nonpoint-source pollution control regulations. With respect to timber interests, the ADEC should work closely with ADNR-DOF and ADF&G in drafting the regulations. Other key affected interest groups such native corporations or other landowners, fishing groups, and conservation groups should be involved in the development of the regulations.

AUTHORITIES APPLIED TO IMPLEMENT THE RECOMMENDATION

The authorities under which the new regulations would be developed are AS 46 and the CWA.

POTENTIAL CONSTRAINTS TO IMPLEMENTATION

A potential constraint to implementation is opposition from the regulated industry. Industry may claim the new program would be too costly and unnecessary because, from their perspective, existing authorities are adequate. A second possible constraint to implementation is the perception that the ADEC would duplicate or interfere with ADNR regulation of timber lands under the FPA or other agency regulatory authorities. While there may be some complementarity, ADEC statutes and activities concerning the control of nonpoint-source pollution from timber harvest would not diminish other agency authorities. New ADEC regulations would set performance standards necessary for meeting the AWQS. Other requirements related to fish habitat, reforestation, mitigation, or habitat restoration would not be affected. A third possible constraint is the likely increase ADEC permitting staff work load resulting from additional project reviews and monitoring activities.

POTENTIAL FUNDING SOURCES

Additional funding for the ADEC to implement the new comprehensive regulations would likely be required. A relatively greater increment may be needed for the review of timber harvest and associated activities compared to other activities, such as placer mining, in which the ADEC is currently reviewing. The most probable source of finding would be a combination of state and federal funds. Under Section 319(h) of the CWA the EPA could, providing Congress appropriates the money, provide grants to fund up to 60 percent of program cost. Another potential source of funding is the Alaska Legislature.

SCHEDULES OR MILESTONES

The ADEC should proceed with the development of a nonpoint-source pollution control program through ADEC regulations as soon as practicable. With respect to regulations as they apply to timber harvest and associated activities, the ADEC will need to be cognizant of the ongoing state review of the FPA and FPR. We suggest that the ADEC commence the development of regulations by February or March 1989. The regulations should be completed and go into effect by March 1990 or as soon as possible thereafter.

Recommendation 3:
Obtain Additional Funding for Review and Monitoring

OBJECTIVE

To reduce or control nonpoint source of pollution through additional review and monitoring of timber harvest and associated activities.

DESCRIPTION

The ADEC is the state agency with the statutory responsibility and expertise to protect state water quality. Due to funding constraints, internal program priorities and/or limitations in staff, ADEC's ability to review and monitor timber harvest and associated activities under the AWQS or the FPA and FPRs has been very limited. It is essential that ADEC play a very active role in both project review and monitoring under any strategy to control nonpoint sources of pollution. The ADEC recently participated in a few forest practices field reviews in Yakutat and Hobart Bay areas. The ADEC's interest and participation in this review is very encouraging, and will help a great deal in addressing water quality concerns associated with that development. In addition, the ADF&G, through regulation of activities affecting anadromous fish streams, and to some extent the ADNR, through implementation of the FPA and FPR, also play a role in controlling nonpoint sources of pollution. These other agencies should also acquire additional funding, in addition to making other statutory and regulatory changes, to carry out their responsibilities to review and monitor timber harvest and associated activities for nonpoint sources of pollution.

The timber harvest industry has generally supported increased agency involvement in project development and monitoring. The resource agencies should work together and with the industry in defining priorities for project review and field presence. It may be appropriate to submit a joint resource agency proposal to the Alaska Legislature or other sources for additional funding.

AGENCIES OR PARTIES RESPONSIBLE FOR IMPLEMENTATION

The ADEC should assume the lead responsibility for seeking additional funding under the CWA. The resource agencies should, either separately or collectively, submit proposals to the Alaska Legislature for enhanced involvement in the review and monitoring of timber harvest and associated activities.

AUTHORITIES APPLIED TO IMPLEMENT THE RECOMMENDATION

No new authorities need to be created. The CWA and AS 46.03 provide the authority to implement this recommendation.

POTENTIAL CONSTRAINTS TO IMPLEMENTATION

The biggest constraint to implementation is the difficulty in securing funding necessary to enhance agency review and monitoring capabilities. Both state and federal sources of revenue and the political will to more thoroughly manage forest practices are uncertain.

POTENTIAL FUNDING SOURCES

The most likely funding sources are federal funds under the EPA Section 319(h) grant program after FY 89 or a general fund appropriation from the Alaska Legislature.

Recommendation 4:
Review and Update Timber Harvest BMPs

OBJECTIVE

To develop comprehensive, state-of-the-art BMPs for controlling nonpoint sources of pollution resulting from timber harvest and associated activities.

DESCRIPTION

There are several field manuals available with BMPs for timber harvest and associated activities. The ADNR/DOF, EPA, USFWS, and the USFS have developed manuals of BMPs for timber harvest and associating activities in Alaska. Most of these manuals primarily address timber harvest and associated activities in the Alaska's Sitka spruce/hemlock coastal forest, and few BMPs have been developed specifically for timber harvest activities in southcentral and interior spruce and birch forests. Many of the existing BMPs have been shown, based on agency experience and recent studies, to be ineffective in controlling nonpoint sources of pollution. Existing BMPs should be reviewed and revised, and new BMPs developed, to more effectively address nonpoint-source pollution associated with timber harvest operations. The reevaluation and development of BMPs should be included as a separate recommendation in the state's nonpoint-source pollution control strategy in the event it is not accomplished under the FPA/FPR discussed in Recommendation 1. The evaluation should include, at a minimum: (1) a review current literature and other state programs related to BMPs for timber harvest and associated activities; (2) an assessment of the extent to which existing BMPs have been applied by the timber industry; (3) an evaluation of the effectiveness of existing BMPs in preventing nonpoint-source pollution; and (4) an evaluation of which BMPs should be incorporated into regulations as mandatory requirements.

AGENCIES OR PARTIES RESPONSIBLE FOR IMPLEMENTATION

The state resource agencies should take the lead in the evaluation and development of new BMPs. These agencies should, as appropriate, involve federal agencies and the timber industry.

AUTHORITIES APPLIED TO IMPLEMENT THE RECOMMENDATION

Section 319(b)(2)(A) requires states to identify BMPs which will be undertaken to reduce pollutants. BMPs may also be developed under ADEC statutes and the ADNR's FPA and FPR. Where appropriate, the BMPs should be adopted as part of the ADEC nonpoint source pollution control regulations discussed under Recommendation 2.

POTENTIAL CONSTRAINTS TO IMPLEMENTATION

Both agencies and industry would probably support a reevaluation and revision of existing BMPs. One possible constraint would be industries reluctance to support BMPs based on economic or other grounds. Another potential constraint would be the substantial staff commitment required to conduct a thorough evaluation of BMPs. This task may be accomplished with existing staff over a long period of time. However, there is need to complete this task in a more timely manner which may require additional staff support.

POTENTIAL FUNDING SOURCES

The most likely funding sources after FY 89, if needed, would be federal funding through the EPA Section 319(h) grant program and/or the Alaska Legislature.

SCHEDULES OR MILESTONES

The setting of a schedule and milestones is difficult in light of the uncertainty of the scope and timing of the FPA/FPR review, and whether the review will include a reevaluation and revision of BMPs associated with timber harvest activities. A separate evaluation will be needed only if a thorough evaluation is not completed under the FPA/FPR review. If there is no commitment made to reevaluate the BMPs by June 1989, then ADEC should independently initiate a review of BMPs related to control nonpoint sources of pollution associated with timber harvest operations. An independent review, if necessary, should start in July 1989 and be completed by March 1990 or as soon as possible thereafter.

Recommendation 5:
Educate Public and Timber Industry

OBJECTIVE

To educate coastal districts and the timber harvest industry on effective timber harvest BMPs.

DESCRIPTION

It is important that BMPs be well understood and supported by both the affected public and the forest harvest industry (Sachet et al. 1980). A public information program should be established to further educate the public and industry personnel on effective BMPs.

The public review should focus on affected coastal districts in southeast and southcentral Alaska. There are several reasons for this. First, coastal districts are the organized entity in coastal regions of Alaska responsible for representing community views in review of activities associated with timber harvest and other coastal projects. Secondly, several coastal districts recently expressed a need and desire for an educational effort at the October 12-13, 1988, Southeast Coastal District Workshop in Ketchikan. Districts indicated that they do not understand BMPs for timber harvest activities and do not know how to recognize effective or ineffective practices. These coastal districts expressed an interest in learning more about effective BMPs for timber harvest activities to improve their ability to participate and represent local views in the project review process and to monitor these activities. Thirdly, the predominant view among district staff at the workshop is that the FPA and FPR have not been very effective in protecting water quality, coastal habitat, and other coastal district concerns. A public education effort could improve coordination between the state and districts, improve their understanding of the timber industry, and improve their ability to assist in the management of timber harvest activities.

The program for educating the timber harvest industry on BMPs should be also be conducted with the landowner decision makers and, as appropriate, with logging contractors. Similarly, we believe an educational effort with timber landowners will help improve coordination between the state and the timber industry.

The specifics of an effective educational program for coastal districts and industry should be designed and implemented in coordination with the state resource agencies, coastal districts, and the timber industry. The general educational program would be conducted jointly by ADNR, ADEC, ADF&G, and DGC. The public information program might include separate one week workshops for districts and industry, including a combination of meetings and

field trips, for coastal districts and industry. Separate coastal district and industry workshops would allow proper orientation to different district/industry backgrounds and technical information needs. The workshops might be located in two locations, one in southcentral Alaska (e.g., conducted in Prince William Sound) and another in southeast Alaska (e.g., Prince of Wales Island).

AGENCIES OR PARTIES RESPONSIBLE FOR IMPLEMENTATION

To be successful, the education program must be designed and implemented in close coordination with the primary land owners or managers (e.g., regional and village native corporations, USFS), the state resource agencies, and affected coastal districts. The state resource agencies and DGC would coordinate the design and implementation of the program.

AUTHORITIES APPLIED TO IMPLEMENT THE RECOMMENDATION

The authorities to implement the recommendation include Section 319(h)(5)(D) of the CWA, the FPA and FPR, and ADEC statutes (AS 46) requiring protection of water quality.

POTENTIAL CONSTRAINTS TO IMPLEMENTATION

One of the likely constraints to successful implementation of this recommendation is the difficulty in getting the wide variety of interests to agree on program design. For example, it will be difficult to achieve consensus on the location for field trips (e.g., landowners would not want their operations used as examples of poor forest practices). This and other constraints can be overcome through close coordination with the landowners in the design and implementation of the educational program.

POTENTIAL FUNDING SOURCES

Additional funding for ADNR, ADF&G, and ADEC will likely be needed to implement the proposed educational program. The funding level needed to develop and implement a public education program would be determined when the program is designed. Potential funding sources include federal funding through the EPA Section 319(h) state grant program. The EPA can provided up to 60 percent funding and the remaining 40 percent must be provided by the state through nonfederal funds. Another potential source of federal funding is the state ACMP funding pursuant to Section 306 of the Coastal Zone Management Act of 1972, as amended (CZMA). It should be recognized, however, that CZMA funding has decreased in recent years and the ability to fund new programs is low. It may be possible, however, to partially support this recommendation by using ACMP funds to support district participation in the workshops. The Alaska Legislature could also be asked to include

this program as part of any new funding for implementation of the FPA and FPR (see Recommendation 1).

SCHEDULES OR MILESTONES

As mentioned in previous recommendations, the FPA and FPR are currently under state review. The results of this review and commitments to change various aspects of the act and regulations will likely be made by June 1989. A review of the timber harvest BMPs may be underway at that time. Program design for the public education program could commence by July 1989. Between July and December 1989 the agencies could design an education program. The period January to April 1990 would be used to consolidate materials and develop presentations for the workshops, and to schedule the coastal district and industry workshops. The coastal district and agency workshops should be conducted the 1990 summer field season.

Recommendation 6:
Promulgate Fish Habitat Regulations

OBJECTIVE

To develop uniform standards for regulation of activities affecting anadromous fish pursuant to the Fishways Act (AS 16.05.840) and the Anadromous Fish Act (AS 16.05.870).

DESCRIPTION

The ADF&G is responsible for regulating activities that may affect fish passage under the Fishways Act (AS 16.05.840) and activities affecting anadromous fish under the Anadromous Fish Act (AS 16.05.870). Permits issued under these acts are referred to as fish habitat permits. Subsection AS 16.05.870(b) of the Anadromous Fish Act specifically requires the ADF&G to regulate logging activities which may result in pollution of anadromous fish streams. AS 16.050.870(b) states:

> If a person or governmental agency desires to construct a hydraulic project, or use, divert, obstruct, pollute, or change the natural flow or bed of a specified river, lake, or stream, or to use wheeled, tracked, or excavating equipment or log-dragging equipment in the bed of a specified river, lake, or stream, the person or governmental agency shall notify the commissioner of this intention before the beginning of the construction or use.

There are currently no ADF&G regulations governing the issuance of fish habitat permits. The ADF&G should promulgate regulations pursuant to Fishways and Anadromous Fish Acts. The regulations, once approved, would provide a clear description of the activities that would be regulated, standards that would be enforced, and help ensure consistency for fish habitat permits.

AGENCIES OR PARTIES RESPONSIBLE FOR IMPLEMENTATION

The ADF&G is the agency responsible for implementation. Coordination with other agencies and development interests should occur as appropriate.

AUTHORITIES APPLIED TO IMPLEMENT THE RECOMMENDATION

The applicable authorities are AS 16.05.840 and AS 16.05.870.

POTENTIAL CONSTRAINTS TO IMPLEMENTATION

One constraint may be opposition from some of the entities affected by the regulations. The department will need to work with these entities to address their concerns.

POTENTIAL FUNDING SOURCES

No additional funding is needed.

SCHEDULES OR MILESTONES

No schedules or milestones have been set. The ADF&G should initiate the promulgation of regulations for fish habitat permits as soon as practical.

Recommendation 7:
Establish a MOU Between the State and USFS

OBJECTIVE

To establish a formal agreement between the State of Alaska and the USFS on policies and procedures for coordinating review of USFS programs and activities.

DESCRIPTION

For the past few years the DGC, in coordination with ADNR, ADEC, and ADF&G, has been working with USFS towards developing a Memorandum of Understanding (MOU) for coordinating state review of a broad range of USFS programs and activities. The MOU will generally address state authorities which apply to activities on USFS lands. Both the activities that will be reviewed by the state and the procedures for conducting the review will be addressed. These negotiations should completed and the MOU signed as soon as possible.

In 1978 the ADF&G entered into an MOU with the USFS regarding coordination between the two agencies on review of USFS activities that affect fish and wildlife. In 1980 the ADEC and USFS also entered into an MOU regarding coordination in the review of USFS authorized activities that affect water quality. These MOUs are still in affect but have not been fully implemented. Following the completion and signing of the DGC/USFS MOU discussed above, the ADF&G and ADEC should determine whether changes to the previous MOUs should be amended or terminated. The ADEC and ADF&G should initiate changes in the MOUs as appropriate.

AGENCIES OR PARTIES RESPONSIBLE FOR IMPLEMENTATION

The DGC has the lead responsibility for working with the USFS in development of the general MOU. Following approval of this MOU, the ADEC and ADF&G would be responsible for evaluating agency specific MOUs and, where appropriate, initiating amendments to those MOUs.

AUTHORITIES APPLIED TO IMPLEMENT THE RECOMMENDATION

The authorities to enter into an MOU are: Section 307 of the CZMA (16 U.S.C. 1456), the ACMP (AS 46.40, 6 AAC 50 and 80), the National Forest Management Act (16 U.S.C. 1600), the National Environmental Policy Act (42 U.S.C. 4321), the Federal Land Policy and Management Act (43 U.S.C. 1701), the Alaska National Interest Land Conservation Act (16 U.S.C. 3210), ADEC statutes (AS 46.03), and the CWA (33 U.S.C. 1251).

POTENTIAL CONSTRAINTS TO IMPLEMENTATION

A possible constraint to implementation is the USFS reluctance to enter into coordination agreement with the state regarding ACMP consistency. The USFS and the state are in disagreement with respect to what activities should be subject to consistency and which standards of the ACMP apply. The state has provided the USFS with a legal opinion in support of its position, and we are hopeful that this issue will be resolved shortly.

POTENTIAL FUNDING SOURCES

No addition funding is needed.

SCHEDULES OR MILESTONES

No schedule or milestones have been set. It is the state's hope that an agreement will be reached and an MOU signed in the near future.

Recommendation 6:
Establish an Interagency Forest Practices Working Group

OBJECTIVE

To facilitate implementation of the State Nonpoint-Source Pollution Control Strategy and the resolution of other forest practices issues.

DESCRIPTION

Section 319 of the CWA requires that the state incorporate a number of measures in its nonpoint-source pollution control plans to ensure successful implementation of state nonpoint-source pollution control management strategies. The state has been unable to adequately implement the 1980 nonpoint-source pollution control management plans and appropriate measures must be taken to ensure implementation of the current plan. An interagency group was established to monitor development of 1980 plan, but this group was disbanded at plan completion and the other state resource agencies did not play an active role in plan implementation. An interagency working group should be established to facilitate and oversee both the implementation of the current strategy and the resolution and implementation of other forest practices issues (e.g., products of the FPA and FPR described under Recommendation 1). The "core" of the working group should consist of one mid or upper level staff representative from each of the state resource agencies. Depending on the topics of discussion, it may be desirable to involve the DGC and other state and federal agencies or other interest groups.

The ADEC would retain its lead responsibility for implementing the nonpoint-source pollution control strategy and would use the core working group to solicit agency participation and as a forum to discuss strategy. The core working group would meet regularly during the first year or two following plan approval and as needed thereafter. Each of the working group members will be responsible for coordinating their agency's involvement in the implementation of the recommendations.

The working group could also assume responsibilities for completion of various tasks that are part of or result from the state's reevaluation of the FPA and FPR. It is not likely that this working group could get involved in that effort, if at all, until after the initial evaluation. A general process and schedule is already in place for the initial evaluation of the FPA and FPR (see Recommendation 1).

AGENCIES OR PARTIES RESPONSIBLE FOR IMPLEMENTATION

The core working group would consist of a representative from the ADEC, ADF&G, and the ADNR. The group would be organized by ADEC for issues relating to the implementation of the Statewide Nonpoint-Source Pollution Control Strategy. Other state and federal agencies and interest groups would be involved as appropriate.

AUTHORITIES APPLIED TO IMPLEMENT THE RECOMMENDATION

The authorities under which this will be implemented are the CWA and ADEC's general statutory authority (AS 46) to protect water quality.

POTENTIAL CONSTRAINTS TO IMPLEMENTATION

One potential constraint will be the lack of staff time to participate in the group and the amount of work necessary to complete the tasks required for implementation. A second possible constraint is inadequate priority given by the participating agencies to carry out the strategy. Another possible constraint is the perception by other agencies, industry, or interest groups that the composition of the core working group should be expanded to include more representatives of the various interest groups. The core working group should be kept small and involve other affected parties as needed.

POTENTIAL FUNDING SOURCES

The need for additional funding is dependent on the level of work required of the working group. The group could probably operate under existing funding and staff if the work is limited to monitoring the implementation of the nonpoint-source pollution control strategy. If greater participation in evaluation of other forest practices issues is required, additional funding may be needed. The most probable source of funding is the EPA Section 319(h) grant program or additional appropriations from the Alaska Legislature.

SCHEDULES OR MILESTONES

The working group should established and commence work on implementation in January 1989.