

8

SUGGESTED STRATEGIC PROGRAMMATIC RESPONSES

The nine technical and, to some extent, the five background GEIS papers provide a wide range of specific mitigation strategies that address those impacts identified in sections 5, 6, and 7 as significantly adverse. These strategies to mitigate the impacts projected to occur at three distinct levels of statewide timber harvesting activity were developed separately in the technical papers to address specific issues related to timber harvesting (e.g., impacts of timber harvesting on wildlife habitat). The GEIS integrates those separate analyses and recommendations to address all key issue areas identified for analysis in the FSD in a unified manner.

The integrated mitigations identified in sections 5 to 7, and summarized in appendix 4, vary considerably in terms of their focus and the functional role they play in protecting and enhancing the state's forest resources. However, three general categories of mitigations are evident. These are:

- site-level responses;
- landscape-level responses; and
- forest resources research.

Site-level Responses

Site-level mitigations are those considered to be tactical (i.e., they are typically specific on-the-ground land practices designed to reduce and/or eliminate environmental problems associated with harvesting or forest management). Included in this category are measures such as filter strip retention in riparian areas, alternative methods for disposal/distribution of slash in a harvested area, consideration/retention of biomass (e.g., snags) during harvest, and timber sale design modifications to reflect nontimber considerations (e.g., wildlife, aesthetics). These practices are quite identifiable and focused on achieving specific resource objectives (e.g., 100-foot vegetative filter strips adjacent to waterbodies or wetlands).

Landscape-level Responses

The second category of mitigation strategies that surfaced through the GEIS study process is that defined here as coordinated approaches for addressing resource management concerns that arise from accumulation of site-level impacts. Such mitigations do not specifically relate to certain practices on a given harvest site, but rather encompass geographically large areas spanning multiple ownerships, and serve to address landscape-level forest resources goals. Unlike tactical mitigations that are often realized in a relatively short period of time simply through alternative harvesting and/or management practices, these more complex mitigations will often take an extended period of time to implement and require the cooperative and coordinated efforts of many different land managers. Examples of such mitigations include

modification of age class and/or covertime structure for an ecoregion which, when aggregated, can serve as statewide goals to achieve wildlife habitat, biodiversity, timber production, or forest protection objectives.

Forest Resources Research

A third general category of mitigation strategies identified in sections 5 to 7 is that which addresses gaps in the current level of understanding about forest ecosystems and their interactions with other important resource-dependent variables. These forest resources research strategies will not, by themselves, mitigate the significant impacts projected to occur. However, they will provide resources managers and policymakers with better information regarding specific resource characteristics and trends. This information, in turn, will allow new or more effective management strategies to be developed to address the area of concern. The forest resources research mitigations presented in the preceding sections focus on the: collection of baseline data; establishment of monitoring programs to identify trends in resource conditions; and development of research programs aimed at providing better understanding of interactions and linkages between various elements of the forest environment and its management. In addition, research aimed at improving efficiency of wood utilization is important to all scenarios considered.

The GEIS identifies a variety of mitigation recommendations at each of the three alternative levels of statewide timber harvest. However, while such tactical mitigations are extremely important and useful study outcomes, the GEIS also serves the broader purpose of providing direction on the types of policy or programmatic strategies the state should consider to effectively address the recommended mitigations.

There are a number of ways in which the recommendations identified in the technical and background papers can be transformed and brought forward as strategic policy recommendations. The key focus was on integrating the various mitigation options into a comprehensive set of policy strategies that can readily be identified as the centerpiece for an implementation program. The remainder of this section presents these broad policy strategies, and an overview of forest resource-based research strategies and administration mechanisms needed to implement the site- and landscape-level policy strategies.

8.1

Suggested Site-level Policy Responses

Strategies in this category are intended to modify operational procedures used in planning, and executing timber harvesting and forest management activities on an individual site.

8.1.1

Goals and Objectives

The goals and objectives for suggested site-level policy responses are simple and straightforward. They should:

- incorporate all site-level mitigation strategies recommended in the final GEIS;
- apply statewide to all ownerships to the extent legally and practically possible;
- ensure that the issue of cost effectiveness is given key consideration;
- consider the need to maintain the integrity of private property ownership rights while;
- informing all property owners of their statewide responsibilities for resource protection; and
- provide for ongoing research and special interest groups' input and, as appropriate, develop processes for subsequent clarification and/or modification of these practice standards.

8.1.2

Major Policy Elements and Considerations

Many of the recommended mitigations developed in the technical papers and included in this document address specific objectives. This study has also discussed the mechanisms that are currently available to address these recommendations. One of the most important is the Minnesota voluntary BMPs program, which is basically aimed at water quality.

While recognizing the utility of a voluntary water quality BMPs program, the GEIS has identified the need to expand it to incorporate a broader recognition of forest resource values through an array of prescriptive timber harvesting and forest management practices. Consequently, the GEIS study recommends Minnesota adopt a comprehensive forest resources practices program that advances acceptable practices for maintaining and enhancing these values beyond that possible with the effective, but narrow, water quality BMPs program.

Other States' Experiences

Several other states have adopted a comprehensive timber harvesting and/or forest management practices programs. In fact, as of 1991, ten states had implemented some form of a comprehensive forest practices law, and three states have laws that form a defacto regulatory system on forest management and harvesting practices (Ellefson and Cheng 1993, in press). The states covered by these legislative approaches (further discussed in appendix 4) are as follows:

- comprehensive forest practices states

- Alaska - Massachusetts
 - California - Nevada
 - Connecticut - New Mexico
 - Idaho - Oregon
 - Maine - Washington
- defacto forest practices states:
 - Florida
 - Maryland
 - Montana

Key Considerations

Irrespective of the type of guidelines or regulatory structure for prescribing acceptable timber harvesting practices a state is contemplating, there are several important factors that need to be considered. The Society of American Foresters (SAF), a national organization of forest resource professionals, has articulated many of these considerations in a recent position statement on forest practice regulations (SAF 1989). Note that the SAF neither advocates nor opposes the public regulation of private forest practices. Rather, the SAF presented criteria to assess the likely effectiveness of such regulation. These are criteria for sound ideas that should be considered in examining alternative mechanisms to affect timber harvesting or forest management practices. A complete discussion of these principles is included in appendix 4. In brief, they collectively emphasize the following:

- regulate only to enhance, not to deplete;
- balance regulatory costs with benefits, be efficient;
- cover all interested publics and landowners;
- base all efforts on science, not anecdote;
- recognize forest variability, flexibility; and
- the need for monitoring, clarity, fairness, responsiveness, and responsibility.

Clearly forest practice regulations are but one way to sustain forest productivity and protect environmental quality. Although they may express a broad public intent to achieve this objective, they should not be assumed to do so by virtue of intent alone. The effectiveness of forest practice regulations depends on their impact. Their impact depends on landowners' responses to them, and rarely can these responses be expected to follow directly from the regulatory intent (SAF 1989).

8.1.3 Policy Recommendation for Minnesota

The background work for the GEIS has generated a family of site-level strategic mitigation recommendations. The material in section 4 illustrates that the existing framework to address these recommendations is adequate in theory. However, it can be limited to too few resources of landowners in practice. The GEIS study team therefore recommends that the site-level recommendations be collectively considered in a coordinated and more encompassing *state comprehensive Forest Resources Practices Program (FRPP)*. Such a program would be aimed at a common set of practices and guidelines across ownerships to provide a consistent framework for coordination of separate landowners' mandates and policies.

FRPP

Such a program would serve as an umbrella structure for the implementation of a wide range of specific management prescriptions that have been identified as necessary, and whose impacts are beneficial to important forest resource values. These management prescriptions could include guidelines that address the following activities associated with timber harvesting and recognized in the GEIS as desirable approaches to mitigating adverse impacts:

- timber sale design and layout to incorporate nontimber concerns (visual BMPs);
- methods for the disposal/redistribution of slash and other woody biomass;
- pest management, using the MNDNR's pest management guidelines;
- establishment and management of riparian corridors;
- BMPs for water quality;
- biomass retention (e.g., inclusion of snags);
- harvest and management practices, thinning, clearcutting, etc.;
- postharvest reforestation practices;
- types and methods of road construction;
- managing for visual/aesthetic objectives;
- managing for protection of unique historical/cultural resources; and
- traffic control/site amelioration to minimize compaction.

8.1.4 Practices Compliance and Support Mechanisms

The SAF principles mentioned in this section and detailed in appendix 4 serve as a guide for this major policy initiative. A central issue is determining the most efficient and appropriate means of effectively implementing these practices once they are developed. Possible alternatives for implementing these practices include the following.

Mandatory Compliance

Detailed rules and regulations are developed to prescribe how timber harvesting and forest management activities should be conducted. Mechanisms for reviewing compliance, and penalties for failure to comply with such rules would be part of the formal regulations. Appropriate mechanisms for monitoring and evaluation would be created.

Voluntary Guidelines

An alternative way to implement a comprehensive set of forest practices is through a voluntary compliance structure, much like the current BMPs in Minnesota. Under such a program, loggers and land managers would be offered opportunities for educational and training programs, appropriate technical/financial assistance, and other incentives to encourage application of desired logging practices. Public resource management agencies would play an important role in encouraging voluntary compliance with these practices.

Certification

Another tool to help implement a series of forest practices prescriptions is certification of loggers, forest operators, and foresters. Certification would likely help ensure that these affected groups are aware of current expected practices and are competent in their implementation. Establishing such a certification (or licensing) program before any member of these groups can operate in Minnesota is one way of influencing monitoring and checking compliance over the aforementioned forest practices prescriptions. In any case, participation in educational programs is essential for continued competency in conducting the desired practices and as a condition for continued certification.

Procurement Contracts

A final option listed here is for woodusing industries to require compliance with a code of practice (COP) as a condition of wood supply contracts. Under such a program, Minnesota's forest industries would endorse a COP developed under the FRPP. The COP would be incorporated into wood supply and forest management agreements, with noncompliance treated as a breach of contract conditions. This would link in with logger, forester, and forest worker certifications, which should be based on both required educational and demonstrated field training results. Those who do not comply with the COP risk financial losses as well as a loss of their certification/license to operate in the forests of Minnesota. However, under current state and federal laws such a program would likely lead to the determination of an employer/employee relationship between independent logging contractors and the landowners and wood using industries with whom they do business. Thus, care should be taken in the development and implementation of this option.

Suggested Approach for Minnesota

The GEIS recommends the following implementation steps be associated with adoption of the new FRPP:

- The FRPP should initially be voluntary. However, it must also clearly consider incorporating the following elements:
 - logger, forest operator, and forester certification or licensing programs;
 - statistically sound monitoring and evaluation of compliance activities. If compliance falls below a specified threshold, mandatory compliance rules should then be considered (including therein authority, costs, data needs/availability, and available resources) for the area out of compliance;
 - wood purchasing industries will be encouraged to adopt a forest operators/loggers COP that is congruent with forest practices guidelines. This COP would then be introduced into all forest operators/loggers contracts to ensure statewide standard compliance; and
 - the state should work with its own agencies and departments, the counties and the USDA Forest Service to develop financial and technical assistance and incentives programs for private landowners, operators, and loggers to encourage adherence to the practices prescriptions.

8.1.5

Administrative, Personnel, and Financial Requirements

The recommended organizational structure for implementing the recommended FRPP is discussed in section 8.4.

Development of a comprehensive set of forest resource practices prescriptions/standards should reflect broad-based inputs. However, administration of the FRPP must be assigned to a single body with the sole responsibility for implementing, monitoring, and enforcing approved practices.

With regard to personnel and finance, the GEIS process is too general to develop specific recommendations. Nonetheless, the state should carefully review the history of the ten states with full practices programs, as well as the three with defacto programs. The experience of these states should serve as a guide. As shown in appendix 4, Montana spends less than \$100,000 per year on a voluntary program driven by a unique *intent to* notification process requirement, while California spends over \$10,000,000 annually on a mandatory one. Additionally, staffing for review and enforcement of threatened or endangered species concerns may also need to be considered.

Minnesota should carefully consider the criteria suggested in the SAF position statement and maintain a very watchful eye on both staffing and

monitoring/compliance costs. Mechanisms, such as timber or processing taxes, or surcharges on recreation facilities, will ultimately need to be considered as possible mechanisms to finance such a comprehensive timber harvesting program or FRPP designed to meet only the absolute minimum requirements to mitigate site-level timber harvesting and forest management impacts.

8.2 Suggested Landscape-level Policy Responses

Landscape-level responses were defined as those typically being broad-based solutions to address the cumulative effects of individual site-level practices which require extensive planning and cross-ownership coordination to achieve intended regional or statewide objectives. This will be a difficult task due to the widely varying mandates and objectives of the various landowners statewide. However, without this effort, there will be no way to ensure the best possible results.

8.2.1 Goals and Objectives

The goals and objectives for suggested landscape-level policy responses are similar to those for the site-level responses. They should:

- incorporate all landscape-level mitigation strategies recommended in this study;
- apply statewide across all ownerships to the extent legally and practically possible;
- be simple, straightforward, and cost effective;
- consider the conflicting nature of diverse forest lands and forest land owners;
- involve all landowner groups to the maximum extent possible;
- be responsive to new data and information to ensure flexibility for change when needed; and
- create the environment to develop a common foundation (*not necessarily uniform*) for statewide resource management and planning objectives to the maximum degree possible.

8.2.2 Major Policy Elements and Considerations

Some of the key recommended mitigation strategies developed in the technical papers that are carried forward in this document have relatively

broad objectives that transcend forest land ownership boundaries. Typical examples would be:

- to balance age class and covertime structure statewide;
- to develop and institute a statewide road and trail plan;
- to fully implement an integrated forest health program; and
- to maintain patches of forest intact in areas of mixed land use (and ownership) by reducing use of clearcutting, linking patches, etc.

The consideration of mitigation strategies that transcend ownership boundaries and owners' objectives is clearly difficult under any circumstances. To the degree Minnesota's forest resources decisionmaking structure is presently diverse and complex, this can be even more difficult. Currently, the state does not appear to have a system that will generate a common foundation for statewide forest resources and resource management goals and objectives. As stated in section 4.8:

"... To the degree that the USDA Forest Service, the NIPF group, the counties, the MNDNR, and other interested parties, such as the forest products industry, conservation groups, the tourism and resort industry, etc., cannot go forward under well-articulated and common visions and goals, guidelines, and directions, the state's forest resources run the risk of inadequately providing for the values and services needed by society."

To meet this challenge, leadership is needed to develop this common foundation.

8.2.3 Policy Recommendation for Minnesota

The GEIS study team recommends that to successfully mitigate, in advance, unacceptable *landscape-level* impacts from timber harvesting and forest management activities, a statewide *Sustainable Forest Resources Program* (SFRP) should be adopted as the basis for a common statewide foundation. The study team realizes that other activities, such as the MNDNR regional planning, the Lake States Assessment, etc., are in progress. However, this is not enough. These efforts need to be coordinated and combined for effectiveness and efficiency where possible. This is the best road to a common and more effective statewide foundation.

SFRP

This initiative would provide a broad, landscape-level focus on managing Minnesota's forest resources for a variety of outputs and objectives as has been discussed in several technical papers. The basic objective of this SFRP would be to establish a structure and mechanism statewide for systematically

identifying existing forest resource conditions; evaluating these conditions in light of past forest resource trends; determining desired future forest resource conditions; identifying and developing specific strategies necessary to achieve those desired future forest resource conditions; and providing feedback to assess the success in achieving those objectives are determined.

In contrast to existing forest or land use planning efforts conducted by federal, state, and county agencies, the SFRP would identify and set goals for desired future forest resource conditions that *transcend ownership boundaries*. In addition, the temporal requirements associated with achieving these goals would likely be longer-term than existing individual planning efforts.

The SFRP would provide a systematic way to direct forest management towards the achievement of broad, landscape-level forest resource conditions and goals. In doing so, the program would be supported by the following major activities:

- *Identifying present and past forest resource conditions.* The first requirement in establishing a landscape-level approach to resource management is to develop a sound understanding of existing resource conditions and emerging trends. Such information is essential to recognizing how the resources have changed over time, what variables have influenced this change, and the likely direction these changes will take in the future. Doing so, however, requires the acknowledgement that it is impossible to monitor and evaluate all forest resource attributes. Instead, the focus needs to be on identifying the key parameters that reflect the broader health of the forest resources and their ability to function together as an ecosystem.
- *Identifying future forest resource condition goals.* The focus of this activity would be to determine what forest resource goals are both desirable and realistically achievable. The future contribution of Minnesota's forests to forest biological diversity, economic development, and forest health and productivity are examples of areas that need precisely defined goals. This would be done through incorporation of a broad-based interest representation. It is very important to define these goals in such a way that they can be realistically achieved. For example, a goal to maintain or advance the level of biological diversity would need to be articulated in the form of desired future forest age class and coevtype structure.
- *Management alternative formulation and implementation.* Once broad, landscape-wide forest resource goals are established, specific management strategies need to be formulated to achieve these goals. The success of the SFRP depends on the cooperative and coordinated effort of the different forest resource management organizations to develop comprehensive strategies, recognizing their respective individual politics and programs. A commitment is needed from these organizations to conduct their activities such that the landscape-level goals are defined and addressed. The strategies developed need not necessarily be identical among forest

- resource management agencies, but they must be complementary.
- *Monitoring and evaluation.* Another key to the success of a SFRP is ensuring that forest resource characteristics are monitored and periodically evaluated to identify the degree to which the desired future forest resource goals are, in fact, being achieved. The specific characteristics to be monitored will be closely linked to the desired future forest resource attributes identified in the second step. Performance results from periodic monitoring and evaluation will be a useful tool for making appropriate modifications to specific management practices and goals.

8.2.4

Administrative, Personnel, and Financial Requirements

The recommended organizational structure to help create and implement a successful Minnesota-wide SFRP is covered in section 8.4. However, some broad comments regarding administrative structure, personnel, and financial issues are noted here:

Administration Requirements

Administratively, a single entity should create and coordinate the implementation of the SFRP. This administrative body must be assigned both the responsibility and the authority to achieve this task on an *agency basis*. This administrative body *should have no line management responsibilities (day-to-day vested interests) for on-the-ground program implementation*, but it should be held accountable for the effective development, organization, and coordination of the program.

Personnel Requirements

The human resources need for this task should mostly come from existing natural resource units in public and private agencies and organizations. A successful SFRP can be achieved by redirecting these existing human resources to a new approach, rather than by layering an entire new personnel structure onto the already existing one(s). The only area of new staff support would be to the newly appointed administrative body, where some additional human resources will likely be required. These requirements are discussed in appendix 4.

Financial Requirements

As noted previously, for the most part this program will be organized by redirecting existing public and private resources rather than creating duplicative systems and funding needs. The major new financial issues will be centered around an annual budget for the modestly staffed administrative body. This is discussed more completely in appendix 4.

Like the recommended FRPP, the SFRP will need to be self-funded on a long-term basis or its viability, objectivity, and flexibility will be jeopardized.

A variety of funding source options are potentially available, but forest resources use or consumption levies should be considered as a primary source to generate the funding. This approach will be in the best long-term interest of the primary forest user groups, as it will internalize the cost of a SFRP to those with a vested interest in protecting, managing, and using the state's forest resources. This will, in turn, help to keep the entire effort simple and straightforward. The GEIS study team fully realizes this is easier said than done, but the principles are still sound. Further analysis of funding is beyond the scope of this study.

8.3

Suggested Forest Resources Research Strategic Responses

Forest resources research strategies in this category are intended to: obtain the information needed to undertake strategic and operational planning; monitor both short and long-term forest resource changes occurring at the landscape- and site-level; and provide a foundation of scientific information that can be used in developing technically sound forest resources management and planning policies and programs. The specific responses considered (from section 5.7.2) are:

- monitor the age class and covertype structure of the state's forests;
- complete an inventory of the state's biodiversity features;
- conduct an inventory of old growth forests across all ownerships;
- develop and fund a research program to investigate the effects of timber harvesting and forest management activities on the tourism and travel industry in Minnesota; and
- upgrade and maintain a listing of known archaeological, historical, and traditional use sites in the state.

These strategies tend to parallel findings of the recent study of forest resources research by the National Research Council (1990). This study called for strengthening five broad research areas:

1. the biology of forest organisms;
2. ecosystem function and management;
3. human-forest interactions;
4. wood as a raw material; and
5. international trade, competition, and cooperation.

Note that the GEIS recommended responses in section 5.7.2 are related to biophysical forest attributes and human forest interactions. As such, these strategies relate to areas 1 to 3 above. The GEIS did not focus scopewise on issues associated with 4 and 5. However, the full spectrum of research needs identified in appendix 4 does encompass these nationally identified areas.

Section 4 of this document outlines the existing organizations with responsibilities for forest resources research in Minnesota, as well as their current programs and initiatives. This study has also demonstrated three very important realities with respect to the importance and availability of information on Minnesota's forest resources:

- the GEIS process has been totally dependent on previously conducted forest resources research;
- the GEIS process has required a very significant amount of well-founded research in order to respond credibly, factually, and objectively to the FSD key issues; and
- while substantial and relevant research information was readily available for GEIS-related work, the GEIS process clearly identified the need for significantly enhanced research to comprehensively address all FSD key issues.

8.3.1

General Focus For Future Forest Resources Research

In addition to recognizing specific shortcomings in the current status of information relating to Minnesota's forest resources, the GEIS study process underscored the need to focus future resources research efforts to address the following information needs:

Multidisciplinary Considerations

Past research efforts have often focused very narrowly on specific, segmented areas of forest resources. As a result, research involving a broad cross-section of scientific disciplines from the biological, physical, and social sciences was seldom conducted. However, as resources management moves towards a more integrated and broadscale, landscape-level approach that involves interdisciplinary problem solving, the research needed to support this approach must also take on a parallel direction.

The GEIS study is an excellent demonstration of how to better understand and evaluate the interactions, interrelationships and interdependencies among various systems of the state's forest resources. Future research efforts must also be broadened to recognize these linkages from an ecosystem-level perspective. This will involve collaboration among a wide variety of natural resources disciplines.

Spatial and Temporal Dimensions

The GEIS exemplifies the utility of conducting forest resource assessments that consider broad-scale dimensions of time and space. The statewide scope and 50-year planning horizon generated levels of understanding not previously known about the interactions between various levels of timber harvesting and their effect on a variety of forest resource characteristics. As was discovered through this study, however, few data sets exist to meet the information needs of such analysis.

Public demand for a better understanding of how today's actions will affect forest resource values over long periods of time will continue to increase. Improved information and systems technology will allow forest resource managers to respond more efficiently by improving their ability to incorporate more forest resource information in their decisionmaking. Future forest resources research must broaden its scope to consider larger geographic scales and longer planning horizons than have been treated in the past.

Forest Resources Management Linkages

Scientists must continue to strengthen links between forest resources research outcomes and forest resources management practices. Rapid changes in technology regarding forest resources management and utilization suggest such links are essential if practitioners are to be more responsive in developing management techniques and principles are scientifically based.

Investment and Response Linkages

In order to cover these four concepts, Minnesota must have a well-designed and coordinated forest resources research program. Existing research focus is sporadic in terms of targeting needs for specific issues, providing cross-landowner interaction, and in coordination of statewide forest resources research programs. In short, a coordinated approach is needed to ensure the best possible advancement of strategies to mitigate potential impacts of timber harvesting and forest management.

8.3.2

Goals and Objectives

The research program required to cover the four broad information needs identified in the previous section should have an overriding goal to *meet both existing and future gaps in the level of understanding needed to properly manage Minnesota's forest resources over time.*

Furthermore, the appropriate research program will need to be carefully linked to both the FRPP (site-level responses and needs) and the SFRP (landscape-level responses and needs). In this light, the research program's objectives should be to:

- provide the scientific basis for development, refinement, and monitoring of forest practices and policies appropriate at the statewide level;
- develop an understanding of how timber harvesting and forest management affect landscape-level ecological processes and functions;
- ensure that timber harvesting and forest management in Minnesota are state-of-the-art;
- ensure that the information needed to guide policy development and monitor its effectiveness is available to decisionmakers;
- provide a structured way to set its own research priorities, undertake specific tasks, and to disseminate the results to appropriate end users; and
- be responsive to changing demands in information needs required by forest resource professionals and policymakers.

8.3.3 Research Program Considerations

The long-standing history of cooperative agreements between the USDA Forest Service NCFES and the UofM College of Natural Resources was noted in section 4.5. Also discussed were the roles of the UofM MAES and MES, as well as the NRRI in Duluth.

The resulting availability of formal research efforts has been constructive and provided important input to forest resources management in Minnesota. However, existing research organizations and cooperative agreements are not enough, as was determined during this study. In fact, the GEIS technical papers (and sections 5 to 7 of this report) have identified where required information was lacking, as well as possible areas for improving existing practices in order to achieve better mitigation results. These considerations can serve as part of the charge for implementing a fully-coordinated and focused statewide research program. Examples of research initiatives that could be included as foundation steps for this program are (a comprehensive list of all major research initiatives identified in the GEIS process is included in appendix 4):

- to develop a better understanding of timber harvesting and forest management impacts on ecosystem functions and processes;
- to provide the scientific basis for setting and refining desired age class and covertype goals to meet biological diversity objectives;
- to identify the full role of forest soils and their various conditions in forest resources productivity in Minnesota;
- to determine the interaction between the level of timber harvesting and forest management activities and the tourism/outdoor recreation industry;
- to develop management techniques and impact assessments for forest pests;

- to identify and evaluate low impact timber harvesting techniques and technologies applicable to Minnesota;
- to identify potentially complementary forest industries for Minnesota; and
- to fulfill some of the monitoring functions identified under the harvesting practices and SFRP.

8.3.4

Identified Research Program Overview

To meet the previous identified research program goals and objectives, and effectively deal with the other issues raised here, the GEIS study team offers the following recommendations with regard to a research program:

- to effectively and efficiently address the research needs, goals, and objectives for Minnesota, the state must assume the central role for coordinating the development of a comprehensive cross-landowner, statewide *Forest Resources Research Program* (FRRP);
- the administrative responsibility for coordinating the statewide FRRP should be assigned a single administrator. This assignment should allow for the utilization of existing systems and organizational structures wherever possible;
- the FRRP will need to be responsible for at least the following:
 - identifying research needs and establishing priorities and coordination among agencies for actual research work, with a focus on ecosystem and landscape-level research;
 - identifying and tracking all ongoing forest resource-related research, information dissemination, effectiveness, and funding issues;
 - encouraging collaborative programs and projects aimed at new technology development for more effective forest resources management;
 - facilitate methodologies and systems for database development, sharing, and application across species such as databases that allow for common ecological classification system and/or analyses;
 - develop methodologies for effective monitoring programs for scientific purposes, FRPP compliance needs, and cross-landowners and agencies forest resource administrative effectiveness;
 - foster research that is based on scientific principles of measurement, assessment and evaluation;
 - develop approaches to ensure administrative effectiveness across all landowners and agencies through good coordination and cooperation; and
 - develop a mechanism that generates a five-year statewide research program based on needs and priorities of the FRPP and SFRP. Also critical will be consideration of funding availability and mechanisms, institution/agencies available resources and talents, and cross-landowners' goals and objectives.

- the statewide FRRP should also become the driving force for extension, technology transfer, and continuing education activities, both current programs and those to be developed in cooperation with the MES. These educational efforts are viewed as essential to the acceptance and implementation of GEIS recommendations.
- The GEIS study team further recommends the establishment of a Minnesota Applied Forestry and Harvesting Program within the statewide FRRP and in coordination with the MES. The program would be jointly administered by the MNDNR and the MES and would:
 - be the basis of certification/licensing for employment and subcontract work in forest areas for all landowners and agencies in Minnesota as required by the COP;
 - integrate forest management, harvesting, and other forest multiresource subjects into a comprehensive extension education program; and
 - be supportive of the needs of the FRPP and SFRP.

This focus on coordination in research programs recognizes that data and research results useful to the GEIS has come from many sources in the state, from other research programs around the country, and from other countries. Within the state it is important to recognize the MNDNR Fish and Wildlife Division's research efforts, the Natural Heritage Program, and the Country Biological Survey as important contributors and parties to coordination. Additionally, by virtue of their progress in many areas of forest protection, management, and harvesting research, contacts and scientist exchanges with forestry research programs in Canada and Scandinavia are especially encouraged.

8.3.5 Administrative, Personnel, and Financial Requirements

The research program will operate in the overall statewide structure embodied and outlined in section 8.4. One of the FRRP administrator's first assignments would be to detail the initial administrative and staffing requirements required for the first five-year plan, including its education components. Some of the broad concepts that should be considered are that:

- existing organizations and mechanisms should be utilized to the maximum extent possible;
- subsequent new resource needs should first be appended to existing structures; and
- new structures be created only as a last resort.

As with the other GEIS recommended programs, self-funding should be used as much as possible. Heavy reliance on state general revenues would be likely to subject the research program to relatively frequent statewide budgetary debates. This could be destructive to a statewide research program *which must*

have a stable, long-term focus and direction.

To move toward as much funding independence as possible, the new research program should focus on the following:

- existing federal formula research funds and competitive grant programs;
- current state funds earmarked for natural resources research issues; and
- direct stakeholder support.

However, for long-term financial support sufficient to address the GEIS identified needs, the state should pursue securing alternative self-funding sources that relate to forest resources use or access, which are addressed in general terms in appendix 4.

8.4

Possible Administrative and Organizational Structures

Previous parts of this section discussed and outlined three major strategic program directions that need to embody implementation of the mitigation recommendations discussed in sections 5 to 7. These are the:

1. FRPP;
2. SFRP; and
3. FRRP.

The purpose of the remainder of this section is to outline a range of possible administrative and organizational structures that could be used in Minnesota to implement these three major strategic program recommendations. Included in this discussion will be the consultant's recommendation as to which arrangement would be the most effective in administering and implementing these three programs.

8.4.1

Characteristics of Effective Administrative Mechanisms

The long-term effectiveness of the strategic program recommendations will depend, to a large degree, on the administrative structures determined to have responsibility for their administration and implementation. There are a variety of administrative mechanisms and institutional structures that could be used to implement the FRPP, SFRP, and FRRP. Many of these already exist in Minnesota's public government infrastructure. The nature and substance of these three strategic program directions suggest there are obvious advantages and disadvantages associated with assigning responsibility of administering these programs to a particular organization. As the state begins to examine processes for implementing these recommendations, certain attributes stand out as being important characteristics of agencies or organizations assigned this

implementation responsibility. Thus, the chosen administrative structure should:

- provide opportunities for representative stakeholders of Minnesota's forest resources to provide input on development and implementation of the FRPP, SFRP, and FRRP;
- provide an environment that fosters interagency coordination on forest resource matters of mutual concern;
- have defined opportunities and procedures for providing public input, as well as defined processes for incorporating this input into decisionmaking processes;
- be empowered to fully carry out its responsibilities commensurate with the overall objectives of the three strategic programs;
- be recognized as the focal point that can provide input to legislative and executive branches on statewide forest resource policy matters;
- be recognized within the state as the organizational entity with the authority to implement the strategic program recommendations;
- have adequate staff and financial resources to fully accomplish each program's stated objectives;
- have the technical, administrative, and professional expertise to fully implement the three recommended programs;
- have defined processes for ensuring accountability from the various affected interests in achieving each program's stated objectives;
- have defined processes for fully implementing these programs in a manner that ensures cost and organizational efficiencies;
- consider the need to maintain the integrity of private property ownership rights; and
- have the authority and responsibility for implementing these programs which are not in conflict with existing laws or rules or other existing agency policies or programs.

8.4.2

Alternative Mechanisms for Implementing Strategic Program Recommendations

The GEIS study team recognizes that the ultimate decision for determining the appropriate place and administrative structure for implementing the three broad strategic programs recommended in the GEIS will occur outside the parameters of this study. This reality notwithstanding, the study team felt the GEIS has the responsibility for identifying possible administrative structures that should be considered in subsequent discussions of how best to implement the recommendations contained in this study, as well as suggesting a preferred structure.

The following discusses four such mechanisms/structures in the context of general strengths and weaknesses that would support or hinder their ability to effectively implement the FRPP, SFRP, and FRRP. Of these four, three

currently exist in Minnesota. The last mechanism discussed, a Minnesota Board of Forest Resources, does not presently exist and would have to be established. These four are by no means the only alternatives available to Minnesota—many others exist. Their inclusion here illustrates the breadth of options available that could be used to administer these programs.

Minnesota EQB

One possible administrative structure for implementing the three strategic programs is the Minnesota EQB. As the state's executive branch board responsible for coordinating statewide environmental policy, the EQB could serve as the repository for administering the three strategic program recommendations. Given the current structure, operation and responsibilities of the EQB, the following observations regarding the appropriateness of the EQB as the administering agency for the strategic program recommendations are made.

Strengths/Advantages

The EQB:

- is an established environmental policy board that reflects many of the characteristics and serves many of the functions that would be needed to administer the three program recommendations;
- currently plays a major role in coordination of state environmental policy;
- represents a broad cross section of interests reflecting different agency and citizen perspectives regarding natural resources and environmental policy;
- currently has the jurisdiction to address and coordinate natural resources issues that affect different agencies/organizations; and
- provides citizen access to environmental and natural resources decisionmaking through its well-developed and articulated policies and operating procedures.

Weaknesses/Disadvantages

However, the EQB historically:

- has focused primarily on pollution and land use/development issues, and thus its experience in dealing with natural resources issues, including forestry, has been quite limited;
- has and will continue to maintain a wide area of topical responsibilities, which will in turn limit its ability to focus consistently and in the required degree on the three strategic programs;
- has responsibilities that affect other levels of government beyond the state, primarily through administration of the state's Environmental Review Program. However, it may not be perceived by nonstate government entities as having the responsibility (or authority) to coordinate development of statewide forest resources policy;
- has limited staffing and additional staff support would be needed if the

EQB were assigned responsibility for implementing the three strategic program recommendations; and

- has functioned on enabling legislation that does not recognize many of the functions that would be needed to fully implement these programs, for example, in coordinating research and administering a voluntary forestry practices program.

MNDNR

As the agency responsible for resource management responsibilities on state forest lands, the MNDNR and/or its Division of Forestry is another possible organization that could administer the FRPP, SFRP, and FRRP. Reflecting this agency's organizational structure, mission, and responsibilities for resource management, the following observations are presented regarding the appropriateness of the MNDNR to administer these programs.

Strengths/Advantages

The MNDNR:

- currently has substantial professional resources management expertise in a variety of disciplines related to forest resources management (e.g., forest management, wildlife, recreation);
- has responsibility for managing a significant portion of the state's forest land base, and in response has developed numerous policies and programs directed at managing this resource;
- utilizes many of the resource planning activities in the department which are consistent with the general direction and intent of the SFRP;
- has experience in developing voluntary forest practice guidelines (i.e., BMPs), including coordinating two field audits on compliance with these practices;
- has previously established working relationships with many of the organizations that would be involved in implementing the three recommended programs (e.g., research); and
- has created linkages with different research units in the state and region, which would help support administration of the FRRP.

Weaknesses/Disadvantages

The MNDNR:

- is not explicitly empowered to serve as a coordinator for developing forest resource policies and/or goals on lands other than those that are state-owned;

- has processes for citizen access to resources management decisionmaking within the MNDNR that are sometimes perceived as being not well developed or articulated;
- is perceived by certain segments of the public as being too closely aligned with industrial interests to objectively carry out the provisions embodied in the three recommended programs;
- lacks authority for implementing research programs; and
- given its specific line responsibilities for statewide forest resources, as the administrator of the three strategic programs, the MNDNR would effectively become its own monitoring agency, which would likely create significant potential for conflicts as well as questions of credibility.

MFCC

The MFCC was established in the late 1970s at the request of the USDA Forest Service to serve as an informal means of bringing together various stakeholders to discuss common forestry problems, and develop cooperative solutions to these problems. There are currently 28 members on the MFCC. In general, membership to the MFCC can be characterized as including the state's public land management organizations, natural resources education and research institutions, professional forestry associations, and wood products industry interests. At present, MFCC meetings are held quarterly. Given its current structure and function, the following observations can be made regarding the opportunities for assigning GEIS implementation responsibility to the MFCC.

Strengths/Advantages

The MFCC:

- has many interests associated with forest resources management already represented on the MFCC;
- has had some success in coordinating forestry-related activities, including research and extension programming; and
- is represented with considerable natural resources professional and technical expertise.

Weaknesses/Disadvantages

Conversely, the MFCC:

- is strictly a voluntary committee, and as such it is not recognized in law, or otherwise as having authority to provide the administrative functions or decisionmaking authority needed to implement the three recommended strategic programs;
- does not have the support staff necessary nor the funding mechanisms to implement the program recommendations. Also, administrative and support staff responsibility is currently provided in-kind by the MNDNR's Division of Forestry;
- does not have a membership that reflects the broader stakeholder

representation that is suggested as being needed to incorporate balanced input in implementation of the FRPP and SFRP; and

- does not have well-developed processes for citizen access and participation in MFCC discussions.

Minnesota Board of Forest Resources

A fourth alternative administrative structure for implementing the FRPP, SFRP, and FRRP is creation of a Minnesota Board of Forest or Natural Resources. Such a board would provide the focal point around which all other administrative and organizational structure suggestions would flow.

In general, the functional responsibilities of the board should include the following:

- serve as the primary state entity for coordinating all forest resources issues, policies, plans, and programs;
- serve as the primary advisory body on forest resources issues to the executive and legislative branches of the Minnesota state government;
- design, implement, administer, and be responsible and accountable for the FRPP, SFRP, and FRRP; and
- work with both the executive and legislative branches of government to secure funding, and implement the organizational structures required to meet its mission.

If such a board were created, several general observations can be offered regarding its ability to serve as the administrative structure for implementing the FRPP, SFRP, and FRRP.

Strengths/Advantages

Creation of such a board would:

- establish a formal mechanism for developing and implementing *statewide and mutually-agreeable* resource goals;
- legitimize the authority for developing and implementing these statewide resource goals;
- address an identified problem of the need for better coordination among forest managers and owners in addressing certain forest resource issues of mutual concerns;
- provide a new opportunity for obtaining broad stakeholder representation in implementing the GEIS's strategic program recommendations;
- generate a well-defined access point for public input/response to resource management decisions;
- establish a focal point for addressing statewide forest resources issues and developing policy responses; and

- provide an opportunity to foster integrated management of the various uses of forest resources.

Weaknesses/Disadvantages

At the same time, such a board could:

- interfere with MNDNR, county, and federal management authority, management direction, and decisionmaking processes;
- with a small number of stakeholders, disenfranchise special interests not represented on the board;
- if limited to forest resources, set a precedent for creation of other state "resource" boards; and
- deter from its objective of achieving integrated resources management if it is too narrowly centered (e.g., a timber or a wildlife focus).

8.4.3

Recommended Administrative Structure for Implementing Strategic Program Recommendations

Given the relative strengths and weaknesses of the four alternative administrative mechanisms discussed in the context of implementing the FRPP, SFRP, and FRRP, the GEIS study team recommends a Minnesota Board of Forest Resources be established. The potential for a broader natural resources board also exists, but that is beyond the scope of this study. At this juncture, a forest resources board is viewed as embodying more of the desirable characteristics identified in section 8.4.1, relative to the other three administrative structures discussed. As envisioned by the study team, a Minnesota Board of Forest Resources would serve as the umbrella structure under which the three strategic program recommendations identified in this section would have the highest potential to be jointly and successfully implemented.

Other new vehicles besides a forest resources board are possible. Possibilities may evolve from several environmental/natural resource agency reorganization bills in the legislature, the Governor's Commission on Reform and Efficiency, or the Governor's Sustainable Development Initiative. The state could also adopt a forest resources commission or council, or create an expanded forest resources committee. Each of these options will have different characteristics and potentials for success, depending, of course, on the basic charter given the selected body. The primary differences among boards, commissions, councils, and committees are explained in appendix 4, section 8. However, if the administrative agency for these programs is going to reflect many of the desirable characteristics described in section 8.4.1, the GEIS study team's recommendation is that Minnesota establish a state board of forest resources. A more detailed description of suggested key characteristics and considerations of a forest resources board are presented in section 9 of appendix 4.

8.5 Implementation Considerations

The GEIS process, underway now for over three years, was a focused exercise to collect a tremendous amount of baseline data on Minnesota's forest resources condition, and make judgements about how timber harvesting affects these conditions. Recommendations to address specific resource concerns, as well as broader strategic policy responses, have also been identified. Now that this baseline assessment is complete, follow-up efforts need to ensure that, to the extent desirable and practical, the recommendations put forward in this assessment are implemented to their fullest. In doing so, three specific tasks are suggested:

1. GEIS information dissemination;
2. administrative responsibility assessment; and
3. supporting program development.

8.5.1 GEIS Information Dissemination

Many of the tactical recommendations identified in sections 5 to 7 can begin to be implemented on public lands directly by the land management agencies through changes in their operational procedures and policies. To facilitate this process, the GEIS study team suggests, to the extent possible, efforts be undertaken to disseminate the information and findings of the GEIS to the state's land management organizations. While many of the mitigations suggested in the GEIS are being carried out in varying degrees by these organizations, a comprehensive outreach program is needed to fully inform land managers of the study's findings and recommended modifications to existing management practices. In addition, educational efforts should be directed at disseminating the findings and recommendations of the GEIS to the 130,000 NIPF owners, as they are collectively responsible for managing nearly one-half of the state's forest land base. Workshops, seminars, and other like forums are suggested as appropriate vehicles to disseminate the GEIS findings and recommendations. This outreach effort should be a lead component of the education effort described in section 8.3.4.

8.5.2 Assigning Administrative Responsibility—Strategic Program Recommendations

Successful implementation of the three strategic program recommendations will require assigning administrative responsibility for program development. While the FRPP, SFRP, and FRRP efforts could be developed independently, the GEIS study team believes a forest resources board is the appropriate administrative structure for implementing these initiatives. As

such, the team views creation of a forest resources board as paramount to effectively developing these three major policy initiatives concurrently.

Therefore, as a means of implementing the strategic policy responses presented in this section, the GEIS study team recommends the initial focus should be on establishing a state board of forest resources. Being the recommended umbrella under which the site and landscape-level strategic policy and forest resources research initiatives are largely carried out, it is essential this organizational structure be created in advance of the other policy initiatives. Only after a forest resources board is created can these other strategic policy responses be developed and fully implemented.

In an effort to advance the concept of a forest resources board, the GEIS study team suggests the creation of an ad hoc task force with broad representation that includes both legislative and executive branches of government. This task force should be charged with (1) agreement on the key mission, authority, functions, and structure of such a forest resources board; and (2) preparation of draft legislation that would create a Minnesota Board of Forest Resources.

Should the state choose to use other organizational structures (e.g., EQB, MNDNR) for administering the three strategic programs identified, efforts need to be undertaken to assign the receiving agency with the appropriate authority and resources necessary to establish full program implementation. Such could include revising existing laws, or modifying organizational structures to accommodate this responsibility.

8.5.3 Supporting Program Development

A number of systems will need to be developed to support full implementation of the three strategic program recommendations. Although briefly discussed in the context of specific programs earlier in this section, supporting systems need to be thoughtfully developed in the context of the FRPP, SFRP, and FRRP. Key among these are the following:

- *Educational programs* will need to be developed to inform landowners, resource managers, and loggers of the various elements and practices embodied in the FRPP. Given the recommended voluntary nature of the FRPP, a thorough assessment of existing programs needs to be conducted and a comprehensive outreach programming strategy developed.
- *A range of technical assistance programs* will need to be considered to provide landowners with assistance in managing their lands for a variety of forest values. A number of technical assistance programs currently exist in both the public and private sector. A comprehensive review of these programs needs to be carried out to determine the gaps or inconsistencies in existing technical assistance programming, and identify desirable

modifications to such programs or the development of new ones that would support successful implementation of the GEIS's three strategic program recommendations.

- *Existing cost-share and other financial assistance programs* also need to be examined in the context of supporting full implementation of the FRPP, SFRP, and FRRP. Similar to the need to conduct a review of existing technical assistance programs, financial assistance programs need to be critiqued with the same goal of identifying existing program deficiencies. A key consideration in determining whether to augment existing programs or develop additional financial incentives for forest landowners is the effectiveness of such efforts in achieving desirable land management practices and forest resource outputs.
- *Professional education programs* will be paramount to providing the needed training to the state's existing and future natural resource professionals. Such programs should recognize the need to develop broad, interdisciplinary curricula that incorporate a wide variety of training opportunities in the physical, biological, and social sciences related to natural resources and environmental management.
- *Continuing education for resource professionals* will also be needed to ensure that resource professionals are exposed to state-of-the-art management techniques and technological innovations as they become available. This information exchange will become increasingly important as management direction responds to new management philosophies and directions (e.g., landscape management) that incorporates new paradigms.
- *Scientific monitoring programs* are critically important to serving as the mechanism by which the FRPP and SFRP are effective in meeting their intended goals. As such, comprehensive programs need to be designed to provide the necessary feedback information regarding overall program effectiveness at accomplishing its stated goals. In designing these scientific monitoring programs, consideration needs to be given to existing monitoring and evaluation efforts, as well as to determining the appropriate administrative responsibility for their implementation.
- *Research programs* will be central to the long-term success of the FRPP and SFRP. As such, research needs should be communicated to the research community via publications and conferences as the FRRP is being developed in order to move basic concepts forward.

8.5.4

Implementation Timeliness

A final thought on implementation is appropriate. The GEIS study team also strongly suggests that processes to implement these recommendations begin immediately. Public interest in management and protection of Minnesota's forest resources has grown tremendously in the last few years. The GEIS study process characterized many of the important forest resource issues, and has provided focus to the debate about the extent of problems or concerns, as well

as how to effectively deal with them. Given this momentum, the study team believes successful implementation of the study's recommendations will be enhanced by their timely consideration by the appropriate policymakers.