

WYOMING TIMBER MARKET ANALYSIS: The New Western Timber Economy

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Administrative study for the USDA Forest Service.

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While many contributed to this report, any errors are fully our responsibility.

EXECUTIVE SUMMARY

Purpose and Scope

This administrative study was originated to provide support for the revisions of the USDA National Forest plans for the forests located in the state of Wyoming and to provide information to the State of Wyoming including the Wyoming State Forestry Division. As such, the scope of the report is limited to the state of Wyoming. Four forms of information were used: 1. USDA Forest Service timber data records, 2. surveys of USDA Forest Service officials and of timber industry representatives, 3. personal interviews of Forest Service officials at each affected National Forest and industry representatives of each major mill, and 4. literature.

Findings

The findings of this study have potentially significant implications for public policy, public timber programs and for the timber industry. A new timber economy is emerging in the State of Wyoming that has been shaped by a series of significant changes. The shape and nature of the new economy is unmistakable and markedly different from the past. The key factors shaping the new economy, characteristics of the new economy and some potential implications are outlined below.

A. Factors Shaping the New Economy

1. International Events: are affecting the Wyoming timber economy as never before. Recent events include increasing Canadian lumber imports, a strong US dollar, a series of international monetary crises that occurred in the 90s with current revival. Further, the US Canadian Softwood Lumber Agreement will expire April, 2001 with the potential to pressure lumber downward. Recovering Asian economies are expected to increase US lumber exports.
2. Domestic Events: include the reduction in public timber harvesting reflecting environmental/amenity restrictions and pressures, increased offerings of small diameter volume, increased offerings of private timber, higher and more volatile lumber prices, green certification. While international markets are expected to rebound, domestic demand is expected to slow as a consequence of higher interest rates.

B. The Emerging Wyoming Timber Economy

1. Industry Consolidation: The key and unmistakable trend resulting from the factors shaping the new economy is industry consolidation. Understanding the nature of the consolidation is, however, the key to understanding the new economy. Small diameter volumes require more capital investment to harvest and process in an economically efficient way. With unreliable volumes from any particular national forest and high lumber prices, the natural economic consequence is the establishment of large highly capitalized processing centers. Such processors rely on high volumes, low margins, capital intensive processing, and the procurement of volumes from many ownerships and national forests. Large corporations are favored relative to the traditional small operator. Large corporations with national and international holdings can diversify away lumber price volatility affecting Wyoming's lumber markets, operate at scale, better deal with international inter-connectedness, and better manage the costs of green certification.

2. Trouble for Small Processors: Wyoming's small processors who have relied on adjacent national forests for steady volumes have found themselves having to reach farther for volume and now compete with larger processors over longer distances. Securing private volumes means no Small Business Set-Aside protection. Smaller processors struggle to make the capital infusions necessary to effectively compete in the new economy. In Wyoming and throughout the West, processors configured at 12MMBF annual log input or lower are closing while processors of potential regional scale are considering capital infusions and expansions. Mid-sized processors (greater than 12MMBF but smaller than the regional processor) increasingly rely on technical innovation to maximize value added and to secure niche markets better suited to larger diameter material. They struggle to make the capital infusions and acquire enough large diameter stock to maintain operating margins.

C. Implications

1. Forest Service Sale Program: Nearly half of the volume processed in Wyoming's mills now comes from private supplies. With continuing industry consolidation, Forest Service sales face increased competition from state and private sources and the prospects of fewer bidders and longer haul distances. In essence, the Forest Service stumpage market position is changing from that of a dominant supplier to competitor with other sources. To the extent that such trends continue, a natural outcome would be to see more negotiated contracts with purchasers as the agency seeks vegetative services on low quality material and receives fewer bids per sale resulting from consolidation.
2. Private supplies remain unknown with certainty but will play a greater role in the future of Wyoming's timber industry. Our interviews of processors suggested both declining private volumes under contract, and a historical recognition of underestimating the quantity and resilience of private supplies (primarily to a confusion between inventory and supply). Wyoming's private timber supplies are often associated with multi-function ranches and affected by the price of timber relative to other ranch products and services such as the price of beef. To the extent that private timber continues to increase in importance, expanding extension services could be considered.
3. Timber Culture: The closure of smaller and family owned mills in the Western US and the current struggles of such mills in Wyoming pose a public policy consideration as the mills that played a key role in the development of Wyoming's culture are in jeopardy. We found the owners and representatives of small family owned mills to have a strong affiliation with the forest resource base and to have a strong sense of community responsibility. Since at least the turn of the century, local timber operators have contributed to Wyoming's natural resource culture and economic development.

The emerging new timber economy affects Wyoming and much of the West. Many elements shape the new economy, but declining volumes and lower quality volumes from Forest Service lands resulting from environmental and amenity restrictions has been the theme. Low volumes would suggest closures to reduce capacity, but when combined with lower quality volumes, it suggests a more fundamental change in processing strategy. Processing lower quality stock requires heavy investment in capital infrastructure including technological investment and

innovation. Such facilities have high fixed and low variable cost structure. Operating margins are modest and dependent on volume. Processors will increasingly look to the intra-state scale for securing volumes. Expect highly capitalized mills to secure volume over extraordinary distances from a wide mix of owners placing increased pressure on state and private inventories. To survive, small processors will need well-defined niches for product, for securing stumpage, and to carefully manage the technology and financing of mill efficiency.

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PURPOSE AND SCOPE

Several National Forests in the State of Wyoming are in the process of amending or revising their forest plans. This administrative study is intended to support those efforts as well as to provide background information to the Wyoming State Forest Service.

This report provides an analysis of the key timber markets in the State of Wyoming with particular emphasis on the elements of federal timber demand and supply and its impact on the structure of the Wyoming timber industry. Each national forest, the Bureau of Indian Affairs at Fort Washakie and each of the top timber purchasers/processors were extensively interviewed and surveyed to provide first-hand information in support of this analysis. In addition, USDA Forest Service 2400-17 timber sale records were extensively used to analyze each national forest and to provide a state overview. These records have well-known limitations. For example, volumes are as appraised and they only include Forest Service sale data. Nevertheless, analysis of these records reveals key trends affecting Wyoming's timber economy. In addition, published economic data from various sources provided the information for much of the international and domestic economic perspective included at the beginning of the report.

The report includes a section on national and international trends and events that have played an increasingly important role in shaping the timber situation in Wyoming. As the globe has "shrunk" and we have grown increasingly "interconnected" such that including a national and international background became essential to an informed understanding of the Wyoming timber situation and its evolution. Subsequently, an overview of the state timber situation is provided followed by an analysis of each national forest and its top processors. The synthesis of findings assimilates the individual forest analyses to provide an overall interpretation and analysis of key trends affecting the state.

NATIONAL AND INTERNATIONAL

The timber industry in Wyoming is undergoing a period of rapid change as it copes with a new economy. Most will likely find a challenging future and some may not last the new decade. The Asian crisis of 1997 impressed Wyoming timber operators with how connected they are to the global economy. The crisis reduced demand for Wyoming lumber while Canadian imports increased. Although the Asian economies are now recovering and foreign demand for US products is again increasing, the US dollar is strong providing a disadvantage for American timber producers by making US exports relatively expensive. Nevertheless, current forecasts (WWPA 2000) are for increased lumber exports. Closely related is an increase in domestic real interest rates which are forecast (WWPA 2000) to slow the construction, and housing markets.

Although the American economy is projected to remain strong for a few years, US producers, including those in Wyoming will continue to compete with relatively inexpensive foreign imports. A more detailed analysis of the world and national economy is provided below. We begin with demand and subsequently move to a discussion of factors affecting supply—the production side of the economy.

Demand

Demand addresses the consumer side of the economy and here we will detail the key factors affecting how much Wyoming timber products are desired from a national and international perspective.

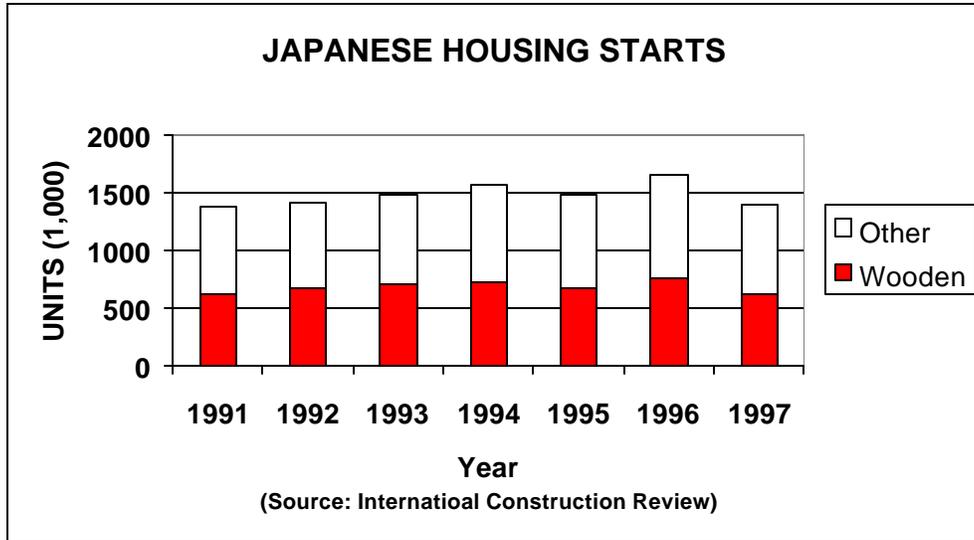
Economic Turmoil and Interconnectedness

The decade of the '90s was difficult for international economies as three financial and economic crises all but swept the globe demonstrating a new and powerful interconnectedness of the world economies. New economic relationships are a consequence of many elements including financial innovation on US equity and debt markets that have made cross-border investments more accessible to institutional and individual investors. At the same time, revolutionary advances in information technology, with lower transportation and transaction costs have made the world more interdependent and interconnected. The power of the new interconnectedness was directly felt in international timber markets, state timber markets and by local processors in Wyoming. In many parts of the world, the crises are abating as economies recover and many of the effects have been reversed. The particulars of these effects and how they affect the Wyoming timber markets and economy are addressed next.

Three **global crises** depressed financial and commodity markets starting with the devaluation of European currencies in 1992-93 as Italy and the United Kingdom abandoned the European Exchange Rate Mechanism (ERM). This was followed by the collapse of the Mexican peso in December 1994 that touched off "The Tequila Effect" as Latin American currencies came under attack. The third crisis known as the "Asian Flu" began in Thailand in 1997 and eventually spread to Russia and back to Latin America. The Asian crisis is of particular relevance to the US housing and lumber markets and is one key reason why the US economy was able to sustain rapid expansion throughout the decade with very low interest and inflation rates.

The Asian crisis demonstrated the financial integration of world economies and their impact on US lumber markets to an unprecedented extent. The crisis began in the summer of 1997 as financial turmoil in Thailand spread to Indonesia, Malaysia, and the Philippines. By October the economies of Hong Kong and subsequently Korea were affected. The Asian market began its precipitous fall as a result of failed banks and investments throughout Japan, Korea, Indonesia, the Philippines, Thailand, Malaysia and Singapore.

As equity markets contracted, commodity prices fell as did the demand for housing. Japan was particularly hard hit and with a large increase in the Japanese consumption tax, the economy entered into recession in 1997. Consequently, the demand for housing affecting US exports declined. Japanese total housing units fell 16% and wooden units fell 19% in 1997 as indicated in the chart below.



The crisis, particularly with respect to Japan, adversely affected prices and trade in wood products as foreign investment and demand fell dramatically. Because lumber products are priced internationally in US dollars, depreciation of Asian currencies significantly depressed lumber exports from the US. The Asian markets have become important to US producers of lumber and wood products because they historically constituted approximately 50% of total exports. At the start of the crisis, in 1997, the total value of exports fell 22% from highs in 1996 and were down 52% from 1996 levels by 1998. These effects are evidenced by the declining US exports as shown in the table below. Declines in exports from Japan and South Korea were particularly steep with the value of exports to Japan at only 65% and to Korea at 31% of 1997 figures.

Table of US Domestic Exports—lumber and wood products, SIC 2400 (millions of US dollars)

COUNTRY	1994	1995	1996	1997	1998
Japan	3,135	3,285	3,360	2,524	1,640
Korea (South)	317	332	299	301	94
Indonesia	22	29	36	38	36
Philippines	13	13	40	34	25
Thailand	20	27	32	29	21
Malaysia	12	19	28	27	20
Singapore	14	16	21	17	12
Sub-total	3,533	3,721	3,816	2,970	1,848
% of world exports	49%	50%	51%	41%	31%
World exports	7,270	7,424	7,420	7,312	5,960

Source: Industry Canada, July, 1999

Exports from Canada to Japan diminished to further increase US-Canadian imports of softwood lumber.

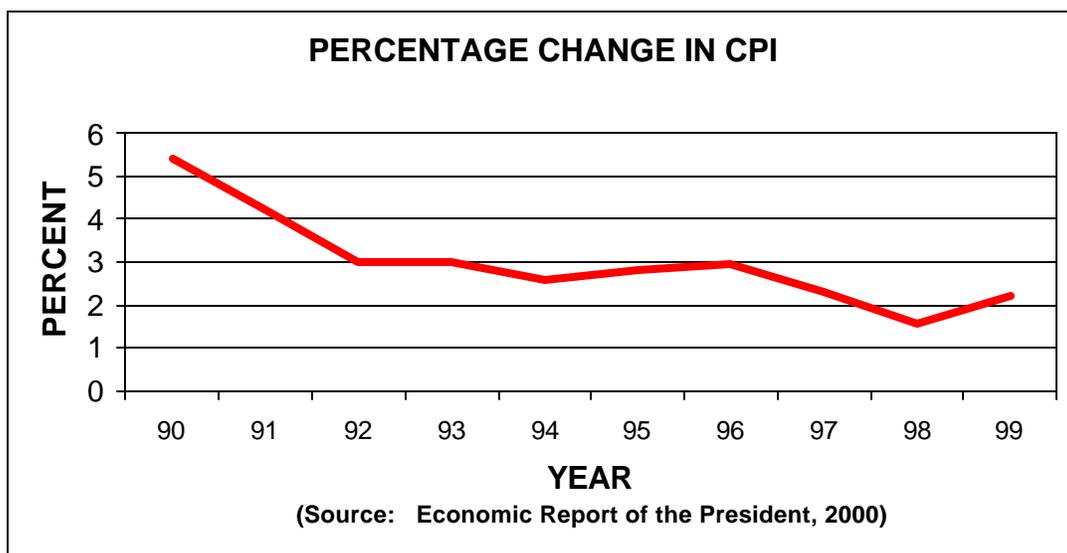
In short, the global economic downturn reduced the demand for US lumber and other wood exports while imports from lumber producing countries increased. This international trade effect acted to depress US lumber prices from the mid to late '90s as evidenced by the relatively flat to declining intermountain Western Wood Products Association (WWPA) lumber price indices for ponderosa pine and white woods (p 15). Relatively flat lumber prices directly affected processors throughout the Western US.

Green Certification by independent agents is becoming a selling point for lumber retailers such as Home Depot, the world's largest retailer of home building products including lumber. In October 1999, the company announced that it plans to give preference to certified wood products and over the next three years will stop selling lumber products that originate in environmentally sensitive areas. The company is using its environmental policy to gradually shift to sales of wood and wood products that are certified from those that are not.

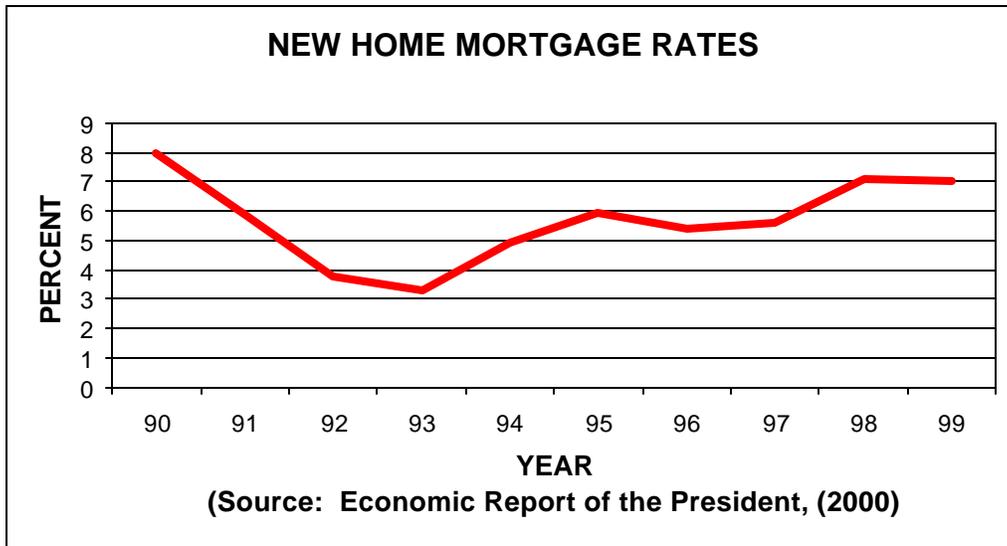
Certification requires timber producers to demonstrate a level of forest management that ensures soil conservation, reforestation, responsible management of soil and water resources, consideration of biodiversity and proper harvesting techniques. Currently certified wood constitutes only one percent of the wood sold worldwide, and where foreign producers are equipped to produce green products, they will have a comparative advantage in the market. To gain the certified label, producers must undergo an exhaustive scientific process which, will likely lead to increased costs of operations. Although Home Depot will incur the costs of certification for the time being, a portion of these costs will eventually be absorbed by consumers and timber producers. Smaller processors and producers will have more difficulty meeting the green standards because the larger managers and owners will likely have better access to the knowledge and expertise needed to implement the standards at lower cost.

National

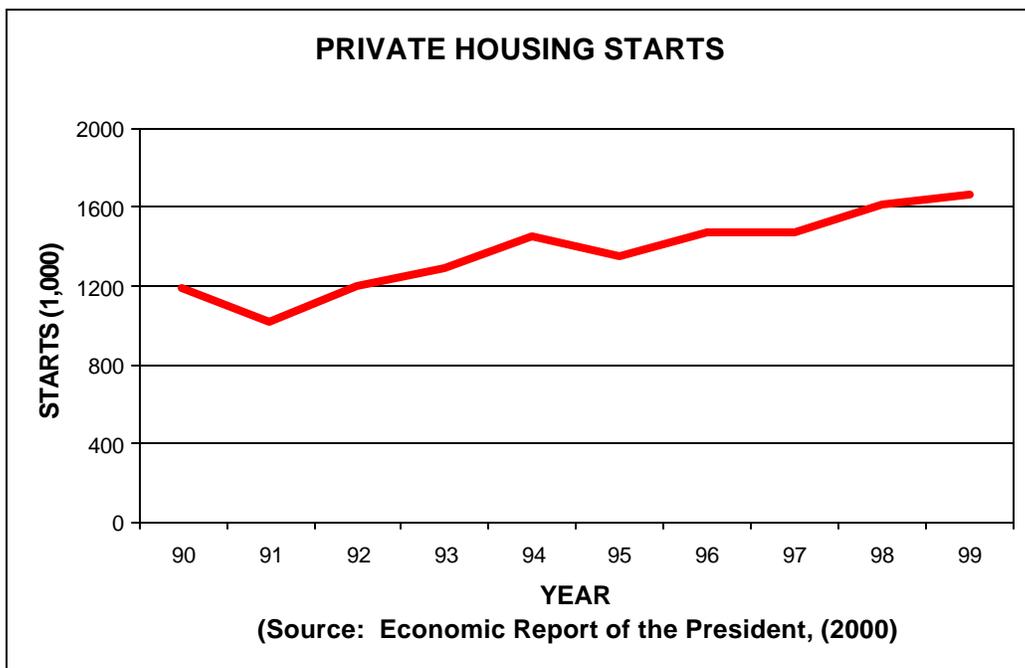
The US economy in 1999, for the eighth consecutive year, experienced expansion and is expected to remain strong despite the economic turbulence in the east Asian countries. Inflation remained low after 1991 (between 1.5% and 3.0% as measured by the Consumer Price Index) new home mortgage rates remained stable throughout the decade.



Domestic home building activities reached record levels in 1998 as mortgage rates remained low. The international monetary crises and the domestic rate of inflation are related as the global down turn reduced demand for US products.



Private non-residential construction increased, as did remodeling and renovation. Although housing starts are expected to be slightly less than average, homes are expected to be larger, and home improvement and repair are expected to become increasingly important. Housing starts in the chart below from 1990 through 2000 show a steady annual increase.



This steady increase is in jeopardy as recent increases in nominal and real rates have already begun to slow housing starts.

Supply

Several factors are adversely affecting the timber industry. First, the decreasing availability of federal stumpage due to the road moratorium and various wildlife management initiatives has pressured purchasers to seek alternative sources of stumpage. Private landowners have responded and now provide nearly half of the volume processed in Wyoming. Although private timber owners have responded to higher stumpage prices, many are concerned that private supply is unsustainable and will diminish four or five years hence. No reliable data are currently available to address this contention and we note that foresters have historically underestimated the viability of private timber suppliers.

Imports

In spite of a strong domestic economy, wood products markets were volatile without rising for two reasons. First, there was an increase in imports, especially for lumber products, as products were diverted from the southeast Asian economies into the United States. Fueling the increase in imports was a relatively highly valued US dollar. The trade-weighted value of the US dollar increased in 1997 and early 1998 to its highest level since 1986. If exchange rates are sustained, imports will likely continue to grow, whereas exports will be further depressed. As shown in the table below, the dollar increased against each of the currencies listed.

Exchange Rates in US Dollars, 1993-1999

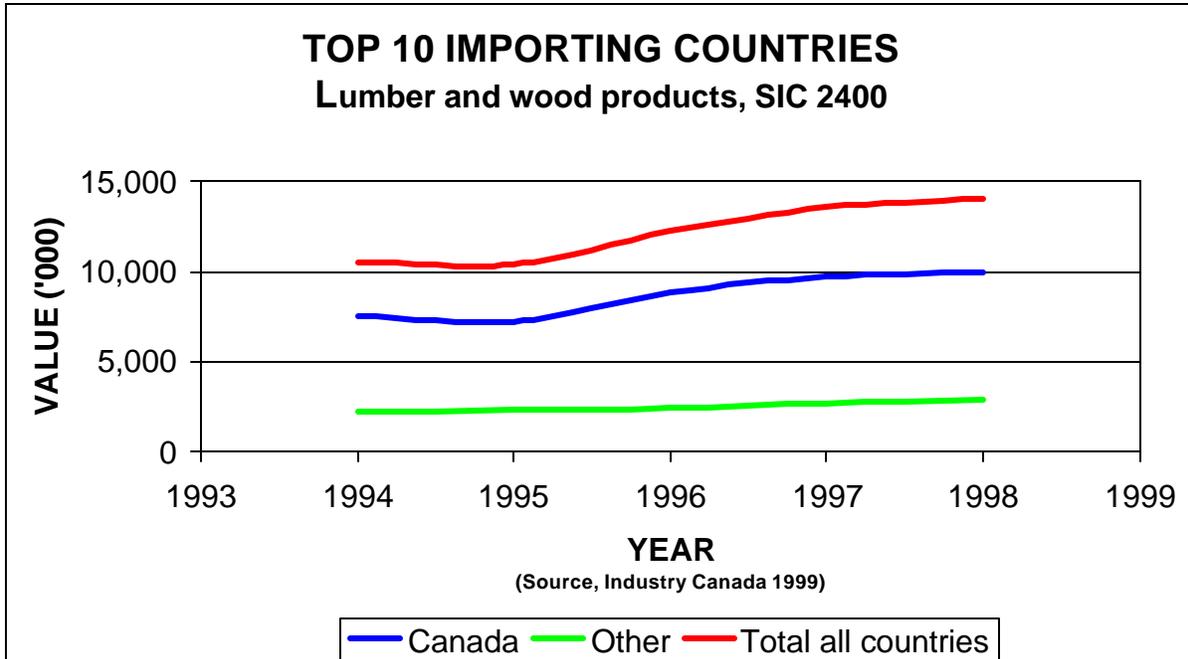
Country	Currency	1993	1994	1995	1996	1997	1998	1999*
Canada	Dollar	1.2902	1.3664	1.3725	1.3638	1.3849	1.4836	1.4902
Japan	Yen	111.08	102.18	93.96	108.76	130.99	121.06	114.31
Mexico	Peso	3.1237	3.3853	6.4467	7.6004	7.918	9.152	9.4320
China	Yuan	5.7795	8.6404	8.3700	8.3395	8.3193	8.3008	8.2774
Malaysia	Ringgit	2.5738	2.6237	2.5073	2.5154	2.8173	3.9254	3.7999
Taiwan	Dollar	26.416	26.465	26.495	27.468	28.775	33.547	32.050
Thailand	Baht	25.333	25.161	24.921	25.359	31.072	41.262	37.31

Source: Federal Reserve Statistical Release, 1999. * exchange rates for August 4, 1999.

US exports of lumber and wood products decreased steadily from 1995, and then fell almost 20% in 1998. At the same time, imports of lumber and wood products from the rest of the world have increased steadily since 1994, rising 33% overall between 1994 and 1998. Although imports from Europe and South America have been increasing, Canada has, by far, the largest market share at approximately 73%. The charts below document import trends into the US market from 1994 through 1998.



During the Asian crisis, lumber and wood product imports in the US markets, from Europe and South America increased competition and downward pressure on prices. Using a base of 1996, total imports were up 11% in 1997, and 15% in 1998. European imports have increased since the start of the Asian crisis rising 18% in 1997 and 39% in 1998 from the base year 1996. South American imports rose 25% and 30% from the base year.



US Imports from top 10 countries—lumber and wood products, SIC 2400

(millions of US dollars)

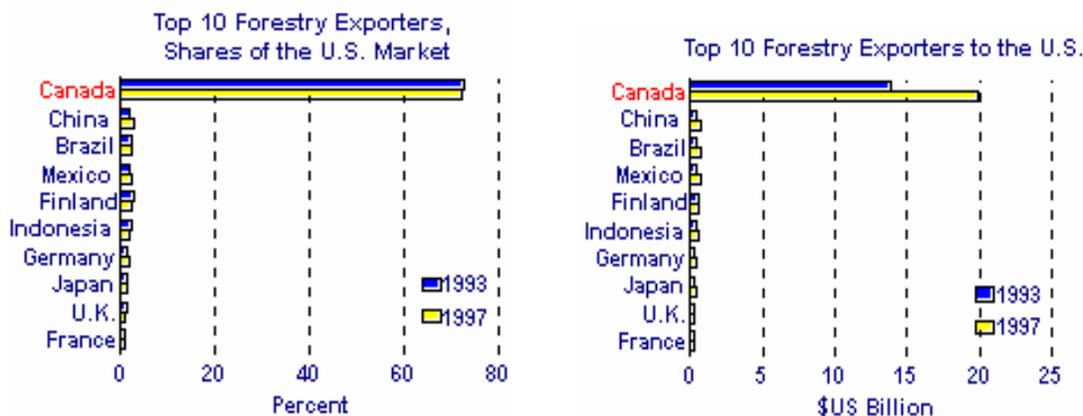
Country	1994	1995	1996	1997	1998
Canada	7,571	7,231	8,829	9,719	9,958
China	348	392	426	512	647
Indonesia	507	488	479	517	485
Mexico	303	308	399	444	412
Brazil	330	361	338	402	399
Chile	135	163	173	253	280
Malaysia	214	188	219	182	205
Taiwan	202	173	154	158	141
Portugal	78	102	120	125	140
Thailand	99	116	122	127	138
Total all countries	10,547	10,394	12,214	13,553	14,057

Source: Industry Canada, July, 1999

North American Free Trade Agreement—NAFTA

Canada is the top exporter of forest products into the US market with approximately 73% of the market share, valued at \$20 billion US dollars as seen in the chart below.

Top 10 Forestry exporters to the US: percent and value.



Similarly, Canada is the largest market for US exports in wood products. Although exports of forest products to the Canadian market are increasing, imports from Canada continue to increase, as does the Canadian market share. Fueling the increase in imports is the weak Canadian dollar relative to the US dollar, and the Asian crisis—especially as related to Japan. As a consequence of the Asian crisis, where Japanese demand for Canadian lumber greatly declined, increased shipments were made from Canada to the US. In 1995, Canadian exports reached a record level of 16.2 billion board feet.

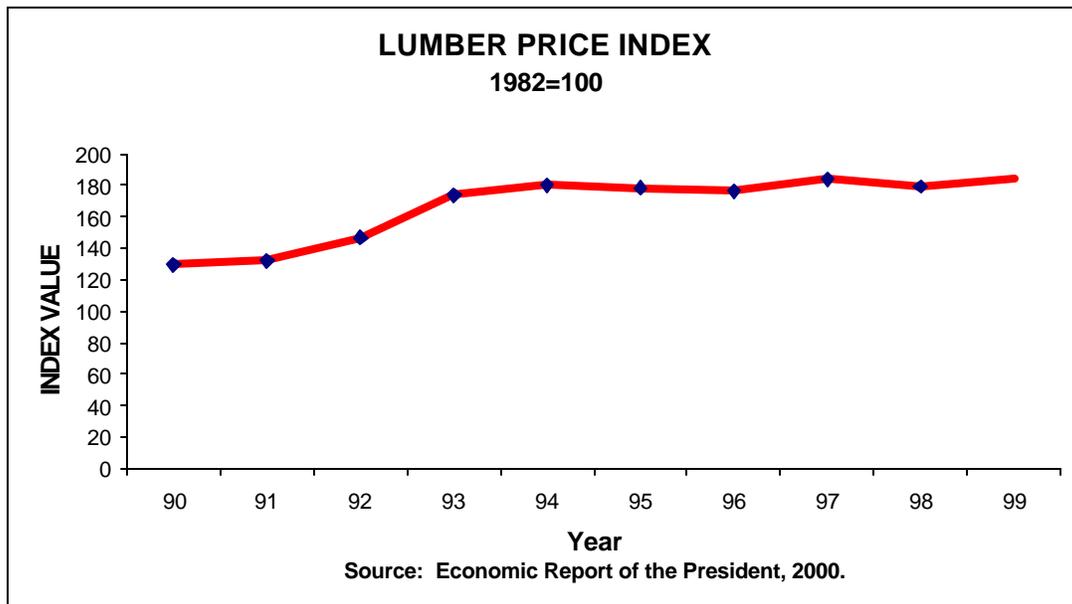
In 1996 Canada and the United States finalized a trade agreement (US Canadian Lumber Trade Agreement) where the US made a commitment to not launch any trade actions on Canadian

softwood lumber exports for the next five years. In return, Canada agreed that softwood exports from British Columbia, Alberta, Ontario and Quebec that exceed 14.7 billion board feet would be subject to a fee of \$50/MBF for the first 650 MMBF, and \$100/MBF for volumes in excess of 650 MMBF. Saskatchewan, Manitoba, the territories, Newfoundland and the Maritime provinces are exempt and will maintain their traditional exemption. Consequently, US manufacturers have experienced an increase in competition from Canadian lumber exports.

With the US Canadian Lumber Agreement scheduled to expire in April, 2001, and although it is early, there is no sign of agreement between the US and Canada in the works. With Canadian imports currently accounting for about one third of the US softwood lumber market, this places considerable uncertainty in lumber prices just a year away.

Trade agreements under NAFTA combined with a weak Canadian dollar have made Canadian imports more affordable. This is evidenced by the increase in imports from Canada over the last few years. Similarly, the relatively strong US dollar and displacement of international producers in Europe, Asia and South America as a result of the Asian crisis has further increased competition and changed target markets for American producers.

Each of the demand and supply elements addressed above affect the nation's price for lumber products. The chart below shows the effect of these elements on the nation's producer price index for lumber and wood products.



The Lumber price index chart shows a steady increase until the international financial crisis (described above) began to hit in 1993. Despite a robust housing and remodeling market fueled by low interest rates in the US, the nation's lumber prices remained flat throughout the remainder of the decade--largely held in check by reduced international demand.¹

¹ The lumber price index more applicable to Wyoming (p. 15) shows increased volatility.

STATE OVERVIEW

The commercial timber markets of Wyoming are part of the larger, dynamic and interconnected economy discussed above. Increasing international influences coupled with uncertainty with regard to domestic environmental policy make for an uncertain future. We will focus on those events that, in our view, are the most reliable indicators of present and future conditions.

Economies often extend beyond state boundaries. In the state of Wyoming, the National Forests are located along or overlap the state boundary suggesting there really is no “state timber economy.” An extreme example is the Black Hills N.F. in the Northeast corner of the state which, if combined with the rest of the Black Hills and related haul zones, could form a definable timbershed. On the demand side, Wyoming’s most vibrant processors acquire volumes from neighboring states and have developed integrated and dynamic purchasing strategies. Recognizing that Wyoming does not constitute a timber “economy,” provides an important context for analyzing the state timber markets. With this recognition, we will address the state timber situation and provide analysis of potential use for the individual forests. The state perspective is valuable to identification and illumination of key emerging trends in the region and in the Western US.

Commercial Ownership

Commercially viable timber resources in the state of Wyoming reside primarily within the National Forests (Green and Conner 1989). As the table below shows, roughly 63% of the sawtimber acreage is owned and managed by the National Forests. The next largest owner of commercial timber acreage is private and it comprises about 27% of the sawtimber.

Ownership class	Forest type	Stand-size class (1,000acres)				
		Sawtimber	Pole	Sapling/seedling	Nonstocked	All classes
National Forest	Douglas-fir	298.3	54.3	18.9	3.5	375
	Ponderosa pine	239.7	7.4	5.5	1.9	255
	Lodgepole pine	725.0	553.1	125.3	35.4	1,439
	Spruce-fir	832.0	67.9	71.6	16.6	988
	Hardwoods	43.7	55.7	11.8	5.1	116
	All types	2,139	738.4	233.1	62.5	3,173
Other public*	Douglas-fir	52.3	7.2	7	0	66.5
	Ponderosa pine	136.2	38.2	4.9	69.5	248.8
	Lodgepole pine	37.2	58.4	14	0	109.6
	Spruce-fir	106.7	84.8	45.4	84.4	321.3
	Hardwoods	0	33.3	26.4	0	59.7
	All types	332	222	98	154	806
Private	Douglas-fir	59.7	12.9	2.8	0	75.4
	Ponderosa pine	612.7	82.9	94.8	114.7	905.1
	Lodgepole pine	61.8	43.8	8.1	8.1	121.8
	Spruce-fir	121.1	54.3	33.5	39.7	248.6
	Hardwoods	67.5	94.5	26	45.9	233.9
	All types	923	288	165	208	1,585
Total	Douglas-fir	410	74	29	4	517
	Ponderosa pine	989	128.5	105	186	1408
	Lodgepole pine	824	655	147	44	1670
	Spruce-fir	1060	207	151	141	1558
	Hardwoods	111	184	64	51	410
	All types	3,394	1,249	496	426	5,563

Source: Green and Conner (1989)
*Includes tribal lands which are not public.

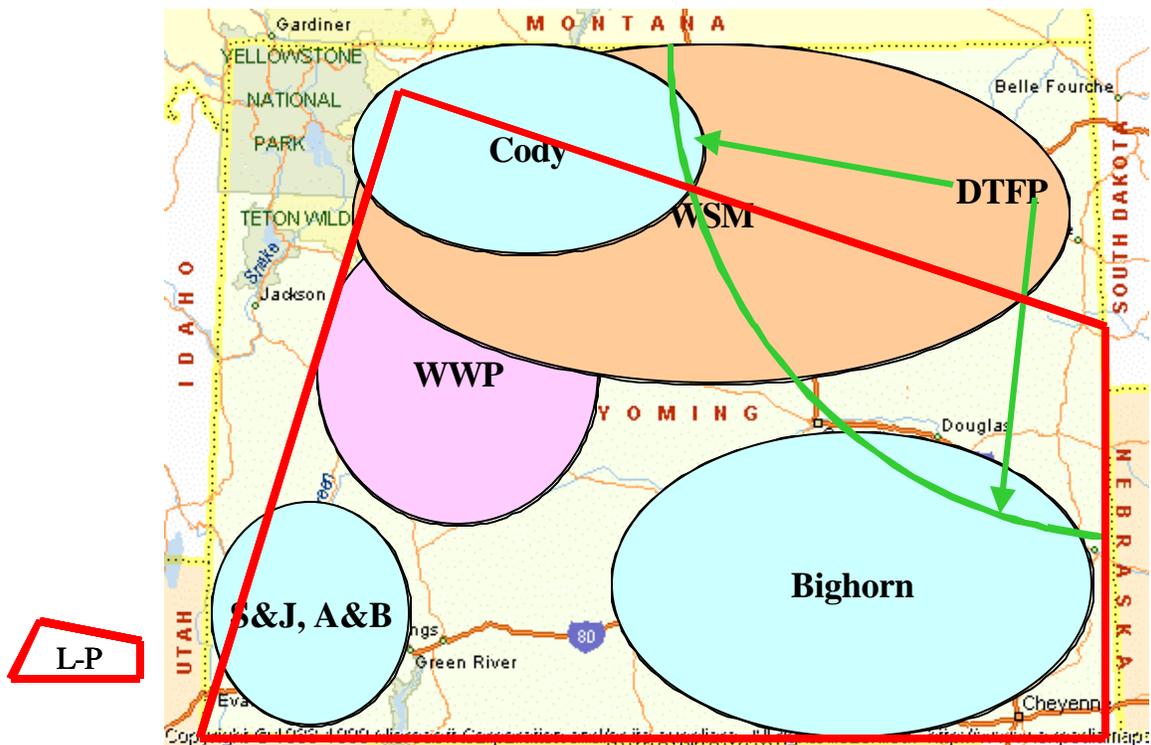
Note the disparity in species by ownership class; private and other public volumes are predominantly ponderosa pine, while National Forest volumes are predominantly spruce/fir and lodgepole pine. Most of the private and state ownership is located in the Northeast part of the state whereas, most of the private ownership is in Crook and Weston Counties (Green and Moisen 1988). Of these inventories, 98% was estimated to be ponderosa pine with 67% sawtimber and 11 % non-stocked (Green and Moisen 1988). In contrast to the National Forests, private owners have been positively disposed to harvesting. For example, Birch (1996) stated

that "Owners (private) have a positive attitude toward timber cutting at a time when there is greater demand for products from the forest."

We caution that all source documents for inventory data are dated. For example, Waddell et al. published in 1987 do not agree with other sources published by the USDA Forest Service. They report 4,331 total acres: 2,211 National Forest acres, 789 acres of other public, 37 acres in forest industry, and 1,296 acres in farm or other private. Further, since these inventories were estimated, prices have risen motivating accelerated private removals, more intensive management and considerations of bringing additional acres into timber management. The reader should be careful to interpret these data in the proper context. An updated inventory analysis is underway for the state and is scheduled to be completed within the next year. Other references, also dated, include Conner and Pawley (1988) and Green and Conner (1984).

Processing

There are eight major processors in the state as shown in the following map illustrating processor hauling distances. Major processors include Cody Lumber Inc., Wyoming Saw Mills (WSM), Devils Tower Forest Products (DTFP), Wyoming Wood Products (WWP), Big Horn Lumber, Ayers and Baker Pole & Post (AB), South & Jones Lumber Company (SJ), and Louisiana Pacific (L-P) denoted by the red polygon. Pope and Talbot at Newcastle is omitted because it will close shortly. This overview shows the working area for each of the major mills.



To construct these overlapping areas we used the approximate distances as reported to us by the mills with confirmation through USDA Forest 2400-17 timber sale records. We made no attempt to adjust the areas for transportation or geographic features and we truncated haul distances at the state boundaries. We used a boundary of approximately 500 miles for L-P with

sale records and excluded the Black Hills. These boundaries are dynamic given that processors continually expand operations while others reduce haul distances or shut down. Nevertheless, the illustration should provide a quick introduction to the industry and aid with visualization of the state's most significant processing infrastructure. Each of the processors identified on this map is discussed below under the heading of their respective National Forest.

The following table lists each of the major processors and the volume they are currently configured to process in log input. We have added South Fork Lumber located in Wheatland, WY.²

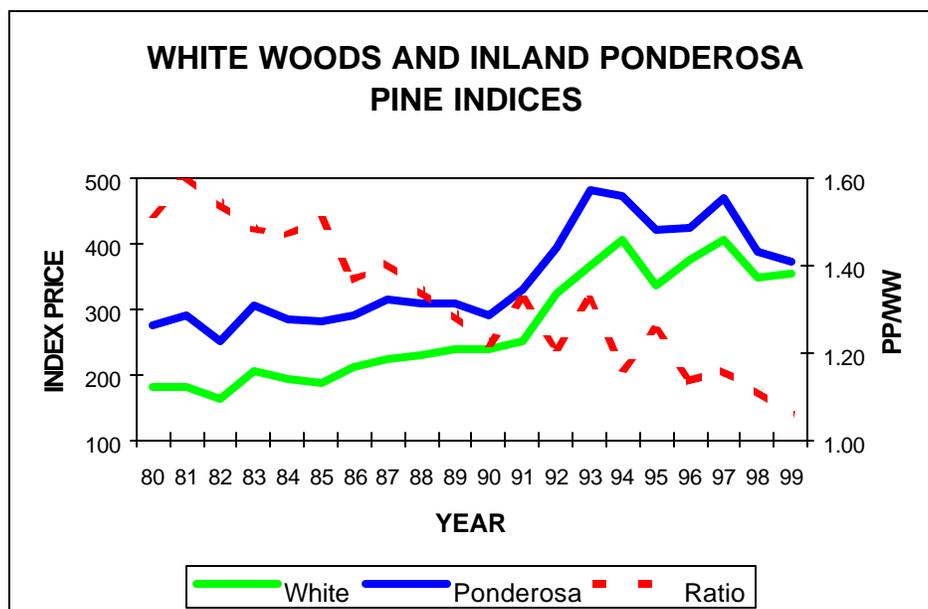
Major Purchaser's Current Volume Configuration	
Purchaser	Volume Configuration Estimate (MMBF log scale)
Ayers & Baker	3
Big Horn Lumber	15
Cody Lumber	3-4
Devil's Tower	26
L-P Saratoga	
One Shift	53
Two Shifts*	106
Pope & Talbot*	22
South & Jones	6
South Fork Lumber	2
Wyoming Sawmills	24
Wyoming Wood Products	3
Total	135
*Not included in total.	

² South Fork Lumber does not purchase federal timber such that public sale data records are unavailable. South Fork is not discussed in the following material on the National Forests. Hence, we offer the following synopsis. South Fork Lumber is a multi-purpose mill configured to use about two million board feet annually. It produces a wide range of products, but focuses (90%) on landscape timbers made from ponderosa pine. Ponderosa pine accounts for about 95% of their volume. They employ about 15 individuals. The mill secures its volume from state and private (no Forest Service) sources. Stating that volumes have been difficult to obtain, they also indicate that the future depends upon their ability to secure logs.

Lumber Prices

Lumber prices most affecting the state's timber economy are the White Woods Lumber Price Index published by the Western Wood Products Association. This index is used for both lodgepole pine and the ponderosa pine from the Black Hills National Forest. It is a common practice to use the white wood index for lower grades of ponderosa pine and as shown in the WWPA lumber price indices charted below, the white woods index and the inland ponderosa pine indices have converged indicating gradually declining grades in ponderosa pine.

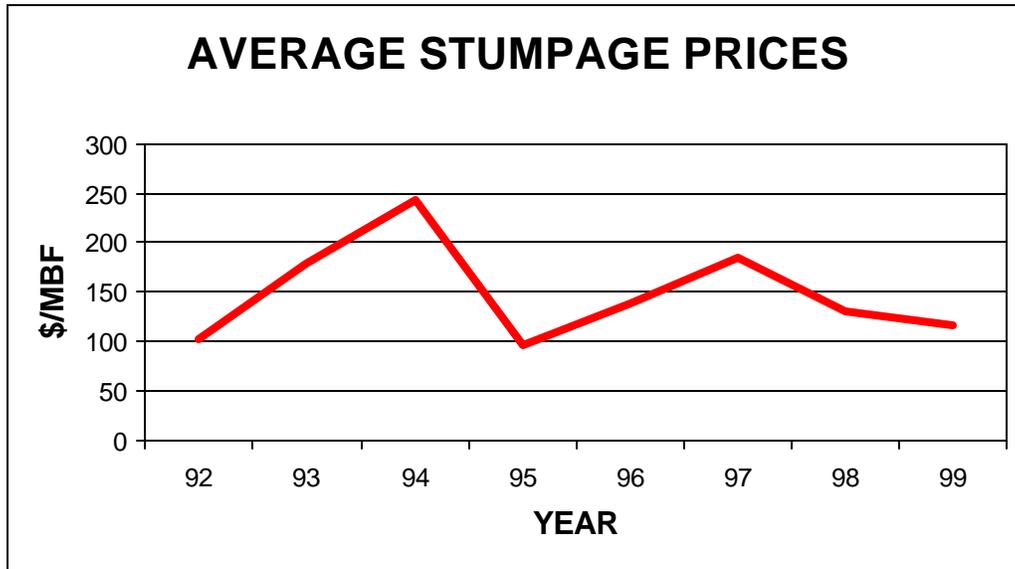
While these indices do not reflect any particular mill, they are generally accepted as reflective of the general lumber market conditions of the state. Prices include all of the relevant economic information of supply and demand discussed earlier. For example effects of the international monetary crises, a booming domestic economy, reductions in domestic public supplies and increased imports are all reflected in lumber prices.



These price series show a rapid rise in lumber prices in the late 1980s and early 1990s as public sales of stumpage was seriously curtailed. This rapid rise is abruptly halted as the series of inter-related international monetary crises associated with the Asian Flu ran from 1992 through 1997 (described in detail beginning on page six). This period is marked by increased volatility caused by offsetting supply and demand currents as the Wyoming timber economy was whipsawed by strong national and world events.

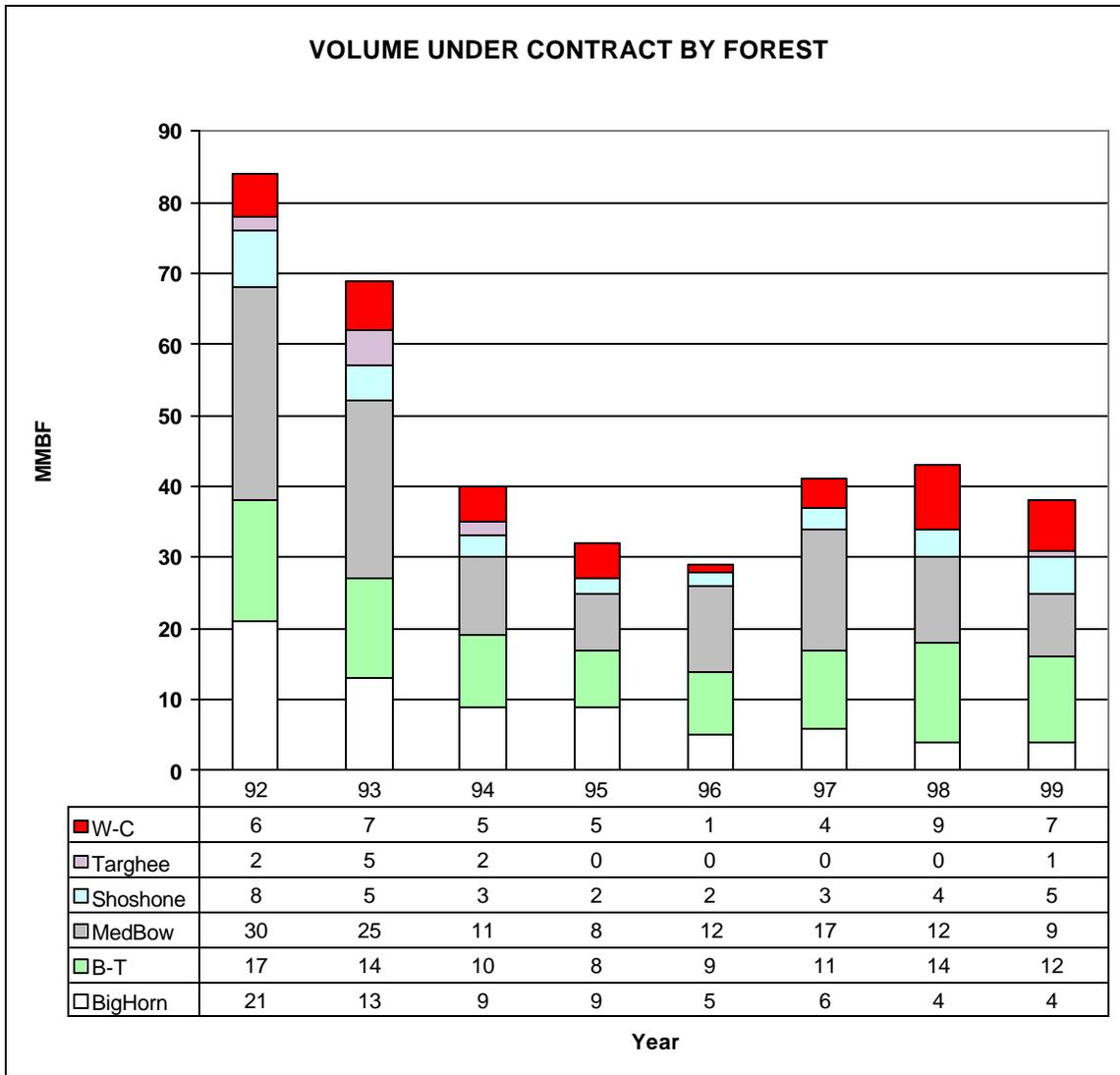
Also, striking in the lumber price chart is the declining ratio of the Ponderosa Pine Price Index relative to the White Woods Price Index. For example, in 1980 the ponderosa index was about 50 percent higher while in 1999 it was about six percent higher. To the extent that the index accurately reflects general prices by species, the Ponderosa Pine Price Index has steadily declined relative to the White Woods Index, reflecting lower grade recovery as less specialty products and more dimension lumber is being produced from the species. With the exception of the price volatility experienced in the early 90s, the ratio consistently declined. As we will show later, the trend toward smaller diameter processing is a driving force behind industry consolidation and increased mill capitalization.

Average stumpage sale prices for the state, calculated from Forest Service 2400-17 forms, reflect variation in the WWPA White Woods Lumber Price index. These calculated average prices are shown in the chart below and include all National Forests with the exception of the Black-Hills.



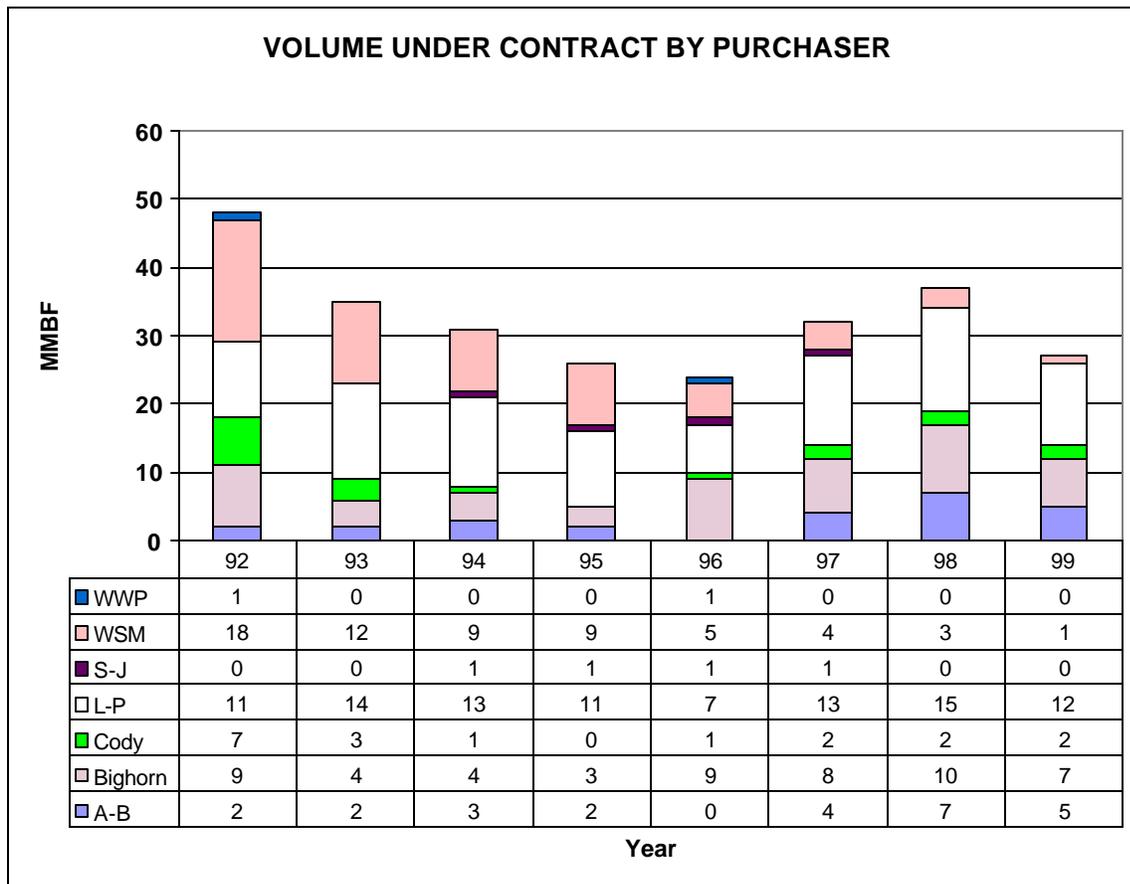
National Forest Sale Data Overview

This section provides an overview of the National Forest timber situation for the state. The state has two distinct market areas: the Black Hills which is primarily ponderosa pine and the remaining forests which primarily sell lodgepole pine. The first two charts show volume under contract by year for the non-Black Hills forests. The third chart shows volume under contract for the Wyoming portion of the Black Hills. Volume under contract (VUC) is the amount of volume, as appraised by the Forest Service, sold but not yet harvested. This measure is closely related to timber sale volume (all sale volume becomes VUC) but smoother as purchasers may not harvest all of their volume on a particular sale in a single year. This measure provides insight into purchasers as VUC is key to their survival. The first chart shows volume under contract by forest for all but the Black Hills.



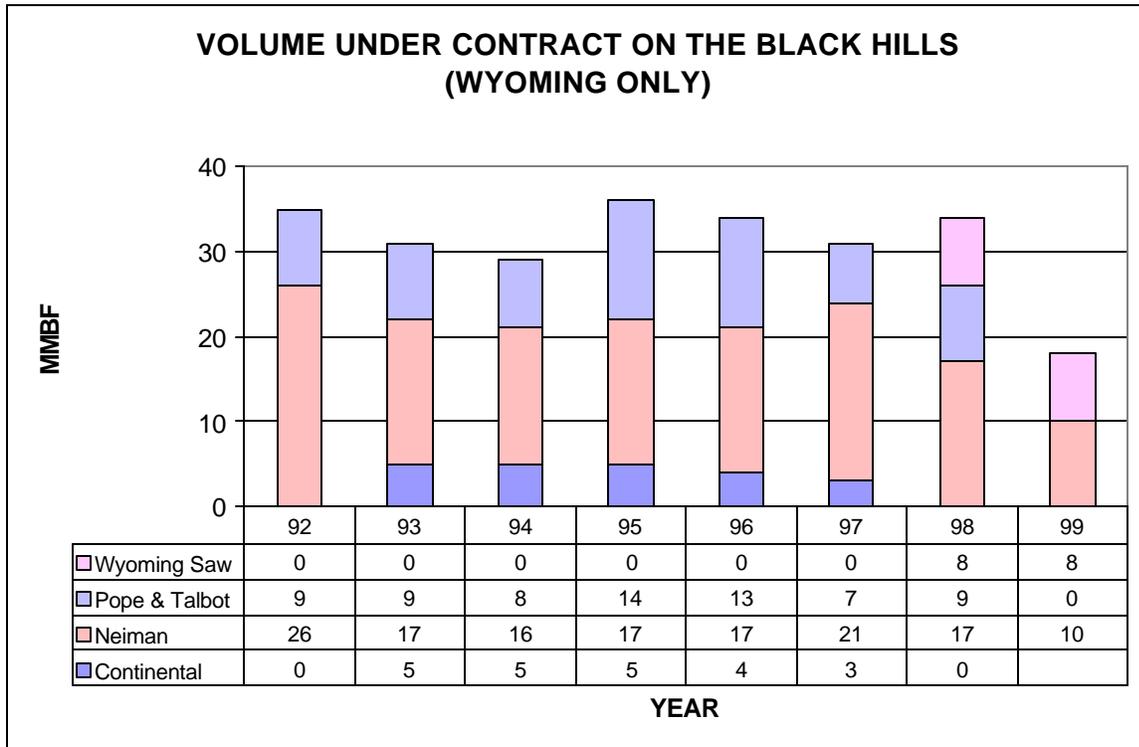
Note the roughly 50% decline in VUC from 1992 to 1999. The only forests with a relatively constant VUC measure are the Bridger-Teton and the Shoshone.

The second chart of VUC shows volumes by top Wyoming purchaser.



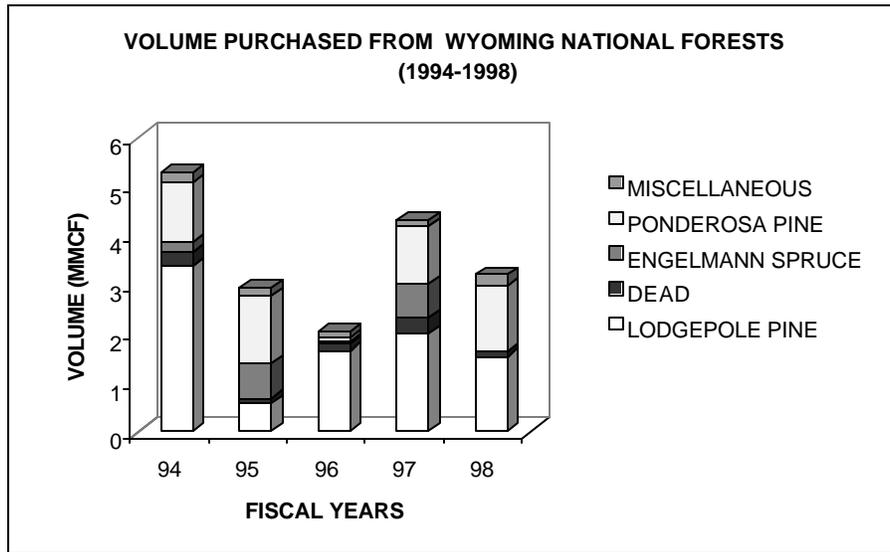
Two trends are noteworthy. Wyoming Sawmills, which had the largest inventory in 1992, has consistently declined in its inventory of VUC by year to the point where it is now one of the lowest while L-P has kept its VUC consistent. The implications of this will be discussed in more detail relative to the individual purchasers. Also note that Wyoming Sawmills obtained VUC from the Black Hills in 1998 and 1999. This volume is illustrated in the next chart.

On the Black Hills N.F., VUC is entirely from Wyoming and does not provide a complete perspective of the Black Hills N.F. Because all of the volume is from a single forest, we have segmented the bars by purchaser to provide additional information.



Note the overall decline in VUC on the Black Hills portion of Wyoming. Also note the changes in market share of VUC by purchaser. The Continental mill was purchased by Neiman and therefore shows no volume under contract since 1997. The reasons and implications of these changes in VUC by purchaser are discussed in detail in the final section of this report.

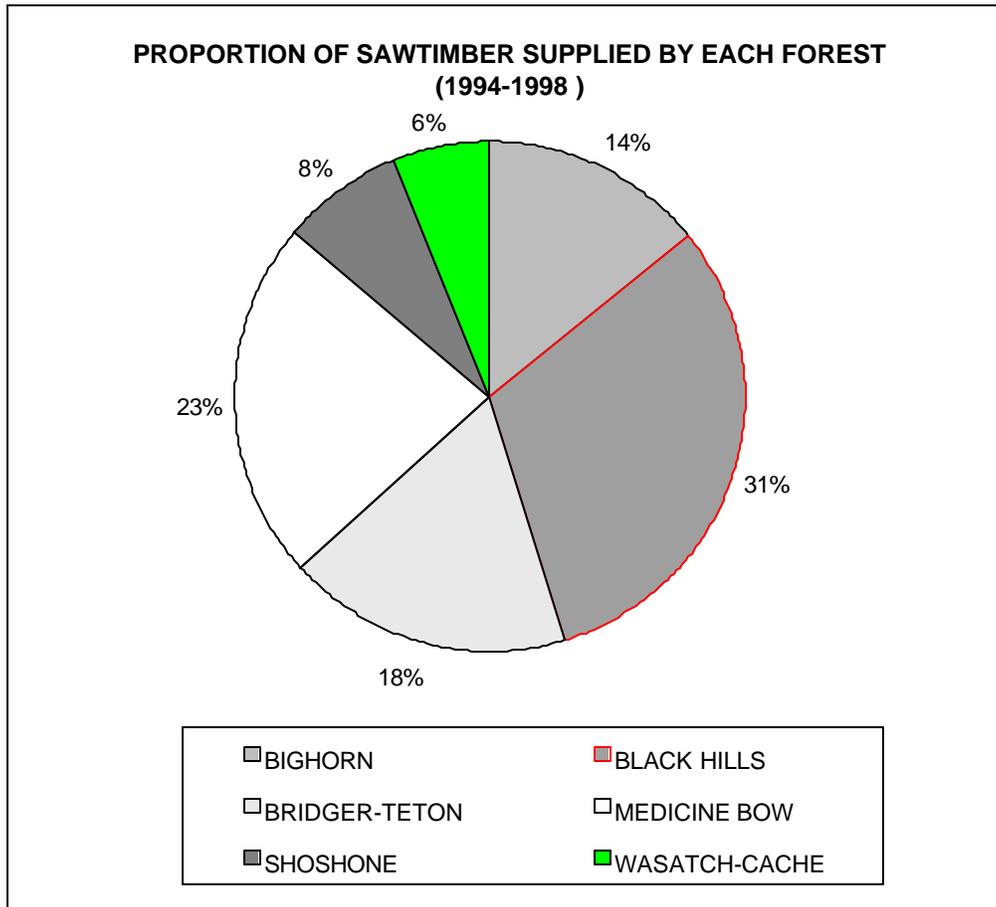
The following chart shows volumes sold for all of the Wyoming national forests for the five year study period by species.



The volume in 1998 is 3.2 MMCF and is 62% of the 5.1 MMCF sold in 1994. Further declines in National Forest volume levels are likely due to designation of the roadless areas and other environmental and amenity considerations. One of the key issues facing western timber programs is the decline in National Forest timber available for sale. Recently, President Clinton announced a move to set aside 40 million acres of land currently designated as roadless to be treated as wilderness areas. Although the land may not officially be categorized as wilderness, which requires an act of congress, it may become unavailable for timber harvest in the future. An additional 15 million acres currently undergoing inventory is also being considered for future roadless designation.

Other issues affecting the national timber supply, particularly in Wyoming, include efforts to set aside forestlands for grizzly bear habitat, and the listing of the Canadian Lynx. If these species are given priority over timber harvesting, land designated for timber production will be subject to further restrictions.

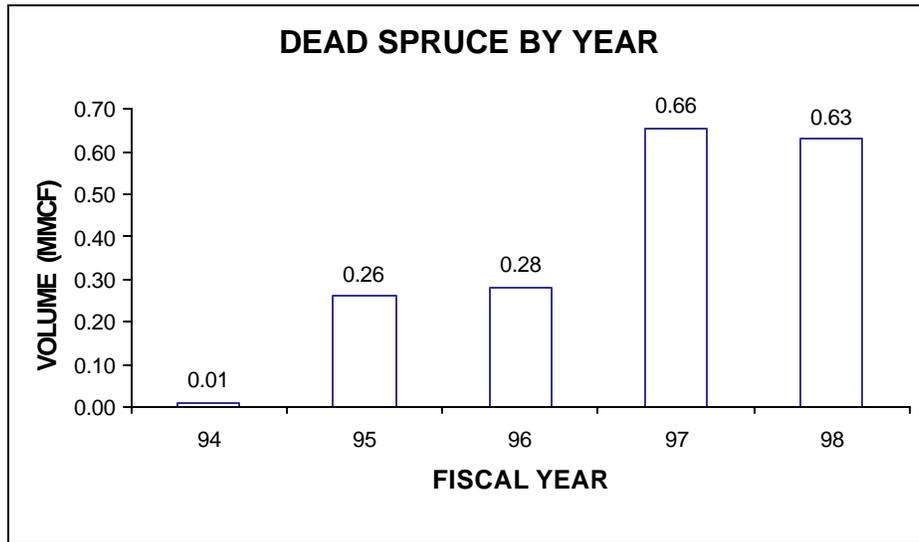
The following chart shows the contribution of each national forest to the overall total supply of sawtimber volume.



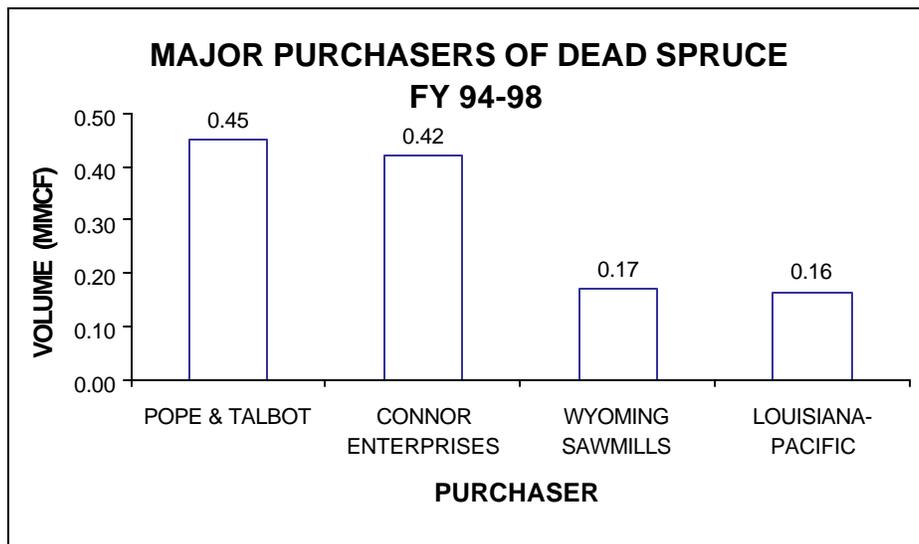
As shown in the above pie-chart, about 86 percent of the National forest timber sale volume has been supplied by four forests in Wyoming: the Black Hills, the Bridger-Teton, the Medicine Bow and the Bighorn. While sales by the Wasatch-Cache and Shoshone have been important to support vegetative management goals on those forests and important to local processors and associated economies, the overall volume has been minor relative to the other forests in the state.

The National Forests have also been offering **dead spruce** sales. These have not been a major part of the Wyoming timber economy, but nevertheless can be important to purchasers and forest managers. Hence, we provide a brief overview of sale records on dead spruce. Because this is a minor program, this section will not be elaborated on in the remainder of the report.

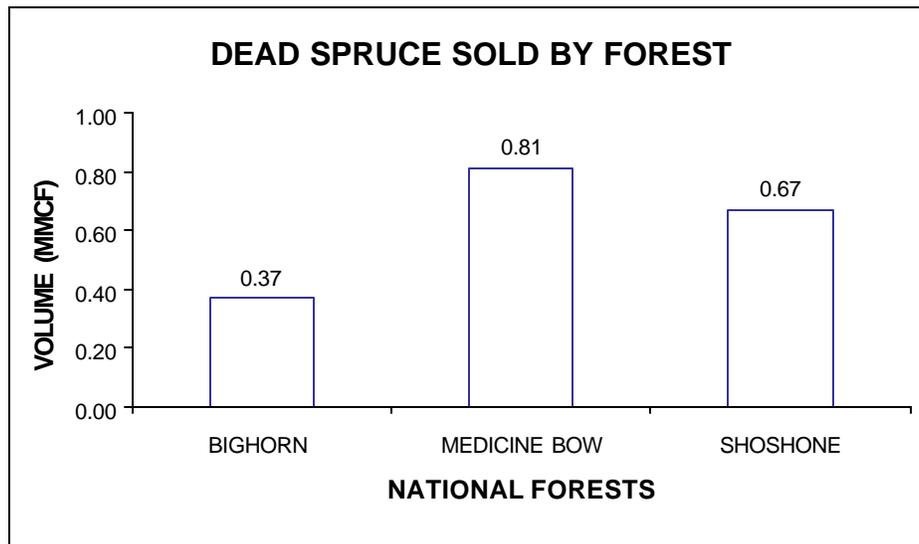
As shown in the chart below, dead spruce sale volumes have steadily increased over the study period to about .65MMCF per year.



Major purchasers of dead spruce are also major purchasers of live sawtimber suggesting that dead spruce is primarily offered as part of sawtimber sales. These purchasers may re-sell spruce volumes to manufacturers of log homes or of other dead spruce processors.



As shown in the chart below, dead spruce sales have primarily been on the Medicine Bow and Shoshone National forests.



Overall, the dead spruce market has been a relatively minor, but growing, part of the overall timber economy of Wyoming.

NATIONAL FORESTS and THEIR TOP PURCHASERS

Bighorn National Forest

Sale Program

The Bighorn National Forest timber plan went into effect in 1985 and is scheduled to be revised by approximately 2002. The forest is approximately 1.1 million acres, of which 676,000 acres are forested. Of the forested land, 248,970 acres are designated as suitable for timber management. However, only 1,000 acres have been harvested annually in recent years. Based upon the analysis and work done between 1990 and 1994 on the proposed ASQ Forest Plan amendment, the Regional Forester made an administrative decision that the Bighorn would offer 4-5 MMBF annually until the Forest Plan was revised. Although timber sales follow the NEPA process, since 1996 all proposed actions have been appealed, thus adding to the costs and time of completion. However, the Forest Service has not entered into litigation over such issues.

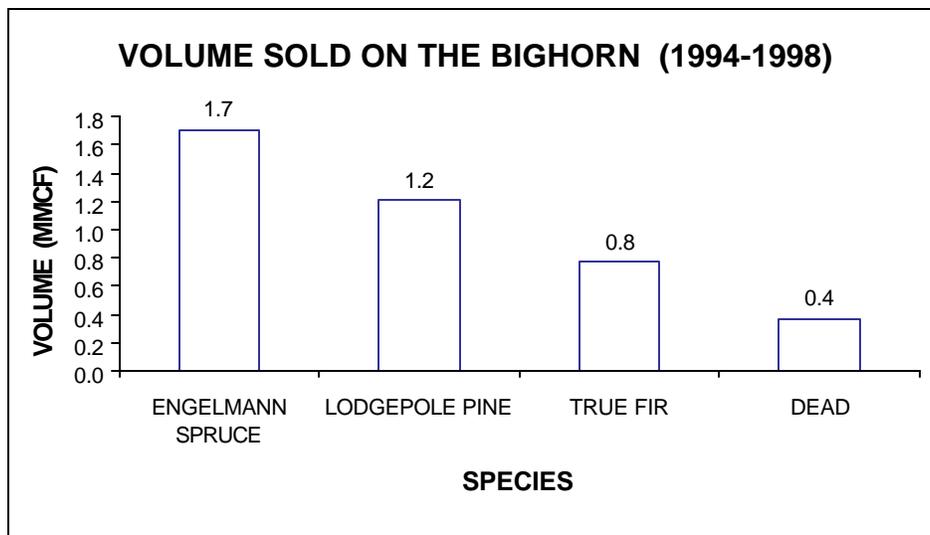
In revising the forest plan, the agency intends to focus on five key issues; biological diversity, timber suitability and management of timber lands, roadless area allocation and management, special areas, and travel management, and dispersed and developed recreation management.

The roadless area initiative has the potential for major impacts in the future on the Bighorn National Forest given that 73% of the forest base, as measured by the 1978 inventory, is located in what are now roadless areas which includes 56% classified as roadless plus 17% in the Cloud Peak Wilderness as defined by the 1985 Forest Plan. Considering that the current annual harvest is based upon 249,000 suitable acres of which approximately half are in the roadless areas, and

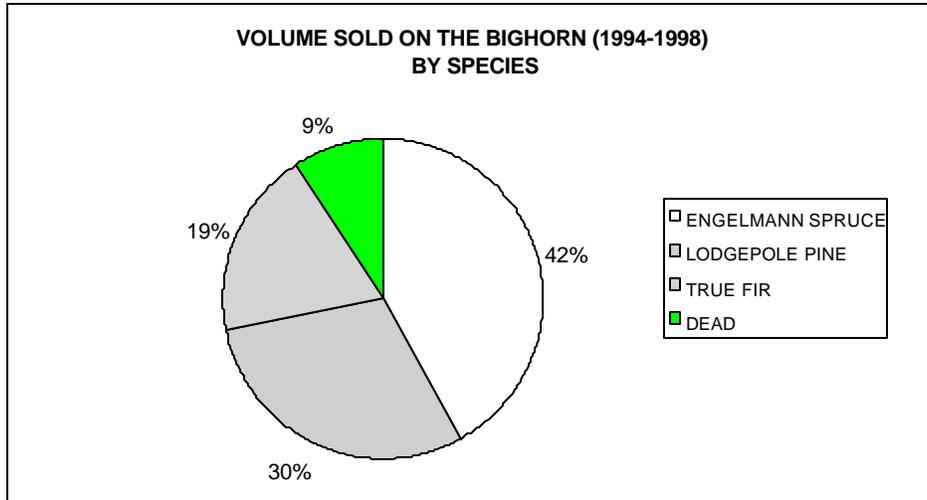
that timber harvesting in the past has been concentrated in the 50% with roads, a removal of the timber base from the roadless areas could significantly impact future timber harvesting.

Albeit minor, the second factor affecting the timber program is the Endangered Species Act and habitat requirements. The Canadian Lynx, if listed, could have a long-term effect on future management plans. Similarly, elk hiding cover and adjacency issues regarding elk habitat may also pose problems to the timber program. As public timber supplies decline, an increasing amount of stumpage is being offered by private landowners adjacent to federal lands, thus negatively affecting elk habitat and Forest Service management.

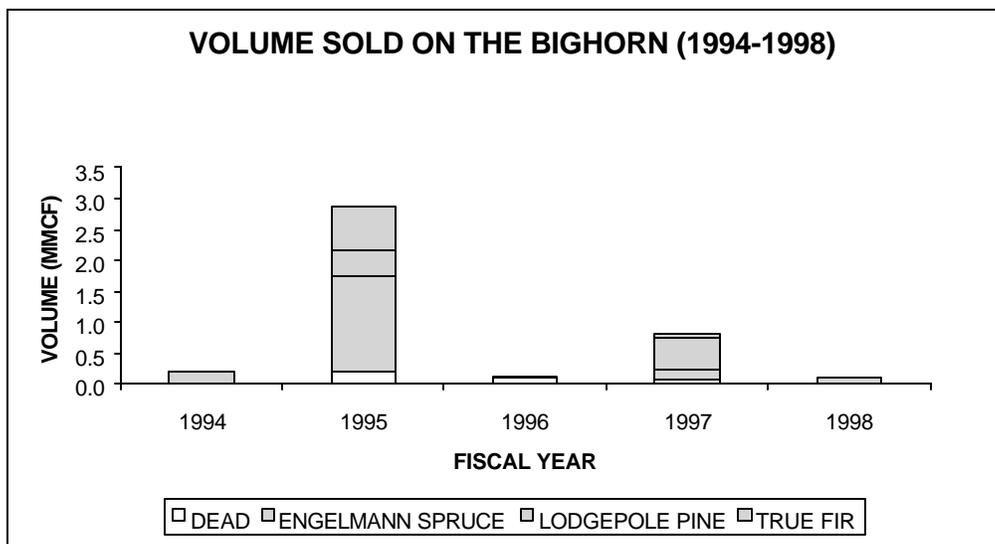
The following charts summarize the Bighorn National Forest timber program from 1994 through 1998. Volume sold by species indicates the majority was Englemann spruce and lodgepole pine (2.9 MMCF), with the remainder being true fir and dead timber (1.1 MMCF).



Similarly, Englemann spruce accounts for 42% of the cut, lodgepole pine 30%, true fir 19%, and dead timber 9%.

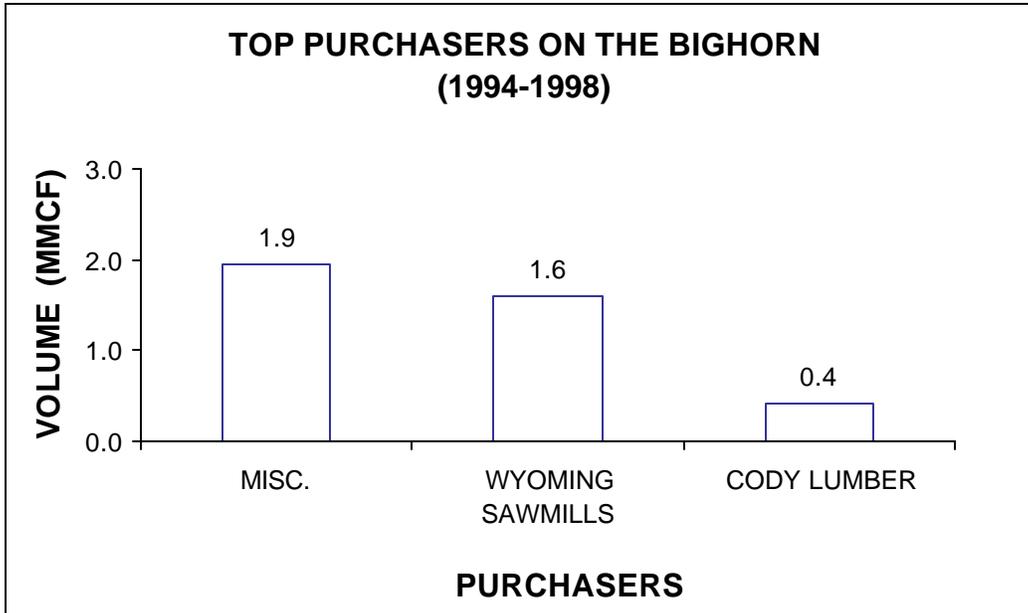


Volume sold on the Bighorn varies substantially over the course of the study years. The total volume for 1994 was 0.19 MMCF. Volume for 1995, was the highest given substantial harvests of Englemann spruce and true fir, at 2.9 MMCF. Total harvest for 1996 through 1998 were 0.11, 0.81, and 0.09 MMCF respectively.



Purchasers

The miscellaneous category makes up the majority of purchases on the Bighorn, comprising 1.9 MMCF over the study period. Wyoming Sawmills is the single largest purchaser by volume at 1.6 MMCF from 1994 through 1998 with Cody Lumber at 0.4 MMCF.



Wyoming Sawmills, located in Sheridan, is a single-shift stud mill operating with a 250-mile radius over three states. The mill currently operates at about 24MMBF on a single shift with the ability to double shift. Although species used include 60% ponderosa pine, 30% lodgepole pine and 10% Douglas-fir, the mill was configured to use a species mix of 60% lodgepole pine and 40% Douglas-fir. Supply is 75% private, 10% Forest Service, and 10% tribal, with 5% originating on state lands in Montana and Wyoming. The optimal source of stumpage is thought to be 80% federal and only 10% private, with the remainder coming from state and tribal lands. Of the current sources, 60% is derived from Montana, 20% from Wyoming, and 20% from South Dakota. Products include 80% 2x4s (all grades including finger joints), 10% 2x6s and 10% 1x4s.

With lower volumes from the Bighorn and lower grades of volumes, the mill is experimenting with creative technological applications designed to increase value added to smaller diameter stumpage. Their focus has been innovation with respect to wood products rather than mill upgrades. Currently, they have several grants to develop laminated stud products intended to provide them with a competitive edge by enabling them to convert lower grade timber into premium products. Research is funded by the National Science Foundation in conjunction with Montana State University in Bozeman.



Wyoming Sawmills states that they have been affected by the global economy and increased competition from Europe, Russia and Canada. Prices continue to increase and markets are becoming more volatile. The mill, however, has a comparative advantage in that demand has increased for products produced from local, slow-grown wood with tight grain. Such products are typically stronger and offer more stability.

Cody Lumber Inc. located in northwest Wyoming is a relatively labor-intensive random length board mill set up to run approximately five MMBF/year. The mill operates on a single shift, with a supply radius of about 200 miles. Species used include a combination of 70% lodgepole pine and Englemann spruce, and 30% Douglas-fir to produce 75% one-inch boards and 25% framing lumber. Sources of input are 70-80% private, with 10% from the Forest Service, and the remainder from BLM and other sources. Of that supply, approximately 95% originates in Wyoming and five percent in Montana. The mill expects supply sources to change in the future, with Forest Service stumpage sources approaching zero and private sources making up the difference. This is a difficult position for the mill given that private sources are not viewed as sustainable, they will not be protected by the SBA set-aside program, and competition for private stumpage is increasing as Wyoming mills increase their radius of operations.

Volatile product markets related to changes in the global economy have added to uncertainty



regarding the future. Prior to the Asian crisis, Cody Lumber shipped products primarily to the eastern seaboard. Those markets, however, are currently being served by increasing imports from Europe. Currently, Cody Lumber markets its products in the intermountain west region and Texas. Other changes in the market include increased demands for tongue and groove boards, and specialty products. Cody Lumber has also experimented with diversification including the use of cottonwood. They note that general prices have risen

over the past five years and continue to be volatile. Cody Lumber has invested in few technological improvements given uncertainty regarding the future supply of federal timber.

Black Hills (Wyoming Only)

The Black Hills National Forest has a timber history of over 100 years and was the location of the first timber sale in the National Forest System known as Case No. 1. The Forest has a reputation of sound forest management with a highly visible tourist industry. As evidence of this, historical documentation indicates that the timber inventory has increased over time. We describe the current program in detail below.

Sale Program

The Black Hills National Forest revised its forest management plan in 1997. Major considerations focused on providing diverse habitat, maintaining soil and water quality, sustaining commodity uses, scenic quality and recreation, as well as working cooperatively with neighbors to provide customer service and to promote rural development. Promoting financial efficiency was also a concern. The Revised Forest Plan is currently being adjusted as directed in the Washington Office appeal decision. No timber has been offered for sale since October '99. The Forest Service is taking a conservative approach to land management with a strong emphasis on habitat needs. This will be accomplished through extended rotations and reduced timber harvests. This direction will remain in place until the Forest completes a comprehensive adjustment to the forest plan.

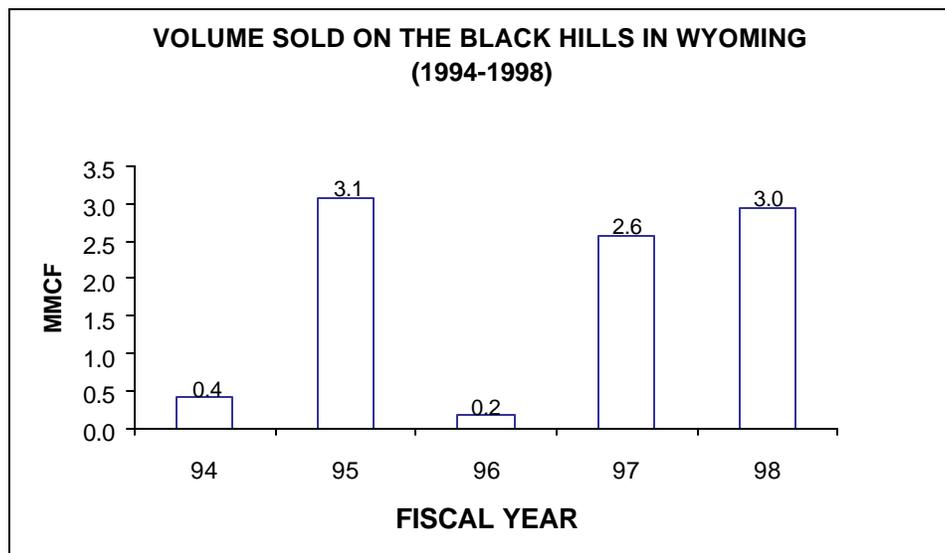
Throughout its existence, over five billion board feet have been harvested while having a total standing timber inventory of the same amount. Timber management has been primarily even-

aged where commercial thin, seed cut and overstory removals have been the preferred silvicultural tools. However, a stronger focus on wildlife, water, soil, stand diversity and habitat requirements is narrowing silvicultural opportunities and practices, which in turn is affecting the timber program. The result will likely be a reduction in future timber output. Issues affecting the timber supply include minimum requirements for habitat and species diversity, age, and multiple-use management.

Another important factor for the Black Hills is timber appeals and litigation; both add to the time and cost of implementing timber sales. Currently, all timber sales are appealed and there are four in litigation. The appeal points generally focus on wildlife habitat needs, particularly for the northern goshawk and other cavity nesting birds, deer and elk, and to a lesser extent endangered species.

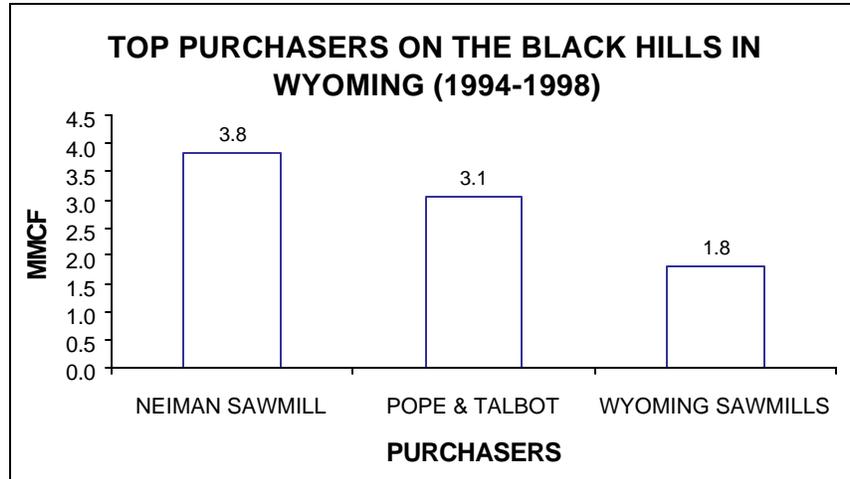
Finally, the roadless area initiative will not significantly affect the timber program. The Black Hills has a relatively small amount of roadless area, although, within the existing roadless areas, silvicultural needs will not be met. This will likely result in mountain pine beetle infestations, fire and timber stagnation. Currently, there is escalating concern of mountain pine beetle attack primarily in the northern hills. This problem is exacerbated by political pressure for treatment due to mixed ownership, visual quality and commodity use.

Volume sold between 1994-1998 on the Black Hills for Wyoming has been volatile reaching a low of 0.2 MMCF in fiscal year 1996, and a high of 3.1 MMCF in 1995. All volume is ponderosa pine.



Purchasers

Top purchasers between 1994-1998 include Neiman Sawmill at 3.8 MMCF, Pope and Talbot at 3.1 MMCF and Wyoming Sawmills at 1.8 MMCF. The processors are detailed below.



Devils Tower Forest Products (DTFP) is a corporation owned by the Neiman family. According to the current mission statement, the corporation is dedicated to its employees, customers and to reaching a level of success that will ensure a long-term future. Neiman owns the DTFP, Rushmore Forest Products (RFP) in Hill City, SD and a remanufacturing plant in Sturgis, SD. RFP, formerly "Continental," was purchased by Neiman in the last two years. Neiman has made significant upgrades in the form of capital improvements to the mill. Upon completion of the restructuring, the mill is expected to increase processing from about 18MMBF to 26-30MMBF log input annually. RFP is a dimension mill designed to produce 2x4, 6 and 8, 1x4, 6 and five quarter decking. The Hill City location is especially well situated for Forest Service supplies and to work in tandem with



DTFP which specializes in grade products. To process most efficiently, all logs are sorted by diameter with the larger logs routed to DTFP and the smaller diameter logs, more suitable for dimension products, are routed to RFP. Such routing affects the processing data and volumes for both mills. Because the mills are managed in tandem, logs processed at Hulett, may have originated from another state. Note that on the hauling zone map (above) the green quarter circle depicting DTFP for Wyoming could be extended as a circle into adjacent states to complete the haul zone for DTFP. The following data on DTFP are presented in that context and in the context of RFP.

DTFP is a grade mill that reports producing approximately 40% shop industrials, 35% 4x4 boards 15% random edge decking and 10% dimension lumber. Of DTFP's input sources, only 20% come from Wyoming while 78% come from SD and minor amounts from Montana. Sources of input by land ownership show the Forest Service as the primary supplier with 64% of the volume, private sources supply 29%, and State of Wyoming sources just seven percent.

Neiman has aggressively managed DTFP for long-term profitability consistently positioning the Neiman corporation for future survival during difficult and dynamic times. By aggressively identifying product niches, focusing on them and by keeping his mills equipped with state-of-the-art technology, the corporation and DTFP have been successful. Here we mention what we view as some key considerations for the future. Because of the broad product mix and long-term contracts for specialty products, for a small business specializing in forest products, Neiman is

well diversified in the product markets. Neiman mills have access to both commodity and special product markets. Secondly, Neiman and DTFP are particularly well suited to purchasing and milling Forest Service timber. The DTFP mill relies heavily on Forest Service timber (64%). Neiman mills also enjoy important protection by the SBA program and the location of RFP is particularly advantageous to Forest Service timber. The key concern, in our view, is the future uncertainty of the Black Hills timber program. To this end, Neiman has consistently been acquiring private ranches with the purpose of managing them for timber, hunting (fishing) and grazing. Private ownership of timber in Wyoming is concentrated within the DTFP haul zone. Nevertheless, we view Neiman's high percentage of Forest Service timber as an important consideration to the long-term viability of the mills.

Pope and Talbot

Pope and Talbot is in the process of closing its mill at Newcastle that it has operated for a little over 10 years. The sawmill is expected to close July 7, 2000 and then to be auctioned. This mill is configured to process one and two inch material with an annual log input volume of about 22 MMBF. Historically it has processed about 60% dimension and 40% board volume. Recent sources of volume have been 40% Forest Service, 35% private and five percent state and five percent Bureau of Land Management. About 65% of this volume has come from Wyoming and 35% from South Dakota. The mill is of relatively old technology lacking technological efficiency and product focus.

Bridger-Teton

The Bridger-Teton National Forest is composed of the Bridger and Teton National Forests. The Bridger National Forest is divided into eastern and western divisions along the west slope of the continental divide and the crest of the Wind River Mountains. Seven of the 10 largest glaciers remaining in the contiguous United States are found in these mountains and recreation opportunities, including backpacking, rock climbing, fishing, hunting and other outdoor activities, are abundant. The Teton National Forest lies to the north of the Bridger National Forest, and is also heavily used for recreation. Currently, the highway follows the route of early explorers, making the forest accessible to many visitors during all seasons. There are numerous areas to explore via cross-country ski and snowmobile, as well as two developed ski areas. Overall, recreation use on the Bridger-Teton National Forest is significantly impacting the timber program and extraction of other resources such as oil and gas.

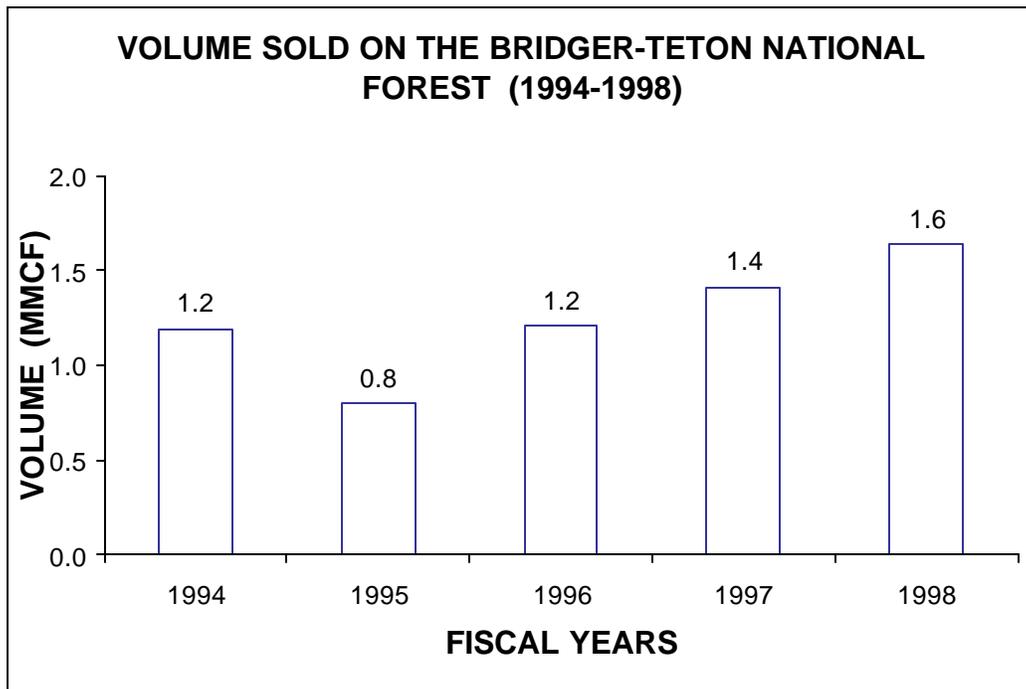
Sale Program

The timber program on the Bridger-Teton National Forest is controversial and continues to come under attack from special interest groups as a result of the many demands being made on scarce natural resources. There is continued debate over the highest priority use and currently greater emphasis is being placed on increased recreation and provision of wildlife habitat in lieu of providing commodity products for surrounding sawmills. Although the emphasis is not timber production, timber removal will continue for the purpose of manipulating vegetation for forest health, fuels reduction, watershed maintenance, and wildlife habitat needs. The Forest Plan for the Bridger-Teton is scheduled to be revised in 2005.

Adding to the complexity of the timber program and reduced effective supply, is the increasing need to collaborate with all interested publics and agencies to accomplish objectives and meet NEPA requirements. The main issue includes addressing the habitat needs of existing and new sensitive and/or threatened plant and animal species. Notwithstanding, almost all sales over approximately 100 MBF, or that contain live trees, are expected to be challenged by appeal or threatened with litigation.

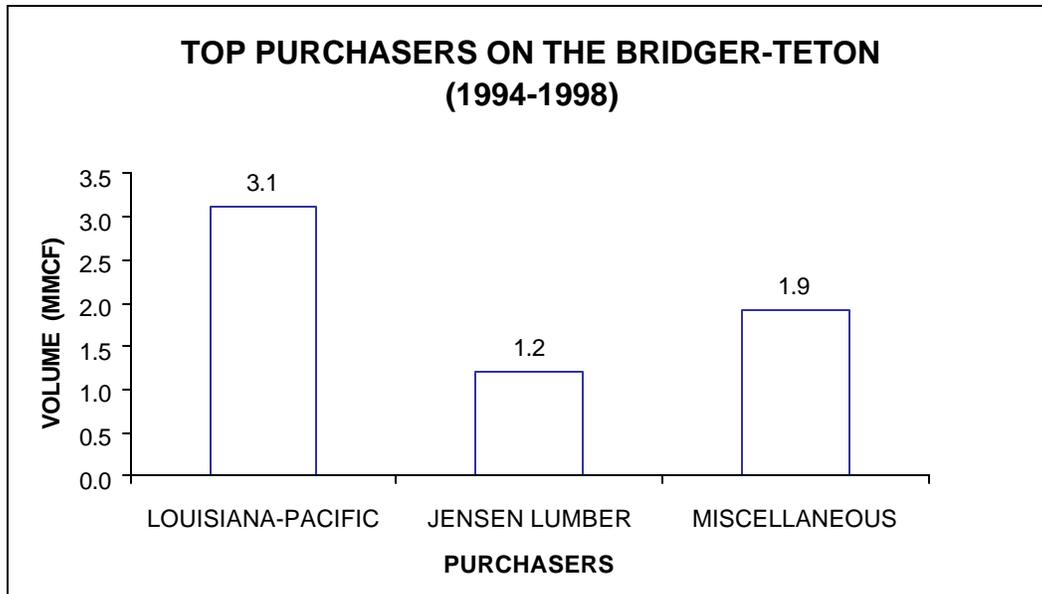
Another factor that will lead to a substantial reduction in timber volume is the roadless initiative. The Bridger-Teton National Forest has a large roadless area which will reduce the available future timber supply. This will likely lead to a deterioration of forest health as a result of the relatively old age structure of the majority of timber stands, and the increased likelihood of insect and disease activity, and the occurrence of catastrophic wildfire.

Although future supply is expected to decrease, sales records indicate a rise in volume between 1994-1998. The minimum volume was sold in 1995 at 0.8 MMCF, whereas the maximum volume was 1.6 MMCF in 1998.



Purchasers

There are two major individual purchasers of stumpage on the Bridger-Teton; Louisiana-Pacific and Jensen Lumber with the remainder composed of miscellaneous smaller purchasers.



Wyoming Wood Products, (WWP) a Hickerson family owned and operated mill, is the key processor in the Lander/Dubois area and is configured to process about three MMBF annually. The mill is an intensive one-shift operation that procures all Wyoming timber from approximately a 200-mile radius. Over the last two years this mill has processed one to two MMBF per year obtaining 70% volume primarily from state lands, 20% Forest Service sales, and 10% private sales. This volume comprises 15% sub-alpine fir, 10% Englemann spruce, 74% lodgepole pine and about 4% aspen. The volume is processed into a wide range of products including precut logs (house logs), decking, paneling, and boards (1x4s and 1x6s up to 8 feet long). All house logs originate from dead spruce or lodgepole pine. WWP had made recent capital investments in more efficiently processing small diameter stock.

Future procurement of volume is expected to come predominantly from state lands, private sources and the Forest Service. Like many of the mills in this study, WWP has survived Forest Service sale declines by increasingly contracting with state and private sources. The mill is also positioned to process volume from the Fort Washakie Reservation depending upon availability.

Although the wholesale market was affected by the Asian crisis, the local retail product market remained strong. WWP produces high quality 8-foot 1x4s which are remanufactured in Portland, OR into high grade paneling.

Medicine Bow

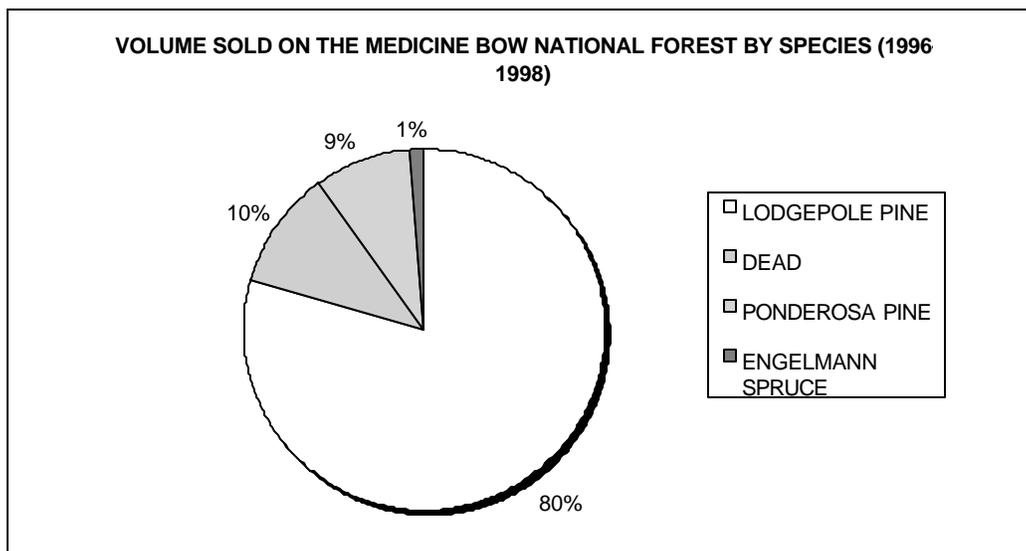
The Medicine Bow and Routt National Forests, with the Thunder Basin National Grassland encompass three million acres in Wyoming and Colorado. Although the national forest lands are contiguous, the Medicine Bow is located in Wyoming whereas the Routt is located in Colorado. Our analysis focuses on only the Medicine Bow.

Sale Program

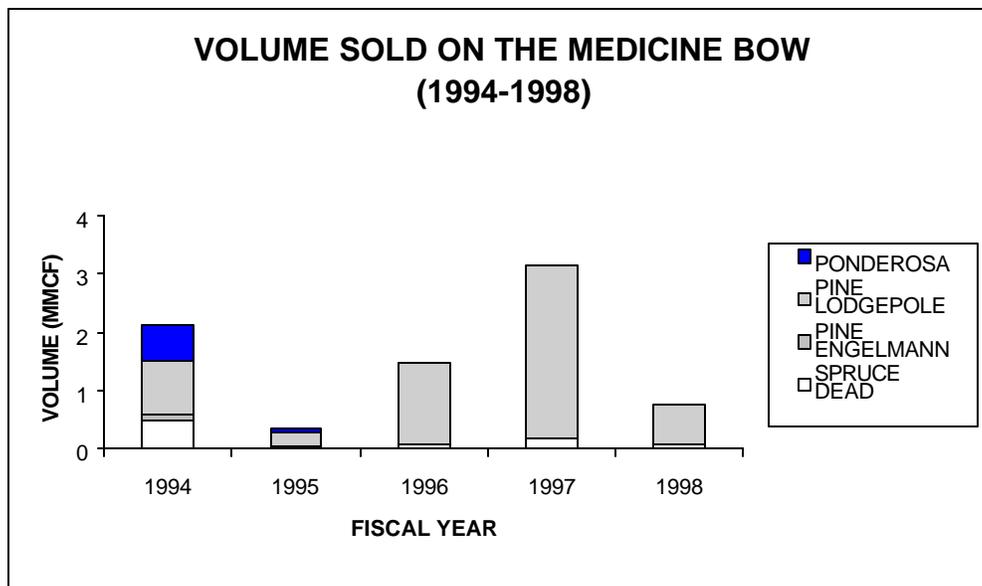
The Medicine Bow National Forest sold an average of approximately 17 MMBF each year over the study period. However, this figure is lower than the targeted ASQ and will likely be reduced in the future as a result of economic factors affecting potential purchasers, the roadless initiative, and the presence of threatened and endangered species. The 1985 forest plan is now under revision and is expected to be finalized in December 2001. Revisions will tentatively focus on roadless areas and evaluation, biological diversity, timber allocation and management, recreation, wild and scenic rivers, and oil and gas leasing. Because scoping is still in progress, other pertinent issues may be added to this list.

Several factors have the potential to negatively impact the timber program on the Medicine Bow. First, species mix and sale quality. Recently there have been sales not bid upon as a result of mixed species and lower average volume per acre. Such sales are a combination of lower grade material (POL) and saw timber which makes it difficult for purchasers who specialize in one or the other to market. Furthermore, historical silvicultural practices have resulted in smaller diameter and therefore, less desirable saw timber making proposed timber sales relatively unattractive. Second, the road moratorium which expires in June 2000 also has the potential to greatly reduce timber sales on the Medicine Bow. Under the existing forest plan, there are sales planned for areas which may be permanently designated as roadless. If the roadless area initiative is finalized in favor of wilderness-type areas, such sales will be abandoned further reducing the ASQ. Finally, threatened and endangered species such as the Canadian Lynx, which is pending listing, and the wolverine have the potential to restrict silvicultural activities in timbered areas, particularly for the use of pre-commercial thinning. If these species are listed they will reduce the number of effective acres available for timber management and harvest.

The following charts summarize volume sold, species, and purchasers for the Medicine Bow National Forest. Between 1994-1998 lodgepole pine was the predominant species at approximately 6.3 MMCF which constitutes 80% of the volume in the same time period. Dead, ponderosa pine and Englemann spruce sales were all under 1 MMCF making up the final 20% of sales.

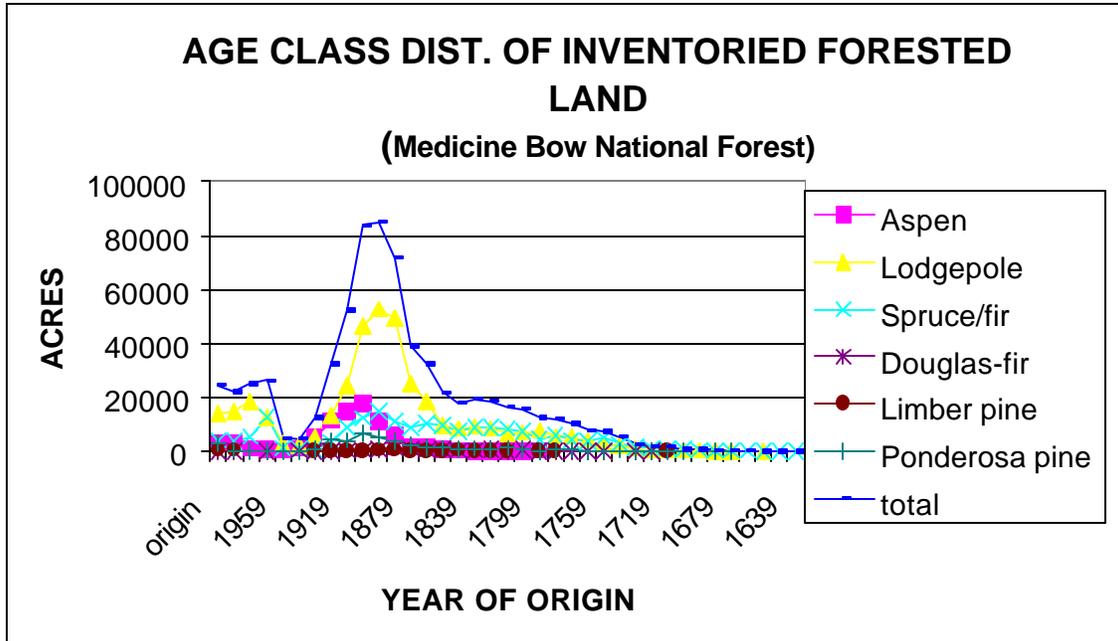


Volume sold on the forest ranges from a low of 0.3 MMCF in 1995 to a high of 3.2 MMCF in 1997 where the primary species is lodgepole pine.



There is an expected spruce beetle epidemic resulting from a windthrow event October 25th, 1997 known as the Routt Divide blowdown. Consequently, record populations of beetles were recorded the summer of 1999. Although the beetles thrive on downed trees, once populations reach epidemic levels they begin to attack standing live trees which they eventually kill. And, although this area is in Colorado, there are pockets of susceptible timber near the border which may exacerbate the infestation leading to mortality and increased fuel loading.

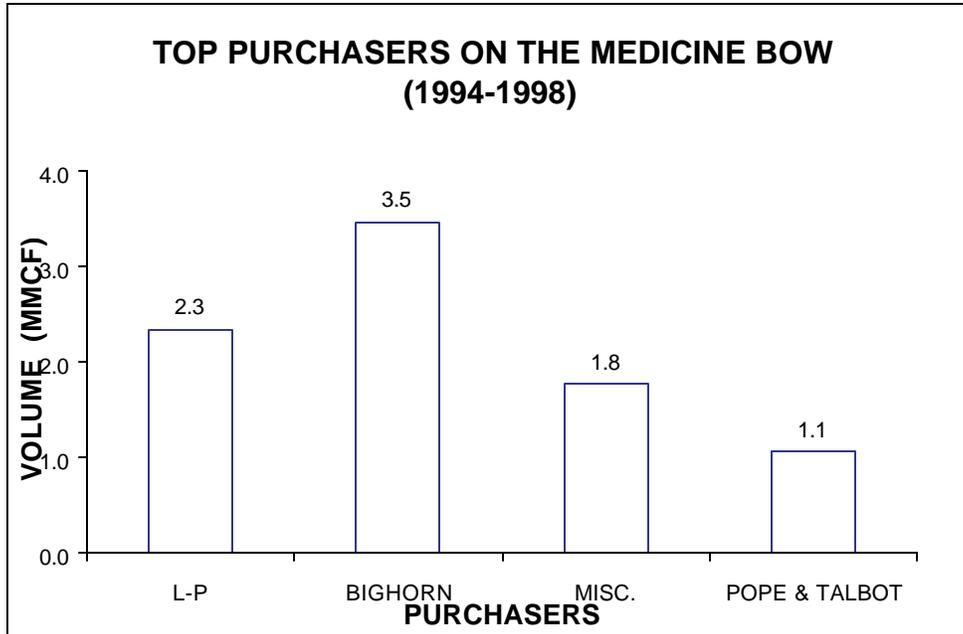
Another important forest health issue is age class. Inventory analysis has shown that approximately 50% of stands on the Medicine Bow originated between 1860 and 1920 as illustrated in the following chart.



Based on growing conditions and species, average growth is expected to culminate in 40-50 years, after which average growth and vitality will begin to diminish. Although stands are relatively healthy at the present time, there is concern that without vigorous timber management, these stands will succumb to mountain pine beetle and spruce beetle infestations. Such insect problems may then lead to increased fire hazard and the risk of catastrophic stand replacing fires.

Purchasers

The purchasers are in order of volume, Louisiana-Pacific, Big Horn Lumber and Pope and Talbot. There are several smaller purchasers that make up the miscellaneous category which accounts for the third most volume between 1994-1998. We provide a summary of L-P and Big Horn below.



Louisiana-Pacific Corporation (L-P) purchased its Saratoga, Wyoming sawmill in 1983 from Edward Hines Lumber Company. The mill presently produces approximately 85% 2x4s and 8% 2x6s in eight- and nine-foot lengths, as well as 25% 1x4, and 2% 2x3 lumber. The mill is currently configured to process approximately 53 MMBF on one shift per year. Stumpage is purchased primarily from the Forest service (50%), and the private sector (45%). Only 5% of L-P's stumpage originates on state lands, although the Forest Service is the primary



source for stumpage. L-P's market area has been expanding and is expected to continue this trend, particularly given expected increases in private supply. Currently 25% of the Forest Service stumpage originates in central and southern Wyoming, 60% in Colorado, 10% in Utah, and 5% in Idaho. With respect to private supplies, 60% comes from Colorado and 40% from Wyoming. Species used include ponderosa pine, lodgepole pine, Englemann spruce, sub-alpine fir, and Douglas-fir.

The company has recently invested in several technological upgrades to the Saratoga mill including installation of an electrostatic precipitation unit for the boiler, an additional dry kiln and upgrades of the two existing kilns, a new planer with sorting system and upgrades in optimization in the sawmill. L-P is planning more upgrades in the future including a \$12M investment over the next 2-3 years to the planing operation and the sawmill. Currently they can plane all products except the 1x4 material. They intend to add a second shift by the fall of 2000 and have currently expanded to 6-10 hour shifts per week which may be accompanied by an increase in the procurement radius from 300 to 500 miles. L-P states that their long-term viability in the industry will depend on technological upgrades.

The success of the stud mill at Saratoga depends on the versatility of the resource. Whereas some competitors are structured to take only one to two species, L-P is able to accept three to five different species, enabling them to work well with multi-species sales which are

characteristic of private holdings: approximately 75% of timber tracts are multi-species. At this time, they have not pursued additional volumes of ponderosa pine because it makes for a lower margin stud product. This is confirmed as we observed no purchases of Forest Service sales over the five year study period on the Black Hills National Forest.

Home Depot provides a very important market for L-P's dimension lumber. L-P annually arranges long-term product contracts with Home Depot for sale of dimension lumber. These contracts ensure that L-P can move product with much more reliability and price certainty than previously where they had to work the volatile spot market for lumber. Further, with Home Depot's interest in the sale of green certified lumber products, suppliers like L-P have a direct incentive to qualify as green suppliers. Home Depot's literature suggests that their interest in green certification is strong and is integrated into a large and progressive environmental program. For example, their current web site states: "The Home Depot was the first home improvement retailer to pioneer the U.S. market for wood products certified under the principles of the Forest Stewardship Council (FSC). Our Timber Task Force is continually striving for improvements in forest management practices." (Source: <http://www.homedepot.com>).

L-P Saratoga ships most of its lumber to the eastern and southern regions of the United States. As with many other modern sawmill facilities, the chips, bark and shavings are no longer stockpiled, but are sold in bulk form to other companies. L-P dimension lumber is desirable in the eastern and southern United States because of desirable building qualities. Further, L-P has a competitive advantage with lower grade material because of their flexibility in product mix and their ability to operate the Olathe waferwood mill in conjunction with the Saratoga stud mill.

Within the last five years, L-P has experienced a decrease in product prices due primarily to increased imports from the world and particularly Canada. This is confirmed by our lumber price index charts (both national and local) and import analysis in earlier sections of this report. They expect that as world markets recover, prices will continue to increase enabling L-P to pursue advanced harvest techniques including helicopter and skyline logging thus increasing available supply in some sectors where logging was not previously feasible. Profitability will continue to increase with the addition of another shift in the fall of 2000 and L-P will have a clear advantage over other mills as prices rise and public sale levels fall. For a more developed analysis of these and other economic effects regarding L-P see the section at the end of this report on industry consolidation.

Big Horn Lumber Co. located in Laramie, has been owned by Cook Lumber of Fort Collins, CO since 1971. Sawing mostly Englemann spruce and lodgepole pine, Big Horn Lumber



produces planed, kiln dried, graded 30% 1x4, 30% 1x6, 30% 1x8 and 10% 2x4 inch boards. Their production varies depending primarily on the quality and volume of timber available, as well as product markets and seasonal fluctuations in demand. Species mix is approximately 60-70% lodgepole pine, 20% Englemann spruce, and less than 10% sub-alpine fir. Residual chips, shavings, and sawdust are sold in bags. Annual mill volume is approximately 15 MMBF based on a single shift with some overtime. However, the actual volume is significantly lower due to defects. Currently, Big Horn purchases approximately 60-70% from the USDA Forest

Service, 10-20% from State lands, and 10-20% from private lands. All volume purchased was from Wyoming and Colorado.

Timber supply from the Forest Service has been declining in recent years due to the decreased quality and size of timber being sold. Although Big Horn is willing to purchase smaller dimension timber, to be profitable they must produce a significant number of high quality boards. Other problems associated with the decline in Forest Service timber sales can be attributed to relatively high appraisal values, low volumes per acre and the percentage defects with each sale. Although timber sales from Forest Service lands have been decreasing, Big Horn expects to obtain 15 MMBF in the future. The mill has continued to modernize over time, adding dry kilns in 1994, a new small-log system in 1997 and a lumber sorter in 1998. These technological improvements have given Big Horn the ability to increase recovery and to more efficiently handle smaller dimension logs. The technology can be further automated to improve recovery and efficiency. They report no immediate plans for automation.

The Rocky Mountain, mid-eastern and southeastern regions of the country constitute the largest portion of Big Horn Lumber's sales territory. The global market is also having a greater effect on Big Horn, particularly the recent Asian crisis. Three factors are significant: the decrease in Asian demand and increasing competition from imports to the US, depressed prices as a result of increased supply and competition, and the development of long-term product contracts (Big Horn did not have such a contract as of the time of this interview) with prominent retailers such as Home Depot and Lowes. The increased importance of the world market situation has led to greater volatility in prices: prices changes are sharper, faster, and less seasonal.

Shoshone National Forest

Established in 1891 as part of the Yellowstone Timberland Reserve, the Shoshone National Forest consists of 2.4 million acres of varied terrain ranging from sagebrush flats to rugged mountains. With Yellowstone National Park on its western border, the Shoshone encompasses the area from the Montana state line south to Lander, Wyoming, which includes portions of the Absaroka, Wind River, and Beartooth Ranges. The western boundary of the forest south of Yellowstone is the crest of the Continental Divide. Elevations on the Shoshone range from 4,600 feet at the mouth of the Clarks Fork Canyon to 13,804 feet at Gannett Peak. All Yellowstone National Park visitors entering from the east or northeast travel through the forest.

Sale Program

The current Shoshone National Forest Plan was developed in 1986 and will be revised in FY 2000, contingent upon Congressional approval and funding. Plan revision will likely focus on three areas of concern; threatened and endangered species, recreation management, and soil and water issues. In 1994 the Shoshone National Forest drafted an Environmental Impact Statement to revise the allowable sale quantity (ASQ). The proposed alternative resulted in an ASQ of 4.5 MMBF annually, down from 11.2 MMBF annually as stated in the 1986 plan. At that time, it was decided that the new ASQ would stay in effect until the National Forest plan was revised in 2000.

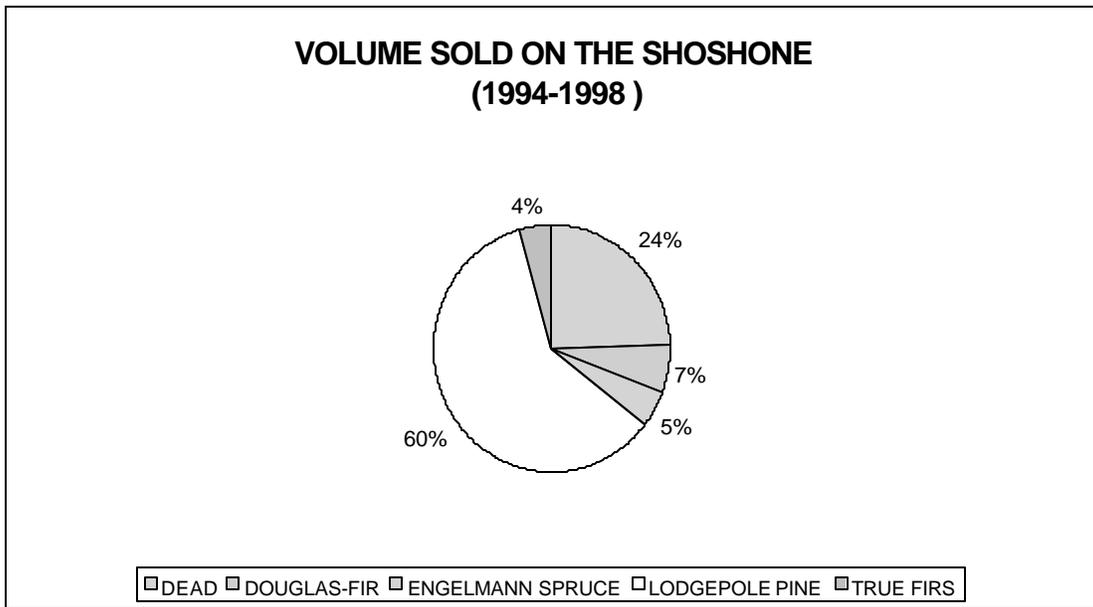
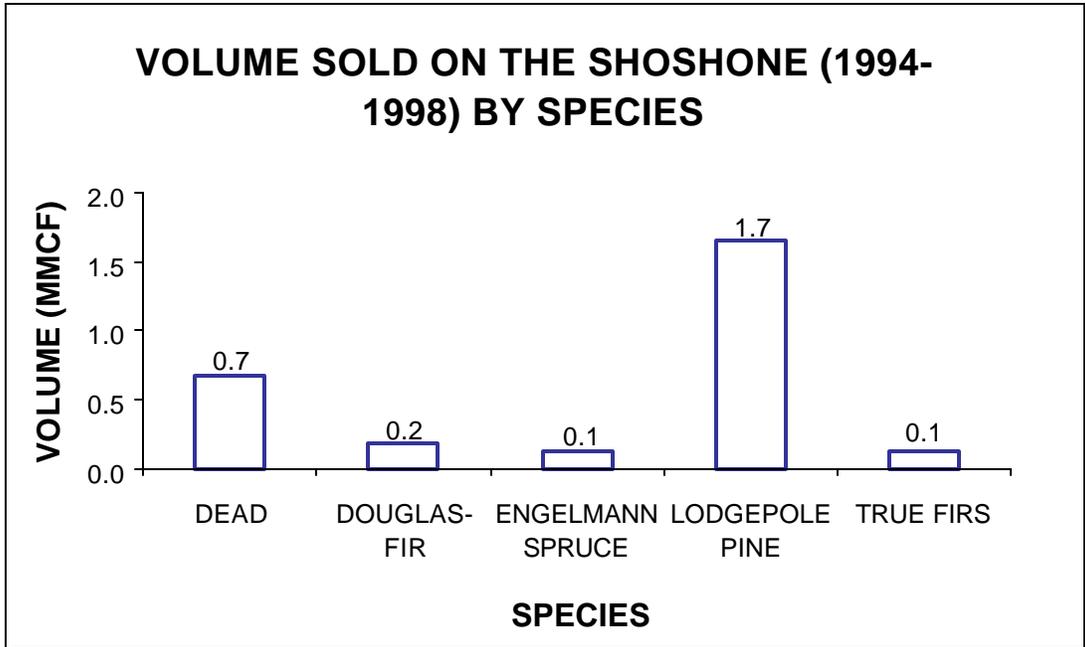
The decision to recalculate the ASQ was a result of three factors. First the 1988 fires burned a significant portion of the timber base. Losses due to fire were 86,000 acres which constituted approximately 10% of the available timber supply. Second, monitoring begun in 1986 indicated

that figures used to calculate the 1986 Forest Plan ASQ may have been overestimated resulting in lower actual timber volume availability. Finally, the forest planning model did not incorporate adequate measures for mitigating damage from timber harvest and road building, further affecting future timber availability. The President's roadless initiative will also significantly affect future harvesting. Although specific figures are not currently available, it is estimated that approximately 60% or approximately 40,000 acres of timbered lands will be affected. .

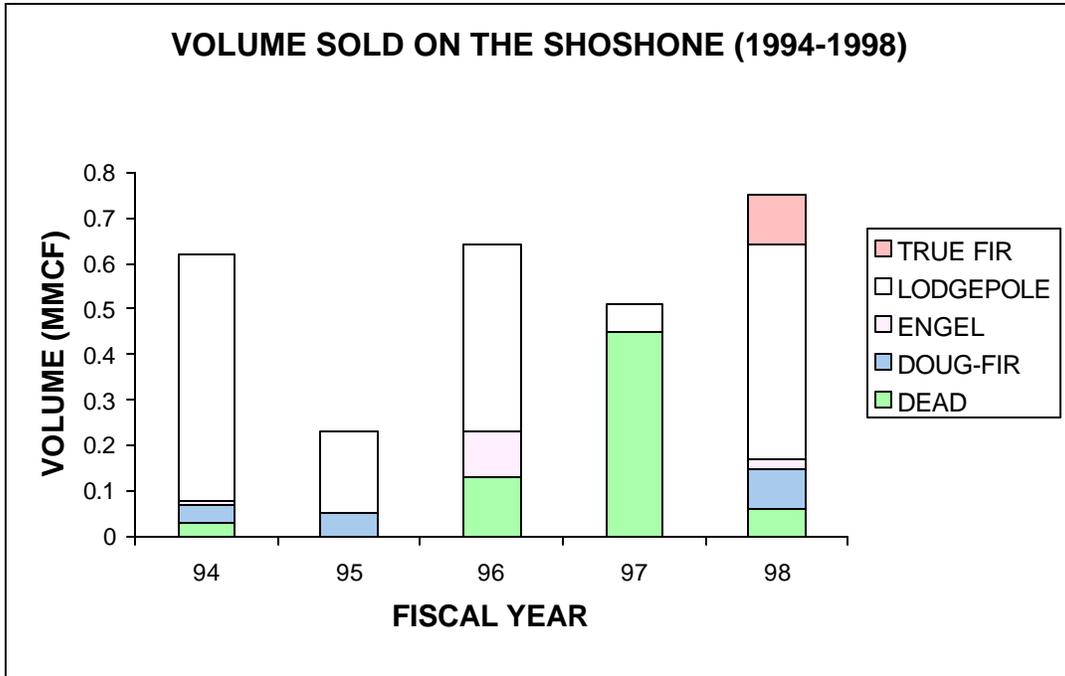
In evaluating the main issues, revision of the ASQ and cumulative effects, the Forest Service also took into account economic and social effects, and resource issues. Their analysis revealed that although the timber industry was important in providing economic and social diversity to Wyoming, loss of timber harvesting would affect only 0.3 % of the total local economy (USDA 1994).

Additional issues affecting the timber program include timber sale appeals, threatened and endangered species, and forest health issues. Currently all timber sales are appealed primarily based on Forest Service procedures, but none are in litigation. Second, threatened and endangered species such as the grizzly bear, and potential listing of the lynx and cutthroat trout, are restricting available silvicultural opportunities. For example, listing of the grizzly bear prior to 1988 has resulted in restricted winter harvesting with respect to types of harvest operations and entry times. Finally, based on aerial observations, forest health issues are affecting approximately 30,000 acres, particularly along scenic corridors. Problems include Douglas-fir beetle and spruce beetle infestations, and, white pine blister rust. Recreation and scenic corridors are difficult to manage for insects and pathogens, due to the public's opposition to harvesting in these visually sensitive areas.

Although the Shoshone National Forest includes 2.4 million acres, only 86,000 acres are available for timber production, and of that, less than 0.2% is commercially available. Timber volumes sold on the Shoshone between 1994 and 1998 show lodgepole pine to be the predominant species at 1.7 MMCF which is 60% of the total volume. Dead timber is next at 0.7 MMCF which constitutes 24% of total volume. The remaining categories are Douglas-fir, Englemann spruce and true firs at approximately 0.4 MMCF and 16%.



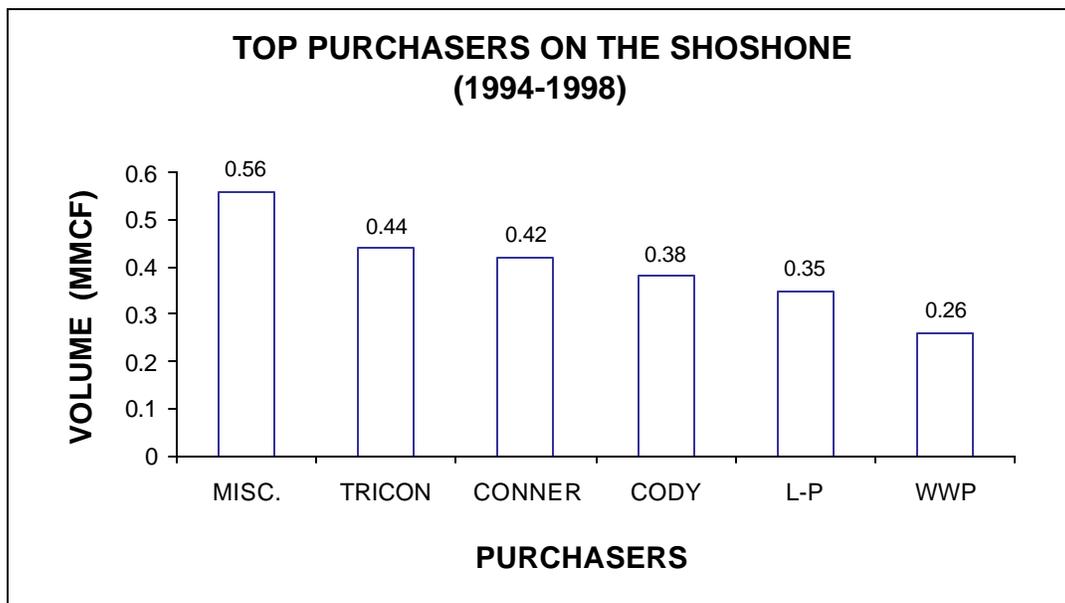
Total volume sold during 1994-1998 ranges between a low of 0.23 MMCF in 1995 and a high of 0.73 MMCF in 1998.



Sales by purchasers are described in the next section with a detailed account of the major purchasers for the forest.

Purchasers

Top purchasers on the Shoshone include Tricon, Conner, Cody, L-P and WWP as illustrated below.



Note that all of the volumes shown in the top purchaser chart are minimal reflecting the pie chart shown earlier in which the Shoshone has only supplied about eight percent of the volume in the Wyoming National Forests. Except for Tricon and Conner, neither of which are located in Wyoming, each of the top purchasers shown in the chart are described under another national forest. Even so, we note that the Shoshone has historically been a key supplier to Cody Lumber and plays a potentially crucial role in this mill's financial viability. **Cody Lumber Inc.** has purchased about the same amount of volume from the Bighorn National Forest over the study period. Please see the Cody Lumber Inc. write-up under the Bighorn National Forest section of this report.

Tricon is located at St. Regis, MT and is a highly capitalized mill designed to process small diameter lodgepole pine. The volume identified in the chart was reported to have been sold to L-P. Conner Lumber, (Mike Conner) is a contract logger from Montana who most likely sold this volume to another mill.

Wasatch-Cache

Wasatch-Cache National Forest lands are located in three major areas: The northern and western slopes of the Uinta Mountains, the Wasatch Front from Lone Peak north to the Idaho border including the Wasatch, Monte Cristo, and Bear River Ranges, and The Stansbury Range, in the Great Basin. The Forest boundary encompasses approximately two million acres of which approximately 1.2 million acres are National Forest land. Timber, water, forage, wildlife and recreational opportunities are managed by the Forest Service to ensure sustained ecosystem health, using the methods best suited to protect the natural beauty of the area.

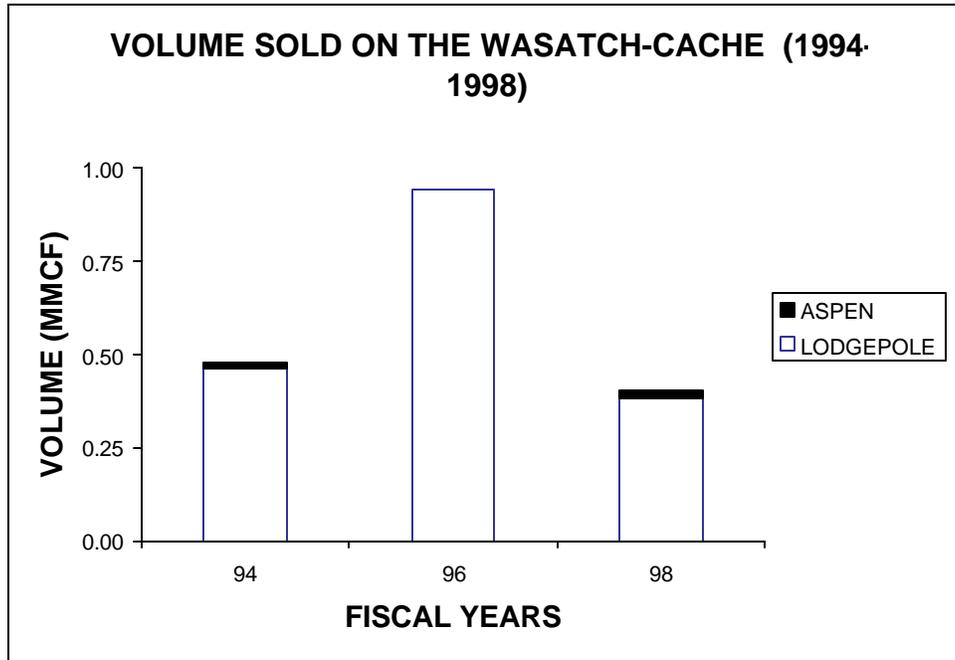
The forest is currently undergoing a process to evaluate the roadless area initiative which will consist of three major steps: inventory analysis, evaluation, and recommendations for future use. Roadless areas of greater than 5,000 acres will be evaluated for potential wilderness designation. Evaluation will be based on an area's production capability and use, and relative value. The Wasatch-Cache National Forest has most recently identified 577,914 acres in roadless areas which will significantly affect the future of the timber program.

The Wasatch-Cache National Forest is revising its Forest Plan which is expected to be finished by December 2000. Under the existing plan, the initial ASQ was estimated at 16 MMBF. However, after analysis and consideration of the pine beetle epidemic, that figure was reduced to 14 MMBF. Further analysis and compliance with standards and guidelines reduced the ASQ to 7.5 MMBF. Although the timber program is relatively small, this is a significant decrease that has affected local and regional purchasers. Under the current plan revision, the Forest Service must consider the roadless area initiative which is expected to reduce the ASQ to between 4-5 MMBF, of which 250,000-300,000 MBF is firewood and smaller diameter timber. Although the Endangered Species Act (ESA) has significantly affected timber programs on other forests, the ESA with respect to listing of the Canadian Lynx is not expected to have a significant effect on logging.

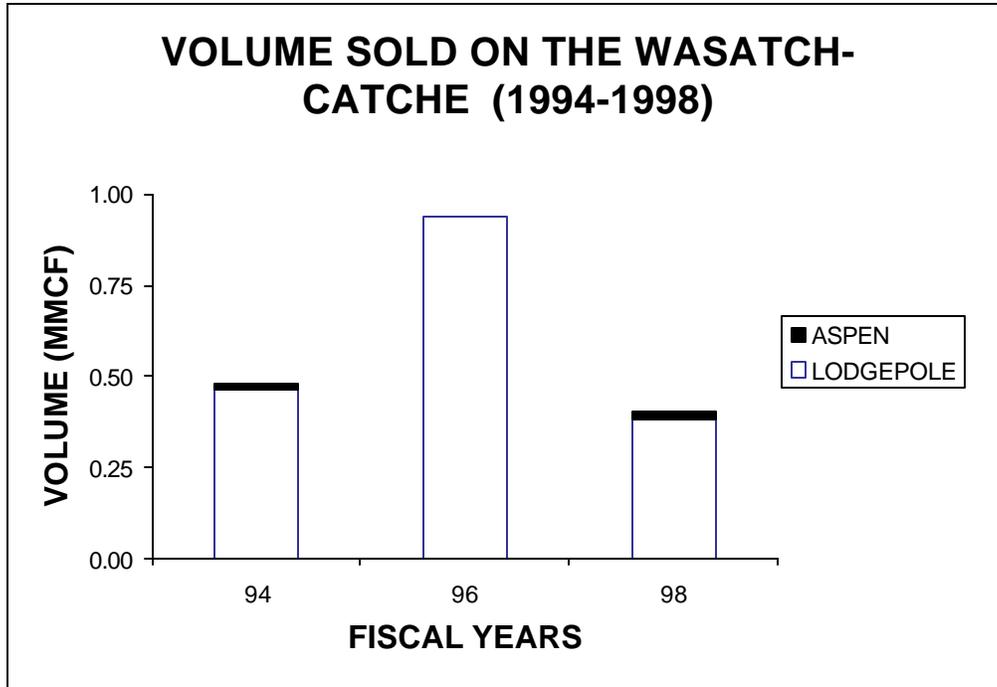
The lead time for timber sales on the WC often takes two years. Given careful consideration of the NEPA process, timber sales are usually all appealed based on wide-ranging issues. Notwithstanding minor adjustments, the Forest Service has avoided litigation on each sale.

Sale Program

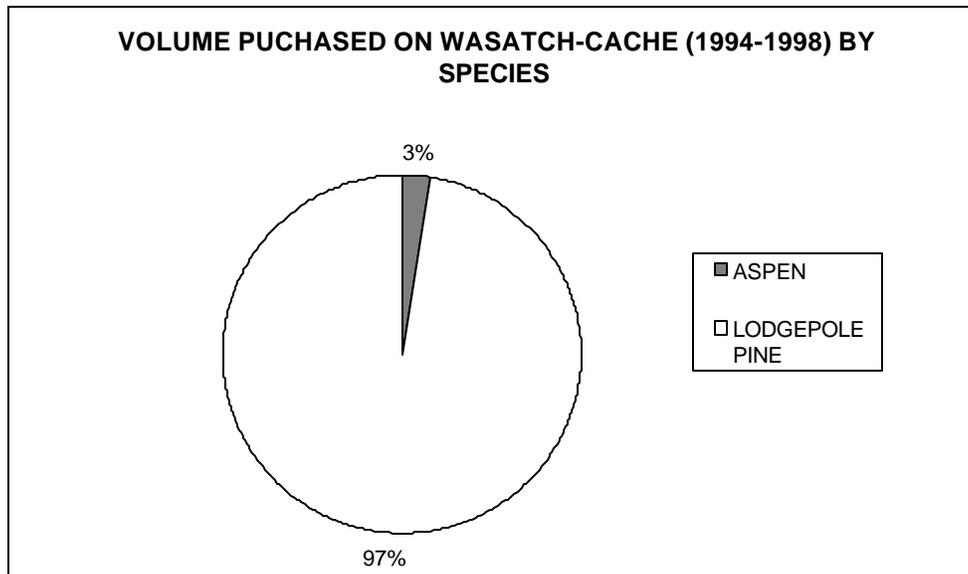
Volume sold on the Wasatch-Cache in Wyoming includes fiscal years 94, 96, and 98. Volume for those years are 482 MCF, 941 MCF and 406 MCF respectively. Although the predominant species is lodgepole pine, aspen sales accounted for 43 MCF in 94 and 98.



Volume purchased between fiscal years 1994 and 1998 amounted to 0.042 MMCF of aspen, and 1.62 MMCF of lodgepole pine.

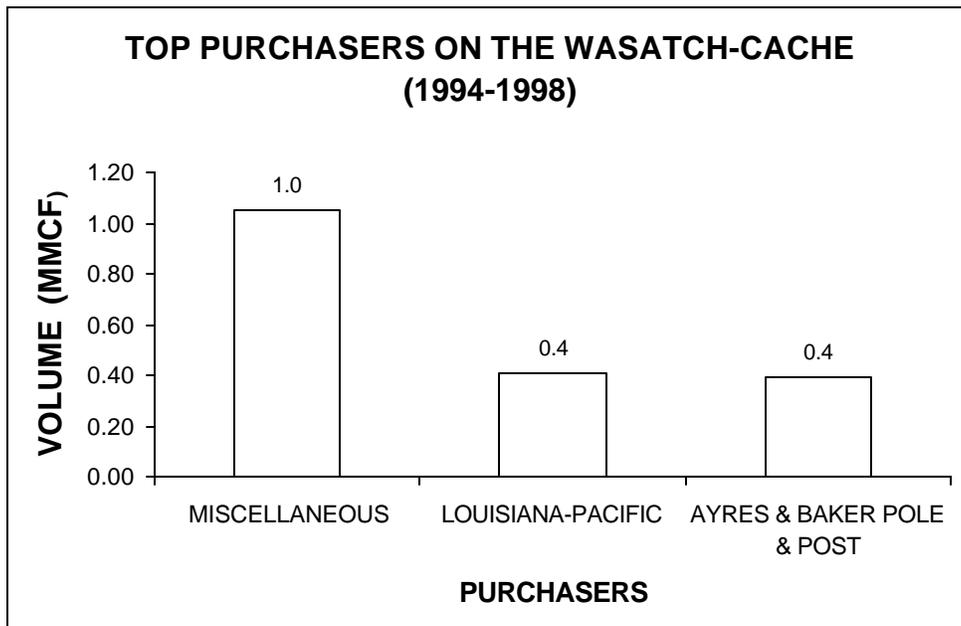


As a percentage, lodgepole pine made up 97% of the volume, whereas, aspen was only 3%.



The top purchasers between 1994 and 1998 were Ayers and Baker Pole and Post, and Louisiana-Pacific Corporation. Although the miscellaneous category makes up the largest portion of sales on the Wasatch-Cache, they are primarily small sales going to many different purchasers.

Although their timber supply is 100% private, South and Jones Lumber Company is profiled below as are the other major purchasers.



Purchasers

Ayers and Baker Pole & Post, Inc., was established in 1968 in Evanston, Wyoming. The operation moved to Mountain View, Wyoming in 1979 to expand facilities. Using approximately 3-8 MMBF annually, they produce 10% round wood, 10% 4x4 and 4x6 products, and 80% 6x6 and 6x8 dimension timbers. The primary species used is lodgepole pine with some Douglas-fir. Sales and marketing is directed to mines, wholesalers and retailers, and through brokerage. Targeted markets include the Wyoming area, the intermountain west, Kansas and Nebraska, and the west coast. Their bulk quantities of sawdust are sold in nurseries and dairies. The leftover peeler shavings are sold to a company that colors the shavings with dye and markets the finished product as decorative landscaping material. Cedar-colored shavings originating at Ayers & Baker Pole & Post were recently used at the Salt Lake city Airport.

Ayers and Baker purchase 80% of their timber from Forest Service land, 15% from private land, and 5% from state land. Of this, 20% of their inputs come from Wyoming, and 80% are derived from Utah. They do not foresee a problem with diminishing future supply or a change in sources. Most of their timber sources originate within a 25-75 mile radius.



Currently Ayers and Baker Pole and Post operate an eight hour shift and employ 24 people. Most technological upgrades to the mill occurred five or more years ago, and none are planned for the immediate future. New investment will depend upon future market conditions. With respect to finished product markets, there have been few changes. The demand for round wood has been relatively strong, particularly for pressure treated products. There has also been a slight increase in competition for round wood products. With the exception

of a slight decrease, prices have been relatively stable over the last five years. Wyoming and Colorado make up their main product distribution area.

South and Jones Lumber Company, located seven miles north of Evanston, Wyoming, is family operated and has been in existence for approximately fifty years. They currently operate one eight-hour shift, not including logging. South and Jones use six MMBF annually, producing 50% mine timbers, 30% industrial lumber, and 20% private and custom lumber. Sawdust, bark and waste products are used for pellets marketed in the winter. Finally, they log their own sales. Species used include 30% lodgepole pine, 40% spruce, 20% Douglas-fir and 10% balsam fir. Mine timbers are the primary product and are typically sold directly to mines in the area. Other products are sold directly or through brokerage in Wyoming, Montana and Idaho.

With respect to supply, South and Jones Lumber Co. relies on private sources and does not foresee a decrease in the availability of private stumpage for the next eight years. Although they would prefer a mixed input source, they feel that Forest Service sales are appraised too high, and are of poor quality and inadequate volume to be profitable. Currently, 20% of their inputs are derived from Wyoming, and 80% from Utah. Their radius of operation is less than 100 miles.

Recent technological improvements in the mill include a horizontal band saw to increase salvage volume used for wood pellet production. Although no upgrades are scheduled for the future, South and Jones will respond accordingly to future improvements in market conditions.

Markets for mine timbers and industrial lumber have exhibited a downward trend according to South and Jones. They attribute such trends to two factors. They believe that an increase in Forest Service stumpage prices caused the mining industry to seek cheaper substitutes thereby resulting in lesser demand for mining timbers. Second, the increase in imports from Canada as a result of NAFTA has increased competition, particularly for industrial lumber being sold as pre-constructed wall components.

Fort Washakie

Fort Washakie—Bureau of Indian Affairs, is also located in west central Wyoming north of Lander. Although there has been a significant decline in federal timber supplies and an increase in stumpage prices, one would expect that tribal timberland products would greatly benefit, however, the tribal lands have not been a significant stumpage source. The tribe is putting together its first timber sale since 1987. Annual cut has fallen from 8.4 MMBF to 4.46 MMBF due to elk habitat considerations and all sales must be sold to Indian loggers (United States Government Department of Interior Bureau of Indian Affairs 1987).

Currently, there is no CFI inventory, and the planning process has been extended to 2003 at which time there will be a new inventory. The new plan is expected to be in place by 2004 with a new annual allowable cut. Although the AAC is expected to be closer to 8 MMBF the actual amount won't be known until the inventory analysis is completed. Fort Washakie timber volume, which has a lengthy history of inconsistency, is an important consideration for Wyoming Wood Products at Lander.

FINDINGS AND CONCLUSIONS

The new western timber economy is unfolding in Wyoming with important implications for public management, policy, for private processors and land owners. Here we describe the key features of the new economy, its effect on industry consolidation and conclude with a discussion of the implications of the new economy and of the emerging new industry structure.

A New Western Timber Economy

Many elements combine to shape the new western timber economy, from international considerations, to the nation's trade and monetary policies, to increasing responses to environmental and amenity pressures on public policy. Below we list the key factors shaping the new economy—especially as they pertain to Wyoming.

International events play an important role in Wyoming's timber markets. Without exception, Wyoming's forest processors report an increased awareness of effects that international events have had on them. The health of international economies has directly impacted the demand for Wyoming's forest products. If world economies continue to rebound from the monetary crises of the late '90s, the international demand for forest products is expected to increase. Other international events may mitigate. These include the stronger US dollar (making domestic products more expensive) and increases in Canadian imports. Canada accounts for the vast majority of wood imports, and Canadian imports have risen. The US Canadian Lumber Agreement will expire in April, 2001 and could have significant implications for US and Wyoming lumber markets. Failure to reach a trade agreement could depress lumber prices and offset increases expected from an international recovery.

Domestic events have been the driving force in shaping the new economy. Foremost is the rising effect of environmental and amenity pressures on timber harvesting. Timber sales are increasingly difficult and costly to prepare and offer for sale due to environmental appeals, litigation and potential litigation. Sale volumes have declined throughout the Western US, including Wyoming, but an additional effect is that the quality of most volumes has also declined. Declining volume and lower quality combine to make for a powerful agent of change prompting industry consolidation. These and other related impacts are addressed in items one through seven.

1. Reductions in public timber supply led to **sharply higher stumpage and lumber prices** in the early 90s, albeit mitigated by Canadian imports and international monetary crises later in the decade. A key effect of higher prices is to reduce the importance of transportation costs; especially for logs. This, in turn, reduces the advantage that smaller mills have in locating near a particular National Forest or historical "working circle."
2. The state and region have two principle commercial species: ponderosa pine and lodgepole pine, and these species often have different markets. Most **lodgepole pine is manufactured into "commodity" products** whereas **ponderosa pine (also spruce) is used for both commodity products and for "specialty" products**. Higher grades of ponderosa pine are more often used in specialty products. By commodity products we mean products that are often mass-produced and for which there is little distinction by manufacturer. For example, graded dimension lumber manufactured by one company is priced identically to the same grade processed by another manufacturer. Such products include dimension lumber and oriented strand board (OSB). These forest products are

more closely tied to the construction and remodeling markets which are known to be cyclical and volatile. In contrast, specialty products, which often require special manufacturing techniques or remanufacturing are produced in lower quantities by smaller processors and receive more favorable pricing. Ponderosa pine, for example, “is prized for molding and for doors, windows, frames and drawers where undermovement durability is essential. It has the ability to withstand scuffs, shocks and jars without splitting, which makes it the premier wood for these and other applications such as jambs, shutters, screens, columns, stairwork and fascia,” (<http://www.wvpa.org/ppine.htm>). Neimann [Devil’s Tower Forest Products (DTFP) at Hulett] has been the State and regional example of a successful specialty producer. For commodity species such as lodgepole pine, and lower grades of ponderosa, traditionally, the competitive advantage will go to the producer with the lowest average cost in the short run and the lowest total cost in the long run. L-P has the clear advantage as a commodity producer in the lodgepole pine market.

3. **Forest Service sale volumes are declining in quality.** With an increased emphasis on vegetative treatment of the forest, and a corresponding decline in commercial value, timber sales are more often of smaller diameter and poorer quality. Such volumes provide a comparative advantage to the commodity producer. Small diameter material will likely become 2x4 or OSB. Note that L-P chose to close its board mill in Walden in 1995. One reason was that this mill was at a competitive disadvantage in processing lower quality material. Most of the mills interviewed, expressed frustration with the Forest Service timber appraisal policy (**TEA**) in conjunction with Forest Service quality of sale volumes. Stumpage is often small diameter and short lengths such that it has relatively high logging and processing costs and includes more waste material than larger pieces. Concurrently, the Forest Service appraisal process, in the view of purchasers, does not seem to reflect such merchantability problems.³ Mills find it difficult to rely on such a sale program when alternative private and state volumes of better quality have been available and, in the estimation of many purchasers, more fairly appraised.
4. **Private stumpage** is increasingly important. The forestry profession has often underestimated the importance and resiliency of private inventories. With an increase in stumpage prices viewed as “permanent” by many, small private owners including ranches have had a powerful incentive to rethink the management of their holdings. With rising prices, commercial inventories are much more valuable, many non-commercial inventories are now commercially viable, and acres that were allocated to other uses can be brought under management for fiber products. Further, much of the volume on private ranches is thought to have the potential to benefit from more active management and cultural practices. The large commodity producers have an advantage here as well. For example, L-P can approach timberland owners with a management plan that includes removing and processing smaller material including Aspen, to “clean-up” their forests in ways that are difficult for smaller producers to replicate. This occurs because L-P can sort small material between the OSB and stud processing facilities also providing a source for aspen fiber. Large processors like L-P have another comparative advantage on

³ This finding, regarding appraisals, did not pertain the Wyoming portion of the Black Hills National Forest.

private lands—no SBA program. Small businesses do not enjoy the protection from the SBA that is required on some federal sales.

5. **Extensive corporate resources and diversification.** L-P has more extensive corporate capital available to address the globalization of product markets, and western trends. The more complex operating economy, both globally and locally provides an advantage to larger companies that have more extensive resources in personnel and in operating capital. In addition, L-P is a major US corporation with sales of approximately \$2.8 M primarily from OSB, but also including building products (dimension lumber and plywood), and pulp.

OSB processing requires substantial capital input and because of the commodity nature of the product, substantial throughput volumes for efficient manufacturing. L-P continues to provide innovative OSB products with an apparent eye towards improving value added and to distinguish products from competitor offerings which include tongue and groove flooring and sheathing; both made at Olathe. Nevertheless, the OSB market has suffered from overcapacity (Jaffe 1999), extreme volatility⁴ and competition from inexpensive Canadian imports. Even though the mill at Olathe is a major producer in the region, it is the smallest OSB facility of its kind in the US.

6. Increasing **environmental awareness and Green Certification** also plays to the advantage of larger processors. Complying with Green Certification standards on private forestlands will require additional expertise, care and associated expense. For example, green certification will necessitate verification of wood sources and logger training programs.
7. **Higher stumpage prices mean that hauling distances are of less relative importance.** To every processor, hauling distance is an important consideration in the acquisition of volumes. However, the higher the stumpage price the smaller proportion hauling is of total cost. To take an extreme example to illuminate this important point consider how far it would pay to ship a pound of diamonds. Here shipping charges are virtually nill as compared with the value of the product. Now consider the viability of shipping a pound of coal around the globe. The same principle applies to timber—high valued timber will ship farther, hence hauling distances have increased substantially over the last 10 years as stumpage prices have risen. Today's mills must reach a minimum of 200 miles and most will need to reach ever further to be competitively viable. Today's hauling distances often exceed 500 miles.

⁴ In recent years OSB prices have fallen by 50% and risen by 100% in less than one year (Jaffe 1999). OSB prices have recovered substantially from previous lows.

Industry Consolidation and Regional Processors

The new western timber economy suggests that timber policy-makers, planners and mill owners should consider a future substantially different from the past. The current trend of industry consolidation is now apparent throughout the Western US. The following quote from the Western Wood Products Association 1997 Statistical Yearbook captures this effect in the Western U.S.

"According to the most recent Profile of Western Sawmills, 349 sawmills operated in the West during 1996. This is down 17% from the number reported in 1994. Small mills, with an annual rated production capacity of less than 20 million board feet, decreased to 81 sites, just over half of the number recorded two years earlier. Average production per mill topped 46 million board feet, with over 80 percent of the total coming from half of the operating mills." (WWPA 1997)

In Wyoming and throughout the west, economic conditions associated with the new economy will naturally select for the most economically efficient producers. Those best suited to the new economy will survive while others will struggle or close. These trends are particularly strong in the inland west. Consider the following quote from the WWPA 1998 Statistical Yearbook:

"In 1990 there were 586 sawmills in the West. By the end of 1998 the number had dropped to 292. The Inland region has been hardest hit, losing 191 mills during that period. Oregon, the state with the most lumber mills, saw 89 mills close. The number of small mills operating in the West continues to decline. In 1990 there were 213 sawmills that annually produced 20 million board feet or less. At last count there were 47. Using data supplied by Western states that track employment in sawmills, planing mills, and logging operations, employment in those three sectors fell a total of 27% from 1990 to 1998. Over the same period Western lumber production fell 21%. Meanwhile, there was only a 13% drop in overall Western forest products employment. While employment in sawmills has dropped, new secondary manufacturing and engineered wood products plants have taken up some of the employment slack."

The overall message is potentially profound for state and federal public agencies and for all processors. Clearly reductions in mill processing facilities and industry consolidation are strong trends in Western processing. These represent a powerful force in USDA Forest Service Region two.

In Wyoming we are now seeing the increasing presence of large regional scale processors relative to small processors. Such processors will be best able to operate in internationally connected markets, secure private supplies, be less dependent on the sale offerings from a single national forest, be better able to manage the increasing costs and skill required for green certification and to finance the heavy capital and technological improvements to mills. These costly improvements will more efficiently process small diameter material and provide the ability to generate value added to small diameter/poor quality volume. In addition, well positioned mills will commonly manage haul distances from 300-600 miles.

The Wyoming industry can be considered to be made up of regional processors, mid-size processors and small processors. Our categorization includes consideration of market presence in addition to sheer volume. Large processors include L-P operating throughout the state except for ponderosa pine volumes and potentially Neiman specializing in ponderosa pine mostly on the Black Hills. Mid-size mills include Wyoming Sawmills and Big Horn Lumber and Pope and Talbot. Smaller processors include Cody Lumber.

Small Processors: This category includes many smaller processors originally strategically located for volume from a small number of National Forests. This category includes the processors producing less than 20MMBF lumber tally per year or roughly less than about 12MMBF log input.

These processors are usually characterized as board or post and pole mills. They are typically versatile and make products to order. They are relatively labor intensive and struggle with technological improvements. These processors often reflect a rich history of the Wyoming timber culture and a close tie to resource management and stewardship. Nevertheless each struggles to secure private volumes in the face of declining public supplies with no SBA protection and increased competition from L-P. As with much of the western U.S., the plight of these mills is very uncertain and this sector has suffered the most closures. Only the most determined and clever are surviving in the new economy. For many, these are “generational mills” family owned and passed from one generation to another. A key issue extends beyond the future viability of processing to the survival of one of Wyoming’s colorful and valued cultures.

Mid-Size Processors: these mills are substantial operations, usually qualifying for SBA set-aside volumes, fairly dependent on timber supplies from two or three national forests, and some private timber. Each is unique and faces an uncertain future. Due to their moderate size, they struggle to make the capital investments in mill technology required to provide necessary value added to poor quality volume and they will struggle to obtain supplies of quality timber. They also will compete with the regional mills for private and state timber of higher quality. We stress that while these mills share the common characteristics of mid-size mills each is unique with unique market positions and outlooks.

Pope and Talbot . This mill had not kept up technologically, does not qualify for SBA volume and, in our estimation, will have to increasingly compete with Neiman for lower quality volumes primarily on the Black Hills. Pope and Talbot has three competitive disadvantages: technology, no SBA qualification and longer average haul distances. (Note: mill closure announced subsequent to this writing).

Big Horn at Laramie: This L-P neighbor is particularly well located to process Routt and Medicine-Bow timber. As a board mill, Big Horn does best with high quality lodgepole pine, but has to take the lower grade material with it. “Trading” small diameter material for large diameter material with L-P would seem to be advantageous to both. Although Big Horn has not been dependent upon SBA volumes, we anticipate an increasing dependence.

Wyoming Sawmills at Sheridan is well located to access the Bighorn volumes—no other mill has such an advantage on the Bighorn due to location. However, Bighorn volumes are no longer enough to support WSM. Longer hauls and smaller material make technological innovation imperative. While this has been a focus, and the mill manager has taken extraordinary initiatives to better utilize small diameter stock, the long-term payoff is uncertain to us. Key reasons are that the financial commitment involving the capital improvements to the mill have not been made. Also, other mills owned by Allied in the Intermountain West (currently Alamogordo, NM and previously Montrose, CO) , have not seen the commitment to capital improvement necessary to secure a sound future. Wyoming Sawmills must now reach farther for other National Forests and for private volumes while competition for private volumes—especially in ponderosa pine--will

likely increase. We expect that operators on the Black-Hills will become more aggressive and less dependent on Forest Service volume and this will affect WSM.

Regional Processors: These companies have made key strategic investments in technology for processing small diameter low quality volume, expansion of their facilities, and significantly expanded their areas of operation. Again the individuals are very different, but share striking similarities.

Neiman is not a regional-scale processor, however, we discuss his operation here to illuminate strategic similarities with L-P. For example, while L-P is a major US corporation, Neiman is classified as a small business. Also note that Neiman has historically relied on Forest Service volume to a greater extent than has L-P. Nevertheless, we will consider some similarities to illustrate an emerging processing structure that is different from that only a few years ago and will likely make for a much different future.

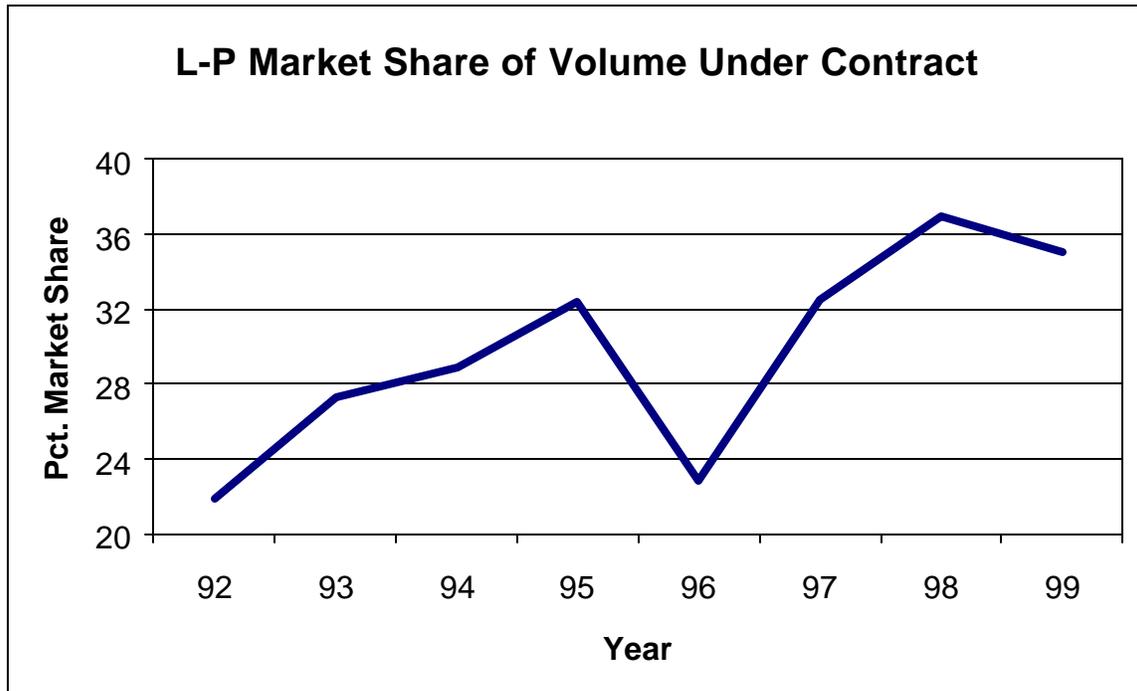
Given his presence in the Black Hills portion of Wyoming Neiman has made key strategic decisions that are similar to those of L-P; we found their similarities important to survival and expansion in the new economy. Both have made substantial capital investments in mill technology, both operate mills in tandem—one for lower diameter/quality volume and another for the rest and each has substantially expanded or has clear plans to expand. In addition, they do not compete with each other because of species differences which also provides for important differences in location. Each has a clear and strong presence in their markets, has shown adaptability, and has specialized relative to the species being processed. Because of the size and importance of L-P, we further develop the analysis of L-P as a regional scale processor below.

Louisiana Pacific: Understanding the regional presence of L-P means understanding **Oriented Strand Board (OSB)**. OSB is L-P's flagship product and the key to understanding the company. L-P is the largest manufacturer of OSB in the country and with its mill in Olathe, Colorado, it has the only major OSB facility west of the Mississippi. L-P is currently investing heavily in the future of OSB, and perhaps as part of an extensive evaluation of each of its plants, L-P has recently made significant strategic decisions regarding its future, including closure of unprofitable plants (<http://www.lpcorp.com/hq/six.html>), investment in current facilities and several acquisitions (three in 1996). Two examples are particularly illuminating. Locally, a fire in the Olathe plant damaged processing capability, but the company will invest and rebuild with greater efficiency. Such a financial commitment locally is tangible evidence of L-P's commitment to the future of the Olathe mill. L-P recently agreed to merge with Le Groupe Forex, a leading producer of OSB in Canada. Le Groupe Forex will increase annual sales by approximately \$150M and give L-P a more integrated presence in the OSB market. This is another example of industry consolidation with an aim toward reducing overall costs. In addition, L-P is expected to complete its acquisition of Evans Forest Products (a Canadian engineered wood producer) adding another \$90M to sales. An integrated US-Canadian presence is a clear advantage considering the importance and increasing presence of Canadian imports.

Although some OSB products are easily differentiated in the market, for the most part L-P is in the commodity production business with 2x4s from Saratoga and OSB construction 4x8 sheets from Olatha. In commodity production, the low-cost producer has an advantage because they have little affect on product prices. The low-cost producer typically can be characterized by technologically efficient plants geared to large volumes. L-P has done this well with the tandem mill operations in Olatha and Saratoga. By aggressively buying Forest Service volume and by

focusing on private volumes, L-P has been able to operate both mills effectively while considering expansion at Saratoga.

To demonstrate the increasing presence of L-P we charted L-Ps share of Forest Service volume under contract from 1992 through 1999.



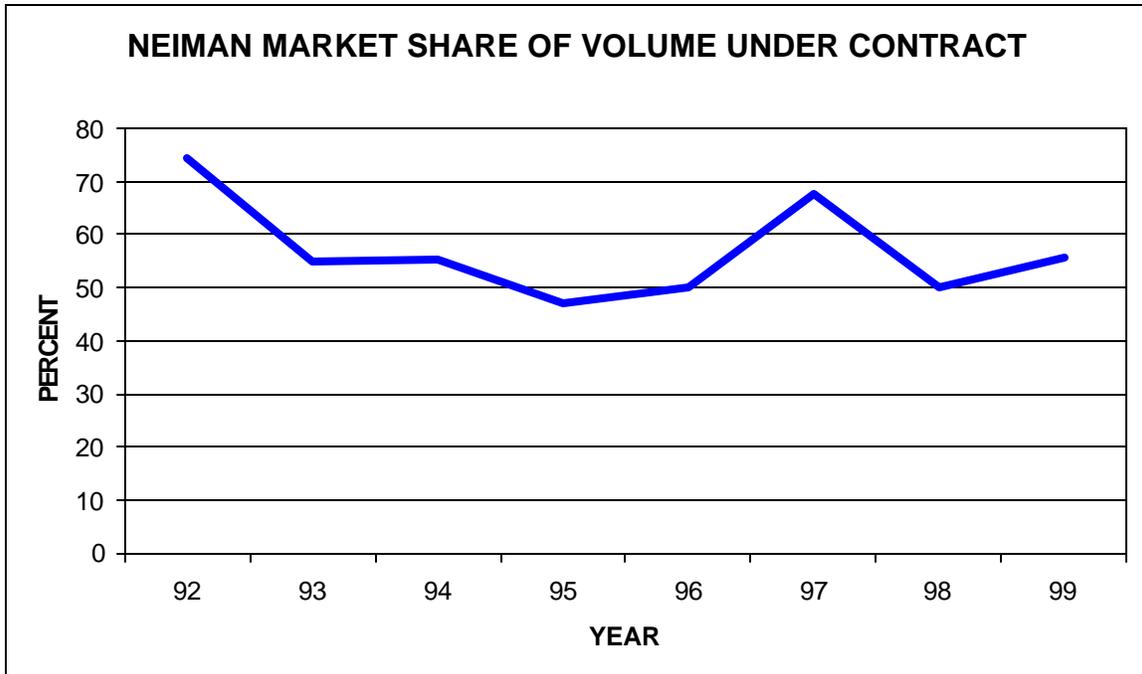
The chart of L-P's market share of Forest Service volume under contract shows a steady increase over the eight year time period with the exception of a dip in 1995 and 1996 corresponding with the closure of the Walden, Colorado board mill in about 1995. The strength of the trend is demonstrated by the rapid recovery of market share following the Walden mill closure. L-P currently enjoys about a 35 percent market share of volume. While data on private volumes under contract are not available, we suggest that if included, the trend would be even more stunning because L-P has been aggressively pursuing private volumes and because L-P has a comparative advantage in securing private volumes (no SBA program). Private inventories for L-P are predominantly in the area of Casper to Wheatland.

Neiman and DTFP: We qualify the following brief discussion of Neiman and DTFP as a regional processor because Neiman's presence is virtually restricted to ponderosa pine, most of which has been found on the Black Hills National Forest. The Black Hills National Forest, except for the Wyoming portion is beyond the scope of this project. This restricts our findings and the extent that we can support our analysis with data.

Neiman's expansion into the Black Hills means that there is too much capacity relative to sales volume. A processing capacity reduction is likely and the likely candidate is Pope and Talbot at Newcastle, WY (subsequently announced closure). This mill is less efficient and has longer haul distances. Neiman also owns a ponderosa pine remanufacturing plant in Sturgis, SD. Neiman

has a diversified product mix making several types of ponderosa products from windows to dimension lumber.

Neiman bought the mill at Hill City, SD—formerly known as the “Continental” mill. Investing heavily in the mill to upgrade and increase capacity, he will use this mill to process small diameter material. Larger diameter volumes will be processed at DTFP. With a technologically efficient and expanding operation Neiman is positioned in a similar way as L-P to compete in the new economy. Note the consistently high market share of volume under contract in the chart below.



While maintaining about 60% of the US Forest Service volume under contract (Wyoming only), reliance on the Black-Hills is a key consideration. To the extent that public supplies decline further changes should be expected. To the extent that Neiman has to increasingly rely on private timber, this could directly pressure Wyoming Sawmills while increasing competition for private timber in Montana as we anticipate Wyoming Sawmills to continue to look north for volumes. We anticipate increased competition between Neiman, WSM and Pope and Talbot.

Conclusion

The Wyoming timber economy is rapidly evolving affecting public supplies, public policy and the processing industry. The key changes identified above, especially reduced National Forest volumes of lower quality and markedly higher stumpage prices are fundamentally reforming timber processing. Mills best suited to the future economy are large highly capitalized, specialize in small stem stock, and secure volume over a wide territory including both public and private stumpage. Such processors will secure timber from very long hauls—upwards of 500 miles. Survivors need both a clear niche identification for the future as well as access to capital to invest in the technology that will keep them competitive. Small stem volume will require increased technology to take advantage of the small piece size and to get the most value added out of the small stock. Because of the heavy capital investment in technology that is required,

large processors operating over a large geographic area will survive while small processors are disadvantaged in the small diameter market. The question is whether small processors can secure enough volume to serve niche product markets.

This represents a fundamental shift in the availability of public timber and in the industry structure. Previously an assortment of stud, board and specialty mills co-existed with well defined territories to process local volumes. Localization is giving way to regionalization in milling with further industry consolidation. The converse is that the mills in the most difficult position will be small, dependent on a particular forest, and unable to finance new technology. An unintended side effect of the environmental shift toward reduced timber sales on public lands is the disadvantage and potential extinction of the family owned mill.

The two ends of the spectrum in Wyoming are defined by the large highly capitalized L-P sorting volume between two mills and specializing in small stem volume with the ability to also process large diameter volume, and Cody Lumber a small family owned board mill largely dependent on the National Forests for its survival.

The middle is occupied by Wyoming Sawmills and Big Horn Lumber. Wyoming Sawmills has had to reach farther than ever to secure enough volume. At the same time, this mill is researching and experimenting with new processes to better take advantage of smaller diameter material. The future for the mid-sized mills is perhaps the least certain and may depend upon their individual situations.

We suggest that five years from now, there will be fewer mills, but those that will have survived will include large high technology processors operating over a large geographic territory with a few niche processors.

Forest Service timber sales will increasingly compete with private sources of supply and are likely to attract fewer bidders as a consequence of consolidation. If consolidation continues, large processors may gain a stronger bargaining position in timber sale contracts. The increased sale of low quality material as well as potential increases in the amount of “services” included in sale contracts could increasingly make for a negotiation of sales as opposed to traditional auctions. With severely restricted harvesting, National Forests are experiencing increased mortality rates and accumulations of decadent materials. While the Forest Service has moved away from managing timber as a crop on Western forests, management problems are mounting. Increasing accumulations of decadent volumes pose difficult choices for forest managers as insect, disease and the potential for catastrophic wildfires mount. While forest management implications are beyond the scope of this study, they pose key policy and administrative issues.

With a diminished role of USDA Forest Service timber sale volumes, the relative importance of **State of Wyoming** volumes and extension services is increasing. State volumes are often offered under more favorable contract conditions and volume is often of better quality. Further, as the importance of **private volumes** is much increased, the state has an increased need to keep current inventory estimates on private lands, and improved opportunities for extension services.

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APPENDIX: Home Depot Environmental Agenda

Home Depot Vendors Respond to Company's Environmental Agenda October 27, 1999 10:45 AM

ATLANTA, Oct. 27 /PRNewswire/ -- The Home Depot (NYSE: HD), the world's largest distributor of wood products, announced today that several of its vendors have responded enthusiastically to its new wood purchasing policy. The company is using the policy to phase in wood and wood products that are independently certified as derived from responsibly-managed forests.

The company also announced that it has awarded commendations to two vendors, J.D. Irving and Columbia Forest Products, for leadership in gaining independent certification. Lumber from both companies is certified by the Oaxaca, Mex.-based Forest Stewardship Council, and is now available at several Home Depot stores.

"The certification process is exhaustive and scientific," said Suzanne Apple, Home Depot vice president, community affairs and environmental programs. "To gain the 'certified' label, our vendors must demonstrate a very high level responsible forest management, including soil and water management, biodiversity, harvesting practices and replenishment of trees."

Home Depot president and CEO Arthur M. Blank announced on Aug. 26 an effort in which the company would give preference to certified wood products and over the next three years stop selling wood products from environmentally sensitive areas.

"We're telling our vendors that our company will vote with its purchasing dollars for wood products that are environmentally sound," Blank said.

The company's announcement was warmly greeted with congratulatory remarks from numerous environmental groups who have sought to promote the use of certified wood products.

Home Depot is working closely with the World Wildlife Fund and the World Resources Institute to develop subsequent steps the company will take in its environmental efforts. The company said its immediate goals are to ensure uninterrupted product availability, product quality and low prices.

"As the largest retailer in our industry, we recognize our responsibility to provide environmentally friendly alternatives for our customers," Blank said. "We're proud to lead the industry in changing the way wood products are produced and sold and to lead the charge in promoting the use of certified wood products."

In addition, the company is stocking an increasing variety of products that conserve energy and water, or are made from organic or alternative materials.

For energy conservation, Home Depot now carries a line of energy-efficient lighting products and devices that control power consumption by appliances. Also in stock are low-flow shower heads that conserve water and reduce septic waste.

The company carries a line of environmentally friendly lawn and garden chemicals, such as fertilizers and pesticides, in addition to organic cleaning agents and water-soluble paints.

Several products are made from recycled materials, including "Isoboard," a high-performance wood substitute made from waste straw, and an array of plastic products -- such as carpets and tubing -- made from recovered waste plastics.

Home Depot's lumber department has begun carrying "finger-jointed" wood studs and molding, which combine short scrap pieces of wood into sturdy standard eight-foot lengths.

"Home Depot has always stood for choice," Apple said. "We are happy to make broad selection of alternative products available to our customers. In addition to the quality and value, our customers are responding very positively to the fact that a growing number of our products are environmentally friendly."

Founded in 1978, The Home Depot operates 874 stores in the United States, Canada, Chile and Puerto Rico. For the last six years, Fortune magazine has named Home Depot as America's Most Admired Specialty Retailer. Home Depot's stock is publicly traded and is included in the Standard & Poor's 500 Index.

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