Selling Woodland Timber:
Contract Decisions

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EXT 759

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*Forest landowners can choose from several
contract types when planning a timber sale.*

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While many people regret the necessity of written contracts, legally binding documents are essential when selling timber products.

Nonindustrial private forestlands generated an estimated 865.5 MMBF[1] from Idaho during 1991. A landowner conducting a minimal commercial thinning of 20 to 30 acres can easily generate 100 MBF. This 100 MBF could easily represent $12,500 to $35,000 in cash returns to the landowner, beyond harvest costs. Many investors will agree that this magnitude of value justifies a written contract, designed to protect the forestland owner's interests.

Two types of agreements are commonly used in timber sales from nonindustrial private forestlands: (1) The landowner can sell the logs to a logging operator, mill representative, or log broker based on delivered mill scaled volume, or (2) the landowner can hire a logging contractor, then market the logs to area mills personally. While these two contract types are similar, the differences are significant.

Timber Sale Contracts

In the first option, a purchaser both harvests the timber and markets the logs. Normally, the best arrangement for the landowner is to specify a value paid per species and by volume for delivered logs. It is advisable to arrange this payment on some predetermined interval convenient to

mill pay dates with sufficient time allowed for the purchaser's bookkeeping, usually once or twice per month. This option places the economic burden of changing log markets on the purchaser.

If the market for logs increases, the purchaser enjoys higher revenues. However, if the market decreases, the purchaser bears the burden of the delivered price decrease. The value paid to the landowner is fixed in the contract.

A timber sale contract is a written agreement between a landowner and an entity purchasing the timber products. This entity may be a logging operator, a log mill, or a log broker. In each situation, the second party is the one who pays the landowner for the wood removed.

Many times, the *purchaser* is a logging operator who harvests the trees, processes the logs, and sells the products to one or more log mills in the region. The purchaser could be a log mill that hires a logging operator to harvest the trees and manufacture the logs to fit mill specifications. Or, the purchaser could be a *log broker*, a person who purchases the rights to a landowner's timber, chooses and hires a logging operator, then markets the wood to chosen mills. In each situation, the landowner deals only with one purchaser: the logging operator, the mill, or the log broker.

The contract developed to handle the timber sale generally specifies a value that the landowner will receive on some measured basis. This basis might be (1) a **lump**

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[1]MBF: Thousand Board Feet. The number of board feet from a log describes how many 12"x12"x1" boards can be cut from that log. MMBF represents 1,000 MBF, or 1 million board feet.

sum, (2) an **average price per MBF**, or (3) a **price per MBF per species** based on mill scaled volumes.

√ In a **lump sum** agreement, the purchaser will make a single payment to the landowner, specified in the contract, on or before a certain date. The sum does not change dependent upon volume removed, it is fixed in the contract. Foresters do not generally recommend lump sum agreements to landowners because of a history of highgrading by logging operators and lower quality work associated with lump sum sales.

√ A timber sale contract designed to sell the timber on an **average price per MBF** relies on scaled volumes from the mill(s) to pay the landowner. The volume delivered to the mill is multiplied by the amount specified in the timber sale contract to determine the value due the landowner. Specific values per species are not assigned. One value per MBF is specified in the contract and used for all species.

√ A timber sale contract that specifies a **price per MBF by species** based on volume delivered to the mill(s) is similar to the previous example. However, the volume is recorded by species, then multiplied by the appropriate value per species to determine value due the landowner. Because log values vary by species, forestry consultants often recommend that landowners choose this type of arrangement when using a timber sale contract.

Remember, in a timber sale contract, the landowner deals only with one party: *the purchaser*. The landowner negotiates a payment price with the purchaser for the timber products removed. The purchaser is responsible for managing all aspects of logging, marketing, and payment for the timber products.

Logging Contract / Log Purchase Agreement

When landowners use a logging contract/log purchase agreement they are really dealing with two separate agreements. The first agreement is a **logging contract**, made between a logging operator and the landowner. The logging operator *bids* (offers prices based on certain conditions of the work) on the job of logging the property, based on deliveries to specified mills. The logging operator never actually purchases the timber products from the landowner, and therefore, does not sell the timber products to the mill(s). The logging operator harvests the products and delivers them *on behalf* of the landowner, as well as fulfilling other contract obligations made with the landowner. The logging operator is a contractor just as a carpenter, plumber, electrician, or other professional service provider hired to complete a specific job.

In the **log purchase agreement**, the landowner negotiates with mills to determine the best prices for logs from their property. Landowners commonly sell certain logs to different mills based on product size and species. A mill specializing in veneer might pay a high price for peeler-quality western white pine, but a low price for Douglas-fir and western larch stud logs. Another mill might have the opposite policy because it specializes in dimension lumber. Other mills utilize pulp logs, chip logs, or are *tooled* for optimum manufacture of certain log sizes through their mill. Log purchasing agents for mills are generally agreeable to offering prices by species for wood delivered to their mill.

The landowner must determine which species should go to each mill, and inform the logging operator of the *sorts*[2] in the logging contract.

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[2]Sorts: The process of grouping certain species or sizes of logs together to be delivered to separate mills. Each sort is generally kept separate from other sorts to aid in truck loading and delivery.

Logging operators ⇩	Logging costs per MBF			
	Mill X ($)	Mill Y ($)	Mill Z ($)	Pulp Mill ($)
A	110	105	125	100
B	100	100	125	100
C	115	110	115	100

Table 1. Logging cost bids from logging operators including deliveries to specified mills. Prices listed are costs for logging and delivery to the specified mill.

Pulling the Agreements Together

The landowner must determine the best combination of logging operator and mill(s) to contract with. There will be one contract for a logging operator and one or more log purchase agreements with area mills. Generally, logging operators may include up to three sorts for the same price as one sort; however, multiple sorts usually require larger log landings, and higher logging costs.

Landowners may find a *decision matrix* useful to help choose a combination of logging operator and area mills that brings the highest revenue.

The first step is to gather logging and hauling prices to each delivery point for each logging operator. This can be summarized in a table similar to table 1.

Most logging operators will request a sample logging contract before offering a logging bid. Landowners should consider hiring an attorney skilled in logging contracts to review the agreement before giving it to potential contractors. When a forest-land owner hires a professional forestry consultant, the consultant generally provides sample contracts, modified to suit specific conditions of individual timber sales. (For more detailed information on logging contracts and forestland management, see a professional forestry consultant in your area.)

Next, the landowner should create a table similar to table 2. List the mills down the left side (X, Y, Z, and Pulp Mill), and each species group that the mills purchase across the top. In this example, species

	Delivered log prices				
Log mills	Estimated volume of logs on the timber sale				
	100 MBF	30 MBF	25 MBF	40 MBF	5 MBF
⇩	DF/WL ($)	GF/WH ($)	WWP ($)	LP/ES ($)	Pulp ($)
X	250	230	440	220	0
Y	245	240	410	230	0
Z	260	250	400	200	0
Pulp mill	0	0	0	0	105

Table 2. Values represent delivered log prices per MBF to area mills. The figures at the top of the columns represent the approximate sale volume by species. Species abbreviations are as follows: DF = Douglas-fir, WL = western larch, GF = grand fir, WH = western hemlock, WWP = western white pine, LP = lodgepole pine, ES = Engelmann spruce, Pulp = logs used only for pulp products. See a local forestry expert for further details.

sorts are DF/WL, GF/WH, WWP, LP/ES, and Pulp. Then place the appropriate values in the table, as quoted from the mills.

Finally, insert volumes appropriate to the landowners' timber sale above the species list in table 2. Obtain these volumes from a formal timber cruise prepared by a professional forester. Many professional forestry consultants can complete this type of volume assessment. You can justify the cost of the timber cruise with increased decision-making accuracy, and an improved ability to estimate the future value and health of your forestland.

Decision-Making Criteria

See tables 1 and 2 for a demonstration of a 200 MBF timber sale. Half of the timber sold is Douglas-fir and western larch.

First Glance Method

At first glance, one might think the decision is clear: choose the mills based on the highest prices, then see which logging operator can complete the job the cheapest. In this case, the DF/WL and the GF/WH would be sent to mill Z, the WWP would be sent to mill X, the LP/ES would be sent to mill Y, and the pulp wood would be sent to the pulp mill. Since the majority of the volume (130 MBF) is being sent to mill Z, you might choose the logging operator that bid the lowest price delivered to this mill: logging operator C. In this example, the landowner would receive $31,500 for the value of the timber removed, after the logging operator has been paid. Since there are more than three sorts, *the value of the sale is not maximized.*

One Sort, One Logging Operator Method

In this method we calculate the cash returns based on each logging operator delivering all logs to one mill. Since only one mill is purchasing pulp logs, we will represent it in our calculations as an additional $25.

To compare options using this method, we subtract the cost of logging and delivery from the delivered mill price, then multiply it by the volume of each species. By repeating this for each mill and logging operator we can choose the combination that makes the most money. Figure 1 shows this method mathematically.

Mill X, Logging Operator A:

{100(250-110)}+{30(230-110)}+
{25(440-110)}+{40(220-110)} + 25 = $30,275

Mill X, Logging Operator B:

{100(250-100)}+{30(230-100)}+
{25(440-100)}+{40(220-100)} + 25 = $32,225

Mill Z, Logging Operator B:

{100(260-125)}+{30(250-125)}+
{25(400-125)}+{40(200-125)} + 25 = $27,150

After calculating each of the nine possible combinations from the example, we find that under this method, hiring operator B to send products to Mill X yields the highest return to the landowner: $32,225. This is $725 more than the previous example, but still not the best solution for this timber sale.

The Decision Matrix Method

The best method to choose a logging operator and which mills to send wood to is slightly more complicated. When creating a **decision matrix,** the landowner creates a

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Figure 1. One sort, one logging operator method shown mathematically.

$$\sum_{i=1}^{n} \{ VOL_i * (VAL_i - LOC_i) \}$$

Where:
i   =   number of species groups to be harvested,
VOL_i =   Total volume of species in group "i",
VAL_i =   Value of species group "i" at each mill,
LOC_i =   Logging operator cost for delivery to each mill.

series of tables based on each logging operator. The matrix lists each species group and each mill under consideration (table 3). In this example, the prices listed are the difference between the delivered mill value and the delivered logging cost.

To determine the first entry in the table (operator A delivering DF/WL to Mill X), a person would subtract the appropriate logging cost from the appropriate delivered log price (table 3). As follows:

(delivered log price to mill X for DF/WL) -
(logging and delivery cost to mill X from operator A)
Inserting numbers, we have:
$250/MBF - 110/MBF = $140/MBF

The highest values are highlighted for each species sold for each logging operator (see numbers in bold). This value is then multiplied by the volume for that species and totaled. During the value summary, the highest value per species is used to deter-

mine maximum value possible using each logging operator.

To demonstrate the process with logging operator A, we multiply the potential revenue by the volume per species, then add.

{$140/MBF x 100 MBF} + {$135/MBF x 30 MBF} +
{$330/MBF x 25 MBF} + {$125/MBF x 30 MBF} +
{$5/MBF x 5 MBF} = $31,325

This process shows that the highest value to be generated from hiring logging operator A is only $31,325. Hiring logging operator B could generate $32,925, while hiring logging operator C could generate a maximum of $31,500.

The optimal choice in this situation is to choose logging operator B and sort the wood as follows: DF/WL and WWP to mill X, GF/WH and LP/ES to mill Y, and the pulp logs to the pulp mill. This decision yields $700 more to the landowner than choosing the one sort, one operator

Log mills	Logging Operator A				
	DF/WL ($)	GF/WH ($)	WWP ($)	LP/ES ($)	Pulp ($)
X	140*	120	330	110	--
Y	140	135	305	125	--
Z	135	125	275	75	--
Pulp mill	--	--	--	--	5

Max. value $31,325

Log mills	Logging Operator B				
	DF/WL ($)	GF/WH ($)	WWP ($)	LP/ES ($)	Pulp ($)
X	150	130	340	120	--
Y	145	140	310	130	--
Z	135	125	275	75	--
Pulp mill	--	--	--	--	5

Max. value $32,925

Log mills	Logging Operator C				
	DF/WL ($)	GF/WH ($)	WWP ($)	LP/ES ($)	Pulp ($)
X	135	115	325	105	--
Y	135	130	300	120	--
Z	145	135	285	85	--
Pulp mill	--	--	--	--	5

Max. value $31,500

*Prices listed are dollars per species per MBF the landowner will receive after paying for logging and hauling.

Table 3. In this example, the **Decision Matrix** helps determine the highest value from a combination of four mills and three logging operators.

method; $1,425 more than the first glance method; and $5,775 more than the worst case of the one sort, one logger method.

Which Format to Use?

When landowners use timber sale contracts, they sell the logs from their property for a price set on a particular date. Once that price is set in the contract and signed by both parties, it will not change unless the contract contains specific wording to modify this criterion.

When a forestland owner hires a logging operator and markets the logs directly, the forestland owner retains the option to ship the wood to whichever mill is paying the highest log prices. Since the operator contract specifies a fixed amount for the logging, the landowner has only one variable to work with: mill value for delivered logs.

The timber sale agreement may seem simpler and faster while placing the marketing duties onto the purchaser. The second method may seem more complex, but more flexible. However, some situations warrant one contract structure over the other. The contract structure choice is tied directly to log market trends. Assuming every forestland owner wishes to maximize timber sale value, the landowner should choose the contract structure with the highest potential revenue.

If log prices are decreasing, the landowner should consider using a timber sale contract. Since the price paid to the landowner by the purchaser is fixed in the timber sale contract, the burden of the upcoming decrease in log prices will be placed on the purchaser. This way, landowners reduce their risk of losing value because of decreasing log markets.

If log prices are increasing, however, the landowner should consider using an operator contract for the logging, and marketing the wood directly to area mills with log purchase agreements. Assuming log mar-

kets will increase during the timber sale, the landowner will receive the benefits of the higher prices as the sale progresses. But, the landowner assumes the risk of a price reversal.

Practicing Good Forestry

Forestland owners should remember that good forestry involves a clear definition of why the timber sale is being conducted. The forestland owner needs to use sound silvicultural techniques to insure that a healthy, productive forest remains, or has the ability to grow and mature.

Professional foresters are uniquely qualified to make silvicultural decisions on behalf of forestland owners. While many timber harvesters do understand silvicultural techniques, a qualified forestry consultant is better suited to represent your needs and desires by marking the timber to be removed before beginning timber harvest activities.

Other Considerations

The business of buying and selling timber products is a large, competitive industry. Mill representatives, logging operators, and log brokers represent themselves and their businesses. Private forestland owners generally do not understand logging operations and log manufacture as well as a logger or mill forester. Landowners who wish to have property logged should study the industry thoroughly before jumping into an agreement they do not fully understand.

Many professional forestry consultants are available to private forestland owners in the Inland Northwest. A true forestry consultant represents the forestland owner, just as a lawyer or an accountant is obligated to protect your best interests during a forest management endeavor.

A professional forestry consultant can assist the private landowner in planning, setting up, administering, record keeping, and other details of a timber sale. A profes-

sional forestry consultant will negotiate on behalf of the forestland owner with logging operators and log mills to secure the highest possible return to their client. Good consulting foresters can generally offset fees by expertly marketing a landowner's timber. They also evaluate specific timber sale characteristics to make recommendations on what type of sale structure to use: a timber sale contract or a logging contract/ log purchase agreement.

Professional forestry consultants also provide a critical market appraisal service for forestland owners. Since consultants represent many forestland owners at a time, they are generally up to date on current log market trends and can secure top value for their clients.

Before deciding to hire one consultant over another or one logging operator over another, collect references and examples of timber harvest or forest management jobs completed by the company. Reputable forestry consultants and logging operators are generally happy to share the names of clients served and to provide references of other professionals in the industry willing to verify their credibility.

For more information on selling timber products and forest management, consult a University of Idaho Cooperative Extension System forester, a Forest Practice Advisor from the Idaho Department of Lands, or a private consulting forester.

For further reading, consult the following publications:

Baumgartner, D. M., and H. M. Jones. 1981. Timber sale agreements. Bulletin 0961. Pullman, WA: Washington State University Cooperative Extension.

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Mukatis, W. A., and C. F. Sutherland. 1986. Contracts for woodland owners and Christmas tree growers. Circular 1192. Corvallis, OR: Oregon State University Extension Service.

McMahon, R. O. 1984. Developing a marketing strategy for woodland owners: Initial considerations. Circular 1130. Corvallis, OR: Oregon State University Extension Service.

Starkey, S. J., and N. E. Elwood. 1983. Log exports and the private woodland owner: An overview of operations and markets. Circular 1141. Corvallis, OR: Oregon State University Extension Service.

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