

This file was created by scanning the printed publication.
Text errors identified by the software have been corrected;
however, some errors may remain.



United States
Department of
Agriculture

Forest Service

Pacific Northwest
Research Station

Research Paper
PNW-369

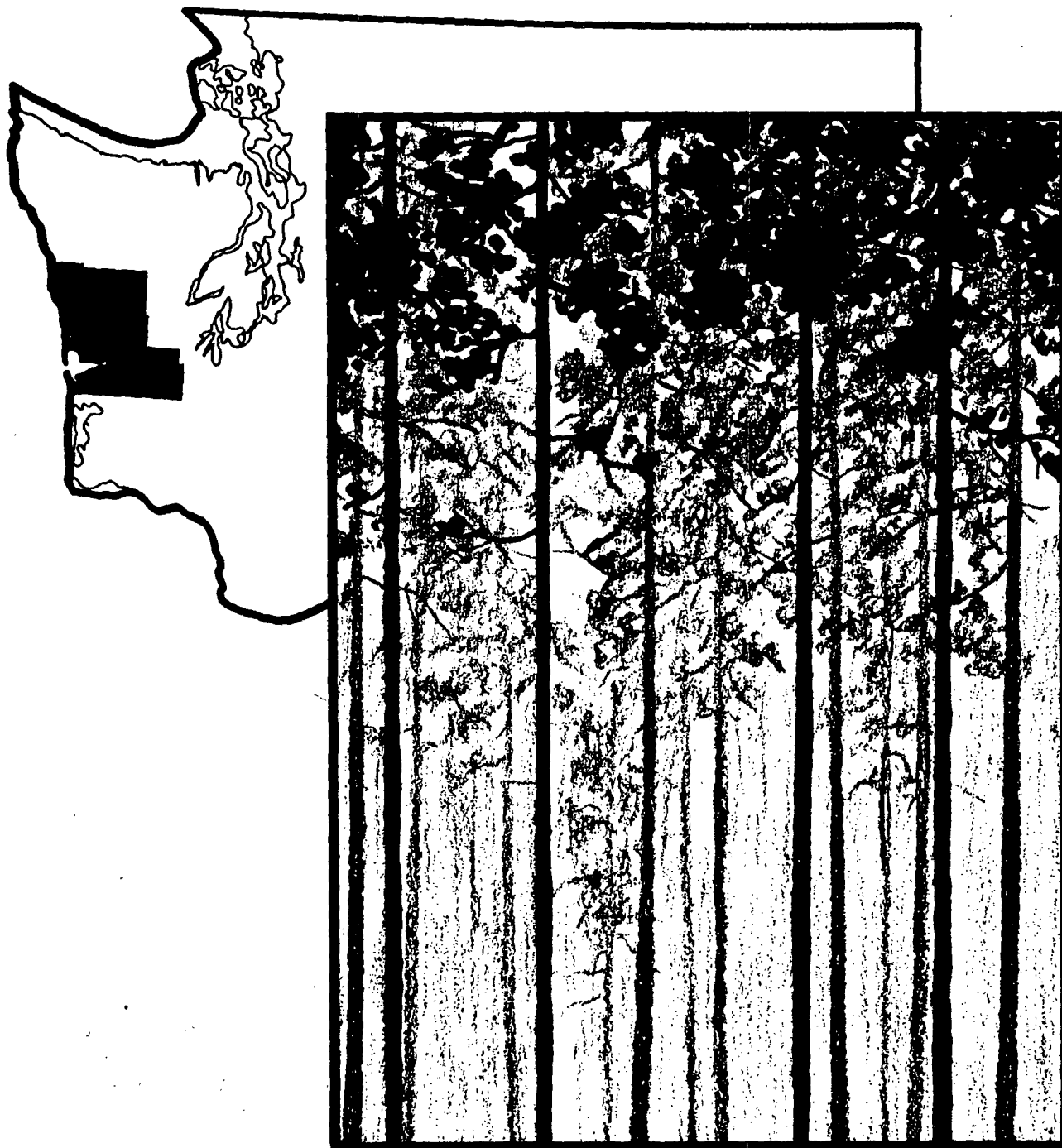
October 1986



Are Federal Sustained Yield Units Equitable? A Case Study of the Grays Harbor Unit

Con H Schallau and Wilbur R. Maki

EDITOR'S
FILE COPY



Authors

CON H SCHALLAU is a research economist at the Pacific Northwest Research Station, Forestry Sciences Laboratory, 3200 Jefferson Way, Corvallis, Oregon 97331. WILBUR R. MAKI is a professor, Department of Agricultural and Applied Economics, University of Minnesota, St. Paul, Minnesota 55108.

Abstract

Schallau, Con H; Maki, Wilbur R. Are Federal sustained yield units equitable? A case study of the Grays Harbor unit. Res. Pap. PNW-369. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station; 1986. 17 p.

The Grays Harbor Federal Sustained Yield Unit (U.S. Department of Agriculture, Forest Service) was established in 1949 to enhance the economic stability of the forest products industry and dependent communities in Grays Harbor County, Washington. Provisions of the unit's charter require that all logs harvested from the Quinalt Ranger District of the Olympic National Forest receive primary processing in Grays Harbor County. Periodic reviews have resulted in few changes in the operation of the unit. In 1981, however, restrictions were incrementally relaxed so that by 1985, only 50 percent of the logs had to be processed in Grays Harbor County. This paper describes an analysis that was part of a review to determine whether the 1981 change should be continued or rescinded. Findings of this study suggest that the forest products industry and the economy in Grays Harbor County are healthier than in the contiguous nonmetropolitan counties and that continuing the restriction may be to the detriment of neighboring counties that are not as well off.

Keywords: Sustained yield, economic impact, economics (forest products industries), community stability.

Contents

- 1 Introduction**
- 3 The Importance of the Forest Products Industry**
- 3 The Total Work Force
- 3 Components of the Economic Base
- 7 The Economic Vitality of Grays Harbor County**
- 7 Change in Comparative Advantage
- 9 Comparing Profits Before Taxes
- 9 Summary and Conclusions**
- 11 References**
- 12 Appendix 1**
- 12 Tables 5 to 9
- 17 Appendix 2**
- 17 Washington Counties by Reference Areas

Introduction

The 1944 Federal Sustained Yield Forest Management Act of March 20, 1944 (58 Stat. 132; 16 U.S.C. 583, 583a-583i), authorizes the Secretaries of Agriculture and the Interior to establish sustained yield units consisting of forest land under their respective jurisdictions. These units could be established (sec. 3):

whenever...the maintenance of a stable community or communities is primarily dependent upon the sale of timber or other forest products from federally owned or administered forest land and such maintenance cannot effectively be secured by following the usual procedure in selling such timber or other forest products....

In 1949, pursuant to this act, the Secretary of Agriculture authorized the creation of the Grays Harbor Federal Sustained Yield Unit.^{1/} With the creation of this unit, primary processing of logs harvested from the Quinault Ranger District of the Olympic National Forest was restricted to Grays Harbor County, Washington (fig. 1). Since the inception of the unit, however, this restriction has been waived for some log buyers so they can market timber outside the zone of primary manufacture.

The importance of the timber harvested from the unit has varied considerably. In 1949, the unit accounted for 33 percent of the logs consumed in Grays Harbor County; in 1976 it accounted for only 6 percent. From 1981 to 1984, the unit's contribution ranged from 8 to 15 percent.^{2/}

Policy reviews of the unit were conducted in 1954, 1958, 1960, 1967, and 1978. Except for a change suggested in the 1967 review—to include chips in the definition of primary processing—the management policy did not change appreciably until 1981. At that time, primary processing restrictions were relaxed incrementally so that by 1985 only 50 percent of the logs harvested from the unit had to be processed in Grays Harbor County.

The primary processing requirement was relaxed to determine if the location of primary processing of timber harvested within the unit would change. In effect, relaxing the requirement increased the availability of raw material to the forest products industry outside the unit. Furthermore, increased competition might result in higher bid prices. Since 1981, however, the major problem facing the forest products industry throughout the Pacific Northwest has been limited markets. So, despite the relaxing of the primary processing requirements, increased competition for the unit's timber has not materialized. Nevertheless, some timber harvested from the unit continued to be sent to processing facilities outside Grays Harbor County (see appendix table 6).

^{1/}Two sustained yield units are in the State of Washington. In 1946, the Shelton Cooperative Sustained Yield Unit resulted from an agreement between the Forest Service and the Simpson Timber Company. This agreement, unlike the Grays Harbor Sustained Yield Unit, committed designated National Forest and Simpson Timber Company land in Grays Harbor, Mason, and Thurston Counties to cooperative management. This agreement terminates on December 31, 2046 (58 Stat.: 16 U.S.C. 583-5831, Suppl. 4).

^{2/}See appendix table 5 and Leonard Guss Associates, Inc. (1980).

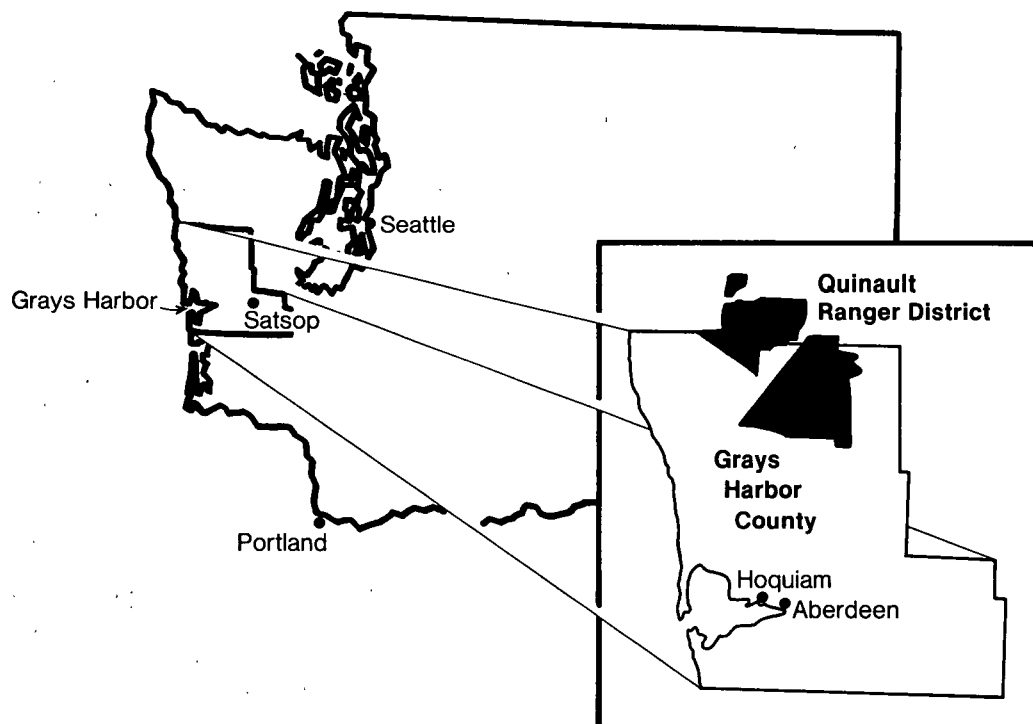


Figure 1—Location of the Quinault Ranger District of the Olympic National Forest.

It may be too early to evaluate all the ramifications of relaxing the unit's primary processing restrictions. The Nation's economy was growing rapidly during the 1970's. But since 1981, when the primary processing requirements were relaxed, it has experienced the most severe recession since World War II. The forest products industry of the Pacific Northwest has yet to fully recover from the severe economic stress caused by competition from sawmills and plywood mills in the South and by lumber imports from Canada. The economic turmoil of the 1975-85 period (that is, substantial growth followed by inflation and economic stagnation, followed by a very severe and protracted recession), however, provides a unique opportunity to contrast the economic performance of the forest products industry and dependent communities of Grays Harbor County with that in neighboring counties.

If Grays Harbor County needs preferential treatment, it should be most apparent in times of economic stress. Some economies are not able to accumulate sufficient wealth for a "rainy day" during the recovery and growth phases of a business cycle; such areas experience more trauma during a recession.

The original purpose of the Grays Harbor unit was to enhance the economy of the forest products industry and dependent communities of Grays Harbor County. The USDA Forest Service could well be meeting this objective. Given the contemporary situation, however, one could ask, "Is it fair that timber processors in Grays Harbor can bid on all National Forest timber sales—with the exception of the Shelton unit—while those in neighboring counties can't?" The process for resolving ques-

tions of fairness can be enhanced by having information about the economic vitality of the segments of the forest products industry and the dependent communities that stand to gain or lose as a result of the 1981 decision. The purpose of this analysis is to provide such information.

The Importance of the Forest Products Industry The Total Work Force

The estimated full- and part-time work force in Grays Harbor County in 1983 was 28,216 employees and proprietors. Between 1975 and 1983, it increased faster than the national average (18.4 vs. 15.6 percent) but slower than the State of Washington average (24.2 percent). Manufacturing is the county's largest employer group (table 1). The forest products industry (that is, lumber and wood products and paper and allied products) accounts for most of the county's manufacturing employment—74 percent, compared with 20 percent for Washington and 7 percent for the Nation. "Personal, business, and professional services" is the largest employer in the State and the Nation.

Components of the Economic Base

Along with total employment there is another and perhaps more important way to judge an industry's contribution to the county's economy. For communities to grow and develop, they must attract new dollars from selling goods and services to the outside world. The industries that bring in new dollars by exporting products and services beyond local boundaries (that is, to buyers elsewhere in other States and nations) constitute an area's economic base.

Generally speaking, most manufacturing employment is classified as economic base (or "basic"), whereas service or "residential" employment (for example, barber shops, realty firms, schools, and local government) is primarily geared to producing for local needs. Some portion of the latter is also basic. For example, Federal military and civilian employment qualifies as a basic industry because taxpayers outside the county pay most of the cost.

Residential employment is supported by the economic base. Money flowing in provides income for wage earners and entrepreneurs to spend on locally purchased goods and services. Usually, the economic growth of a region depends on the success of its economic base.

We used the excess employment technique to identify the industries comprising the economic base of Grays Harbor County, the five contiguous nonmetropolitan counties (fig. 2), and the State of Washington.^{3/} This technique is based on the assumption that the national distribution of employment and earnings among industries is the norm. Any industry with employment or earnings in excess of this norm is considered to be producing for markets outside the county (or sub-State district) and is part of Grays Harbor County's economic base. The percentage of excess employment serves as an indicator of the region's dependency on a particular industry for generating new dollars from outside the region. In 1983, three industries accounted for most of the economic base employment of Grays Harbor County (table 2).

^{3/}For an explanation of various methods for bifurcating employment into the basic and residential sectors, see Bendavid (1974).

Table 1—The composition of the work force of Grays Harbor County, Washington, the State of Washington, and the United States, 1983^{1/}

Employer	Grays Harbor	Washington	United States
	<u>Percent of total employment</u>		
Manufacturing:			
Durable goods--			
Lumber and wood products	13.2	2.1	0.6
Other durable goods	3.2	7.9	9.0
Nondurable goods--			
Paper and allied products	3.0	.8	.6
Other nondurable goods	2.6	3.4	6.6
Total ^{2/}	22.0	14.2	16.8
Personal, business, and professional services	17.9	18.3	19.8
Retail trade	14.1	15.0	14.6
State and local government	13.6	13.3	12.3
Contract construction	7.0	3.7	3.7
Transportation and communications	3.7	4.7	4.7
Finance, insurance, and real estate	2.2	4.9	5.3
Farm proprietors	2.0	2.2	2.5
Wholesale trade	1.9	5.0	5.0
Federal Government:			
Military	1.7	3.8	2.5
Civilian	1.0	3.4	2.8
Nonfarm proprietors	11.3	8.1	7.2
Agricultural services, forestry, and fisheries	.9	.9	.5
Agricultural production	.6	2.1	1.2
Mining	^{3/}	.1	.9
Furniture	0	.2	.4
Total ^{2/}	100.0	100.0	100.0

^{1/} Employment estimates for Grays Harbor County, other counties of the State of Washington, and the United States were derived from unpublished data, U.S. Department of Commerce, Regional Economics Measurements Division, Regional Economic Information System (REIS), Washington, DC. Estimates for 1983 were derived by using ratio estimators, based on unpublished 1983 data from the Washington Department of Economic Security's industry employment series for counties, to adjust the corresponding 1980 REIS employment series.

^{2/} Sum of parts may not equal total because of rounding.

^{3/} Less than 0.1 percent.

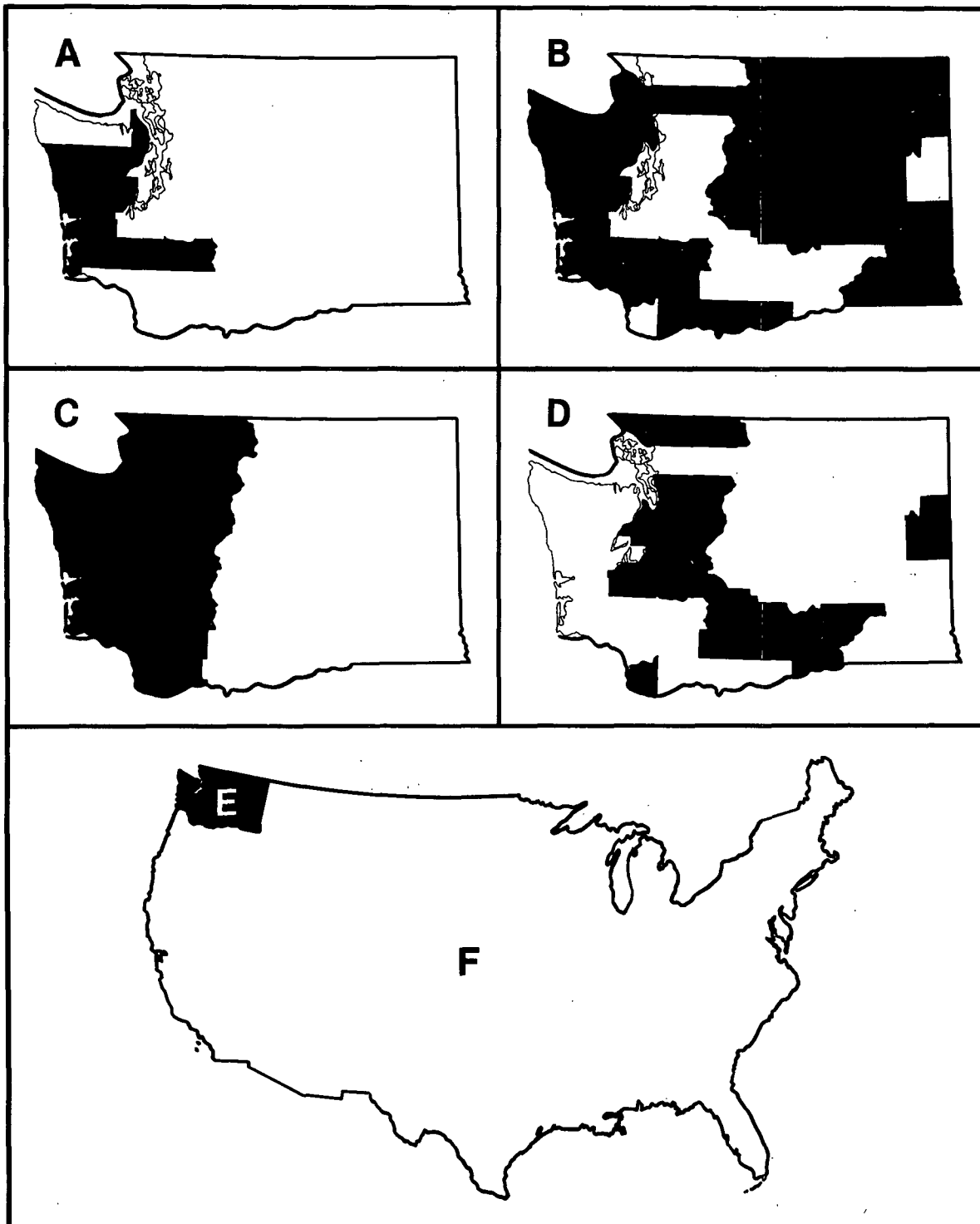


Figure 2—Reference areas: (A) five contiguous nonmetropolitan counties—Grays Harbor, Jefferson, Lewis, Mason, and Pacific; (B) nonmetropolitan Washington, including the five contiguous counties in "A"; (C) western Washington, including counties in "A"; (D) metropolitan Washington; (E) State of Washington; and (F) United States.

Table 2—Components of the economic base in the State of Washington and selected sub-State areas, 1975, 1980, and 1983

Economic base industry	Grays Harbor County			Contiguous nonmetropolitan counties 1/			State of Washington		
	1975	1980	1983	1975	1980	1983	1975	1980	1983
	<u>Percent of economic base</u>								
Forest products	79	60	62	64	57	53	27	25	22
Nonfarm proprietors	15	10	17	17	17	22	9	8	11
Contract construction	0	28	14	0	9	2	2/	9	2/
State and local government	6	1	5	10	10	13	21	11	14
Total	100	99	98	91	93	90	57	53	47
All other basic industries	0	1	2	9	7	10	43	47	53
Total	100	100	100	100	100	100	100	100	100

1/ Grays Harbor, Jefferson, Lewis, Mason, and Pacific Counties.

2/ Less than 1 percent.

Though these same industries accounted for about the same share in 1975, the change in shares of certain individual industries is noteworthy. Contract construction did not qualify as a basic industry in 1975, but it increased to 28 percent of total basic employment in 1980. This change reflected the beginning of construction of the nuclear reactor near Satsop, Washington.

Because of the relative increase in contract construction, the importance of the forest products industry decreased in Grays Harbor between 1975 and 1983. The data, however, are misleading. Employment data reflect place of work and not place of residence. Few of the employees of the forest products industry commuted from outside Grays Harbor, whereas many of the contract construction employees did. Furthermore, only a few caretaker employees are now working at the site of the mothballed nuclear plant. Consequently, the basic component of contract construction employment declined after 1983. Therefore, the forest products industry is as important now as it was before construction of the nuclear reactor was begun.

The decrease in importance of contract construction between 1980 and 1983 reflects the loss of more than 2,500 basic employees because the nuclear reactor was mothballed. Because many of the contract construction workers commuted to the reactor site (mainly from Thurston and Pierce Counties), the sharp drop in basic contract construction employment was not as traumatic for the Grays Harbor economy as the percentages suggest.

The Economic Vitality of Grays Harbor County

Most of the nonfarm proprietors are involved in activities related to forest products (for example, contract logging and hauling). For this reason, the importance of the forest products industry is slightly greater for the contiguous nonmetropolitan area than for Grays Harbor.

The establishment of the sustained yield unit granted preferential treatment to Grays Harbor County. This favoritism was rationalized because of the perceived need to assure stability for the county's forest products industry and dependent communities. The lack of an explicit definition of community stability in the Sustained Yield Forest Management Act complicates the recurring need to justify the existence of the unit. In this analysis we assume that preferential treatment might still be rationalized if the economic vitality of the timber industry and dependent communities of Grays Harbor County is surpassed by the economic vitality of nearby areas.

In this section we compare the economic vitality of Grays Harbor County with that of the Nation and selected areas in the State of Washington. We chose two indicators of economic vitality: (1) an area's comparative advantage and (2) industry profits before taxes.

The basic approach of the analysis of comparative advantage is to compare Grays Harbor County with the United States, Washington, and four subdivisions of the State: (1) five contiguous nonmetropolitan counties (Grays Harbor, Jefferson, Lewis, Mason, and Pacific); (2) nonmetropolitan Washington; (3) western Washington, and (4) metropolitan Washington. These four areas, the State of Washington, and the Nation are called reference areas (fig. 2; see appendix 2 for the listing of counties by reference area). These six reference areas are not mutually exclusive.

Change in Comparative Advantage

The change in regional shares of employment shows how much more or less employment Grays Harbor County would have had had its forest products industry grown at the same rate as, for example, the average of all counties in the reference area composed of the five contiguous nonmetropolitan counties. In 1980, Grays Harbor County had an increasing regional share of 170 employees, indicating that its forest products industry grew faster between 1975 and 1980 than the average rate for the industry in the contiguous nonmetropolitan county reference area (table 3). This change reflects a gain in the comparative advantage of Grays Harbor County over its neighbors because areas that increase their regional shares of employment "are those in which overall access to basic inputs or to markets has been improved relative to other regions engaged in the same activity; they have gained because of their greater locational advantages for the operations of given activities or industries" (Perloff and others 1960).

The change in shares of employment shows that the economic performance of the forest products industry in Grays Harbor County also surpassed that in all the other reference areas except metropolitan Washington—where secondary processing in the forest products industry is more important—and the United States. Furthermore, if all industries are considered, the rate of change for Grays Harbor between 1975 and 1980 was higher than for all reference areas.

Table 3—Change in shares of employment of 6 reference areas, for selected industries in Grays Harbor County, 1975-80 and 1975-83

Reference area and industry	1975-80	1975-83
	<u>Employees 1/</u>	
Contiguous nonmetropolitan counties: 2/		
Forest products industry	170	8
All industries	1,772	614
Western Washington:		
Forest products industry	80	-349
All industries	1,955	-883
Nonmetropolitan Washington:		
Forest products industry	235	238
All industries	3,348	1,525
Metropolitan Washington:		
Forest products industry	-268	-934
All industries	1,673	-1,357
State of Washington:		
Forest products industry	39	-308
All industries	2,155	-455
United States:		
Forest products industry	-364	-1,033
All industries	4,064	643

1/ Minus signs indicate a decreasing share.

2/ Grays Harbor, Jefferson, Lewis, Mason, and Pacific Counties.

The recession of 1981 and 1982 and the mothballing of the nuclear reactor at Satsop, Washington, are evident when the analysis is extended through 1983. Grays Harbor increased its share of all industry employment (including the forest products industry) relative to its neighbors and nonmetropolitan Washington but lost ground in most respects relative to the other reference areas. The exception was the United States. Although Grays Harbor County's share of the Nation's employment in the forest products industry declined between 1975 and 1983, its share of all-industry employment increased.

The economic vitality of Grays Harbor County compares favorably with that of other counties in the nonmetropolitan areas of Washington. Its immediate neighbors are not as well off in terms of change in regional shares of employment in the forest products industry and all industries. Furthermore, had the nuclear reactor project not been mothballed, the Grays Harbor County increase in the share of "all industries" employment would have surpassed that of all reference areas (see appendix table 7).

Comparing Profits Before Taxes

Value added by manufacturing represents income payments directly to workers and business owners. It is equal to the value of shipments less the cost of materials, parts, supplies, fuel, goods purchased for resale, electric energy, and contract work. In 1977, Grays Harbor County accounted for about 59 percent of the \$538 million of the value added by the forest products industry located in Grays Harbor County and the contiguous nonmetropolitan counties (see appendix table 8). Between 1977 and 1982, the value added by the area's forest products industry decreased by 46 percent to \$288 million (see appendix table 9). During this period, value added by the forest products industry in Grays Harbor County declined by 48 percent. Consequently, its share of the five-county area's value added declined slightly to 56 percent of the total.

Profit before taxes is equal to value added minus payroll (see appendix tables 8 and 9). Profit before taxes dropped precipitously between 1977 and 1982 (table 4); and in Pacific County, profits had also declined between 1972 and 1977. In 1977, profit before taxes per worker hour earned by the forest products industry in Grays Harbor County exceeded profit earned by the industry in the other four contiguous nonmetropolitan counties. Despite the slightly smaller share of value added in 1982 than in 1977, profit before taxes did not decline as much in Grays Harbor County during this period as it did in all but one of the neighboring counties. Consequently, 1982 profits before taxes were still higher in Grays Harbor County than in the other four counties.

Summary and Conclusions

During the 1975-83 period, Grays Harbor County increased its share of employment in all industries in the contiguous, five-county area. Meanwhile, growth in employment in the forest products industry in Grays Harbor County kept pace with that of neighboring counties. These trends reflect the comparative advantage of Grays Harbor County over its neighbors. Furthermore, in 1977 and 1982, profits before taxes were higher for the forest products industry in Grays Harbor County than in neighboring counties. Also, profits increased faster in Grays Harbor County between 1972 and 1977 than in neighboring counties and declined less between 1977 and 1982.

The results of this analysis suggest that during the 1975-83 period, the forest products industry and dependent communities in Grays Harbor County were better off than those in neighboring counties. Grays Harbor County responded more than its neighbors did to the economic opportunities during the upswing of the business cycles of the 1970's and, as a consequence, has better withstood the stresses brought on by the collapse of the housing market and subsequent recession.

The Grays Harbor Sustained Yield Unit was established to enhance the economic performance of the forest products industry and dependent communities in Grays Harbor County. When it was established, the unit's exclusionary timber allocation policy may have had little or no impact on the economies of neighboring counties. Currently, however, the unit may have an adverse economic impact on the timber industry located outside Grays Harbor County. Furthermore, the unit may be one reason (albeit minor) why Grays Harbor County surpassed its neighbors in economic performance between 1975 and 1983.

Table 4—Profit before taxes per worker hour in the forest products industry in Grays Harbor, Washington, and contiguous nonmetropolitan counties, 1977 and 1982

County and industry	Profits before taxes ^{1/}			
	1977	Change between 1972 and 1977	1982	Change between 1977 and 1982
	<u>1977 dollars per hour</u>	<u>Percent</u>	<u>1977 dollars per hour</u>	<u>Percent</u>
Grays Harbor:				
Lumber and wood products	17.13	113.80	11.10	-35.21
Paper and allied products	16.52	57.73	13.24	-19.85
Jefferson:				
All manufacturing, including paper and allied products ^{2/}	14.14	39.21	8.81	-37.74
Lewis:				
Lumber and wood products	10.73	20.27	10.26	-4.38
Mason:				
Lumber and wood products	10.08	52.32	-3.98	-139.49
Pacific:				
Lumber and wood products	7.08	-34.68	2.88	-59.38
All contiguous counties:				
Lumber and wood products	13.61	63.13	7.65	-43.77
Paper and allied products	15.57	50.57	11.07	-28.90
Average	13.90	59.95	8.27	-40.51

^{1/} Profit before taxes equals value added minus payroll divided by hours worked.

^{2/} Paper and allied products accounts for most of the manufacturing in Jefferson County.

Source: U.S. Bureau of the Census, Census of Manufactures, for 1977 and 1982, States of the Pacific Northwest, the South, and the United States, available in 1980 and 1985, respectively.

The timber allocation policy of the Grays Harbor Sustained Yield Unit discriminates against potential bidders representing processors from neighboring counties. We have shown that Grays Harbor County exhibits more economic vitality than its neighbors. Shielding a well-off county to the detriment of its less well-off neighbors may not explicitly conflict with the intent of the Cooperative Sustained-Yield Act. Evidence suggests, however, that the Forest Service may wish to determine whether, from the standpoint of equity, the preferential treatment granted to Grays Harbor County can be justified. Furthermore, since the economy of Grays Harbor County continues to outperform that of its neighbors, there seems to be no reason to rescind the 1981 decision to incrementally reduce the unit's primary processing restrictions—by 1986—from 100 percent to 50 percent of the stumpage harvested from the Quinault Ranger District.

References

- Bendavid, Avrom.** Regional economic analysis for practitioners: an introduction to common descriptive methods. New York: Praeger Publishers; **1974**. 195 p.
- Leonard Guss Associates, Inc.** A review of the Grays Harbor Sustained Yield Unit. Tacoma, WA; January 4, **1980**; 14 p. Report prepared for the Western Forest Industries Association.
- Perloff, Harvey S.; Dunn, Edgar S., Jr.; Lampard, Eric E.; Muth, Richard F.** Regions, resources, and economic growth. Lincoln, NB: University of Nebraska Press; **1960**. 716 p.

Appendix 1
Tables 5 to 9

Table 5—Importance of timber harvested from the Grays Harbor Sustained Yield Unit, 1978-84

Year	Timber harvested		Unit's contribution as a proportion of total harvest
	From unit	From all ownerships in Grays Harbor County	
	- - - - Million board feet - - - -		Percent
1978	92.9	528.3	17.6
1979	85.1	595.7	14.3
1980	76.4	409.7	18.6
1981	49.5	337.5	14.7
1982	49.2	589.1	8.4
1983	100.6	948.4	10.6
1984	82.7	792.1	10.4

Source: "Quarterly Cut Records," Olympic National Forest and "Timber Harvest Reports," State of Washington, Department of Natural Resources.

Table 6—Volume of timber harvested from the Grays Harbor Sustained Yield Unit, for which the requirement for processing inside Grays Harbor County was waived, 1978-85

Year	Volume processed outside county
	<u>Million board feet</u>
1978	2.3
1979	1.5
1980	11.0
1981	2.8
1982	7.0
1983	20.0
1984	5.0
1985	0

Source: Personal correspondence with Bill Hay, Olympic National Forest, Quinault Ranger District. During the 1981-85 period, an additional 5.2 million board feet was processed outside the unit from lands that became exempt as a result of the 1981 decision to incrementally reduce the primary processing restrictions.

Table 7—Change in shares of employment of 6 reference areas for selected industries in Grays Harbor County, Washington, 1975-80, 1980-82, 1982-83, and 1975-83

Reference area and industry	1975-80	1980-82	1982-83	1975-83
	<u>Employees</u>			
Contiguous nonmetropolitan counties:				
Forest products industry	170	-465	350	8
Contract construction	1,523	378	-466	672
All industries	1,772	-161	-196	614
Western Washington:				
Forest products industry	80	-726	329	-349
Contract construction	2,419	1,649	-2,526	1,009
All industries	1,955	324	-2,540	-883
Nonmetropolitan Washington:				
Forest products industry	235	-252	301	238
Contract construction	2,511	1,837	-1,948	1,248
All industries	3,348	1,324	-1,864	1,525
Metropolitan Washington:				
Forest products industry	-268	-866	238	-934
Contract construction	2,451	1,590	-2,441	1,033
All industries	1,673	166	-2,555	-1,357
State of Washington:				
Forest products industry	39	-574	263	-308
Contract construction	2,462	1,632	-2,362	1,071
All industries	2,155	548	-2,421	-455
United States:				
Forest products industry	-364	-825	180	-1,033
Contract construction	2,732	1,259	-2,613	1,139
All industries	4,064	-571	-2,592	643

Table 8—Value added, payroll, hours worked, and profit before taxes, by forest products industry in the Grays Harbor and contiguous nonmetropolitan counties in Washington State, 1977

County and industry	Value added	Payroll	Hours worked	Profit before taxes ^{1/}	
				1977	Change between 1972 and 1977
	Million 1977 dollars		Million	1977 dollars per hour	Percent
Grays Harbor:					
Lumber and wood products	257.5	87.9	9.9	17.13	113.81
Paper and allied products	59.1	24.4	2.1	16.52	57.73
Jefferson: ^{2/}					
All manufacturing	32.7	12.9	1.4	14.14	39.21
Lewis:					
Lumber and wood products	117.7	51.2	6.2	10.73	20.27
Mason:					
Lumber and wood products	51.1	24.9	2.6	10.08	52.32
Pacific:					
Lumber and wood products	19.5	11.0	1.2	7.08	-34.68
All contiguous counties:					
Lumber and wood products	445.8	175.0	19.9	13.61	63.13
Paper and allied products	91.8	37.3	3.5	15.57	50.57
Total or average	537.6	212.3	23.4	13.90	59.95

^{1/} Profit before taxes equals value added minus payroll divided by hours worked.

^{2/} Paper and allied products accounts for most of the manufacturing in Jefferson County.

Source: U.S. Bureau of the Census, Census of Manufactures, for Washington State, 1972 and 1977; available in 1976 and 1980, respectively.

Table 9—Value added, payroll, hours worked, and profits before taxes, by forest products industry in the Grays Harbor and contiguous counties, Washington, 1982

County and industry	Value added	Payroll	Hours worked	Profit before taxes ^{1/}	
				1977	Change between 1977 and 1982
	Million 1977 dollars	Million	1977 dollars per hour	Percent	
Grays Harbor:					
Lumber and wood products	124	58	6.0	11.10	-35.21
Paper and allied products	38	18	1.5	13.24	-19.85
Jefferson: ^{2/}					
All manufacturing	24	13	1.3	8.81	-37.74
Lewis:					
Lumber and wood products	79	39	3.9	10.26	-4.38
Mason:					
Lumber and wood products	13	22	2.2	-3.98	-139.49
Pacific:					
Lumber and wood products	10	7	1.1	2.88	-59.38
All contiguous counties:					
Lumber and wood products	226	125	13.2	7.65	-43.77
Paper and allied products	62	31	2.8	11.07	-28.90
Total or average	288	156	16.0	8.27	-40.51

^{1/} Profit before taxes equals value added minus payroll divided by hours worked.

^{2/} Paper and allied products accounts for most of the manufacturing in Jefferson County.

Source: U.S. Bureau of the Census, Census of Manufactures, for Washington State, 1977 and 1982; available in 1980 and 1985, respectively.

Appendix 2
Washington Counties by
Reference Areas

Reference area	Counties
Contiguous nonmetropolitan counties	Grays Harbor, Jefferson, Lewis, Mason, Pacific
Western Washington	Clallam, Clark, Cowlitz, Grays Harbor, Island, Jefferson, King, Kitsap, Lewis, Mason, Pacific, Pierce, San Juan, Skagit, Skamania, Snohomish, Thurston, Wahkiakum, Whatcom
Metropolitan Washington	Benton, Clark, Franklin, King, Kitsap, Pierce, Snohomish, Spokane, Thurston, Whatcom, Yakima
Nonmetropolitan Washington	Adams, Asotin, Chelan, Clallam, Columbia, Cowlitz, Douglas, Ferry, Garfield, Grant, Grays Harbor, Island, Jefferson, Kittitas, Klickitat, Lewis, Lincoln, Mason, Okanogan, Pacific, Pend Oreille, San Juan, Skagit, Skamania, Stevens, Wahkiakum, Walla Walla, Whitman

Schallau, Con H; Maki, Wilbur R. Are Federal sustained yield units equitable? A case study of the Grays Harbor unit. Res. Pap. PNW-369. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station; **1986**. 17 p.

The Grays Harbor Federal Sustained Yield Unit (U.S. Department of Agriculture, Forest Service) was established in 1949 to enhance the economic stability of the forest products industry and dependent communities in Grays Harbor County, Washington. Provisions of the unit's charter require that all logs harvested from the Quinault Ranger District of the Olympic National Forest receive primary processing in Grays Harbor County. Periodic reviews have resulted in few changes in the operation of the unit. In 1981, however, restrictions were incrementally relaxed so that by 1985, only 50 percent of the logs had to be processed in Grays Harbor County. This paper describes an analysis that was part of a review to determine whether the 1981 change should be continued or rescinded. Findings of this study suggest that the forest products industry and the economy in Grays Harbor County are healthier than in the contiguous non-metropolitan counties and that continuing the restriction may be to the detriment of neighboring counties that are not as well off.

Keywords: Sustained yield, economic impact, economics (forest products industries), community stability.

U.S. Department of Agriculture
Pacific Northwest Research Station
319 S.W. Pine Street
P.O. Box 3890
Portland, Oregon 97208

BULK RATE
POSTAGE +
FEES PAID
USDA-FS
PERMIT No. G-40

Official Business
Penalty for Private Use, \$300

do NOT detach label