ALASKA LEGISLATURE COMMITTEE FILES 1993-1994 8672
7992 HOUSE RESOURCES

1.10 Examples of Investment Requirements

To illustrate the scale of investment and enterprise size for different types of manufacturing operations, some estimates of the capital and wood resources required to establish various levels of processing capacity are presented in the following table:

Option	Capital Cost ($000)	Annual Wood Required (Cubic Feet)		Manufacturing Employment (Persons)
Small Sawmill	$150	42,000		2-4
Small-Med. Sawmill	400	150,000		4-5
Medium Sawmill	1,900	750,000		10
Large Sawmill	18,500	5,000,000		30
Plywood	20,000	3,500,000		80
Panelboard	30,000	3,500,000		100
Container Ply.	6,000	3,500,000		60
BCTMP Pulp	300,000	10,000,000		135
Kraft Pulp	600,000	29,000,000		500
Paper Mill	1,300,000	NA		500
Med. Pellet Mill	2,000	90-120,000	(tons)	20
OSB/Waferboard	45,000	295,000	(cords)	180
MDF Mill	40,000	72,000	(BDU)	70
Mfd. Housing	300 +	NA		8-12
Small Log Home	600 +	2	(MMBF)	10-15
Small House Log Profiling Mill	100-200	2	(MMBF)	4-5
Large Log Home	1,500 +	4	(MMBF)	20-30
Large House Log Profiling Mill	500-1,000	4	(MMBF)	8-12

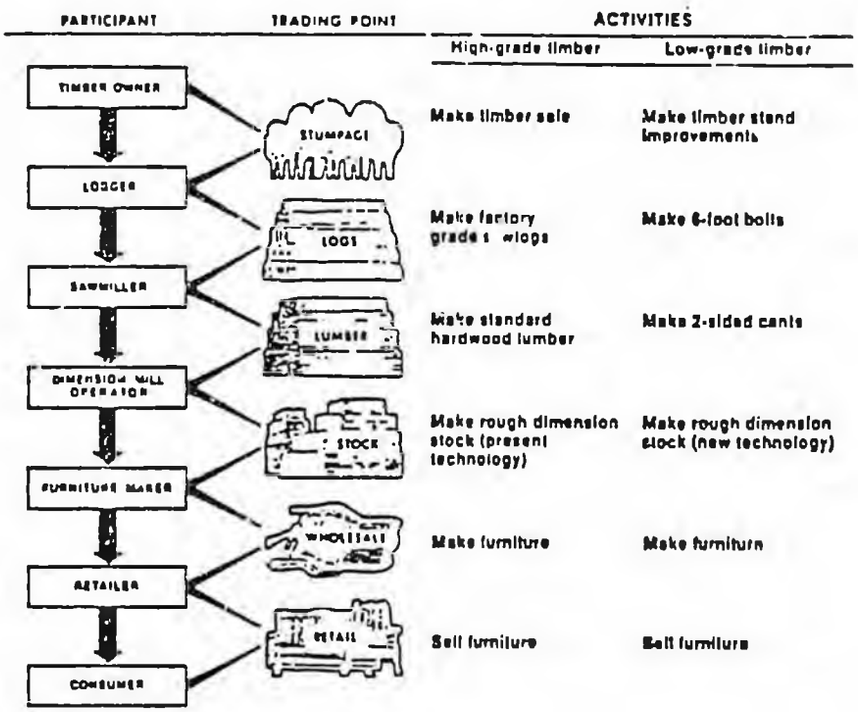
Sources: Cal Kerr, Matanuska-Susitna Borough Forest Management Plan, June 1989; Dr. Edmond Packee, unpublished research; ASK* Marketing and Research Group unpublished research; Dr. Pete Koch, Proceeding: Development of Alaskas' Boreal Forestry, 1988.

2. INDUSTRY STRUCTURE

Most advanced timber supply regions have been in the business for generations and have gradually developed a high degree of specialization and integration. Specialization is the process that allows efficient production of resources. Integration is the process that allows efficient handling and distribution of each log to its highest and best use. The markets for each product have different requirements and different channels of distribution that are difficult for any single company to meet. Often a log can pass though as many as 6 to 10 owners before ending up as a cabinet in a kitchen. Each of these owners provide a vital function that serves to add value to the end product.

Often an experienced and diversified company is able to perform a few of these functions in-house to capture greater margins; the inability of a company to perform each one of these functions well can erode profit margins.

The following diagram illustrates the overall structure of the wood products industry:



2.1 Timberland

The first stage of production is the timberland owner The land owner must provide sufficient information on the raw material and the sale terms to the logger so that the logger is able to reasonably estimate all of the costs and project a profit. Profits for the landowner are achieved by proper

management of the forest resource and by providing accurate information on the resource and the costs of extraction. Logging operators who are unable to accurately project costs and value will always bid down a timber sale to reduce their risk. Support activities for the landowner include timber sale planning and layout, supervising road building and infrastructure development, monitoring logging activities, environmental and regulatory compliance, tree improvement and reforestation.

2.2 Logging

Loggers perform the first market-related function. They determine whether they should haul tree-length logs, or which log length will bring the highest prices from various buyers. Usually this sorting begins in the forest so that each type of log is directed to its highest value buyer. Loggers add or diminish value by their handling and bucking procedures.

Without taking title to the logs, graders expand on the specialization process by attaching a relative value to each log by specifying the characteristics of the log.

2.3 Sorting and Grading

The logs are taken to a log concentration yard or a transfer facility where they are sorted further. One facility can have up to 60 different log sorts. The sort yard can be in a sawmill staging area or at an intermediate point where different logs are sold to different buyers. Each time a log is handled it can lose up to 5% of its value due to scrapes, splits, and wastage.

Often a broker will purchase or facilitate the sale at the log sorting areas. An example of this is seen with the Japanese trading companies who buy all saleable logs and sell them to lumber mills, chip mills, Korean sawmills, and Taiwanese mills. The broker or buyer often re-sorts the logs based on each customer's unique product needs. They are able to extract the highest price from each customer because every customer gets only what they need and do not have to spend money to dispose of unnecessary raw material.

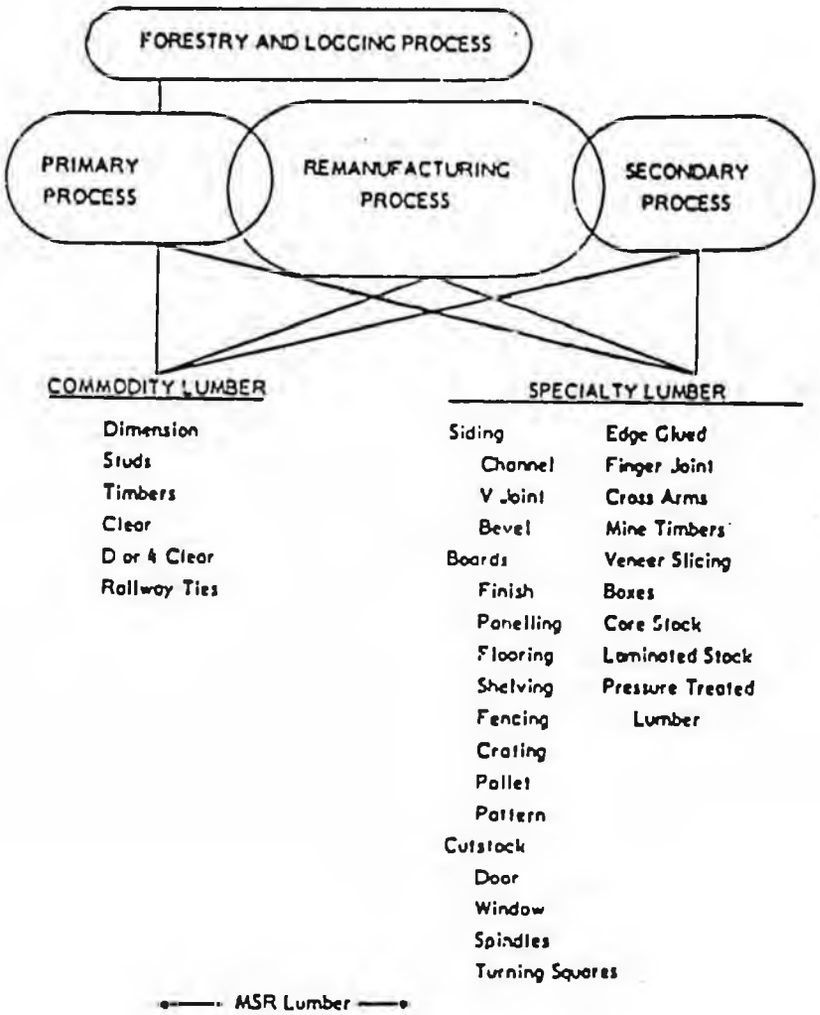
2.4 Sawing and Milling

The primary sawmill produces commodity lumber products. Profits are generally made by volume production based on high throughput and maximizing product recovery, which varies by as much as 70%. Additional profits are achieved by knowing exactly what products to make. Technology is increasing the flexibility of sawmills, but flexibility is still limited because of volume requirements. The product is often graded again at this point, and value is based on this grade.

Again, brokers often perform the specialization function. They distribute the products to many different customers based on individual requirements. Their ability to make a profit (or the sawmill's ability to make additional profits) depends on the ability to meet individual customer specifications on

a continuing basis. The customer may be a wholesale or retail lumber yard or another intermediate processor of finished product.

The secondary sawmill produces paneling, siding, furniture stock, stock for toys, utensils and instruments, or any number of custom products that have unique shapes, characteristics, and markets. While flexibility can decrease profits for the primary processor, flexibility is the key to profits for the secondary processor. Dimensioning mills usually do not work with a broker in sales of stock because close communication with the final buyer is essential for meeting their needs accurately. These mills may work with brokers or building supply stores and contractors for the sale of siding, paneling, and flooring. The following diagram illustrates the function and value created by a secondary sawmill.



Source: Carroll-Hatch, 1988.

A secondary sawmill must be willing to rapidly shift the dimensions of lumber that is manufactured, change the moisture content, change the species, or any number of adaptations to meet the needs of the product manufactures. The secondary sawmill, in turn, will be willing to pay a higher price to the primary sawmill if the primary sawmill can deliver products that minimize the work required to meet the product manufacturers' needs. Proper log handling, sorting, and bucking in the woods and the concentration yard will make it easier for the primary sawmill to make the commodity products that bring the highest price. Proper marketing requires that the feedback from the consumer reaches all the way to the logger in the woods. At any stage of this process, one participant can perform the tasks of upstream or downstream stages through vertical integration. Shortening this chain will increase margins and knowledge of consumers but each task must be performed well if value is to be maximized at each stage.

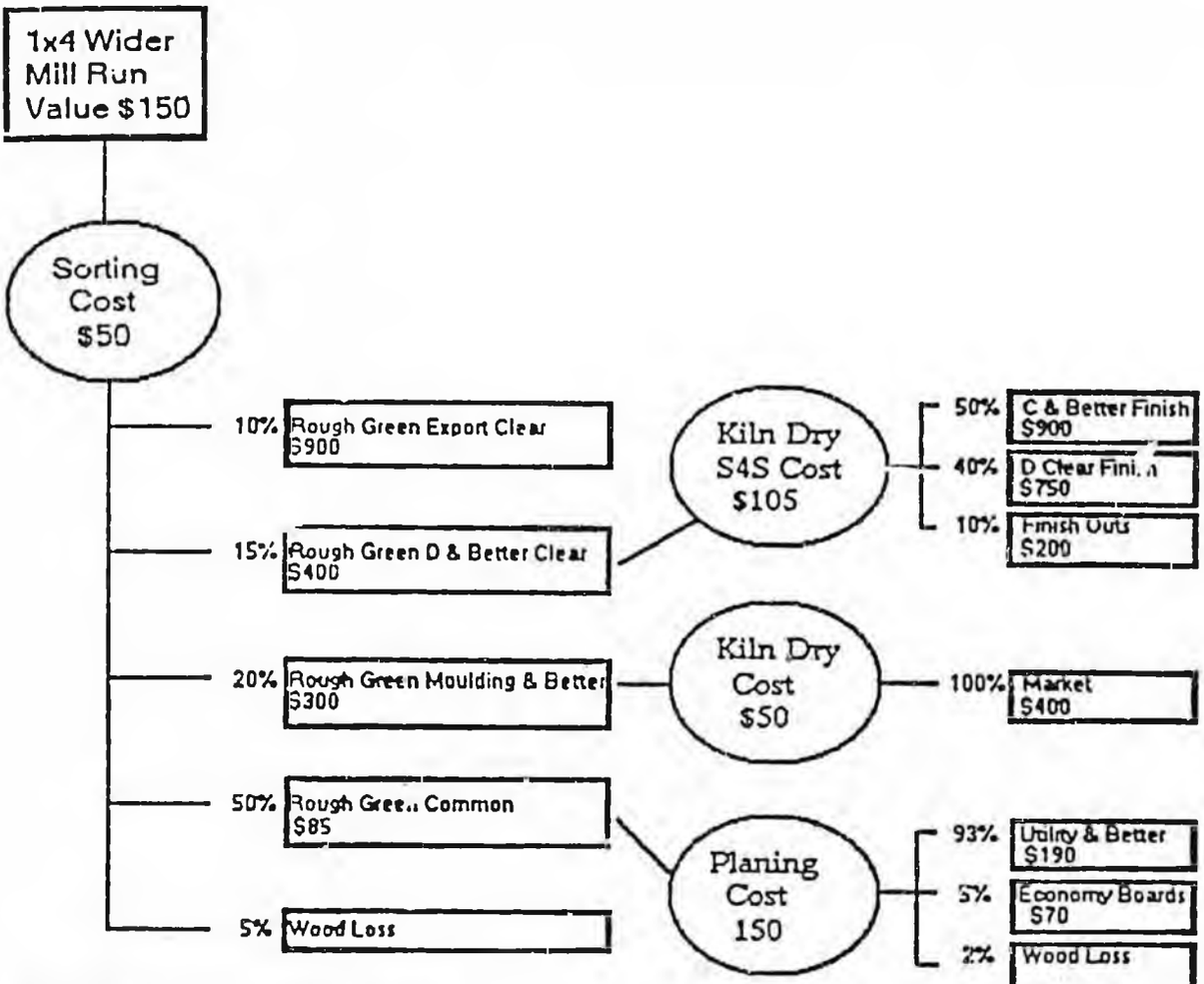
2.5 Manufacturing and Remanufacturing

The furniture manufacturer or other remanufacturer turns the lumber into consumer products. These products sell in consumer markets through retailers and must meet the ultimate test of the end-user. Key to the ability of make a profit is matching the product with the consumer. The furniture maker is likely not interested in the sawmill business because it is too difficult to estimate sawmill production costs and establish product prices.

The remanufacturer is forced to constantly adapt the product in anticipation of, or in response to, changes in the market. Constant feedback from consumers, retailers, and wholesalers is the only way to adapt to market changes in a timely fashion. The remanufacturer, in turn, must redesign products to meet the changing needs.

The following graphic illustrates the remanufacturing process. Although unit values are outdated, the relationships remain essentially unchanged.

ONE EXAMPLE OF REMANUFACTURING PROCESS ANALYSIS



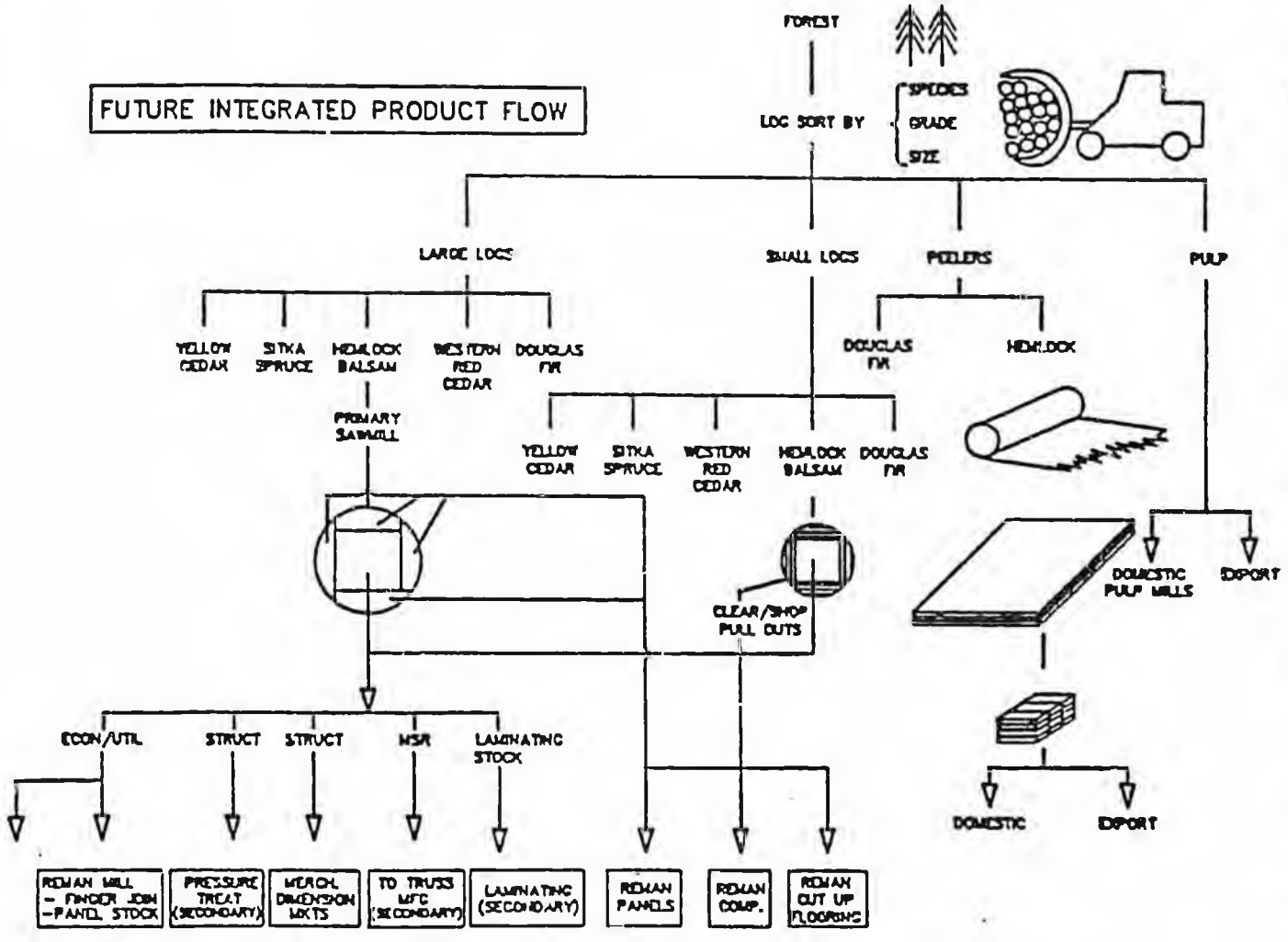
Finished Value	$375.60
Total Costs	$300.75
Potential Profit	$ 74.85

Source: Carroll-Hatch, 1988.

2.6 Waste Wood and Shrinkage

Waste wood is created at each stage of the manufacturing process, and disposal represents a significant cost. The ability of each producer to meet the needs of the buyer has a profound effect on profit recovery and the amount of wood waste that is generated. For example, one firm was supplying 3 inch ladder stock to a ladder manufacturer, but the ladder manufacturer was only getting 50% recovery from the lumber. Both companies increased margins and reduced costs when the supplier cut the ladder stock more accurately for the ladder manufacturer. Proper management of waste wood can make the difference between profitability and bankruptcy. Waste wood can be better utilized in an industrial complex because the companies can share a boiler or cogeneration facility, or provide a stable supply of pulp chips.

The diagram below shows a model proposed for the Western Canada wood products industry to achieve the greatest efficiency through integration. This model can be applied to the problem of developing an integrated wood products industry in Alaska.



Source: Carroll-Hatch, 1988

3. WOOD PRODUCTS

The total value of Alaskan wood product exports was over $537.8 million in 1991. Log exports were valued at $293.7 million, lumber at $68.7 million, and pulp at $161 million.

3.1 Round Log

3.1.1 Alaska

With Native corporations liquidating timber inventories, Alaska exported 520 MMBF of logs in 1988. (Berman and Hull, 1989.)

In 1990, a total of 1.03 billion board feet of timber was harvested throughout Alaska, 474 MMBF feet came from the Tongass Forest in Southeast Alaska and 547 MMBF from private lands.

In 1991, 528.9 MMBF were exported from Alaskan ports. Roughly 27% of this left through the Anchorage port. Alaska spruce exports totaled 218.6 MMBF of which 44% passed through Anchorage.

Log Exports from Alaska, 1986-1992*
(Thousand Dollars)

	Spruce	Hemlock	Western Red Cedar	Softwood**	Birch	Total
1986	64,044	59,496	6,582	7,422	0	137,543
1987	96.592	86,985	13,526	16,745	0	213,849
1988	112,789	106,992	25,576	19,824	0	265,180
1989	155,909	120,361	29,942	22,706	17	328,935
1990	166,618	114,949	27,507	27,695	0	336,769
1991	156,816	95,182	21,987	19,742	0	293,727
1992*	37,157	21,935	3,439	7,461	8	70,001

* 1992 is for Jan.- April.
** Species not specified.
Source: U.S. Bureau of the Census, compiled by ACIB.

Tight timber supplies in Southeast Alaska and the Pacific Northwest have caused firms in these regions to reach as far north as Afognak Island, Prince William Sound, and Kenai Peninsula for logs. The Alaska Pulp Corporation sawmill in Wrangell is using these supplies to feed its sawmill operation (Bradner, 1992), and James River Corporation is purchasing pulpwood from Afognak and Homer to feed pulp mills on the Columbia River.

3.1.2 Kenai Peninsula

The Kenai Peninsula contains significant stands of old growth white spruce mixed with white birch, Sitka spruce, Lutz spruce (a hybrid white-Sitka spruce), and western hemlock. The forest type is a cross between the mixed wood boreal forest of Interior Alaska and the western hemlock-Sitka spruce forest of the Southeast rainforest.

White spruce has excellent properties for most lumber and pulp uses. It has a very high strength-to-weight ratio, glues easily, dries well, machines well, and has excellent resonance properties for use in musical instruments. There are typically a large number of small, tight knots in the wood, making the percentage of clears lower than Sitka spruce. The only limiting property of the wood is that it does not accept most wood treatments. White spruce will accept copper sulfate treatment as a preservative. White spruce is the dominant softwood used in Canada for pulping. The wood has long fibers that separate easily and bleach well.

The CFP Seward mill had significant problems with the occurrence of compression wood (accumulated internal stress developed during the growing process) from some spruce stands located on the Kenai Peninsula. After processing the logs into lumber, it tends to warp and twist which may bind saws during production. However, for sizes greater than 4"x4", this problem is minimized in that it will not bend or twist noticeably if compression wood is present. The presence of compression wood could hinder quality control and competitiveness in joinery work, furniture stock, and small dimension lumber. Since it is difficult to detect before a log is sawn, it will also affect the quality of round logs for export.

Sales of round logs from the Kenai Peninsula have generally been limited to local suppliers of firewood, rough lumber, and houselogs.

Historically, the lack of consistent and predictable timber sales from public lands has limited the establishment of any major processing facilities. Klukwan Forest Products exported about 50 MMBF of spruce logs from the Homer Spit in the 1990-1991 period. The operation ceased in 1991 due to a downturn in the Japanese market and the small size of a number of the logs. Klukwan initially sorted the logs for Sumitomo and Nichimen but abandoned the log sorts in favor of sales of camp run (all merchantable timber) material.

3.2 Dimensional Lumber

3.2.1 Alaska

According to the most recently available information, in 1989 total production from all sawmills in the Anchorage Bowl was estimated to be 2 to 4 MMBF of rough green lumber. By-products (such as slabs and landscaping chips) accounted for another 1 MMBF-equivalent. No detailed lumber production data for the rest of Alaska is readily available.

The CFP Seward mill captured at least 15% of the Alaskan consumption of finished hemlock and Sitka spruce lumber and, according to Frank Seymour (Forest Products Specialist, Alaska Department of Commerce), could easily

have grown to 50% had operations improved.

Nearly running to daily capacity, Valley Sawmill of Anchorage opened a second mill this year across Cook Inlet from Anchorage and is expected to handle 5 to 8 MMBF per year. In 1991, Alaska exported 170 MMBF of lumber.

Alaska Exports of Lumber
(Millions of board feet and average value in $ per MBF)

Year	Volume (MMBF)	Average Value ($ per MBF)
1988	167.4	$359.27
1989	183.8	380.04
1990	212.0	397.56
1991	170.3	412.31

Source: U.S. Bureau of the Census, compiled by ACIB.

In 1983 and 1984, each year, approximately 155,000 short tons (or approximately 138 MMBF) of lumber were brought into Southcentral Alaska harbors. Of this amount, 100,000 short tons (or roughly 90 MMBF) came through the Port of Anchorage. (source: U.S. Army Corps of Engineers, Waterborne Commerce of the U.S. cited by Gunnar Knapp, ISER Alaska Railbelt Lumber Markets 1986.)

Trade statistics show that 15 MMBF of softwood lumber were imported into Alaska from Canada in 1990. This amount declined to 7 MMBF in 1991, probably due to the start-up of the CFP mill in Seward. The average value of Canadian lumber imports has been increasing, from $183 per MBF for spruce-pine-fur (S-P-F) lumber in 1990 to $238 per medium density fiberboard (MBF) in 1992. The appendix shows imports from Canada in detail.

3.2.2 Kenai Peninsula

In 1982, there were twenty eight full-time sawmills on the Kenai Peninsula with an estimated annual production capacity of 120 MMBF. The majority of those mills were small circular sawmills producing up to 1 MMBF year of timbers, green lumber, and houselogs. There were also thirty five mobile dimension sawmills in various locations. Today, there are four or five regularly operating sawmills on the Kenai Peninsula, (excluding the CFP Seward sawmill) none of which are operating near capacity (the total capacity is estimated at only 250 MBF per year).

The 100 MMBF CFP sawmill in Seward is currently not operating but is expected to resume operations in late 1992, making it the largest Kenai Peninsula customer for logs. The CFP mill relies primarily on Native corporation timberlands but also purchases logs on the open market. Reactivation plans for the CFP mill call for feedstock from public timber sales as well as privately owned timber.

Until the Seward sawmill opened, virtually no kiln dried lumber was produced in Alaska. The mill produced mainly kiln-dried and green lumber for in-state

and export markets. Most of the export product consisted of "baby squares" and chips.

3.3 Pulp, Paper, and Woodchips

The pulp industry plays a critical role in an integrated forest products industry. Pulp mills generally utilize the low grade trees and sawmill residues, allowing only the high value trees to go to the sawmill. Lumber mills have a recovery rate of 45-65% for the logs that they process. Pulp mills provide an outlet for a tremendous amount of waste that otherwise would be expensive to dispose. Pulp mills also contribute to the economy of the communities where they are located by providing from 120 to 500 direct manufacturing jobs and placing $300 million to $1 billion in fixed capital investment.

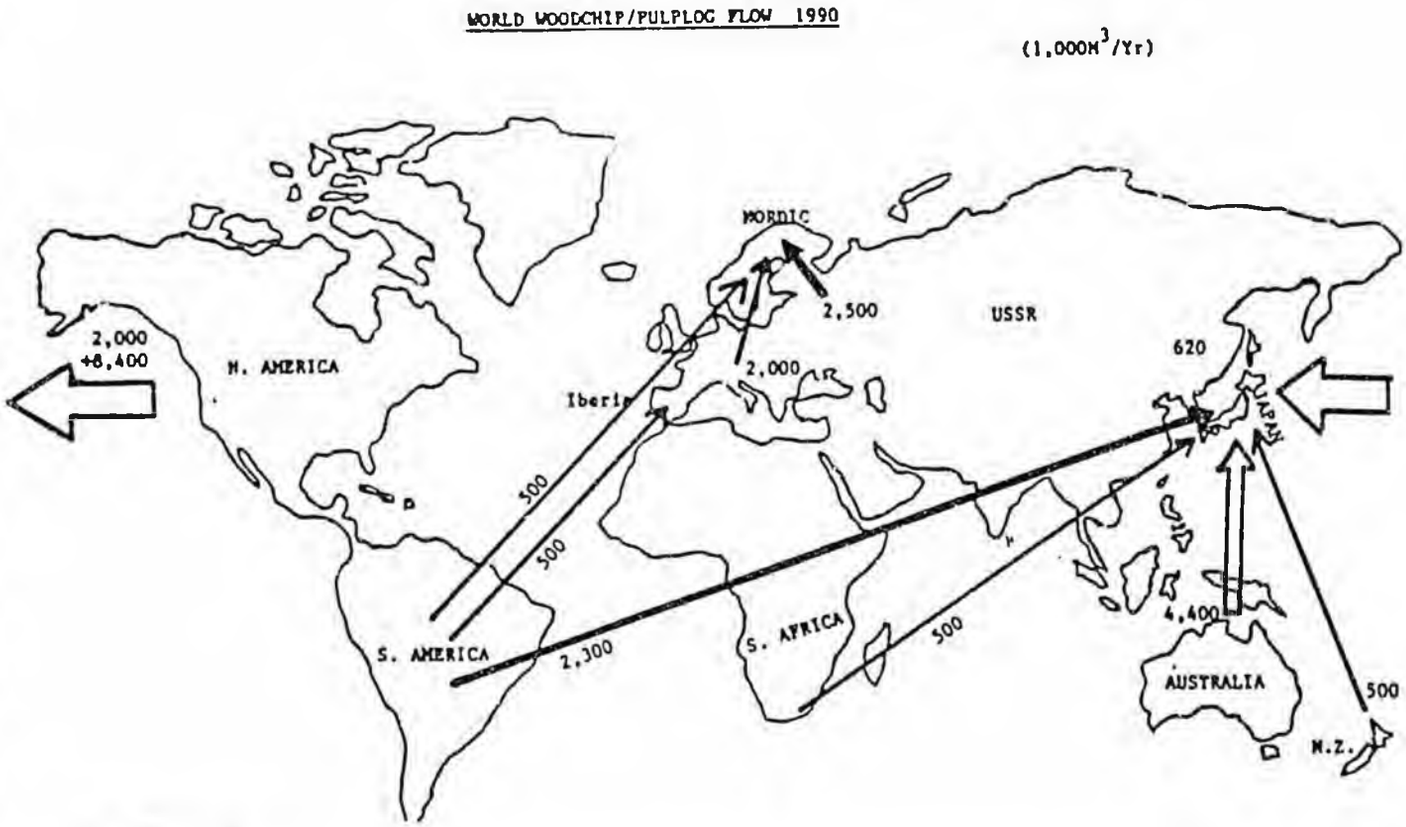
Pulp and paper are the highest value commodity products made from wood fiber. Chemithermomechanical pulp (CTMP) has a 90% fiber recovery rate, making this process an excellent use of low-grade timber.

The CTMP process is twice as efficient in utilizing wood fiber as the kraft process. Kraft pulp yields only 45-55% of the raw material in finished product while the CTMP process boasts a 90-95% yield on fiber input (one ton of CTMP pulp requires about 95 cubic feet of raw material). CTMP mills also have lower scale economies than kraft mills. A CTMP mill can be built for as low as $300 million while a kraft mill needs a $600 million facility to be economically feasible. A CTMP mill requires a much smaller forest area to provide sustained raw material. This is important in areas with low annual allowable cuts or long rotation cycles.

With the discovery of dioxins and chlorinated furans in bleached pulp, the industry has developed a method of using oxygen instead of chlorine-based chemicals to break down the fibers without creating dioxins (Hunt, 1988). Experimental designs of pulp mills with a closed loop water system have been developed. Any considerations of pulp mills should consider the latest in environmental technology.

Logging restrictions in the Pacific Northwest will create sharp reductions in the supply of woodchips in the near future. Marubeni Corporation projects that supplies from this region will drop by about 4 million bone dry units (BDU) (1 BDU is roughly equal to 2,400 lbs.) (PRWMR, 1992). Plywood mills in the Pacific Northwest are relocating to the Southeast U.S. where stumpage prices are lower. The loss of plywood capacity also will decrease the amount of fiber available for pulp mills in North America and Asia. Alberta Canada's expansion of pulping capacity in the late 1980's also has placed a strain on chip supplies, although the effect has not been dramatic.

The following graphic illustrates the general flow of world wood fiber flow for paper or pulp manufacturing from 1990.



3.3.1 Alaska

In 1991, Alaska exported $161 million worth of paper pulp from two pulp mills located in the Southeast region. That same year, $7.9 million worth of chips and $4.7 million worth of pulpwood were also exported. There are no paper mills in Alaska.

Pulp Exports from Alaska, 1986-1992*
(Thousand Dollars)

	Dissolving	Sulphite Bleached	Sulphate Bleached	Sulphate Unbleached	Total
1986	86,643	2,375	330	0	89,348
1987	118,737	10,231	668	1,411	131,047
1988	166,746	15,173	645	0	182,564
1989	217,172	13,863	293	894	232,222
1990	171,655	7,783	0	12,188	191,627
1991	153,932	4,066	0	2,952	160,950
1992*	62,610	1,504	0	0	64,114

*1992 is for January - April only.
Source: U.S. Bureau of the Census, compiled by ACIB.

Given the capital investment required, the cost of meeting environmental quality standards, and associated litigation costs, it is not likely that a pulp or paper mill would be feasible on the Kenai Peninsula. Assuming the needed volume of feed stock was present, such a plant could be located

elsewhere in the Railbelt, at a site more central relative to timber supplies.

One concept for a world-scale paper mill in Alaska has been suggested by a Canadian expert. This proposal would involve an investment in the $1 to $1.5 billion range and would likely require joint financing with a major international paper company. Two products have been suggested: 1) Light Weight Coated (LWC) such as that used in glossy magazines or 2) Uncoated Free Sheet which is used in computer paper, envelopes, xerographic, and other bond papers. Markets would include U.S. West Coast as well as Pacific Rim countries.

The Uncoated Free Sheet contains 10% to 20% softwood pulp and 80% to 90% hardwood pulp. The Light Weight Coated contains 50% bleached kraft softwood pulp (66% softwood) and 50% bleached mechanical hardwood pulp (33% hardwood). The plant would require approximately 30 to 40 million gallons of water per day, adequate land, access to tidewater, rail or truck access, 100 to 120 megawatts of electricity, and infrastructure support (such as training). It would likely employ 500 people. The plant could be located on a 200 mile radius (preferably with direct rail access) from its wood fiber sources.

The key economic question concerning a plant of this size is the availability of sufficient wood fiber to support the plant's operation over its expected economic life.

3.3.2 Kenai Peninsula

Given the excellent pulping properties of White Spruce, the potential for the production of chips on the Kenai Peninsula is very good. CFP's Seward sawmill developed stable markets for its spruce woodchips in Japan. Chip exports from Alaska jumped from $2 million in 1990 to $8 million in 1991. Almost all of the gain was attributed to the CFP mill. A new joint venture between Circle D Lumber Company (Klamath Falls, Oregon) and Kenai Pacific Lumber Company (Anchorage, Alaska) has announced plans this year for chipping operations with sales to Pacific Rim customers shipped from the Port of Homer.

Quality requirements for woodchips are very tight. Generally, buyers will not accept chips with over 0.5% contaminants (bark, rot, dirt, etc.) and 0.5% fines. Export markets often have tighter quality requirements than domestic markets. The ideal chip size is 20 millimeter (mm) long in the direction of the grain and 4 mm thick. Good quality chips are between 10-30 mm long and 2-5 mm thick. Oversize chips are sent to a rechipper while fines are burned for heat or energy.

One of the reasons for the success of the CFPs' chip sales was that the mill built its own chipping facility and did not rely on portable chippers in the woods. It is very difficult to maintain quality standards when using a portable chipper, particularly in winter when the bark is frozen. Portable chip operations should be carefully examined for quality control.

The beetle-killed spruce trees have perfectly acceptable properties for kraft pulping as long as decay has not set in. A kraft pulping study by Werner,

Elbert, and Holsten (1983) on beetle-killed white spruce in Southcentral Alaska showed no loss in pulp yield from trees dead as long as 50 years. (See appendix for complete paper.) The kraft pulp market is a natural fit for the dead Kenai spruce. Other pulp markets may or may not have the same results. The kraft pulping process breaks down each fiber. Other processes that maintain the integrity of each fiber may not get such a high pulp yield. Tests should be made to determine the properties for different pulping methods.

Due to its smaller scale, the chemithermomechanical pulp (CTMP) process is likely to be the most feasible method for the Kenai Peninsula. A 1990 report by Edmond Packee of the University of Alaska Fairbanks outlines the following profile of a small-scale CTMP plant:

Mill Size	300 tons per day, current minimum design
Annual Production	106,500 tons (300 tons per day x 355 days)
Value	$750-$800 per ton (Nov. 27, 1990 prices)
Annual Gross Value	$82,537,500 ($775 x 106,500 tons)
Mill Employment	125 to 135 (direct)
Number of Loggers	50 based on a 220-day year; exclusive of truckers and service personnel

3.4 Preservative Treated

There are no preservative treatment facilities in Alaska. Plans call for the addition of a treatment facility to the CFP Seward sawmill.

Substances used in treating wood against rot commonly include creosote, copper arsenates, and other copper-based organic chemicals, but these are considered toxic or hazardous materials and require special handling. Alternatives (such as copper phosphate/copper sulfate double diffusion and borate treatments), are now being researched in Alaska.

In-state consumption of treated lumber is estimated to be 2 to 3 MMBF, total in-state consumption of all treated wood, excluding railroad ties is estimated at 4 to 5 MMBF. Principal products include poles, residential decking, bridge work, posts, and other dimensional stock. Annual use by the Alaska Railroad is estimated at 2 MMBF.

Smaller size landscape ties are commonly not preservative treated, but are dipped in a dark stain and sold at prices in the $5 to $10 range.

Of Alaska state agencies, the Alaska Railroad is likely the single largest user of wood. The Alaska Railroad purchases treated ties (7"x9"x8.5'), switch ties (up to 16' in length), car stakes (6"x6"x10'), tapered at each end), wedge blocks (24"x4'), car decking (varies per need), timbers and decking for bridges (typically Douglas fir), and other miscellaneous materials. While they have in the past had contracts with local suppliers for treated ties, it was at a time when no treatment facility existed in the state and timber supplies were erratic. Ties were cut in Alaska, sent to the Seattle area for treatment and shipped back to Alaska. With an adequate timber supply and promising preservative alternatives to creosote and arsenates, it could, if treated locally, be possible for Alaskan producers to

be awarded contracts to supply ties and other products to the Alaska Railroad.

The Railroad presently uses creosote treated ties. As a hazardous or toxic waste material, creosote possesses a long-term disadvantage. Although they are evaluating alternative tie materials such as steel, there may be an excellent opportunity for local producers to work with technical experts and state officials to secure 3 to 5 year contracts with the Railroad. Timing is crucial since it is likely that purchasing decisions will be made before the end of 1992 or early 1993.

A local treatment plant with adequate capacity is essential, in that it is marginally economical to ship wood outside for treatment and re-ship it to Alaska. Given the increased mass of treated material, Alaskan producers, using an in-state treatment facility would be able to save on shipping costs which would be incurred by outside suppliers. Once a suitable alternative treatment to creosote is accepted by the Alaska Railroad, it should be possible to establish a local treatment facility. Such a facility could be used by a number of wood product producers. A local treater could also consider producing fire retardant products for building applications outside of Alaska.

3.5 Other Value-Added Products

Many value-added products can be produced with relatively little capital investment. With a high-volume operation producing dried and graded stock, small-scale remanufacture of specialty products can be supported.

Repair and remodeling products should continue to do well in Alaska, as in the Lower-48.

3.5.1 Alaska

Located mainly in the Southcentral and Interior regions of Alaska, there are a number of small producers of value-added products. These products include:

- Rough-sawn and planed green lumber
- Chips
- Architectural woodwork, moulding, etc.
- Paneling and flooring
- House logs
- Landscaping materials
- Pallets, moving crates
- Custom log homes
- Commercial and residential furniture
- Custom home building (stick built)
- Cabinetry
- Bowls, vases, planters, and other decorative/handicraft products
- Firewood
- Picture frames

Examples of Alaskan companies' product lines for wholesale or retail trade

include: 1) The Valley Sawmill, has been making rough and planed lumber in Anchorage for a number of years; they have recently opened a new mill across Cook Inlet from Anchorage. 2) A Thorne Bay company makes cedar shingles from sawmill residues, employing 12 people. 3) One Fairbanks producer of wooden bowls (mainly birch) produced approximately 10,000 turned bowls during its first year (1991-1992) of operation. 4) Two Wasilla companies, no longer in business, produced paneling and flooring for the Southcentral Alaska market, employed 13 people; and an Anchorage company produced log cabin kits for export to Japan from 8" notch logs, with cabinets, interior partitions and additional lumber included in the kits.

No detailed sales, production, or employment data is available for this these small manufactures in Alaska.

3.5.2 Kenai Peninsula

Examples of products being produced by roughly 15 companies on the Kenai Peninsula:

- Crafts
- Dogsleds
- Bracelets, carvings, wood figurines, and other decorative items
- Burl clocks
- Wood bowls and vases
- Toys
- Dimensional lumber, posts, planks, decking
- Furniture (stools and tables)
- Chips
- Cedar planters
- Custom cabinets
- Kitchen cabinets
- Spruce logs
- Glue laminates
- Log homes
- Picture frames

The estimated total value of these products is about $7.8 million for 1991. Of this, roughly $7 million was attributed to the CFP Seward sawmill.

3.6 Log Homes and House Logs

Prefabricated log home kits are one of the most attractive industry options for utilizing small amounts of beetle-killed spruce. Forest disease and pest outbreaks in lodgepole pine stands in the Rocky Mountains helped to create a sophisticated and growing log home manufacturing industry in that region. We can expect the same type of activity to occur with the spruce beetle epidemic if the industry is nurtured and allowed to grow. Capital costs for a manufacturing plant total about $0.5 to $1 million and can expect to employ 8-15 people in direct manufacturing jobs. Such a plant would likely use 2 to 4 MMBF per year.

A log home company could also be in a position to develop sales of profiled

logs for other log home builders inside and outside of Alaska. Interest has been expressed by large-scale U.S. log home builders in producing both finished home kits and profiled logs on the Kenai.

House logs and log homes are generally the highest value product that can be made from beetle-killed trees once checking has started. The industry in Idaho, Montana, Eastern Oregon, and Wyoming became well developed after an outbreak of forest pests killed large quantities of ponderosa pine. The spruce beetle infestation could spur similar development of a log home industry on the Kenai Peninsula.

The activities in local log home manufacturing for domestic and export markets is increasing. The methods used for these log homes range from hand hewn to turned logs.

A homebuilders association survey found that people buy log homes for the following reasons, in order of preference:

1. Exterior appearance;
2. High quality construction;
3. Interior appearance; and
4. Saving money by helping with construction.

The same survey found that the resale value and appreciation of log homes exceeded those of conventional single family detached homes by more than 15%. The survey implies that a log home will sell before a frame house when the buyer is offered a choice. The sale value of log homes is supported by an anecdote from a Soldotna developer who built 20 homes in 1990. The developer built six log homes in the subdivision, and all log homes sold before any of the other conventional (frame) speculative homes.

3.7 Housing

The need for low and moderate income housing in Alaska could support manufactured housing products as well as cabinet and interior finishing wood products. Extensive investigation is needed concerning codes and regulations, obtaining approval by lenders and public agencies, and in developing appropriate designs.

3.8 Tongue and Groove Paneling (T&G)

With the availability of graded lumber, small scale producers can remanufacture products such as T&G with or without surface finishing or sealing. The do-it-yourself (DIY) market in Alaska is still mainly served by outside sources who package complete kits as well as bulk finished stock.

3.9 Glue-Laminates

As an alternative to solid wood or steel beams, glue-laminated (glue-lam) beams and laminated veneer lumber offer a way to use smaller sized trees to produce high-value products, typically for roof and floor applications.

These products have a high strength-to-weight ratio and have very consistent strength characteristics, making them a viable substitute for solid wood and metal products. Trusses represent an extension of basic glue-lam beam manufacture.

As glue-lam products are relatively new, strong marketing by producers to designers and buyers not familiar with glue-laminate beams have proven necessary to succeed.

While this represents a high value-added product, it requires significantly more technical expertise and capital investment than T&G paneling. This includes testing and quality control processes as well as specialized production expertise. This may be a good joint investment opportunity with experienced manufacturers.

For structural applications, a common substitute is laminated veneer lumber (LVL). LVL uses lower grade lumber pieces that are laminated together to form the core of the post. A veneer of appearance-grade old growth is glued to this core stock to create a post that meets both appearance and strength requirements. Significant market opportunities have arisen from this technology, and new markets for core stock and clear veneers are growing in Japan.

LVL is also being used for furniture, cabinetry, and many specialty products and is an alternative to particleboard covered with wood veneer or plastic.

3.10 Specialty Wood Products

Architectural woodwork and specialty products (such as gift products), are all excellent value-added products which do not require extensive capital outlay. Few in-state companies produce these products. What is needed is a detailed market research effort to sort out the most feasible products from the myriad of possibilities.

Through investment in computer-controlled processing mills, a wide range of products can be produced without the risk associated with dedicated equipment.

Products such as turned bowls and vases require technical knowledge as well as one to two years of marketing work to develop a satisfactory customer base.

Interest has been expressed by the Great Alaska Bowl Co. (Fairbanks) in obtaining high-quality green spruce wood blanks for their unique turning operations.

3.11 Furniture and Cabinetmaking

Spruce can be used to produce simple and decorative furniture such as stools, simple tables, and outdoor furniture. With an ample supply of timber, a favorable transportation situation, and access to major Pacific Rim markets, there may be excellent opportunities for experienced manufacturers to

consider the Kenai Peninsula.

For efficient, small-scale operations, there may be some excellent opportunities in the Alaska market for economical furniture, as well as high-end and custom furniture. Competition from major chain stores, however, will have to be taken into account in pricing.

The value of wood furniture products from U.S. suppliers in 1991 was $7.6 billion and is expected to increase another 6.3% to $8.1 billion in 1992. The growth in furniture manufacturing is expanding into the Mexican Maquiladora districts. Overall growth in the furniture industry in Mexico totaled 54% for the period 1984-1990. The growth was fueled by U.S. companies moving into Mexico to take advantage of lower labor costs. Many of the furniture manufacturers are relatively small, and their lumber dimensions and species requirements are somewhat unique. This type of fragmented industry requires a specialized marketing program to build confidence in each buyer that a stable and reliable supply of quality product is assured. Buyers often place their confidence in a supplier based on their track record, which makes it difficult for a new supplier to enter the business. Two approaches for gaining access to the market are entering into a joint venture with an existing supplier or using a specialized broker to handle all sales for a period of time.

Local cabinetmakers could consider taking advantage of local market opportunities for do-it-yourself products and could sell to builders of log and manufactured housing as well as retailers. The added value component of kitchen cabinet manufacture in Alberta, Canada around 1980 averaged 60% over four year period, according to a survey of manufacturers by Statistics Canada.

There are a number of local cabinet manufacturers supplying commercial and residential customers, most doing so for small custom orders.

3.12 Ready To Assemble Furniture (RTA)

This is a strong and growing market in the U.S., estimated at nearly $2 billion in 1987 and expected to continue at a very strong growth rate. Most furniture imported into the U.S. is RTA with most manufacturers outside of the U.S. In Europe, the majority of cabinets are RTA, while in the U.S., the opposite is true.

According to an industry report in 1988, what would not sell for over $50 in 1977, rose to $250 in 1987 and was expected to continue rising well past $500. Although prices are increasing, a survey in 1986 shows that 25% of the market was priced in the $50 to $100 range, 40% in the $100 to $200 range, 25% in the $200 to $300 range with products priced over $300 accounting for 10% of the market.

Typically, RTA products use particleboard with melamine or wood veneers. Without a particleboard manufacturer in-state, one challenge may be to develop a line of competitively priced solid wood RTA products. These could command a relatively higher price to the particleboard, based on consumer preferences for natural wood products. A modestly-scaled manufacturing plant

can be established for $1 to $1.5 million. Another option would be to develop furniture stock for RTA manufacturers.

Co-located with a particle board manufacturer, RTA furniture manufacturing could represent one of the higher added-value products.

Flexible designs allow for flexible manufacturing. Starting with one or two similar products, such as book cases, an RTA producer can develop other products, taking advantage of their established marketing distribution channels.

Markets include discount mass merchandisers, electronic and computer stores, home improvement centers, large department stores, warehouse clubs, specialty furniture stores, and catalog showrooms.

It is likely that any company planning to go into the RTA furniture business would have to acquire computer design and computer controlled milling capacity to assure high quality and low production costs. At present no Alaska manufacturer of wood products has integrated such capability. One way to begin would be to arrange a tour of the Northern Michigan Cooperatives and Technical Centers for those Alaskan producers serious about such work.

Discounters and manufacturers that cater to the mass merchandise trade agree that customers are becoming more interested in the top-end price level of furniture. Frank Aquila, National Sales Manager for Affordable Furniture, believes the strength of the volume will remain between $49 and $79 priced furniture but that higher priced furniture will also sell well. One manufacturer says that a ready-to-assemble piece probably will not do well if it is more expensive than a pre-assembled piece.

RTA furniture is gaining in popularity for use in both the home office and small business settings, a trend that manufacturers attribute to a better definition of the category by retailers and the increasing number of consumers who require this merchandise. Jeffrey Houseman of the Charleswood Corporation noted that home office users are more particular about their requirements than the customers for other RTA furniture products. This difference is because it is not only important that the RTA merchandise fit with office equipment, it is also important that the customer fits. Style is a major selling point, and manufacturers are introducing new colors and finishes to stay competitive. The major difference between home office and small business settings is that the home office consumer needs more of a compact design and function, according to Bill Agnew of Armstrong Furniture. Ben Levy of Soundesign Corp.'s RTA Furniture Division predicts that retailers will be offering lower price points on their RTA offerings as a result of the recession. (Chanil, Debra,1991.)

In Anchorage, there are two manufacturers of office furniture, employing about 25 people. These companies import truckloads of unsurfaced particleboard and that which has been veneered. Careful attention is paid to design, quality of fasteners and fittings, and the manufacturing process. At present, they use small quantities of Alaska and imported hardwoods for trim. Although they use RTA manufacturing methods, they usually take responsibility for final assembly and do not package their goods as RTA.

One of the main problems these companies face is the lack of attention by government purchasing departments to their products, favoring outside suppliers through direct sales and area sales representatives.

3.13 Fish Roe Boxes

Roe boxes are usually made of clear white spruce - no knots acceptable in the Japanese market, typical 5 Kilogram (Kg) boxes measure 2 3/4" x 9 1/16" x 12 7/16" and are usually made of 7/16" white spruce stock. They are generally lined with 4 mil polyethylene plastic film.

Based on industry interviews, it is estimated that 80% to 90% of the roe boxes coming into Alaska originate in B.C. Canada. The acceptance of plastic containers is increasing. Plastic possibly accounts for 30% of the boxes used in packing roe and is increasing.

The major suppliers of wood boxes provide additional value for their customers by sourcing salt, nails/staples, rolls of perforated liner film, and rolls of pre-printed top sheet film. They also provide plastic containers. In effect, they provide one-stop shopping.

Most of the roe boxes are die-marked with the customer's name on them. A die costs $700 to $1000. Prices for 5 Kg boxes start at $148.50 per 100 for ready to assemble boxes and $183.50 per 100 assembled. The 10 Kg size costs processors $205.00 per 100 un-assembled and $240.00 per 100 assembled.

Based on fish egg export data, over 25,000,000 Kg of salmon and other fish eggs were exported from Alaska in 1991. This would easily support informal estimates valuing Alaskan consumption of roe boxes at $5 million. Based on these quantities, it could represent 5 to 6 MMBF of white spruce. Specific follow-up with all roe suppliers in Alaska is needed.

3.14 Pallets and Crating

The U.S. market for pallets and skids was essentially flat in 1991 due to the downturn of the U.S. economy. U.S. producers' shipments were valued at $1.7 billion in 1991, down less that 1% from 1990. However, over the past 10 years, U.S. wooden pallet production has increased by almost two-thirds.

The industry primarily uses hardwood lumber, logs and cants, consuming an estimated 5.1 billion board feet (17.6 million cubic meters) in 1991. The industry also used an estimated 1.7 billion board feet (4.0 million cubic meters) of softwood lumber and 2.3 billion square feet (2.0 million cubic meters) of softwood plywood and oriented strand board/waferboard (3/8" basis) in 1991.

The pallets and skids industry is composed mainly of small operators employing an average of 18 workers per establishment. Roughly 2,000 firms produced an estimated 460 million wooden pallets and skids in 1990.

In Anchorage there is only one full-time manufacturer of pallets and a few wholesale suppliers of these products. They make pallets, moving crates, and other shipping containers. All of their lumber was bought from Chugach

Forest Products when the mill was operating. Depending on demand, there may be one or two more companies that can produce pallets and boxes. A typical breakdown of materials would include plywood from Oregon, 80-90% lumber from B.C., and the balance from Washington and Oregon.

3.15 Coffins and Caskets

Although most fine hardwood types will continue to be imported, ones made from local wood represent a small-scale manufacturing opportunity. From research done in Alberta, Canada, the value-added component to casket manufacturing averaged 50% over a 4 year period for which statistics were gathered.

From a 1986 Anchorage survey, it was determined that one-third of those interviewed preferred burial. According to a local funeral home, at that time roughly 60% were being buried, 40% were being cremated. Nationally, wholesale prices for caskets were in the $400 to $600 range. In Alaska, the low-end prices ranges from $325 to $525.

The chief barriers include: 1) product liability insurance, (estimated at $5 million with over $10,000 in annual premiums); and 2) Alaska Department of Health and Human Services specifications for coffins which favor outside suppliers.

The state-wide market for low-end caskets is estimated at 100 to 200 units per year. Given the limited nature of the Alaska market for softwood caskets, local mills could produce blanks for final manufacture to a wholesaler, as one Everett, Washington company presently does.

3.16 Musical Instruments

With Alaska's large visitor industry and the interest in folk art and handicraft products, manufacture of traditional and non-traditional musical instruments is another example of value-added products which could be supported. Detailed product and market research is needed.

The global (free world) demand for all pianos is about 375,000 units per year. The market for high grade pianos tends to be very stable and is rising slightly while the market for low-end pianos is declining.

The market for pianos in Northern Europe is near saturation but demand in Southern Europe is still increasing. The U.S. market for pianos is declining because it is approaching the saturation level of 20% to 25% of households.

The piano industry in Japan is an important market for Sitka spruce from Southeast Alaska. While Japan is no longer the leading manufacturer of pianos, it still dominates the high quality piano segment. This high quality segment is very stable and does not fluctuate with global economic conditions.

Korea is now the largest manufacturer of pianos in the world. Korean manufacturers have dominated the market for medium-to-low grade pianos. They

have gained a strong position in the manufacturing of other musical instruments as well. Korean manufacturers use a "variety of spruces, mostly from North America." (Kim et al. 1988).

According to Yamaha Piano Group in 1989, there is only one manufacturer of piano soundboards in the U.S., Posey Manufacturing in Hoquim, Washington.

The soundboard, keyboard and other parts of pianos are made from Sitka spruce. The wood properties for high quality pianos are among the most exacting in the world. Romanian spruce from Germany is considered the best species, followed by Sitka spruce from Alaska and Canada. Only about 40% of a select Sitka spruce log is acceptable for soundboards in high grade pianos. The wood must be totally free of knots, have straight grains with 3-10 grains per centimeter, and have few pitch pockets. The piano blanks must be seasoned for 6 months (low grade pianos) to 5 years (concert pianos) before they can be kiln dried. Blue stained wood is unacceptable as piano stock. The blanks must come from quarter sawn boards, not full sawn boards, in order to get the proper grain alignment.

For low-end pianos the ability to substitute other species for Sitka spruce increases. Yamaha now uses strictly Sitka spruce but is testing the use of sugar pine and other species in low grade upright pianos. Basswood from the U.S. is often used in lower grade pianos made by other producers.

The use of white spruce in instrument manufacturing is unknown, but clears from butt ends of logs conceivably have the properties acceptable for lower grade pianos, guitars, violins, and other string instruments.

3.17 Energy

Most integrated sawmill operations need to plan for burning hogfuel for electricity and cogeneration of steam for kiln heating.

Assuming that a wood processing center could not utilize a sufficient quantity of its wood waste by-products, material could be sold for firewood or processed into pellets by a co-located pellet mill.

While wood fiber fuels, such as presto logs or pellets appear to be best suited to the residential market, securing institutional or commercial customers for pellets is essential to the feasibility of pellet manufacturing in Alaska. The residential market is the most accessible market given its lower sensitivity to BTU costs and aesthetic factors. The single largest consumer market in Alaska, Anchorage has approximately 75,000 households, 55% of which have at least one fireplace and 9% have woodstoves (source: ASK* Marketing and Research Group for the Municipality of Anchorage, Department of Health and Human Services, Division of Environmental Services, 1991).

3.17.1 Firewood

A December 1985 market report for the Alaska Power Authority indicated the total Alaska market was 51,000 cords per year with 17,500 (35% of total) purchased and 33,600 cords cut by individual householders (65%). Average

purchase price per cord was $85, for a total purchased firewood market of $1,488,000. (Cal Kerr, 1989.)

Current prices for firewood range from $75 to $125 per cord.

3.17.2 Fuel Pellets

A pellet mill located near a wood processing center would buy waste products, including bark, chips, sawdust, etc. and process them into residential and commercial grade fuel.

Currently there are no wood pellet producers in Alaska. However, pellet stoves are being sold in the state and pellet fuel is shipped from producers in the Pacific Northwest and sold at prices 75% to 100% higher than in local Pacific Northwest markets. Shipping costs can amount to half of the price consumers pay for the pellets. Prices for a ton of wood fuel pellets in Alaska ranged from $185 to $250, depending on transportation costs. In 1988 the Village of Kake switched from fuel oil to wood pellets for heat. (source: Nov. 1990 Bioenergy News, Alaska Energy Authority)

With favorable shipping rates, it may be possible to tap the Japanese market for fuel pellets -- initially northern and Hokkaido areas. In these areas the use of wood fuel pellets is already established. Shipping costs will need to be carefully explored.

The State of Alaska could help a pellet plant get started by facilitating contracts for commercial scale accounts. These could include prisons, generating stations, office building heating plants, etc.

Pellets are generally uneconomical when gas is available. Cost per million BTU can generally be comparable to fuel oil.

3.17.3 Presto Logs

These represent an alternative to pellets and may find a wider market, initially, since no retrofitting of stoves is needed. The advantage of Presto logs over solid wood logs includes a higher BTU content; one log can burn all night in an airtight stove.

It is possible that one plant could produce both products.

3.17.4 Chips

Green wood chips - cost per million BTU is substantially cheaper than pellets. Properly designed stoves produce very little ash and tar residue. Chips can also be mixed with coal to improve emissions (they cannot cost more than coal).

3.17.5 Alcohol Synthesis

There are a number of processes which breakdown cellulose for processing by biochemical means into methanol and other by-products. A recycling plant designed to accommodate large quantities of paper pulp (as well as wood chips, bark, etc.) would require substantial capital investment.

Given the Federal mandate for clean air fuels and the roughly 9 million gallons of gasoline consumed in the Anchorage area, producing alcohol from wood fiber needs a close look. Earlier studies for grain-based ethanol production show that without waste by-product sales the project would not be profitable.

One or two Anchorage companies have seriously considering alcohol from recycled waste cellulose.

3.18 Other Waste By-products

3.18.1 Road Fill

Chunk wood road fill and newer substances such as "Chunkcrete" have possible applications in Alaska for low-use roads. Chunkcrete, which is a mixture of cement, sand and wood chunks less than 3" in size is being developed by the Houghton Michigan Laboratory of the USFS. Some investigation needs to be done to determine its feasibility for low use rural roads and logging roads on the Kenai Peninsula.

3.18.2 Animal Bedding

Anchorage retail prices for white wood shavings in partially densified 8 cubic foot bags is $10 to $11. In Fairbanks, sales of this waste stream product have been demonstrated at the Great Alaskan Bowl Co. If the price was in the $4 to $6 range, closer to that of cleaned, shredded newsprint ($3.50 to $4.00 per bag), then a market for small and large animal bedding would become available. The advantage shavings have over newsprint is the lack of dust. Its disadvantage is a relative lack of absorbency. This disadvantage is not a great one, however.

The present Southcentral Alaska market for animal bedding use can be estimated at $0.5 to $0.8 million.

4. DOMESTIC MARKETS

4.1 Lower-48 Market

National housing starts are expected to increase through 1993 with a stronger increase in remodeling and repair work estimated to grow to $130 billion in 1993. These factors will continue to drive up the price for wood products as well.

Alaska wood products have traditionally been noncompetitive in Canadian and Lower-48 U.S. markets due to high operating and transportation costs in Alaska. The only products that were competitive in the U.S. market were logs and lumber from Sitka spruce for specialty products, and cedar shingles for roofing markets. Due to the low cost sawmills and low stumpage rates in the Pacific Northwest and Canadian lumber, products from Alaska have not been competitive in the Lower-48.

This situation has changed for the better in 1992. The Alaska Pulp Corp. sawmill in Wrangell now sells 30% of its output in Washington building markets and James River Corp. shipped 2 or 3 shiploads of pulpwood to its mills in the Pacific Northwest. These market shifts are occurring even though the lumber markets in the U.S. are relatively stagnant.

Washington, Oregon, and Northern California are known as the "fiber basket" of the U.S. The timber industry's contribution to the economy and the development of the region is well documented. However, the listing of the Northern Spotted Owl as a threatened species under the Endangered Species Act has contributed to a significant reduction in available timber supplies.

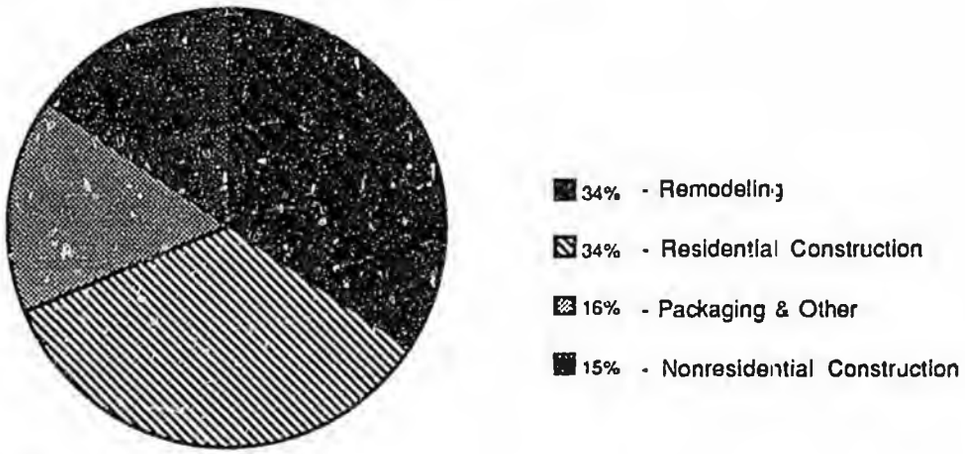
Likely increases in demand in combination with reduced Lower-48 supplies and subsequently increasing prices suggest good opportunities for Alaska timber products to be sold in the future to paper companies, furniture manufacturers, log home builders, and retailers of gift and decorative items.

4.1.2 Lumber

Through 1992, total U.S. lumber production is expected to increase by about 9%. Wood chip production also is expected to rise slightly. Softwood lumber imports are projected to rise substantially in 1992, based on expectations of a substantial increase in demand and only a moderate increase in U.S. production.

U.S. softwood lumber consumption is expected to increase to 48.27 billion board feet in 1992, below the peak level of 50.55 billion board feet in 1987. While current lumber prices did not change much over the 1990-1991 period, prices for S-P-F random lengths are projected to increase to $240 per thousand by 1996.

Lumber Consumption in the U.S. by End-Use



Source: Widam Managment, 1992.

Use of softwood lumber in residential construction markets has declined from nearly one-half to about one-third of the total softwood lumber consumption. Repair and remodeling markets now account for the largest single use of softwood lumber. By 1996, U.S. housing starts are forecast at 1.6 million units, which represent a strong market.

Consumption of panel products in the U.S. and Canada is expected to grow, supporting production levels of nearly 30 billion board feet in 1996.

According to various experts, there is likely to be an increase in demand for softwood lumber at a time when available supplies of timber from the Pacific Northwest, West Coast, and western Canada are being reduced. Estimates of the softwood lumber shortfall for the U.S. market range from 5 to 9 billion board feet.

"As demand for lumber increases and U.S. Pacific Northwest production falls during 1992 and 1993, the market prices received by sawmills in all U.S. and Canadian regions will improve substantially over 1990 levels. As a result, efficient mills with access to timber will again be able to cover the higher wood costs that characterize all producing regions in North America, including British Columbia. ...there can be no question that the supply of softwood lumber products will shrink relative to the increase in consumption that will take place by the second half of 1992 and during 1993. Although total demand in the United States will be less than the record consumption set in 1987, each producing region outside the U.S. Pacific Northwest will enjoy a larger share of the market." (source: J. Douglas Smyth, Research Director IWA, 1991).

In the first half of 1991, more mills closed in Oregon and Washington than had ever closed before in an entire year. This trend was expected to continue through 1992. Improvements in domestic and international markets, coupled with adequate supplies of Alaska timber, suggest opportunities for development of a value-added wood products industry, rather than low-value recovery of the resource represented by sales of round logs.

The following table is taken from J. Douglas Smyth's report, "The Impact of Changing U.S. Timber Supplies on the U.S. Countervailing Duty Action Against Canadian Softwood Lumber Imports."

U.S. Softwood Lumber Consumption
1987 and 1991-1993
(billion board feet)

1987	(record)	50.6
1991	(preliminary)	43.1
1992	(preliminary)	44.3
1993	(preliminary)	48.5
1991	exceeds 1987	-7.5
1992	exceeds 1991	1.2
1993	exceeds 1991	5.4

Source: U.S. Department of Commerce projections, Western Wood Products Association, and various forecasters, unpublished).

About 95% of the U.S. lumber industry's imports come from Canada. Imports in 1990 were about $2.8 billion, compared to $3.2 billion in 1989, a decline of more than 12%. About 90% of the imports were softwood lumber.

The price of framing lumber increased during the second quarter of 1991 to more than $300 per MBF and is expected to level off to a year-end average of $240 MBF, the same as in 1989.

According to Widman Management Consultants and Forest Industries publications, over 90% of U.S. production remains within the U.S. while the majority of Canadian production is exported. Canadian mills still supply over 90% of their country's lumber consumption.

The value of the U.S. lumber industry's exports rose about 5% in 1990 from $2.4 billion in 1989 to $2.5 billion. Softwood lumber exports in 1990 were valued at more than $1.3 billion, down 4.7% from 1989, while the quantity exported decreased 13% to 2.9 billion board feet, or almost 6.9 million cubic meters.

Value of U.S. Production from Sawmills and Planing Mills
(Value in millions of dollars (1987))

	Exports	Imports	Shipments
1990	$2,498	$2,804	$16,284
1991	$2,523	$2,327	$15,470
1992	$2,645	$2,606	$15,934 (forecast)

Source: U.S. Department of Commerce, 1992.

In 1991 softwood lumber exports increased about 1% in value, while hardwood

exports increased 1.5%. Softwood lumber exports to Canada, which was in the midst of a recession, decreased about 25% while exports to Japan rose slightly.

For the first time since statistics have been gathered, wood consumption by the remodeling and repair sector has exceeded that of the residential construction industry. According to an industry source, the U.S. do-it yourself (DIY) market for wood and wood products was $22.7 billion in 1989 and was expected to grow to $25.3 billion in 1993. (Am Paint 90/06/04 p.59).

Recent estimates peg wood consumption by the repair and remodeling sector at 14.78 billion board feet lumber. The share of softwood used in this sector has risen from 21% in 1976 to 34% in 1991. From 1992 through the foreseeable future, this share is anticipated to plateau at 15.28 billion board feet.

The following table from Western Wood Products Association and Widman Management Consultants shows the trend in lumber consumption in the U.S. for repair and remodeling.

U.S. Repair and Remodeling Lumber Consumption
(Million Board Feet)

Year	Volume	% Change from Previous Year
1977	7,474	1.6
1978	8,089	8.2
1979	8,170	1.0
1980	8,111	(0.7)
1981	7,900	(2.6)
1982	8,012	1.4
1983	8,978	12.1
1984	11,325	26.1
1985	16,363	9.2
1986	13,350	9.4
1987	15,383	13.7
1988	15,132	(1.6)
1989	14,911	(1.5)
19[illegible]	15,153	1.6
*	14,775	(2.5)
Forecast		
1992	15,275	3.4
1993	14,650	(4.1)
1994	14,260	(2.6)
1995	14,320	0.4
1996	14,400	0.6

* 1991 is an estimate.
Source: Widman Management Consultants, 1992.

4.1.3 Treated Lumber

Through the mid-1980's market growth for treated lumber averaged 10% per year. U.S. sales by region were estimated from a 1990 survey of U.S. treaters:

	North-east	North-central	Rocky Mtn.
Dimension	14.58	20.09	1.0
Poles	1.17	7.50	3.92
Posts	0.09	4.17	0.75
Plywood	1.00	0.42	n/a

(millions of cubic feet, converted from board feet)

Source: Industry Survey.

Consumer demand for preservative treated decks, fences, and landscape ties has the greatest impact on treated lumber sales. Treated products used in the construction of patio decks and fences appear to be the dominant force in this market. Although volumes of wood for decks and related structures are connected to housing starts, many sales are being made to homeowners as DIY projects both as new additions and replacements market where decks are not large enough or are rotting.

4.1.4 Pulp, Paper, and Related Products

According to Standard & Poor's May 1992 Industry Survey of Paper and Forest Products, "improved productivity, slower capacity growth, and restricted fiber supplies should lead to higher profits for the paper companies this year." The survey also predicted "improved demand from a stronger economy will cause explosive earnings growth in 1993."

Some grades, such as coated paper board are in limited supply. The market for paper pulp is expected to remain strong with prices increasing. Anticipated increases in demand for paper are expected to exceed current and newly added national capacity for pulp.

From a national survey of 69 publishers, representing 356 magazines, paper usage was projected to increase 2.8% in 1992 over 1991 figures, and 3.7% in 1993 over 1992. This represents 1.67 million tons of paper.

Exports of chips reported increased more than 7% in 1990, to $361 million.

4.1.5 Hardwoods

Although it will require further investigation, there are markets for birch and other hardwoods, a market which has improved greatly since the mid-to-late 1980's. According to Frank Seymour, Forest Products Specialist for the Alaska Department of Commerce, given an adequate supply of birch logs, there may be opportunities for approximately 4 MMBF per year in the Southern

California area for Alaska white "paper" birch kiln-dried lumber graded to National Hardwook Lumber Association (NHLA) standards. The Puget Sound and San Francisco areas would also be likely markets. This would be for select or better and number one grades, in rough planed dimensions.

In-state use of milled birch and other hardwoods has remained low due to a lack of an adequate supply of sawn, kiln-dried, material.

Most of the growth in the wood furniture industry has come from particleboard and medium density fiberboard products, but solid wood furniture has seen growth as well. There are opportunities to supply these manufacturers with furniture stock on a regular basis.

4.1.6 Log Homes

The National Association of Homebuilders Research Center estimates that the 420 log home producers in the U.S. produce 25,000 units annually, or about 1 home for every 10,000 home buyers. Ninety percent of these homes are primary residences.

Demographics of U.S. log home buyers show that they are likely to be between 25 and 45 years old, married with children, employed as a manager or professional, and have a household income of $40,000 per year. The home is being built as a primary residence, and is located in the outer ring of the suburb. Buyers use words like "homey," "cozy," and "natural" to describe why they bought their home. Other reasons include energy efficiency, low maintenance, and ease of construction. Most buyers work with the manufacturer or contractor to design and/or construct their homes, but some buyers do small parts of the job themselves. The do-it-yourself homebuilder is a small minority.

4.2 Alaska and Kenai Peninsula

Freight rates play a critical role in the competitiveness of Alaska's forest products. The cost of bringing lumber into the Railbelt market from Seattle is about $70 per MBF. This gives Alaska processors a cushion in local markets but puts them at a disadvantage in West coast markets. Low stumpage rates could help to make Kenai Peninsula products more competitive. To be competitive in U.S. markets, Kenai Peninsula processors must manufacture high value products that offset the impact of high freight rates. Many lower value products can be competitive in-state.

Freight rates from Anchorage to various destinations are listed below. These are published tariffs and should be considered a high estimate. Negotiated rates would naturally be lower. Additionally, many forest products would be shipped by chartered vessel.

Anchorage - Tacoma	$875 per 40' container
Anchorage - Los Angeles	$1,900 per 40' container

Roughly two-thirds of Alaska's population resides in the Railbelt area, which encompasses the Kenai Peninsula, Matanuska-Susitna, Fairbanks, and Anchorage

areas plus small communities along the rail lines. Thus, physical access to local consumer markets is assured.

4.2.1 Round Logs

ITT Rayonier is using Seward as a trans-shipment point to load logs harvested near Fairbanks that are destined for Japanese markets. Logs from the Kenai Peninsula could be cost competitive with this existing venture.

Sales of round logs from the Kenai Peninsula have generally been limited to local suppliers and markets for firewood and rough lumber. Small quantities of houselogs have been used by local log home builders. If log home companies invest in profiling or final manufacturing plants, then an additional in-state and export market for logs would be available.

Although the CFP Seward sawmill is currently not operating, it is expected to resume operations in late 1992, making it the largest local customer for logs on the Kenai Peninsula. The CFP Seward sawmill previously relied on Native corporate timberlands but also purchases logs on the open market. Reactivation plans for the CFP mill call for feedstock from public timber sales as well as privately owned timber.

Remote rural markets will continue to be difficult to access. However, if shipping costs from Anchorage to Dutch Harbor can be reduced enough to compete with Seattle costs, then coastal and inland villages located in the western and northwestern regions could become new (albeit small) markets for lumber, manufactured housing, and other manufactured wood products. Alaska Commercial Company presently is the major supplier of wood products to these areas.

Round logs, although providing a poor net economic return when exported, are products which can be supplied by large and small logging operations. However, until the CFP Seward sawmill reopens and additional in-state capacity for processing various stock is developed, export markets will continue to be the mainstay for logs.

Sales of logs along with rough and finished dimensional stock may be necessary to facilitate access to new customers overseas.

4.2.2 Lumber

From various sources, the in-state lumber market can be estimated at 130 MMBF to 150 MMBF. At $300 per MMBF (composite price), the Alaska lumber market can be valued at $40 to $45 million. This number would seem low, based on interviews with a number of companies in wholesale and retail trade.

A sales-based estimate of the 1991 in-state lumber and wood products markets would appear as follows:

(1991 - $ Millions)

Lumber	$45.0	to	$52.8
Panels (plywood, waferboard, particleboard)	8.0	to	12.0
Misc. posts, etc.	4.0	to	7.0
Total	$57.0	to	$71.0

Source: ASK* Marketing and Research Group, unpublished estimates.

Softwood lumber imports to Alaska from domestic and foreign sources have averaged 100 MMBF annually through the late 1980's. In 1990, $2.2 million of softwood lumber were imported from Canada, with $1.5 million in 1991. This represented an estimated 15.1 MMBF and 7.3 MMBF respectively. The following table shows the most recently available detail on wood product shipments into Southcentral Alaska:

Net Shipments of Wood Products
into Southcentral Alaska Harbors

	1983	1984
Lumber		
Short tons	159,421	152,395
MBF	145,073	138,679
Posts, Poles, Pilings, and Other Rough Wood		
Short tons	--	28,067
MBF	--	5,613
Veneer, Plywood, and Other Worked Wood		
Short tons	--	342,852
000's sq. ft.	--	42,944
Other Wood Manufactures		
Short tons	--	106,008

Source: G. Knapp and K. Foster, 1986.

The estimated 1980 per capita consumption of imported lumber for the Railbelt area was 267 board feet and 85 square feet of plywood. Locally produced lumber per capita consumption was estimated at 33 board feet. The resulting total for 1980 per capita lumber consumption was 300 board feet. At the time, the U.S. per capita consumption was 141 board feet. (source: Reid, Collins, Kenai Peninsula Timber Supply and Marketing Opportunities June 1982). One explanation for the high ratio would be oil field use and the fact that relatively little stone and concrete is used in Alaskan residential construction, compared to national usage rates.

In contrast, the USDA Forest Service's 1982 national model (medium

consumption level) was applied to Alaska's population base of 550,000:

Hardwood lumber	22.8 MMBF
Softwood lumber	107.8 MMBF
Softwood plywood	53.4 MM SQ FT 3/8" basis
Particleboard	34.4 MM SQ FT 3/8" basis
(includes composite, flake, MDF, wafer boards)	
Fuelwood	2.5 MM CU FT

Source: George Sampson, 1988.

Use of particleboard in Alaska was estimated to be well below the consumption rate based on the model. In addition to the products listed above, timbers, posts, pilings, poles, railroad ties, and paper products are used in the state. (source: USFS George Sampson Aug. 1988, Potential for Forest Products in Interior Alaska)

According to a 1982 Reid/Collins study, demand for lumber in the Railbelt area was estimated to be 64 MMBF and was expected to increase to 82 MMBF by 1986. Based on per capita estimates, Alaska Railbelt lumber consumption was estimated to be 76 to 88 MMBF. (source: Reid, Collins/Cal Kerr; Kenai Peninsula Timber Supply and Marketing Opportunities June 1982). At the time of that study, approximately 2500 housing units were permitted for construction in Anchorage in 1981 - roughly twice the estimated new construction anticipated for all of Alaska for 1993.

Tight timber supplies in Southeast Alaska and the Pacific Northwest have caused firms in these regions to reach as far north as Afognak Island, Prince William Sound, and Kenai Peninsula for logs. The Alaska Pulp Corporation sawmill in Wrangell is using these supplies to feed its sawmill operation (Bradner, 1992), and James River Corporation is purchasing pulpwood from Afognak and Homer to feed pulp mills on the Columbia River.

4.2.3 Log Homes

The Alaska market for log homes has some demand which has not been realized because production, marketing and legal requirements have not been fully developed as with out-of-state suppliers. Out-of-state suppliers, several of which have sales representatives in Alaska have model homes, color catalogs, backed by a substantial design and manufacturing capacity. The potential for this market requires additional research.

The major market for log structures in Alaska is the visitor industry. Rapid growth in the visitor industry combined with the shortage of bed space makes prefabricated log homes an attractive alternative for expanding overnight capacity. Many lodge owners will purchase a number of units at one time, along with a central lodge. Others find that adding a single log home is an effective way to moderately expand. Bed and breakfasts are growing in popularity as an alternative to crowded and expensive hotels. Log homes are well suited for this use. Kenai Peninsula manufacturers have received inquiries and sales from all of these types of buyers. The size of the market is difficult to estimate but it is apparent that a market exists. In all cases, a log home projects a frontier lifestyle that closely matches

Alaska's image in the minds of residents and visitors alike. Based on national consumption and local estimates, the annual demand in Alaska for homes is 50 to 75 units per year, plus another 25 to 50 for recreational cabins.

4.2.4 Housing

The State of Alaska is expected to invest $15.4 million in new housing construction and $54.6 million in homebuyer assistance for 1993. Federal funding for Indian Housing Authorities in Alaska is expected to be about $118.8 million, of which $14.5 million will be spent on new construction with another $36.0 million for homebuyer assistance.

Although there is no firm information on projected new housing in Alaska, anticipated funding programs and conventional financing could support approximately 1,500 to 1,700 new housing units for 1993-1994. This would be based on 500 federally-funded units, 500 privately-financed construction, and another 500 to 700 State-assisted low-to-moderate income units.

Using a factor of 9,200 board feet of wood products for a 1,200 square foot manufactured home, an in-state demand of over 20.7 MMBF for 2,250 homes per year was projected in a 1992 report for the CFP Seward sawmill. (It should be noted, that the average size of rural Alaskan homes is closer to 900 square feet.)

Most manufactured housing being placed in Alaska is barged up from suppliers in the Pacific Northwest. The U.S. average is approximately 12,000 board feet per conventional dwelling unit. This should contribute to the development of local lumber, cabinetry and manufactured housing businesses. With the cooperation of the U.S. Bureau of Indian Affairs, U.S. Housing and Urban Development, and Alaska Housing Finance Corporation, this demand could support one or two manufactured housing plants. Recreational cabins could also be manufactured by these companies and sold through local retailers or directly from the factory.

On the Kenai Peninsula, there is the potential for an estimated 50 log recreational cabins. If the Princess Lodge expands its capacity for 1993, another 50 log cabins could be required.

4.2.5 Treated Wood Products

Alaskan in-state markets, including ports, railroad, and public transportation departments could provide a good basis for treating of other wood products, such as pilings, etc. for in-state and possible export markets. Each year, the Alaska Department of Transportation and Public Facilities purchase bridge timbers, decking, and rails for ongoing bridge maintenance. They prefer 3"x12" Douglas fir in random lengths in the 10' to 20' range. Spruce and hemlock are often acceptable, depending on price and requirements. Some specifications require pentachlorophenol treatment. Depending on new highway construction and the results of bridge resurfacing tests, a modest in-state market for decking and other bridge components could increase. They usually stockpile 3,000 to 5,000 board feet of this sawn

lumber. Each bridge project uses 10,000 to 15,000 board feet.

Also, the USFS anticipates funding at least one new timber bridge project to be awarded in Alaska in 1993.

In 1988, the Alaska Railroad committed to a multi-year contract for 120,000 ties. These were produced by Trapper Creek Mill and Wrangell Forest Products. Problems which they encountered included erratic timber supplies and lack of an in-state treatment facility which required shipping ties to Seattle for treatment and shipping them back. The contracts were only partially fulfilled and the Railroad purchased ties from various suppliers in the Lower-48 and Canada. At that time, locally sourced wood had to be sent to Seattle for treating and then shipped to Southcentral Alaska to the Railroad. At that time prices for ties fluctuated between $18 and $24.50 each.

Recent projections by the Railroad call for 30,000 to 40,000 ties per year over the next 5 or 6 years. They also purchase about 500 switch ties (double the length of standard ones). In addition to the softwood ties, the Railroad has purchased hardwood ties, about one-third more expensive.

Estimating at 40 to 50 board feet per tie, purchase of 120,000 ties by the Alaska Railroad would represent 4.8 to 6.0 million board feet over the life of a 5-year purchase contract. At an expected selling price of $25 per tie, this represents at least $3 million dollars. (In 1991, 114 MBF, valued at $56,639 of railroad ties were imported from Canada with another 309 MBF valued at $158,297 imported from Canada from January to May of 1992.)

Some examples are provided here of other treated products which could be produced in Alaska for local customers. These will depend on the technical feasibility for substituting spruce for Douglas Fir and in the acceptability of alternative treatment processes: From a 1986 report, the Port of Anchorage had in place 164 "fender pilings" or poles (these are 45' long, 18" diameter at the heel, and 12" diameter at the toe). These are made of Douglas Fir, as required by American Standards and Testing Measures (ASTM) standards. The pilings are backed up by 300 12" x 12" timbers up to 44' in length. At the time of the report, the Port paid between $200 and $250 each for the fender pilings and between $90 and $100 for the timbers. Similar configurations exist at each Alaska Marine Highway and port terminal throughout the state. Where ports have direct rail access, additional pilings are in place at the end each of rail spur. Over recent years, steel pilings have been popular. However, the preferred material has been wood.

There are a few large scale mining projects underway in Alaska, many of which have need for support timbers. It is also possible that many small scale mines may not require treated timbers. Although most mining in Alaska is placer or surface mining, there are a number of mines which require support timbers. At present, most of these are sourced from outside of Alaska. No reasonable estimates of the potential market can be made at this time. As a recent CFP Seward sawmill report mentioned, one miner purchased 500 support timbers from outside sources.

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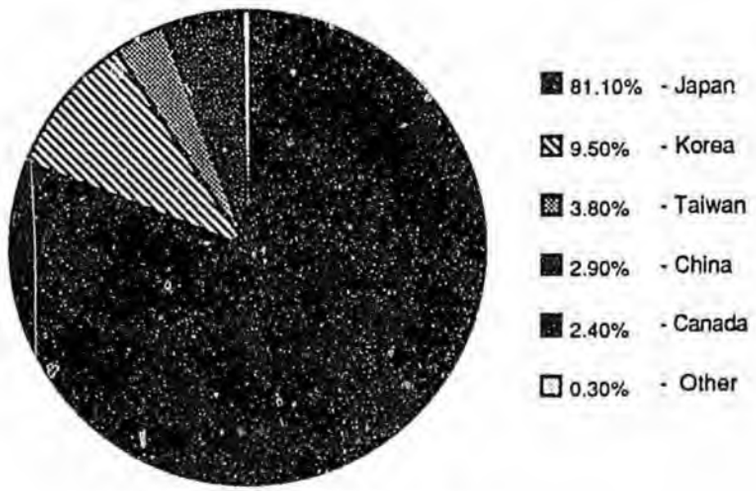
5. INTERNATIONAL MARKETS

5.1 Introduction

As mentioned in the previous section, the outlook for Alaska producers has changed for the better. Despite these developments, the Alaska timber industry relies heavily on foreign markets, particularly the Japanese market. The graph below shows that in 1991 over 80% of the value of wood products exports, excluding pulp, were destined for Japan. Such a heavy reliance on the Japanese market places Alaska in a precarious position when the Japanese market softens. The current slump in Japanese demand has not greatly affected the Alaska industry because prices have not dropped as sharply as volumes.

Value of Alaska Solid Wook Exports, 1991



Source: U.S. Census of the Bureau, compiled by ACIB.

Japanese companies have been purchasing Alaska logs and lumber for over 30 years and are very familiar with the tree species and industry in Alaska. Japan is the largest and most affluent timber market in Asia, and sets the price for all Asian markets. The trading companies provide break bulk services and other marketing functions that Alaska processors often cannot afford to do on their own. Often the Japanese trading companies will take Alaska lumber to Japan and sort it for Taiwanese customers who buy by the container. It is not economical for an Alaska supplier to ship rough lumber by container to Taiwan, given the low cost position of Pacific Northwest mills. Rising stumpage rates in the Pacific Northwest are improving the economics of Alaska production. Only high value products can bear the burden of high transportation costs. Therefore, the key to diversification lies in adding value to wood products.

This is plainly evident in the two pulp mills in Southeast Alaska, who serve global markets. Pulp is generally the highest value wood product, and the

Southeast mills are competitive in markets such as Norway and Russia.

As log and lumber prices rise in the Pacific Northwest, Alaska timber is now starting to be competitive in that region. The growing scarcity of old growth timber in other regions should increase the attractiveness of old growth spruce from the Kenai Peninsula.

In 1986 the European market for DIY kits was expected to be worth about $3.4 billion at the retail level. (source: Frost and Sullivan E822 86/03/14). In 1984, it was estimated that the United Kingdom accounted for 22% of European market, France 23%, West Germany 32%, and Italy 13%. Generally, the DIY industry performs better than new construction during moderate economic recessions.

Korea and Taiwan are developing markets for log homes. These markets are just starting to develop, and the manufacturer typically determines the design and styling. Korea is generally a price sensitive market but rapid income growth has created a class of wealthy people who stress quality over price. Log homes are also more expensive than standard housing. Korea had a $1 million market in 1990, in spite of the 13% duty on log homes. Construction workers in Korea are not trained to build log homes, and close supervision is usually necessary.

Taiwan has some unique construction and maintenance problems due to the high humidity and the monsoon season. Wood housing is generally not preferred for these reasons but log homes, carefully weather-proofed, are being sold primarily as resort dwellings. The Taiwanese must be sold on quality, safety, durability, and construction method. As with Korea, the Chinese in Taiwan are not familiar with log homes. The manufacturer determines the product specifications and also must supervise construction. It is important to build supervision costs into the package price as a whole, rather than breaking the cost out separately. If costs are broken out, the buyer typically declines the supervision services and proceeds to make errors in construction. This hurts long-term market development. Despite a 10% tariff on log homes, Taiwan is expected to have a $5 to $15 million market in 1993.

5.2 Transportation Costs

As with the domestic markets, freight rates play a critical role in the international competitiveness of Alaska's forest products. Alaska sits about three days closer to Asia than the Pacific Northwest, giving it a slight transportation advantage when using chartered vessels of about $7,000 per day.

Freight rates from Anchorage to various destinations are listed below. These are published tariffs and should be considered a high estimate. Negotiated rates would naturally be lower with many forest products being moved by chartered vessel. Also, low stumpage rates can help to improve Kenai Peninsula producers' competitive position.

Anchorage - Japan	$135/ MBF
Anchorage - Korea	$219/ MBF
Anchorage - Vancouver, BC	$1,325/ container
Anchorage - United Kingdom	$4,089/ container

5.3 Asia and Pacific Rim

International markets are improving as Indonesia and the Philippines start banning the export of lumber. Other South Pacific countries are expected to follow suit. In British Columbia, the annual harvest of 90 million cubic meters is expected to drop off to 75 million cubic meters in the next three years. Sawmills are closing due to fiber shortage. Round log exports are restricted. Planting has been increased 400% in the past 4 years. South Korea has been seeking long term supplies of timber or wood fiber for their mills.

Taiwan has been looking for new supplies of timber. Their volume and value of imports is expected to continue to expand rapidly. Log imports declined from$600 million in 1979 to $467 Million in 1988 and lumber imports increased from $45 million in 1979 to $312 million in 1988. Their wooden furniture exports expanded from $321 to $887 million in that same time period. The U.S., Japan, and Europe are their major markets. In the People's Republic of China (PRC), housing is the most pressing need for their 1.1 billion people. The volume of imported North American wood is expected to increase, mostly in logs. (source: Dec. 1989 Alaska Forest Products Newsletter from University of Alaska Fairbanks Cooperative Extension Service; Frank Seymour)

The following table shows one set of demand forecasts for Pacific Rim countries over the current decade.

Pacific Rim Solid Wood Demand Growth
from 1989 to 2000

Country	Cubic Meters	Board Feet
U.S.A.	No Change	No Change
Indonesia	18 million	3.98 billion
Malaysia	5 million	1.1 billion
Japan	No change	No change
Thailand	2 million	0.44 billion
China	13 million	2.87 billion
Taiwan	1 million	0.22 billion
Korea	6 million	1.33 billion
Total	45 million	17.39 billion

Source: Jaako Poyry, Pacific Rim Wood Market Report, 1/92

5.3.1 Japan

About two-thirds of Japan's land area is classified as forest land. The

proportion of forest land ranks among the highest in the world but in per capita terms, Japan stands at only 40% of the world average. The abundance of wood in Japan has led to a strong traditional use of wood products. Japan's Shinto religion is closely connected with nature, and this is evident in the use of wood products. The practice of using wood and other natural products in the home is referred to as "borrowed nature", and the use of natural products makes the people feel closer to the spirits. The Japanese use a great quantity of exposed and hidden wood in their houses, they enjoy wood furniture, they use plywood as paneling in their homes and offices, and wood is being promoted by the government for use in public places.

Despite the abundance of forests in Japan, the country still relies on imports to satisfy about 65-75% of its demand. Japan's steep forested slopes (combined with the scarcity and high cost of labor) make production costs high relative to foreign supplies. Because of Japan's affinity for it's domestic species, buyers prefer to purchase species that have similar characteristics to its domestic cedar and cypress. Western hemlock, Douglas fir, yellow cedar, spruce, and larch have properties that closely resemble Japanese species. The forests of the U.S. Pacific Northwest, Canada, and Alaska are a logical and continuing source of product for Japan. The industry in Japan is well developed and has a deep knowledge of the specific wood properties in each of these supply regions.

The housing industry in Japan consumes about 90% of all Alaska log and lumber exports. The consumption of wood products in Japan is surpassed only by consumption in the United States and the former Soviet Union. The total Japanese demand for all wood products in 1992 is expected to total 106 million cubic meters (23.5 billion board feet). Just under half of this total, 10.9 billion board feet, is used in lumber-related industries. Pulping and plywood are the other dominant uses. The following table describes total demand in further detail.

Timber Demand in Japan, 1986-1992*
(Million cubic meters)

	Lumber	Plywood	Pulp/Chip	Other	Total
1986	44.9	10.9	33.6	5.1	94.5
1987	47.9	13.5	34.7	7.1	103.1
1988	53.7	13 0	38.3	1.3	106.3
1989	56.5	14.7	42.2	1.4	113.9
1990	53.9	14.5	41.3	1.4	111.2
1991	51.9	14.2	43.8	1.5	111.4
1992 *	49.1	13.2	41.9	1.6	105.8

* 1992 is forecast
Source: Japan Lumber Journal, Vol. 33 No. 8. 4/30/92.

The next table shows a breakdown of Japanese wood imports by major trading partner:

Japanese Imports of Wood Products, 1987-1991
(Logs & lumber, million cubic meters; chips, million metric tons)

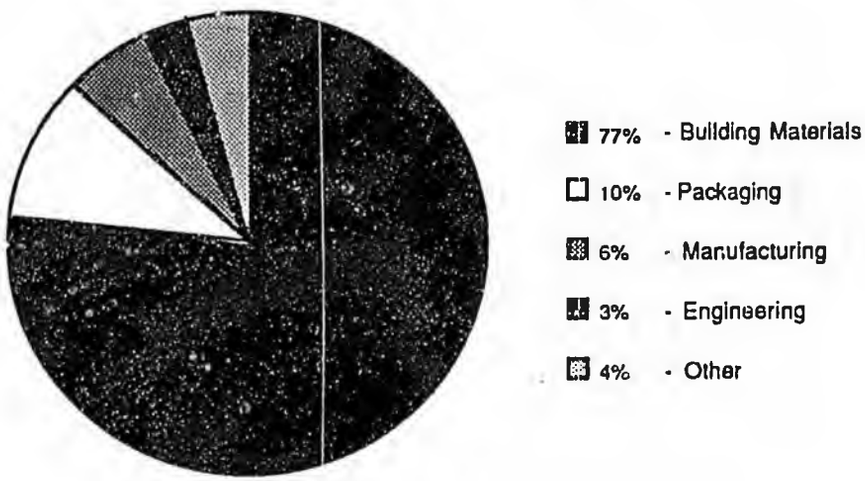
	1986	1987	1988	1989	1990	1991
LOGS						
Southsea	12.1	13.5	11.8	12.4	11.2	10.3
N. America	9.8	11.6	10.7	11.9	10.9	9.6
Russia	6.3	6.1	5.8	5.2	4.9	4.3
NZ-Chile	0.5	0.6	0.9	1.5	1.8	2.1
Others	0.2	0.4	0.4	0.5	0.3	0.4
Total Logs	28.9	32.3	29.6	31.3	29.0	26.4
LUMBER						
Southsea	0.9	1.3	1.5	1.7	1.3	1.3
N. America	3.9	5.2	5.8	6.7	6.5	6.9
Russia	0.2	0.2	0.2	0.3	0.3	0.3
NZ-Chile	0.2	0.3	0.5	0.4	0.6	0.7
Others	0.3	0.4	0.5	0.5	0.4	0.3
Total Lumber	5.5	7.4	8.4	9.6	9.1	9.4
CHIPS						
Softwood	2.84	3.11	5.50	3.84	3.74	4.10
Hardwood	3.40	4.03	7.29	5.79	6.47	7.66
Total Chips	6.24	7.14	12.79	9.63	10.21	11.76

Source: Japan Lumber Journal, Vol. 33, No. 9. 5/20/92.

Lumber used as building materials in residential construction accounts for 70% of all lumber consumption. Non-residential construction accounts for 7% of lumber demand. Engineering (lumber used in bridge building and other non-applications) accounts for only 3% of consumption. New housing starts drive the demand for lumber in Japan.

The following graph shows lumber consumption in Japan.

Lumber Consumption in Japan by End-Use

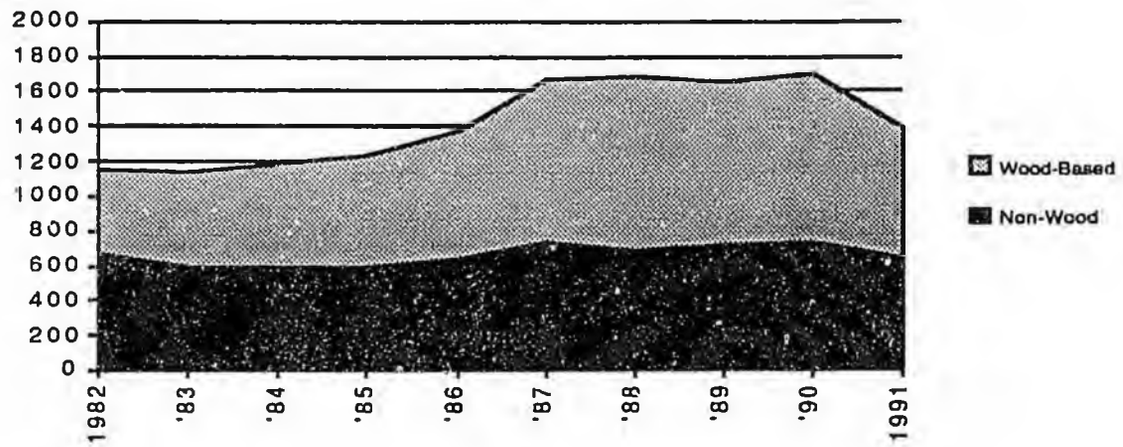


Source: Kim et al, 1989.

The rapid growth of the log and lumber market in Japan during the late 1980's is attributed to the rapid growth in housing starts. Japan's unprecedented economic growth through the late 1980's is now followed by the bursting of the "bubble economy." Housing starts, and demand for lumber, have dropped accordingly.

Much of the growth in housing starts came from multi-family housing and prefabricated housing, which do not use a great deal of lumber. The dominant reason for this trend is the high cost of land and the high cost of labor. The high cost of construction labor and the scarcity of labor are creating new market growth in finished lumber imports and imports of prefabricated windows and door casings. Growth in finished product imports should continue in the 1990's due to labor shortages.

Housing Starts in Japan, 1982-1991



Source: Japan Lumber Journal

Japan's traditional housing construction method is wood-based post and beam construction. The number of traditional housing starts has remained somewhat stable over the past decade. A wide variety of lumber products with specific applications are used in this style of housing. The most common imported product is the "baby square," a 90mm x 90mm or 105mm x 105mm square length of lumber used either as posts or remanufactured into other products.

Due to labor cost increases in Japan, there is a trend to import more of the precut specialized dimensions. British Columbia and the U.S. Pacific Northwest are taking advantage of this movement by targeting this market. Some Japanese trading companies are working with North American mills to develop stable sources of dimensional lumber that meet Japan's exacting quality standards. Some industry leaders say that the dominance of baby square imports is passing, in favor of kiln dried dimensional lumber imports.

A diagram and list of dimensional products used in a traditional Japanese house is provided in the Appendix to further identify the use of these products.

Each of the products used in traditional housing have unique applications and product specifications. Only certain species are generally accepted for certain applications. A summary of products, species, and characteristics are presented below.

Grand Sill -
*Port Orford cedar, Alaska yellow cedar, hemlock, larch.
*Strength; water and rot resistant; Port Orford cedar used in expensive homes, yellow cedar used in medium priced homes, hem-larch used in lower class homes.

Long Post -
*Cedars, Douglas fir, hemlock, Russian spruce, Sitka spruce.
*Strength; clears for exposed surfaces; domestic cedar preferred.

Post -
*Cedars, hemlock, Sitka spruce.
*Strength; 3 sides clear; old growth, tight grain, white color wood; trend toward using laminated veneer lumber with an overlay of clear.

Hidden Beams -
*Domestic pine, Douglas fir, hemlock, larch.
*Strength of domestic pine preferred; trend toward using D. fir but high cost of D. fir allows substitution of other species.

Joists -
*Domestic fir and pine, hemlock, larch.
*Strength and cost important; hemlock is now dominant species.

Window Sills and Frames, Door Frames, Molding, Shoji Screens -
*Domestic-Sitka-White spruce, hemlock, Douglas fir.
*Strength; Appearance grade; old growth with 8-12 grains per inch, straight grain, clear, white wood; finger jointing from high grade scraps is common.

Lumber grading in Japan is accomplished in compliance with Japan Industrial Standards (JIS). It is exceedingly difficult for a foreign lumber manufacturer to gain approval to produce JIS grade-stamped lumber. Selling ungraded products to lumber retailers will limit product applications and market acceptance. A more efficient strategy would be to work with an importer or sawmill in Japan to produce the lumber stock and allow grading and some finishing in Japan.

The Japanese have a strong preference for using old growth timber with no knots in exposed uses. Some of these uses, such as molding and shoji screens (rice paper windows), require appearance grade wood that does not have to meet strength requirements. Other uses, such as exposed posts and beams, must meet both appearance and strength requirements. The loss of available old growth timber has increased the price of these materials to the point where substitution is taking place.

In structural applications, the most common substitute is laminated veneer lumber (LVL). LVL uses lower grade lumber pieces that are laminated together to form the core of the post. A veneer of appearance grade old growth is glued to this core stock to create a post that meets both appearance and strength requirements. Significant market opportunities have arisen from this technology, and new markets for core stock and clear veneers are growing in Japan.

The other major use of lumber in Japan is the packaging industry, which accounts for 10% of consumption (2.2 billion board feet). The demand for lumber in the packaging industry has remained relatively stable over the past decade, despite overall growth in the use of packaging, crating, and wooden boxes. The reason for the loss of share for lumber packaging is that new crating designs have increased the use of plywood, steel, and plastic. New technologies in the manufacture of packing boxes have made them stronger, and the boxes can be re-used a number of times. Wood, however, is often preferred because of its ease in workmanship and because third world users (recipients of the packing crates loaded with goods) salvage the wood for use in construction.

Packaging is an important outlet for lower grade lumber that does not meet construction specifications. As such, many different species are used in the crating industry. Hemlock and radiata pine are the dominant species used in packaging. Radiata pine from New Zealand is used heavily in Western Japan where transportation costs from New Zealand are low. When transportation costs rise, radiata usage drops sharply. Hemlock and Russian larch are preferred in the Tokyo area because radiata is viewed as weak and susceptible to growing mold. Hemlock does not promote the growth of mold. This is important because the appearance of the package is a large factor in the presentation of the product to the customer. White spruce is an acceptable substitute for any of the other species used in packaging, provided the price is competitive.

Pallet factories buy material cut to length. They produce standard size pallets as well as many special orders. A pallet manufacturer will produce as few as 10 custom order pallets for a customer. Because of the high proportion of special orders, pallet manufacturers order their materials on a spot basis. Domestic mills are able to respond much quicker than foreign suppliers. Some producers use Korean suppliers to save money and keep the response time low. Some product specifications for packaging materials in Japan are listed below.

Pallet Stock	Standard Dimensions	19 x 120 x 1200mm
		19 x 150 x 1200mm
		50 x 90 x 1000mm

Japan's imports of furniture have been growing rapidly in recent years. The growth is due to a combination of rapid overall market growth and an increasing diversity in consumer tastes that are not satisfied by domestic manufacturers. Growth also is being fueled by contractor demand to furnish hotels, commercial facilities, office buildings, and resorts. Imports totaled 178 billion Yen ($1.3 billion) in 1990, or about 28% of the market. While the level of imports has grown 30% annually during the 1987-1990 period, the share of imports has remained relatively stable at around 30%.

The recent decline in Japanese housing starts will probably lower the demand for furniture in the near future.

The domestic industry is characterized by a large number of small regional manufacturers that specialize in a certain type of furniture, such as footed furniture, beds, or cabinets. Over 5,000 manufacturing enterprises share the market, and only seven of the 48 prefectures (boroughs) in Japan produce over 5% of domestic output. These companies produce mostly mid-range furniture for the domestic market. Storage cabinets and footed furniture are the largest segments of the market. Some softwoods are used in the manufacture of furniture, particularly domestic larch and imported hemlock. Hardwoods are the dominant lumber stock, and the main species are oak, beech, alder, domestic birch, and tropical hardwoods.

The table below shows that Taiwan and the U.S. are the dominant foreign furniture suppliers. Taiwan supplies both low price and high price furniture while the U.S. supplies mid-range and high price furniture. The most rapid growth among suppliers has come from Western countries and low wage regions.

Japanese Furniture Imports in 1990

	Share of Imports	Percent Change
Taiwan	22%	-14%
U.S.A.	20%	56%
Italy	14%	53%
Thailand	12%	37%
Indonesia	11%	90%
Korea	7%	3%
Germany	6%	40%

Source: JETRO, 1992.

Western exporters have achieved considerable success by selling upscale furniture and "theme" furniture that is marketed by associating the furniture with a particular lifestyle. Consumers are becoming increasingly knowledgeable about interior coordination, furniture styles, and materials. Marketers have capitalized on this by displaying complete room sets and emphasizing cultural traits at trade fairs and permanent display areas. The diverse tastes among consumers has opened many new niche markets that can be exploited using this strategy. Furbig AB, a Finnish pine furniture manufacturer, used this strategy to great effect by teaming up with exporters of log homes from Finland to provide a turnkey second home with a consistent theme (JETRO 1992; WWPA 1986). Due to the small size of rooms (12'x12' or 9'x9') in Japan, furniture must be compact, and imported furniture often blends Japanese product use characteristics (low tables) with Western styling.

Most furniture manufacturing facilities are located in timber industrial parks, which historically were centered around a local supply of timber. As timber supplies grew scarce, imports became more popular. Furniture manufacturers prefer to purchase kiln dried (KD) lumber cut exactly to

specification width, thickness, and length, directly from a local sawmill. If they sawed their own lumber, it would be difficult for them to calculate their costs and their selling price. It also would be difficult to export finished lumber directly to the manufacturer, at least initially. The best opportunity may lie in supplying either finished furniture, or supply rough sawn blanks, to the sawmill while working in conjunction with the manufacturer. After some time, the exporter would learn to cut and dry the lumber to specifications.

Below are some specifications for imports of rough blanks provided by a manufacturer of knotty pine and spruce cabinets, wardrobes, and chests of drawers. Each buyer will have its own specifications; these are offered as an example.

Initial export - Kiln-Dried pine or spruce lumber
- Thickness - 25 mm
- Random widths
- Random lengths

Finished blank export - KD pine or spruce to 10%
- 35mm x 38mm x 1050mm
- 35mm x 38mm x 715mm
- 29mm x 45mm x 1250mm
- 24mm x 115mm x 700mm
- 24mm x 70mm x 740mm
- 24mm x 60mm x 720mm

Source: Widam Management LTD. 1982.

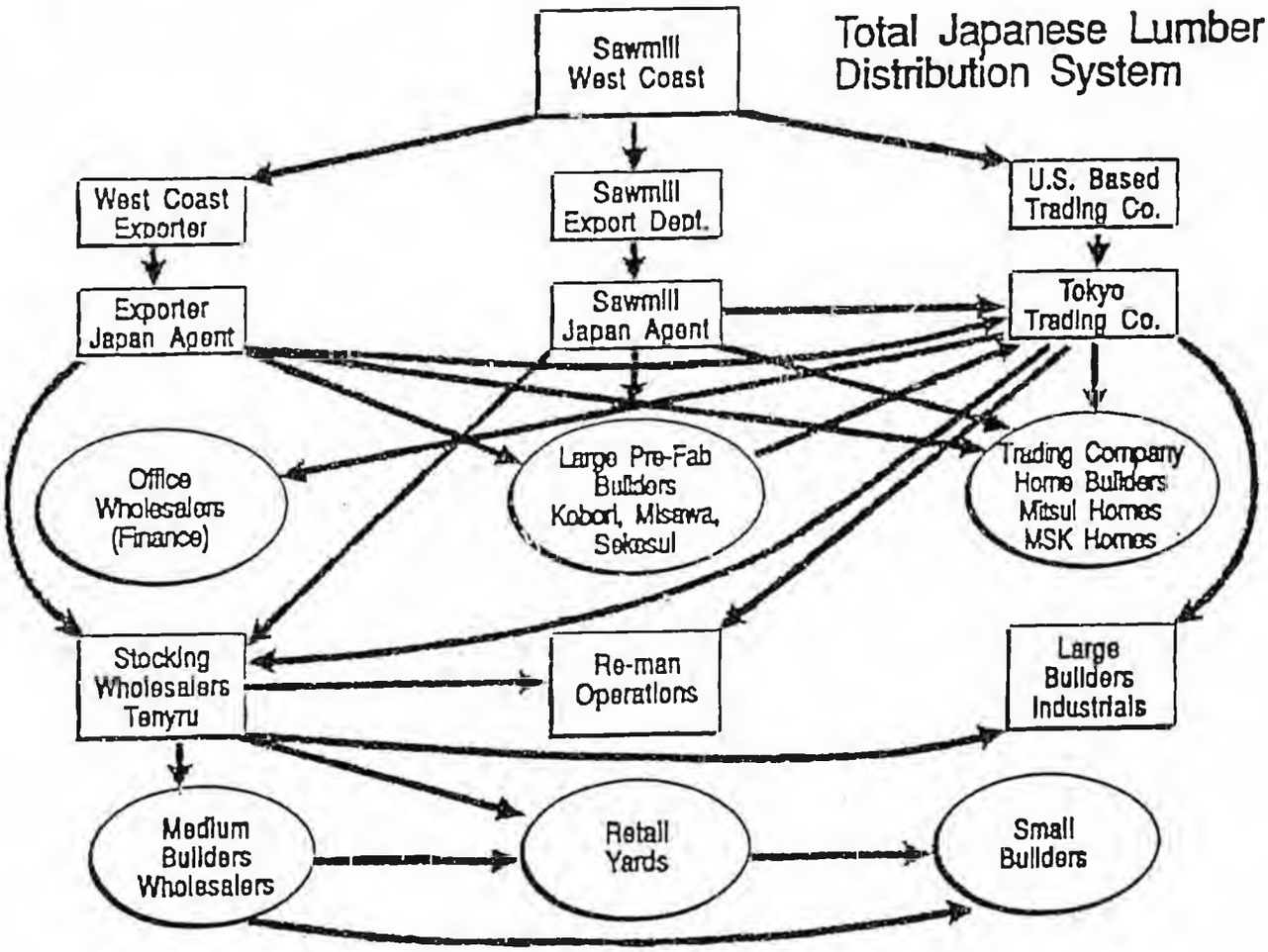
This manufacturer recognized that the traditional rejection to knots in wood furniture is changing toward an acceptance of knots. He saw growth in the acceptance of knotty pine furniture. This acceptance would be hastened by lifestyle marketing. The aversion of many manufacturers to process their own lumber stock gives rise to a tremendous opportunity for remanufacturing industry exports if the firm was dedicated to tight specifications and close communications with buyers.

Channels of distribution in Japan are often long, complex, and rigid. Many of the Japanese processors are part of a keiretsu, which are related or sister companies in various stages of the distribution chain. The keiretsus are typically centered around a major trading company and a bank. The companies may have a cross-ownership of stock and interlocking directorates. The trading company offers the downstream companies short-term financing, technological and market assistance, and an assured supply of materials. The trading company may dictate price, terms of delivery, and quality of product in the case of small suppliers. In return, the downstream companies stay loyal to the trading company as a source of supply. The downstream company may also favor supplying another downstream company in the keiretsu.

In other words, market entry is often controlled at the first step in the distribution channel. While finished products may be imported that reach beyond the sawmiller, the finished product may be sold by a keiretsu wholesaler. A foreign seller may negotiate product specifications directly with a wholesaler but the trading company will handle the mechanics of the

sale. If a keiretsu member purchased from outside the keiretsu, it may be denied credit or technical assistance from the trading company. While illegal in the U.S., the keiretsu system provides some stability in volatile markets. Additionally, the keiretsu compete fiercely with one another so many competitive forces are still at work. There is little incentive for a company to leave a keiretsu and operate independently because many foreign suppliers are not committed to the market. Not all firms, however, are affiliated with a keiretsu. Firms should seek direct relationships where possible.

The following graphic illustrates the distribution relationships which exist within the Japanese lumber industry.



The shortage of U.S. Pacific Northwest supplies of paper pulp has been offset to some extent by the expanded use of recycled paper as a fiber source. Japan is leading the way in recycling, with a targeted recovery rate of 55% in 1995. This equates to 17.5 million tons of fiber per year. Marubeni projects the demand for paper in Japan in 1995 will be 32 million tons, leaving 14 million tons of fiber to be sourced as pulp or chips for pulp. Given current Japanese pulp capacity, approximately 40 million cubic meters of chips will be required. Imported chips will account for 23 million cubic meters of this amount, up 3.6 million cubic meters from present levels.

Over half of the demand for chips in Japan is for hardwood chips, 19.3 MM

million cubic meters (cum), while softwood chips totaled 8.6 MM cum in 1991. Imported softwood chips totaled 8.5 MM cum in 1991, with 5 MM cum originating in the U.S. West coast. Supplies from the U.S. West coast (including Alaska) are projected to decline by 700 M cum in 1992. Japan will likely source this supply from the U.S. South, Australia, and other nations. This represents a significant window of opportunity to provide softwood chips to Japan from the Kenai.

There is a similar opportunity for the export of hardwood chips to Japan. Japan imported 11.3 MM cum of hardwood chips in 1991, and that figure is expected to grow by 2.6 MM cum by 1995. The most likely alternate sources for these chips are the U.S. South, Chile, Australia, South Africa, and other nations. Low grade birch from the Kenai is already gaining the attention of major Korean importers. Japanese importers are currently committed to purchasing Kenai Peninsula softwood chips. Viable opportunities may exist for additional chip exports to Japan.

Log homes are becoming very popular in Japan. The Japanese have always enjoyed the Western lifestyle, and a variety of factors have led to the expansion of the market. The high cost of homes in suburban Japan is often prohibitive, making a second home in rural areas a viable alternative. Prefabricated log homes are not labor intensive to construct, making construction costs low. Japanese people have a natural affinity to wood products because natural objects are an extension of their Shinto religion. Relaxation of building codes in Japan has provided the greatest impetus for market growth.

The market has grown tremendously in the past five years. Recent estimates were not readily available but the total number of units constructed in 1990 was about 3,000. No official statistics are kept on log home starts. The recent increase in interest rates, the Japanese stock market crash, and tight capital in Japan may have reduced the growth rate in 1992. Still, exporters and contractors feel that the log home boom is not a passing fad. People are spending more time outdoors and now have two day weekends to enjoy a second home.

The demographics for Japanese buyers are similar to American buyers. Japanese use of log homes is somewhat different than American uses, however. Second homes accounted for about 60% of the market in 1989. Other uses include corporate recreation and training facilities, large scale facilities for club houses, lodges, golf courses, ski resorts, restaurants and offices. The fastest growing segment of the market is resort-related uses. The following breakdown of uses was current in 1989. Current statistics were not readily available but have probably changed significantly.

Second homes	60%
Stores & restaurants	10%
Small hotels & lodging	10%
Offices & gathering halls	5%
Other	15%

Domestic log home manufacturers once occupied 60% of the market in Japan but imports have gained the majority of the market. The prices for log home kits vary widely, from under $20,000 to over $100,000 depending on the size and

styling. Imported kits are about 20% less expensive than domestic kits, and are priced about 25% above comparable prices in the U.S.

The rapid growth in sales has created some problems in the new market. Many Japanese contractors and buyers were not aware of product specifications, quality attributes, and construction techniques. Additionally, many foreign manufacturers did not initiate a good quality control program. As a result, inferior products entered the market and tarnished the reputation of the whole industry. Japanese consumers and contractors are now quite sophisticated in their knowledge of the industry and have exacting specifications that must be met.

The distribution channels for imported log homes is relatively short and simple. The foreign manufacturer sells to an importer or contractor, developer, or home builder. Manufacturers used to determine the product specifications but now the level of market sophistication has grown to the point where the developer works with the manufacturer to determine the design and styling.

Sales efforts of the manufacturer are targeted toward both the developer and the consumer, with emphasis on the developer. The manufacturer should develop a small sales brochure in Japanese for casual inquiries, as well as an in-depth brochure and building manual for the developer. The developer will typically do most of the mass marketing to the consumer market.

5.3.1. Japan Trade Barriers

The trade barrier most commonly mentioned in Japan are Japan Agricultural Standards, the Japanese wood product grading regulations. While these standards are not formal trade barriers because Japanese firms have to comply with them, they are often very difficult for foreign companies to meet. As a result, foreign lumber can be downgraded, resulting in a loss of value. Thus these effectively function as barriers to trade. Building codes in Japan restrict certain uses of wood, such as in dwellings over three stories hign. The building codes have the effect of limiting the total size of the wood market, but they do not hinder individual wood shipments from foreign countries.

The greatest barriers to entry in the Japanese market are the unique product specifications and the tight quality control requirements that are demanded by Japanese buyers. In addition to these barriers, Japanese buyers prefer to build long term relationships with stable suppliers who are willing to commit to the Japanese market. The buyers seek suppliers who have established track records and the financial resources to survive during periods of depressed prices. Small suppliers and newly established businesses find it difficult to attract buyers and develop relationships for these reasons. Working through a broker is one effective method for entering the Japanese market and building a good reputation with buyers.

5.3.2 Korea

Korea's economy experienced rapid growth in the late 1980's. As a result,

inflation surged and wages grew over 30% in two years. Rising wages made Korean manufactured goods noncompetitive in many foreign markets, leading to a trade deficit. The deficit was fueled by rising imports and an appetite for imported goods. The government of Korea initiated austerity measures to realign the economy. As a result of these measures, some imports were restricted and housing starts were reduced from 750,000 units in 1990 to an estimated 500,000 units in 1992. The table below shows the decline in exports of wood-related products in 1991.

Korean Exports of Manufactured Wood Products
(Million Dollars)

	1987	1988	1989	1990	1991
Furniture	115	186	186	172	156
Musical Instruments	146	203	155	141	141
Shipping Containers	429	752	1,043	1,025	937

Source: USDA-FAS, 1992.

The rising wages in Korea have made the import of softwood lumber economic, despite the 9% duty. The table below shows that lumber imports, along with most other wood products, have recently increased.

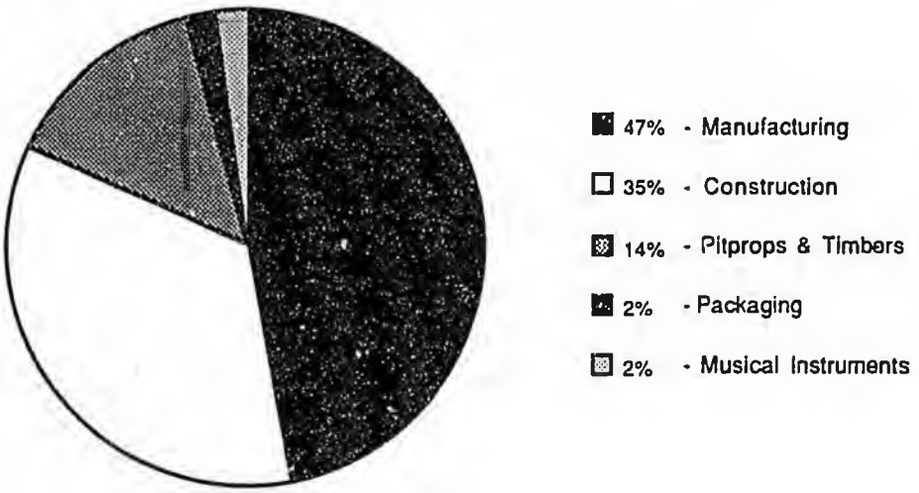
Timber Imports into Korea, 1989-1991
(Million Dollars)

	1989	1990	1991
Wood Chips	20	12	12
Logs	960	990	1,040
Lumber	170	167	228
Veneer	23	26	31
Finished Lumber	21	15	24
Particleboard	45	74	75
Fiberboard	33	27	25
Plywood	173	256	358
All Others	21	40	64
TOTAL	1,466	1,607	1,857

Source: USDA-FAS, 1992.

Most of Korea's imported timber is used in manufacturing processes. Housing construction is mostly apartment style housing made of steel-reinforced concrete. Construction lumber is used primarily as concrete forming. Korea also manufactures standard lumber products for the Japanese market, but lumber exports to Japan have declined as wages increased.

Lumber Consumption in Korea by End-Use



Source: Kim et al, 1989.

Unlike Japan, a significant proportion of Korea's furniture production is exported. Exports climbed by over 300% during the 1985-1988 period to $150 million but have slowed considerably. Current exports are declining and this trend is expected to continue due to exchange rates and rising wages in Korea. Thailand, China, Indonesia, Mexico, and other low wage nations are more competitive in Korea's traditional export market niche, low price furniture. The use of medium density fiber board (MDF) and radiata pine have increased in an effort to control costs.

Domestic furniture sales continue to grow rapidly due to a recent housing boom and increasing wages. Many Koreans desire to upgrade their housing but the government is currently limiting new housing starts to check inflation. This action is causing apartment dwellers to buy furniture and other furnishings to improve the appearance of their apartments. Tropical hardwoods have a traditional use in Korea for furniture, and acceptance of other species is limited. As costs rise, however, other low cost species are being substituted.

A large particle board mill and a large MDF mill have been built in the past 2 years in Korea. These facilities are greatly increasing the demand for softwood and hardwood chips, as well as logs for chips.

Korean firms have already taken one shipment of birch logs from the Susitna Valley in 1992. The birch will be used as veneer and lumber for furniture and chips. The buyers expressed interest in continuing the relationship over a 10 year period.

Demand for chips in Korea totaled 2 MM cubic meters in 1990 and is now starting to increase to feed the new capacity investments in particle board and medium density fiberboard plants. Economic growth in Korea also is creating growth in the paper industry. Much of this demand is domestic-led,

as exports are generally declining. Korean chip buyers have expressed interest in purchasing birch and spruce chips from the Kenai Peninsula. Securing a source of timber and negotiating a reasonable price are the main barriers to a successful deal.

5.3.2.1 Korea Trade Barriers

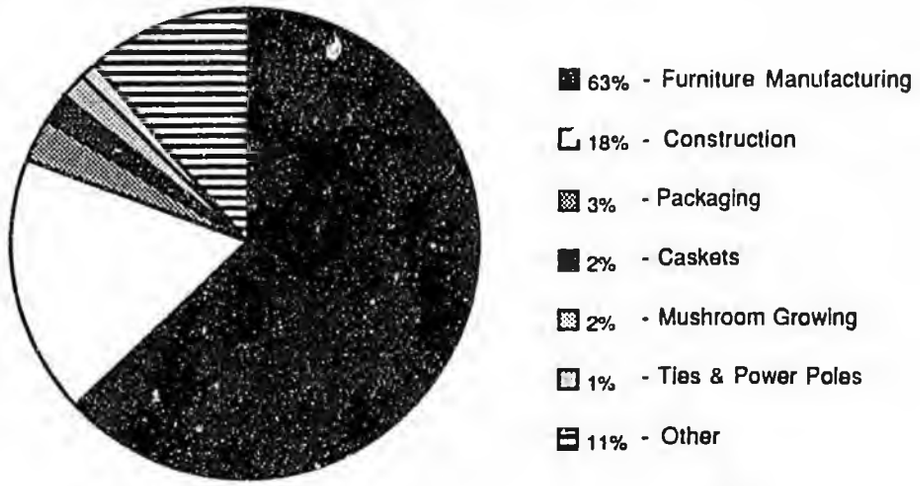
Korea maintains a number of tariff and nontariff barriers to imports, particularly value-added products. The large majority of timber imports into Korea are logs. Korean buyers have long maintained that U.S. lumber was priced about 10% too high while the duty on lumber products has been kept at 9%. The tariff on lumber is particularly significant in Korea because of the price-sensitive nature of Korean buyers. Rising costs in Korea are now starting to make U.S. lumber more competitive in Korea despite the 9% duty.

The nontariff barriers to trade in forest products in Korea can pose greater difficulties than tariffs. Government works closely with industry in Korea, and a series of "hurdles" have been established to prevent the domestic timber processing industry from foreign competition. The most significant of these barriers are high port of entry taxes and levies, import licensing requirements, subsidies and price supports to domestic firms, import restrictions and quotas, and low cost financing for domestic firms. The easiest way to get around these barriers is to sell to Korean buyers FOB Kenai or other U.S. points. The buyers will attend to the process of importing.

5.3.3 Taiwan

Taiwan is a major manufacturer of furniture, mostly for export markets. Furniture manufacturing is the largest use of lumber in Taiwan. Furniture for the domestic market is usually made from tropical hardwoods, and substitution of Alaska species would not be very successful. The Taiwanese manufacturers usually produce private label furniture for large retailers and other importers and manufacturers in the export markets. There is very little branded product exported from Taiwan. Because of this, the manufacturers build to specifications provided by the customer. The customer decides what species of wood will be used. The large majority of furniture stock are temperate and tropical hardwoods.

Lumber Consumption in Taiwan by End-Use



Source; Kim et al. 1989.

White spruce from Alaska would be a good source of knotty pine furniture stock. Penetrating the furniture market with white spruce and birch would require convincing the buyers in the U.S., Europe, and Pacific countries to specify that white spruce or paper birch be used. The furniture buyers would then instruct the Taiwanese manufacturers to use these species. Most major furniture manufacturers attend trade shows in the U.S. each year to meet with buyers. This would present a good opportunity to make contacts and present the benefits of Alaska species.

The structure of the furniture industry and timber industry is fragmented. There are many small manufacturers and sawmills that work independently of each other. Most of the sawmills buy lumber and logs by the container because the volumes used by them is relatively small. The industry is so competitive that sawmills do not join cooperatives to buy timber by the shipload; they do not want their competitors to know what volume of timber they are processing. Many U.S. companies have been reluctant to ship by the containerload because of the high costs and low volumes.

Japanese trading companies often supply the Taiwanese processors because the trading companies import shiploads and perform the sorting and break-bulk functions, and they also provide short-term financing. Many Taiwanese processors would prefer to buy containerloads directly from the U.S. Communications with U.S. suppliers can be difficult, and the Taiwanese are not familiar with U.S. grading standards. Smaller U.S. companies are often more successful in exporting directly to Taiwan because they are committed to the buyers and are willing to be more flexible than the larger U.S. companies.

Taiwanese mills prefer to process cants and rough lumber rather than logs because shipping containers will hold more lumber and because handling and wood waste are minimized--important factors in the cramped small sawmills.

5.3.3.1. Taiwan Trade Barriers

Taiwan has little forest resources of its own and is forced to import timber to feed its furniture and construction industries. Despite the reliance on imports, tariffs only recently have been brought down from previously high levels. Other barriers do not pose insurmountable challenges to the exporter, but should be mentioned. Import licensing requirements, port of entry taxes and levies, domestic monetary restrictions, and price supports to domestic firms are among the barriers to forest products trade.

A greater challenge for Kenai exporters in gaining a presence in Taiwan is that the Taiwanese are traditionally a hardwood consuming people. Softwoods are just recently gaining market acceptance due to short supplies of tropical hardwoods. The Chinese in Taiwan are not familiar with U.S. grading standards, product uses, and pricing. Often, much education and market development work is necessary to close a sale. A few Taiwanese buyers are familiar with softwoods, and these firms should be sought out to minimize the exporter's market development costs.

5.3.4. China

The timber industry in China is run by the central government. China has a shortage of wood products, and the country is experiencing tremendous growth despite the global recession. The government has instituted a wood substitution policy to lower the demand for wood products by requiring that other building materials be used. The centralized allocation of foreign currency is used to limit the amount of wood that is imported, and barter trade often becomes necessary to conclude a sale. Local governments are allowed to earn and keep a portion of their own foreign currency. Local provincial governments also are allowed to freely spend this foreign currency, and these provinces are often good niche markets for hard currency sales.

Import licensing requirements, import quotas, the wood substitution policy, and the large bureaucracy of the centralized wood procurement system are all significant trade barriers. The State of Alaska is currently establishing a joint forestry commission with the timber-rich province of Heilongjiang. Working through this commission to supply other Chinese Provinces may be the best method for small Kenai exporters to penetrate the Chinese market.

5.4 Southsea Nations

The Southsea nations (Indonesia, Malaysia, Papua New Guinea, Philippines, etc.) provide tropical hardwoods to Asia, Europe, and North America that are used mostly in the manufacture of plywood, packaging, and furniture. Many Southsea nations have banned the export of round logs in an effort to support their plywood industries. Indonesia, in particular, has been very effective in this strategy, and the result has been a strong decline in Japan's plywood industry.

Tropical hardwoods are not seen as a strong competitor to North American softwoods in most markets. Softwoods have been gaining some acceptance as

substitutes for tropical hardwoods in some uses, mainly plywood and packaging. Attention to global deforestation has been focused primarily on tropical rainforests. There is a groundswell of support in the European Community for a requirement that all tropical hardwoods be labeled by country of origin. This will facilitate a growing boycott and potential ban on purchases of tropical hardwoods. A similar movement is gaining momentum in the United States. These developments could expand the demand for temperate hardwoods as well as softwoods.

5.5 Chile and New Zealand

Chile and New Zealand both produce radiata pine that is grown on plantations. The trees grow very fast in the temperate climate, reaching maturity within 20-30 years. These plantations are just starting to reach maturity, and their presence as a competitor will only increase in the future. Growth prospects for the next five years are limited because many trees will not reach maturity before the year 2000. The total harvest potential of these countries is expected to rise from 20 million cubic meters in 1990 to about 55 million cubic meters in 2005. Domestic demand is not expected to increase substantially during this period, leaving export markets to absorb this capacity.

The rapid growth rate of radiata pine results in very wide growth rings and a corresponding lack of structural strength. This limits the use of radiata in many structural applications where strength is an important attribute. Chile (and to a lesser extent New Zealand) have attempted to overcome this by heavy research expenditures and marketing efforts. Chile has diversified its market base to include the Middle East, Europe, the U.S., and Japan. Chile's market development in the U.S. is succeeding in replacing some ponderosa pine clear lumber markets for use in furniture blanks, finger-jointing material, and doors. Growth is expected to continue because U.S. buyers are satisfied with the product. Radiata pine from Chile has been approved in Japan for use in plywood and some construction uses. Over the next decade, radiata pine from Chile and New Zealand could dominate the market for toys, molding, and other non-structural lumber uses as well as be a serious competitor in global softwood plywood markets.

5.6 Europe

The major lumber markets in Europe are the United Kingdom, Italy, and Germany. Italy imports almost strictly clear lumber, and most softwood supplies come from East and West European countries. Other important markets are the Benelux countries because they serve as intermediaries for distribution throughout Europe. The global recession has hurt demand for forest products in Europe, and the recent high interest rates in Germany are further depressing demand for building products. European demand, with the exception of Germany, is expected to remain in a depressed state for the next three years. The European Economic Community (EEC) is an important market for North American lumber producers but the U.S. and Canadian position is being threatened by import barriers. About 90% of the lumber shipments to Europe from North America are in the form of green lumber. The EEC has placed a ban on the import of green softwood lumber due to fears of pinewood

nematode infestation. The U.S. and Canada are contesting this ruling and have won a temporary reprieve from this restriction. The pinewood nematode is very rare in Western North America.

The restriction would not normally be prohibitive except that building codes in Europe do not favor kiln dried lumber. Therefore, the premium paid for KD lumber is low and does not justify the added cost. In the short term, the European market is expected to remain flat due to poor economic conditions. In the longer term, Germany is expected to experience rapid growth. It remains to be seen whether North American producers will survive the application of the nematode import barrier to be competitive in Europe. Tropical hardwood producers may face a similar fate. The EEC, under pressure from the Green Party and consumers, is considering placing a ban on the import of tropical hardwoods. Such a ban may expand markets for temperate hardwoods.

Canadian companies have been the most successful firms in penetrating the European market. The United Kingdom is a primary market because of its desire to import softwood lumber. Exports to the United Kingdom (UK) from Western Canada totaled 680 MMBF in 1991 and are forecast to hover below 500 MMBF for the next three years (Widman 1992). Exporters from Western Canada face similar transportation costs as potential Kenai Peninsula exporters, and stumpage rates on the Kenai Peninsula will probably be lower than in Canada. The forecast of Western Canadian exports which appears later in this section shows potential markets for Kenai Peninsula lumber. Small Canadian companies in Alberta and Interior British Columbia have established relations with British furniture and ladder manufacturers. These niche markets could possibly be pursued by processors on the Kenai that are willing to develop close relationships. Shipments are cut to specification, containerized, and typically not kiln dried.

The market in the UK has product specifications that are as stringent as those in Japan. Sweden is a dominant supplier to the UK softwood lumber market, with exports totaling 550 MMBF in 1991 (Gozalbez, 1992). All other suppliers are expected to match the quality of Swedish product. The Canadians are able to match Sweden's quality, and the high cost of stumpage in Sweden makes up for the high transportation costs from British Columbia through the Panama canal.

Opportunities for exporting softwood lumber products to Sweden and Finland are very limited. The countries import almost no softwood lumber, and they have a ban on importing non-kiln dried softwood from pinewood nematode countries. Also, Sweden and Finland are members of the European Free Trade Association (EFTA). EFTA member countries include Sweden, Finland, Austria, Switzerland, Iceland, and Liechtenstein. The EFTA and EEC countries will soon join together into a larger customs union, the European Economic Area. Common tariff and nontariff barriers, including the potentially disastrous pinewood nematode barrier, will apply to all EEA countries. The pinewood nematode is not known to exist in Southcentral Alaska. If Alaska could obtain a variance from the restrictions placed on green lumber imports, a large and potentially lucrative market could be created. A variance for Alaska would allow the government to attract sophisticated processing companies, and the value of stumpage would increase significantly. Much legal and diplomatic efforts would have to be expended to secure a variance.

Opportunities could exist in the future for the export of birch woodchips to Sweden. Sweden is constantly looking for birch chip opportunities in North America to feed their pulp mills. Currently, transportation costs are too high to service the Scandinavian market from Alaska. However, if a Northern sea route opens up, direct Alaska-Sweden trade may become profitable.

5.7 Russia

Russia holds about one-half of the world's softwood timber inventory. The primary export species from the Russian Far East include larch, white fir, silver fir, and red pine. Some of these species are of relatively low value, and the high density of the wood often creates problems in millwork applications.

Russia is an active exporter in Pacific Rim timber trade, supplying Japan with 1 billion board feet of logs and lumber in 1991. Russia has maintained a presence in the Japanese market for 30 years. Russian wood is processed into construction products in the small sawmills in Northern and Western Japan, where the species are similar to local trees. South Korea has a few new joint ventures in Russia targeted for housing and concrete forming in Korea, but the logging operations in Russia have not been successful to date. U.S. companies are exploring forestry opportunities in the Russian Far East, primarily with the goal of selling into Asian markets. One U.S. log home company contacted for this study recently secured agreements for Russian timber and is considering manufacturing operations there as well.

Russia is generally seen as the "wild card" in Pacific Rim timber trade but there are many impediments to expanded competition from Russia as a timber supplier. These impediments include: 1) a chaotic distribution system, 2) problems with grading and sorting standards, 3) environmental concerns, 4) a huge and unmet domestic demand in Russia, 5) low value species, 6) a lack of infrastructure, and 7) an aging capital stock.

The characteristics of Russian Far East softwoods are somewhat similar to those of the Kenai Peninsula and Southcentral Alaska, although Kenai Peninsula white spruce has broader applications than Russian timber. Sellers of Kenai Peninsula products may do well by targeting existing users of Russian timber in Northern and Western Japan as well as Korean trading companies. Companies who are considering investment in the Russian timber industry should be persuaded to invest in the Kenai Peninsula due to the higher quality timber and lower risk.

5.8 Canada

Alaska currently exports pulpwood logs to Canada, and the opportunities for supplying Canadian pulp mills are increasing. However opportunities to sell finished products to the Canadians are limited because of the large number of efficient processing facilities that exist throughout Canada. Sales of semi-finished products and raw materials may become more and more likely as Canadian supplies diminish.

The Canadian industry is a likely target for attracting investment into the Kenai because supply constraints have limited the opportunities for Canadian companies to expand. Canadian companies are prime investment candidates because they could bring their processing technology, market channels, and grading systems. The Kenai Peninsula would offer a stable supply of timber and proximity to tidewater and Asian markets.

Canada, in particular British Columbia, is a significant competitor in the forest products trade. The Canadian forest products industry is market oriented, and market development efforts by government and industry have achieved considerable success. The federal and provincial governments are committed to the success of the timber industry; seven percent of employment in Canada is related to the industry. In 1989 timber exports contributed C$19.5 billion to Canada's balance of trade--more than agriculture, fishing, mining, and energy combined (Myles 1992).

The following two tables quantify Canada's success in foreign lumber markets. The second table of forecasts of Western Canadian exports provides an indication of the markets where an efficient Kenai producer could be successful.

Total Canadian Lumber Exports by Country, 1988-1991
(Million Board Feet; source: U.S. Dept of Agriculture, FAS)

	1988	1989	1990	1991
Belgium & Luxembourg	112	86	135	117
Denmark	0.2	0.4	1	1
France	90	69	123	68
Germany	50	38	58	46
Greece	0.3	0.3	0.4	0.4
Ireland	29	32	15	13
Italy	36	36	49	52
Netherlands	18	22	25	30
Spain	6	17	28	20
United Kingdom	939	799	748	531
Other Europe	15	4	3	7
Middle East	39	35	90	136
Other Africa	108	224	179	93
Japan	1,453	1,670	1,669	1,904
Other Asia	123	70	47	80
Australia	171	162	114	85
Other Oceania	7	9	13	7
Latin America	3	1	1	3
Caribbean	2	1	1	1
USA	9,167	8,902	7,426	7,285
Puerto Rico	42	43	NA	NA
TOTAL	12,410	12,220	10,726	10,479

Source: USDA-FAS, 1992.

Forecast of Western Canadian Lumber Exports, 1991* - 1996
(Million Board Feet)

	1991*	1992	1993	1994	1995	1996
Japan	1,600	1,435	1,295	1,240	1,140	1,020
U.K.	680	470	480	490	535	585
Middle East/ N. Africa	200	190	190	160	150	140
China	40	40	40	40	40	40
Australia	120	155	165	170	165	165
France	90	90	100	100	100	100
Belgium/ Luxembourg	140	90	90	100	100	100
Germany	50	60	65	70	65	65
Netherlands	25	14	15	20	15	15
Italy	30	29	30	30	30	30
Caribbean	40	30	35	40	45	45
Other	20	25	35	35	40	40
Total	3,035	2,628	2,540	2,495	2,425	2,345

* 1991 is an estimate.
Source: Widman Management Consultants, 1992

Timber supplies in British Columbia are declining due to over-harvest and set-asides. Canada's system of long-term contracts with evergreen clauses are a critical component of their strategy to retain value-added processing facilities. The program has been so successful, however, that most timber supplies have been committed. It is difficult to develop new processing capacity in Western Canada due to a lack of available timber resources. It may be possible to attract new investment to the Kenai Peninsula with its available timber that is close to major markets in the U.S., Canada, and the Asian Pacific.

The success of Canadian companies in developing foreign markets makes them attractive investment partners in developing Kenai Peninsula forest resources.

Over half of Canada's timber industry is concentrated in the pulp and paper sector. Raw materials for the pulp industry generally come from sawmill residues in British Columbia and other places. As timber supplies decline in Canada, the amount of chips generated by the sawmill industry will decline. Canada's pulp mills could prove to be an economic outlet for low grade material from the Kenai Peninsula, particularly the beetle-killed spruce.

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PRODUCT & MARKET FEASIBILITY REPORT FOR COMMERCIAL TIMBER RESOURCE UTILIZATION PROGRAM

APPENDICES

Appendices available at the Kenai Peninsula Borough Economic Development District, Inc., 110 South Willow Street, Suite 106, Kenai, Alaska 99611
(907) 283-3335

REPORT

to

KENAI PENINSULA BOROUGH
ECONOMIC DEVELOPMENT DISTRICT, INC.

for a

MASTER TIMBER HARVESTING PROGRAM
PLAN DEVELOPMENT

for the

KENAI PENINSULA BOROUGH, ALASKA

from

Project Manager, John L. Hall
Taiga Resource Consultants

October 26, 1992

110 S. Willow St., Suite 106 • Kenai, Alaska 99611 • (907) 283-3335 FAX (907) 283-3913

KENAI PENINSULA BOROUGH
ECONOMIC
DEVELOPMENT
DISTRICT, INC.

TO REPORT READERS:

The enclosed report was prepared by a consultant for the Kenai Peninsula Borough Economic Development District, Inc. (EDD) to be used in the work of the Kenai Peninsula Timber Resource Utilization Task Force. While the findings and recommendations of the report are those of the authors, this material was intended for use in formulating strategies and recommendations of the Task Force to be reported to the Borough Assembly and in the design and development of the EDD's work program. The newly formed Timber Resource Utilization Committee of the EDD intends to use these documents to continue the work toward the accomplishment of this mission.

James A. Elson, Chairman

FACT SHEET

Spruce Bark Beetle Impact and Issues

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Spruce Bark Beetle Impact and Issues

CATEGORY: INFESTATION

FACT: Since 1954 annual surveys have been done by the USDA Forest Service. Results of these surveys show 1.2 million acres of the 2.2 million acres of forest land in the borough have been infested from the 1950's to 1992.

FACT: The 1992 aerial survey showed that there were 365,000 spruce beetle infested acres in the borough. It is estimated that out of the 365,000 currently infested acres, there are over 125,000 acres of new infestation. This reflects the relative increase in infestation from 1991 to 1992. Infested acres are those with spruce trees showing red tops (last year's hits.)

FACT: It is important to consider that the increase and/or decrease from year to year reflects the relative level of infestation. The beetle life-cycle is generally two years—so it is to be expected that the infestations will ebb and flow. In addition, once trees show red tops it indicates that they have already been hit the previous year and are dying this year. Subsequent surveys will only inventory new red tops. However, the effect on the forest is cumulative—while the exterior boundaries of an infestation may or may not expand—the devastation within can go on until it is complete.

FACT: The spruce beetle infestation is spreading in the following areas of the borough: Kenai, Soldotna, Kasilof, Happy Valley, Anchor Point, Crescent River (West Side Cook Inlet), Homer East-End Road, Fox River, Kachemak Bay, Hope, Sunrise, Six-Mile and Moose Pass

FACT: The spruce beetle also kills Sitka spruce in the coastal or maritime forest. Therefore, infestations are possible in the Seward and Kachemak Bay areas. For example, Afognak island 80 miles south of the borough, had a major infestation on 100,000 acres in the mid-30's which resulted in a loss of 150 million board feet of timber.

CATEGORY: TIMBER HARVEST & TRANSPORTATION

FACT: The total area of the borough is 16,384,000 acres. The land area is 10,048,000 acres. The forest land is 2,220,000 acres.

FACT: There are 646,000 acres of commercial forest land in the borough.

FACT: Thirty-four percent or 224,000 acres of this commercial forest land is in the Kenai National Wildlife Refuge and the Kenai Fjords and Lake Clark National Parks and is currently unavailable for harvest.

FACT: There are an estimated 3 billion board feet of total available timber, the majority is white or Lutz spruce. Of this total, approximately 800 million board feet are currently under contract from large private land owners. The percent of hardwoods present (birch, cottonwood and aspen) varies from 5 to 5 percent except in the Tyonek area where it reaches 50 percent.

CATEGORY: REFORESTATION

FACT: The report to the KPB Timber Task Force titled; Master Timber Harvesting Program Plan Development, recommends that when a full harvest program is implemented a fully staffed Reforestation Center and Nursery be established. Staffing would include: Silviculturist, Fisheries and Wildlife Biologist, Nurseryman, Fire Control Specialist and other team members.

FACT: Initial cost of investment for the Reforestation Center is estimated to be in the range of $1 million to $1.5 million. The operation of the center would be in phases, with existing personnel from the agencies involved, providing the above services until the full center is needed,

FACT: The major detriment to reforestation in the boreal forests of the borough is Blue Joint Grasses of the genus *Calamagrostis*. According to the experts the best strategy to combat this smothering grass is: to plant early (one year after harvest), plant big (two-year old seedling or large wild seedlings), use mats to reduce competition, and scarify the soil for increased temperature and exposure of the mineral soil. With this strategy, reforestation efforts are likely to be successful the first time and will reduce the need for second efforts.

FACT: The harvest of the forest can be done properly and professionally with coordinated input of wildlife and fisheries biologists, fire control specialists, forest entomologists, silviculturists, forest engineers and other forestry personnel.

FACT: Each individual landowner or manager in the borough will determine the method and extent of their timber harvest program.

FACT: Forest insect control programs for the spruce beetle are only economically feasible on small, high value residential tracts.

CATEGORY: RECOMMENDATIONS

Key Recommendations from Master Timber Harvesting Program Plan Development Report

- Action could result in the harvest and utilization of the 800 million to 1.5 billion board feet of spruce timber recently infested and on the verge of destruction by the spruce bark beetle.

- Aggressive action includes: forward funding of roads, reforestation and pursuing financing through government entities who are currently empowered to provide loans for these types of projects (Alaska State Legislature, Dept. of Commerce & Economic Development, Dept. of Transportation, Alaska Industrial Development & Export Authority.)

- In addition, aggressive action requires: a timber harvest program and accompanying transportation plan for the major spruce forest units of the borough; immediate coordinated timber harvest programs for KPB and State lands in the central and southern peninsula; and that the KPB should assume a leadership role by encouraging the potential purchasers of public and private timber to install value-added forest products complexes which would complement the existing industry operations.

CATEGORY: OWNERSHIP

FACT: Table

The Estimated Ownership and Volume

of the

Available and Possible Commercial Forest Land (CFL)—Entire KPB

Owner	Area-CFL Acres	%	Volume MMBF	%
KPB	30,000	9	255	9
State	99,000	29	795	26
Large Private Corp	195,000	57	1752	58
Other Private	20,000	5	207	7
TOTAL Available	344,000	100	3,009	100
Chugach NF -Possible	79,000	-	641	-
GRAND TOTAL Available + Possible	**423,000**	**100+**	**3,650**	**100+**

Note: CFL in Kenai National Wildlife Refuge and Kenai Fjords-Lake Clark National Parks are not included

Report

to

Kenai Peninsula Borough Economic Development District, Inc.

for a

Master Timber Harvesting Program Plan Development

for the

Kenai Peninsula Borough, Alaska

from

Project Manager, John L. Hall
Taiga Resource Consultants

October 26, 1992

Credit Page

Report prepared by: John L. Hall, Project Manager, Taiga Resource Consultants, Girdwood, Alaska.

Researched and written by: Arvid J. Hall, Yakataga International, Girdwood, Alaska.

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TABLE OF CONTENTS

-Executive Overview-

The spruce forests of the Kenai Peninsula Borough are being devastated by the spruce bark beetle. In 1992, aerial surveys detected 365,000 acres of recently infested forest land. The infestation is expanding in the Moose Pass, Kenai, Soldotna, Kasilof, Ninilchik and Fox River areas on the Kenai Peninsula and on the west side of Cook Inlet at Cannery Creek, Crescent River and Tyonek.

The history of major spruce beetle infestations indicates that once an infestation starts in an area and the weather conditions are favorable, the majority of the spruce trees eventually become infested and die. Past infestations have impacted 1.2 million acres of the total 2.2 million acres of forest land in the borough.

This Master Timber Harvest Program presents options for the Kenai Peninsula Borough to consider. The first would be "No Action" by the Borough. The second would be limited involvement with a harvest program for Borough lands. The third option would be a coordinated effort with small and corporate land owners, the State lands (Mental Health, University, DNR and ADF&G) and the Chugach National Forest lands. The Fish and Wildlife Service would be asked to join this effort. The Kenai Peninsula Borough would be the lead agency, administrator, and coordinator of this effort.

Option three recommends a fully staffed Reforestation Center and Nursery with a Silviculturist, Fisheries and Wildlife Biologist, Nurseryman, Fire Control Specialist and other team members. In addition, it recommends: a timber harvest program and accompanying transportation needed in the major spruce forest units of the borough; immediate coordinated timber harvest programs for Borough and State lands in the central and southern peninsula; and that the Borough take the lead in encouraging the present harvest of corporate lands and potential purchasers of public and private timber to install a value-added forest products complex which could complement the existing industry operations.

The third option is encouraged due to the need to revitalize the forest health of 365,000 acres of the infested forest land (the spruce trees currently infested will deteriorate and be unusable in 3-5 years), to make the spruce timber useable for the world market, and to improve the socioeconomic and environmental resources of the borough.

The spruce bark beetle epidemic within the Kenai Peninsula Borough is a dire threat to all borough forested land, and impacts both natural and human resources. The "No-Action" alternative has proven to be, by experience, expensive in terms of government efforts to mitigate the potential fire hazard—witness the Cooper Landing fire hazard control project. Left untreated, infested forests have seriously degraded wildlife and fisheries habitat and scenic, aesthetic and recreation values. An important commercial timber resource and a healthy forest are being compromised for this generation and for generations to come.

The spruce beetle epidemic within the Kenai Peninsula Borough should be considered an incident equal in scope and impact to a large wildfire and dealt with in the same sense of urgency and damage control.

1.0 Introduction

The purpose of this report is to present three options for the Kenai Peninsula Borough (KPB) to consider and evaluate for maintaining a healthy spruce forest, promoting scientific land management, saving valuable forest products, promoting value-added forest products facilities and improving other social, economic and environmental resources of the borough. Full implementation could result in the harvest and utilization of the 800 million to 1.5 billion board feet of spruce timber recently infested and on the verge of destruction by the spruce bark beetle. Timely utilization of the timber within one to two years after the deadly beetle attack becomes visible is critical for a healthy forest, for full utilization of the resource, and to extract the highest commercial value.

The Draft Forest Health Management Plan prepared by the Division of Forestry and the report prepared by the Kenai Peninsula Borough Economic Development District titled Commercial Timber Resources of the Kenai Peninsula Borough were researched extensively and yielded vital data for the creation of this plan.

This plan is not a detailed harvest plan for private, Borough, State or Federal lands. From the annual Forest Service aerial forest health surveys, estimates have been made of the projected spread of the spruce bark beetle infestation and the forest resource impacted. The plan recommends those areas where the Kenai Peninsula Borough can take the leadership role. Also included are estimates of timber volumes and volumes impacted on potential timber sales, miles of road needed and draft coordinated road cost share and easement agreements. An estimate of the reforestation needs of each option is also outlined.

Note: **Borough**, when capitalized, and KPB refer to the Kenai Peninsula Borough municipality and the specific lands under municipal ownership. When not capitalized, **borough** is used as an inclusive term for everything within the KPB's legal boundaries.

In order for the various land owners (Federal, State, KPB, University, ANCSA Corporations and private) to combat and minimize the long-term damage to the borough's forest resources, a strategic harvest plan has been formulated. This plan addresses many facets of the unique and various natural and human resources of the borough.

In a separate section, this plan also addresses the acres, volume, value and environmental degradation of the spruce beetle infested forests on the Kenai National Wildlife Refuge.

2.0 Options

The following options should be considered by the Kenai Peninsula Borough.

Option I—No Action.

The current status quo would remain in effect. Timber harvest would continue to occur at the present level primarily on private and corporate lands currently under contract. Salvage harvest would occur at moderate rates on public land, mostly to supply the local markets for house logs and firewood. It is expected that most ANCSA Corporations would sell their timber not currently under contract as market demand increases. Most of the timber harvested would be standing live, green spruce cut for export or chips. Modest investment in value-added production and most new infrastructure would be provided by the private sector in the form of new roads and a few timber transfer facilities. Forests, either beetle infested or threatened with beetle infestation, would likely continue to be impacted at an accelerated rate with little impetus or funding for larger scale reforestation.

Advantages: Timber industry continues modest growth with little pubic opposition or controversy. Governments risk little capital and reap moderate increases in tax base.

Disadvantages: Fire danger increases. Potential for expensive fire suppression in future. 1990 Tok fire cost state approximately $25 million, for example. Wildlife habitat and fisheries values decline.[1] Tourism possibly negatively impacted by loss of recreation facilities and aesthetics from fire and/or danger from falling beetle killed trees. Important timber resource is lost and not likely to be replaced unless large scale catastrophic fires occur in beetle killed areas. Reforestation of harvested lands primarily ensured through enforcement of provisions in Alaska Forest Resources and Practices Act (FPA).

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[1]. Cooper Landing Draft EIS, USFS, Warren Oja

Option II—Moderate Action

Coordinated promotion of borough timber resources results in accessible beetle killed timber being harvested prior to decay. Concentrated reforestation efforts are limited due to lack of dedicated funding or facilities. P ssible long-term commitment by public and private sectors for forest products complex for value-added processing.

Advantages: Same as I, with increased borough employment and economic activity.

Disadvantages: Fire danger increases moderately in most areas and highly in unharvested areas.

Option III—Coordinated Action Plan:
Joint Private, Borough, State & Federal

Long-term investment by both timber industry and governments for harvest and value-added processing. Majority of commercial timber available is harvested under accelerated action plan prior to decay and loss of value. Green commercial timber at high risk also harvested as preventive measure for future beetle outbreaks. Large-scale reforestation occurs from private/public commitment to natural regeneration or replanting beetle killed/harvested acres. Non-commercial forests replanted or revitalized by an aggressive site specific prescribed fire treatment.

Advantages: Employment and economic activity increases substantially within borough. Numerous year-round, well paying jobs are created. Infrastructure expanded. Tax base increases. Fire danger is mitigated especially in human influenced areas of borough. Reforestation efforts result in increase in quality habitat for most herbivores and predators. Increased access to larger land base decreases pressure on developed recreation sites. Increased opportunities for fish and wildlife habitat enhancement.

Disadvantages: Large areas of the borough become roaded with associated increased maintenance costs. Potential loss of invested capital in infrastructure if market demand for spruce declines or beetle impact becomes unmanageable, with an uneconomic timber salvage program as only viable option.

To increase the effectiveness of Option III and to streamline management, the state could assign management responsibility for State timber on certain State lands to the Kenai Peninsula Borough. Further study of this strategy is necessary to fully explore the political ramifications.

3.0 Reforestation

3.1 Reforestation Center

In view of the reforestation effort which will be necessary on a variety of public and private lands due to the enormity of bark beetle devastation, two distinct solutions have become apparent.

Option I—Utilize DNR Tree Nursery, Palmer

Obtain all white/Lutz spruce from new State-DNR nursery in Palmer. This new nursery will be able to provide several million seedlings per year at a cost of $0.25 for 1/0 (one year old) seedlings. Transportation from Palmer will be required. Distance to Soldotna is 200 miles.

Advantages: No additional investment required.

Disadvantages: Distance from nursery to planting sites. Lack of control over quality and quantity of stock. Necessary for borough's reforestation needs to compete with other reforestation efforts in the state. No local (Kenai Peninsula) involvement. Reforestation needs might outstrip current capacity of nursery (400,000 seedlings/year, 1 crop, max. capacity 1.2 million). Borough would have to compete with other areas of state with reforestation needs for seedlings.

Option II—Establish Joint Borough, State, Federal Reforestation Center and Nursery within Borough

Draft an ordinance through the Kenai Peninsula Borough (KPB) legal department authorizing the construction of a reforestation center which would include a reforestation staff, nursery, greenhouses, research facilities and, possibly, a home base for a prescribed burn team for natural reforestation efforts in remote areas. Initial cost of investment for the nursery would be in the range of $1 million to $1.5 million. The Palmer nursery has had a construction budget of $1 million

for a 10,000 square foot facility. Detailed construction costs of this facility are included in the Appendix for reference. The KPB and State own numerous patented sites in the Soldotna/Kenai area which would be suitable for this center and could be dedicated by the Assembly. A facility which could be integrated with education in the borough would be ideal. The KPB should be the lead agency with financial support and participation from state and federal agencies and in addition encourage active participation involving both personnel and financing from large private landowners and timber harvesters. Staffing would consist of a reforestation technical team, on assignment, from the entities just mentioned, including fire behavior specialists, wildlife and fisheries biologists, silviculturists and nursery managers—all with a mission to protect and enhance the forest health of the borough.

Proposed Reforestation Center Staffing

Personnel	Cost/yr	Agency	Overhead
Director/Manager	$60,000	KPB	$30,000
Office Staff	$45,000	KPB/PVT	$30,000
Forester/Silviculturist	$60,000	DNR	$30,000
Wildlife Biologist/Ecologist	$60,000	ADF&G	$30,000
Fisheries Biologist	$60,000	ADF&G	$30,000
Nursery Specialist	$60,000	DNR	$30,000
Technicians (2)	$60,000	PVT	$30,000
Fire Behaviorist	$60,000	FED/DNR	$30,000

For further information on detailed cost analysis of reforestation center, see Appendix-Reforestation.

Advantages: Control over growing, quantity and quality of stock. Close proximity to reforestation efforts over 16 million acre borough. Enhanced educational opportunities. Combines technical forestry, wildlife and fisheries expertises—to promote a healthy forest while enhancing the wildlife and fisheries resources. Shows serious commitment to revitalizing forests.