REPORT OF THE
JOINT SUBCOMMITTEE STUDYING

# The Impact of Satellite Chip Mills on Virginia's Economy and Environment

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA


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# I. AUTHORITY FOR STUDY

The 1999 Session of the General Assembly passed House Joint Resolution No. 730 (Appendix A), which established a 13-member joint subcommittee to study the impact of satellite chip mills on Virginia's economy and environment. In conducting its study, the joint subcommittee was directed to examine the:

1. Experiences in other states with the operation of satellite chip mills;

2. Current and potential impacts of satellite chip mills on Virginia's economy, natural resources and environment;

3. Potential impact on private forest landowners, including long-term profitability, the availability of markets and forest management options;

4. Sustainability of Virginia's forest resources to accommodate current and potential satellite chip mill production, including methods to improve forest management by private landowners; and

5. Practical methods for assuring economic and environmental sustainability of the forest, including the need for adequate resources for the Department of Forestry and other government agencies charged with the conservation of Virginia's forestlands.

A budget of $12,000 was allocated to complete the study, and the subcommittee charged to report its findings and recommendations to the Governor of the 2001 Session of the General Assembly. The two-year budget provided funding for eight meetings of the joint subcommittee.

# II. BACKGROUND

## A. TRENDS IN TIMBER HARVESTING IN THE SOUTH

The geographic shift in forestry harvesting operations from the public forestlands of the Pacific Northwest to the Southeast was due to a number of factors including a more attractive regulatory climate in the South, the fact that most forests in the South are owned by private landowners and the need for additional raw materials to meet increased demand from overseas markets. In excess of 70 percent of the 214 million acres of forest in the South is held by private, nonindustrial owners and 20 percent is owned by the forest products industry. The chief of the U.S. Forest Service in June of this year expressed concern with this shift to the South, noting that during the

past 20 years, a large surplus in the growth of timber compared to harvests in the region has been almost eliminated. In 1977, the growth of timber stock in the South exceeded harvests by 75 percent. By 1997, the gap had closed to five percent. In the South, according to federal estimates, the deficit in growth is greatest on land owned by the timber industry, where removals in 1997 exceeded growth by 15 percent. Timber industry officials counter that such concerns are groundless and that most logging is being conducted with the health of the forest as well as the industry in mind. They acknowledge that there may be a period where removals exceed growth but this is due in part to the forest resource growing old, and therefore, the growth slowing while the removals are increasing.

The increased harvesting in the southern region of the U. S. has been accompanied by an increase in the chipping operations. Since 1985, the number of high-capacity chip mills operating east of the Rocky Mountains has increased from 30 to more than 150. Part of the reason for the proliferation of such operations is the increased demand for fiber by domestic pulp and paper industries in the South. Pulp mills in the region have been increasing their production during the past two decades. The U. S. now produces about 28.5 percent of the world's paper and paperboard, and 31.3 percent of the world's pulp. Despite the increased production and sales, pulp and paper employment had declined by two percent since 1994. Wood products industry figures show that more than 1.2 million acres were cleared in 1997 to supply chip mills.

According to the federal Southern Resources Assessment, timber harvests in North Carolina, Tennessee and 11 of the Southern states increased by 50 percent from 1977 to 1997, from 6.8 billion to 10.2 billion cubic feet. Today, the states from Virginia west through Texas account for two-thirds of the 16 billion cubic feet of timber harvested in the United States.

To provide some context for a discussion of issues related to the operations of chip mills, a description of the structure of the forest products industry is helpful. The industry can be viewed as having two components: the solid wood segment that requires a continuous supply of mature trees to provide lumber for manufactured goods, and the paper sector that requires a large amount of wood fiber to manufacture paper products. In order to ensure a continuous supply of mature trees, the solid wood segment uses the environmentally accepted practice of selective harvest, in which older trees are harvested and many medium age and young trees are left for the next harvest in 15 to 20 years. However, the selective harvest method can be abused by "high grading," a practice in which only the best trees are taken and no cull cuts are made to ensure that commercially valuable species will be available for the next harvest. On the other hand, chip mills, in order to obtain maximum fiber volume at minimum cost for the paper industry, generally use the clear-cutting method. Industry representatives deny that chip mills promote clear-cutting, but rather help provide a market for all fiber coming from a forest harvest, thereby promoting good utilization. They state that,

economically speaking, chip mills do not drive any forest harvesting practice. However, "the financial incentive provided to landowners to merchandise otherwise unusable trees discourages bad practices such as high grading."[1]

There are two type of chip mills: (i) chip mills associated with saw mills and manufacturers that process mill and factory residues and (ii) "remote" or "satellite" chip mills that supply a primary facility (pulp or paper). In the past, most of the chip supply for paper mills in the South came from sawmill residue. Today, however, an increasing volume of chips received by the paper industry comes from satellite chip mills. This type of chip mill typically has a life expectancy of 10 years or less, depending on its production schedule, and directly employs 6 to 10 people. If one adopts the definition of a high capacity/satellite chip mill used in the North Carolina chip mill study[2], according to the Department of Forestry (DOF), the following operations would fit the definition: Tradewinds (Louisa County), Chip, Inc. (Fluvanna County), Cascade Chips (Brunswick County, although it only operates periodically), Brookneal Chips (Campbell County), Mt. Forest Products (Dickinson County), Smurfit-Stone (Charlotte County), and Glover Industries (Greenville County), which is under construction.

## B. STATE AND FEDERAL CHIP MILL/FOREST RESOURCES STUDIES

In response to forest resource trends and concerns raised by grass-root organizations throughout the Southeast, a number of states and the federal government have conducted studies of forest resources in the region.

### 1. Economic and Ecological Impacts Associated with Wood Chip Production in North Carolina

In 1996, James Hunt, Governor of North Carolina, directed the North Carolina Department of Environment and Natural Resources (DENR) to conduct a study of technical issues associated with wood chip mills and wood chip production in North Carolina. The study was initiated to examine the role of chip mills as part of North Carolina's timber industry, and to explore whether chip mills caused more timber to be harvested in North Carolina. Additionally, the study was to examine other potential ecological and economic impacts, including changes to forest composition, soil and water quality impacts, wildlife habitat alterations, regional economic impacts of wood-based manufacturing and nature-based tourism, effects on nonindustrial private forest landowners, and the effects on residents' perceptions of the quality of life in selected communities where chip mills were located.

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[1] "Frequently Asked Questions," Willamette Industries, http://www.wii.com/chipfaq1.htm.

[2] For the purposes of the North Carolina chip mills study these facilities (i) take trees harvested specifically for pulpwood, (ii) chip this material at locations other than a pulp mill, and (iii) ship the chips to another location for product manufacturing.

Scientists affiliated with the Southern Center for Sustainable Forests, a cooperative center established among North Carolina State University, Duke University and DENR, performed the research for the study. The $250,000 study, funded by DENR, the U.S. Environmental Protection Agency (EPA), and North Carolina State and Duke Universities, began on May 1, 1998, and most components were completed by July 31, 2000. Because the study's mandate was broad and the budget was somewhat limited, the study focused on high priority issues.

Certain topics such as the nonmarket (and nonuse) social benefits from privately-owned forestland and the potential for chip mill harvest impacts on understory forest plant communities were not pursued because of the scientific uncertainty about how best to analyze the relationship of these issues to chip mills. The study team sought to focus on areas in which it had the greatest confidence in its conclusions. The study relied extensively on existing data and current or newly developed modeling approaches, augmented with field observations. Entirely new data was collected in the community impact assessment and the wildlife components. One of the significant limitations of the study was the use of relatively old 1990 forest inventory and analysis data as the principal source on the status of North Carolina's forests. However, the use of timber products output data allowed an updating of timber harvest levels with reasonable accuracy through 1998.

The study was organized into two components: the ecological and environmental impacts associated with wood chip production, and the economic benefits and consequences of wood chip production. The objectives of the ecological component were to: (i) examine how wood chip production alters the ecology of forest stands in North Carolina, (ii) evaluate the direct, indirect and cumulative effects of wood chip production on forest structure, (iii) assess the impacts on selected animal communities, (iv) evaluate wood chip harvest impacts on soils and water quality, (v) determine the impact of wood chip mills on stormwater and wastewater runoff from processing facilities, and (vi) evaluate forest management options for assuring sustainability of the state's forest resources. The objectives of the economic component were to: (i) assess the current status of North Carolina forests, (ii) assess the effect of wood chip production on timber supply, (iii) assess the effect of wood chip production on wood-based manufacturing firms and on the outdoor recreation industry, (iv) analyze the effects of improved timber markets for forest landowners, (v) evaluate the market and nonmarket impacts of chip mills on economically efficient forest management practices and on forest conditions, and (vi) examine the impacts of wood chip production on local economies, infrastructure, and communities. While the study was to assess the current forest and land use situation and the role that chip mills play on those conditions, the mills were seen as only one of many factors affecting the state's forests.

The principal findings of the study are organized into sections reflecting the levels of confidence the researchers placed on the accuracy and reliability of the results. Among the finding characterized as "virtually certain" were the following:

- North Carolina's total forest area peaked at about 66 percent of the state's land in 1964, declined to 62 percent in 1990, and continues to decline, particularly in the Piedmont area, due to on-going urbanization. Forest losses have been partially offset by conversions of farmland into forests.

- North Carolina's soil and water systems are strongly influenced by long, intensive agricultural uses that have substantially affected soil and water systems, degrading many.

- Nonindustrial private forest (NIPF) harvests occur principally by clear-cutting (77 percent), without regard to whether there was a chip mill component to the harvest sale.

- Chip mills are part of the overall wood processing chain that procures and conveys wood fiber to pulp and paper mills. The quantity of pulpwood processed through North Carolina wood chip mills varies with pulp mill product demand. As of 1997, wood chip mills processed about 12 percent of the state's total timber harvest. The relationship between the number of wood chip mills and chip mill output volume is tenuous because the mills have usually only operated one shift per day but could increase production without new equipment or facilities.

- The only modern survey of erosion by land class in North Carolina was performed by the USDA Soil Conservation Service in 1978. That survey estimated that cropland contributed 65.1 percent of total erosion in North Carolina; other land 12.8 percent; surface mines 8.6 percent; forests 4.1 percent; urban areas 3.4 percent; pasture 2.9 percent; construction 1.1 percent; highway construction 0.7 percent; gully erosion 0.6 percent; and federal non-cropland 0.6 percent.

In the category of "high certainty," the researchers found that chip mills increase the utilization of wood fiber on a harvest site, so each acre yields more volume. Wood chip mills expand pulpwood markets, improve production efficiency, contribute to additional forest harvest area, and offer NIPF timber sellers markets for stands that were previously not economical to harvest.

The study did not find evidence that hardwood stands were being harvested solely for sale as pulpwood, as current (low) pulpwood prices make this choice uneconomical for most owners who can afford to wait and produce higher value

products. Under similar projected future prices and harvest costs, chip mills will not lead to significant shortening of average hardwood rotations. However, the researchers do indicate that chip mills will generate enough benefits to induce some owners to harvest more timber, if not make more regeneration investments.

Other "high certainty" findings include:

- Chip mills contribute to more and "cleaner" clearcuts. These result in higher revenues to NIPF landowners, reduce site preparation costs, and may actually reduce soil disturbance associated with mechanical site preparation in those cases where landowners choose to plant harvested acres to pine. The study estimated that annual cost savings in site preparation to North Carolina NIPF owners could be roughly $800,000. Conversely, increased fiber utilization will result in increased exposure of mineral soil, greater potential for erosion, and a reduction of post-harvest wildlife habitat complexity on lands left to regenerate naturally in hardwoods.

- Few high value hardwoods are being chipped for pulpwood. Commercially valuable trees with alternative markets are generally merchandized for their best commercial use.

- Wood chip mills have both replaced existing wood concentration yards and often opened new processing capacity in areas where timber inventory has been relatively plentiful and previous pulpwood procurement efforts have been small. At least in new pulpwood market areas, wood chip mills prompt additional acres of timber harvest and influence the distribution of harvests on the landscape. Despite the expansion of chip mills, a large amount of annual hardwood growth remained in comparison to annual removals in the 50-mile radius around 14 of the 18 existing mills.

- Historically, at river basin and statewide scales, effects of forest harvesting and management on soil erosion, flood flow, and water quality were modest (4.1 percent in 1978). Agriculture contributed the majority of erosion in the state (68 percent in 1978) and controls the dynamics of soil erosion, hydrology, and water quality in most river basins. Most effects of forest harvesting on soil and water systems occur at the local scale, on-site, or immediately downstream of harvested areas.

- Post-harvest recovery of soil and water depends on the process and on management. Where harvest systems are carefully laid out and attend to skid trails, access roads, streamside crossings, and streamside management zones, recovery periods can be relatively rapid, within one to five years for most

processes. Where harvest-system implementation is inadequate, adverse impacts on hydrology, water quality, and soil properties can slow the return to pre-harvest conditions.

- Accelerated channel erosion was the most common wood chip mill stormwater problem, though not severe at any chip mill site. Stormwater volume and velocity can be easily reduced by using best management practices (BMPs) (detention ponds, water bars, filter fences, terracing, etc.). Eroded channels in the vicinity of mills cannot be attributed to mill stormwater runoff alone. Eroded channels can be an artifact of past agricultural use throughout the state.

- Stream sedimentation was found to be a common but easily manageable problem in streams receiving chip mill storm water. Sources of sediment from chip mills include site surfaces as well as the upper portions of stormwater channels. The majority of surveyed sites contained high percentages of vegetated or armored surfaces and sedimentation rates were deemed to be low to moderate.

- Surface erosion was not deemed to be a significant problem at most wood chip mill sites, and was present only in localized areas. All observed cases of erosion can be controlled by stabilizing soil with vegetation, and grading site surfaces to drain into stormwater channels.

The researcher's ability to assess the impact of forestry operators and land use changes on wildlife was limited. A number of findings on the operations of chip mills and their impact on wildlife and habitat were classified as having a "medium level" of certainty.

- Chip mills allow more complete utilization of wood from harvest sites than is possible without a chip mill in the local market. The study estimates that chip mills improve utilization of timber by about 18 tons (450 cubic feet) per acre.

- Chip mills obtain material from better utilization of existing sites, but this does not supply all their material needs. The study concludes that roughly 1,000 additional acres must be harvested each year to support each additional 100,000 tons of chip mill capacity.

- North Carolina's forests are the best source of high quality water, and in aggregate the quantity and quality of water from forests serves to dilute negative impacts to water quality from agricultural and urban runoff.

- Although the differences in the volume of downed woody debris between sites with and without a satellite chip mill component are statistically significant, the researchers were unable to make definitive statements about the significance of these differences to wildlife. The consensus among experts is that the absence of woody debris would be detrimental to biodiversity and ecological processes. However, thresholds of woody debris volume below which wildlife are affected negatively have not been determined.

- The increased rate of timber harvest in North Carolina may adversely affect sensitive aquatic communities, through shortcomings in design and implementation of BMPs at individual harvest locations, and has potential for adverse cumulative effects, particularly in areas experiencing high rates of land use change unrelated to forestry.

The authors of the study discussed its many limitations, including the nonmarket benefits that are intrinsic to forests that are currently difficult to place a value on. They point out that the study found that public concern for these nonmarket values, and the fear that they may be negatively affected by increased timber harvests, is a principal factor in the present debate over chip mills.

The study's findings led the researchers to draw the following conclusions:

- North Carolina's forestland base has declined since 1964, and seems to be declining more rapidly with urbanization. Some of this loss is made up by agricultural land reversions to forests, but less forest area is anticipated in the future.

- The projected declines in timber areas and inventories in all forest management types, except planted pine, are cause of some concern.

- Wood chip mills, as part of the total wood-processing complex, contribute moderately to increased timber harvests. They process about 11 percent of the total timber removals in the state, but add processing capacity in areas where procurement efforts have historically been slight. They do increase timber harvest in an area around the chip mill, however, because these areas have had poor markets and little pulpwood in the past, the wood chip mills have not adversely affected sustainability in the short run. Instead, the chip mills have allowed pulp mills to procure wood farther from the pulp mill, where local timber inventories may be scarce.

- Even without timber harvesting, timber mortality will reduce timber growth because many of the trees are getting older. Because timber markets and price responses affect sustainability, increases in demand will level off if

prices rise too much, and timber harvests will decrease. Thus, sustainability goes beyond both the calculation of simple growth to removal ratios and mere timber production, into other market goods and environmental services that can be provided by forests.

- Forests in North Carolina probably yield the cleanest water in the state, contributing only a small portion of the sediment load. Wood chip mills have storm water management plans and rigorous standards to ensure that they protect water quality. They generally follow those guidelines well. However, research is needed regarding the impacts of (i) intensive forest harvesting and (ii) increased utilization associated with wood chip or other timber harvests on soil properties and site productivity.

- Wood chip mills provide NIPF landowners with new markets for previously unmarketable pulpwood, especially hardwoods. Forest benefits, other than wood chip sales alone, will remain the primary reason most private landowners hold land, although income from forest activities is significant.

- The wood-based manufacturing industry is large, contributing substantial value-added products and high wages in the pulp and paper sector, and significant employment and sales in the solid wood and furniture sectors. Nature-based tourism is a smaller economic sector than forest products but is about as large as any one of the three forest-based sectors. Nature-based tourism employs more people, although at a lower average wage. The service sector, including tourism, is growing much more rapidly than the wood-based manufacturing sector and the state's overall economy.

- Forest stock (area and inventory) is probably declining. This is being caused by both relatively rapid forestland losses to urban, minor land and rural transportation uses, and by rapid increases in timber harvesting.

- Whether the decreasing stock of forests, timber volume, and environmental benefits are caused more by wood chip mills and timber harvests or by development and clearing is still undetermined. Also uncertain is whether (i) improved forest management, (ii) more educational, financial or tax incentives, (iii) state regulation, (iv) conservation easements, or (v) free markets will best enhance sustainability.

**2. Missouri Governor's Advisory Committee on Chip Mills**

In 1998, Governor Mel Carnihan of Missouri issued Executive Order 98-16, which established the Advisory Committee on Chip Mills. Directed to identify the impact of

chip mills and associated forest harvesting practices, the Advisory Committee was to study the:

- Experience in other regions of the United States with the operation and forest resource harvesting practices of chip mills;

- Impact on the state's natural resources of new and existing chip mills in Missouri or neighboring states, including current and potential social, economic, and environmental impacts;

- Potential environmental impacts, including soil erosion, sedimentation, water quality, watershed protection, habitat loss, biological diversity, outdoor recreation and tourism, and any additional requirements that may need to be incorporated into any permit process to provide protection against such impacts;

- Sustainability of Missouri's forest resources under current timber production levels;

- Capacity of Missouri's forest resources to sustain increased chip mill production levels;

- Impact of chip mills on value-added industries and high-value forest products; and

- Long-term profitability of private forests.

The 14-member Advisory Committee was co-chaired by the Directors of the Department of Natural Resources and Department of Conservation and includes state agency heads, legislators, forest products representatives, environmental groups, a forest landowner, and a private property owner. The Governor directed state agencies not to provide new economic incentives to develop or expand chip mills in the state for the duration of the study. He also required the Department of Natural Resources, during this period, to condition future permits to (i) require training of all contractors and employees of chip mills in the use of sustainable logging practices and BMPs designed to protect water quality, (ii) require mill operators to reveal the sources (origin) of the logs they buy, so monitoring and improvement of cutting operations can occur, (iii) include "re-open clauses" that would allow the reopening of permits to deal with adverse impacts resulting from industry operations, and (iv) limit the duration of permits related to chip mills to no longer than one year.

The Advisory's Committee's final report was issued on August 1, 2000. The report is organized into three parts. Part I describes the nature of the chip mill issue in Missouri, the establishment and composition of the Advisory Committee, and its charge and activities. Part II contains background information on Missouri's forest resources, chip mills and forestry industry, forestry practices on nonindustrial private lands, and a discussion of environmental sustainability, education efforts targeting forest landowners, landowners rights and responsibilities, and experience with chip mills in other states. A significant portion of this part of the study examines the potential effects of chip mills and related timber-harvesting practices on the forest environment in the state. These include the potential effects of timber harvesting on (i) soil fertility and erosion, (ii) water quality, sedimentation, and watershed protection, and (iii) biodiversity and species conservation. Also, the study briefly examines the impacts on the quality and availability of recreational opportunities. Part III includes the Advisory Committee's 35 recommendations.

The Advisory Committee reviewed more than 70 possible recommendations. What follows are a number of those approved by a majority vote in the areas of (i) environmental sustainability, (ii) education, training and professional management, (iii) sustainable economic and social impacts, and (iv) financial support.

*a. Environmental Sustainability*

The Committee found that sustainability of all forest resources is critical and can be influenced by the kinds of practices conducted on forested lands. This involves sustaining the geological foundations and biodiversity of the forests. A sustainable environment encompasses both the living and non-living elements the forest ecosystems.

Recommendations:

- Update the state forestry laws to increase participation in the program by linking landowner assistance to the implementation of BMPs.

- Establish a Forest Resource Council whose purpose would be to: foster collaboration among the wood products industry, environmentalists, the tourism industry, public agencies and private landowners; advise the Governor and state and local governments on sustainable forest resource policies and practices; and coordinate priority forest research and develop and implement sustainable forest management initiatives.

- Create an interagency task force to evaluate the present definition of "best management practices."

- Institute a requirement for use of best management practices for harvests involving removal of 50 percent or more of forest cover on more than 40 contiguous acres during a period of one year within Ozark regions where soils are low in fertility and the landscape is more dissected. Establish a requirement for a Missouri Timber Harvest permit issued by the Missouri Department of Conservation for such harvests.

- Fund a long-term research effort focused on the wood source area for chip mills that utilize remote sensing and other techniques to investigate harvest sites, location, methods, and use of BMP's; and a comprehensive two-year study of the environmental, social and economic impacts associated with chip mills, including harvesting in source areas, to be comprised of university, state and federal agency personnel and submitted to the General Assembly by January 1, 2003.

- Encourage companies to use the principles of the Sustainable Forest Initiative (SFI) or other certification programs on all forestlands and participate in a verification process.

- Fine responsible parties based on the environmental degradation their actions have caused. The resulting fund would then be used for a combination of education, incentives, regulation and monitoring.

*b. Education, Training and Professional Management*

Education, training and management are critical to the long-term sustainability of Missouri's forests. The goal is to have every forest landowner and mill operator educated in sustainable forest management, all timber harvests follow BMPs, and all loggers professionally trained. The Committee (i) supports the existing Statewide Certification Training Program for Loggers and the effort to create incentives for voluntary logger certification and (ii) encourages the use of such trained loggers in timber harvesting and the maintaining of a list of such certified loggers.

- Encourage the formation of a coalition of forest landowners that would agree to use only trained loggers and implement sustainable forestry principles.

- Establish a Professional Registry Board for professional licensed foresters to practice in Missouri.

- Develop seminars to assist landowners in bidding and selling their standing timber.

- Institute a high intensity forest landowner education effort in the chip mill sourcing zones and include an evaluation of effectiveness.

*c. Sustainable Economic and Social Impact*

The Committee's vision is to see a healthy forest-based economy that would be sustained over time and to support a forest resource that would provide amenities and financial returns to both landowners and all Missouri citizens.

Recommendations:

- Enhance the marketing efforts by the Departments of Agriculture and Economic Development to assist in the development of value-added forest products and export trade.

- Endorse a grant program for marketing/feasibility studies that provide assistance to wood products firms to develop value-added business concepts that lead to new or expanded uses or technologies for agricultural products and foster economic development in rural areas.

- Expand policies that encourage the use of recovered paper by the paper industry and programs that require or promote the recovery of waste paper.

- Expand research and development of alternative fiber sources for paper, focusing on high-yield crops.

- Institute strategies that reduce the demand for virgin wood pulp, including policies that promote greater acceptance by the public and private sectors of lower grade paper stock in publications.

- Encourage the formation of forestry cooperatives for marketing, management, export development, etc.

*d. Financial Support*

The Committee found that state funding of education programs and the providing of financial incentives and support to landowners should be available to those who use sustainable management and BMPs.

Recommendations:

- Consider using some of the revenues from the soil conservation portion of the Missouri Parks and Soils Sales Tax to sustain soil productivity for sustainable

forest management and forest resources in Missouri.

- Encourage producers to develop a statewide check-off program on timber sales modeled after those for other agricultural commodities. Revenue would support research, marketing initiatives, and education.

- Reduce tax liability for forest landowners who use sustainable management and BMPs by (i) creating a sliding scale for capital gains tax; (ii) allowing expensing of management costs; (iii) allowing a double deduction for the net cost of timber stand improvements; and (iv) working to reduce the federal inheritance tax.

*e. Other*

Recommendation:

- Recognize the fundamental rights and responsibilities of property owners relative to timber management through policies and land use practices that protect soil and water resources without unduly restricting landowners' discretion to make responsible land use decisions.

### 3. Federal Study of Environmental Impact of Chip Mills Terminals on the Tennessee River

In 1990 and 1991, the Tennessee Valley Authority (TVA) and the U. S. Army Corps of Engineers (USACE) received permit applications from four companies seeking to build barge terminals for the purpose of shipping wood chips to market from proposed chip mills. The supply of hardwoods and access to low-cost water transportation make the region a desirable location for hardwood chipping facilities. This has resulted in the paper industry constructing wood chip mills in southeastern locations remote from existing pulp and paper plants. Siting these mills on the inland waterway enhances their economic competitiveness and increases the potential market.

Industrial development on the Tennessee River requires several different permits and approvals from TVA and USACE. The National Environmental Policy Act requires federal agencies to assess and consider the potential impacts of actions they propose to undertake or the actions others propose but which require federal agency approvals. For major actions, such as the building of barge facilities, an environmental impact statement (EIS) must be prepared and circulated to the public and other interested agencies for comment. TVA's and USACE's initial approach was to prepare individual environmental assessments for each of the barge terminal applicants. The environmental review was to focus on the direct and indirect effects of the barge

terminals and the environmental consequences to the sites where the associated chip mills proposed to locate. Potential impacts on the wood procurement or sourcing areas, while recognized, were not evaluated in detail. In response to public comments, timber-harvesting analyses were significantly expanded in the EIS to include the cumulative effects of locating one or more chip mills within the same forest procurement area.

The TVA and USACE identified and evaluated in detail three alternatives: (i) no action, (ii) approve one or more requests with typical, on-site environmental protection conditions, or (iii) approve one or more of the companies requests subject to conditions that would reduce the potential environmental impacts in the timber procurement area. Under the first alternative, the no action alternative, TVA and USACE would deny all of the requests made by the chip mill applicants. This alternative would avoid localized impacts associated with construction and operation of the proposed barge terminals and prevent one of the companies from constructing a chip mill. However, any of the companies could decide to relocate to other sites and transport the products by truck or rail rather than by barge because TVA and USACE do not regulate chip mills located on private property and that do not need river access. Thus, denial of the requests might delay, but not necessarily avoid, potential harvesting impacts.

Under the second alternative, one or more of the requests would be approved on the condition that on-site environmental protection measures be implemented that are similar to those applied to industrial applicants. No attempt would be made to enhance or improve forestry practices or programs, under the assumption that existing programs would provide some degree of protection in the procurement area. Among the on-site measures required would be chip mill and truck noise controls, construction BMPs, runoff and dust controls, and archeological resources protection.

Under the third alternative, the agencies would approve one or more requests with timber procurement conditions designed to reduce potential environmental effects from harvesting. These conditions could include enhancing existing forest management programs or adopting specific protective measures. The effectiveness of this alternative depends, to a large extent, on the performance of state agencies with jurisdiction over private timber harvesting activities.

The EIS found that the proposed chip mills would primarily obtain logs from privately-owned forests in a three-state, 42-county area. While acknowledging that estimating harvesting-related impacts involves "substantial" uncertainty or speculation because such impacts depend on the decisions of private landowners to make their timber available, the EIS did draw several conclusions. It found that an increase in the percentage of harvests would be expected as a result of chip mill timber procurements. Compared to the types of harvesting currently occurring in the 42-county source area, clear-cutting was expected to increase from 44 percent to as much as 69 percent if three

chip mills were to locate in the region; while selective harvests would decrease from 56 percent of all harvests to 31 percent. This would mean that 114,000 acres per year of the forests could be clear-cut, compared to 55,000 acres per year being currently clear-cut. One of the benefits of additional clear-cutting, according to the EIS, is that clear-cutting would favor a wide array of tree species including commercially valuable species, although the actual composition of future stands that regenerate is not always predictable. The EIS also noted that increased timber harvesting would (i) affect plant communities and associated wildlife populations, and (ii) cause stream changes in terms of stream temperature, sedimentation, flow modifications, and nutrient enrichment. Examining the mills' impact on jobs and income, the EIS concluded that the three mills would increase direct and indirect employment in the area by 1,400 jobs and increase annual direct and indirect income by $71 million. With these findings as a basis for its actions, in 1993 TVA denied all permit requests associated with the barge facilities and three chip mill applications.

**4. Tennessee Forest Management Advisory Panel**

As a result of the public's concerns over clear-cutting, chip mills, and sprawling pine plantations, the 1997 Session of the Tennessee General Assembly established the Tennessee Forest Management Advisory Panel to identify policies that promote forest sustainability and sound stewardship. Specifically, the Advisory Panel was to look at:

- The management objectives and guidelines for state forests;
- Policies for forest management practices;
- Objectives, programs and services available for private forests; and
- Alternative funding strategies to accomplish sustainable forest management.

Tennessee forests cover 13 million acres, most privately owned, and support a $5 billion timber industry.

The 39-member panel was made up of individuals from the wood products industry, landowners, agricultural representatives, environmentalists, foresters, and legislators. The panel made 28 recommendations that were endorsed by a majority of the 29-voting members. The recommendations were characterized as "urging" mostly voluntary and educational programs to promote responsible timber harvesting. Listed below, the recommendations fell into four categories: increase education, expand research, encourage partnerships, and promote incentives.

Increase Education

- Enhance and expand BMP education for private landowners and professionals;

- Increase funding for education and personnel for managing state forest lands; and

- Establish registration programs for professional foresters to ensure that foresters are adequately trained and registered.

Expand Research

- Publish an annual report on the state of Tennessee forests;

- Research the causes of, and develop recommendations to reduce, forest fragmentation; and

- Support more comprehensive research on state forestlands.

Encourage Partnerships

- Establish mechanisms for public participation in state forest planning and management; and

- Establish industry and state partnerships to promote education and forest management.

Promote Incentives

- Establish mechanisms to provide landowners rewards and incentives for practicing good forest management and planning for both timber and non-timber objectives (i.e. development of a forest bank); and

- Strengthen and enforce consequences or disincentives for loggers who violate water quality laws (examine Virginia "bad actor" law).

The Advisory Panel, recognizing that the implementation of many of its recommendations would require additional revenues, explored ways of securing additional funds. The panel examined such financing options as imposing an environmental assessment on all property taxes and earmarking the assessment portion,

imposing a severance tax on timber, dedicating a percentage of the sales tax on specific items (outdoor equipment, ATVs, chain saws), reallocating funds generated by real estate transfer taxes, and establishing permit fees for loggers. However, the Advisory Panel did not recommend specific mechanisms.

A number of environmental groups asserted that the report failed to address important issues and focused simply on voluntary measures, leaving state forests open to "assault" by the pulp and paper industries. They recommended a number of legislative initiatives, including (i) a comprehensive Forest Practices Act to assess forest resources and regulate large commercial timber harvests; (ii) a bill to prevent the awarding of economic incentives to large pulpwood facilities without an assessment of their impact; (iii) a directive to the Division of Forestry to study selective cutting, promote recreation in state forests and identify sensitive areas for protection; and (iv) authorization to allow counties to enact a severance tax on large pulpwood harvests.

**5. Southern Forest Resources Assessment**

As the demand for southern forest products and forest-related amenities continues to mount, leaders from federal and state agencies across the Southeast have begun a study aimed at measuring whether the South's forests can continue to meet growing resource demands for the long-term. In 1999, officials from the USDA Forest Service, the U. S. Fish and Wildlife Service, the Environmental Protection Agency, the Tennessee Valley Authority and state forestry agencies initiated a two-year study of the southern landscape. The overall objective was to compile and analyze the best available data in order to examine the status of forest resources in the South: their productivity, ecological diversity, and sustainability. It will provide managers of public lands and private land owners with information on which to base decisions regarding how to address pressures facing the South's forests. The project is expected to conclude by 2001. It will include a review of the full array of forest products and service demands, as well as the current and probable supply of resources. The study will examine (i) harvesting trends for a variety of products including sawtimber, pulp and paper; (ii) the rate of conversion of forests to other land uses; and (iii) the ecological diversity of the resource including biological organisms and their habitats. For purposes of the study, the term "sustainability" is defined as the ability to manage private and public forests to meet the needs of the public today, without compromising future generations' ability to meet their own needs.

There are trends that give resource managers some concern: first, timber production has increased in the South; second, patterns of population growth in the region and their impact on the resource; and third, the changes in land use in the region and the implications of such changes in the forest resource. The methodology of the study involves a two-tier approach. One analysis will evaluate resources region-wide. The other will focus on one or more smaller areas where sustainability either

appears to be in question or requires further attention. The unit of analysis of smaller area investigation could be by state, multi-county, or ecological region. The study will make no judgements or decisions about future uses nor will it recommend strategies for managing resource extractions or services. The area to be covered by the study includes forests in Alabama, Arkansas, Georgia, Kentucky, Florida, Louisiana, Mississippi, North Carolina, South Carolina, Virginia, Tennessee, Texas and Oklahoma.

## C. VIRGINIA STATUTES

Management of the Commonwealth's forests is the responsibility of the State Forester and the agency he heads, the Department of Forestry. By statute, he is to "supervise and direct all forest interests and all matters pertaining to forestry within the Commonwealth." (Va. Code § 10.1-1105). Among his duties are the (i) development of a program to promote the use of prescribed burning for community protection and ecological, silvicultural, and wildlife management; (ii) enforcement and prosecution of all laws pertaining to forest and woodlands; (iii) development of silvicultural best management practices, including reforestation, prevention of erosion and sedimentation, and maintenance of buffers for water quality; (iv) collection of information on forest destruction and conditions; and (v) protection of state waters from pollution by sediment deposition resulting from silvicultural activities.

It is in protecting state waters from sediment deposition that the State Forester has at his disposal his most effective enforcement tool. Under the 1993 silvicultural "bad actor" law (Va. Code § 10.1-1181.1 et seq.), the State Forester is authorized to issue special orders to landowners, timber owners and operators who have conducted or are conducting or have allowed to be conducted silvicultural activities that are causing or likely to cause pollution. The order requires the owner or operator to cease immediately all or part of his forestry activities on the site and to implement specified corrective measures within a stated period of time. Such orders can only be issued after a hearing with reasonable notice. However, if the State Forester finds that the activity is being conducted in a manner "which is causing or is likely to cause an alteration of the physical, chemical or biological properties of any state waters resulting from sediment deposition presenting an 'imminent and substantial' danger to (i) the public health, safety or welfare, or the health of animals, fish or aquatic life, (ii) a public water supply, or (iii) recreational, commercial, industrial, agricultural or other reasonable uses," he may issue, without advance notice or hearing, an emergency order directing the person to immediately cease the activity and take specific corrective measures. The State Forester is required to then provide an opportunity for a hearing, at which time he can affirm, modify, amend or cancel the emergency special order.

If an owner or operator fails or refuses to obey a special order, the State Forester may impose a civil penalty of up to $5,000 for each violation. Each day of a continuing

violation may be judged to be a separate violation. In determining the amount of the penalty, the State Forester is directed by the statute to take into consideration the violator's history of noncompliance; the seriousness of the violation, including any irreparable harm to the environment and any hazard to the health or safety of the public; whether the person was negligent; and the demonstrated good faith of the violator in reporting and remedying the pollution. The civil penalty can be assessed only after the owner or operator has been given an opportunity for a formal hearing conducted under the provisions of the Administrative Process Act. If a person fails to pay the civil penalty, the order is transmitted to the circuit court of any county or city where the person owning the property has any estate, whereupon a lien will be placed on his property. An owner or operator has the option of agreeing to a consent order in which the offender and the State Forester agree to specific civil charges in lieu of a civil penalty. In 1998, an amendment was made to the silvicultural law, which requires owners or operators, prior to or not later than three working days after the beginning of the operation, to notify the State Forester. The notification has to specify the location and the actual or anticipated date of the activity.

The State Forestry is also authorized to exercise his enforcement powers to ensure compliance with Virginia's Seed Tree Law (Va. Code § 10.1-1162 et. seq.). Under § 10.1-1164, a landowner, who commercially cuts timber from 10 acres or more of land on which loblolly or white pine grow and which constitute 25 percent or more of the live trees on each acre, is required to "reserve and leave uncut and uninjured" at least eight cone-bearing or white pine trees 14 inches or larger in diameter, unless there is in effect on that land a department-approved management plan. Violators may be found guilty of a misdemeanor and can be fined $30 for each seed tree cut in violation of the law; however, the total amount of fine for any one acre cannot exceed $240. A person who does not carry out any term of the management plan may be found liable to the Commonwealth in a civil suit brought by the Attorney General for at least $240 per acre subject to the plan as well as any legal fees incurred by the Commonwealth. In addition, any person convicted of failing to leave the proper percentage of seed trees uncut must post a cash deposit or bond with the court in the amount of $30 for each seed tree cut in violation of the law, with the total amount required to be posted not to exceed $240 per acre. The cash deposit or bond is used to ensure that the cut-over area is properly seeded by the landowner. Once the agency inspects the replanted area and finds the planting was done appropriately, the cash deposit or security is returned to the landowner. If the landowner fails to implement the replanting plan, the cash or bond can be used by the Department to pay the cost of the planting.

Virginia's air and water pollution laws administered by the Department of Environmental Quality (DEQ) recognize the fact that chip mills and the associated timbering operations are potential sources of pollution that should be regulated so as to minimize their environmental impacts. An air pollution control permit is required

for any new chip mill that emits more than 15 tons per year of a certain size of particulate and for expanding or modifying sources (facilities) that emit 10 tons per year of this particulate matter. Sources falling below these levels must still register with DEQ.

Storm water discharges from chip mills are a regulated industrial activity under the federal National Pollutant Discharge Elimination Storm Water Regulations and the Virginia Pollutant Discharge Elimination System permit regulations (VPDES). These facilities are required to obtain a permit from DEQ. This permit is issued under the authority of the Environmental Protection Agency's Multi-sector Industrial Storm Water General Permit and covers storm water discharges from the operations of the facility. A storm water pollution prevention plan (SWPPP) has to be developed and implemented. The SWPPP identifies all storm water discharges at a facility and requires the implementation of both structural and non-structural BMPs to reduce the impact of storm water runoff on the receiving stream to the maximum extent practicable. The permits may also contain water quality based effluent limits, if conditions warrant, as well as a requirement for storm event monitoring, and a periodic assessment of the effectiveness of the storm water controls. If the mill stores treated wood it must conduct on-going monitoring.

A VPDES permit is also required during the facility's construction phase if five or more acres will be cleared, graded or excavated as part of the construction activity. The five-acre threshold will be reduced to one acre in approximately one year in order to bring Virginia's general permit provisions in conformity with the EPA's Construction Baseline General Permit. This permit also requires a SWPPP, with an emphasis on erosion and sediment controls for the storm water runoff. Any timber-cutting related to the facility's construction is covered under this permit. Once the facility's construction is complete, this permit is terminated.

Local governments have limited powers to ensure that proper silvicultural practices are followed. In 1997, legislation was enacted (Va. Code § 10.1-1126.1) that prohibits local governments through use of their police, planning and zoning powers from unreasonably limiting forestry practices that are conducted (i) in accordance with silvicultural best management practices and (ii) on forest lands or lands in agricultural or forestal districts. Ordinances regulating silvicultural practices have to be reasonable and necessary to protect the health, safety and welfare of residents. A recent formal opinion of the Attorney General stated "that a locality may regulate by ordinance silvicultural activities but must observe the duties and limitations that are clearly and unambiguously set forth in the statute."

Currently, localities in Virginia are authorized to adopt and administer an erosion and sediment control program. Under the Erosion Control Law (Va. Code §

10.1-500 et. seq.) no person may engage in any disturbing activity of 10,000 square feet or greater until he has submitted an erosion and sediment control plan for the activity, and the plan has been reviewed and approved by the plan-approving authority. However, a specific provision of the law exempts "tilling, planting, or harvesting of agricultural, horticultural, or forest crops, or livestock feedlot operations" from what is defined as land disturbing activity, so long as the harvesting or reforestation activity is done in conformance with the forestry laws.

## III. SUBCOMMITTEE DELIBERATIONS

The subcommittee met six times during a two-year period. It received testimony and comments from more than 23 individuals. They included representatives of the various sectors of the wood products industry, environmentalists, DOF officials, economists, forest resources researchers, community activists, private landowners, and a local economic development official. At its initial, organizational meeting the subcommittee was provided with information and materials on the (i) mission and responsibilities of DOF, (ii) economic importance of the forest products industry to individual private forest owners as well as to the statewide economy, and (iii) potential environmental effects from the operation of satellite chip mills. The second meeting was devoted to presentations on the state of Virginia's forest, current studies of forest resources, the impact of chip mills on communities, and the economic impacts of forest resources. By the third meeting, the last held in the first year, it was clear that it would be difficult to achieve consensus on many of the chip mill-related issues. Consequently, the subcommittee requested Dr. Richard Collins, Director of the Institute for Environmental Negotiations, at the University of Virginia, to conduct an analysis to determine if there were areas in which there was agreement, which he discussed with the subcommittee. At this meeting, the subcommittee was able to reach agreement on the need for additional findings for DOF, which is detailed later in the report.

The subcommittee began its second year of deliberations with a tour of a satellite chip mill that at the time was not fully operational, a private industrial forest, and private property that had been clear-cut. At its fifth meeting, the subcommittee received an update of DOF's Virginia Forest Inventory and a presentation on the merits of developing a comprehensive forest policy. The last meeting of the subcommittee was a work session in which it reviewed a draft of the subcommittee final report and adopted recommendations for legislative action.

As noted previously, the subcommittee had difficulty reaching a consensus on issues relating to the impact of satellite chip mills and associated timbering activities on Virginia's economy and environment. Recognizing that there were two distinctive points-of-view, the subcommittee sought testimony from those who could be characterized as supporting the current forestry management system, including

enforcement of the silvicultural water quality laws, and those who believe there should be greater government oversight of the forestry industry and its practices. This report reflects these differing positions by presenting each group's perspective of the forestry industry's impact on Virginia's economy and environment.

## A. ROLE OF THE DEPARTMENT OF FORESTRY AND THE STATE OF THE FORESTS IN VIRGINIA

### 1. Agency Mission

The Department of Forestry's mission, according to Deputy State Forester Bettina Ring, is to "protect and develop healthy, sustainable forest resources for Virginia." The focus of the agency is on all of the forest resources. Forests provide (i) renewable raw materials to meet our daily needs, (ii) watershed and stream protection, (iii) wildlife habitat, (iv) improved air quality, (v) recreational opportunities, (vi) an appealing tourist attraction, and (vii) an enhanced quality of life. The challenge of sustainable forest management in Virginia, according to Ms. Ring, is "to integrate and provide economic benefits from our forests for the current generations without impairing the ability of future generations." The agency accomplishes its mission by:

- Protecting private forestland from fire, insects and disease, and degradation;
- Providing technical assistance to private landowners by engaging in such activities as preparing forest stewardship plans, and coordinating reforestation projects;
- Growing tree seedlings for reforestation and related purposes in its three nurseries and maintaining a genetic tree improvement program that has been in existence for more than 40 years;
- Administering state and federal cost-share assistance programs;
- Working with local governments and land trusts on conserving the forest land base and comprehensive land-use planning; and
- Serving as the lead agency for implementation of the Riparian Buffer Plan.

In addition to these activities, the agency manages a water resources program in response to the passage, in 1988, of the Silvicultural Water Quality Law, which sought to protect streams from sedimentation resulting from silvicultural activity. The program was established as a non-regulatory approach that focused on increasing awareness and providing assistance and education in the field by training loggers, the forest products industry and landowners in acceptable silvicultural practices. Under

the program, DOF inspects those harvesting operations that it is aware of to ensure compliance with the law. The program is coordinated by a water resource team that includes a water resources manager and compliance engineers who provide regional coverage, but have statewide responsibilities for water quality protection.

In seeking to maintain healthy forests for Virginia, the department has set the following objectives:

1. To ensure an appropriate balance of growth and removals;

2. To increase the number of landowners receiving advice from a professional forester on how to manage their forestland to meet their objectives;

3. To maintain adequate incentives for landowners to retain their land in forest;

4. To provide unbiased resource information to ensure more informed land use decisions are made throughout Virginia; and

5. To integrate economic and environmental goals for the forests so that the benefits can be sustained to meet the needs of future generations.

Sixty-one percent of the land in Virginia is forested. There are approximately 16 million acres of commercial forestland. Seventy-seven percent of the forest is owned by nonindustrial private forest landowners, represented by 300,000 citizen landowners, with 10 percent owned by the forest products industry, and 13 percent owned by federal, state and local governments. Sixty-five percent of the forested acreage is hardwood forest, 24 percent is softwood, and 11 percent is mixed forest. According to DOF figures, the forest products industry contributes $9.8 billion annually to Virginia's economy. An additional $1.5 billion per year is contributed by forest-related activities such as hunting, fishing, recreation, and tourism. Timber, over the years, has been consistently ranked as the most valuable cash crop in Virginia. The forest products industry is ranked number one in manufacturing jobs (over 228,000 employees), second in salaries and wages and fourth in total value-added through manufacturing. For every one-dollar received by landowners for their timber, approximately $49 of economic activity (including value-added) is generated.

DOF has completed and is presently conducting several assessments of the state of the forests in Virginia. In 1992, a survey of Virginia landowners examined who Virginia's landowners were, who they would be in the future and what their goals, values and attitudes were regarding management of their forestland. The Department has begun the Forest Resource Assessment Project that is characterized by the agency

as a "proactive approach to looking at Virginia's forest resources on a continual basis." Phase I of the assessment examined the distribution of Virginia's population and its impact on the state's forestland. The Department found that more than 20,000 acres of forestland are being lost annually to other land uses, which has resulted in greater forest fragmentation with its attendant impacts on the economy and environment. According to Ms. Ring, such fragmentation makes it more difficult to provide fire protection and protect water quality in these transitional areas. Phase II of the project focused on the economics of forest management. Phase III, which is being completed, provides a detailed assessment of the current state of forest resources at a local level with a pilot-project in Louisa County. This entails working closely with the local planning department, the Louisa County Board of Supervisors, and representatives of local industry to determine what types of resource information is needed for decision-makers to make more informed land use decisions. It is anticipated that this effort will result in detailed mapping and spatial analysis of forest fragmentation and the surveying land ownership patterns. Such information will assist local officials in determining the quantity of forestland that is necessary for Louisa to sustain its rural character while at the same time providing the appropriate level of economic and ecological benefits.

**2. State of Virginia's Forests**

In 1997, DOF began the latest Forest Inventory Analysis. The first inventory was done in Virginia in 1940 by the U. S. Forest Service (USFS). Since then inventories have been conducted in 1957, 1966, 1977, 1986 and 1992. Because DOF wanted more current data, state crews working in cooperation with the USFS were established to conduct an annual forest inventory to determine the status of growth and removals, acres of forestland, the quality and quantity of timber and the overall condition of the forest resource. In order to complete the inventory by the fall of 2000, the number of crews working "on the grounds" has been doubled.

State crews will be measuring one-fifth of the sample plots each year over a five-year period. Each year's effort will constitute an annual survey with the figures updated each year. More than two-fifths of the plots have been surveyed since the state's inventory began in 1997. There are more than 5,000 ground plots that will be analyzed, and in excess have 2,000 plots have been surveyed. The inventory will contain the following information:

- The acres of land in forest and their distribution among various forest types;
- The number and volume of trees in the forest, by species, age and size class (stocking);

- The amount of growth in trees and volume removed since the last inventory (removals); and

- The amount of trees and volume that died since the last inventory (mortality).

The inventory has provided a profile of Virginia's forestlands. Commercial forest area has increased since the first inventory in 1940, reaching a high in 1977 of 16.42 million acres or 64.6 percent of the land. The chart below also indicates a decline between the period between the 1977 inventory and the 1986 inventory, attributable primarily to urbanization and an increase in the amount of forestland not available (parks and wilderness), according to DOF officials. The DOF anticipates that this trend in the loss of available timberland will continue. A slight increase in 1992 was due, to some extent, to an increase in the abandonment of agricultural land.

**Commercial Forest Area**

| Year | Million Acres | Percent |
|---|---|---|
| 1940 | 14.83 | 58.4 |
| 1957 | 16.11 | 63.4 |
| 1966 | 16.34 | 64.3 |
| 1977 | 16.42 | 64.6 |
| 1986 | 15.57 | 61.2 |
| 1992 | 16.03 | 63.1 |

In the period between 1940-1992, forest ownership has not changed dramatically. Industry ownership has been steady, about 10-percent, while private nonindustrial landowners have owned up to 80 percent, with the current figure being 77 percent. However, one of the significant changes has been that, while in excess of 60 percent of forest ownership in 1957 was farm ownership, by 1992 less than one-third of the private nonindustrial ownership was classified as farm ownership. There also has been a decline in the size of an average tract of forest. A 1992 study indicated that the weighted median tract size was 73 acres. This means that half the forestland in Virginia owned by nonindustrial owners is in relatively small tracts.

One of the positive trends documented by the forest inventories is the increase in the growth stock inventory during the past 60 years. In 1940, there was approximately 13 billion cubic feet of commercial timber. By 1992, the amount of growing stock had increased to 26.5 billion cubic feet. During the past 50-60 years, the most dramatic increase in growing stock has been the 148.9 percent increase of cubic feet of hardwoods. The increase in softwood stocks, while less dramatic, still grew by 32 percent (Appendix B).

To obtain a more complete picture of the forest resource it is important to examine not only growth in the timber stocks but also the cubic feet of timber being harvested (removals). For softwoods, the greatest differential between growing stock and removals was in 1992 when the growing stock exceeded the removals by 25 percent or a growth/removal ratio of 1.25 (Appendix C). Typically, softwood-growing stock has exceeded removals, except in 1966, when more softwood was cut than grown. However, even for those years when growth exceeded removals the differential was small. In fact, the preliminary data from 1998 suggest the growth of softwood stocks will exceed removals by only one percent.

Until recently, the hardwood growing stock has been significantly greater than the removals (Appendix D). The 1986 inventory documented the beginning of a reduction in the growth/removal ratio as hardwood stocks decreased and removals increased dramatically. No longer, as was the case in 1986 inventory, is the growth in hardwoods twice as much as the removals (ratio = 2.08). Data collected in the 1998 inventory appear to indicate that growth exceeded removal by only 37 percent (ratio = 1.37).

There has been a change in the composition of the forest. Upland hardwood acreage has increased between 1940 and 1992. Lowland hardwood forest acreage remained the same during this period but pine stands have decreased significantly from 5 million acres to less than 3 million acres, with the stands generally being younger. The only type of pine that has not declined in acreage is loblolly. Virginia and shortleaf pine have been in serious decline. Virginia pine has fallen from more than 3 million acres in 1940 to about 1.5 million acres in 1992 and shortleaf pine has dropped from 1.2 million to 100,000 acres during the same period. The loblolly pine has remained at 2 million acres. However, natural stands are being replaced by plantations.

The species composition has also changed over time, led by a dramatic increase in oak volume from just below 4 billion cubic feet in 1940 to close to 10 billion cubic feet in 1992. Based upon percentage increases by species, red maple has increased approximately 320 percent and yellow poplar increased in excess of 250 percentage (Appendix E). The growth of these two species indicates a change in the forest toward more shade and fire tolerant species.

Dr. John Scrivani, who is directing the current Virginia forest inventory, noted in his testimony before the subcommittee that the commercial uses of the forest, in the period 1940-1992, have been sustainable, and in fact, wood volume has doubled as the forest has matured. However, he cautioned that while an increase of about 18 percent in removals since 1992 should not result in total removals exceeding growth, the margin will be narrowed, thereby raising legitimate concerns.

## B. ECONOMIC IMPACTS OF FOREST RESOURCES

According to DOF officials, Virginia is "blessed with a very productive forest." Forest can grow almost anywhere in Virginia. In most instances, with some skill and knowledge, a very productive pine or hardwood stand can be regenerated. This means that commercial uses of Virginia's forest can be sustained and provide commercial benefits. In measuring the economic benefits derived from commercial uses of the forest, the Department uses the following indicators[3]:

- Stumpage - the cash payments received by forest landowners for the right to harvest timber from their land;

- Cash receipts - the cash payments made for wood at the point of forest processing, such as a sawmill. The cost of harvesting is included so comparisons can be made to other harvested crops.

- Output - the cash value of the products made by either primary or secondary wood products manufacturers; and

- Employment - the jobs created by forest management, timber harvesting and forest products manufacturing.

The latest (1998) estimate of stumpage received by forest landowners in Virginia is $312 million. This figure is more than double that of 10 years ago, reflecting partly an increase in the amount harvested, but to a greater extent, a significant increase in timber prices. The stumpage increase has occurred for both pine and hardwood, as prices stabilized for hardwood and continued to increase for pine. When expressed as cash receipts, timber harvests can be compared to the harvest of agricultural products. According to the DOF, based on 1997 data, timber harvest ($602 million) is second in cash receipts to poultry and eggs ($730 million) and slightly more than all field crops combined ($480 million). As a percentage of all agricultural and forest products, poultry and eggs represented about 25 percent of the total cash receipts in 1997 and timber accounted for 20 percent.

The total manufacturing output of the forest products industry can be divided into primary and secondary processing.[4] In 1996, the direct output for primary processing industries was about $5 billion and approximately $4.5 billion for secondary industries for a total of $9.4 billion. Indirect output, which includes

3. Harvest figures were estimated using forest products tax receipts. Stumpage prices were those reported on a regional basis by field foresters. The computations of direct, indirect and induced economic impacts were calculated using the IMPLAN economic model.

4. Primary industries include sawmills, paper mills, paperboard mills, pulp mills, etc. Secondary industries includes wood furniture manufacturing, cabinets, boxes, etc.

goods and services purchased from other industries for the manufacturing process, totaled another $4.1 billion. The Department has not at the time of this study estimated the induced impacts, which are economic outputs resulting from spending by industry employees. Thus, excluding what the induced impacts might be, the total output in 1996 was $13.4 billion. This level of manufacturing output is nearly 50 percent greater than the last estimates.

Paperboard mills were responsible for 33 percent of the value of the products produced by the primary forest industries (output), followed by paper mills (20 percent), saw mills (19 percent), logging (7 percent), reconstituted wood products (5 percent), veneer and plywood (5 percent) and all others (11 percent). For secondary forest industry, the greatest value of products produced was wood furniture (31 percent), followed by paperboard containers and boxes (26 percent), millwork (12 percent), wood preserving (5 percent), cabinets (5 percent), prefabricated buildings (4 percent), and others (17 percent).

In 1996, the forest products industry employed a total of 181,825 individuals, 66,621 of whom were directly employed by the industry. A breakdown of the employment profile appears in Appendix F.

## C. FOREST PRODUCTS INDUSTRY'S PERSPECTIVE

### 1. Industry Structure and Maintaining the Resource

Representatives of the forest products industry pointed out that it is made up of a number of interdependent sectors. Satellite chip mills are only one component in a manufacturing process that involves (i) landowners making decisions on the use of their forest timber, (ii) saw mills and lumber yards maximizing use of all the wood material by cutting low quality trees and tree parts into chips, (iii) transporting the chips to mills, and (iv) processing the chips into pulp and paper products. Thus, chip mills should be viewed from broader context in terms of what is occurring in the forest products industry. They note that certain types of facilities are an essential part of the industry, suggesting that not a single acre in Virginia is cut just to supply chip to mills. However, the market for chips does enable landowners to receive benefits from fire-damaged trees and parts of trees (tops) that cannot be utilized for lumber. In many instances, stand alone chip mills have simply replaced equipment in woodyards that previously had been located at the paper mill sites.

Mr. Ben Reeves, a representative of Georgia Pacific, reminded the subcommittee that forest markets, whether they are for chips or whole logs, encourage landowners to use their land to grow forests and maintain them for future generations. The following are examples of this commitment to maintain Virginia's forests:

- Landowners voluntarily focus their efforts on growing and sustaining the forests. The Sustainable Forest Initiative, adopted by the industry, involves a comprehensive approach to growing and harvesting trees while protecting wildlife, and soil, air and water quality. In 1999, the forest industry spent nearly $64 million on research related forestry, wildlife and biodiversity.

- Chip mills do not mean more acres will be harvested, rather there will be a better utilization of trees.

- The industry voluntarily addresses harvesting practices. During the past decade it has made a conscious effort to implement BMPs. The use of BMPs by landowners and loggers increased from 50 percent in 1987 to 90 percent in 1990, and 95 percent in 1997. These efforts have resulted in better water quality and less raw material being sent to landfills, according to DOF's Water Quality Task Force.

- The forestry industry has established a BMP education program in which 2,500 loggers have participated.

- The industry offers assistance to private landowners in managing their land for timber, wildlife and recreation, and encourages landowners to maintain their land as forests. Private companies such as Westvaco and Georgia-Pacific employ foresters whose time is devoted to helping private landowners manage their land.

- Manufacturing facilities are more efficient and technologically advanced than in the past. Almost half the chips from pulp and paper mills comes from wood left after trees are made into lumber at the independent saw mills.

**2. Contribution to Virginia's Economy.**

According to industry representatives, the forest products industry contributes more than $11.5 billion annually to Virginia's economy. Approximately 230,000 Virginians are employed by the industry, receiving $1.6 billion in payroll. The harvesting process and the manufacturing and marketing of wood products contributes $9.8 billion annually to the economy. In addition, the annual value of outdoor recreational activities associated with the forests is estimated to be in excess of $1.7 billion.

Dr. John Muench, a retired forest economist, discussed the economics of the forest industry. He emphasized that central to any economic analyses of the forest products industry are the concepts of value-added income and the multiplier effect. Because the wood that consumers use is not in the form of raw logs, there are many

value-adding steps taken before timber products are eventually in the hands of the consumer. The manufacturing process involves the logger, the trucker, the sawmill, and the pulp plant. From these primary processing stages the wood moves to a construction site, a pallet mill, a flooring plant, a furniture factory, a paper mill, a box plant or other secondary and tertiary processors. Each step involves transportation and marketing expenditures, and income opportunities for other businesses, such as the diesel fuel supplier, the manufacturer and distributor of saws and machinery, etc. He cited a 1995 DOF study showing that for each dollar paid for standing timber, the total direct and induced impacts multiply that one dollar 49 times. According to the study, timberland-based activities accounted for 85 percent of the $11.5 billion that all forest-based activities contributed to Virginia's economy. He also cited the 1987 Virginia Agricultural Futures Study that included data on the contributions the various sectors of Virginia's economy made to the state's gross state product and the multipliers resulting from direct and induced activity from each sector. The study reported that multipliers for the lumber, pulp and paper, and wooden furniture industries are exceeded only by that of the construction industry, which is an industry that uses a large volume of wood products.

Dr. Muench pointed out that changes in forest production would particularly affect rural areas, where these industries tend to be located. He suggested that an opportunity exists to develop the forest products industry to replace the income and employment opportunities being lost through the decline of the tobacco industry in rural areas.

While acknowledging that tourism is big business in Virginia, Dr. Muench noted that spending on food, fuel, lodging, and souvenirs is done at what he termed "magnet" attractions such as Virginia Beach, Busch Gardens, Williamsburg, Kings Dominion and Explore Park. Much less is spent by tourists in the less-developed rural areas. He observed that "restricting forest harvesting in order to provide an aesthetically pleasing landscape for rural visitors is not likely to attract more tourism to those areas." The "Futures" study recommended that the state increase efforts to promote the export of forest products in order to maintain and expand value-added activities and jobs created by the forest products industry. In addition, the study found that new markets should be developed for the state's hardwood forest, in light of the fact that hardwood growth exceeds annual use. Dr. Muench suggested that satellite chip mills "fit" this market development recommendation. He believes that world demand for timber products will continue to grow and that Virginia landowners, industries and workers can gain income and employment by meeting that demand using the state's abundant forest resources.

### 3. Economic Development

Mr. Glynn Loope, executive director of the Allegheny Highlands Economic Development Authority, as someone who is responsible for enhancing economic development efforts in the rural western region of the state, expressed his support for the timber and forest products industry. He noted that the region covered by the Authority has the highest unemployment rate west of Richmond and north of the coalfields. To demonstrate the impact of wood products sector on the economy, he presented 1998 economic data showing that the lumber and wood products sector generated $97.4 million in taxable wages (statewide), representing 27,717 direct jobs. This figure does not include an additional $72.4 million in wages from 22,340 jobs in the furniture business, nor $23.1 million and 17,697 jobs in the paper and allied products sector.

He pointed out that while Virginia and the nation have enjoyed much economic growth, many regions and communities have not participated in the booming economy because of their lack of economic diversification and the absence of infrastructure to accommodate growth. He is concerned with any effort that would, in effect, destabilize the existing industries in the region, resulting in the loss of jobs that are "nearly impossible" to replace. In the Lenowisco and Cumberland Plateau Planning Districts, which encompass the seven coal producing counties of Lee, Wise, Scott, Dickinson, Tazewell, Russell, and Buchanan, the existing wood products sector directly accounts for 916 jobs and $5 million in wages. Farther up the Route I-81 corridor, spanning from Bristol to Harrisonburg, the industry is responsible for creating 5,446 jobs. This figure does not include the related furniture and paper sectors, which contribute another 12,134 jobs. In Southside, from Danville and the Lynchburg metropolitan areas to Petersburg, there are approximately 24,784 jobs associated with the forest products industry. Mr. Loope noted these jobs were characterized as "fragile" and as being "at risk" by the Governor's Employment and Training Department.

He rejected the notions that (i) jobs lost in the forest products industry can be replaced with service sector jobs in the tourism industry and (ii) "forest removal" would cause dramatic losses in the travel and tourism industry. As evidence to the contrary, he cited the thriving resorts and recreational activities in the forested area located between the world's largest bleach board paper mill (Westvaco) and the Homestead resort. Also within the area are Douthat State Park and Lake Moomaw. The area affords outdoor enthusiasts thousands of acres to hunt, fish, camp and hike on actively managed forestland, which has a pulp and paper mill that has been operating for 100 years. Comparing the personal income generated by the tourism and wood products industries, Mr. Loope stated that in 1998, in the Roanoke Valley, the average weekly wage in the tourism business (lodging and related services) was $298,

versus $581 in wood products and $725 in non-durable good manufacturing (paper-making). Mr. Loope, characterizing it as a "regional fit," expressed interest in attracting a chip facility to a community like Clifton Forge. Because the state or federal government owns most developable land in the Highlands region, the creation of jobs and a stable tax base is problematic. That is why the wood products industry has become the foundation of the region's economy.

## D. SUPPORTERS OF GREATER OVERSIGHT OF THE INDUSTRY'S PRACTICES

### 1. Environmental Concerns

The subcommittee heard from a number of individuals who believed the state should play a greater role in overseeing the operations of satellite chip mills and associated forest practices. Mr. Rick Parrish, an attorney with the Southern Environmental Law Center, informed the subcommittee that environmentalists have no desire to dictate how landowners manage their private forestlands, so long as they take their stewardship responsibilities seriously. The environmental community's objective is to ensure that the timber industry remains healthy, viable and sustainable into the future. Mr. Parrish suggested that a healthy, sustainable timber industry will be "protective of the environment," while a short-sighted, "cut-and-run" timber industry will likely do greater damage to both the environment and the community. He noted that this concern regarding sustainability is reflected in the Virginia Department of Forestry's Virginia Forest Assessment, 1997 Phase One Project Report, when it states:

> When all timberland is considered available for harvest and management, current levels of timber growth can support the current levels of harvest, with a comfortable margin. However, if only 'suitable rural forestland' is considered to be the basis for long-term sustainability, current levels of consumption meet or exceed current growth.

He characterized the issue before the subcommittee as not simply one of private versus public rights and responsibilities, though that is certainly a factor in the debate. The real issue, according to him, is whether the state has a role in ensuring that long-term economic activity is sustainable. Environmentalists believe that the land, air, water, and inhabitants thereof will be protected by focusing on sustainability. Communities will be protected as well from the problems associated with third world economies that are based upon resource extraction, where the benefits are experienced "elsewhere" and the problems stay at home. He expressed a concern with the scale of harvesting operations, noting that timbering operations are acceptable and suitable on a small scale but can cause "enormous problems over the longer term if conducted on a large scale." He described a situation in which a logger goes onto private forestland ostensibly to take the low-grade, leftover hardwood, but because of its availability

takes the young, straight, healthy saplings, thereby maximizing the amount of timber that can be harvested. What results is timber being taken to the chip mills that is a mix of knotty, old, twisted wood that might be beneficial for wildlife habitat but not useful for lumber, and long, straight grain hardwood that is too young for lumber but suitable for chipping. These are the materials that 20-30 years from now will provide the raw material for sawmills. He suggested that unless the property owner is particularly astute or a state agency is carefully monitoring the forest situation, the logger will not leave the younger timber, giving it a chance to mature and provide lumber in the future.

Mr. Parrish believes a longer-term perspective is needed. He sees the Commonwealth on the "brink of a problem," as the industry is beginning to harvest more timber than is being grown. The more satellite chip mills that are located in Virginia, the more difficult it will be to reduce the amount of harvesting. He sees the need for an enhanced educational effort to better inform landowners of the choices available and the options they have that will enable them to better manage their timber resources. He cautioned the subcommittee that if we reach the point where we are cutting more than we are growing, the economy in those regions that are dependent upon the forest resource will experience an economic downturn because the resource will no longer be available over the long-term.

Ms. Dana Smith, Executive Director of the Dogwood Alliance, echoed many of Mr. Parrish's concerns. The appearance of chip mills in communities, logging trucks on rural roads, clear-cutting, sedimentation in streams and rivers, and severe impacts on the local sawmill industry have fueled many of these concerns. She is not concerned with one chip mill, one clear-cut, one pine plantation or what one landowner is doing on his land, but rather the cumulative effect of all of these decisions. She stated that citizens across the region are requesting that the state, before issuing the needed permits, examine the off-site logging impacts, and the effects on the local economy and water quality of those communities that are located next to a proposed facility. She emphasized that the current forestry policies will not protect communities or the environment from intensive types of forestry practices, which have not previously been witnessed in the region; although, she acknowledges that Virginia is not as yet experiencing the type of extensive forestry practices that are occurring in other states in the region.

**2. Economic Impacts**

Ms. Smith also spoke about the forest products industry's effect on the economy, emphasizing that any such analysis should not be limited to the industry's contribution to the economy but should also include the various costs. This means addressing such questions as:

- How much taxpayer money is going into subsidizing the industry through the use of various tax incentive packages?

- What are the costs of water quality degradation?

- What is the cost society has to bear?

- What are chip mills socio-economic effects on a community in terms of poverty rates and education levels?

Mr. Karyn Moskowitz sought to answer a number of these questions. Ms. Moskowitz is an economic analyst who for the past six years has worked with a number of nonprofit organizations, including the Dogwood Alliance. She stated that while timber production is projected to increase, it will probably not result in increased employment or income for most communities in the southern Appalachians. Although timber production increased by 20.1 percent from 1983 to 1992, real income increased by only 14.3 percent and employment increased just 2.7 percent. Even though harvests were greater in 1992 than in previous years, the number of jobs per million cubic feet of timber harvested, adjusted for inflation, decreased by 4.8 percent (Appendix G). She cited a federal study, Southern Appalachian Man and the Biosphere, that estimated the ratio of jobs to volume harvested in solid wood industries is about three times higher than the ratio for pulp and paper industries. The average annual wage in the timber industry in the region is approximately $18,405, about $3,000 below the average wage for the manufacturing sector as a whole.

Ms. Moskowitz observed that Virginia's economy is typical of the entire country. Services, retirement, government, and retail trade are becoming the dominant sources of personal income and employment, compared to extractive industries such as forestry and mining. However, she noted, the vitality of most regions' economies still depend, to a large extent, on the health and vitality of its forests, with a standing forest now being more valuable to the economy than a logged one. According to her, surveys have shown that a healthy environment is an important factor in determining where individual households will locate. Similarly, surveys of businesses have shown that an attractive environment, high quality of life, and access to recreational opportunities are important factors in businesses deciding where to locate. She suggested that workers with the highest skills and incomes want to live where the quality of life is high, and are not attracted to communities with degraded forest environments. She cited a 1994 survey conducted in southwestern Virginia in which three-quarters of the respondents stated that the quality of life in the area would prevent them from ever leaving the area.

Using several economic indicators, Ms. Moskowitz discussed the forestry-based industry's impact on Virginia's economy. U. S. Commerce Department data on total

state earnings in 1997, broken down by place of work, show that service industries represent the most earnings in Virginia, followed by government and the manufacturing sectors (Appendix H). Forest-based earnings are 1.43 percent ($1.7 billion) of total state earnings and 10.8 percent of the manufacturing sector's earnings (Appendix I). It is her opinion that individuals and companies in the service sector, the sector generating the most earnings, seek out and thrive in a healthy, natural environment. A place with good water quality and clean air has its own multiplier effect. Local economic activities based on the environment (recreational opportunities and services) absorb and hold dollars longer in the local economy. So, for example, if an area offers abundant recreational opportunities, residents will travel less than if it offers few opportunities, thereby keeping their money in the local economy. According to Ms. Moskowitz, traditionally, rural economic development policies in the South have focused on the recruitment of extractive industries. These are seen as "basic" industries that drive the engine of a regional economy, bringing in money as they export goods and services to other regions. She suggests that local economies are more diverse and complex, as the previous figures indicate, and that recreation-related opportunities and services are part of the foundation of many of these economies.

Ms. Moskowitz emphasized that public policy decisions regarding forest resources should be based on an analysis of both costs and benefits. She asserted that logging taken to the extreme could jeopardize the underlying fabric of forest ecosystems. Repairing these ecosystems can be very costly. From an economic point-of-view, unsustainable logging and related damages can create what she termed "extensive spillover costs" for other industries, impeding growth of the overall economy. Such spillover costs include:

- Recreational fishing - firms may forgo earnings if timber production degrades fish habitat and reduces fish population;

- Commercial fishing - firms may forgo earnings if timber production degrades fish habitat and reduces populations of the commercial fishery;

- Sediment removal - taxpayers may pay to dredge channels and treat municipal water if timber production results in sediment runoff into public waters;

- Risk of flooding - property owners may incur extra risk if timber production increases runoff and creates sediment that reduces stream-channel capacity;

- Water quality reduction - industries that use water as part of their production process, or for cooling, may incur costs if timber production reduces water quality;

- Ecosystem damage - taxpayers may pay the costs of habitat if timber production causes ecosystem damage;

- Tourism - firms may forgo earning if timber production diminishes the value and supply of recreational opportunities;

- Quality of life - individuals may experience a decrease in their quality of life if timber production degrades consumption amenities;

- Unemployment insurance - other industries bear additional costs when the timber industry fails to pay the full cost of unemployment; and

- Below cost timber sales - taxpayers pay for programs that provide industry with timber at below-cost prices.

**3. Impact on Communities**

Ms. Lynne Faltraco, representing the Concerned Citizens of Rutherford County, North Carolina, and a member of the advisory committee for the North Carolina chip mill study, discussed the socio-economic costs of having a chip mill in a community. Since June 1995, her organization has opposed the construction and the operation of a high capacity free-standing chip mill (Broad River Forest Products Chip Mill) located in Union Mills, North Carolina. Ms. Faltraco highlighted various issues that she characterized as violating citizens' sense of community and quality of life. These issues include the following:

- Safety on roads in communities where chip mills are located. There is concern with road safety as truck traffic increases on narrow, curved roads that carry timber into and out of chip mill facilities. When the roads were built in the 1950s the prospect of 50 logging trucks per day, each weighing approximately 80,000 pounds , using the road was not considered. Many of these roads already shown signs of deterioration due to increased truck traffic;

- Devaluation of private property. Because of excessive noise from the chip mill, changing aesthetics, logging truck traffic and safety issues, property owners near the Williamette Industries' chip mill in Kane, Pennsylvania, have seen then property values decrease as much as 50 percent;

- Air quality issues related to chip mills that are not enclosed. Residents, loggers and others working in wood-related occupations are subject to dust and wood fiber particles, compromising their immune system and increasing the risk of respiratory illnesses;

- An off-site and cumulative impact caused by clear-cutting creates erosion, siltation, and sedimentation that affects local watersheds and citizens' drinking water. The proliferation of chips mills and increases in timber harvesting in Rutherford County and surrounding counties is an important reason for protecting local watersheds;

- Decreased stocks of fish and other wildlife due to clear-cutting affects opportunities to hunt and fish. Scientific evidence has shown that most wildlife need healthy forests and clean water to survive. With the acceleration of industrial clear-cutting in North Carolina and surrounding states, wildlife habitats will be altered drastically;

- Local tourism, which communities depend upon to support their economic and aesthetic base, may be compromised as chip mills promote cutting of forestlands. The local tourism development authority's 1999-2000 marketing plan revealed that the continued promotion of the county is having a positive economic impact. In 1998, tourism generated $83 million and 1,090 jobs. This ranks tourism as one of the top employers in the county. Tourism is a $10.8 billion industry in North Carolina, and travel expenditures directly generated more than 187,000 jobs. A 1996 publication stated that the timber industry employed 108,221 people equaling 2.7 percent of overall employment. The earnings generated from forestry, paper and allied products, lumber and wood products were $1.72 billion. According to U.S. Department of Commerce figures, in 1997, the earnings increased to $2.42 billion; and

- In the long-term, deforestation has the potential to change local climate. The accelerated cutting that needs to be done to supply a chip mill promotes open areas and "hot spots." Hotter weather, more violent storms, and dramatic changes in weather conditions are beginning to occur because of increased clear-cutting in the country and throughout the Southeast.

## E. DIFFERENT PERSPECTIVE: A COMPREHENSIVE FOREST POLICY

Dr. Harold Wisdom, Professor of Forest Economics and Policy at VPI-SU brought a different prospective to the chip mill issue. He suggested the controversy has distracted public attention from serious and broader forest policy matters that need to be addressed, if Virginia's forests are to continue to serve present and future generations of Virginians. The conflict, according to Dr. Wisdom, is a symptom of a broader forest problem--the absence of a comprehensive state forest policy based on current forest science. Instead of a comprehensive approach, Virginia has a timber policy, a recreation policy, a water policy, a wildlife policy, etc.

He observed that a comprehensive forest policy should:

- Cover all components of the forest systems, such as forests, wildlife and fisheries;

- Provide direction when forest issues cross agency boundaries or jurisdictions; and

- Facilitate public debate on uses of the forest that affect broad segments of the public.

He argues that the responsibility for the many forest benefits is scattered among several departments. The problem with the current organizational arrangement is that it does not provide for formal coordination and cooperation among the various state agencies (Departments of Forestry, Mines, Minerals and Energy; Environmental Quality; Game and Inland Fisheries; Conservation and Recreation; and Historic Resources) when forest problems overlap jurisdictions. He emphasized that the Commonwealth needs to be able to deal with these problems at the forest systems level, quickly and efficiently. In his view, the core problem for Virginia's forest policy is how to encourage private forestland owners to provide the optimum combination of timber and non-timber benefits from their forests, without violating their property rights in the process. Currently, there are not adequate incentives to persuade private forestland owners to continue producing both timber and forest amenity benefits on their land. The problem is that, unlike timber products which are bought and sold in the market place, there is no reasonable way that forest owners can require the public to pay for its enjoyment of the forest amenities offered by private forests. He suggests that there are a number of policy instruments that could provide some benefits in exchange for these forest amenities. These could include such market-based incentives as full or partial interest land purchases (conservation easements), tax-based incentives, and tradable or bankable land purchases (forest mitigation bank).

The advantage of market-based incentives is that they provide protection for environmentally important forestlands without infringing upon private property rights. However, be cautioned, before Virginia can establish a system of incentives, it needs to have a better scientific foundation for estimating the impacts of timber harvesting and forest management on other forest components (e.g., wildlife, aesthetics, and water). What is also needed is broad input from the public who will "foot" the bill. He suggested that the notion of compensating landowners for producing public benefits is an idea whose time has come.

Dr. Wisdom believes the development of a comprehensive forest policy should begin with a generic environmental impact study (GEIS) of the impacts of forest use on the major forest components. This would entail a broad environmental review of the cumulative impacts of a variety of forest uses not adequately reviewed on a case-by-case basis. The review would generate technical information and based on such information broad policy recommendations can be made. The GEIS could examine as many issues of concern as appropriate. These might include:

- Ways to maintain the productivity of forests for timber production;
- Forest health (disease, pests, exotics);
- Plant and animal diversity;
- Forest-dependent wildlife fish species and their habitat requirements;
- Water quality (sedimentation, nutrient loading, and run-off);
- Forest soils;
- Forest recreation and tourism; and
- Aesthetics and unique historic and cultural resources.

In Dr. Wisdom's view the GEIS would:

- Examine the impacts of timber harvesting and forest management on Virginia's environment and economy;
- Consider all forestlands and resources within the state to determine statewide cumulative impacts;
- Analyze those impacts resulting from timber harvesting and associated forest management in activities in Virginia. These could include logging, site preparation, reforestation, and forest road construction;
- Examine any important changes due to ecological processes, such as the aging of forest stands and pest and disease attacks.
- Recommend strategies for mitigating unacceptable impacts from timber harvesting and forest management activities; and

- Suggest a model sustainable forest management act for Virginia.

To oversee the GEIS, Dr. Wisdom recommended that a forest resources council be established. The council would conduct public hearings throughout the state on the study's results, and its policy and mitigation recommendations. The council would also (i) supervise the development of the comprehensive forest policy, based on the GEIS and the public's comments, and (ii) advise the Governor, General Assembly, state and local governments on the GEIS process and its progress. The comprehensive forest policy would consist of drafts of legislation, regulations, and market-based incentives, drawing upon the GEIS and public comments. The policy would provide forest management guidelines for all state agencies with forest-related responsibilities and the private sector.

Dr. Wisdom concluded by stating that the development of a comprehensive forest policy would:

1. Facilitate broad public participation in designing Virginia's forest policy for the twenty-first century, and encourage debate on the purposes of Virginia's forests;

2. Inform participants in the debate, using the best forest science available;

3. Allow all Virginians an opportunity to express their concerns;

4. Build broad public support and legitimacy, because all stakeholders would have been involved in the process from the beginning;

5. Facilitate the movement to sustainable forest management of Virginia's forests. A policy that emphasizes sustainable forest management would strengthen Virginia's competitive position in markets that are becoming increasingly sensitive to environmental and sustainable forest management issues;

6. Slow the conversion of forestlands to nonforest uses. A system of incentives to produce both timber and forest amenities would encourage private forestland owners to keep their lands in forests; and

7. Resolve potential forest-use conflicts before they became polarized.

# IV. CONCLUSION AND RECOMMENDATIONS

Those individuals who testified before the subcommittee clearly represented varying points-of-view not only on the effect of satellite chip mills but also on the broader issues of the health of Virginia's forest resources and logging/harvesting policies. Supporters of satellite chip mills argue that chip mill production is nothing new. Wood has been chipped to produce pulp for paper-making for years. What has changed is that the chipping operation has now been moved from the pulp mill into the woods. By doing this, the industry is able to reduce its hauling costs because the cost per ton of transporting chips is less than transporting logs. The chipping mills increase the utilization of wood by cutting low quality trees and parts of trees into chips, thereby providing an additional economic return to landowners from their investment in forestland. According to members of the industry, this higher return will encourage more intensive forest management, which in turn will lead to more vigorous and healthy forests.

There is a strong belief by owners of private forestlands that they should have the right to manage their timber in the manner they choose, whether it means selective cutting or clear-cutting. While selective cutting has the benefit of being aesthetically more pleasing and allows for continued growth of the forest, many landowners now find that this practice does not harvest enough of the "bad" wood and leaves poor quality stands, thereby reducing the "inherent potential" of the site. Clear-cutting, on the other hand, results in a greater diversity of trees being regenerated. Therefore, the only practical way for a landowner to return his or her land to a productive forest is to remove all of the existing stands and start over with new stands. The chip mill provides an opportunity then for the landowner to receive an additional income to help offset the costs of reforestation. Having this market for forest products can make a difference between a landowner's decision to keep land in forests or to convert it to a shopping center, housing development or other non-farm uses.

Representatives of the industry believe that additional governmental restrictions on the growth or location of processing facilities are unwarranted, except to ensure compliance with reasonable environmental and safety regulations in the siting process. They suggest that if private forests are to continue as a viable land use, then the landowner must not be burdened by overly restrictive and unnecessary constraints. Market forces should determine the number, the type and the location of wood converting facilities and foresters should be allowed to determine how the forests should be managed for sustained production in order to meet societal needs. The goal should be to have the landowner keep his or her property in forestlands. In attempting to meet this goal, the landowner is going to determine the land's highest and best value, which means not only economic value, but wildlife, aesthetics and environmental values. It should, however, be the landowner's choice.

Those who support greater oversight of the industry emphasize that they are not anti-forestry or anti-logger. They recognize each citizen's dependence on sawmills and paper mills to produce products that are essential in maintaining Virginians' quality of life. However, they suggest that, badly done, the commercial harvesting of trees on non-industrial private forestland harms the productivity of the site, the quality of downstream public waters, fish and wildlife habitat, and scenic and recreational values. Inappropriate harvesting contributes to regional economic instability, just as careless mining has damaged the economy throughout Southwest Virginia, West Virginia, and Kentucky.

Opponents of satellite chip mills argue that forests have a high non-market value that is lost when they are clear-cut. They are concerned that the increasing numbers of chip mills will encourage clear-cutting, which will compromise the scenic beauty, wildlife habitat and water quality, resulting in harm to the tourism and outdoor recreation industry. They acknowledge that landowners should have a number of options available to them on how to manage their forestlands. While a landowner may choose to clear-cut his forestland he should, at the very least, consider such options as rotational cutting, cultivation of diverse tree species, not just pine plantations, use of less destructive logging equipment, and requesting information from the contractor on use of practices to protect water quality and preserve wildlife habitat.

While recognizing the tradition of private property rights, advocates of more government oversight believe such rights are not absolute but, in fact, are tempered by limited government intervention, as has been the case with respect to zoning decisions and environmental regulations. Such intervention is done to protect the rights of neighbors and the "public trust" interests of all citizens to have clean air, water and protect endangered species. In order to protect Virginia's forestland from the actions of what are know as "bad actors," and to avoid the public's continued subsidy of the costs of dealing with environmental damage caused by unsustainable forestry practices, supporters of more government oversight believe a number of measures should be considered:

- Landowner education be enhanced and master logger training be instituted;
- Prior to harvesting, a plan should be required to be completed by a licensed forester and that a "master logger be present in every logging job";
- Financial incentives (conservation easements; tax relief) be made available to private landowners, by which the public shares with landowners the cost of protecting values on private land;
- Instituting mandatory BMPs and the strict enforcement by DOF of these BMPs on logging operations;

- Adoption of a comprehensive forest policy that would cover all the components of the forest system; and

- Placement of DOF under the Secretary of Natural Resources;

Although reaching a consensus among the members of the subcommittee was difficult, during its first-year of deliberations there was one area in which the subcommittee members did agree. The subcommittee found that additional staff was needed if the Department of Forestry is to properly carry out its mission. Personnel data, included in the decision package summary for the Department's 2000-2002 Budget (Appendix J), shows an agency whose maximum number of authorized positions (MEL) is lower today than it was almost two decades ago. For most years, the agency has not received the requisite funding to fill all of these authorized positions. In 1983, the DOF's authorized employment level was 343 compared to today's level of 320. The years of 1991 and 1992 saw the largest authorized employment level (422 positions). As presented to the subcommittee, DOF's budget request for the first-year of the biennium budget includes 21 technicians to ensure field staffing for fire protection, four foresters to ensure adequate water quality law enforcement field staff, and six regional specialists to implement Virginia's riparian buffer initiative, for a total of 31 additional full-time employees (FTEs). The second-year of the budget submission requests 11 additional FTEs: five foresters and four technicians for water quality enforcement, and two riparian foresters for the Riparian Buffer Initiative.

After reviewing the agency's two-year budget proposal, the subcommittee found that the Department of Forestry lacks the needed funding to carry out its mission and statutory responsibility. Therefore, the subcommittee recommended:

> Recommendation: That the 2000 Session of the General Assembly adopt an amendment to the 2000-2001 budget which provides $5.4 million to support 42 full-time positions with one-time and recurring operating costs to: (i) increase the number of fire-fighting staff; (ii) protect the lives and safety of firefighters through the personal protection equipment; (iii) enhance enforcement of water quality by field staff; (iv) increase aerial forest fire suppression; and (v) implement Virginia's Riparian Buffer Initiative.

The General Assembly, during the 2000 Session, considered the subcommittee's recommendations and incorporated into the biennium budget funding for 20 full-time positions at a cost of $1.6 million the first-year and $1.2 for the second-year of the biennium. In addition, language was placed in the budget that requires DOF to report by December 15 of each year on the progress of implementing the silvicultural water

quality laws in Virginia. The report is to be submitted to the chairmen of the House Committee on Appropriations and the Senate Committee on Finance.

It is the policy of the Commonwealth not only "to conserve and protect and encourage the development and improvement of the Commonwealth's agricultural and forestal lands for the production of food and other agricultural and forestal products..." but also "... to conserve and protect agricultural and forestal lands as valued natural and ecological resource that provide essential open spaces for clean air sheds, watershed protection, wildlife habitat as well as aesthetic purposes" (Va. Code § 15.2-4301). In the face of the loss of almost 20,000 acres of forest land annually to other land uses and the resultant increased fragmentation of this land, it is important that the state have the capacity to determine the sustainability and long-term health of its forest resources.

The subcommittee considered several options or strategies for assessing the status of Virginia forests and related forest resources such as air and water quality, wildlife and wildlife habitat, and aesthetic values. Several members of the subcommittee suggested that current efforts to ensure the sustainability of the forest are limited in scope. They believe that a comprehensive forest plan, similar to the one described by Dr. Wisdom in his testimony before the subcommittee, should be developed and implemented. The plan would serve as a strategic document to better coordinate the activities of the public and private sectors in order to ensure that Virginia maintains a sustainable forest resource. Such a plan should (i) encourage the reforestation and management of forest lands owned by individuals, families, and other private owners; (ii) advocate environmental policies and programs that protect water quality and wildlife habitat; (iii) assure forests can continue to provide wood and paper products for future generations; (iv) recognize the economic and amenity value of forestlands; and (v) promote stewardship and the conservation of forests. The plan when developed would include the following:

- Coverage of all components of the forest system, including forests, wildlife, and fisheries;

- Forest management guidelines for all state agencies with forest-related responsibilities and the private sector;

- A strategy, including market- and tax-based incentives, for encouraging private forestland owners to continue to provide timber and forest amenity benefits in their lands, without violating their property rights; and

- A broad environmental review, referred to as a generic environmental impact study (GEIS), to document the cumulative impacts of forest uses on the major forest components.

Those members supporting this approach recommended that a General Assembly resolution be prepared that includes the previously described provisions. The resolution would specifically request that the Secretaries of Commerce and Trade, Natural Resources, Finance, and Transportation create an executive-branch interagency taskforce to develop and implement a comprehensive forest conservation plan. The taskforce is to be composed of representatives of the following agencies: the Department of Forestry; Agriculture and Consumer Services; Mines, Minerals and Energy; Taxation; Game and Inland Fisheries; Conservation and Recreation; Environmental Quality; Transportation; the Virginia Economic Development Authority and the Virginia Tourism Authority (Appendix K).

After discussing the proposed resolution, members of the subcommittee voted to support an alternative proposal. That proposal, in the form of a legislative resolution, has as its foundation the current law that protects farm and forest lands. The General Assembly, in § 3.1-18.4, found

> ...that farm and forest lands are being converted to nonagricultural uses. The loss of this land undermines the Commonwealth's food and forest production capabilities. Agriculture, forestry, and related enterprises comprise a significant segment of the Commonwealth's economy and play a critical role in defining the character of the Commonwealth, and their preservation should be encouraged.

The statute specifically states that "[t]he policies and actions of various state agencies account for a significant portion of farm and forest lands being converted to nonagricultural use..." and "[w]here possible, state policies and actions should encourage the preservation of farm and forestland." Under this law, in preparing environmental impact reports, state agencies are to consider the impact of major state projects on all farm and forest lands. They are to prepare a plan annually that contains an analysis of the impact that each agency's regulations and projects have on the conversion of farm and forest lands, and are to submit the plan to the Secretaries of Commerce and Trade and Natural Resources for their review. The Secretary of Trade and Commerce would then submit a written report on the impacts of agencies' actions on the conversion of farm and forest lands to committees of the General Assembly.

Building on this current policy, the proposed resolution requests the two Secretariats and the Virginia Board of Forestry to:

1. Review those programs administered by state agencies that directly or indirectly affect the sustainability and long-term health of the forest resources of the Commonwealth;

2. Identify programs administered by agencies that affect the management of forest lands, regardless of ownership;

3. Direct all such agencies to develop cooperative agreements, memoranda of understanding and other appropriate; and

4. Recommend to the Governor, and to the chairmen of the House Committee on Conservation and Natural Resources and the Senate Committee on Agriculture, Conservation and Natural Resources, initiatives and actions that will enhance the health of the forest resource, while protecting the Commonwealth's environment and associated natural, historical and cultural resources.

The subcommittee believes that the passage of legislation by the General Assembly that includes the above provisions combined with the current statutory mandates provide a basis for any future considerations of forest management policies by the General Assembly. It is essential that the Commonwealth as trustee of the public interest protect the health and sustainability of Virginia's forest resources. Therefore, the subcommittee recommends:

Recommendation: That the 2001 Session of the General Assembly pass a joint resolution (i) urging the Secretaries of Commerce and Trade, and Natural Resources to ensure that the plan containing an analysis of the impact that state agencies regulations and policies will have on the conversion of forestlands is submitted annually and (ii) that all agency programs, which directly or indirectly affect the sustainability and long-term health of Virginia's forest resources, be reviewed and any initiatives or actions that will enhance the health of the forest resource be recommended to the Governor and General Assembly (Appendix L).

The subcommittee briefly discussed the need for additional expertise in the area of forest hydrology. While no formal recommendation was adopted by the subcommittee, there was agreement among members of the subcommittee that (i) a new forest hydrologist position should be established within the Forestry Department at Virginia Polytechnic Institute and State University and (ii) an additional two forest hydrologist specialists should be employed by the Cooperative Extension Service to conduct water quality protection educational programs for loggers and forest landowners in Virginia.

Respectfully submitted,

Delegate Barnie K. Day, Chairman
Delegate R. Creigh Deeds
Delegate Terry G. Kilgore
William S. Braunworth
Dr. M. Rupert Cutler*
James R. Hileman
Karl F. Wenger*
Senator Malfourd W. Trumbo, Vice Chairman
Delegate James H. Dillard, II
Senator Kevin G. Miller
Mr. Randy Bush
James W. Garner
Shireen Parsons*

**Non-voting Advisory Members**

Delegate H. Morgan Griffith
Delegate Clarence E. Phillips
Delegate R. Steven Landes
Delegate Mitchell Van Yahres*

*** Members statements submitted appear on following pages.**

# SUBCOMMITTEE MEMBERS STATEMENTS

Dissent to the Majority Position in the
Report of the Joint Subcommittee Studying
The Impact of Satellite Chip Mills on
Virginia's Economy and Environment (HJR 730)

We, the undersigned members of the Joint Subcommittee, respectfully disagree with the conclusions of the Subcommittee majority that the impact of satellite chip mills on Virginia's economy and environment is benign and that therefore forest landowners and the forest products industry should not be burdened by new constraints to protect the public interest in a sound economy and a healthy environment.

To the contrary, we have learned from our participation in the Subcommittee's study that a need exists for greater governmental oversight of forestry and the forest products industry in Virginia, on behalf of the citizens of the Commonwealth of present and future generations. While this increased level of oversight of logging on private lands is needed regardless of the rate of increase in the number of chip mills in the Commonwealth, it will become more critical as the number of chip mills in the state grows and forest removal across the state exceeds forest growth.

Such interventions should be put in place without delay, to protect the value of private land adjacent to that being logged and to protect the long-term public trust interests of citizens in clean air and water, biological diversity, and ecological services (the generation of clean air and water by healthy forests). The protection of these priceless public values by agencies of the Commonwealth is

mandated in Article XI of the Virginia Constitution. We offer the following specific conclusions and recommendations:

## Conclusions

1. Evidence from neighboring states clearly shows that the presence of a large number of chip mills encourages extensive forest clear-cutting, and that these large, contiguous clear-cuts compromise scenic beauty, wildlife habitat, species-diverse hardwood forests, and water quality and harm the tourism and outdoor recreation industries. We should not wait until this rapidly spreading phenomenon becomes even more obvious in Virginia to take appropriate defensive action here.
2. Recent instances are on record in which the commercial logging of non-industrial private forestland in Virginia has harmed the long-term productivity of the site, the value of neighboring properties, the quality of downstream public waters, the quality of fish and wildlife habitat, and scenic and recreational values.
3. Careless and destructive logging practices can contribute to regional economic instability, leaving the land and landscape degraded and unfit for other economic uses for long periods of time.
4. Due to administration demands for staff reductions, in some cases the Virginia Department of Forestry has been unable to administer, inspect and monitor logging operation to detect violations of laws intended to protect water quality and the environment from harm by logging on private lands. In some instances such requirements as enforcing notification of

intent to log, monitoring logging operations, stopping operations that violate water quality laws and related water quality-protection procedures, requiring adequate repair of the damaged landscape, and seeing to it that the violators of these laws and regulations be seriously penalized have not been followed. Today, the penalties do not fit the crimes, and companies simply consider them a cost of doing business. Case in point: The record of Independence Lumber Company in Grayson County. Independence paid $16,875 in 1998, the second highest fine ever paid by a logging company in Virginia. Between the time it paid that fine and December, 2000, VDOF records show that Independence Lumber had violated the Silvicultural Water Quality Law at least 13 more times. In one case, sedimentation was so severe that VDOF invoked its seldom-used "stop work" power. Even under existing law, fines could be much stiffer; VDOF may fine companies $5,000 a day for every day they are out of compliance. However, the VDOF leadership has arbitrarily set fine "limitations" so that no logger can ever be fined for more than 30 days of violations on any given operation. There is no statutory basis for this limitation. Thus, Independence was in violation of the law, actively polluting Virginia's public waters, for hundreds of days but was charged only for 15 days of being out of compliance. Bottom line: Logging companies can make more money doing the damage than preventing it.

5. The staff of the Virginia Department of Forestry is handicapped in its ability to insist on the use of tree-harvest "Best Management Practices"

(BMPs) to protect public water supplies and other public trust values because the use of these BMPs on private land in Virginia is strictly voluntary. They may or may not be implemented according to the landowner's or the logger's whim, unlike the mandatory water pollution-prevention rules that apply to other potentially polluting entities such as municipalities and manufacturing industries.

6. Best Management Practices (BMPs) are *minimum* standards that loggers must use if they are to prevent sediment from entering Virginia's streams. According to the VDOF's latest (November 2000) audit of BMP usage by loggers, only 20 percent of the Commonwealth's loggers properly applied all BMP categories on their logging jobs. The Department acknowledged that 10 percent of the harvested tracts had active water quality problems and that another 27 percent of the inspected sites had potential water quality problems—both categories being violations of Virginia's 1993 Silvicultural Water Quality Act. Voluntary BMPs simply are not getting the job done.

## Recommendations

1. We support the recommendation made to the subcommittee by Professor Wisdom of Virginia Tech that a comprehensive forest policy be written and adopted for the Commonwealth of Virginia with the participation of all stakeholders in the Virginia forest resource.
2. We recognize the hardship the Department of Forestry has faced in ensuring adequate water quality law enforcement while suffering major

cuts in recent years in its authorized employment level. We join with our colleagues in the majority in recommending an increase in the number of VDOF foresters and forest hydrologists employed and assigned to protect the Commonwealth's water quality from pollution by logging operations.

3. We believe the Virginia Department of Forestry and the citizens of the Commonwealth would be well served by a review of the performance of the Department of Forestry by the General Assembly's Joint Legislative Audit and Review Commission. Such a review would identify the strengths and weaknesses of the forestry department, including the adequacy of its staffing level and budget and the quality of its performance in carrying out its mandated statutory duties including that of protecting the Commonwealth's water quality from forestry activities. Among other things it should explore the alternative of having the task of enforcing water quality laws in logging and wood-manufacturing operations reassigned to the Virginia Department of Environmental Quality, the Commonwealth's primary and expert water quality protection and enforcement agency, rather than having enforcement handled by the same agency that is responsible for the promotion of forestry and forest products.
4. We note the lack of sufficient forest hydrology expertise on the staffs of the VDOF, the Forestry Department of Virginia Tech, and the Virginia Cooperative Extension Service. In addition to supporting the hiring of more water quality protection specialists by the VDOF, we strongly

recommend that a new forest hydrologist faculty position at Virginia Tech and two new forest hydrology extension specialist field positions in the Extension Service be authorized and fully funded by the General Assembly, to provide the research and logger training needed to take science-based steps to reduce logging-related water pollution problems in Virginia.

5. We urge passage by the General Assembly of a new law making the use of widely accepted (minimum) forestry best management practices mandatory, with "teeth" that include serious fines for failure to implement. The objective is to assure that sustainable forestry is being practiced in the Commonwealth. This step already has been taken in several other states including Kentucky; BMPs have long been used by leading forest products corporations on their own corporate lands in their own self-interest. Making BMPs mandatory should result in loggers in Virginia taking them seriously and in the improvement of water quality below future logging operations. These mandatory BMPs should include not only explicit practices to minimize soil erosion and sedimentation during logging and log removal but also practices to minimize the loss of fish and wildlife habitat and damage to historic sites. These latter practices should be written with the advice of the Virginia Department of Game and Inland Fisheries and the Virginia Department of Historic Resources.
6. This new forest practices law also should include landowner protection provisions that require (a) the notification of not just the VDOF but of

adjacent landowners of intent to log well in advance of such logging (and not after it is under way) and (b) the active presence of a certified "master logger" on the logging site whenever logging is going on, with stiff penalties for the violation of these rules.

7. The preparation of a comprehensive environmental impact statement (EIS) by the corporation proposing to build it should be required by the Commonwealth whenever a new chip mill is proposed for construction. This EIS should include a description of the impact of the mill in terms of the volume of wood it will require, the envisaged sources of that raw material, and the environmental impact of that logging.
8. We propose that policy oversight of the Virginia Department of Forestry be transferred from the Secretary of Commerce and Trade to the Secretary of Natural Resources, to emphasize the fact that Virginia's forests are not merely a commodity in the market but a precious legacy that, considering all forest products, values, and services, is an important component of the natural resource patrimony of our Commonwealth that must be protected and managed in a sustainable manner with the interests of all citizens and future generations in mind.

We conclude by quoting a "Commentary" article from the February 28, 2001, *Roanoke Times* written by Tim Zink, an editor of Blue Ridge Press and a former staff member of *National Geographic* magazine. It is entitled "Reversing the Southeast's environmental race to the bottom."

"Southeastern state legislators must avoid hiding behind federal unwillingness to address environmental challenges. Instead, they should lead decisively, reversing the embarrassing and destructive race to the bottom. Nothing less that the scenic beauty and quality of life in our naturally blessed homeland hangs in the balance."

Signed:

M. Rupert Cutler

James H. Dillard, II

Shireen Parsons

Mitchell Van Yahres

**Statement 2**

394 Goldberry Lane
Tappahannock, VA 22560
November 29, 2000

The Honorable Barnie Day
Chair, Joint Legislative Subcommittee to study Chip Mills
604 Braswell Drive
Meadows of Dan, VA 24120

Dear Delegate Day:

Having listened to the testimony presented to the Joint Subcommittee to Study Chip Mills, I believe three major questions about chip milling need answers for the Subcommittee to fulfill its mission. They are: what is the drain on the forest resource, what is the impact on the forest environment, and what can or should be done about these effects?

As of 1997, total growing stock (all trees 4.5 inches dbh and larger) in Virginia was 26.5 billion cubic feet, composed of 19.8 billion cu. ft. of hardwoods and 6.6 billion cu. ft. of softwoods. This forest was growing 0.85 billion cu. ft. annually while 0.59 billion cu. ft. were harvested and 0.18 billion cu. ft. died. The amount harvested includes all trees cut, not only those for chipping but those for all other purposes as well. The harvest and mortality loss together still leave the forest resource increasing--the 1997 volume of 26.5 billion cu. ft. is significantly greater than the 1992 volume of 25.9 billion cu. ft. The current survey will show whether this trend is continuing. [1]

The impact of chip milling on the forest environment is no greater than that of timber harvesting for any other use. The wood is logged in the conventional ways, most by "Best Management Practices", and trucked to the mill. Logging disturbs soil primarily in skid trails. Sediment loss from undisturbed forest ranges from 0.01 to 0.10 ton per acre per year. During timber harvest it may increase temporarily to 0.05 to 0.50 tons per acre per year, and subsides to the natural rate in 1-5 years (Patric, 1994). These amounts are in contrast to soil losses in agriculture, in which 5.0 tons per acre per year indefinitely are considered tolerable but which frequently exceed that rate.[2]

Another popular concern is the effect of timber harvesting on wildlife. Animals and birds require a variety of vegetational types to satisfy their needs. Sharp increases in wildlife populations have been observed and, in some instances recorded, after timber harvesting: for example, white-tailed deer in the Lake States and in Pennsylvania after the heavy early logging. The deer population also surged after old-growth loblolly pine was logged in northeastern North Carolina in the early 1950s. In the same locality, the small rodent population quintupled after the overstory was removed (Trousdell, 1954). The same process was observed more recently by an investigator in Mississippi. In contrast, other investigators have pointed out that certain birds seem to require rather large acreages of unbroken forest but it isn't clear whether these birds actually need the large acreages or whether they are the only species able to survive in that environment. In the 1930s a wildlife biologist pointed out that "Unbroken high forest is the poorest of all wildlife habitats."

Any proposed measures to protect the forest environment in Virginia must consider the level of management already being imposed. As of 1997, individuals owned 11.927 million acres of the 15.345 million acres of timberland in the state[3]. Of the remainder, 1.364 million acres were owned by the Federal government in the National Forests; 1.537 million acres were owned by forest industries; and 0.515 million acres were owned by other public agencies, mainly the state. The Federal, state, and industrial forests are generally well managed, but only about one-third of the non-industrial private forest (NIPF) owners get any professional advice, according to the U. S. Forest Service.

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[1] Figures are from U. S. Forest Service Inventory and Assessment, posted on the Internet

[2] The value of 18.6 tons per acre per year has been published several times recently but is of questionable validity and has not been accepted by professional hydrologists.

[3] "Timberland" is defined by the U. S. Forest Service as forested land capable of producing 20 cubic feet .

This behavior by NIPF owners in managing their timberland may seem undesirable, but forest vegetation will become reestablished in a naturally forested region unless conversion to a non-forest use prevents it. While the reestablished forest may not be best for timber production, it may satisfy some owners whose primary objective is other than timber production. So the question seems to be: which private owners need and would accept professional guidance and how should it be provided?

Many NIPF owners want other benefits from their land in addition to, or instead of, timber production--hunting, animal and bird watching, protection of certain birds and animals, collection of edible plants, fruits, and nuts, and simply enjoyment of "walking in the woods" engage some NIPF owners . This variety of interests suggest that the Departments of Game and Inland Fisheries, Recreation and Conservation, Chesapeake Bay Land Assistance, and Environmental Quality , and the Division of Soil and Water Conservation, as well as the Department of Forestry have an interest in the management of the NIPFs.

To the degree that these agencies have responsibilities for some aspect of the state's forests, their authorizing legislation should at least permit, if not require, that their operations be coordinated, so that they do not inadvertently work in opposition to one another. The first step, then, would seem to be a review of the relevant legislation to see if any changes, deletions, or additions are needed to enable free coordination among these agencies, followed by any necessary revision of regulations and rules.

Effective coordination requires some direction and oversight. Since the environment we are concerned with here is composed of the forests of the state, the logical agency to do that job would seem to be the Department of Forestry. The dominant factor of the forest environment is the tree stand. The composition, age, condition, and treatment of stands determine what happens to the other components of the forested area. The flexibility available to the forest manager to accommodate other components of the forest depends on the characteristics of the species composing the stand, which is the forester's specific area of expertise.

In view of the above points, may I suggest that the Committee recommend the following actions to the legislature:

1. Review existing legislation to determine if any changes, deletions, or additions are needed to enable free coordination among these agencies;

2. Compose legislation to permit coordination among agency programs with a monitoring and facilitating agency designated.

Very respectfully yours,

Karl F. Wenger, Ph.D.
Member, Joint Legislative Subcommittee on Chip Mills

Literature Cited

Patric, James H. 1994. Water, Woods, and People: A Primer. Artistic Printers, 2475 Snapps Ferry Rd. Greenville, TN 37743

Trousdell, K. B. 1954. Peak Population of Seed-eating Rodents and Shrews Occurs 1 Year After Loblolly Stands are cut. U. S. Forest Serv. Southeast. Forest Expt. Sta. Res. Notes 68. 2pp., Illus. [Processed.]

cc.All members of the Joint Legislative Subcommittee on Chip Mills
James Garner, State Forester

# APPENDICES

# 1999 SESSION

**ENROLLED**

## HOUSE JOINT RESOLUTION NO. 730

*Establishing a joint subcommittee to study the impact of satellite chip mills on Virginia's economy and environment.*

Agreed to by the House of Delegates, February 25, 1999
Agreed to by the Senate, February 23, 1999

WHEREAS, the forest resources of the Commonwealth are abundant, covering over 15 million acres, with over three-fourths of this land being owned by private landowners not connected with either government or the forest industry, whose individual goals and stewardship values have the greatest impact on the viability and health of Virginia's forest lands; and

WHEREAS, the forests of Virginia are invaluable assets and vital to its citizens because they provide timber and useful wood products and employment throughout all regions of the Commonwealth; filter air and water pollution; protect soil and water resources; provide fish and wildlife habitat, outdoor recreation and tourism opportunities; and support the general health and quality of life for present and future generations; and

WHEREAS, in 1991 the Department of Agriculture and Consumer Services predicted that "an increase in competition in the Southeast for low-grade hardwood resources and resulting inflated stumpage prices will inevitably make Virginia's forests more attractive and competitive," and "the abundance of hardwood inventory and excellent deep-water ports make Virginia a prime site for hardwood-chip export market development," providing additional economic incentives and management options to private landowners to continue to sustainably maintain this forest land base; and

WHEREAS, a number of forest products operations, referred to as satellite chip mills, are located in Virginia; and

WHEREAS, these mills have as their primary purpose the chipping of wood, with the resulting wood chips used in a multitude of such manufactured products as composite wood, paper and related products; and

WHEREAS, the Commonwealth has a vested interest in the manufacturing of value-added forest products; and

WHEREAS, data is insufficient to resolve current concerns over forest and natural resource policy issues, diverse economic and ecological values, differences in desired forest uses, and interpretations of scientific and factual information; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That a joint subcommittee be established to study the impact of satellite chip mills on Virginia's economy and environment. The joint subcommittee shall be composed of 13 members, which shall include 6 legislative members and 7 nonlegislative citizens and ex officio members as follows: four members of the House of Delegates to be appointed by the Speaker of the House in accordance with the principles of Rule 16 of the Rules of the House of Delegates; two members of the Senate to be appointed by the Senate Committee on Privileges and Elections; two members representing the environmental community and two members representing the forest products industry, one of whom shall represent the solid wood industry and one of whom shall represent the pulp and paper industry to be appointed by the Speaker of the House; two members representing the private forest owners, one of whom shall represent the Virginia Farm Bureau to be appointed by the Senate Committee on Privileges and Elections; and the State Forester to serve ex officio. A legislative member shall serve as chairman of the joint subcommittee.

In conducting its study, the joint subcommittee shall examine the:

1. Experiences in other states with the operation of satellite chip mills;

2. Current and potential impacts of satellite chip mills on Virginia's economy, natural resources and environment;

3. Potential impact on private forest landowners, including long-term profitability, the availability of markets and forest management options;

4. Sustainability of Virginia's forest resources to accommodate current and potential satellite chip mill production, including methods to improve forest management by private landowners;

5. Practical methods for assuring economic and environmental sustainability of the forest, including the need for adequate resources for the Department of Forestry and other government agencies charged with the conservation of Virginia's forest lands.

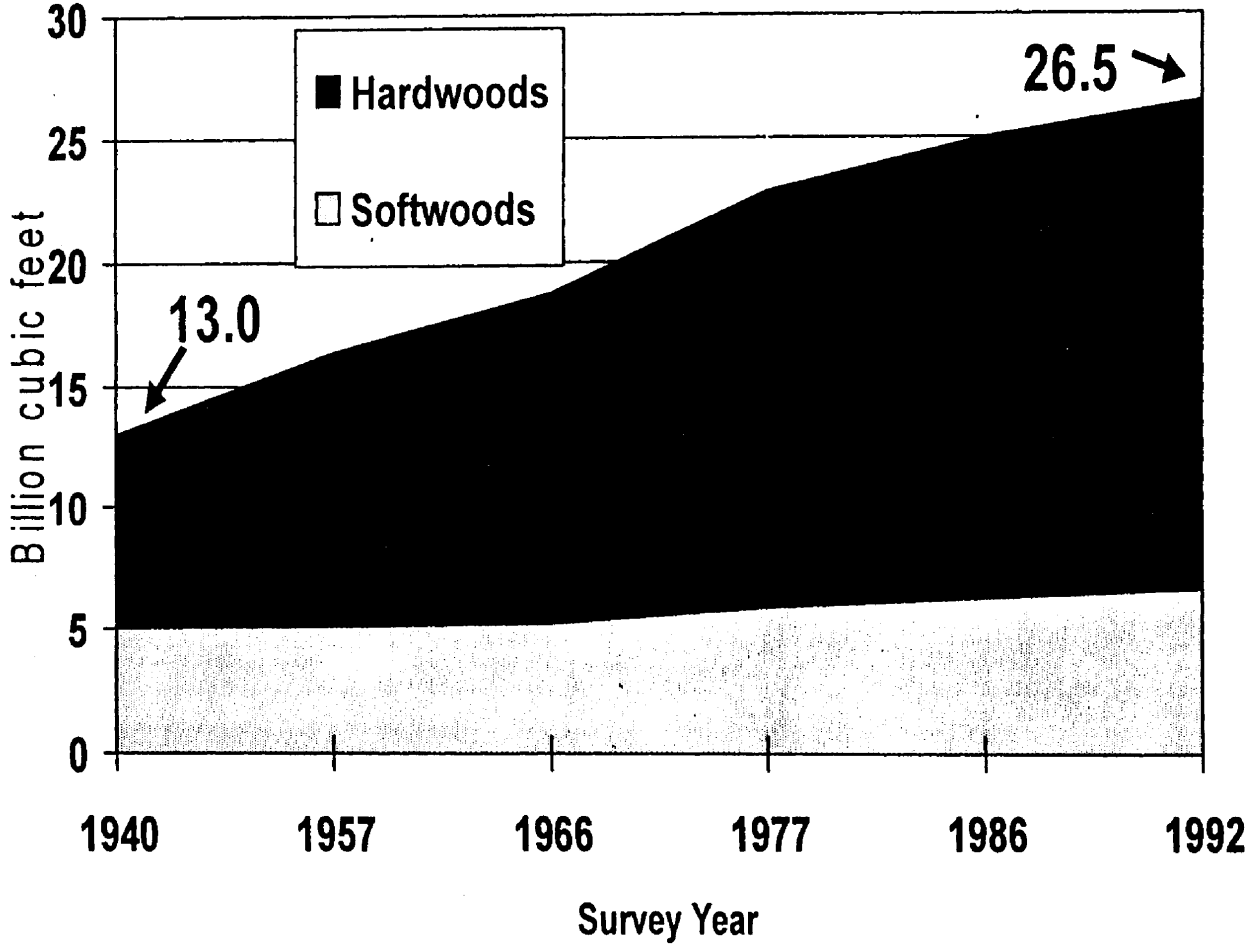
The direct costs of this study shall not exceed $12,000.

The Division of Legislative Services shall provide staff support for the study. Technical assistance shall be provided by the Department of Forestry and the Departments of Wood Science and Forestry of the College of Forestry and Wildlife Resources, at Virginia Polytechnic Institute and State University. All agencies of the Commonwealth shall provide assistance to the joint subcommittee, upon request.

The joint subcommittee shall complete its work in time to submit its findings and recommendations to the Governor and the 2001 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

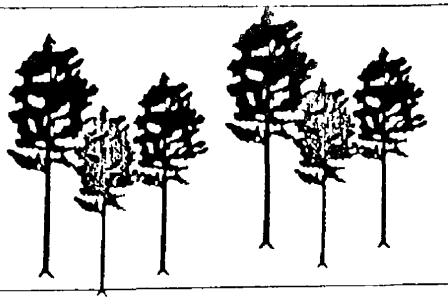
Implementation of this resolution is subject to subsequent approval and certification by the Joint Rules Committee. The Committee may withhold expenditures or delay the period for the conduct of the study.

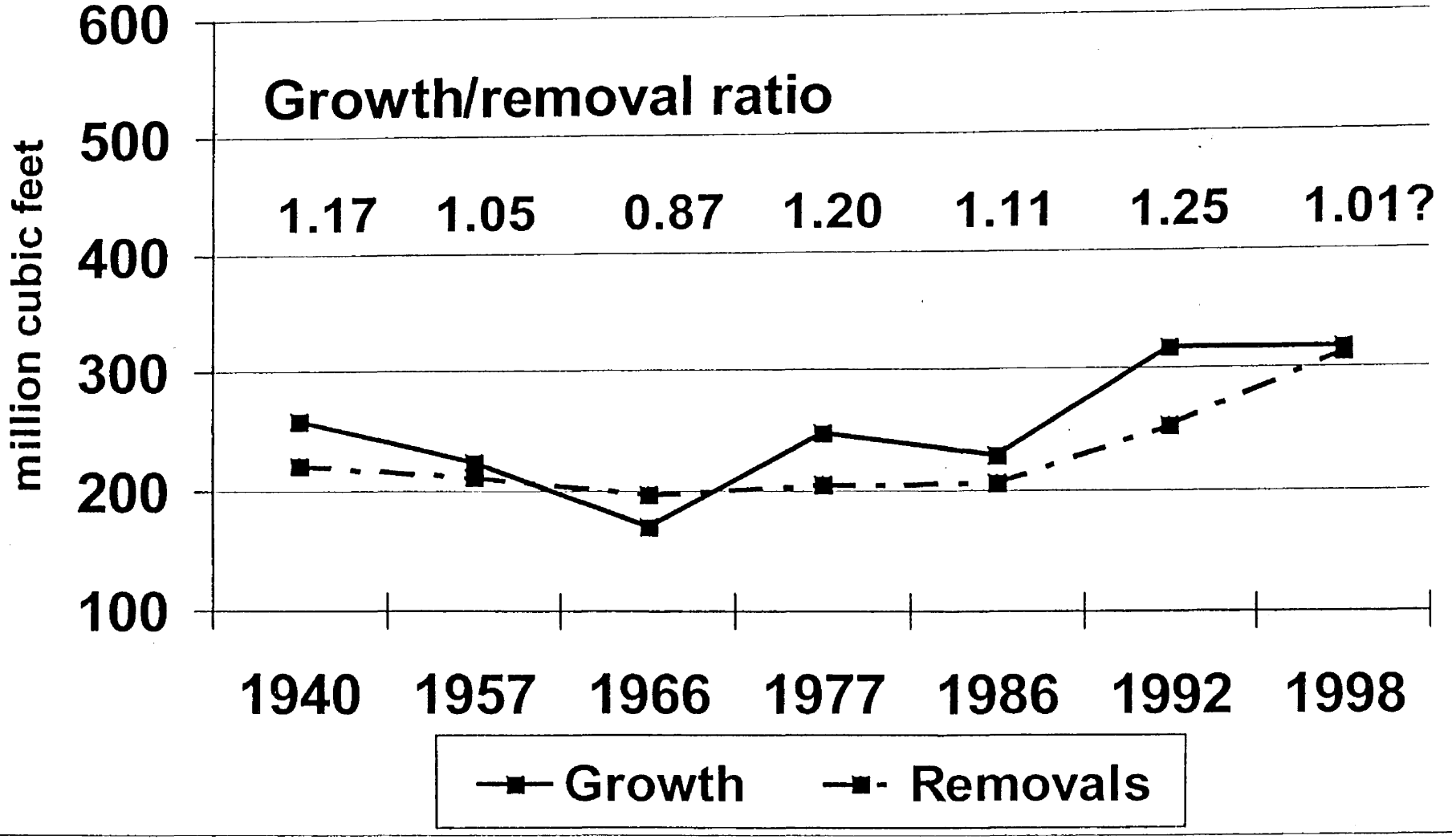
# Growing Stock Inventory 1940-1992




| | |
|---|---|
| Softwood | |
| 1940 | 5.03 |
| 1992 | 6.65 |
| | +32.2% |
| Hardwood | |
| 1940 | 7.97 |
| 1992 | 19.84 |
| | +148.9% |

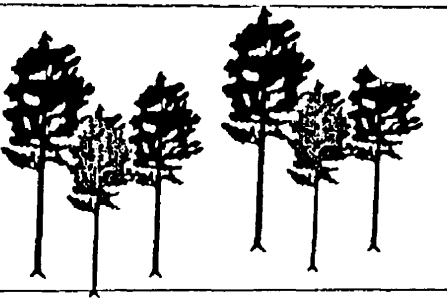
# Softwood Growth & Removals, 1940-1992

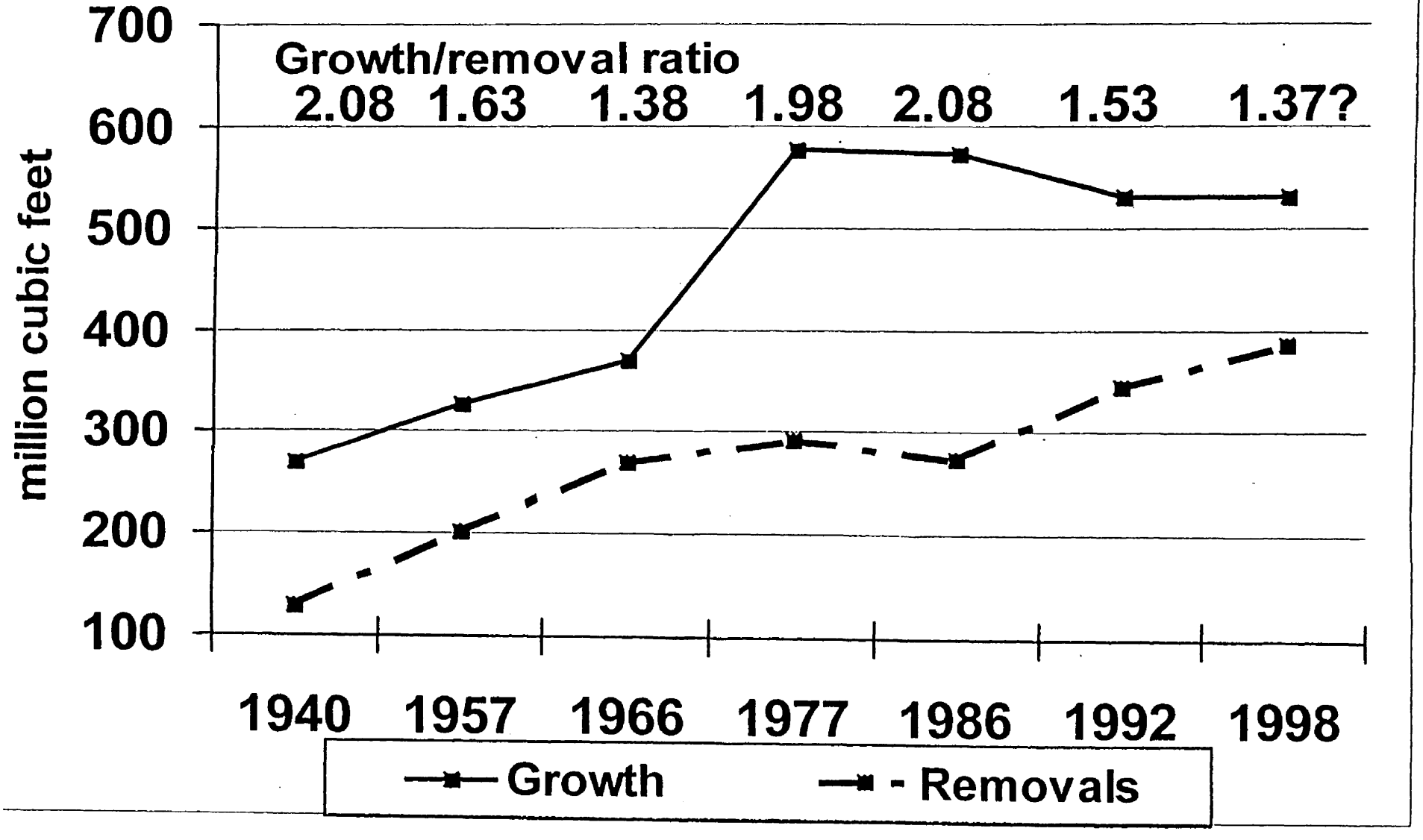




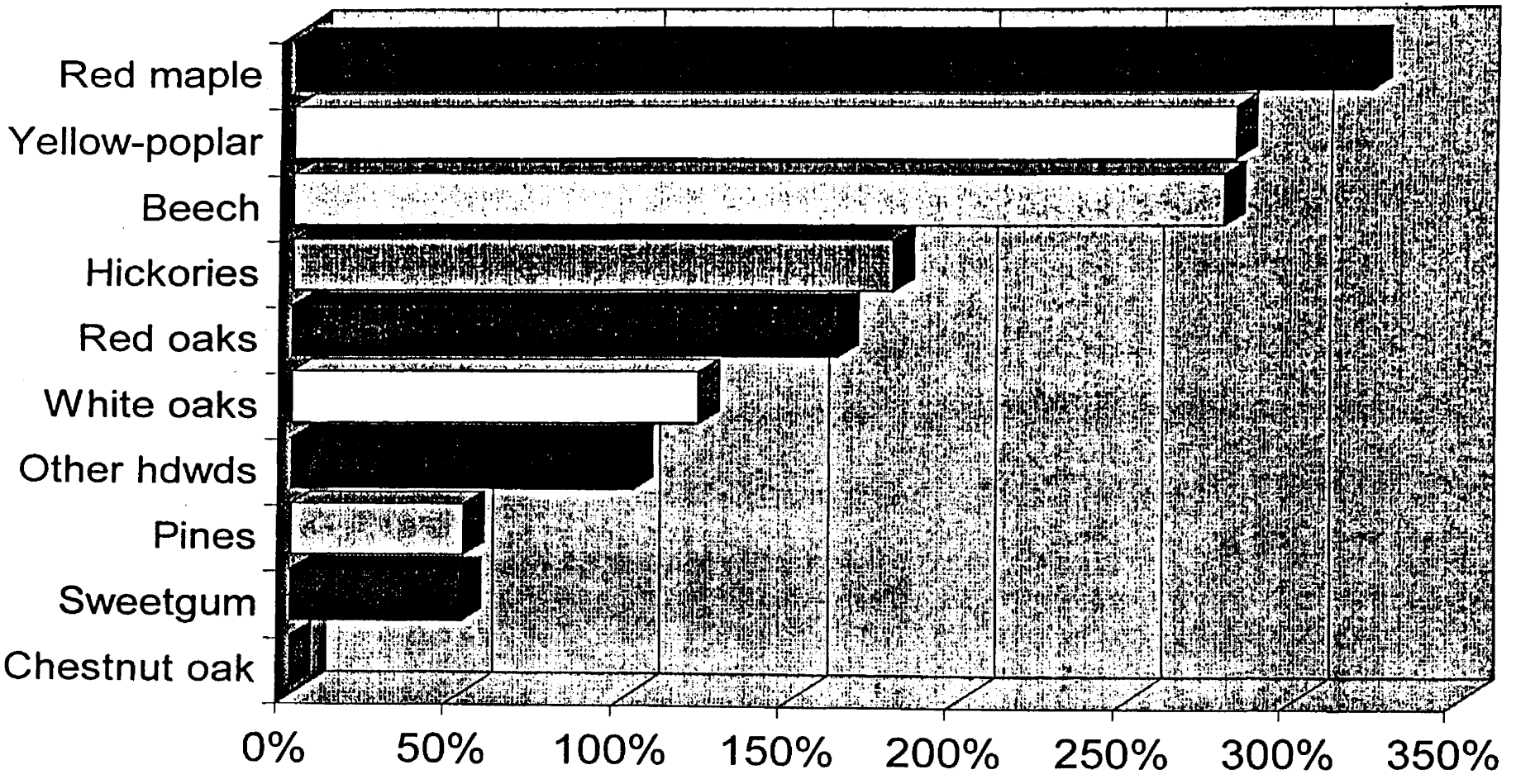
Appendix D

# Hardwood Growth & Removals 1940-1998



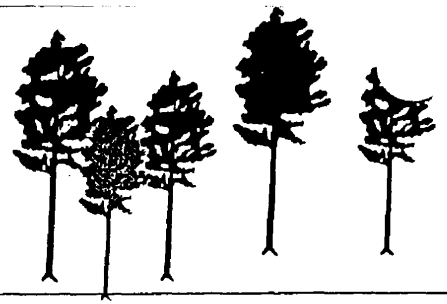


# Volume Increases by Species, 1940-1992



Appendix F

# Forest Products Industry Employment, 1996



| | Direct | Indirect | Induced |
|---|---|---|---|
| Primary | 24,236 | 20,565 | 23,556 |
| Secondary | 42,415 | 17,882 | 13,216 |
| subtotal | 66,651 | 38,447 | 36,772 |
| Construction | 34,094 | - | - |
| Wholesale | 5,861 | - | - |
| total | 106,606 | 38,447 | 36,772 |
| Grand total | 181,825 | | |

# Combined Timber Production, Employment, and Income for Georgia, North Carolina, and South Carolina, 1983 and 1992

| Year | Timber Production Million cubic ft | Employment Number | Payroll (in thousands of dollars) | Employment Per million cubic ft | Income (thousands of dollars)/ million cubic ft |
|---|---|---|---|---|---|
| 1983 | 2,175 | 251,403 | 6,596,512 | 115.6 | 3,033 |
| 1992 | 2,612 | 258,203 | 7,538,347 | 98.9 | 2,887 |
| Percent Change | | | | | |
| 1983-92 | 20.1 | 2.7 | 14.3 | -14.4 | -4.8 |

Source: ECONorthwest with data from the U.S. Department of Commerce, Bureau of Economc Analysis, 1994,1995

# Virginia State Earnings by Industry Percentage of Total
## (In Thousands of Dollars)

| | | |
|---|---|---|
| **Total State Earnings** | **122,578,569** | |
| Services | 36,242,577 | 29.57% |
| Business services | 10,084,322 | 8.23% |
| Health services | 8,271,028 | 6.75% |
| Engineering and management services | 7,233,405 | 5.90% |
| Government | 26,794,256 | 21.86% |
| Manufacturing | 16,121,411 | 13.15% |
| **Lumber and wood products** | **839,089** | **0.68%** |
| **Paper and allied products** | **907,367** | **0.74%** |
| Retail trade | 10,670,393 | 8.70% |
| Finance, insurance, and real estate | 8,609,713 | 7.02% |
| Transportation and public utilities | 8,229,085 | 6.71% |
| Construction | 7,634,456 | 6.23% |
| Wholesale trade | 6,632,099 | 5.41% |
| Mining | 656,971 | 0.54% |
| Ag. serv., forestry, fishing | 641,544 | 0.52% |
| Agricultural services | 619,249 | 0.51% |
| Fishing | 9,338 | 0.02% |
| **Forestry** | **2,957** | **0.00%** |
| **Total Forest-Based Earnings** | **1,749,413** | **1.43%** |

Source: U.S. Department of Commerce, BEA, REIS Data, 1997

# Virginia State Earnings from Manufacturing Percentage of Total
## (in Thousands of Dollars)

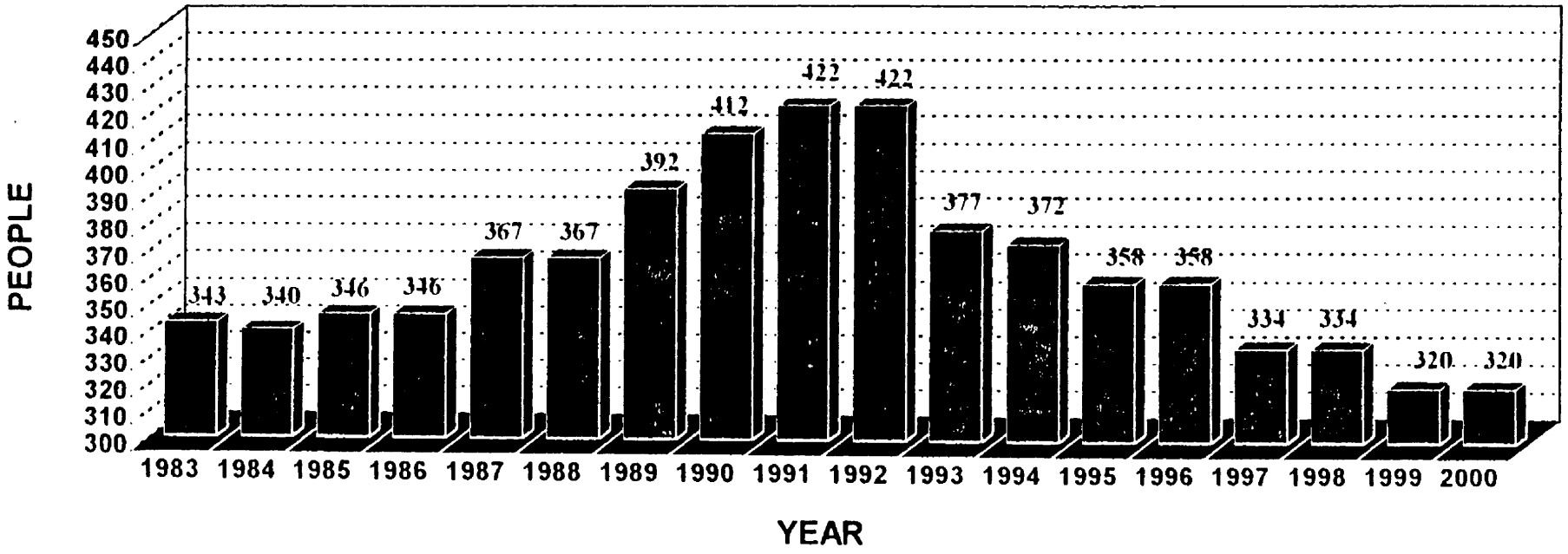
| | | |
|---|---|---|
| **Manufacturing** | **16,121,411** | |
| Printing and publishing | 1,715,935 | 10.64% |
| Electronic and other electric equipment | 1,584,566 | 9.83% |
| Other transportation equipment | 1,266,083 | 7.85% |
| Chemicals and allied products | 1,225,965 | 7.60% |
| Food and kindred products | 1,196,087 | 7.42% |
| Industrial machinery and equipment | 1,115,638 | 6.92% |
| Textile mill products | 933,079 | 5.79% |
| **Paper and allied products** | **907,367** | **5.63%** |
| **Lumber and wood products** | **839,089** | **5.20%** |
| Rubber and misc. plastics products | 807,737 | 5.01% |
| Fabricated metal products | 766,405 | 4.75% |
| Tobacco product | 700,576 | 4.35% |
| Motor vehicles and equipment | 607,998 | 3.77% |
| Furniture and fixtures | 532,350 | 3.30% |
| Primary metal industries | 504,992 | 3.13% |
| Instruments and related products | 482,194 | 2.99% |
| Stone, clay, and glass products | 438,619 | 2.72% |
| Apparel and other textile products | 330,644 | 2.05% |
| Miscellaneous manufacturing industries | 122,579 | 0.76% |
| Petroleum and coal products | 31,017 | 0.19% |
| Leather and leather products | 12,491 | 0.08% |

**Source: U.S. Department of Commerce, BEA, REIS Data, 1997**

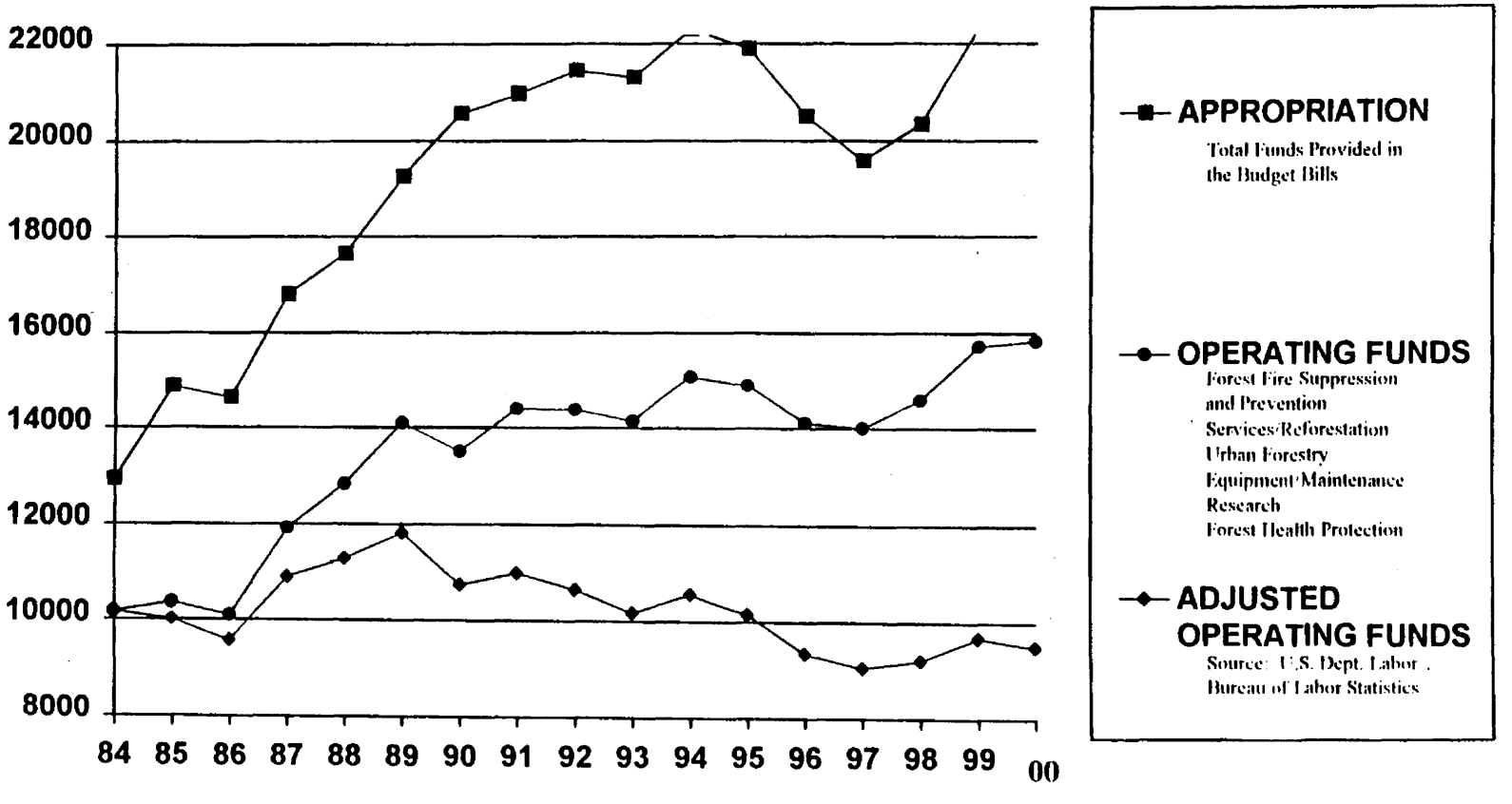
# DEPARTMENT OF FORESTRY PERSONNEL

## 1983 - 2000

### MAXIMUM EMPLOYMENT LEVEL (MEL)



# TOTAL APPROPRIATIONS AND FORESTRY OPERATIONS
## (IN THOUSANDS OF DOLLARS)




*Fiscal Years 1996-1998 are Estimated

# Table 1: Decision Package Summary for DOF 2000-2002 Budget

| | | FTE's | | Budget | | | |
|---|---|---|---|---|---|---|---|
| | | | | Recurring Need | | One Time Funding | |
| Decision Package | Title | 1st Year Additional | 2nd Year Additional | 1st Year | 2nd Year | 1st Year | 2nd Year |
| 300 | Ensure field staffing for fire protection | 21 Technicians | -0- | $772,821 | $826,938 | $713,671 | -0- |
| 301 | Ensure firefighting safety with personal protective equipment | -0- | -0- | -0- | $50,000 | $100,000 | -0- |
| 302 | Ensure adequate water quality law enforcement field staff | 4 Foresters | 5 Foresters 4 Technicians | $169,324 | $540,503 | $142,104 | $301,959 |
| 303 | Aerial forest fire suppression | -0- | -0- | $435,000 | $435,000 | -0- | -0- |
| 400 | Implement Virginia's Riparian Buffer Initiative | 6 Regional Specialists | 2 Riparian Foresters | $217,316 | $382,792 | $251,606 | $74,702 |

HOUSE JOINT RESOLUTION NO. _____ Appendix K

Requesting the Secretaries of Commerce and Trade, Natural Resources, Finance, and Transportation to create an executive-branch interagency task force to develop and implement a comprehensive forest conservation plan.

WHEREAS, seventy-seven percent of the forestland in Virginia is privately-owned; and

WHEREAS, farm and forest lands are being converted to nonagricultural and nonforestal uses and the loss of this land undermines the Commonwealth's food and forest production capabilities; and

WHEREAS, § 3.1-18.4 of the Code of Virginia recognizes that "(a)griculture, forestry, and related enterprises comprise a significant segment of the Commonwealth's economy and play a critical role in defining the character of the Commonwealth, and their preservation should be encouraged"; and

WHEREAS, it is the policy of the Commonwealth not only "to conserve and protect and to encourage the development and improvement of the Commonwealth's agricultural and forestal lands for the production of food and other agricultural and forestal products" but also "...to conserve and protect agricultural and forestal lands as valued natural and ecological resources which provide essential open spaces for clean air sheds, watershed protection, wildlife habitat, as well as aesthetic purposes" (Virginia Code § 15.2-4301); and

WHEREAS, the agencies of state government are required, by statute, to develop a plan, to be updated annually, that contains an analysis of the impact that certain agencies' regulations and projects have on the conversion of farm and forest lands; and

WHEREAS, such a plan is limited in scope to measuring the impact of state agencies' actions on forest conversion rather than serving as a strategic document to better coordinate the activities of the public and private sectors in order to ensure that Virginia maintains a sustainable forest resource; and

WHEREAS, current responsibility for the many forest benefits are scattered among several agencies, resulting in no formal coordination or cooperation among the various agencies when forest problems overlap or conflict with specific department authority or responsibility; and

WHEREAS, to sustain Virginia's forests, a comprehensive forest conservation plan should be developed that (i) encourages the reforestation and management of forest lands owned by individuals, families, and other private owners, (ii) advocates environmental policies and programs that protect water quality and wildlife habitat, (iii) assures forests can continue to provide wood and paper products for our needs today and for future generations, (iv) recognizes the economic and amenity values of forest lands, and (v) promotes stewardship and the conservation of forests; and

WHEREAS, a comprehensive forest conservation plan that emphasizes sustainable forest management would strengthen Virginia's competitive position in markets that are becoming increasingly sensitive to environmental and sustainable forest management issues; and

WHEREAS, the development of a comprehensive forest conservation plan would facilitate public debate on uses of the forest resource that affect broad segments of the public; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Secretaries of Commerce and Trade, Natural Resources, Finance, and Transportation be requested to create an executive-branch interagency task force to develop and implement a comprehensive forest conservation plan. The Secretaries shall appoint representatives from the following state agencies or authorities to serve on the task force: the Departments of Forestry, Agriculture and Consumer Services, Mines, Minerals and Energy, Business Assistance, Taxation, Game and Inland Fisheries, Conservation and Recreation, Environmental Quality, Transportation, the Virginia Economic Development Authority, and the Virginia Tourism Authority. The comprehensive forest plan shall include the following:

1. Coverage of all components of the forest system, including forests, wildlife, and fisheries;

2. Forest management guidelines for (i) all state agencies with forest-related responsibilities so as to enhance cooperation and coordination among the agencies, and (ii) the private sector regarding acceptable and unacceptable forest practices;

3. A strategy, including market- and tax-based incentives, for encouraging private forestland owners to continue to produce timber and to provide forest amenity benefits on their lands, without violating their property rights; and

4. A broad environmental review, referred to as a generic environmental impact study (GEIS), to document the cumulative impacts of forest uses on the major forest components. The GEIS shall examine (i) the impacts of timber harvesting and forest management (logging, site preparation, reforestation, and forest road construction) on the environment (plant and animal diversity, water quality, and forest soils), and on the economy; (ii) any important changes due to ecological processes such as aging of forest stands and pest and disease attacks; and (iii) strategies for mitigating unacceptable impacts from timber harvesting and forest management activities.

All agencies of the Commonwealth shall provide assistance to the task force for this study, upon request.

The interagency executive-branch task force shall complete its work in time to submit its findings and recommendations to the Governor and the 2004 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

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Appendix L

HOUSE JOINT RESOLUTION NO. _____

Urging the Secretaries of Commerce and Trade, and Natural Resources to ensure that the plan containing an analysis of the impact that certain state agencies' regulations and projects have on the conversion of farm and forest lands be submitted annually to the General Assembly.

WHEREAS, seventy-seven percent of the forestland in Virginia is privately-owned; and

WHEREAS, farm and forest lands are being converted to nonagricultural and nonforestal uses and the loss of this land undermines the Commonwealth's food and forest production capabilities; and

WHEREAS, § 3.1-18.4 of the Code of Virginia recognizes that "(a)griculture, forestry, and related enterprises comprise a significant segment of the Commonwealth's economy and play a critical role in defining the character of the Commonwealth, and their preservation should be encouraged"; and

WHEREAS, it is the policy of the Commonwealth not only "to conserve and protect and to encourage the development and improvement of the Commonwealth's agricultural and forestal lands for the production of food and other agricultural and forestal products" but also "...to conserve and protect agricultural and forestal lands as valued natural and ecological resources which provide essential open spaces for clean air sheds, watershed protection, wildlife habitat, as well as aesthetic purposes" (Virginia Code § 15.2-4301); and

WHEREAS, during the 2000 Session of the General Assembly the Preservation of Important Farmlands Act was amended to require the Departments of Transportation, Health, Conservation and Recreation, and Environmental Quality, and the State Corporation Commission to prepare a plan analyzing the impact of each agency's regulations and projects have on the conversion of both farm lands and forest lands; and

WHEREAS, the amendments to this act also required that the plan be updated and submitted to the Secretary of Commerce and Trade and the Secretary of Natural Resources annually; and

WHEREAS, the Secretaries are to review the plan in consultation with the Commissioner of Agriculture and Consumer Services and the State Forester, and may recommend improvements in the plan; and

WHEREAS, the Secretary of Commerce and Trade is required, by the statute, to submit a written report by December 1 of each year to the chairmen of the House Committee on Agriculture and the Senate Committee on Agriculture, Conservation and Natural Resources on the impacts of state agency actions on the conversion of farm and forest lands; and

WHEREAS, such a plan and the resulting report will enhance coordination and planning among state agencies of major state projects, thereby enabling the agencies to better be able to meet the policy objective of conserving farm and forest lands; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the General Assembly urges the Secretary of Commerce and Trade and the Secretary of Natural Resources to ensure that the plan containing an analysis of the impact that certain state agencies' regulations and projects have on the conversion of farm and forest lands be submitted annually to the General Assembly; and, be it

RESOLVED FURTHER, That the Secretary of Commerce and Trade, the Secretary of Natural Resources and the Virginia Board of Forestry be requested to (i) review those programs administered by the various state agencies that directly or indirectly affect the sustainability and long-term health of the forest resources of the Commonwealth; (ii) identify programs administered by those agencies that affect the management of forest lands, regardless of ownership; (iii) direct all such agencies to develop cooperative agreements, memoranda of understanding and other appropriate cooperative mechanisms to effectively administer such programs; and (iv) recommend to the Governor and to the chairs of the House Committee of Conservation and Natural Resources and the Senate Committee on Agriculture,

Conservation and Natural Resources initiatives and actions that will enhance the health of the forest resource, while protecting the Commonwealth's environment and associated natural, historical and cultural resources. All agencies of the Commonwealth, including the Departments of Forestry, Environmental Quality, Game and Inland Fisheries, Conservation and Recreation, and the Chesapeake Bay Local Assistance Department, are requested to cooperate in this effort.

RESOLVED FINALLY, That the Clerk of the House of Delegates transmit copies of this resolution to the Secretary of Commerce and Trade, the Secretary of Natural Resources and the Board of Forestry.

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