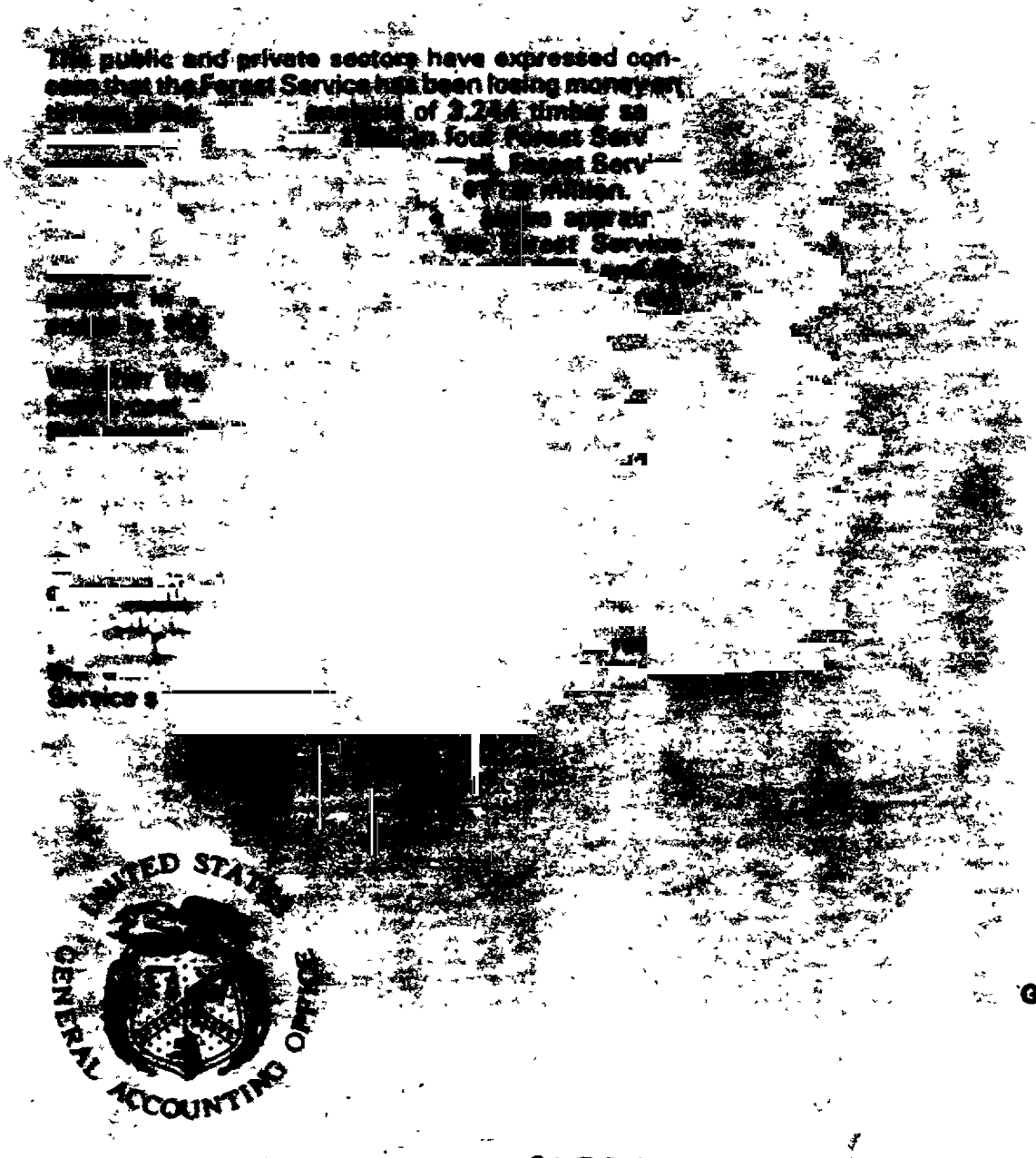
Report To The Congress

OF THE UNITED STATES

Congress Needs Better Information On Forest Service's Below-Cost Timber Sales



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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON D.C. 20548

B-210983

To the President of the Senate and the
Speaker of the House of Representatives

This report discusses our analyses of all advertised timber sales the Department of Agriculture's Forest Service made in its four western regions in fiscal years 1981 and 1982. We made this review to determine whether individual sales were being made below cost, and if so, the general magnitude of this practice, the justification for it, and whether additional congressional guidance is desirable. This report contains recommendations to the Congress and to the Secretary of Agriculture on page 23.

We are sending copies of this report to the Senate Committees on Agriculture, Nutrition, and Forestry; Appropriations; Budget; and Governmental Affairs and to the House Committees on Agriculture, Appropriations, Budget, and Government Operations. We are also sending copies to the Director, Office of Management and Budget, and to the Secretary of Agriculture.

for Comptroller General
of the United States

COMPTROLLER GENERAL'S
REPORT TO THE CONGRESS

CONGRESS NEEDS BETTER INFORMATION ON FOREST SERVICE'S BELOW-COST TIMBER SALES

D I G E S T

The Department of Agriculture's Forest Service annually sells billions of board feet of timber from its national forest lands. In fiscal year 1983, the Forest Service sold 11 billion board feet for about $774 million.

In making a timber sale, the Forest Service incurs costs for a variety of activities. These include determining the timber volume in the potential sale area, preparing logging and transportation plans, assessing potential environmental impacts from harvesting activities, appraising the timber, administering the sale contract, and reforesting the area.

Under the National Forest Management Act of 1976, the Forest Service is to sell timber at not less than appraised value--the minimum acceptable bid--to assure that the government obtains fair market value for the timber. For most sales the Forest Service computes the appraised value by (1) estimating the market price for finished lumber, (2) subtracting the purchaser's estimated logging and milling costs, and (3) including a factor for the purchaser's risk and profit. Forest Service costs to sell timber are not considered in making the appraisal. The contract to harvest the timber is awarded under competitive bidding procedures to the highest bidder.

The 1976 act requires the Forest Service to report annually to the Congress, on a representative sample basis, those advertised timber sales made below the Forest Service's estimated expenditures for such sales. In addition, congressional committees, members of the Congress, and public interest groups have expressed concern that the Forest Service has been losing money on timber sales.

Because of these concerns, GAO analyzed the 3,244 advertised timber sales made in four western Forest Service regions (one Pacific Coast and three Rocky Mountain regions) in fiscal years 1981 and 1982 (latest data available). GAO's objective was to determine whether individual sales were being made below cost, and if so, the general magnitude of this

practice in terms of the number, amount of loss, and geographic location; the justification for it; and whether better data could be given to the Congress. GAO selected these regions because they provided a range of timber prices from the highest in the nation to the lowest and accounted for over 60 percent of all Forest Service volumes sold and sales receipts generated. (See pp. 1 to 8.)

DOES THE FOREST SERVICE RECOVER ITS TIMBER SALE COSTS?

GAO's analysis of the 3,244 timber sales showed that, overall, Forest Service revenues exceeded its costs by $712 million. Although the timber was sold at or above appraised value, 433 (27 percent) of the sales in 1981 and 677 (42 percent) of the sales in 1982 did not generate enough revenues to cover the Forest Service's costs of making the sales. The 1981 and 1982 below-cost sales had shortfalls of $64 million and $92 million, respectively. (See pp. 9 to 11.)

GAO's analysis of factors contributing to below-cost sales showed that such sales occurred more frequently in Forest Service regions that had mostly low productivity timberlands, low sales values for predominant tree species, and relatively low volumes of timber sold. For example, in two Rocky Mountain regions, which had at least 60 percent of their timberland classified as low productivity land and which accounted for only about 7 percent of the Forest Service timber volume sold, over 88 percent of the sales were below cost in 1981 and over 96 percent were below cost in 1982. (See pp. 11 to 14.)

While the above factors appear to be general indicators leading to below-cost sales, other factors can also cause them. GAO's review of specific sale characteristics that contributed to below-cost sales showed that generally these sales were in areas that had steep terrain, which increases harvesting costs, and involved high road engineering and construction costs. (See pp. 14 and 15.)

Applicable legislation governing sales of national forest timber does not require the Forest Service to recover its costs on individual timber sales. The 1976 act does, however, encourage the Forest Service to consider

economic and other factors in deciding, during its forest planning process, whether Forest Service lands are suitable for timber production. (See pp. 15 to 17.)

FOREST SERVICE NEEDS TO USE COST DATA IN EVALUATING INDIVIDUAL TIMBER SALES

The Forest Service does not identify and accumulate its costs for individual timber sales. This hampers the Forest Service from taking timely actions to reduce costs or otherwise improve sale economics. Timber sales are planned at least 5 years in advance of sale award and significant costs are often not incurred until after the sale. In the 3,244 sales GAO analyzed, from 47 to 89 percent (forest averages) of total sale costs were incurred after the sale award. GAO believes that accounting for individual sale costs and revenues is necessary for forest managers to estimate the economics of upcoming sales and to seek ways early in the sale process of avoiding or minimizing the losses from sales expected to be below cost. (See pp. 18 and 19.)

The Forest Service's limited cost data on individual sales also hamper its response to an annual reporting requirement of the 1976 act. The 1976 act requires that the Forest Service provide the Congress annually with a statement, on a representative sample basis, comparing estimated expenditures and return to the government from timber sales. Because it lacks the data, the Forest Service now requests its field offices to submit information on several sales made below cost and then reports on one example each year. The field offices are not required to estimate or otherwise indicate the extent to which the below-cost sales reported are representative of all sales made. (See p. 20.)

RATIONALE FOR SELLING TIMBER BELOW COST

In its 1982 annual report to the Congress, the Forest Service listed some reasons for making below-cost sales: To encourage use of damaged timber, improve growth of individual stands, or satisfy needs of local communities dependent on national forest timber sales. In congressional testimony the Forest Service has stated that even though in the short term such sales appear uneconomical, when the above longer term reasons are considered, such sales are sound

investments of the public's money. A Forest Service headquarters official told GAO that the primary reason for selling timber below cost is to remove relatively low valued timber stands and replace them with higher valued timber stands. The sales value of the next, higher valued stand would recover not only costs of that stand but losses on the previous stand as well. At the Forest Service's suggestion, GAO tested the validity of this sale justification on eight below-cost sales. GAO found that the Forest Service's hypothesis was not valid on these sales because on each sale the net present value of the next stand of timber showed a loss. (See pp. 20 and 21.)

The Congress has said it wants sample data on below-cost timber sales. GAO believes the oversight needs of the Congress would be better served through a comprehensive reporting of below-cost sales.

On the basis of sale economics alone, one could conclude that some national forest lands should not be managed for timber production. GAO recognizes, however, that the Forest Service must also consider other factors in managing the federal timber resource. For example, contributing to local area economic stability by providing timber-related employment may offset the federal subsidy involved in continuing to sell timber from such land for less than cost. It would be unwise to impose rigid or inflexible economic constraints on timber sales to all forest lands nationwide. Accordingly, GAO is not suggesting that all future sales recover costs. Instead, GAO is suggesting that the management of this valuable resource could be improved by developing and using financial data in the timber sale planning and decisionmaking processes.

Whether the Forest Service should recover its costs to sell timber, or whether, as the Forest Service states, below-cost sales are sound investments of the public's money, is a policy question for the Congress. To effectively address that question, however, the Congress needs more complete and reliable financial data on the timber sales program.

If, on the basis of the data the Forest Service reports on below-cost sales, the Congress decides that the Forest Service timber sales program should be operated more on a "going

concern" basis, it could consider modifying existing legislation. One way would be to specify those instances where below-cost sales will be permitted and require for the remaining sales that the Forest Service establish a minimum selling price that will be the higher of either the appraised value of the timber or Forest Service costs associated with making the sale.

GAO demonstrated that the costs and revenues of 3,244 sales could be reasonably estimated using computerized Forest Service data supplemented by other data available at the national forests. GAO believes that the Forest Service could readily develop a systematic means of collecting such data on each sale. (See pp. 22 and 23.)

RECOMMENDATION TO THE SECRETARY OF AGRICULTURE

GAO recommends that the Secretary of Agriculture require the Chief of the Forest Service to develop a capacity to systematically determine the costs to sell timber for all national forest timber sales and on a statistically valid basis compare these costs with the estimated value to be received from the sale. (See p. 23.)

RECOMMENDATION TO THE CONGRESS

GAO recommends that the Congress require the Secretary of Agriculture to revise the annual reporting to the Congress on Forest Service activities to include an estimate of the number and volume of timber sales sold below cost, the amount lost on these sales, and the justification on a summary basis for making such sales. (See p. 23.) Suggested legislative language appears in appendix III.

AGENCY COMMENTS AND GAO EVALUATION

In its March 16, 1984, letter (see app. V) commenting on a draft of this report, the Forest Service expressed concern about the treatment of or the inclusion of certain costs and revenues in GAO's analyses. One of its concerns involved GAO's including as a cost of sales, payments in lieu of taxes made to states where national forest timber is sold. These transfers, while a cost to the federal government, are not a cost when viewed from the perspective

of the government sector or society as a whole.

GAO modified the report to show the effect of excluding these payments as a cost to the timber sales program. The modification did not materially alter the results of GAO's analyses. The exclusion of the 25-percent payment affected less than 10 percent of the sales and would result in a shortfall of $117 million to the government sector as a whole on the 3,244 sales GAO analyzed.

GAO does not agree with the Forest Service's comments regarding its payments in lieu of taxes and continues to believe these payments are directly attributable to timber sales, represent a cost of doing business, and should not be excluded from the analyses. GAO recognizes that certain refinements could be made in the treatment of certain other costs and revenues. However, GAO believes on the basis of available data within the Forest Service, that its analyses are sound and accurately portray the cost/revenue relationships in the regions covered by its review.

The Forest Service agreed with GAO's recommendation to the Secretary of Agriculture concerning cost analyses of timber sales and had no objection to GAO's recommendation to the Congress concerning the annual reporting requirements. The Forest Service said that it plans to implement a Sales Tracking and Reporting System, which will provide a capability to track sale activities and costs. The Forest Service also said that although this system will have the capability, it does not plan to track costs of each sale through time, but rather use this system to track the costs of a reliable sample of sale activities on certain sales each year.

GAO believes that such a system, if properly implemented, should accomplish the purpose of its recommendation to obtain cost data systematically. (See pp. 23 and 24.)

Contents

ABBREVIATIONS

GAO	General Accounting Office
MBF	thousand board feet
NFMA	National Forest Management Act of 1976

CHAPTER 1

INTRODUCTION

The Department of Agriculture's Forest Service annually sells billions of board feet of timber from national forest lands to meet America's many demands for wood products. In fiscal year 1983, the Forest Service sold 11 billion board feet of timber for about $774 million. The Organic Administration Act of June 4, 1897, as amended (16 U.S.C. 471), contained the Forest Service's original authority to sell timber. This act specified that the timber was to be appraised and then advertised for sale. The timber could not be sold at less than the appraised value, and the timber was to go to the highest bidder. The National Forest Management Act of 1976 (NFMA) (16 U.S.C. 472a) reconfirmed the Forest Service's requirements to sell timber "at not less than appraised value." The prohibition on sales at less than appraised value was designed to assure that the United States obtained fair market value for national forest timber. Applicable legislation governing sales of national forest timber does not require the Forest Service to recover its costs.

HOW NATIONAL FOREST TIMBER IS SOLD

The Forest Service timber sale process can take over 10 years from the time initial sale planning begins through the harvest. Typically, about 8 years before the sale award, approximate sale boundaries are identified, the general conditions of the area are surveyed, and a brief logging and transportation plan is prepared. Five years before award, a description of the sale, including location and approximate sale volume, is published in each national forest's listing of upcoming timber sales. During the next 5 years, a variety of other sale preparation activities are undertaken, such as assessing the environmental impacts of harvesting the timber, estimating the timber volume more accurately, and appraising the timber value. For most of its timber, the Forest Service computes the appraised value--the minimum acceptable bid--by estimating the market price for finished lumber at the mill, subtracting the purchaser's estimated logging and milling costs, and factoring in the purchaser's risk and profit. This residual value method of timber appraisal is based on the purchaser's costs to help assure that a purchaser of average efficiency will make a profit from the timber purchased. Forest Service costs to sell timber are not considered in making the appraisal.

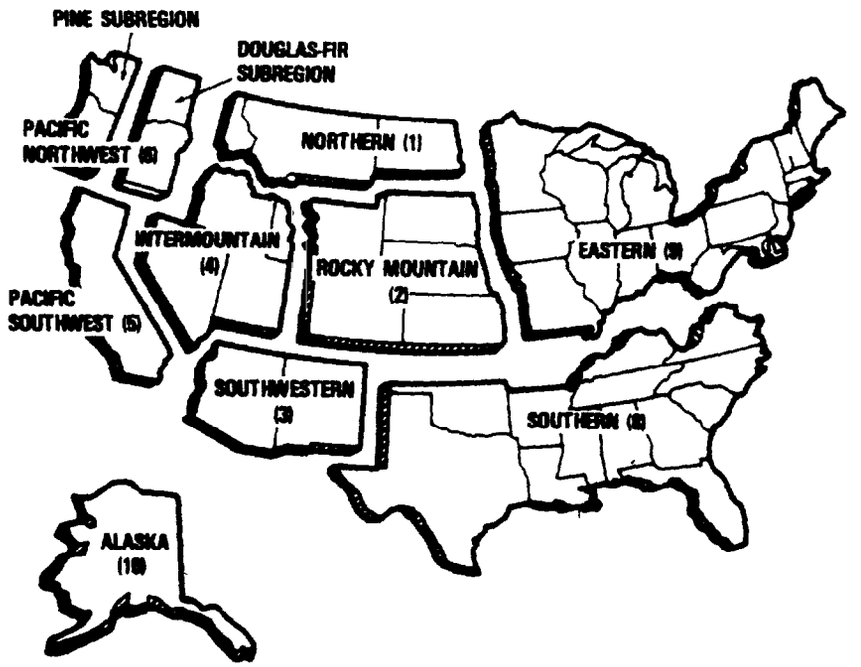
The contract to harvest the timber is awarded under competitive bidding procedures to the highest bidder. The contract terms often call for the timber to be cut in 3 to 5 years, but cutting time can range from 1 or 2 months for small sales to 10 years for large sales. The timber purchaser generally builds any roads needed to harvest the timber during the first part of the contract and then cuts the timber during the latter stages. The Forest Service supervises the purchaser to ensure that the roads are

built correctly, only designated trees are cut, the trees are cut according to contract specifications, damage to the soil or streams is minimized, and various other contract requirements are complied with. After the harvest, the area is reforested by either natural means or the Forest Service planting seeds or seedlings.

WIDE VARIATIONS EXIST IN TIMBER VOLUMES SOLD AND VALUES RECEIVED BY FOREST SERVICE REGIONS

The national forests contain about 191 million acres, of which about 89 million acres are classified as commercial timberlands.[1] Nine Forest Service regional offices manage national

FOREST SERVICE REGIONS



forest lands, but most of the commercial timberland is located in the western regions--41 percent in the four Rocky Mountain regions,[2] 28 percent in the two Pacific Coast regions, and 7 percent in the Alaska region. The remaining 24 percent is divided about equally between the eastern and southern regions. The above map shows the geographical boundaries of the nine regions.

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[1]Forest land that is producing or is capable of producing crops of industrial wood and not withdrawn from timber utilization by statute or administrative regulation.

[2]Northern, Rocky Mountain, Intermountain, and Southwestern regions.

The timber volumes sold and the average values received vary from region to region. The chart below shows the volume and average price per thousand board feet (MBF) of timber sold by the regions for fiscal years 1980, 1981, and 1982.

TIMBER SOLD BY FOREST SERVICE REGION

Fiscal Years 1980-1982

Region	1980 Volume Sold	1980 $	1980 Value per MBF[a]	1981 Volume Sold	1981 $	1981 Value per MBF[a]	1982 Volume Sold	1982 $	1982 Value per MBF[a]
Pacific Northwest--6 (Portland)	5,126	45	$250.87	5,482	48	$224.98	4,642	46	$79.89
Pacific Southwest--5 (San Francisco)	1,921	17	232.64	1,830	16	159.27	1,588	16	55.84
Southern--8 (Atlanta)	1,282	11	75.43	1,219	11	93.31	1,125	11	76.20
Northern--1 (Missoula)	1,133	10	46.43	994	9	59.68	974	10	35.11
Eastern--9 (Milwaukee)	606	5	27.24	644	6	27.70	589	6	26.38
Rocky Mountain--2 (Denver)	324	3	6.06	404	4	9.12	352	4	5.51
Intermountain--4 (Ogden)	364	3	27.19	315	3	16.53	348	3	12.00
Southwestern--3 (Albuquerque)	335	3	50.74	410	4	86.49	331	3	32.43
Alaska--10 (Juneau)	200	2	105.51	159	1	48.06	81	1	29.53
Total	11,291	99[b]	-	11,457	102[b]	-	10,030	100	-

[a]Average bid value per thousand board feet (MBF) of timber sold.

[b]Totals do not equal 100 due to rounding.

The two Pacific Coast regions, which contain a large portion of the high productivity timberlands, annually account for about two-thirds of the timber sold and three-fourths of the value received, even though this area contains less than one-third of the national forest commercial timberlands. Conversely, the four Rocky Mountain area regions, which contain a large portion of the low productivity timberlands, annually account for less than one-fifth of the timber sold and less than one-tenth of the value received, while containing over two-fifths of the national forest commercial timberlands. The higher productivity lands not only have heavier stands of timber per acre than the lower productivity lands, but also the timber is likely to be of higher quality, with less rot and waste material. As a result, such timber has a higher value per MBF and can be expected to provide more revenue per acre harvested than will lower productivity timberlands.

OBJECTIVES, SCOPE, AND METHODOLOGY

With the federal government facing escalating budget deficits, national interest has been on improving government efficiency and economy. One area receiving attention is the management of the nation's natural resources.

The public and private sectors have expressed concern that the Forest Service has been losing money on timber sales. The 1976 act now requires that the Forest Service annually report to the Congress, on a representative sample basis, on those advertised timber sales made below its estimated expenditures for such sales. A 1980 study by the Natural Resources Defense Council, Inc., criticized the Forest Service for incurring losses in the sale of national forest timber. The President's Private Sector Survey on Cost Control included in its August 31, 1983, report on the Department of Agriculture a discussion on how the Forest Service could reduce its costs and/or increase revenues from its timber sales program. Also, the Chairman, Subcommittee on Mining, Forest Management, and Bonneville Power Administration, House Committee on Interior and Insular Affairs, has recently advised us that:

> "I believe most taxpayers and Members of Congress assume that federal agencies make a profit selling public timber resources, or are at least breaking even. If this is not the case, then the rationale for selling timber below cost should be clearly explained.
>
> "If this problem is significant in scope, it may be necessary for the Subcommittee to consider legislation to clarify federal policy on recovery of timber sale costs."

In view of such concerns and indications, we reviewed selected aspects of the Forest Service timber sales program. Our primary emphasis was on examining the magnitude of below-cost sales. We did not try to determine if Forest Service costs were too high or if Forest Service timber appraisals were properly computed. Our objectives were to determine whether, on individual timber sales, the Forest Service is selling timber below its cost, and if so

- --the general magnitude of this practice,
- --the criteria the Forest Service uses to justify this practice and the reasonableness of the criteria,
- --the actions the Forest Service needs to consider to minimize the number of sales made below cost, and
- --whether additional congressional guidance is desirable.

To determine the extent to which the Forest Service is selling timber below cost, we developed a methodology for determining the costs and revenues for individual timber sales. The following chart outlines the revenue (value received) and cost (value expended) elements we considered in computing the gain or loss to the Forest Service on 3,244 individual timber sales.

NET GAIN OR LOSS FOR A TIMBER SALE	Equals	VALUE RECEIVED FROM TIMBER	Minus	VALUE EXPENDED TO SELL TIMBER

VALUE RECEIVED FROM TIMBER

--cash only, or

--cash and roads.

VALUE EXPENDED TO SELL TIMBER

--sale preparation and administration costs,

--road engineering and construction costs,

--sale area reforestation costs, and

--payments to the counties.

To calculate a gain or loss for each timber sale, we used Forest Service timber sale data in combination with data we developed. We included only those readily identifiable Forest Service costs directly associated with timber sales activities. We did not include costs or benefits covering other multiple purpose activities--such as fish and wildlife--which are incurred on both timber sales activities and other activities not directly associated with timber sales, nor did we include certain Headquarters and Regional Office administrative costs. It would have been difficult to specifically identify timber sales related costs in such accounts without making value judgments or complex allocations. Conversely, because of the difficulty of allocating sales preparation and administration costs to total outputs, including such items as overall forest planning, we allocated these costs based on the volume of timber sales over $2,000 in our analysis. Although our treatment of these costs will result in understating certain costs and overstating others, our limited test of several accounts showed that it has little effect on the results of our analyses.

The sales we analyzed were obtained from a Forest Service computerized listing of fiscal years 1981 and 1982 sales in the four regions we selected for review. We obtained the listing from the Forest Service's Fort Collins Computer Center in Colorado. The listing contained 3,244 sales with revenue data and some specific cost data, such as road construction costs, for each. To complete the analyses, we had to estimate certain other sale costs, such as sale preparation and sale administration, by allocating total expenditures for those items to each appropriate sale. These costs are accounted for by the Forest Service on a

forest-by-forest basis but not for individual timber sales. Data from the Forest Service's financial, work accomplishment, and timber sale records at the Forest Service regional locations were used in the allocation process. In addition, in order to focus on the effects that the federal budget has on current timber sales activity, we included the required payments to the counties in which the timber sales were located--25 percent of sales receipts. Since these payments are a cost to the federal government but not a cost to the government sector (or society) as a whole, we also examined separately how the results of our analyses would be affected if these federal costs were ignored. (See app. I for a detailed description of our specific methodology.)

During the initial phases of the assignment, we discussed our methodology with the Forest Service's Director of Timber Management at headquarters and members of his staff, and they agreed that it would provide a reasonable approximation of individual timber sale gains or losses.

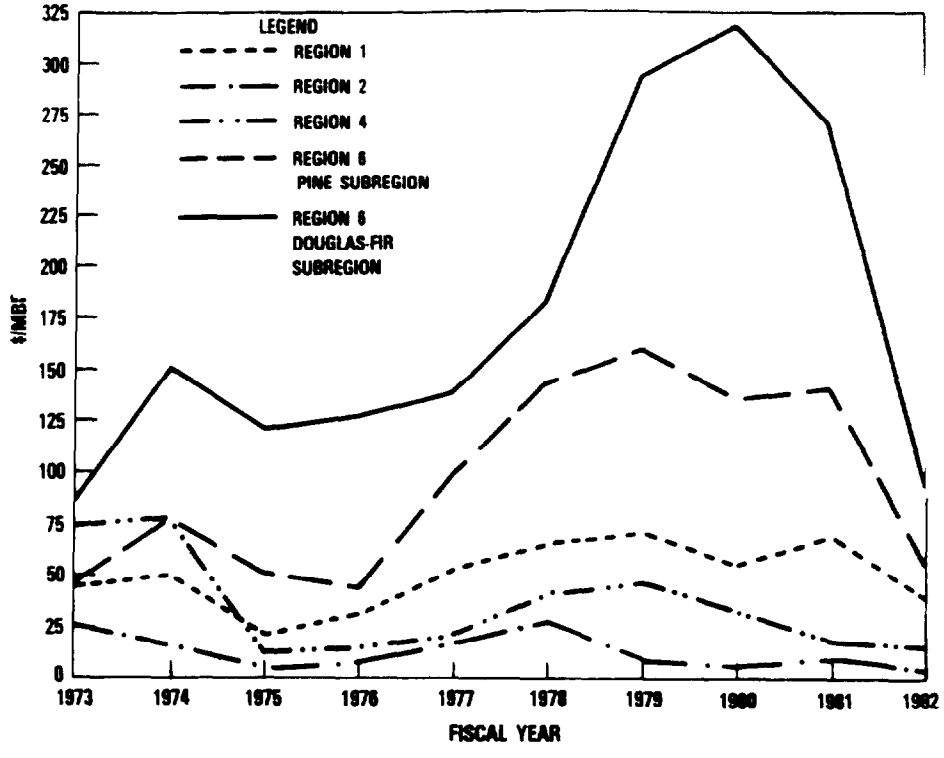
So that our analyses would be representative of areas where large gains would be likely as well as areas where losses could be occurring, we selected four regions that provided a range of timber sale prices from the highest in the nation to the lowest. These four regions were as follows:

Region	Name	Location
1	Northern	Missoula, Montana
2	Rocky Mountain	Denver, Colorado
4	Intermountain	Ogden, Utah
6	Pacific Northwest	Portland, Oregon

As shown in the chart on page 3, region 6 had the highest prices during fiscal years 1980, 1981, and 1982, whereas regions 2 and 4 had some of the lowest. Region 1 provided a good balance, having sales prices in the middle of the range. Because of major differences in sale prices between two areas within region 6, that region was further divided into its Douglas-fir and Pine subregions for analysis purposes.

We analyzed all advertised sales (3,244) awarded in the four regions during fiscal years 1981 and 1982. These years were the most current in terms of available data and provided a comparison of gains and losses between a year of high sale prices and one of lower prices. These years also provided data on how gains and losses are affected by changes in timber markets. Timber prices are highly sensitive to changes in the national economy. As illustrated in the chart on page 7, 1981 sale prices in region 1 and both subregions of region 6 were at or near the highs for the decade. In contrast, the sale prices in these two regions dropped dramatically in 1982. For the other two regions, prices were more in line with historical trends, but prices in 1982 were down slightly from 1981.

STATISTICAL HIGH BID (NOTE A) FOR TIMBER SOLD IN FISCAL YEARS 1973-82 REGIONS 1, 2, 4, and 6



1/A SALE'S HIGHEST BID MINUS THE CREDIT THE BIDDER RECEIVES FOR BUILDING THE ROADS.
SOURCE: DATA COMPILED BY FOREST SERVICE, U.S. DEPARTMENT OF AGRICULTURE.

To determine why sales are being made below cost, we interviewed officials at the headquarters, regional, forest, and district levels. We also obtained more detailed planning and sale file information from forest and district personnel on eight of the timber sales. We selected these below-cost sales to evaluate the economics of the Forest Service's principal reason for making a sale below cost--low-valued, unmanaged stands are cut so that the land can be converted to managed lands of higher valued timber. Two sales were chosen from each of the four regions reviewed with each sale from a different national forest. In addition, the sales were selected to provide differences in a variety of characteristics affecting revenues and costs, such as tree species, land productivity, harvesting methods and equipment, and road construction needs.

The results of our gain or loss analyses cannot be projected to the entire nation as we did not examine any sales in the Forest Service's other five regions. Since we analyzed all sales

within the four selected regions and they represent over 60 percent of all Forest Service volumes sold and sales receipts generated, we believe the results represent an accurate picture of losses incurred in those regions and establish a minimum for national losses for sales awarded in fiscal years 1981 and 1982.

We also reviewed legislation affecting Forest Service timber sales and applicable Forest Service regulations to determine what criteria exist regarding economic considerations in selling national forest timber. In addition, we examined other studies relating to sales of national forest timber below cost, recent Forest Service annual reports, and other documents that were pertinent to our review.

We made our review in accordance with generally accepted government auditing standards.

CHAPTER 2

DOES THE FOREST SERVICE RECOVER ITS TIMBER SALE COSTS?

Our analysis of the 3,244 timber sales the Forest Service made in four of its western regions during 1981 and 1982 showed that, overall, Forest Service revenues exceeded its costs by $712 million. Although the timber was sold at or above appraised value, 27 percent of the sales awarded in 1981 and 42 percent in 1982 did not generate sufficient revenues to cover the costs of making the sales. The 1981 below-cost sales had shortfalls of $64 million, and the 1982 below-cost sales had shortfalls of $92 million.

Our analysis of factors contributing to below-cost sales showed that such sales occur more frequently in Forest Service regions that have mostly low productivity timberlands, low sales values for predominant tree species, and relatively low volumes of timber sold. A detailed review of eight below-cost sales showed that generally these sales were in areas that also had steep terrain, which increases harvesting costs, and involved high road engineering and construction costs. Applicable legislation governing sales of national forest timber does not require the Forest Service to recover its costs on individual timber sales. The NFMA does, however, encourage the Forest Service to consider economic and other factors in deciding, during its forest planning process, whether Forest Service lands are suitable for timber production. The Forest Service issued implementing regulations in September 1982 that require that this determination be based on economic analyses of the costs and benefits for a range of timber production levels. The Forest Service is in the process of incorporating these requirements into its forest plans.

RESULTS OF SALE GAIN OR LOSS ANALYSES

Using our gain or loss methodology, we analyzed all advertised timber sales awarded during fiscal years 1981 and 1982 in regions 1, 2, 4, and 6. Region 6 was divided into its two subregions and each was analyzed separately. We analyzed 3,244 timber sales in all. As shown on the next page, 1,110 sales (34 percent) had losses.

National Forest Timber Sales - Regions 1, 2, 4, and 6
Summary of Gains and Losses for Fiscal Years 1981 and 1982

Region	1981				1982			
	Sales showing gains		Sales showing losses		Sales showing gains		Sales showing losses	
	No. of sales	Amount of gain	No. of sales	Amount of loss	No. of sales	Amount of gain	No. of sales	Amount of loss
		(thousands)		(thousands)		(thousands)		(thousands)
1	135	$ 12,955	132	$19,016	74	$ 3,691	169	$26,220
2	5	51	75	14,117	1	3	73	13,860
4	8	86	62	13,450	3	3	73	10,422
6 (pine)	211	106,539	108	12,332	142	26,976	145	20,634
6 (Douglas fir)	838	597,624	56	5,097	717	121,237	217	21,639
Total	1,197	$717,255	433	$64,012	937	$151,910	677	$92,775

As shown above, the frequency of sale losses varied considerably from region to region and between the 2 years, but even during 1981, a year of high sale prices, substantial losses were incurred. During 1981, 433 of 1,630 sales, or about 27 percent showed losses. In 1982, 677 of 1,614 sales, or about 42 percent, showed losses. A more detailed breakdown of this data by forest is shown in appendix II.

The percent of sales made below cost by region for fiscal years 1981, 1982, and both years combined was as follows.

Region	Percent of sales below cost		
	1981	1982	Combined
1	49	70	60
2	94	99	96
4	89	96	93
6 (total)	14	30	22
Pine subregion	34	51	42
Douglas-fir subregion	6	23	15
Total	27	42	34

Although all regions showed higher percentages of below-cost sales in 1982 than in 1981, their rankings did not change. Regions 2 and 4 showed the highest percentages with over 93 percent of combined sales showing losses. Region 1 showed combined losses on 60 percent of its sales.

Although region 6 below-cost sale percentages were significantly lower than the other three regions, more below-cost sales occurred in region 6 than in any other region. For the 2 years combined, region 6 accounted for about 47 percent of the below-cost sales and about 38 percent of the total cost losses for the four regions.

LOW PRODUCTIVITY LANDS, LOW TIMBER VALUES, AND LOW TIMBER SALE VOLUMES SIGNIFICANTLY INFLUENCE SALE ECONOMICS

Each timber sale is unique, and an analysis of each would be necessary to determine why it did or did not recover costs. However, low productivity of timberlands, lower unit prices received for predominant species sold, and low volumes of timber sold appear to be the primary reasons for significantly higher percentages of below-cost sales in regions 2 and 4 than in regions 1 and 6. We reviewed eight below-cost sales in more detail and identified additional factors that can lead to below-cost sales. (See p. 14.)

National forest timberland productivity

Low productivity timberlands result in low value species growing on the land, low quality of higher value species, low wood volumes per acre, or some combination of these. Each of these causes the purchaser to bid low reflecting either the lower value of the timber or--in the case of low wood volumes per acre--the higher per acre unit costs of harvesting the timber than if the purchaser were cutting larger volumes per acre.

Commercial timberlands are commonly classified according to their capability to grow wood. Their capability or productivity depends on such factors as soil fertility, moisture, slope of the land, and elevation. Productivity classifications are termed site classes that are expressed in terms of the number of cubic feet of timber per acre the land is capable of producing per year. From the highest to the lowest, the site classes are 120 or more, 85 to 120, 50 to 85, and 20 to 50. Site class 20 to 50 land is low in productivity and responds slowly to timber management activities. Generally, land incapable of growing 20 cubic feet per acre per year is not considered to be commercial timberland.

In region 2, the national forest lands are principally located in Colorado, South Dakota, and Wyoming, where about three fourths of the commercial national forest land is in the lowest site class of 20 to 50. Only about 1 percent of region 2's land is in the highest productivity category. In contrast, only about 5 percent of the land in region 6's Douglas-fir subregion in western Oregon and Washington is in the lowest productivity category, and more than 40 percent is in the highest category. Below is a breakdown of commercial timberland for the regions by productivity site class.

	Percent of land in site class				
				Region 6	
Productivity site class	Region 1	Region 2	Region 4	Pine subregion	Douglas-fir subregion
120 or more	18	1	12	6	42
85 to 120	29	5	10	23	24
50 to 85	25	18	18	55	30
20 to 50	28	76	60	16	5

As shown above, the relative rankings of the regions on a land productivity basis, from lowest to highest, are region 2, region 4, region 1, and region 6.

Unit sales prices of predominant timber species

The average unit sales price of predominant tree species sold also varied widely among regions. The average sales prices per MBF for the predominant species sold in regions 1, 2, 4, and 6 in calendar years 1981 and 1982 are shown on the next page.

Species by region	1981 Percent of total volume	1981 Average sales price (MBF)	1982 Percent of total volume	1982 Average sales price (MBF)
Region 1				
Lodgepole pine	26.1	$ 54.53	26.4	$ 34.60
Douglas fir	15.9	44.19	14.7	26.55
Grand fir	13.0	83.17	13.8	37.23
Region 2				
Ponderosa pine	46.2	16.94	25.5	8.51
Lodgepole pine	20.5	4.86	22.0	2.64
Englemann pine	13.6	4.52	26.3	4.67
Douglas fir[a]	3.1	4.34	2.0	5.21
Region 4				
Lodgepole pine	42.5	20.71	20.0	12.94
Douglas fir	28.9	18.86	31.8	16.91
Ponderosa pine	28.6	18.25	30.6	15.51
Region 6				
Douglas fir				
(Douglas-fir subregion)	36.4	350.25	41.8	118.34
(Pine subregion)	6.3	94.09	5.9	35.84
Ponderosa pine	14.3	208.37	15.2	78.56
Western hemlock	13.3	163.43	15.3	44.49

[a]Not a predominant species. Shown for regional comparison purposes.

The table shows a significant decline in unit prices from 1981 to 1982 and also that unit sales prices were lowest in region 2 followed in order by regions 4, 1, and 6. Further, comparing unit prices for the same species among the regions shows a wide variation. For example, average unit sales prices for Douglas fir in 1981 were $4.34 in region 2, $18.86 in region 4, $44.19 in region 1, $94.09 in region 6's pine subregion, and $350.25 in region 6's Douglas-fir subregion. Typically, species' values tend to correspond with land productivity.

Volume of timber sold

In terms of volume of timber sold by the four regions, the chart on page 3 shows that region 6 accounts for nearly half of all Forest Service timber volume sold, region 1 about 10 percent, and regions 2 and 4 about 3 percent each. Since sale preparation and sale administration unit costs result from dividing forest total costs for those activities by timber volumes sold, it appears that economies of scale resulting in lower unit costs

occur when volume increases faster than costs. The higher volume regions generally have lower unit costs.

Average unit costs--cost per MBF sold--for sale preparation and sale administration were generally lower in region 6, followed by regions 1, 4, and 2. None of region 6's 19 forests had average unit costs for these activities exceeding $25, 16 were below $20, and 9 were below $15. In region 1, 7 of its 13 forests exceeded $30 and all 13 exceeded $20. In regions 2 and 4, 18 of the 29 forests exceeded $30 and 27 exceeded $20. Generally, those forests in regions 1, 2, and 4 that sold the most timber had the lowest unit costs as well.

PRINCIPAL FACTORS CAUSING LOSSES ON SELECTED SALES

The factors discussed above appear to be general indicators leading to below-cost sales, but our more detailed review of eight below-cost sales showed other factors can also cause them. In general, we found that most of the sales were on steep terrain and involved high road construction costs in addition to being on low productivity lands.

We selected two sales from each of the four Forest Service regions included in our review. Each sale came from a different national forest. The results of our review of the eight sales are shown below.

Net Loss Calculations
for Eight Selected Timber Sales

	Region and sale name							
	Region 1		Region 2		Region 4		Region 6	
	Fizzle	Griffin Ashley	Mowry Peak	Duling-Buckley	Lower Moose	Bear Hole	East Chewack	Cross Canyon
	(thousands)							
Value received								
Cash	$ 21	$146	$ 20	$138	$ 61	$ 7	$ 25	$210
Roads	361	346	162	156	20	254	31	224
Total	382	492	182	294	81	261	56	434
Value expended								
Sale preparation:								
preparation	89	92	139	101	66	27	93	155
silvicultural exams	20	25	100	20	25	12	16	11
land line location	-	37	11	22	3	4	-	-
Sale administration	54	76	115	44	20	40	87	48
Road costs:								
engineering	118	175	238	111	42	61	1	65
construction	361	346	382	156	65	254	31	224
Sale area reforestation costs	19	114	14	15	59	5	21	204
Payments to counties	7	123	5	73	15	2	6	57
Total	668	988	1,004	542	295	405	255	764
Net loss	($286)	($496)	($ 822)	($248)	($214)	($144)	($199)	$330)

On each sale, we obtained more detailed information from forest and district office personnel and their sale files to identify sale characteristics that may have contributed to the sale loss.

Five of the eight sales involved timber on lands in the lowest commercial land productivity category of less than 50 cubic feet of wood per acre per year, two were in the next category of 50 to 85 cubic feet, and one in the 85 to 120 cubic feet category.

Six of the eight sales had steep terrain that required either some form of cable logging system or, in one case, logging by helicopter. On gentle slopes, ground-traversing equipment such as tractors can be used, whereas on steep slopes sophisticated cable systems are needed. Transporting the logs to a landing by a cable system is generally two to five times more expensive than by tractor.

Road engineering and construction costs were major cost elements on seven of the eight sales. In four sales, road costs exceeded the sale loss and thus were the single most important element determining whether the sale had a gain or loss. When the sale appraisal shows that the purchaser cannot make a normal profit, the Forest Service uses appropriated funds to pay for the road construction up to the point where the purchaser's profit reaches the normal level. On two of the sales (Mowry Peak and Lower Moose), the economics of the sale from the purchaser's standpoint were so poor that the Forest Service had to contribute $220,000 and $45,000, respectively, in appropriated funds in addition to allowing the purchaser road credit to cover road construction costs.

Since the law requires that 25 percent of the proceeds of each sale be distributed to the counties in which the timber is located, some fraction of the sales on which the Forest Service appears to experience a loss may nonetheless appear profitable when viewed from the perspective of society as a whole or from the perspective of the government sector as a whole. We recalculated the cost and revenue comparisons on all sales to see how many would have appeared profitable if the 25 percent payment was excluded from the analysis. The exclusion of the 25 percent payment affected less than 10 percent of the sales and would result in a shortfall of $117,000,000 to the government sector as a whole on the 1981 and 1982 sales.

LEGISLATION DOES NOT REQUIRE COST RECOVERY BUT DOES ENCOURAGE ECONOMIC CONSIDERATION IN TIMBER MANAGEMENT

Applicable legislation governing sales of national forest timber does not require the Forest Service to recover its costs on individual timber sales. The National Forest Management Act of 1976 does, however, encourage the Forest Service to consider

economic and other factors in deciding, during its forest planning process, whether Forest Service lands are suitable for timber production.

As discussed in chapter 1, NFMA provides the Forest Service with the authority to sell timber at not less than appraised value so that the government will obtain fair market value for its timber. For most of its timber, the Forest Service computes the appraised value by subtracting the purchaser's estimated costs from the market price for lumber. This appraisal method, which generally provides a floor for sale bidding, is not based on Forest Service costs to sell the timber. The Forest Service does not consider its costs in determining the value of timber to be sold.

NFMA does include general statements requiring that economic standards be used in managing the various renewable resources of the national forests. With respect to managing the timber resource, the act was more specific. Section 6(k) of the act refers specifically to timber harvesting, stating:

> "In developing land management plans pursuant to this Act, the Secretary shall identify lands within the management area which are not suited for timber production, considering physical, economic, and other pertinent factors to the extent feasible, as determined by the Secretary, and shall assure that, except for salvage sales or sales necessitated to protect other multiple-use values, no timber harvesting shall occur on such lands for a period of 10 years...." (Emphasis added.)

Section 6(k) responded to concerns over Forest Service timber harvests on so-called marginal lands; i.e., lands where the economic and/or environmental costs of harvesting outweigh the benefits derived. S. 3091, 94th Congress, 2nd Session, ultimately enacted as NFMA, addressed the marginal lands issue by proposing to require the Secretary of Agriculture to promulgate guidelines to identify the suitability of lands for resource management, including timber harvesting.

Testimony on S. 3091 suggested that much of the less productive national forest timberland should not be managed for timber production primarily because of the low timber values of those areas. This testimony resulted in S. 3091 being amended to require that the proposed guidelines for land management plans include "a type of cost-benefit test for timber production investments." Specifically, the amendment would have required the Secretary of Agriculture to promulgate guidelines that would

> ". . . identify the relative productivity of land for timber production and assure that timber production is not a management goal on lands where the estimated cost of production will exceed estimated economic

return: Provided, That the estimated cost of production will include only direct timber production costs and not access, protection, revegetation and administration costs for multiple-use purposes."

According to the Senate report, the intent of the amendment was not to prevent the sale of marketable timber but to ensure that public funds are not invested in growing timber for commercial purposes on areas where the anticipated economic return is less than the cost of production.

The amendment generated considerable controversy in the House and Senate. Attempts to incorporate the amendment in the House version of S. 3091 failed. Opponents were concerned that the amendment would foster litigation and that it would have damaging consequences on forest management as well as provide the Secretary with excessive discretion to determine what lands are marginal. During the floor debate, concern was expressed that the provisions would generate serious legal and administrative problems and that states with a large number of uneconomical sales would suffer. As a result of these concerns, the conference committee further amended the amendment to produce section 6(k) of NFMA, as cited above.

A comparison of the original amendment's economic focus with the factors specified for the Secretary's consideration in section 6(k) indicates that the conferees believed that it would be unwise to impose rigid and inflexible economic or other constraints on all national forest lands. The conferees envisioned that the economic factors, as used in section 6(k), could encompass more than the original amendment's cost-benefit analysis. In making his determination, the Secretary could also take into account the impact on local dependent communities. However, under section 6(k), the Secretary need only consider each of these factors "to the extent feasible."

The Secretary issued regulations implementing section 6(k) on September 30, 1982. These regulations prescribe, among other things, the economic (costs and benefits) and other factors that must be considered by the Forest Service when determining, during its forest planning process, what land is suitable for timber production. The Forest Service is in the process of incorporating such data in its forest plans. While the NFMA and Forest Service regulations do not specifically apply to individual timber sales, they do provide a sense of concern that economic factors should play a major role in management decisions such as evaluations of individual timber sales. Chapter 3 discusses the need for the Forest Service to use cost data in evaluating individual timber sales.

CHAPTER 3

FOREST SERVICE NEEDS TO USE COST DATA IN EVALUATING INDIVIDUAL TIMBER SALES

The Forest Service does not identify and accumulate its costs for individual timber sales. As a result, it lacks the basic data needed to judge the economic merits of making any particular sale and to take timely action to reduce costs or otherwise improve sale economics. Further, this lack of data hampers the Forest Service's reporting to the Congress on the extent to which timber sales recover costs. Although Forest Service annual reports cite several reasons to explain why below-cost sales are made, the Forest Service's principal justification is that the losses will be recovered when the next more productive stand of timber is harvested. Our detailed analyses of eight below-cost sales did not support that position.

Other reasons not directly related to timber management economics, such as contributing to local community economic stability (e.g., employment opportunities), may justify continued sales below cost. But the Forest Service is incurring such losses and it needs to (1) develop procedures to systematically consider its potential losses on individual timber sales as part of its decisionmaking process before offering the timber for sale and (2) provide the Congress with a more complete and comprehensive disclosure of below-cost sales so that appropriate committees can better evaluate the Forest Service's timber management program and the adequacy of existing legislation governing it.

FOREST SERVICE COSTS NOT CONSIDERED IN MAKING TIMBER SALES

The Forest Service incurs significant costs in growing and selling timber. These costs are not accumulated or used by the Forest Service to make individual timber sale decisions.

Forest Service headquarters officials acknowledged that the Forest Service does not know how many sales are made below cost. When asked by the House Appropriations Subcommittee on Interior and Related Agencies in March 1983 to provide a profit/loss statement for 1982 timber sales, the Forest Service responded that it does not maintain sale-by-sale records. Forest Service officials said that the magnitude of the annual volume of sales and the multiyear nature of the work do not lend themselves to individual sale accounting. Instead, they provided information on a forest-by-forest basis.

We found that some timber sales costs, such as those involved in sale preparation, sale administration, and road engineering, are accounted for on a forest-by-forest basis. Road construction and sale area reforestation costs and payments to counties, however, are computed for each sale. The expected revenue data are

also available for each advertised sale. The Forest Service collects the revenue and some of the above cost data for each advertised sale and compiles the data on computer tapes at its Fort Collins Computer Center in Colorado. Having the data in computerized form enabled us to analyze all 3,244 advertised sales awarded in fiscal years 1981 and 1982 in four regions. We had to supplement the computerized data because they did not contain cost data on some timber sales activities such as sales preparation and administration. The additional data, however, were available at either regional or forest offices and thus were readily available to the Forest Service.

Forest Service region 6 officials told us that they could estimate individual sale costs several years ahead of the planned sale but that predicting revenues is speculative. The basis for placing a timber sale on the 5-year plan is their determination of whether a market will exist for the timber. The officials said that if they were to base timber sale decisions on costs, the best decision point would be about 1-1/2 to 2 years before the sale when only minor sale costs have been incurred. Most presale detail work occurs after this point.

Region 6 officials told us that typically the greatest expenses will occur after sale award with only 20 to 40 percent of total costs being incurred before sale award. We analyzed the four regions' costs at the forest level for fiscal years 1981 and 1982 to determine the percentage of costs incurred before sale award for such things as sales preparation and road engineering. The percentages were as follows:

Region	Fiscal year 1981	1982
	-----(percent)----	
1	32	35
2	48	53
4	39	39
6-Pine subregion	17	23
Douglas-fir subregion	11	16

As shown above, the percentage of total costs incurred before the sale award (forest averages) ranged from 11 percent to 53 percent. The data suggest that if costs were used to decide whether to proceed with a sale, the decision should be made as early as possible to avoid either unnecessary presale costs or missing opportunities to reduce after sale award costs and improve overall sale economics. For example, Forest Service regional officials told us that certain presale tasks such as the design of timber roads could be modified in certain cases if it became necessary to cut anticipated costs. The region 6 officials' comments indicate that the decision ideally should be made no later than 1-1/2 to 2 years before the sale. However, on some sales, only 9 percent of the cost was incurred by the actual sale award date.

LACK OF COST DATA HAMPERS REPORTING TO THE CONGRESS ON BELOW-COST SALES

Section 6(1) of NFMA requires that the Secretary of Agriculture establish a process for estimating costs and benefits to support the act's timber program evaluation requirements. This process requires the Secretary to provide the Congress with information on a representative sample basis that compares the estimated expenditures for reforestation, timber stand improvement, and timber sales with the return to the government resulting from timber sales. Further, the Secretary is to include in this annual report a summary of the information obtained from this comparison, including identification, on a representative sample basis, of those advertised timber sales made below their estimated costs.

The Forest Service, however, has not established a systematic process for evaluating large numbers of sales to carry out the representative sample reporting requirement. According to a Forest Service headquarters official, the Forest Service does not have data on the costs and returns of individual timber sales. To develop the representative timber sales data, Forest Service headquarters issued instructions to the regional offices and asked them each to submit four advertised sales--two "where it is evident that expected assets generated by the sale will exceed the estimated government costs of preparing, selling, and administering the sale" and two "where it is believed that the expected assets will be less than the government costs." The official told us that each region annually asks its district offices to develop this data.

For the 1980, 1981, and 1982 annual reports, the Forest Service selected five sales from those submitted by its nine regional offices. Only one of the sales shown each year was a below-cost sale. The other four showed returns exceeding costs. The instructions do not require the regions to estimate or otherwise indicate the extent to which the below-cost sales reported are representative of all sales made.

RATIONALE FOR SELLING TIMBER BELOW COST

Since the Forest Service does not systematically compare the costs of producing and selling timber with the returns from the sale, it usually does not know when it makes a below-cost sale. Since the Forest Service is not required to justify sales made below cost, the reasons for making such sales are also not generally known. The Forest Service does, however, obtain information on the reasons for the below-cost sales reported by its regional offices each year for the annual report. These reasons are cited in the annual report section that discusses the representative sample of sales made below cost. The fiscal year 1982 report stated that:

"The principal reasons for selling timber below cost were to encourage utilization of damaged and low profit margin timber, to improve growth by meeting the silvicultural needs of individual stands of timber, or to satisfy the needs of local communities that are dependent on National Forest timber sales."

In response to questions asked about below-cost sales during the 1984 appropriations hearings, Forest Service officials said that some sales appear to be uneconomic when looked at in a short-term comparison of costs and revenues. However, officials said that when the above reasons are considered, it was the Service's judgment that the sales are sound investments of the public's money.

The Forest Service's Director of Timber Management told us that the primary reason for making below-cost timber sales is to remove relatively low valued, unmanaged stands of timber so that the land can be converted to managed stands of higher valued timber. He said that the higher values to be obtained from the next stand of timber sold would more than cover the loss incurred in harvesting the existing stand and growing and selling the next stand. He suggested that we test the validity of this justification for selling timber below cost by comparing the present value of the next and presumably higher valued stand of timber with the present value of the costs of removing the existing stand and growing and selling the future stand.

Given the substantial amount of time that elapses between reforestation and the subsequent commercial harvest of timber, the results of any cost-benefit analysis will be very sensitive to essentially unverifiable assumptions made about future trends in costs and timber sales prices and future interest rates. The results of any such calculation should therefore be viewed with great caution. Nonetheless, in response to the Forest Service's suggestion, we compared the present value of the future timber stands with the present value of the costs of removing the existing stand and growing and selling the future stand on several below-cost sales. We developed assumptions about future costs and prices in conjunction with Forest Service economists and employed the discounting procedure that the Forest Service normally employs (which is slightly different from the procedure we normally use). We selected the eight below-cost sales discussed in chapter 2 for these analyses. We found that the Forest Service's hypothesis was not valid on these sales because on each sale the net present value of the next stand of timber showed a loss. Our analyses are explained in more detail in appendix IV.

CHAPTER 4

CONCLUSIONS, RECOMMENDATIONS, AND AGENCY COMMENTS AND OUR EVALUATION

CONCLUSIONS

Our analyses of timber sales awarded in four Forest Service western regions during 1981 and 1982 showed that, overall, the Service's revenues exceeded its costs by $712 million. However, in each of these years the Forest Service awarded numerous sales--27 percent in 1981 and 42 percent in 1982--that did not generate sufficient revenues to cover the costs of making the sales. The 1981 below-cost sales had shortfalls of $64 million, and the 1982 below-cost sales had shortfalls of $92 million.

Our analysis of factors contributing to below-cost sales showed that such sales occurred more frequently in Forest Service regions that had mostly low productivity timberlands, low sales values for predominant tree species, and relatively low volumes of timber sold. In addition, these sales were generally in areas that had steep terrain, which increases harvesting costs, and involved high road engineering and construction costs.

Because costs are not accumulated for individual timber sales, the Forest Service cannot judge the economic merits of individual sales, know the total extent to which sales are made below cost, determine why losses occur, or take timely action to reduce costs. Also, this situation hampers the Forest Service's annual reporting to the Congress on the extent to which timber sales recover costs.

On the basis of sale economics alone, one could conclude that some national forest lands should not be managed for timber production. We recognize, however, that the Forest Service must also consider other factors in managing the federal timber resource. For example, contributing to local area economic stability by providing timber-related employment may offset the federal subsidy involved in continuing to sell timber from such land for less than the federal government's cost. We agree with the conclusion reached in hearings on the proposed NFMA that it would be unwise to impose rigid or inflexible economic constraints on timber sales to all forest lands in all parts of the country. Accordingly, we are not suggesting that all future sales recover costs. Instead, we are suggesting that the management of this valuable resource could be improved by developing and using financial data in the timber sale planning and decisionmaking processes.

Sale planners in the national forests need cost and revenue data to estimate whether planned sales will recover costs. Because costs are incurred before sale award, sale planners need to make decisions on the sale as soon as possible to prevent these expenditures if they decide not to make the sale.

Forest Service annual reports to the Congress cite general reasons why below-cost sales are made. On eight sales, our test of the Forest Service's primary justification--that revenues from the next stand would recover losses from cutting the current stand--did not support the agency's position.

The Congress has said that it wants sample data on below-cost timber sales. We believe the oversight needs of the Congress would be better served through a comprehensive reporting of below-cost sales made annually. Whether the Forest Service should at least recover its costs to sell timber, or whether, as the Forest Service states, below-cost sales are sound investments of the public's money, is a policy question for the Congress. To effectively address that question, however, the Congress needs more complete and reliable financial data on the timber sales program.

If, on the basis of the data the Forest Service reports on below-cost sales, the Congress decides that the Forest Service timber sales program should be operated more on a "going concern" basis, it could consider modifying existing legislation. One way would be to specify those instances where below-cost sales will be permitted and require for the remaining sales that the Forest Service establish a minimum selling price that will be the higher of either the appraised value of the timber or Forest Service costs associated with making the sale. The Forest Service has advised us that based on its upcoming report on timber sale procedures, action will be taken in fiscal year 1984 to develop a revised policy on minimum rates.

RECOMMENDATION TO THE SECRETARY OF AGRICULTURE

We recommend that the Secretary of Agriculture require the Chief of the Forest Service to develop a capacity to systematically determine the costs to sell timber for all national forest timber sales and on a statistically valid basis compare these costs with the estimated value to be received from the sale.

RECOMMENDATION TO THE CONGRESS

We recommend that the Congress require the Secretary of Agriculture to revise the annual reporting to the Congress on Forest Service activities to include an estimate of the number and volume of timber sales sold below cost, the amount lost on these sales, and the justification on a summary basis for making such sales.

Suggested legislative language appears in appendix III.

AGENCY COMMENTS AND OUR EVALUATION

In its March 16, 1984, letter commenting on a draft of this report, the Forest Service said that it was not appropriate to include its 25-percent timber receipts payments in lieu of taxes to

counties as a cost of the timber sale program. These transfers, while a cost to the federal government, are not a cost when viewed from the perspective of the government sector or of society as a whole. We modified the report to show the effect of excluding these payments as a cost to the timber sales program. The modification did not materially alter the results of our analyses. The exclusion of the 25-percent payment affected less than 10 percent of the sales and would result in a shortfall of $117,000,000 to the government as a whole on the 1981 and 1982 sales we analyzed. We do not agree with the Forest Service's comments regarding its payments in lieu of taxes and continue to believe these payments are directly attributable to timber sales, represent a cost of doing business, and should not be excluded from the analyses.

The Forest Service also expressed concern about the treatment of certain costs and revenues in our analyses. We recognize that certain refinements could be made to our analyses that would result in more precise results. However, on the basis of data currently available within the Forest Service, we believe our analyses are sound and accurately portray the cost/revenue relationships in the regions covered by our review. We have annotated each of the Forest Service's comments. (See app. V.)

The Forest Service agreed with our recommendation concerning cost analyses of timber sales and had no objection to our recommendation to the Congress concerning the annual reporting requirements. The Forest Service said that it plans to implement a Sales Tracking and Reporting System, which will provide a capability to track sale activities and costs. The Forest Service also said that although this system will have the capability, it does not plan to track costs of each sale through time, but rather use this system to track the costs of a reliable sample of sale activities on certain sales each year. We believe that such a system, if properly implemented, should accomplish the purpose of our recommendation to obtain cost data systematically.

DESCRIPTION OF METHODOLOGY USED FOR COMPUTING GAINS OR LOSSES FOR INDIVIDUAL TIMBER SALES

To determine the extent to which national forest timber is being sold below cost, we developed a methodology that could be used for computing the gains or losses for individual timber sales and that could be applied to a large number of sales. To compute a gain or loss, the value received from the sale of the timber and the value expended in selling the timber and reforesting the area had to be quantified. The value received was readily available as a contractual price established for each sale. In contrast, several of the value expended elements are not accounted for by the Forest Service on a sale-by-sale basis. We quantified those elements by allocating total cost to individual sales using a common unit such as MBF or miles. Once determined, the value expended was subtracted from the value received to compute a sale's gain or loss. The following chart shows how we computed the gain or loss on individual timber sales.

APPENDIX I

NET GAIN OR LOSS FOR A TIMBER SALE	Equals	VALUE RECEIVED FROM TIMBER	Minus	VALUE EXPENDED TO SELL TIMBER

VALUE RECEIVED FROM TIMBER

CASH --In return for the timber, the Forest Service receives cash and, for many sales, a constructed road. For most sales, a portion of the cash is set aside for the reforestation of the cutover area, as authorized by the Knutson-Vandenberg Act.

ROADS --The purchaser pays for the timber with cash and, where needed, by building the roads needed to harvest and transport the timber. The purchasers are usually reimbursed for their cost of road construction with a credit reducing what they pay in cash for the timber. A small business purchaser has the option of turning road construction back to the Forest Service and paying the full price for the timber.

VALUE EXPENDED TO SELL TIMBER

SALE PREPARATION AND ADMINISTRATION COSTS --For each sale, the Forest Service prepares an environmental assessment and a transportation plan, estimates the volume and species of timber to be sold, and prepares a silvicultural examination to determine future reforestation needs. On some sales near private lands, survey work is needed. After the sale, costs are incurred to administer the sales contract.

ROAD ENGINEERING AND CONSTRUCTION COSTS --The Forest Service performs its own road design and engineering work and funds this work from appropriations. The timber purchaser generally constructs the roads, but for some sales, the Forest Service assumes responsibility. In both cases, the Forest Service usually pays the road construction costs, either directly with appropriated funds or indirectly by granting the purchaser a credit.

SALE AREA REFORESTATION COSTS --Before the sale, the Forest Service develops a plan for and estimates the cost of required reforestation work. This amount is set aside from the cash receipts generated from the sale.

PAYMENTS TO THE COUNTIES --For every timber sale, the Forest Service is required to pay 25 percent of the value received from the sale, including amounts set aside for reforestation and for purchaser road credits, to the states for distribution to the counties in which the sale area is located.

VALUE RECEIVED FROM TIMBER

The value received that we used in our computations was the amount the purchaser bid for the sale. The Forest Service uses a competitive bidding process whereby the sale is awarded to the highest bidder. The successful bidder then pays for the timber in the form of cash or a combination of cash and roads if purchaser credit roads are to be built. Information on bid values and purchaser credit amounts was readily available on a sale basis from the Forest Service's computerized timber sale reporting system.

To establish its minimum selling prices, the Forest Service uses the higher of either its computed appraisal price or a predetermined minimum price called a base rate. The appraisal price is the Forest Service's estimate of the timber's fair market value and is designed to assure that a purchaser of average efficiency will make a profit from the timber purchased. For most of its timber sales, the Forest Service computes the appraisal price by starting with the market price for lumber realized by the lumber mill and subtracting the logging and milling costs and a margin for the purchaser's risk and profit. The remainder, or residual, is the appraisal price.

The base rate is the higher of a regionally determined minimum rate for each tree species being sold or the estimated essential reforestation costs for the sale area plus 50 cents for each MBF of timber in the sale. When the base rate is higher than the appraisal price, the base rate becomes the advertised minimum sale price.

The successful bidder for the sale then enters into a contract with the Forest Service to harvest and pay for the timber within a specified period of time. The sales price may be substantially higher than the appraised price or base rate because prospective purchasers may bid up the price during the bidding process.

As noted in the value expended section, a portion of the value received is then used to finance some of the sale costs. If the purchaser is required to build roads as part of the sale contractual requirements, the amount the purchaser pays in cash is reduced by the Forest Service's cost estimate to build the roads. On such sales, the Forest Service receives a combination of cash and roads as remuneration for the timber. If the successful bidders are, however, classified as small businesses, they have the option of either building the roads or having the Forest Service build the roads. In the latter case, the purchasers have to pay their full bid price in cash and the Forest Service builds the roads.

APPENDIX I

VALUE EXPENDED (COSTS) TO SELL TIMBER

Sale costs may be incurred several years before the award of the sale; during the course of the sale; and in the case of reforestation, several years after the sale is completed. When a stand is selected for harvesting, various costs are incurred to prepare the timber sale and then to administer it once awarded. If roads have not been previously built, substantial outlays may be needed to engineer and construct roads to haul out the timber. Once the sale area is harvested, costs may be incurred to reforest the area. Finally, 25 percent of the sale's price is required by law to be turned back to the states for distribution to the counties in which the timber is harvested as a payment in lieu of taxes.

To facilitate our analyses, we assumed that the average costs incurred during fiscal years 1981 and 1982 were representative of the costs for the sales sold in those 2 years. The specific cost elements we used in our analyses were sale preparation and administration, road engineering and construction, sale area reforestation, and payments to counties.

Sale preparation and administration costs

The Forest Service has a number of tasks to perform when getting the timber ready for sale and when administering the sale once awarded. A few years before the award of a sale, the Forest Service may begin incurring costs. Initially, the costs are low and include such activities as performing a broadscale reconnaissance of the proposed sale area and preparing a brief logging and transportation plan. As the sale moves closer toward the bidding date, the activity increases substantially with various types of work being accomplished, such as assessing the environmental impacts from harvesting the timber, estimating the timber volume more accurately, marking the timber to be harvested, and appraising the timber value. Examinations are also done to determine the most appropriate methods for harvesting the timber and reforesting the cutover area. Additional costs may be incurred on some sales for land line location survey work to identify legal boundaries.

After the sale is awarded, costs are incurred to administer the sale. The Forest Service supervises the purchaser to ensure that only designated trees are cut, the trees are cut in accordance with contract specifications, damage to the soil or streams is minimized, and various other contract requirements are met. Forest Service officials say the term of a sales contract is often 3 to 5 years and administration costs can be incurred over several years.

The Forest Service does not account for preparation and administration costs on an individual timber sale basis, but rather, on a forest-by-forest basis. For example, total annual expenditures can be obtained for sale preparation, sale administration, silvicultural examinations, and survey work on each forest, but the accounting records do not show individual sale expenditures for these activities. Forest Service fiscal, budget, and timber management personnel said that these costs could, however, be allocated to individual sales on a unit-cost basis because a strong relationship exists between the volume of timber in the sale and the amount of preparation and administration work needed. Allocating costs using unit costs is a common cost-accounting procedure employed by businesses.

To allocate preparation costs, we first divided total annual expenditures for fiscal years 1981 and 1982 as reported by each forest for sale preparation and silvicultural examinations by the timber offered for sale those years to arrive at a unit cost per MBF. Similarly, we calculated a sale administration unit cost by dividing the forest total by the timber harvested for the 2 years. For individual sales in each forest, the unit costs thus calculated were then multiplied by the sale's timber volume to estimate the sale preparation and administration costs, including silvicultural examination costs.

We used a similar approach for survey work, except we divided a forest's cost total for this activity by the number of miles surveyed. The number of miles surveyed for a sale, if any, was obtained from each forest and then multiplied by the unit cost to estimate the survey cost for that sale.

APPENDIX I

Road engineering and construction costs

To harvest timber, access must be provided. Roads built for prior sales or for other purposes may be used for current sales, and sometimes the existing roads are sufficient. But more likely, additional roads will be needed to harvest the current sale. On many sales the timber purchaser is required to build the roads, but for some sales the Forest Service assumes the responsibility.

Timber purchaser road construction costs are readily identifiable with an individual sale. The timber sale contract provisions specify the type of road the purchaser is responsible for building as well as the amount of the credit. Since the credit represents the amount the purchaser would pay in cash for the timber if road construction was not required, we assumed that the credit represented the road construction cost and used that amount in our analyses.

Once built, roads not only make timber harvest in the current sale area possible, but the roads may also benefit additional sales in the vicinity of the current sale area or other purposes such as public recreation. Ideally, the initial costs of road construction should be allocated to both the current timber sale and to any subsequent timber sales that use the road as well. However, because roads deteriorate and the time periods between timber sales are often long, periodic maintenance or reconstruction costs that may exceed the initial costs are incurred to keep the roads usable for future harvests. In addition, Forest Service costs may have been incurred in building roads prior to the sale, of which a major portion would potentially be allocable to the current sale. For example, on one timber sale for which we obtained additional road information, the Forest Service had spent about $6 million in prior road construction. The purchaser credit on the current sale was, however, only $346,000 and this was the amount used in our computations. Therefore, the procedure that we followed in our computation of assigning only purchaser credit to the sale would generally be conservative.

In addition to funding the road construction costs, the Forest Service does the road design and engineering work for these roads. This work is funded from appropriations, and as with sale preparation and administration, the costs are not accounted for on a sale-by-sale basis. A unit cost approach was therefore used to estimate the road engineering costs for each sale.

The total engineering costs for purchaser credit roads are accounted for by each forest. Dividing this annual cost total for the 2 years by the total number of miles of road to be built by purchasers in the sales put up for bid in those years provides an average cost per mile for road design and engineering work. The unit cost was then multiplied by the miles of road to be built in a sale to estimate the engineering costs for that sale.

Sale area reforestation costs

The National Forest Management Act of 1976 limits the harvest of timber to those lands which can be adequately restocked within 5 years of harvest. Once the decision is made to harvest, the Forest Service will incur expenditures to reforest the area, and any costs required to do so should be treated as a cost of that sale.

Reforestation can occur naturally when seeds that fall or are blown from nearby trees germinate, or it can be done by planting seeds or seedlings. The second method is used to achieve faster reforestation and to better control tree spacing and species composition. Planting is, however, an expensive practice, with costs averaging in excess of $400 per acre on some forests.

We obtained estimated reforestation costs for individual timber sales from the Forest Service's computerized timber sale reporting system. Financing the reforestation of sale areas is generally done by setting aside at the forest level a portion of the sale receipts (K-V funds) as authorized by the Knutson-Vandenberg Act of 1930 (16 U.S.C. 576). Before the sale, the Forest Service develops a plan for and estimates the cost of reforesting the area and other related sale area improvement work. Other planned work, such as precommercial thinning and wildlife habitat improvement, is not considered in setting the minimum selling price, but if the sale realizes a high enough price, then funds for this work may also be set aside from the sale receipts.

By comparing the planned work as cited in the Forest Service's computerized sale reporting system with the amount of funds available from the sale receipts, we computed the K-V fund collections for each sale. Sale area reforestation costs we used were the lower of our computed K-V fund collections or the Forest Service's planned cost of reforestation and related sale area improvement work.

Payments to counties

When the Forest Service sells timber, it must pay a portion of the sale amount to the county or counties in which the sale is located. Under laws enacted early in this century, 25 percent of the moneys received from timber sales is turned back to the states for distribution to eligible counties. These funds are intended to compensate the counties for lost tax revenues and are specifically earmarked for public roads and schools. We computed the payments to counties by multiplying the sale award amount obtained from the Forest Service's computerized sale listings by 25 percent.

The payments represent a reduction in the amount of funds that would be returned to the Treasury from the sale of the timber. The payments are also strictly controllable as no payment is required if the sale is not awarded. From these standpoints, the payments are a cost to the federal government of selling the timber. At the same time, our analyses recognize that these outlays have important federal budgetary implications. Therefore, we have included in our report a discussion of the effect that excluding these payments would have on our analyses.

NATIONAL FOREST TIMBER SALES - REGIONS 1, 2, 4, AND 6
SUMMARY OF GAINS AND LOSSES FOR FISCAL YEARS 1981 AND 1982

Region and Ntl. Forest	1981				1982			
	Sales showing gains		Sales showing losses		Sales showing gains		Sales showing losses	
	No. of sales	Amount of gain (thousands)	No. of sales	Amount of loss (thousands)	No. of sales	Amount of gain (thousands)	No. of sales	Amount of loss (thousands)
Region 1 (Missoula):								
Beaverhead	-	$ -	6	$ 720	-	$ -	3	$ 649
Bitterroot	2	82	8	1,073	2	21	10	1,415
Clearwater	16	1,001	17	2,841	6	97	22	3,005
Custer	-	-	-	-	-	-	2	195
Deerlodge	1	1	7	573	-	-	3	251
Flathead	8	195	9	972	11	183	30	6,203
Gallatin	-	-	7	1,551	-	-	4	975
Helena	-	-	4	1,098	1	2	5	951
Idaho Panhandle	44	6,216	22	3,245	29	2,391	34	4,891
Kootenai	52	5,039	30	2,590	20	977	31	3,343
Lewis and Clark	-	-	3	522	-	-	1	128
Lolo	7	400	14	2,431	1	4	8	727
Nezperce	5	21	5	1,400	4	16	16	3,487
Total	135	12,955	132	19,016	74	3,691	169	26,220
Region 2 (Denver):								
Arapaho	-	-	1	358	-	-	-	-
Bighorn	-	-	4	1,164	-	-	5	735
Black Hills	4	44	17	3,228	1	3	19	2,337
Grand Mesa	-	-	3	730	-	-	4	1,539
Gunnison	-	-	3	317	-	-	1	417
Medicine Bow	-	-	5	2,380	-	-	4	2,078
Pike	-	-	6	401	-	-	1	157
Rio Grande	-	-	7	1,545	-	-	8	1,621
Roosevelt	-	-	2	353	-	-	4	304
Routt	-	-	10	1,361	-	-	9	1,650
San Isabel	-	-	2	115	-	-	5	451
San Juan	1	7	10	1,691	-	-	4	1,161
Shoshone	-	-	2	215	-	-	1	510
White River	-	-	3	259	-	-	8	900
Total	5	51	75	14,117	1	3	73	13,860

APPENDIX II

Region and Ntl. Forest	1981 Sales showing gains No. of sales	1981 Sales showing gains Amount of gain (thousands)	1981 Sales showing losses No. of sales	1981 Sales showing losses Amount of loss (thousands)	1982 Sales showing gains No. of sales	1982 Sales showing gains Amount of gain (thousands)	1982 Sales showing losses No. of sales	1982 Sales showing losses Amount of loss (thousands)
Region 4 (Ogden):								
Ashley	-	-	3	533	-	-	2	106
Boise	1	13	9	2,273	-	-	13	2,760
Bridger-Teton	-	-	9	894	-	-	8	319
Caribou	-	-	6	505	-	-	3	335
Challis	-	-	2	152	-	-	4	81
Dixie	-	-	4	2,977	-	-	2	842
Fishlake	-	-	1	40	-	-	-	-
Manti LaSal	-	-	5	181	-	-	2	34
Payette	5	7	5	2,360	3	3	11	2,657
Salmon	-	-	5	1,503	-	-	8	952
Sawtooth	-	-	2	130	-	-	6	463
Targhee	2	66	6	1,175	-	-	8	1,311
Toiyabe	-	-	2	387	-	-	2	212
Uinta	-	-	1	86	-	-	1	52
Wasatch-Cache	-	-	2	254	-	-	3	298
Total	8	86	62	13,450	3	3	73	10,422
Region 6--pine subregion (Portland):								
Colville	16	384	16	2,103	2	5	14	2,553
Deschutes	37	21,277	10	612	27	4,046	22	1,208
Fremont	22	11,230	7	636	21	2,839	14	1,693
Malheur	22	9,187	9	1,704	12	3,152	14	2,373
Mt. Hood	13	4,937	2	262	7	708	3	965
Ochoco	20	15,587	2	22	14	1,475	14	2,036
Okanogan	10	2,595	6	882	3	228	5	1,047
Umatilla	9	5,902	15	2,076	7	884	13	1,508
Wallowa-Whitman	23	2,357	25	3,087	18	4,496	28	3,440
Wenatchee	22	6,539	14	889	12	750	15	3,153
Winema	17	26,544	2	59	19	8,393	3	658
Total	211	106,539	108	12,332	142	26,976	145	20,634

APPENDIX II

value of purchaser-built roads necessary for the harvest and transportation of the timber. Value expended to sell the timber includes, but is not limited to, the sale preparation and post-sale costs incurred to administer the sale, road engineering and construction costs for timber roads, sale area reforestation costs, and payments to states as required by the Act of May 23, 1908, as amended (35 Stat. 260); and

"(3) include as part of the annual report required pursuant to section 8(c) of the Act an explanation on a summary basis of the reason or reasons for timber sales included in the sample developed pursuant to paragraph 2 of this subsection made below the estimated expenditures for such timber and the amount of losses sustained on such sales; and"

SUGGESTED REVISIONS[1] TO THE NATIONAL FOREST MANAGEMENT ACT OF 1976

Section 6(1) of the National Forest Management Act of 1976, 16 U.S.C. 1604(1) is amended to read as follows:

"(1) The Secretary shall--

"(1) formulate and implement, as soon as practicable, a process for estimating long-term costs and benefits to support the program evaluation requirements of this Act. This process shall include requirements to provide information on a [representative sample] statistically valid basis of estimated expenditures associated with the reforestation, timber stand improvement, and sale of timber from the National Forest System, and shall provide a comparison of these expenditures to the return to the Government resulting from the sale of timber; [and]

"(2) include a summary of data and findings resulting from these estimates as a part of the annual report required pursuant to section 8(c) of this Act, including an identification on a [representative sample] statistically valid basis by region of the number and volume by board feet of those advertised timber sales with an estimated final contract price in excess of $2,000 made below the estimated expenditures for such timber as determined by the [above cost process] following process. Timber sales made below the estimated expenditures for such timber are those sales in which the value received from the sale of the timber is less than the value expended to sell the timber.

The value received from the sale of timber is the estimated final contract price projected for the sale, including the

[1]Bracketed material is present statutory language which is to be deleted, and underlined material is new language which is to be added.

APPENDIX IV

EXPLANATION OF MANAGEMENT ACTIVITIES FOR FIZZLE TIMBER SALE AREA

The Fizzle timber sale was on the Lolo National Forest in Montana. Our computation showed that the Forest Service lost $267,000 on the Fizzle sale, excluding any reforestation costs. The loss represents the cost of clearing the land to establish an improved timber stand in the next growing cycle. The Fizzle sale was harvested using seed tree and shelterwood methods. With these methods, some trees are left to provide seed for new trees or to provide protection to new seedlings. Besides the seed trees, the Forest Service plans to plant 139 of the 287 acres in the Fizzle sale area. Once the area has been regenerated, the seed and shelterwood trees will be removed as part of another sale, generating additional revenue. This sale is expected about 7 years after the Fizzle sale is completed.

At about year 20, a portion of the area will be precommercially thinned to remove excess trees at a cost of $100 per acre. The remainder of the area will be precommercially thinned at age 25. No further management activity is forecast until year 80 when a portion of the area will be commercially thinned. Commercial thinning removes excess trees, but the trees to be cut are of a merchantable size and can be sold. At the same time, the road system will have to be rebuilt to provide adequate roads for hauling the commercial thinning timber and the final harvests.

The final harvest for those areas that were not commercially thinned will be at year 95 and the thinned areas at year 100. The seed tree/shelterwood harvesting method will be used again so there will be subsequent harvests at year 102 and 107 to remove the remaining trees. For all the timber sales, the nondiscounted revenue values were increased at an annual rate of 1.4 percent and costs were held constant.

HOW GAO COMPUTED NET PRESENT VALUE FOR THE NEXT TIMBER STAND ON THE FIZZLE TIMBER SALE AREA

Year	Management activity[a]	Discounted revenues or (costs)	
		4% rate	10% rate
0	Loss from sale of existing timber stand (Fizzle sale) ($266,642)	($266,642)	($266,642)
1	Planting of 139 acres and related costs ($80,473)	(77,378)	(73,157)
7	Sale of remaining timber from the 287 acres of seed tree/ shelterwood cuts--517 MBF ($43,759)	33,253	22,455
7	Sale preparation and related costs ($17,614)	(13,385)	(9,039)
20	Precommercial thinning of 83 acres ($8,300)	(3,788)	(1,234)
25	Precommercial thinning of 204 acres ($20,400)	(7,652)	(1,883)
80	Road reconstruction costs ($360,761)	(15,651)	(176)
80	Commercial thinning of 83 acres-- 166 MBF of timber ($5,858)	254	3
80	Sale preparation and related costs ($5,656)	(245)	(3)
95	Final harvest of 204 acres--3,019 MBF ($1,511,915)	36,422	177
95	Sale preparation and related costs ($102,857)	(2,478)	(12)
100	Final harvest of 83 acres--1,328 MBF ($716,788)	14,192	52
100	Sale preparation and related costs ($45,245)	(896)	(3)
102	Sale of remaining 408 MBF of timber on sale area sold in year 95 ($163,588)	2,995	10
102	Sale preparation and related costs ($13,901)	(254)	(1)
107	Sale of remaining 166 MBF of timber on sale area sold in year 100 ($71,348)	1,074	3
107	Sale preparation and related costs ($5,656)	(85)	-0-
	Total revenues	88,190	22,700
	Minus total costs	(388,454)	(352,150)
	Net present value[b]	($300,264)	($329,450)

[a]Nondiscounted amounts are in parenthesis.
[b]Net present value excluding payments to states in lieu of taxes would be ($293,715) at a 4 percent rate and ($322,901) at 10 percent.

The net present values of future timber sales for all eight of our sample cases are presented below.

Discounted Revenues and Costs of Growing a New Timber Crop on Eight Selected Sale Areas

Discount rate	Sale name: Fizzle	Griffin Ashley	Moury Peak	Duling-Buckley	Lower Moose	Bear Hole	East Chewack[a]	Cross Canyon
	(thousands)							
4-percent:								
Discounted revenues	$ 88	$199	$ 419	$966	$191	$300	$ -	$261
Minus discounted costs	388	573	1,264	863	429	611	-	475
Net (loss) or gain	($300)	($374)	($ 845)	$103	($238)	($311)	($ -)	($214)
10-percent:								
Discounted revenues	$ 25	$ 27	$ 220	$443	$105	$265	$ -	$136
Minus discounted costs	352	512	1,061	654	387	544	-	388
Net (loss) or gain	($329)	($485)	($ 841)	($211)	($282)	($279)	($ -)	($252)

[a]The net present value could not be computed for this sale area because the Service has not decided how the area will be managed or even if it will be managed for timber production.

As shown above, all but one of the sales were unprofitable at the 4-percent discount rate, and all were unprofitable at the 10-percent rate. Exclusion of the cost of payments to counties in lieu of taxes from our analyses had no effect on the number of sales that showed losses at each of the discount rates.

United States Department of Agriculture | Forest Service | Washington Office | 12th & Independence SW P O Box 2417 Washington, DC 20013

Reply to 1420

Date 16 MAR 1984

Mr. J. Dexter Peach
Director, Resources, Community, and
Economic Development Division
U.S. General Accounting Office
Washington, DC 20548

Dear Mr. Peach:

The Forest Service has reviewed the GAO draft report on the question of making timber sales below cost. As the result of that review, we are concerned about the way some costs and revenues were treated which alters the magnitude of resulting benefit/cost conclusions on the sales examined. Our concerns on the treatment of costs and revenues are set forth below along with our comments on the specific recommendations made by GAO.

We want first, however, to express our reservations about the concept of examining the costs and benefits of National Forest timber sales on a sale-by-sale basis. By law, the National Forests are managed on a multiple-use, sustained yield basis. Both the cost and benefits of activities carried out under this mandate are so interrelated that we have found no reliable means of allocation to individual resource activities. A timber sale on a National Forest provides multiple benefits--wood for the local mill, increased forage for cattle and wildlife, and access for dispersed recreation, for example. In order to achieve these multiple benefits higher costs are encountered for sale preparation and administration than would be involved if only wood production were the objective. Because the resulting benefits are both economic and noneconomic, a proper allocation of costs is neither simple nor objective.

The logical context for examining both the economic and social consequences of multiple-use forestry decisions is the Forest Land Management Plan. The planning process which is currently underway, as required by the National Forest Management Act of 1976, allows for evaluation of interactions among resources based on various mixes of programs and land management alternatives. This is the appropriate process for evaluating National Forest resource management programs.

[GAO COMMENT: We agree that a more precise analysis could be achieved by further allocating certain costs and benefits as suggested by the Forest Service. We also agree that the type of analyses we have developed and the system the Forest Service is currently developing (STARS) should be used in formulating forest land management plans. However, since the preponderance of the cost/benefit factors apply to the wood production objective of the Forest Service, we believe that these technical adjustments would not materially alter our findings or conclusions.]

Twenty-five Percent Fund

The report treats the 25 percent of receipts that is returned to the States and counties as a cost of making timber sales. While the 25 percent payment to States is an expenditure for budget purposes, we do not believe it is appropriately included in analyzing the cost effectiveness of the sale program. The 25 percent fund was established without relationship to the profitability of timber sales to the Federal Government. Its purpose was to provide a source of revenue to local governments in which property tax revenues are impacted or limited by the existence of Federal lands within their boundaries. At the inception of the 25 percent fund, there may have been some correlation with comparable taxes on private forest land. The 25 percent is computed now on a gross receipts basis; by law there are added to those gross receipts for purposes of the 25 percent calculation the value of roads constructed by the purchaser but which are paid for with timber. This system is comparable to a corporation declaring stock dividends based on gross receipts plus part of its investment costs. It is not an appropriate inclusion for computing net returns on timber sales.

[GAO COMMENT: The Congress has directed the Forest Service to make these payments to states and counties in lieu of taxes and are due only to the extent its timber sales are made and receipts generated. In the private sector, timberlands are taxed by state and local governments and are generally considered a normal business expense. Moreover, the Forest Service has recognized that local taxes, such as the California Yield-Tax levied on timber harvested, is an expense to a purchaser of National Forest timber by making appropriate adjustments to its appraisal process. Therefore, we continue to believe these payments are directly attributable to timber sales, represent a cost of doing business, and should not be excluded from our analysis. Furthermore, even if payments were excluded from our analysis less than 10 percent of the sales would be affected and the government would still have a shortfall of $117,000,000 on its 1981 and 1982 sales.]

Road Costs

Another defect in the draft report's attempt to evaluate timber sale costs is its assignment of all costs of road construction to the particular timber sale by which the road was built. Mainline roads, however, are designed and built as multiple-use roads pursuant to 16 U.S.C. 532-538, and are subsequently used both for later timber sales and for other purposes, a major one of which is often public recreational use. Thus, accurate cost accounting for a timber sale should assign to that sale only the portion of road costs amortizable by the timber removals effected by that sale. Other road costs should be amortized by later timber sales and by allocation to the other uses the road will serve. Sometimes proper cost accounting for a sale would require addition to the cost of that particular sale when the timber from the sale moves over previously constructed roads; at other times, it would require deductions from the apparent cost of the sale involving mainline road constructing, and very often both adjustments would have to be made on the same sale. Unfortunately, the Forest Service's accounting system has not been designed to provide so sophisticated a degree of cost accounting since profitable operation of Forest Service programs has not heretofore been required.

[GAO COMMENT: We have recognized on page 30 the concerns of the Forest Service and agree that a more sophisticated allocation of road construction costs would be desirable. However, as noted by the Forest Service, data are not currently available in its accounting system to make such allocations. Due to this void of data and the absence of information to the contrary, we believe the procedure that we followed in our computation of assigning the full road costs to each sale is reasonable and would tend to balance out adjustments made to past or future sales to reflect other road uses.]

Appropriated Fund Expenditures

Still another shortcoming of the report is that it does not specifically identify what functional accounts were included in the estimate of expenditures. It is our understanding that Forest allocations in P&M 030, 031, and 037, and FR&T 133 funds for timber sale roads were included. For lack of more accurate accounting data this approach could provide an estimate, but if the report is to reach conclusions about specific sales having been profitable or not, we recommend the report identify more specifically the basis for costs and address factors that might alter these costs in more thorough analysis.

For example, a significant amount of 030, 031, and 133 funds is allocated to finance current efforts in Forest Land Management Planning. Although this planning will eventually contribute to overall forest management activities, including timber sales, the current cost is unrelated to present timber sale activities.

Further, not all 030, 031 expenditures on a Forest are for specific timber sales. These funds also support the firewood program, miscellaneous products sales, administration of trespass, land exchange proposals, etc. The calculation used in the report to arrive at per thousand board foot costs does not include the volume of free use and personal use firewood. On some Forests, particularly in Regions 2 and 4, firewood is a significant portion of the timber program. In FY 1983, Regions 1, 2, and 4 had free use programs of 87 MMBF, 96 MMBF, and 82 MMBF, respectively. Free use programs and miscellaneous small products sales are high cost on a per MBF basis, and therefore serve to increase average costs of a total program. The report should be adjusted to recognize the total outputs of convertible forest products, and address narratively the other items of business that are funded in 030 and 031 that do not contribute to measurable board foot outputs.

The report does recognize that other functional support costs to timber sales were not included as costs of the timber sale program. Also, Regional Office, Washington Office, and General Administration costs were not included. This was a decision in the interest of reducing time and complexity of the study, but a complete analysis would have to speak to these costs and related benefits.

[GAO COMMENT: Contrary to what the Forest Service has stated, we did include the volume of free use and personal use firewood in our calculations of MBF costs. However, the first paragraph on page 5 has been revised to more fully explain the methodology used in our analyses and to recognize the Forest Service's concerns.]

Road Investments - Assets

The report uses the purchaser credit limit figure from sales or total purchaser credit obligations on the Forest as a basis for road value gained. Forest Service accounting procedures use both construction costs and engineering costs in computing the asset value of roads. It is important that the users of this report be aware of this difference in approach between the GAO analysis and Forest Service accounting procedures.

[GAO COMMENT: We agree that from a strict accounting standpoint, all costs including engineering costs should be capitalized. However, our analyses were based on the premise of value received from the purchaser of National Forest timber sales. Since engineering costs are paid from appropriated funds by the Forest Service and not by the purchaser, it should not be included as a value received from the purchaser.]

Minimum Stumpage Rates

The report briefly mentions establishing minimum selling prices for timber that would reflect Forest Service costs for making a sale. As has been already indicated, costs for a particular sale requires a sophisticated cost allocation and accounting system which would need to assign to other multiple uses those costs imposed on a sale for their benefit. Timber Management has addressed the issue in a Productivity Improvement Team report on timber sale procedures which is about to be published. Action will be taken in FY 1984 to develop a revised policy on minimum rates.

[GAO COMMENT: This information was added on page 23.]

Report Recommendations

1. GAO recommends that the Forest Service develop a capacity to determine its costs to sell National Forest timber sales on a systematic basis and on a statistically valid basis compare these costs with the estimated value to be received from the sale. We agree with this recommendation.

We are about ready to implement a Sales Tracking and Reporting System (STARS) which will provide a capability to track sale activities and costs. We do not intend to track costs of each sale through time, but rather use this system to track the cost of a reliable sample of sale activities on certain sales each year. We believe this approach will be responsive to the recommendation of GAO and others who have concern about sales costs without creating a burdensome recordkeeping system and without imposing an unacceptable level os cost.

Also, we are about to conclude a Timber Sales Cost Study originated in FY 1975, which will provide a basis for estimating sale costs.

2. GAO also recommends that the annual report to Congress include an estimate of the number and volume of timber sales sold below cost, the justification for making such sales, and the magnitude of loss. The report includes a proposed revision to NFMA to require reporting of cost-revenue on a statistically valid basis to Congress.

We do not object to this recommendation.

Summary

1. GAO should reconsider the treatment of 25 percent payments to States as a timber sale cost.

2. Report should clarify costs considered, addressing both the functional cost items included and excluded.

3. Report should address the Forest Service method of capitalizing road (asset) value to include engineering costs.

Sincerely,

R. MAX PETERSON
Chief

(021003)

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