

ES 147

PRELIMINARY
MUNICIPAL FOREST
SURVEY

JANUARY, 1952

- For -
The Corporation of the
District of North Cowichan,
Duncan,
British Columbia.

- By -
F. J. G. JOHNSON
B.C.R.F.
Vancouver,
B.C.



No. 2

VICTORIA, B. C.

1947.

B. C.'s NEW PLAN OF FARMING--CHRISTMAS TREES

British Columbia has joined company with Santa Claus in making children happy at the Christmas festive season. Trees, for use as Christmas trees and for decoration, are shipped to all parts of the United States, and as far away as the Hawaiian Islands. In 1946, 2,131,725 trees were shipped from British Columbia with an estimated value loaded on the cars of \$402,056.00.

Christmas trees have come to be recognized as a legitimate forest product and their perpetual production on growing sites which are of poor quality can be good forestry practice if properly managed. At the same time, one must keep in mind that, on the greater proportion of forest land, it is more profitable to produce saw-timber and other forest products so that on such areas the second growth or reproduction must be preserved for restocking purposes. It is often stated that Christmas-tree harvesting in young stands is beneficial in that such cutting is primarily a thinning and will improve the final crop of timber. Unfortunately, such claims are not borne out in actual practice.

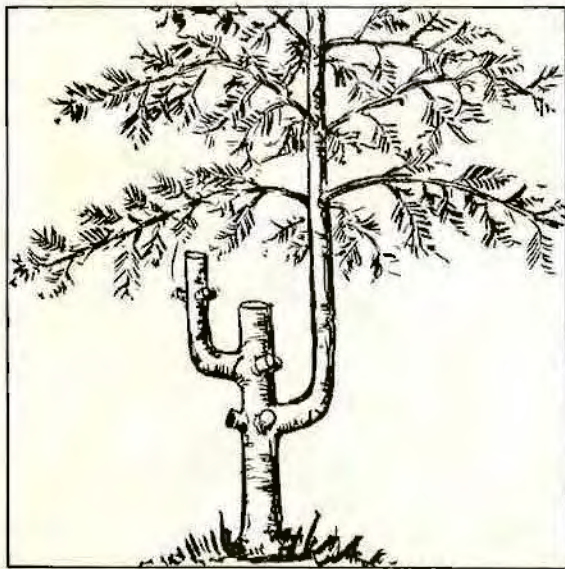
The Forest Service has kept the Christmas-tree industry under close observation since it assumed prominence some years ago and, with the expansion of the output year by year over the past decade, there arose a demand for extension of cutting rights from private lands, where it first originated, to Crown lands in the Douglas fir regions of the Province. Douglas fir has been found to be the most desirable species and no finer trees for this particular purpose are produced in the Pacific Northwest than those young-growth Douglas fir found on the poorer, slow-growing-sites in the fir region of the Interior portions of British Columbia.



From observation it was found that, with few exceptions, harvesting methods employed were destructive and improvident; in other words, the Christmas-tree lands of the Province were being "mined" instead of "farmed." A continuation of this short-sighted policy would only result in a decreased and unstabilized production within a comparatively few years. To maintain the output at its present level, or to increase it, demands that lands best suited to permanent production of Christmas trees be placed on a sustained yield, or tree-farm, basis as soon as possible. Rational management and improved harvesting methods can be expected materially to increase the annual yield per acre and maintain that yield indefinitely in contrast to a few years of overcutting resulting in denuded lands and loss of income.

It was only logical that the attention of the Forest Service should be drawn to the East Kootenay region where there are large areas of Douglas fir forest on land which is too dry to grow satisfactory timber crops. In 1941 a survey was made of suitable Crown lands and sixty-two Christmas-tree farms were established. Each farm varies in area, depending upon the calculated sustained yield, the aim being to provide an eventual annual harvest under management of 5,000 trees. Permits for cutting are issued to bona-fide settlers living nearby and, as long as the permittee adheres to the conditions embodied in the permit, he is assured of the cutting rights on that area. In other words, permittees are assured of continuity of tenure as long as they comply with permit requirements which, in turn, are based on sound management principles.

Permit conditions are designed to produce the greatest number of trees from the Christmas-tree farm year after year. However, provision has been made for considerable freedom in the conduct of operations so that the permittee may be encouraged to develop better practice by experiment. It is required that certain stand improvements shall be introduced, such as trimming or pruning individual trees, thinning thickets, encouraging the growth of "limb" trees, regulating grazing, cutting excess mature timber, and, possibly, planting or transplanting seedlings. Of these measures trimming is probably the most important and the one likely to prove most profitable. On the other hand, the growth of "limb" trees is of greatest interest to the uninitiated. A "limb" tree is the result of a Christmas tree having been cut from the upper portion of a tree leaving the lower three or four whorls of branches on the stump. Subsequent to cutting, the upper branches turn up to form a new tree and in effect what happens is that a three-foot horizontal limb on a stump becomes a three-foot tree when it assumes a vertical position. Compared with naturally-grown trees these "limb" trees grow



remarkably fast, due to the greater development of their root system, thereby producing Christmas trees in a shorter period of time.

In 1946, seventy-eight permit areas yielded 177,000 trees, or 66 per cent of the allowable cut. With the appointment of forest officers by the B. C. Forest Service for the supervision of all operations on Christmas tree permit areas it is hoped that permit areas will be extended and every effort will be made to encourage producers in proper cutting methods designed to attain maximum sustained production for each permit area.

In addition, the Forest Service is engaged in carrying on experiments, on areas strategically located in the East Kootenay, for the purpose of determining suitable cutting practice. These areas will serve as demonstration plots for the benefit of all who are interested, whether they operate on permit areas or their own lands.

It is anticipated that these will demonstrate the practicability of Christmas-tree "farming"; in other words, a sustained and increased annual yield of improved quality trees can be attained, and will be found to be more profitable, over a period of years, than short-term exploitation of Christmas-tree lands. The principles and techniques demonstrated on these farms can be applied equally well to operations on private lands and it is hoped that the ultimate result will be that all lands, both public and private, which are considered best suited to the growing of Christmas trees, will be managed on a sustained yield basis.

BRITISH COLUMBIA FOREST SERVICE

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(Additional copies of this Bulletin will be supplied upon request.)

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INTRODUCTION

PURPOSE OF REPORT

This report is the result of an examination undertaken as a Preliminary Forest Survey to ascertain the extent of municipally owned forest lands, and the nature and condition of the forest cover contained thereon, and their present and potential forest values.

METHODS USED

Originally it was planned to use the data compiled by the recent forest survey conducted by the B.C. Forest Service.

However, the basis of the Forest Service examination was unsuitable and therefore, this report is the result of obtaining all available published information combined with an extensive field examination and study of the areas.

RESULT

As a result of the examination, it is evident that the forest lands held by the municipality are overdue for planned forest management, and that a long term forest management plan and policy should be adopted immediately.

Further, that the areas examined have an indicated gross forest revenue potential of at least \$10.00 per acre per annum at today's dollar value.

Originally it was intended to submit a policy report referring briefly to Forest Protection, Management and Policy in a separate "Policy Report", however, it was found that these subjects could be presented more clearly and without repetition if they were included in the main body of the report, and consequently this procedure was adopted.

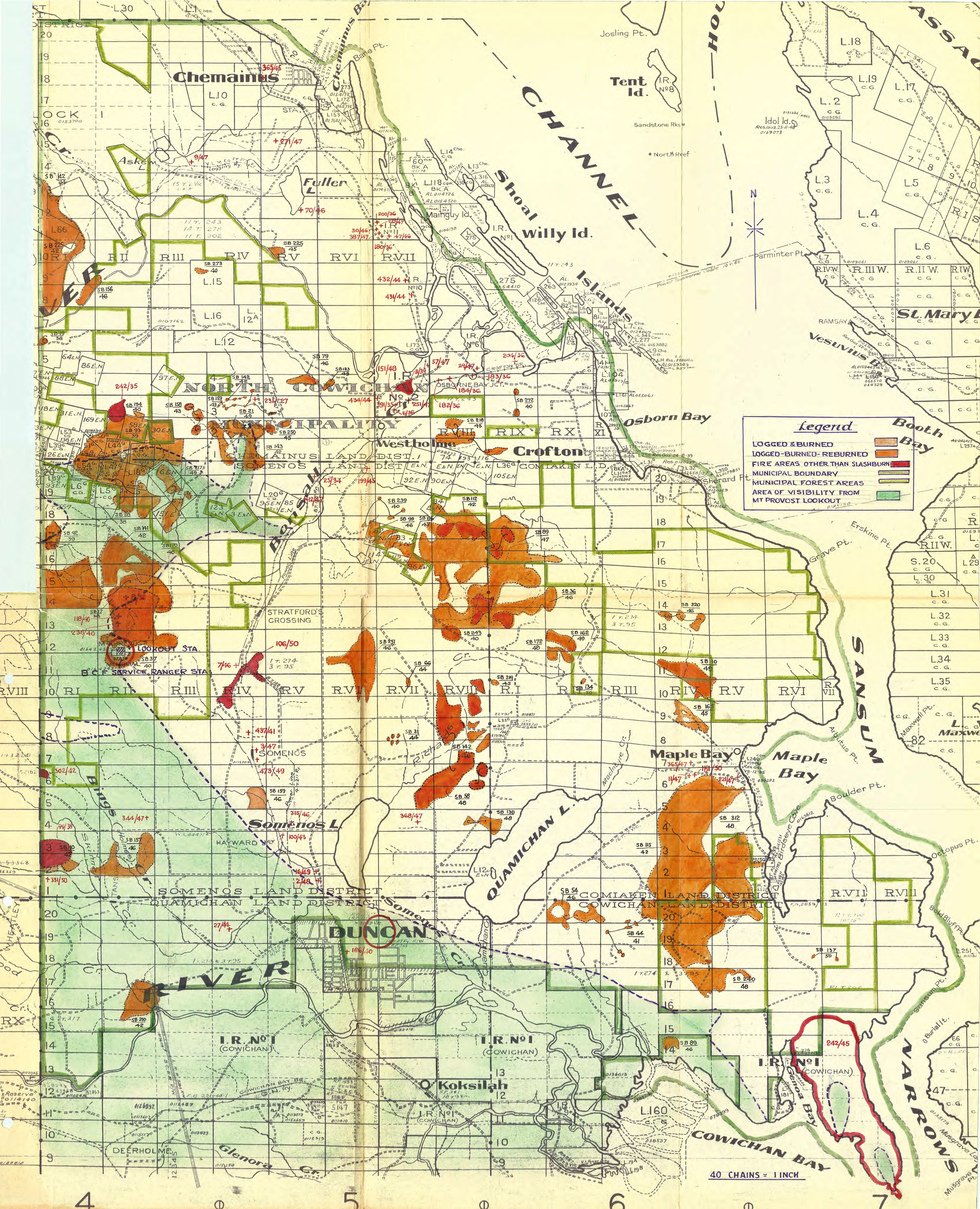
RECOMMENDATIONS

The following recommendations are submitted as a means of obtaining the maximum sustained revenue from the Municipal Forest lands unsuitable for other purposes than that of growing forest crops.

- (1) Arrange for a "Forest Management Plan" to be made of the Municipal Forest. This should cost in the neighbourhood of \$1.00 per acre.
- (2) Adopt the plan by "By-Law".
- (3) Provide for forest protection of the areas.
- (4) Provide qualified supervision of the Forest Management Plan.
- (5) Manage the Municipal Forest for intensive Christmas tree production.


W.H. Cawley, B.S.F.


F.J.G. Johnson, B.C.R.F.
Consulting Forester.



Legend

- LOGGED & BURNED
- LOGGED-BURNED-REBURNED
- FIRE AREAS OTHER THAN SLASHBURN
- MUNICIPAL BOUNDARY
- MUNICIPAL FOREST AREAS
- AREA OF VISIBILITY FROM MT PROVOST LOOKOUT

40 CHAINS = 1 INCH

4 5 6 7

SYNOPTIC SUMMARY

SUMMARY OF ACREAGES

PRODUCTIVE FOREST LAND

Type	Blocks	Acreage							Total	%
		A	B	C	D	E	F	G		
Mature Timber		-	-	125	20	-	-	-	145	1.4
Reproduction		840	145	1575	1655	200	470	65	4740	47.5
Second Growth		-	10	325	1070	685	180	251	2501	25.2
Logged and Logging		240	75	280	208	-	-	20	823	8.4
Not Satisfactorily Restocking		40	365	1099	141	5	42	44	1736	17.5
<hr/>										
Totals	1120	595	3202	3094	890	692	360	9953	100	
<hr/>										
%	11.2	6.0	32.2	31.0	8.9	7.0	3.7	100	100	

Estimated Total Productive Land - 9,953 acres, more or less. ✓

NON-PRODUCTIVE FOREST LAND

Type	Blocks	Acreage							Total	%
		A	B	C	D	E	F	G		
Rock & Inaccessible Timber		80	129	410	50	-	-	-	669	78
Roads and Trails		10	10	45	34	-	18	6	121	14
Non-Commercial Forest Cover		-	20	45	-	-	-	-	65	8
<hr/>										
Totals	90	159	498	84	-	18	6	855	100	
<hr/>										
%	10.5	18.6	58.4	9.8	-	2.1	.6	100%	100%	

Estimated Total Non-Productive Land - 855 acres, more or less. ✓

Estimated Total Land - 10,808 acres, more or less. ✓

SYNOPTIC SUMMARY

VOLUMES

ESTIMATED WOOD VOLUMES - 1952

Type	Volume	Area	Remarks
Sawlogs	1,700 MBM	175 Acres	Mostly old growth scrubby Fir. Very difficult to log. Some residual low-grade trees left from past logging.
Cardwood Pulpwood Poles	17,460 Cards	1,545 Acres	Much of this volume is putting on growth and should not be harvested at present. However, some areas require a clean-up. (See table below).

RECOMMENDED CLEAN-UP CUTTING - 1952

Type	Area	Prod.	Volumes	Estimated Stumpage Values
Old Selectively Logged Areas	450 Acres	Cardwood Pulpwood Poles	3,000 + Cards	\$ 6,000.00
O.G. Fir Scrubby Hard Logging	145	Pulpwood Cardwood Logs	1,600 Cards 900 MBM	\$ 3,200.00 <u>10,800.00</u>
				\$20,000.00 est.

CHRISTMAS TREE PRODUCTION - 1952

Douglas Fir

Area	Cut Per Acre	Estimated Stumpage Value
Approximately 4,300 Acres	35 Trees	\$ 15,000.00

SYNOPTIC SUMMARY

ESTIMATED NET REVENUE

by

PUBLIC OPERATION

<u>1952 A.D.</u> <u>(Now)</u>	<u>Gross</u> <u>Annual Revenue</u>	<u>Gross</u> <u>Annual Cost</u>	<u>Net</u> <u>Annual Revenue</u>
Christmas Trees	\$ 15,000.00		
Cordwood & Pulp	20,000		
Fire Protection		\$ 5,000.00	
Forester & Supervision		10,000.00	
	<hr/>		
	\$ 35,000.00	\$ 15,000.00	\$ 20,000.00
<u>1962 A.D.</u> <u>(Within 10 Years)</u>			
Christmas Trees	\$ 56,000.00		
Fire Protection		\$ 5,000.00	
Forest Management, Silvi- culture & Supervision		15,000.00	
	<hr/>		
	\$ 56,000.00	\$ 20,000.00	\$ 36,000.00
<u>2002 A.D.</u> <u>(in 50 Years)</u>			
Christmas Trees	\$ 78,000.00		
Fire Protection		\$ 5,000.00	
Forest Management & Supervision		15,000.00	
	<hr/>		
	\$ 78,000.00	\$ 20,000.00	\$ 58,000.00

PRIVATE OPERATION

<u>1952 A.D.</u> <u>(Now)</u>			
Christmas Trees	\$ 15,000.00		
Cordwood	20,000.00		
Fire Protection		\$ 5,000.00	
Forester, Supervision etc.		5,000.00	
	<hr/>		
	\$ 35,000.00	\$ 10,000.00	\$ 25,000.00
<u>1962 A.D.</u> <u>(Within 10 Years)</u>			
Christmas Trees			
(7,000 Ac. at \$3.00 Rental	\$ 21,000.00		
7,000 Ac. - 60 trees per Ac. at 5¢	28,000.00		
Fire Protection		\$ 5,000.00	
Forester & Supervision		7,000.00	
	<hr/>		
OR	\$ 49,000.00	\$ 12,000.00	\$ 37,000.00

SYNOPTIC SUMMARY

ESTIMATED NET REVENUE

by

PRIVATE OPERATION (Cont'd)

	<u>Gross Annual Revenue</u>	<u>Gross Annual Cost</u>	<u>Net Annual Revenue</u>
Christmas Trees:			
7,000 Ac. at \$4.00 Rental	\$ 28,000.00		
7,000 Ac. - 80 trees per Ac. at 5¢	28,000.00		
Fire Protection		\$ 5,000.00	
Forester & Supervision		7,000.00	
	<u>\$ 56,000.00</u>	<u>\$ 12,000.00</u>	<u>\$ 44,000.00</u>
<u>2,002 A.D. (in 50 Years)</u>			
Christmas Trees	\$ 78,000.00		
Fire Protection		\$ 5,000.00	
Forester & Supervision		10,000.00	
	<u>\$ 78,000.00</u>	<u>\$ 15,000.00</u>	<u>\$ 63,000.00</u>

REMARKS

1. Figures and estimates based on today's dollar values.
2. The difference in methods for indicated and estimated annual net revenue is only \$5,000.00. It is therefore, the responsibility of the council to base their choice of method upon grounds of public interest as well as upon economic factors.

SYNOPTIC SUMMARY

FIRE HISTORY

NORTH COWICHAN MUNICIPALITY
PAST 10 YEARS

<u>Causes</u>	<u>No.</u>	<u>%</u>	<u>Area Acres</u>	<u>%</u>
Lightning	-	-	-	-
Campers	9	15.2	703	75.2
Railways	9	15.2	Spots	-
Smokers	17	28.9	116	12.4
Brush Burning	9	15.2	96	10.2
Telephone - Power-Lines	1	1.7	8	.9
Industrial	6	10.2	Spots	-
Incendiary	7	11.9	Spots	-
Miscellaneous (Known)	1	1.7	12	1.3
Unknown	59	100.0%	935 Acres	100.0%

Notes:

Campers caused 15.2% of the fires and burned 75.2% of the area.

Smokers caused 28.9% of the fires and burned 12.4% of the area.

By closing the Municipal Forest areas to the general public, it is therefore, theoretically possible to avoid -

44.1% of the risk

87.6% of the area being burned.

COSTS

Estimated costs of providing minimum forest fire protection on Municipal Forest Lands:



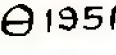
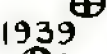






Annual Costs - \$ 5,000.00

Initial Capital Cost - \$ 7,500.00

FOREST INVENTORY AND ANALYSES

TECHNICAL SYMBOLS & TERMS

Please note the following terms and symbols:

- F - Douglas Fir
F 1940 - Douglas Fir established 1940
H - Western Hemlock
C - Western Cedar
B - Balsam
D - Alder
M - Maple
N.C.C. - Non-Commercial Forest Cover
N.S.R. - Not Satisfactorily Re-Stocking
FH 1940 60% - Fir, Hemlock established 1940 stocking B.C.F.S. method 60%
B.C.F.S. % Method - 100% Stocking - 1,000 trees per acre well spaced.
-  - Selectively logged - Residual stand left on the area.
 - Logged - clearcut
 - Logged 1951
 - Logged and slash burned
 - Slash burned 1939
- S.T. - Seed Trees
-  - Swamp
-  5-10 - Snags 5-10 per acre
- # - Rock - cliffs, outcroppings, etc.
-  - Main road
 - Good passable road 1951
 - Old logging road
- Clearcutting - Removal of all wood values on the area - small stems used for pulp and cordwood.
- Selective Cutting - Taking only desired trees - e.g. fir sawlogs only and leaving a residual stand.
- Site - Summation of all factors affecting growth and wood production.
- Site Index - Approximate height of the dominant and co-dominant (tallest) trees on the area at 100 years of age.
- Site Estimates-
- Poor approx. site I - Site Index up to 100
Medium approx. site II - Site Index 100 to 125
Good approx. Site III - Site Index over 125
- General stocking standards for second-growth - ocular
Stocking for reproduction - 4 acre sample plots.

5.12 May 1950

BLOCK "A"



FOREST INVENTORY AND ANALYSES

BLOCK "A" - TZOUHALEM MOUNTAIN AREA

1. GEOGRAPHICAL LOCATION

Immediately East of the city of Duncan, Vancouver Island, bordered by Quamichan Lake to the West, Maple Mountain to the North, Bird's Eye Cove to the East, and Cowichan Bay to the South.

2. LEGAL DESCRIPTION

Cowichan District:

R IV - Bl. 16, Bl. 17, Bl. 18, Bl. 19 and Bl. 20

R V - Bl. 16, Bl. 17, Bl. 18, Bl. 19 and Bl. 20

Gomiacan District:

R V - Bl. 1 with exception of Lots 16 to 25 inclusive.

Bl. 2 with exception of Lots 6 to 15 inclusive.

Bl. 3 with exception of Lots 1 to 6 inclusive.

3. TOPOGRAPHY

The land slopes upward from the 200 foot contour on the North averaging about 30% slope, to a maximum height of 1,700+ feet near the South boundary of this block, and then drops quickly forming steep broken rock cliffs 800 feet high at the South-west corner and along the South-east side of the block.

4. LAND AND FOREST CLASSIFICATION

Gross Area: 1,210 acres more or less.

Estimated Productive Area: 1,120 acres more or less.

Estimated Non-Productive Area: 90 acres.

A. Productive Area Classification

1. Reproduction:

Type	Age	B.S.F.S. % Stocking	Est. Site	Area	F Per Acre	Remarks
F 1935-42	Up to 16 yrs.	60%	Med.	820	800	Good Christmas Trees
F 1930	21 yrs.	100%	Med.	20	1000	Well established -
				Total =	840 Acres	fast growth

2. Logged Areas:

Type	Area	Est. Site	Restocking	Slash	Residual Volume
Recent	240	Med.	-	Not burned	Conceded 5-8 M
N.S.R.	40	Low	-	Light	-
Total	280 Acres				
				Sub-Total =	1,120 Acres

B. Non-Productive

Steep rock cliffs	O.G. Fir	60 Acres
Mineral Rock		20 "
Roads and Trails		10 "
Sub-Total		90 Acres

Grand Total = 1,210 Acres, more or less.

FOREST INVENTORY AND ANALYSES

Block "A" (Cont'd)

5. MERCHANTABLE TIMBER VOLUMES

The area is under the process of selective logging, removing low value saw logs and leaving undesirable hardwoods and some cordwood values. Fir seed trees are well distributed over the entire area and should not be classed as merchantable. No wood volumes will remain on the area other than the residual cordwood volumes not being utilized at present.

6. UTILIZATION

Best described as a stand of mature fir trees of various sizes.

Regeneration indicates that the future wood producing stand will be pure Douglas Fir, full stocked, but it will take approximately 70 years to produce 32,500 bd.ft. per acre of wood suitable for piling and pulpwood only and the area would have to be very cleanly logged and all stems utilized to get this volume.

70 years is too long for a municipality to carry an area of growing forest without returns. The need for a yearly income from this area indicates Christmas Tree farming as the solution. The regeneration on this area is well suited to Christmas tree production, the site gives slow enough growth, the seed trees are only 120-150 years of age, wind firm, and the best insurance policy available for this area.

7. LAND MANAGEMENT POLICY

- (a) Preserve the seed trees.
- (b) Keep the area closed to the public; there is nothing of public interest on this area, and fire will be the main menace in the future. Where the general public go in the forest so goes high fire risk.
- (c) Clean up the selectively-logged areas by clearcutting and slash burning the residual stands. Mark and protect suitable seed trees.
- (d) The road coverage is good on this area but the main entrance roads are impassable and will need repair and maintenance when the area is put on a management plan.



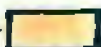





8. REMARKS

The selectively-logging practised on this area in stands of low quality trees leaves a ragged forest not suitable for regeneration of the desired species.

A clearcut for pulpwood and cordwood to prepare this area for a satisfactory crop of Christmas trees is highly recommended and a minimum stumpage charge is necessary for this operation to be successful.

The present old logging roads on the area will be ideally suited to Christmas tree production and will be valuable for fire breaks.

LEGEND

- Non Commercial Cover* ----- 
- Logged* ----- 
- Logged & Burned* ----- 
- Non Productive* ----- 
- Swamp* ----- 
- Reproduction* ----- 
- Second Growth* ----- 
- Mature Timber* ----- 
- ⊖ ----- *Logged 1928*
- ⊕ ----- *Burned 1940*
- ⊕ ----- *Logged 1939*
- ⊕ ----- *Selectively Logged*
- S.T. ----- *Seed Trees*
- ⌘ ----- *Scrub Timber*
- H ----- *Hemlock*
- B ----- *Balsam*
- D ----- *Alder*
- E ----- *Fir*
- C ----- *Cedar*
- M ----- *Maple*
- N.S.R ----- *Non Satisfactory Restocked*
- # ----- *Rock*
- |||| ----- *Snags*
- ==== ----- *Passable Roads (st)*
- *Logging Roads*
- ===== *Main Roads*

Maple Bay

Boulder Pt

MAP No.

①

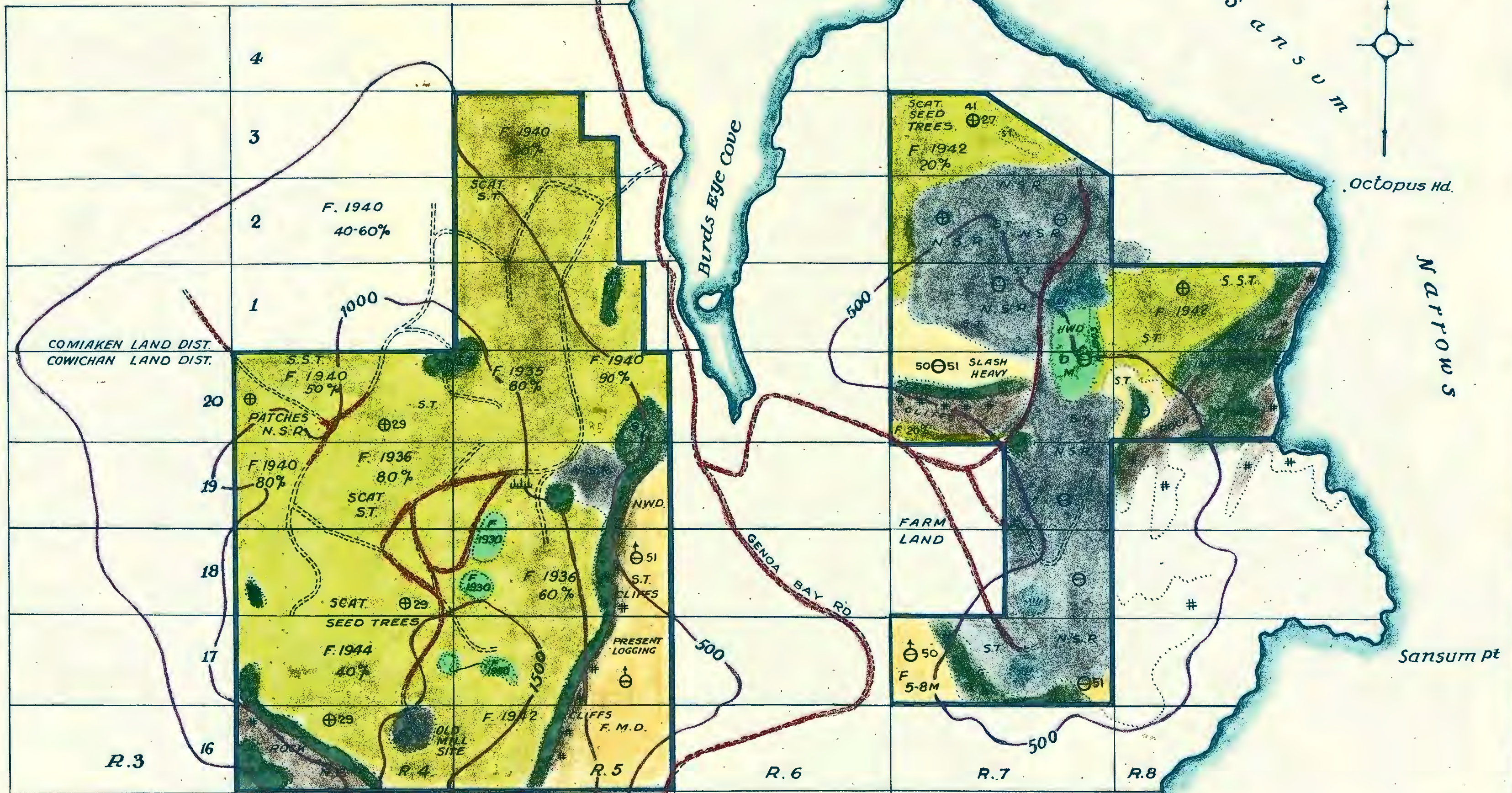


S a n s u m

Octopus Hd.

N a r r o w s

Sansum pt



COMIAKEN LAND DIST.
COWICHAN LAND DIST.

FARM LAND

PRESENT LOGGING

BLOCK "A"

BLOCK "B"

R.3

R.4

R.5

R.6

R.7

R.8

Gena Bay

Scale 20 chains = 1 inch

BLOCK 'B'



FOREST INVENTORY AND ANALYSES

BLOCK "B" - STONEY MOUNTAIN

1. GEOGRAPHICAL LOCATION

Generally located East of the City of Duncan, Vancouver Island, and bounded by Tsohalem Mountain and Bird's Eye Cove to the West, Maple Bay to the North, Sansum Narrows to the East and Cowichan Bay to the South.

2. LEGAL DESCRIPTION

Cowichan District

R VII - Bl. 17, East Half, B.L. 18, East Half, Bl. 19 and Bl. 20.

R VIII - Block 20.

Comiaken District

R VII - Bl. 1, Bl. 2, Bl. 3 except for North-east half of East Half of Bl. 3.

R VIII - Bl. 1.

3. TOPOGRAPHY

From the 200 foot contour in the North, the land rises up to 700 feet + near the center of the block and forms four rocky hills 100 to 200 feet in height, giving most of the area a broken, rolling topography. Steep broken cliffs 400 feet in height are found along the South-west corner of the main body of the block while cliffs 200 - 300 feet high are found at the extreme South-west corner of the block. Most of the block is composed of the North slopes of Stoney Hill.

4. LAND & FOREST CLASSIFICATION

Gross Area: 754 acres, more or less.

Estimated Productive Area: 595 acres, more or less.

Estimated Non-Productive Area: 159 acres, more or less.

A. Productive Area Classification

1. Reproduction:

Type	Age	B.C.F.S. % Stocking	Est. Site	Est. Area	F Per Acre	Remarks
F 1942	9	20%	Low	145	300	Patchy - good for Christmas trees.

2. Second Growth:

Type	Age	Est. F Stocking	Est. Area	Est. Site	Est. Volume at 70 Years	Year	Remarks
F 1903	48	Good	10	Med.	32,000	1973	Poles all infected 24" inside

FOREST INVENTORY AND ANALYSES

Block "B" (Cont'd)

A. Productive Area Classification (Cont'd)

3. Logged Areas:

	Area	Est. Site	Restocking	Slash	Residual Volumes
CFM	20	Med.	Poor C.D.	Light	Cordwood
50-51	35	Low	Nil	Medium	None
50-51	20	Med.	Nil	Light to Medium	Pulpwood
N.S.R.	<u>365</u>	Low		Medium	Cordwood 5-8 M.
	440				

SubTotal = 595 Acres

B. Non-Productive Area Classification

Non-Commercial cover, swamps	20 Acres
Inaccessible cliffs and rocks	129 "
Roads and Trails	<u>10 "</u>
	159 Acres

Grand Total = 754 Acres

5. MERCHANTABLE TIMBER VOLUMES

The block has been logged over once or twice already, with the exception of the inaccessible areas of steep broken cliffs in R VII, Bl. 17 and Bl. 20; R VIII, Bl. 20 and Bl. 21.

The selectively logged area of approximately 20 acres in R VII, Bl. 17, has not been logged clean, and large growth low-grade Fir values of approximately 5 to 8 M.B.M. per acre remain.

no such area?

Another area, R VII, Bl. 20 and Bl. 21, area approximately 20 acres, has been "creamed"; the remaining stand of Fir, Cedar, Maple and Alder is scrubby, ragged and a good example of poor logging practise. It is unlikely that this area contains much in the way of economic values but it should be cleaned off for cordwood, and then the slash destroyed.

The whole block has good seed tree or potential seed tree coverage and these trees should be protected as any wood values they may possess in the future would more than be equalled by damage to second-growth in harvesting them.

6. UTILIZATION

Stamps indicate that most of this area produced low site Fir trees in the past. The area will most likely be well suited to Christmas tree production. Wood production on this area would produce a minimum return over a longer growing period because growth is slow on rocky, poor land of this nature.

7. LAND MANAGEMENT POLICY

- (a) Prepare the recently logged areas for regeneration by cordwood salvage and slash burning. A light slash burn will be beneficial, a heavy or hot burn will be disastrous on the areas of thin top soil.

FOREST INVENTORY AND ANALYSES

Block "B" Cont'd)

7. LAND MANAGEMENT POLICY (Cont'd)

- (b) The present practise of allowing stock grazing on the area should be discontinued. The area produces little vegetation suitable for fodder and the cattle will cause excessive damage to seedlings.
- (c) Road coverage is good and most of the roads are in good condition at present, but they will deteriorate rapidly because they have been built on areas of deeper soil, such as draws and gullies. The roads should be closed to the general public as this area holds no recreational or aesthetic values.

8. REMARKS

In the slash burned areas, the vegetation, mostly bracken fern and oregon grape, indicates low growing site for Douglas Fir. On logged and unburned areas oregon grape and scrubby salal also indicate the site was low, even before slash burning.

Unless slash is destroyed, some areas of N.S.R. will come back to brush and weeds. Some seed trees will require a recovery period to produce better seed producing crowns. The production of wood volumes doesn't look promising on this area of low site, and no mature values are indicated for a great many years. The main problem here is to get the large percent of N.S.R. land back into production of a desirable tree species as soon as possible and hand planting may yet be necessary.

NAP — BLOCK "B"

(See Page 10A)

BLOCK "C"



FOREST INVENTORY AND ANALYSES

BLOCK "C" - MAPLE MOUNTAIN AREAS

Map 2. Blocks C1, C2, C3, C4, C5 and C6.

1. GEOGRAPHICAL LOCATION

Generally located North-east of the City of Duncan, Vancouver Island, and bounded by Maple Bay to the South, Richard's Trail to the South-west, the Island Highway to the West, Crofton Road and Crofton to the North, and Sansum Harrows to the East.

2. LEGAL DESCRIPTION

Block C1 - comprising the following areas of Comiaken District:

R I - Bl. 12, Bl. 16, Bl. 17, Bl. 18

R II - East half Bl. 10, East half Bl. 11, Bl. 15, Bl. 16, Bl. 17, Bl. 18. Blocks 19 and 20 except for Lots 11 to 21 inclusive, Lots 27 to 32 inclusive and Lots 52 to 63 inclusive.

R III - Bl. 12, Bl. 13, Bl. 14, Bl. 15 and Bl. 16.

R IV - Bl. 12, Bl. 13, Bl. 14, Bl. 15, Bl. 16, Bl. 17 and Bl. 10, except West 1/4 of Bl. 10.

R V - Bl. 9, Bl. 10, Bl. 11, Bl. 12, Bl. 13, Bl. 14, Bl. 15, Bl. 16 and Bl. 17, except for North-east 1/2 of Bl. 17.

R VI - Bl. 11, West 90 acres of Bl. 12, West 87 acres of Bl. 13, Bl. 14. West 72 acres of Bl. 15 and West 60 acres of Bl. 16.

Somenos District:

R VIII - East half Bl. 14 and Bl. 18 except portion of Lot 90.

Block C2 - Comiaken District R I : Bl. 12.

Block C3 - Somenos District R VIII : East half of Bl. 14.

Block C4 - Somenos District R VIII : Lot 82, Lot 83 and Lot 96.

Block C5 - Chemainus District R IX : South half of Bl. 2.

Block C6 - Chemainus District R VIII : Bl. 3.

3. TOPOGRAPHY

Maple Mountain rises to 1,600 feet + in the South-east corner of the block. From this elevation the land drops down to the 200 foot contour in the North, East, South and West. Steep rolling rocky hills cover most of the area. The parts of the block South-west of Crofton Slope downwards to the North-east from the 1,300 foot contour to the 300 foot contour averaging about a 20% slope. Block C4, Lots 96, 83 and 82, are composed of steep, broken rock cliffs rising from 100 to 1,000 feet, for the most part inaccessible.

FOREST INVENTORY AND ANALYSES

Block "C" (Cont'd)

4. FOREST AND LAND CLASSIFICATION

Gross Acreage: 3,700 acres, more or less.

Estimated Productive Accessible: 3,202 acres, more or less.

Estimated Non-Productive (including partial seed source, etc.):
498 acres, more or less.

A. Productive Accessible - 1951

1. Reproduction: (Regeneration up to 25 years of age)

Type	Age	B.C.F.S. % Stocking Stand	Area	Estimated No. Softwood Per Acre.	Remarks
F 1943	8	20%	80	150	Quite patchy.
F 1940-41	10	20-35%	800	450	Patchy.
DF 1940	11	10%	195	100	Arbutus 1940
D 1940	11	-	125	-	Small Percent Fir.
H 1930	21	80-90%	40	Henlock 800 - 1000	Mostly too thick.
FD 1930	21	40-50%	32	500	Fir will take over.
D 1930	21	-	16	-	Not likely to produce good Alder.
DH 1930	21	60%	<u>85</u>	700	Small Percent Fir.
Sub-Total -			1373		

2. Second Growth:

Type	Age	Est. Stocking	Area	Site	Est. Vol. per Acre at 70 yrs. cu.ft.	Year
F 1926	25	Good	20	Low	5,500	1996
FD 1920	31	Medium	75	Med.	6,000	1990
DF 1916	35	Poor	50	Med.	4,000	1986
FD 1916	35	Medium	85	Med.	8,000	1986
FCHB 1910	41	Good	<u>95</u>	Med.	8,000	1980
Sub-Total -			325			

3. Logged Areas: (Selectively Logged) (Having poor residual stand)

Type	Area	Site	Restocking	Slash	Future Volumes
CFH 1881	125	Low	Fair	Med.)	Supervised cleanup nec- essary. 5-EM per acre cordwood
CF 1881	15	Med.	Poor	Med.)	
F-S.T.	140	Low	Generally Poor	Light	Important for seed source.
N.S.R. & N.C.C.	<u>1099</u>	Low	-	Generally Light	Indefinite
Sub-Total -			1379		

4. Unlogged Areas:

Type	Area Est.	Site	Ground	Remarks
F- O.O.	10 M	50	Low	Steep broken rock)
F.O.O.	14 M	<u>75</u>	Low	Steep broken rock)
Sub-Total -			125	Generally poor, limby timber, low quality.

Sub-Total - 3,202 Acres

FOREST INVENTORY AND ANALYSES

Block "C" (Cont'd)

4. FOREST AND LAND CLASSIFICATION (Cont'd)

B. Non-Productive - Productive Inaccessible

<u>Type</u>	<u>Area</u>	<u>Remarks</u>
Rock	210	Bed Rock
Swamp	45	Lakes, sloughs, swamp
Inacc. Prod.	200	Steep, broken rock cliffs
Roads	43	Roads, trails, etc.

Sub-Total-498

Grand Total - 3,700 acres, more or less.

5. MERCHANTABLE TIMBER VOLUMES

Selective cut logging has left some areas in poor condition. They require clearcutting and the destruction of unwanted non-commercial species.

It is not known if cleanup cutting for poles and cordwood would be economical and further investigation along this line is necessary.

Some of the unlogged, old growth fir located in R VI, Blocks 13, 14, 15, is still accessible but does not promise any high return. (Approximately 75 Ac. at 14 M).

R II, Block 20 has at present, certain cordwood and pole values that should be protected until the area has definite clear-cutting values.

Future returns from log timber on Maple Mountain will not amount to much for a period extending over the next 40 - 50 years.

6. UTILIZATION

A use other than wood production is necessary if this area is going to contribute any return to the municipality over the next few decades. Grazing is definitely not suitable to this area and should never be allowed. Christmas tree farming appears as the only solution to present day financial requirements.

Most of the area is of low site, indicating a minimum wood return over a long rotation. Low site areas produce the more desirable Christmas trees as slow growth results in bushy trees required for this market. Although the area is favoured with a potential good seed source, the nature of the ground may require hand planting in some locations. To produce the required funds to pay for restocking, the present day values will have to be utilized and this again indicates Christmas tree production.

7. LAND MANAGEMENT POLICY

- (a) Clean up the selectively logged areas, destroying the unwanted species and utilizing the marginal remaining values in poles and cordwood.
- (b) Leave a few selected seed trees and destroy slash in order to give reproduction a good chance to come in naturally.

FOREST INVENTORY AND ANALYSES

Block "C" (Cont'd)

7. LAND MANAGEMENT POLICY (Cont'd)









- (c) The present road systems are quite adequate but some degree of maintenance is necessary to keep roads in a passable condition.
- (d) The main use for this land and the land between the main Block C-1 and the odd small adjacent blocks, - C2, C3, C4, C5 and C6, is the production of some form of forest crop. This rocky mountain land is unsuitable for agriculture or grazing and when any chance to obtain the present privately held adjacent areas occurs, the municipality should incorporate this land into their forest land holdings, in order to consolidate the area into one block.
- (e) Rough speaking, 2,500 acres would likely be suitable for Christmas trees, while 900 acres could remain as second growth to produce a wood crop in 70 years.

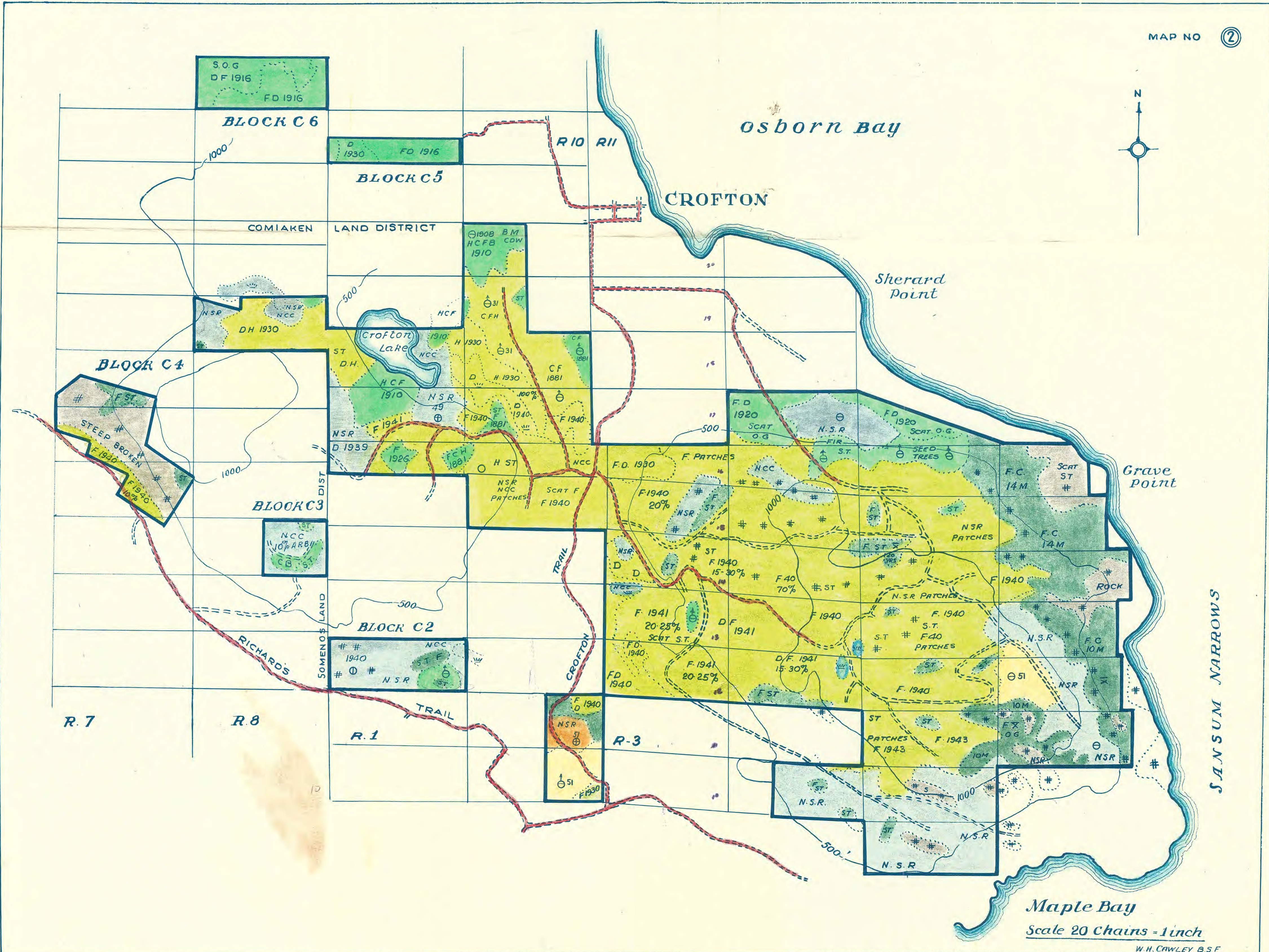
8. REMARKS

Some unsupervised Christmas tree cutting has been noted. Logging is being carried out, looking for immediate financial returns only, and little or no regard for the future has been noted. Do not allow the indiscriminate cutting of Christmas trees to disrupt and disregard the small potential values likely to be realized in the future under the present methods of handling these lands.

Arbutus, a non-commercial species, has regenerated quite well on some of the rocky lowest site areas. In time, Fir may have to be planted in these areas and the Arbutus removed. Alder is taking over some old roads and will have to be removed and the roads opened up again.

LEGEND

<i>Non commercial Cover</i>	
<i>Logged</i>	
<i>Logged & Burned</i>	
<i>Non Productive</i>	
<i>Swamp</i>	
<i>Reproduction</i>	
<i>Second Growth</i>	
<i>Mature Timber</i>	
⊖	Logged 1928
⊕	Burned 1940
⊕	Logged 1939
⊕	Selectively Logged
S.T.	Seed Trees
⌘	Scrub Timber
H	Hemlock
B	Balsam
D	Alder
F	Fir
C	Cedar
M	Maple
N.S.R.	Non Satisfactory Restocked
#	Rock
lll	Snags
====	Passable Roads(51)
-----	Logging Roads
=====	Main Roads



Maple Bay
Scale 20 Chains = 1 inch

BLOCK

"D"



FOREST INVENTORY AND ANALYSES

BLOCK "D" - MOUNT PREVOST AREA

1. GEOGRAPHICAL LOCATION

North-west of the City of Duncan, Vancouver Island, bounded by the old Island Highway to the East, Mount Sicker to the North.

2. LEGAL DESCRIPTION

Block D1 - Soanens Land District:

R I - Bl. 6, except for West 20 acres; Bl. 7, except for East 60 acres; Bl. 8, except for East 60 acres; Bl. 9, except for East 90 acres; Bl. 10; Bl. 11; Bl. 12; Bl. 13; Bl. 14; Bl. 15; Bl. 16; Bl. 17; Bl. 18, except for L. 60; Lot 93, Lot 191 and portion of L. 61 East of the North-South Municipal boundary line.

R II - Bl. 11 and Bl. 12, except for Lots "A" and "B", Bl. 13; Bl. 14; Bl. 15; Bl. 16; Bl. 17 and Lot 5G.

R III - Bl. 9; Bl. 10; Bl. 11; Bl. 12; Bl. 13; Bl. 14; Bl. 15; Bl. 16, South-west corner 42 ac.

R IV - Bl. 13 except for Lot 4441, Lot "C", Lot 3276 and area East of E & N Railway; West 40 acres of Bl. 14; Bl. 15; and East 60 acres of Bl. 16.

Block D2 - Soanens District:

Lot 151, Lot 2 and Lot 76.

Block D3 - Soanens District:

Lot 123 and Lot 3.

Block D4 - Soanens District:

R V - Portion of Lot 85 overlapping into Bl. 17 and South-west corner of Bl. 18 as defined by Lot 95.

3. TOPOGRAPHY

Prevost Mountain rises for 2,500 + feet. The South slopes are quite steep, averaging nearly 30%. The steep areas near the top average 45% slopes. The land to the North drops at an average of about 15% down to around the 1,000 foot contour and then rises up to the 2,000 foot height of Mount Sicker. Prevost Mountain has steep, broken slopes to the South; Little Sicker Mountain has steep, broken slopes and cliffs on the South-east. The land, ridged and ravined between them, is generally accessible; along the West side of the block the land is quite flat.

4. FOREST AND LAND CLASSIFICATION

Gross area, including D1, D2, D3, D4: 3,178 acres, more or less.

Estimated Productive area: 3,094 acres, more or less.

Estimated Non-Productive area: 84 acres, more or less.

FOREST INVENTORY AND ANALYSES

Block "D" (Cont'd)

4. FOREST AND LAND CLASSIFICATION (Cont'd)

A. Productive Accessible

1. Reproduction: (Ages up to 25 years)

Type	Age	B.C.F.S. Stocking %	Approx. Area	Fir Trees per Acre	Remarks	
F	1942	9	75%	300	800-1000	Christmas trees
HF	1941	10	60%	200	400	" "
F	1940	11	25%	250	400	" "
PH	1939	12	45%	200	500	" "
HCF	1933	18	20%	300	200	" "
DFCB	1930	21	60%	145	200	" "
FPJH	1928	23	40%	60	300	" "
Re-c. FB	1936	15	-	200	-	Wood Production
Hwd.						

Sub-Total - 1655 Acres

2. Second Growth:

Type	Age	Est. F. Stocking	Est. Area	Est. Site	Est. Volume at 70 Years	Year	Remarks	
HF	1926	25	Over-stocked	400	Med.	20,000	1996	Christmas Trees
FHC	1923	28	Med.	50	Low	30,000	1993	Wood Prod.
DF	1921	30	Poor	30	Med.	25,000	1991	Wood Prod.
F	1921	30	Good	30	Low	42,000	1991	Wood Prod.
D	1921	30	-	130	Med.	-	-	Fir will likely move in.
FHCD	1903	48	Med.	100	Med.	20,000	1973	Wood Prod.
FHC	1906	45	Med.	300	Med.	20,000	1976	Poles, Cordwood
FC	1891	60	Med.	30	Med.	15,000	1952	Poles, Cordwood

Sub-Total - 1070 Acres

3. Logged Areas:

Type	Area	Site	Seed Trees	Slash	Remarks
1951	40	Med.	Good	Med.	Requires clearcutting for cordwood
Res. 1880	100	Med.	Good	Light	Will have econ. Vol. in 20 years.
Clearcut, Logged	68	Med.	Good	Light	Restocking likely
N.S.R.	141	-	-	Med. to Light	Restocking likely

Sub-Total - 349 Acres

4. Unlogged Areas:

Type	Approx. Vol. per Acre	Area	Remarks
Mature Fir	15 M	20	Steep, rocky ground. Likely not economic.

Sub-Total - 3,094

B. Non-Productive Areas

Type	Acreage	Reason	Remarks
Mature Fir	50	Rock, cliffs, scrubby	Trees seed source value.
Roads & Trails	34	Protection value	Area has fair road coverage.

84 Acres

Grand Total - 3,178 Acres

FOREST INVENTORY AND ANALYSES

Block "D" (Cont'd)

5. MERCHANTABLE TIMBER VOLUMES

Most of this block was clearcut for sawlogs and then slash burned. Some areas contain large snags from logging prior to 1938 and there are areas of good seed source that should be protected. The snags are unmerchantable.

FHCD 1903 - 100 acres contains about 10 M per acre of merchantable wood but logging should not be allowed here for a period of at least 22 years.

Approximately 20 + acres of old growth, scrubby Fir and Hemlock, averaging approximately 15 M per acre could likely be logged but the ground is bad and logging would be difficult. Another 50 acres of similar stands was considered unmerchantable, non-productive because of the steep, rough ground and difficulty to regenerate trees on such areas.

HFC 1891 - 30 acres represents an area averaging approximately 11 M per acre, again extraction problems have evidently saved this timber to date.

FH 1888 - 100 acres contains residual merchantable volumes left from selective logging. However, these areas should be given a chance to put on wood and then should be logged clean, except for seed source, in another 20-30 years, utilizing most of the stems for pulpwood and cordwood.

FB 1936 Resid. Hwd. - 200 acres is another example of poor logging practise. This area has been creamed of merchantable volumes and large partially cull old growth have been left to become snags. Undesirable hardwoods such as Maple and Alder have been left to help produce a ragged stand, where a great many years will be wasted in the elimination of the undesirable species. This area will require attention and should be cleaned up as soon as any economic opportunity occurs.

6. UTILIZATION

Present selective logging areas should be completely clearcut, the small material utilized for poles and pulp, the snags felled, and the resulting slash burned.

From now on the aim of all logging on this area should consider the improvement of the land and forest rather than the immediate monetary gain. Logging on this block today is generally marginal, as very little high quality material remains.

Cat logging is destroying the future of the area by preserving unwanted species and creating all aged forests which are not suited to Douglas Fir.

There are approximately 1,850 acres presently suited to Christmas tree production and another 150 acres will come under the same classification in the future. Of the remaining areas, 1,094 acres have a good start into wood production and 84 acres are classed as non-productive.

FOREST INVENTORY AND ANALYSES

Block "D" (Cont'd)









7. LAND MANAGEMENT POLICY

- (a) Road coverage is fair but branch roads do need maintenance and repair. Little Sicker Road could have some fire prevention signs and warnings. Branch roads require "KEEP OUT" signs to aid fire protection.
- (b) Again, this area lacks mature timber values to supply an income, while the second growth areas are becoming merchantable. Short rotation Christmas tree revenue is indicated until other wood crop values mature.
- (c) Strict supervision of present logging and a definite logging policy is required. Douglas Fir is the tree that will be needed to produce revenue from this area in the immediate future, but present logging does not favour Douglas Fir.

8. REMARKS

Regeneration is quite good over this block and hand planting will not be required, except in a few isolated cases. The seed source at the top of Mount Prevost should be preserved and perhaps the top area should be improved to give tourists and picnickers some area to safely have their lunches. This will lower the danger of the public moving off the main road and lighting fires.

LEGEND

<i>Non commercial Cover</i>	
<i>Logged</i>	
<i>Logged & Burned</i>	
<i>Non Productive</i>	
<i>Swamp</i>	
<i>Reproduction</i>	
<i>Second Growth</i>	
<i>Mature Timber</i>	
⊖	<i>Logged 1928</i>
⊕	<i>Burned 1940</i>
⊕	<i>Logged 1939</i>
⊖	<i>Selectively Logged</i>
S.T.	<i>Seed Trees</i>
⌘	<i>Scrub Timber</i>
H	<i>Hemlock</i>
B	<i>Balsam</i>
D	<i>Alder</i>
F	<i>Fir</i>
C	<i>Cedar</i>
M	<i>Maple</i>
N.S.R.	<i>Non Satisfactory Restocked</i>
#	<i>Rock</i>
.....	<i>Snags</i>
=====	<i>Passable Roads (SI)</i>
-----	<i>Logging Roads</i>
=====	<i>Main Roads</i>

BLOCKS "E, F, G2, & G3."



FOREST INVENTORY AND ANALYSES

BLOCK "E" - NORTH SLOPE MT. SICKER

1. GEOGRAPHICAL LOCATION

North-west of the City of Duncan, and South-west of the City of Chemainus, Vancouver Island. Bounded by the Mount Sicker Road to the North and Mount Prevost to the South and the Island Highway to the East.

2. LEGAL DESCRIPTION

Block E comprises the following areas:

R I - East half Bl. 7; Bl. 6; Bl. 5; Lot 87; Lot 35; Lot 88; Lot 64; Lot 86 and Lot 18.

R II - West 60 acres of Bl. 7; Bl. 5; Bl. 4.

R III - West 40 acres of Bl. 5; Lot 97 and all of Bl. 4 West of Lot 97.

Chemainus District:

R I - East half of Bl. 7; Bl. 6; Bl. 5; Lot 87; Lot 35; Lot 88; Lot 64; Lot 86 and Lot 18.

R II - West 60 acres of Bl. 7; Bl. 5; Bl. 4; Lot 35; Lot 32; Bl. 2, with exception of portion of L. 169; Lot 53 and L. 30.

R IV - West 40 acres of Bl. 4.

3. TOPOGRAPHY

North slopes of Mount Sicker quite steep in places, averaging approximately 35% and rising from the 300 foot contour to the 2,100 foot contour.

4. LAND AND FOREST CLASSIFICATION

Gross Area: 890 acres, more or less.

Estimated Productive Area: 890 acres, more or less.

Estimated Non-Productive Area: negligible.

A. Productive Area Classification

1. Reproduction: (Up to 25 years of age)

Type	Age	B.C.F.S. Stocking	Approx. Area	Fir Trees per Acre	Remarks
F 1940	11	40%	100	500	Christmas Trees
F 1941	10	22%	100	300	Christmas Trees
Sub-Total -			200 Acres		

FOREST INVENTORY AND ANALYSES

Block "E" (Cont'd)

4. LAND AND FOREST CLASSIFICATION (Cont'd)

A. Productive Area Classification (Cont'd)

2. Second Growth:

Type	Age	Est. F. Stocking	Est. Area	Est. Site	Est. Volume at 70 Years	Year	Remarks	
F 1921	30	Good	15	Med.	40,000	1991	Pulp	
FD 1920	31	Med.	70	Good	25,000	1990	Piling	
F 1911 O.G.								
	Values	40	Med.	25	Good	40,000	1981	Hardwood
F 1911	40	Med.	170	Good	50,000	1981	Values	
FD 1911	40	Med.	60	Good	30,000	1981	not	
D 1911	40	Good	240	Good	Softwood	2010	considered	
HE 1940					15,000			
D ^F 1906	45	Med. to Poor	85	Good	30,000	1976		
FD 1906	45	Med.	20	Good	40,000	1976		

Sub-Total - 685 Acres

3. Logged:

N.S.R. - mill likely stock - 5 acres

Grand Total - 890 Acres

5. MERCHANTABLE VOLUMES

It would not be advisable to allow any logging on this area unless special requirements were necessary and the resulting operations were carefully supervised.

There are possibilities for removal of small patches over the next few years, but clearcutting only should be allowed with the resulting slash piled and burned. However, a good deal of the younger material would be wasted and for this reason logging should be held off until the area can produce enough return to cover the type of logging required.

6. UTILIZATION

The reproduction areas of 200 acres could be incorporated into a Christmas tree management plan, otherwise the remaining areas should be left for wood production with perhaps some thinning for Christmas trees.

Hardwood values should be utilized if and when an opportunity occurs, otherwise they will represent wasted effort.

7. LAND MANAGEMENT POLICY

This area is not likely to prove of any great interest to the general public. It is forest land only and should be reserved for this purpose and protected from short-sighted logging practices. However, R I, II, Block 7 may be suitable for farm use.

There are no access roads in the area worth bothering with except of course, the Mount Sicker Road.









FOREST INVENTORY AND ANALYSES

Block "E" (Cont'd)

8. REMARKS

Most of this block is on a steep, North slope. The flat land to the North is agricultural land and some day it may be wise to relinquish the municipal holdings on the land adjacent to the dairy farm for agricultural purposes.

LEGEND

<i>Non commercial Cover</i>	-----	
<i>Logged</i>	-----	
<i>Logged & Burned</i>	-----	
<i>Non Productive</i>	-----	
<i>Swamp</i>	-----	
<i>Reproduction</i>	-----	
<i>Second Growth</i>	-----	
<i>Mature Timber</i>	-----	
⊖	-----	<i>Logged 1928</i>
⊕	-----	<i>Burned 1940</i>
⊕	-----	<i>Logged 1939</i>
⊖	-----	<i>Selectively Logged</i>
S.T.	-----	<i>Seed Trees</i>
Σ	-----	<i>Scrub Timber</i>
H	-----	<i>Hemlock</i>
B	-----	<i>Balsam</i>
D	-----	<i>Alder</i>
F	-----	<i>Fir</i>
C	-----	<i>Cedar</i>
M	-----	<i>Maple</i>
N.S.R	-----	<i>Non Satisfactory Restocked</i>
#	-----	<i>Rock</i>
llll	-----	<i>Snags</i>
=====	-----	<i>Passable Roads (51)</i>
=====	-----	<i>Logging Roads</i>
=====	-----	<i>Main Roads</i>

AERIAL PHOTOGRAPH

(see Page 25)

FOREST INVENTORY AND ANALYSES

BLOCK "F" - NORTH BEND OF CHEMAINUS RIVER

1. GEOGRAPHICAL LOCATION.

Generally South-west of the City of Chemainus, Vancouver Island. Bordered by the Chemainus River to the North and East, by Mount Sicker to the South and the V.L. & M. Co. railroad to the West. Lot 66 is separate and immediately West of the railroad line.

2. LEGAL DESCRIPTION

Block F is comprised of the following areas:

R II - Bl. 9, East 60 Ac. of Bl. 10, East 10 Ac. Bl. 11 "A".

R III - Area South of Chemainus River, Bl. 12 and Bl. 11.

R IV - Area South of Chemainus River in Bl. 12. Area West of Chemainus River of Block 11, Block 10 with exception of a strip 5 ch. x 25 ch. along South side and East 50 Ac. of Bl. 9.

R V - Area West of Chemainus River of Bl. 10, Block 8, West of Chemainus River, and East 65 acres of Bl. 7. All in the Chemainus District.

3. TOPOGRAPHY

Generally a flat, gravel area showing only a pronounced elevation change of 100 feet + along the banks of the Chemainus River.

4. LAND AND FOREST CLASSIFICATION

Estimated Gross Area: 710 acres, more or less.

Estimated Productive Area: 692 acres, more or less.

Non-Productive Area: 18 acres, more or less.

A. Productive Accessible

1. Reproduction (up to 25 years of age)

Type	Age	B.C.F.S. Stocking	Approx. Area	Fir Trees per Acre	Remarks
FD 1942	9	60%	24	700	Christmas Trees
F 1940	11	25%	48	300	" "
F 1936	15	100%	220	1000	" "
F 1933	18	100%	<u>168</u>	1000	" "

Sub-Total - 470 Acres

2. Second Growth

Type	Age	Est. F Stocking	Est. Area	Est. Site	Est. Volumes at 70 Years	Year	Remarks
F 1920	31	Good	14	Poor	20,000	1990	Poles
F 1920	31	Med.	80	Med.	25,000	1990	Piling, Pulp
FD 1920	31	Good	36	Med.	15,000	1990	" "
F 1911	40	Good	26	Poor	25,000	1981	" "
DCF 1903	48	Light	<u>24</u>	Poor	8,000	1973	Poles & Pulp

Sub-Total - 180 Acres

FOREST INVENTORY AND ANALYSES

Block "F" (Cont'd)

4. LAND AND FOREST CLASSIFICATION(Cont'd)

3. Logged:

N.S.R. - 42 acres - will restock in time.

Sub-Total - 692 Acres

B. Non-Productive

Roads - approximately 8 acres

Power Lines - " 10 "

Sub-Total - 18

Grand Total - 710 Acres

5. MERCHANTABLE VOLUMES

None indicated on this area for a good many years.

6. UTILIZATION

Best use for the major portion of this area, approximately 540 acres, is the production of Christmas trees.

7. LAND MANAGEMENT POLICY

(a) The public should be kept out of this area. There appears nothing of general interest here and public travel over the good roads through this block would only increase fire risk and damage the roads.

(b) The good roads are easy to maintain and should be protected and kept passable.

8. REMARKS

This is a fairly level area of low site, well restocked Fir regeneration on logged and slash burned land. The top soil has been burned off, exposing the gravel bed which extends over most of this area.

BLOCK "G1"



Aerial Photograph - G2 and G3 (see page 25)

FOREST INVENTORY AND ANALYSES

BLOCKS G1, G2, G3 - CHEMAINUS AREA

1. GEOGRAPHICAL LOCATION

West of the City of Chemainus, Vancouver Island. Blocks G1 and G2 are located between the Island Highway to the East, the Campbell River power line to the West and the North bend of the Chemainus River to the South.

Block G3 (Lot 66) is South-west of Blocks G1 and G2, and immediately West of the V.L. & M. Co. Railway.

2. LEGAL DESCRIPTION

Block G1: R II - Bl. 20, East 88 acres Bl. 19, East 80 acres and Block 18, East 40 acres and partly in R III Bl. 18. Area designated by special map lines separating it from Block "F".

Block G2: 102 acres in R II, Bls. 15, 14 and 13 as surveyed out of Block "F".

Block G3: R I, Lot 66. East of municipal North-South boundary.

3. TOPOGRAPHY

Block G1: The land generally slopes South-east from the 400 foot contour in the North to the 700 foot contour in the South. Slopes average about 25%.

Block G2: Land slopes North-west from the 400 foot contour in the South to the 700 foot contour in the North.

Block G3: Comprises a small hilltop with an elevation from 400 to 1000 feet.

4. LAND AND FOREST CLASSIFICATION

Block G1: Gross Area: 200 acres, more or less.
Productive Accessible: 195 acres, more or less.
Non-Productive: 5 acres, more or less.

Block G2: Gross Area: 102 acres, more or less.
Productive Area: 102 acres, more or less.
Non-Productive Area: 0 Acres.

Block G3: Gross Area: 64 acres, more or less
Lott 66 Productive Area: 63 acres, more or less.
Non-Productive area: 1 acre.

A. Productive Accessible

Block G1

1. Second Growth:

Type	Age	Est. F. Stocking	Est. Area	Est. Site	Volume Est. at 70 Years	Year	Remarks
DF 1961	35	Light	34	Med.	35,000	1986	
FD 1916	35	Med.	120	Med.	3,000	1986	
D 1916	35	-	3	Med.	-		
F 1916	35	Good	<u>38</u>	Med.	40,000	1986	

Sub-Total - 195 Acres

FOREST INVENTORY AND ANALYSES

Blocks G1, G2, G3 (Cont'd)

4. LAND AND FOREST CLASSIFICATION (Cont'd)

Block G2

1. Reproduction:

Type	Age	B.C.F.S. Stocking	Approx. Area	F. trees per Acre	Remarks
D 1943) F 1948)	3	20%	<u>65</u>	250	Fir will take over
Sub-Total - 65 Acres					

2. Second Growth:

Type	Age	Stocking	Area	Future Vol. at 70 Years	Year	Remarks
F 1906	45	Good	<u>36</u>	40,000	1976	
Sub-Total - 36 Acres						

Block G3

1. Logged:

HC 1898 - 20 acres - Residual trees - seed source
N.S.R. - 44 " - Restocking

Sub-Total - 64 Acres

Sub-Total - 360 Acres.

B. Non-Productive Areas

Block G1

Roads - 5 acres - Island Highway and Railroad

Block G2

Roads - 1 acre

Sub-Total - 6 Acres

Grand Total - 366 acres, more or less.

5. MERCHANTABLE VOLUMES

No volumes on these areas should be considered merchantable at this time.

6. UTILIZATION

Area G1 will be suited for wood production and it has a good stand of healthy Fir at present.

Area G2 - Type F 1906, will best be utilized for wood production.

Approximately 314 acres will suit Christmas tree production.

FOREST INVENTORY AND ANALYSES

Blocks G1, G2, G3 (Cont'd)

7. LAND MANAGEMENT POLICY

These blocks don't fit into the general pattern of the other municipal holdings but they should be held, with the idea of eventually obtaining the intervening and adjacent forest land. Indications are that eventually Block G1 may be suitable for other than forestry purposes in the future.

8. REMARKS

Block G1 is adjacent to the main Island Highway. Block G2 has a good main road on its Southern boundary but lacks access roads. Block G3 is served by a secondary logging road that may require some upkeep in the future.

SEE MAP — PAGE 26A

FOREST INVENTORY AND ANALYSES

CHRISTMAS TREE AREAS & VALUES

General Summary of Areas Suitable for
Christmas Tree Production
1952

Type	Area Acres	Est. Fir per Acre Trees	Location	Est. Cut per Acre Suitable Trees	Est. Total Production 1952	Value at 10¢ per Tree
F 1935-42	820	800	Block A	50	40,000	\$ 4,000.00
F 1930	20	1000	Block A	75	1,500	150.00
F 1942	140	300	Block B	25	3,600	360.00
F 1943	80	150	Block C	10	800	80.00
F 1940-41	800	450	Block C	30	24,000	2,400.00
FD 1930	32	500	Block C	25	800	80.00
F 1926	20	800	Block C	60	1,200	120.00
F 1942	300	800-1000	Block D	50	15,000	1,500.00
HF 1941	200	400	Block D	40	8,000	800.00
F 1940	250	400	Block D	40	10,000	1,000.00
FH 1939	200	500	Block D	25	5,000	500.00
HCF 1933	300	100	Block D	10	3,000	300.00
FBH 1928	60	300	Block D	30	1,800	180.00
HF 1926	400	600	Block D	50	2,000	200.00
F 1940	100	500	Block E	30	3,000	300.00
F 1941	100	300	Block E	20	2,000	200.00
FD 1942	24	700	Block F	25	600	60.00
F 1940	38	300	Block F	25	950	95.00
F 1936	210	1000	Block F	50	10,500	1,100.00
F 1933	<u>188</u>	1000	Block F	100	<u>18,800</u>	<u>1,880.00</u>
1952 -	4282				152,550	\$15,305.00

1952 - Approximately 4,300 acres in production.

Average cut per acre - 35 trees

Estimated yearly income - \$

\$15,000.00

1962 - Approximately 7,000 acres in production.

Estimated average cut per acre - 80 trees

(assisted by planting where necessary)

Estimated yearly income at 10¢ per tree -

\$56,000.00

To Optimum of \$70 - 80,000.00 a year.

FOREST INVENTORY AND ANALYSES

GENERAL SUMMARY OF WOOD AREAS & VOLUMES - 1952

Type	Area Acres	Location	Est. Vol. per Acre	Products	Estimated Total Val.	Remarks (All Stems)	Cutting Rec.
⊕ Recent	20	Block A	5-8 M	Pulpwood Cardwood	2,400 cords	Fir, Alder Maple	Yes
⊕ CFH	20	Block B	4-5 M	Cardwood	160 cords	Fir, Alder, Maple, Cedar	Yes
⊕ 50-51	20	Block B	5-8 M	Pulpwood Cardwood	200 cords	Fir	Yes
⊕ CFH 1881	135	Block C	2-3 M	Pulpwood Cardwood	500 cords	Cedar, Fir	Yes
FOG 10 M	50	Block C	10 M	Cardwood	1,000 cords	Fir	Yes
FOG 14 M	75	Block C	14 M	Sawlogs low grade	900 MBM	Fir	Yes
FCHB 1910	95	Block C	18 cords	Poles, Pulpwood	1,710 cords	F.H.C.	No
FHCD 1903	100	Block D1	10 M	Pulp, Poles Cardwood	2,000 cords	Fir, Hemlock Cedar, Alder	No
FHC 1906	300	Block D1	8 M	Poles, Pulp	1,800 cords	F.H.C.	No
FU 1891	30	Block D1	15 M	Poles, Pulp Cardwood	900 cords	Fir, Cedar Hemlock	No
⊕ 1951	40	Block D1	7 M	Pulpwood	550 cords	Fir, Hemlock	Yes
FH 1888	100	Block D1	8 M	Logs, Pulpwood	800 MBM	F.H.	
FOG	20	Block D1	15 M	Low grade Sawlog, pulp	600 cords	Fir rocky marginal	Yes
D 1911	240	Block E	4-5 cords	Cardwood	1,000 cords	Alder	No
FD 1906	60	Block E	8 M	Cardwood Pulpwood	1,000 cords	Fir, Alder	No
FD 1916	120	Block G1	20 cords	Pulpwood Cardwood	2,400 cords	Fir, Alder	No
F 1916	38	Block G1	20 cords	Pulpwood	760 cords	Fir	No
D 1916	3	Block G1	10 cords	Cardwood	30 cords	Alder	No
DF 1916	34	Block G1	15 cords	Pulpwood Cardwood	450 cords	Alder, Fir	No

FOREST INVENTORY AND ANALYSES

EXTRACTION METHODS

PAST

On the municipal lands examined, Douglas Fir formerly predominated in almost pure stands (80% + F). The forest site was rather low and although the area produced below average volumes and grades, the accessible areas of high volume were logged by high lead methods. The small suppressed trees and the undesirable trees were knocked down during the logging and resulted in clear logged areas. Most of the slash was successfully burned and the ground was left in a condition suitable for Fir regeneration. By chance, many Fir trees not merchantable at these times survived the logging and slash burning and now provide the areas with excellent windfirm, young seed trees.

PRESENT

Today we have the clearcut areas of the past successfully seeding in to the Douglas Fir, which is a desirable species. Only minor quantities of low-grade, low value forest wood products remain. Future revenue will necessarily come from the Douglas Fir reproduction, therefore, today any plan of wood harvesting should be done with the idea of preparing the ground for Douglas Fir reproduction.

Merchantable wood volumes are not sufficient to encourage a clear cut system of logging, therefore, tractors have been used to selectively remove only desired trees, the resulting logged areas are composed of residual, hardwoods, cull old-growth, damaged, suppressed growth trees and piles of unburned slash. The remaining forest is ragged and the small values produced at the time of harvest are soon exceeded by losses in wood production while the forest struggles within itself to repair the unnatural conditions caused by the logging.

Douglas Fir is a semi-tolerant species, reproduction thrives only where light and competition factors meet its requirements and under a selection system, the more tolerant (shade resistant) and undesirable species crowd in and the area comes back to a mixed uneconomic forest. Fir is found at its optimum where an even-aged stand has taken over an area after a disaster, such as a fire or a good job of clearcut logging has removed the former stand.

Clearcut logging resembles nature's method in producing the conditions necessary for the regeneration of future Fir stands, and where a seed source is preserved on clearcut areas, we can expect maximum production of forest wealth, be it Christmas trees or wood values, in the minimum time.

FUTURE

There is approximately 4,500 acres in partial and satisfactory reproduction to date. Our estimate of 7,000 acres in reproduction by 1962 means that 2,500 acres will need some form of silvicultural treatment and assistance to enable the land to become restocked with Fir reproduction.

The following table gives a rough breakdown of this problem:

FOREST INVENTORY AND ANALYSES

Type	Area	Seed Source	Remarks
⬆ ⊖ Selectively Logged	450	Good	Will require cleanup wood removal and slash disposal, then should seed in naturally, some planting may help round out the area.
O.G. Fir	145	Good	Should be logged if possible. Most of these areas are steep and rocky and present only marginal logging chances.
N.S.R.	1000	Good	Should restock naturally to Fir within next year or two.
N.S.R.	400	Good	Will probably require slash disposal.
N.S.R.	<u>505</u>	<u>Fair</u>	Will probably require some planting.
Total	2500	Good	Should be back into production by 1962.

If proper forest management is given to the 10,000 acres (approximately) of municipal forest land during the next ten to twenty years, the result should be that the municipality will have:-

2,500 acres of young timber (second growth) growing from age 20 to 60 years.

7,500 acres of Christmas tree farmland.

10,000 Acres



Logging Slash
Block "B"
Stoney Mountain



Typical Old-Growth
Scrub Fir
Block "C" Maple Mountain



Seed Trees and
Reproduction
Block "C" Maple Mountain



Second Growth and Reproduction
Maple Mountain



N.S.R. Block "C" Maple Mountain
"Note rotten cold deck pile"



Snags Block "D" Mount Prevost

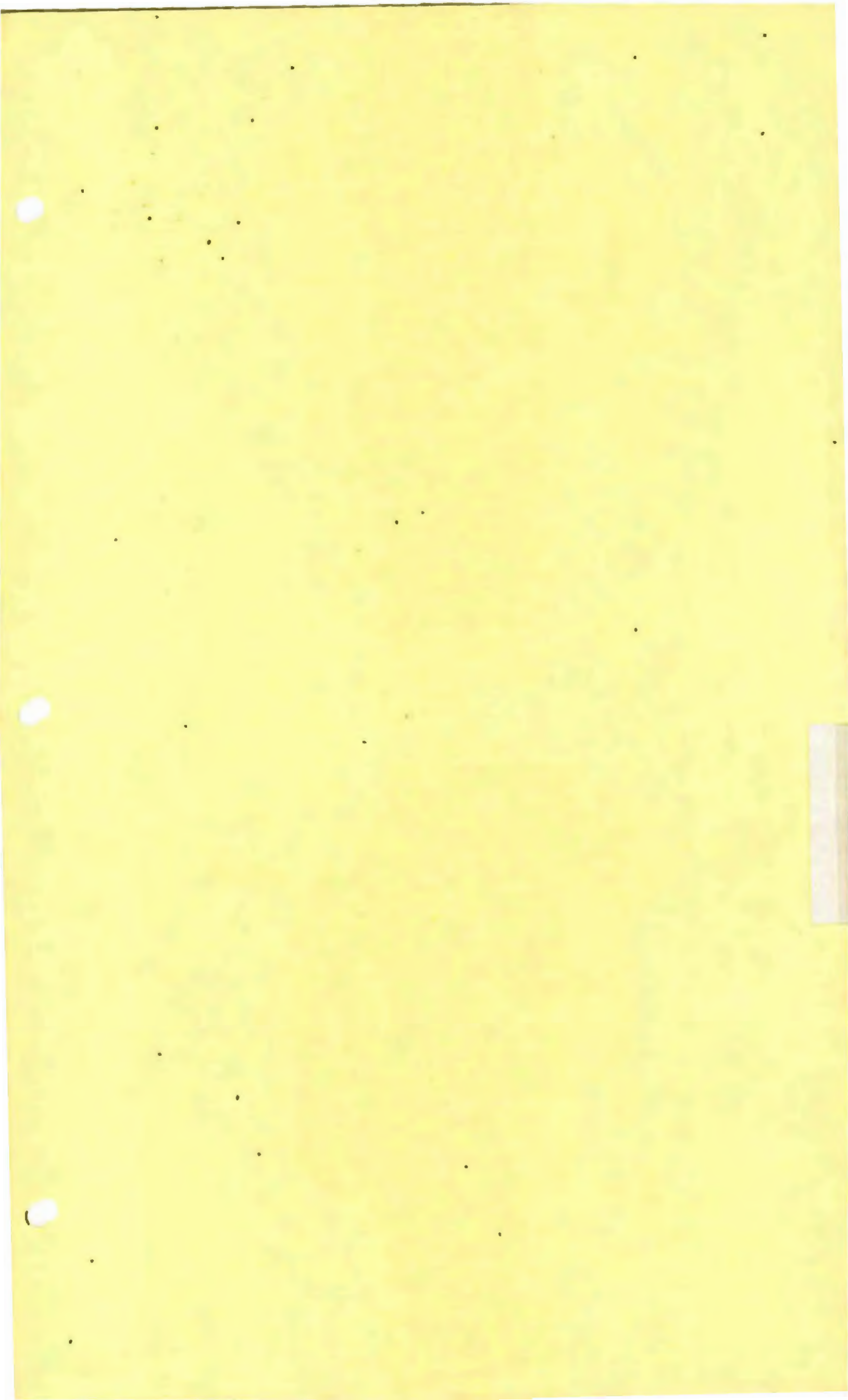
"Note dense reproduction" →



Second Growth F.H.
Block "D" Mount Prevost



Selective Logging
Mount Prevost
"Note Residual Stand and Heavy
Slash"



FIRE HISTORY AND ANALYSES

NORTH COMICHAN MUNICIPALITY
PAST 10 YEARS

<u>Causes</u>	<u>No.</u>	<u>%</u>	<u>Area Acres</u>	<u>%</u>
Lightning	-	-	-	-
Campers	9	15.2%	703	75.2%
Railways	9	15.2%	Spots	-
Smokers	17	28.9%	116	12.4%
Brush Burning	9	15.2%	96	10.2%
Telephone - Power Lines	1	1.7%	8	0.9%
Industrial	6	10.2%	Spots	-
Incendiary	-	-	-	-
Miscellaneous (known)	7	11.9%	Spots	-
Unknown	<u>1</u>	<u>1.7%</u>	<u>12</u>	<u>1.3%</u>
	59	100.0%	935	100.0%
	<u><u> </u></u>	<u><u> </u></u>	<u><u> </u></u>	<u><u> </u></u>

FOREST FIRE HISTORY AND ANALYSES

FIRE ANALYSIS

(Basic data obtained from the B.C. Forest Service)

1. All accidental fires recorded in this municipal district over the past 10 years were preventable fires.
2. 95% of all accidental fires were discovered and reported by the public. Only one out of fifty nine fires was reported by the B.C. Forest Service Mount Prevost lookout. This is due mainly to the fact that the municipal lands visible from the lookout are negligible.
3. Since 1938 the forest fire hazard from fuel and logging debris has been reduced over 50% of the area examined by slash burning and over one half of this area is now bearing healthy Fir reproduction, and thereby further reducing the likelihood of serious fire hazard.
4. Salvage logging and slash burning will be required on recently cutover areas, noted as follows, viz:

Block A	-	240 acres	-	Requires clearcutting slash burning.
Block B	-	75 "	-	Some cleanup cutting, light burn only.
Block C	-	140 "	-	Cleanup cutting, piling and burning.
Block D	-	240 "	-	Clearcutting and slash disposal.
Block F	-	<u>40</u> "	-	Slash burn would be beneficial.

Total - 735 Acres (approximately)
5. Snag falling on Mount Prevost, Block D, would remove a bad hazard. Snags average 4-5 to the acre in areas logged prior to 1938 and their presence endangers the Fir reproduction now on the areas.

PROTECTION

1. Lookouts - From the past years the lookout in this area has been of small use to the municipal forests, however, the lookout man can increase his visible area of municipal lands by walking from the lookout tower to parts of Mount Prevost which would give him a better view of the areas to the North-east.

The public will continue as the main agency in reporting fire outbreaks.

2. A Municipal Forest Ranger will be essential during the fire season and he will require fire equipment for a fast-acting suppression crew. Heavier and more expensive equipment will likely be available from the Forest Service by pre-season arrangements.
3. Small catchment dams can easily be built to form pools of water suitable for fire fighting purposes on many of the small creeks and springs.
4. The areas travelled by the public should be posted with fire danger warnings and also, directions for reporting fires.
5. Most of the municipal forest lands have reasonably good access roads and trails built by the former loggers. Some of these roads would only require minimal annual maintenance to form a valuable asset to fire protection, in that they reduce travel time to the fire, provide ready access, and form excellent fire breaks.

FOREST FIRE HISTORY AND ANALYSES

PROTECTION (Cont'd)

6. The Municipal Council should attempt to institute a municipal forest protection organization by the following means:

(a) Appointment of a Fire Ranger from April 1st to October 1st of each year and provide him with light "jeep" truck.

(b) Provision of a Tool Cache for forest protection, comprising:

2 portable F.F. pumps
3,000 lineal feet hose, couplings, etc.
Shovels, mattocks and axes sufficient for 100 men.

(c) Appointment of Municipal Fire Prevention Officers under authority of Part II of the "Forest Act".

It is well to note that as an organized Municipality, the B.C. Forest Service is not obligated to provide forest fire protection on lands not paying "Forest Protection Tax", and therefore, the onus of forest fire prevention and protection is upon the Municipal Council.

ESTIMATED COSTS

Annual Costs

Fire Ranger - 6 months salary	\$1,500.00
Jeep Truck - maintenance and depreciation (6 mos.)	600.00
Tools - " "	400.00
Improvements - trails, signs, etc.	1,500.00
Fire fighting Trust Fund Reserve (up to \$10,000.00)	500.00
Special Patrolmen (wardens)	500.00
	<u>\$5,000.00</u>

Initial Investment

Jeep Truck and radio phone	\$3,200.00
2 pumps and 3,000 feet of hose, etc.	3,000.00
Tools for 100 men	500.00
Tool Caches	800.00
Fire weather instruments	500.00
	<u>\$7,500.00</u>

FOREST FIRE HISTORY AND ANALYSES

10 YEAR FIRE HISTORY

ACCIDENTAL FIRES OCCURRING IN MUNICIPALITY OF NORTH COWICHAN

Year	B.C.F.S.		Cause	Discovered By	(Spot: less than 1/4 acre)
	Fire No.	Date			Size (Acres)
1932	8	May 8	Hangover from Slashburn	Public	Spot
1934	25	May 28	Railway	Public	Spot
1935	242	June 6	Hangover from Millsite clearing fire	Public	30
	391	Sept 6	Smoker	Public	Spot
1936	6	Apr 22	Clearing ferns	Public	Spot
	180	Aug 10	Children	Public	Spot
	182	Aug 11	Railway	Public	Spot
	183	Aug 10	Railway	Public	Spot
	184	Aug 11	Railway	Public	Spot
	202	Aug 10	Railway	Public	Spot
	204	Aug 15	Railway	Public	Spot
1937	231	Aug 13	Spark from Donkey	Public	1/4
1938	99	June 6	Smoker	Hon. Fire Warden	105
1939	11	Apr 17	Escaped clearing fire	Public	12
1940	118	July 1	Escape from sawdust pile	Patrolman	1
	186	July 15	Spark from crane (Industrial)	Public	Spot
	238	Sept/39	Hangover slashburn	Public	1
1941	437	Aug 18	Burning material from Locie (Rly.)	Public	1/2
1942	302	Sept 16	Unknown	Public	12
1943	100	July 13	Railway	Public	Spot
1944	27	May 5	Escaped permit fire	Public	4
	431	Sept 4	Smoker	Public	1/2
	432	Sept 4	Smoker	Public	2-1/2
	434	Sept 5	Smoker	Public	Spot
1945	199	May 15	Hangover from springburn	Public	1
	242	Aug 11	Abandoned lunch fire	Public	701
	365	Aug 21	Smoker	Public	Spot
1946	7	May 5	Smoker	Public	1/4
	30	May 15	Indian Children	Public	Spot -
	47	May 11	Children lit fern	Public	Spot -
	70	May 21	Smoker	Public	Spot
	315	Aug 22	Children	Public	Spot -
1947	3	Apr 11	Short circuit in mill	Public	Spot
	9	Apr 23	Linesman burning brush	Public	8
	11	Apr 26	Smoker	Public	Spot
	12	Apr 24	Camper and traveller	Public	1/2
	28	May 22	Railway	Public	Spot
	29	May 21	Smoker	Public	Spot
	57	May 27	Indians burning debris	Public	Spot
	221	Aug 3	Smoker	Public	1/4
	251	Aug 9	Railway	Public	Spot
	271	Aug 13	Smoker	Public	5
	344	Sept 4	Burning without permit	Public	1-1/2
	365	Sept 22	Smoker	Public	Spot
	368	Sept 17	House burning	Public	1/4
	387	Sept 29	Children with matches	Public	1/3

FOREST FIRE HISTORY AND ANALYSES

ACCIDENTAL FIRES OCCURRING IN MUNICIPALITY OF NORTH COWICHAN (Cont'd)

Year	B.C.F.S. Fire No.	Date	Cause	Discovered by	Size (Acres)
1948	2	May 8	Smoker	Public	Spot
	151	July 30	Indians burning out snakes	Public	-
1949	16	May 7	Smoker	Public	2
	473	Aug 18	Started in mill	Public	Spot
1950	106	June 4	Clearing Hangover	Public	50
	123	July 3	Smoker	Public	Spot
	151	July 7	Smoker	Public	Spot
	351	Sept 17	Hunter	Prevost L/O	2

These fires are plotted thus:

Less than 10 acres (sq) +

+ spot

More than 10 acres - actual size

+ 368/47 Spot Fire
No. 368
1947

These are ALL plotted in red.

SR 240
48 Slash Burn
No. 240
1948

FOREST FIRE HISTORY AND ANALISES

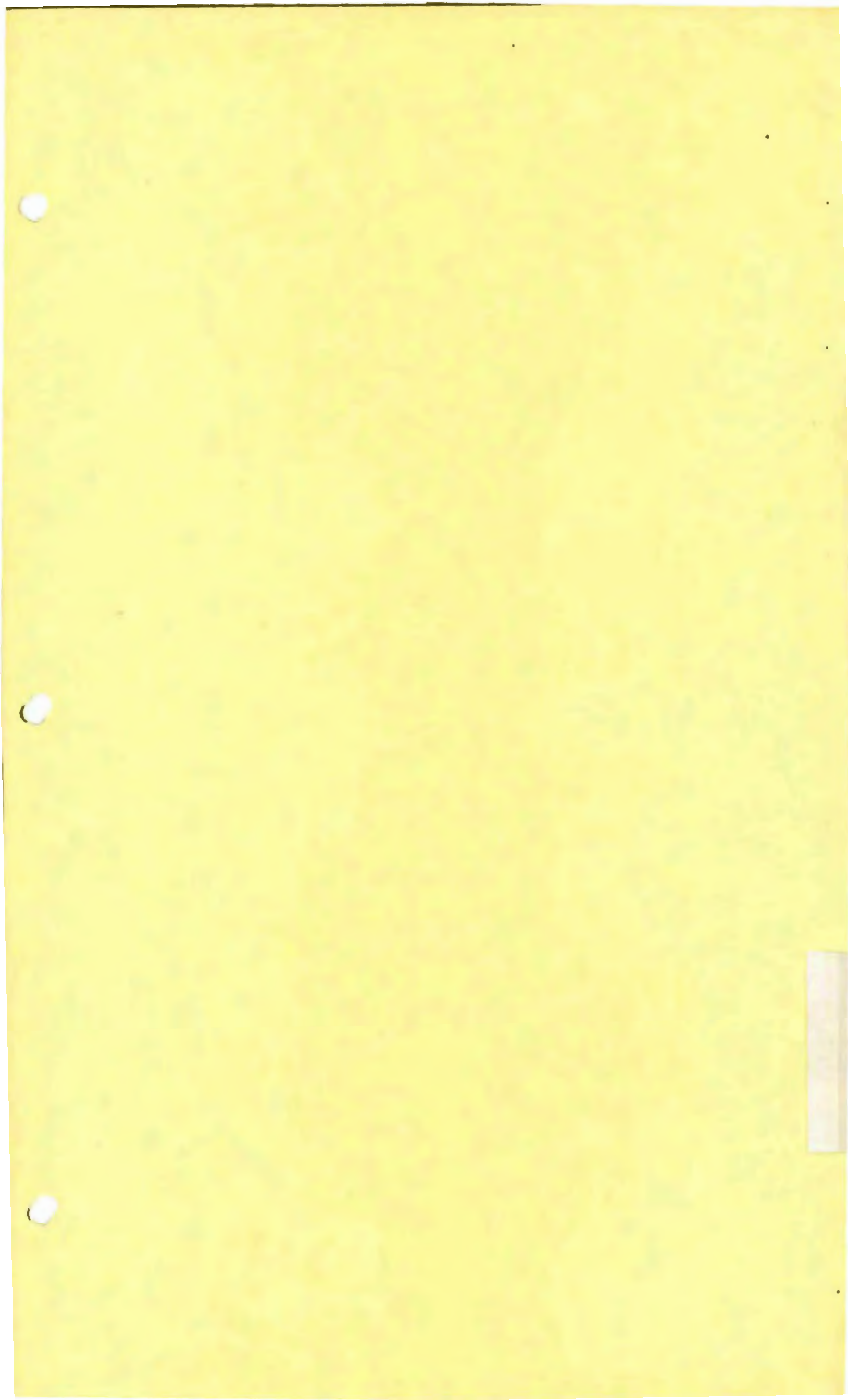
NORTH COWICHAN MUNICIPALITY
INTENTIONAL SLASH BURNS

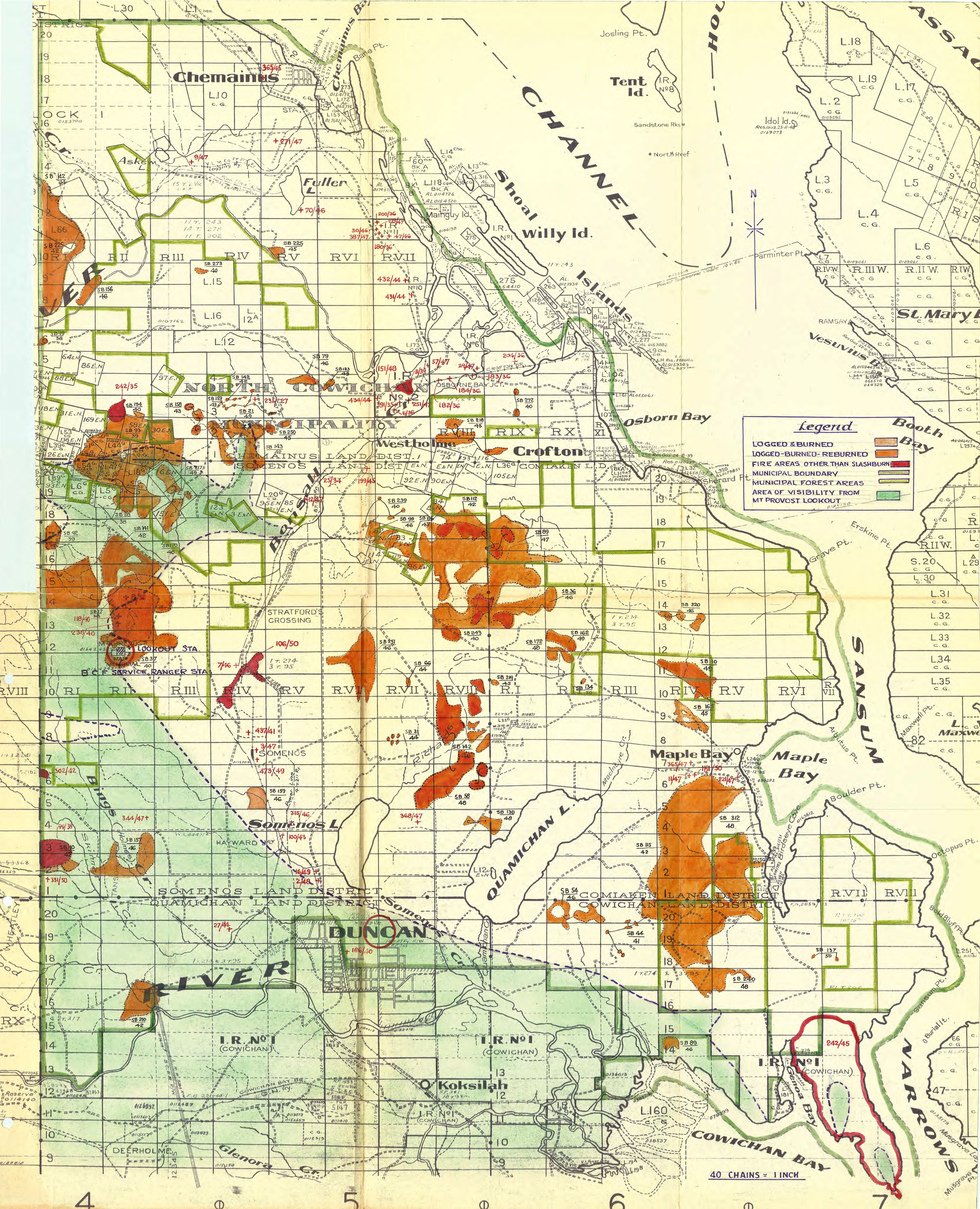
<u>Year</u>	<u>S.B. No.</u>	<u>Size (Acres)</u>	<u>Year</u>	<u>S.B. No.</u>	<u>Size (Acres)</u>
1938	17	Approx. 200	1946	36	197
	19	" 5		79	21
	28	" 100		89	16
1939	92	235		99	23
	93	380		54	70
1940	37	42		151	102
	194	44		152	28
	239	7		155	2
	243	120		156	21
	272	4		157	74
	273	6		159	32
1941	44	2-1/2		220	205
				1947	10
			86		26
			89		635
		171	2		
1942	115	892	172	23	
	141	107	1948	58	335
	142	7		138	22
	143	37		170	30
	148	104		240	76
	210	61		312	215
	225	300		1949	10
1943	31	7			21
	158	90	123		6
	159	6	162	13	
1944	66	3	217	40	
	142	10	1950	134	2
1945	165	26		137	30
	218	43			
	219	2			
	224	3			
	225	10			
	230	10			

These fires are ALL plotted in orange, prefixed with letters "S.B." with date below. 48

Slash burns do not give you true acreage burned. They give you total area freed from hazard - by burning or snagging, etc.

Most of these areas are burned.





Legend

- LOGGED & BURNED
- LOGGED-BURNED-REBURNED
- FIRE AREAS OTHER THAN SLASHBURN
- MUNICIPAL BOUNDARY
- MUNICIPAL FOREST AREAS
- AREA OF VISIBILITY FROM MT PROVOST LOOKOUT

40 CHAINS = 1 INCH

POLICY AND MANAGEMENT

Briefly, the policy that should be followed by the Municipal Council in order to create a permanent forest income from municipal lands unsuitable for other industry, settlement or agriculture, is as follows:

PERMANENCY

The necessary By-Law should be constructed in such a manner that the Municipal Forest lands are permanently reserved and in such a manner that a referendum vote or plebiscite will be necessary from the ratepayers before the forest lands can be reduced in acreage. Not, however, that the boundaries may not be altered where necessary to include more lands suitable for forest management, or where picnic and park sites might be required.

CONSOLIDATION

The major blocks of forest land examined would be managed more easily, if consolidated with adjacent forest lands as these become available through tax sale reversion. The idea being to round out the units into a solid and continuous block of forest land, and the boundaries of the Municipal Forest should be natural rather than legal.

PLANNED MANAGEMENT

Once the Municipal Forest lands have been permanently reserved, consolidated and detailed, economic and basic silvicultural plan should be adopted on a permanent basis.

The details of the forest management will vary from year to year, but the plan must be followed in its basic concepts.

It is useless for this Council to give thought, time, money and effort to provide sustained source of revenue and recreation for the residents of the Municipality if their good work and foresight could be wrecked by the expediency of future Councils.

OPERATION

The production of revenue from the forest lands may be accomplished by two means, i.e.:

Privately

The forest units can be publicly advertised for lease as Christmas tree farm lands on 20-year tenures (renewable if satisfactory).

The lease or license should be drawn up in such a manner that provision is made for annual revision of the rental and stumpage, with, of course, the safeguard to the lessee or licensee that arbitration may be resorted to, and further, that in no event will any increase be more than say, ten percent in any one year. Otherwise the lessee will be discouraged from investing the maximum into the management and operation of the land.

The unimproved forest land examined appears capable of producing about 800 Christmas trees per acre. It is suggested therefore, as an initial trial, the annual ground rental might be set at two to three dollars per acre plus five cents per tree.

The lease would of course, contain a cutting plan and silvicultural clause to safeguard the Municipality.

POLICY AND MANAGEMENT

Publicly

Alternatively, the forest lands could be managed publicly. This would mean that slash disposal, improvement thinnings, artificial planting, road construction and maintenance, silvicultural sanitation and forest protection, scaling, marking, inspection and supervision, would be undertaken by a Municipal Forester and his crew.

The treatment and control of the Municipal lands would be safeguarded by this method. Until a detailed "Forest Management Plan" is made, it is impossible to give the costs of such work, but an approximation is submitted until more factual data can produce an accurate estimate.

Gross Cost

Based on the intensive management of 7,000 acres and the overall care of 10,000 acres, the following estimates of costs are assumed:

(a) 1 Forester (supervision) - Fee & Expenses	\$ 2,500.00
(b) 1 Ranger - Salary & Expenses	2,500.00 (6 mos.)
(c) 2 Ranger's Assistants - Salary & Expenses	4,800.00 (12 mos.)
Transportation (b) and (c)	1,200.00
Tools, Equipment and "Cat" rental	1,000.00
Work Crew	2,000.00
Estimated Cost for 10,000 acres under <u>full</u> management -	\$15,000.00

Gross Revenue

The estimated revenue from the areas is as follows:

Public Operation

	<u>Gross Annual Revenue</u>	<u>Gross Annual Cost</u>	<u>Net Annual Revenue</u>
<u>1952 A.D. (Now)</u>			
Christmas Trees	\$ 15,000.00		
Cordwood & Pulp	20,000.00		
Fire Protection		\$ 5,000.00	
Forester & Supervision		10,000.00	
	\$ 35,000.00	\$ 15,000.00	\$ 20,000.00
<u>1962 A.D. (Within 10 years)</u>			
Christmas Trees	\$ 56,000.00		
Fire Protection		\$ 5,000.00	
Forest Management, Silvi- culture & Supervision		15,000.00	
	\$ 56,000.00	\$ 20,000.00	\$ 36,000.00
<u>2002 A.D. (In 50 years)</u>			
Christmas Trees	\$ 78,000.00		
Fire Protection		\$ 5,000.00	
Forest Management & Supervision		15,000.00	
	\$ 78,000.00	\$20,000.00	\$ 58,000.00

POLICY AND MANAGEMENT

Gross Revenue (Cont'd)

Private Operation

	<u>Gross Annual Revenue</u>	<u>Gross Annual Cost</u>	<u>Net Annual Revenue</u>
<u>1952 A.D. (Now)</u>			
Christmas Trees	\$ 15,000.00		
Cardwood	20,000.00		
Fire Protection		\$ 5,000.00	
Forester, Supervision etc.		5,000.00	
	<u>\$ 35,000.00</u>	<u>\$ 10,000.00</u>	<u>\$ 25,000.00</u>
<u>1962 A.D. (Within 10 years)</u>			
Christmas Trees:			
7,000 Ac. at \$3.00 Rental	\$ 21,000.00		
7,000 Ac. - 80 trees per Ac. at 5¢	28,000.00		
Fire Protection		\$ 5,000.00	
Forester & Supervision		7,000.00	
	<u>\$ 49,000.00</u>	<u>\$ 12,000.00</u>	<u>\$ 37,000.00</u>
<u>OR</u>			
Christmas Trees:			
7,000 Ac. at \$4.00 Rental	\$ 28,000.00		
7,000 Ac. - 80 trees per Ac. at 5¢	28,000.00		
Fire Protection		\$ 5,000.00	
Forester & Supervision		7,000.00	
	<u>\$ 56,000.00</u>	<u>\$ 12,000.00</u>	<u>\$ 44,000.00</u>
<u>2002 A.D. (In 50 Years)</u>			
Christmas Trees	\$ 78,000.00		
Fire Protection		\$ 5,000.00	
Forester & Supervision		10,000.00	
	<u>\$ 78,000.00</u>	<u>\$ 15,000.00</u>	<u>\$ 63,000.00</u>

Estimated Gross Revenue

(At 1952 dollar values on 10,000 acres [±] of Municipal Forest Land)

1952 A.D.

Logging (cordwood, pulpwood, logs)	\$ 20,000.00
Christmas Tree Farming (4,000 acres)	<u>15,000.00</u>
Total	<u>\$ 35,000.00</u>

1962 A.D.

Christmas Tree Farming (7,000 acres)	Total	<u>\$ 56,000.00</u>
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2002 A.D.

Christmas Tree Farming (10,000 acres)	Total	<u>\$ 70-80,000.00</u>
or		
Christmas Tree Farming (7,000 acres)		\$ 60,000.00
Sustained Yield Logging: Annual Estimated Increment on 3,000 acres at 400 f.b.m. per Acre at \$15.00 per M.B.M. stumpage = 3,000 Acres x 400 f.b.m. =		<u>18,000.00</u>
Total		<u>\$ 78,000.00</u>

or

Logging on Sustained Yield basis 10,000 Ac. x 400 f.b.m. per annum per Acre x \$15.00 per M =	Total	<u>\$ 60,000.00</u>
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POLICY AND MANAGEMENT

RECOMMENDATION

Convert all Municipal Forest Lands to intensive Christmas tree farming as advanced second growth matures harvest mature trees and put land into Christmas tree production.

BY-LAWS & POLICY

The following notes and draft By-Law and Contract License Forms are submitted as a guide to your Municipal Solicitor and Municipal Clerk in the construction of the pertinent clauses necessary to cover the forestry phases of Municipal Management.

BY-LAWS

The zoning, building and other By-Laws will require changing and a new category added to exempt or include "Municipal Forest District" (or lands) and the requisite exemption made to other By-Laws where these conflict with the practical and common sense operation of woodlands and forests for tree farm and park purposes.

The following specimen By-Law is submitted for your consideration:

Corporation of the District of North Cowichan

NORTH COWICHAN MUNICIPAL FOREST DISTRICT

By-Law No. 19 .

A By-Law to Regulate the Development and Preservation
of the Municipal Forest District

The Municipal Council of the Corporation of the District of North Cowichan in open meeting assembled enacts as follows:

1. This By-Law may be cited for all purposes as "North Cowichan Municipal Forest District By-Law No. , 19 ." and it and each of its sections shall apply only to and be observed in the Municipal Forest District described as "I — Municipal Forest District" in Schedule " " of "Zoning By-Law No. , 19 " and amendments thereto.

2. In the construction and for the purpose of this By-Law the following words and terms shall have the meanings hereby assigned to them unless repugnant to the context thereof:

BUILDING shall mean anything constructed or erected, the use of which requires permanent location on the ground or attached to something having a permanent location on the ground.

ACCESSORY BUILDING shall mean a subordinate attached or detached building or a portion of the main building the use of which is incidental to that of the main building and located on the same site area, or a building the use of which is incidental to the use of the said land. An accessory building when attached to a main building shall be considered a part of a main building.

MUNICIPAL FOREST DISTRICT shall be and mean that district described, designated and delimited in North Cowichan "Zoning By-Law No. , 19 " and amending by-laws and known as "I — Municipal Forest District."

MUNICIPAL FORESTER shall mean the person appointed from time to time by the Council pursuant to the provisions of this or any other by-law for the purpose of carrying out and enforcing the provisions of this By-Law.

POLICY AND MANAGEMENT

BY-LAWS (Cont'd)

COUNCIL shall mean the Municipal Council of the Corporation of the District of North Cowichan.

MUNICIPALITY shall mean the Municipality of North Cowichan.

COMMERCIAL LEASE shall mean a lease of land or premises whereon may be erected any building for commercial use or area upon which any operation or industry is conducted for commercial purposes.

3. No person shall do, or cause to be done, any work, or erect any building or accessory building on any land or premises within the Municipal Forest District of the Municipality without first having obtained a permit from the Municipal Forester so to do, which permit shall at all times during the performance, or until the completion thereof, be posted in some conspicuous place in the building or premises wherein such work is being done or performed.

4. Application for any such permit shall be made in writing by the owner or any other person desiring to do the work or erect the building or accessory building. Such application shall be filed in the office of the Municipal Forester at the Municipal Hall, Duncan, B.C., and shall be in writing in the form required by the Municipal Forester and shall be accompanied by Plans in duplicate showing the type of work or industrial operation contemplated.

5. If and when a permit has been issued, work shall be started within six months from the date of issuance of such permit,

6. No building erected in the Municipal Forest District shall be occupied or used as a permanent dwelling or place of residence without first having complied with all other by-laws of the Municipality pertaining to a Single-Family District as set forth in North Cowichan "Zoning By-Law No. 19".

7. ALL BY-LAWS OF THE MUNICIPALITY SHALL APPLY TO AND BE ENFORCEABLE IN THE MUNICIPAL FOREST DISTRICT EXCEPT AS SAME MAY BE ALTERED BY THIS BY-LAW AND NOTHING HEREIN CONTAINED SHALL BE TAKEN TO RELIEVE ANY PERSON FROM COMPLYING WITH THE PROVISIONS OF ANY OTHER BY-LAW OF THE MUNICIPALITY APPLICABLE THERETO UNLESS SUCH BY-LAW SO PROVIDES.

SANITATION

8. All garbage and trash shall be burned in stoves or other suitable containers approved by the Municipal Forester.

LATRINES

9. Chemical toilets shall be installed in all outside latrines; alternatively, dry latrines shall be used provided that they are constructed so as to be completely fly-proof from seat to soil pit, and that a close fitting toilet-seat lid is attached. Soil pit shall be at least 3 feet in depth from the surface of the ground and contents shall be liberally covered at all times with chloride of lime. Latrines shall be shielded to provide adequate privacy. No garbage or soil disposal shall be conducted within one hundred feet of any creek, lake or watercourse, nor shall any latrine or toilet be constructed within the said distance. A building accommodating over 10 persons shall provide one chemical toilet or dry latrine for each 10 persons or portion thereof.

FIRE PREVENTION AND PROTECTION

10. There shall be kept in each building from May 1 to October 1 in each year at least one double-bitted axe and one long-handled shovel painted red, for the purpose of fighting fire as required by the Municipal Forester and during the said period such tool or tools shall be used for no other purpose than fighting fire (if any).

POLICY AND MANAGEMENT

BY-LAWS (Cont'd)

11. There shall be kept in good order on any building accommodating over 10 persons a hand-operated metal stirrup pump for each unit of 20 persons accommodated or portion thereof.

12. Provisions of the "Forest Act" of the Province of British Columbia shall be observed at all times.

13. All chimneys and smoke stacks shall be fitted and equipped with spark arrestors constructed of wire mesh of not more than 8 gauge and shall be renewed annually. Oil burning stoves are excepted from this regulation.

14. Every precaution shall be taken to prevent and suppress forest fires at all times.

15. No fire shall be started outside a building without a burning permit to be obtained from the Municipal Forester.

16. Slash and debris shall be piled and burned so that no live trees are scorched or injured.

17. No trails or roads shall be constructed, located or placed without the prior approval in writing of the Municipal Forester.

18. No firearms shall be carried or used without the prior approval in writing of the Municipal Forester as well as all other necessary authorities.

19. No live trees shall be cut upon Municipally owned lands, including highways and road allowances, without a prior written permit therefor being obtained from the Municipal Forester.

20. All trees shall be cut within 6 inches of the ground on the high side of the ground.

21. No wildflowers or native plants upon lands owned by the Municipality (including highways and road allowances) shall be damaged, cut or removed.

22. All leases and licenses granted or to be granted by the Municipality shall be in the form marked Schedule "A" hereto and be subject to the following provisions or regulations whether or not same are contained in the body of the lease:

- (a) A lessee shall pay for any damage to property of the Crown or Municipality resulting from the use of the premises leased by the Lessee,
- (b) A lease shall be transferable only with the written consent of the Municipal Forester,
- (c) Leases or licenses may be renewed upon such terms and conditions as the Municipal Council may decide, provided bona-fide use thereunder has been established and the provisions of the lease and of all regulations made with respect to the Municipal Forest District have been complied with,
- (d) The lessee or licensee shall not hire, sub-let, rent to, or receive any remuneration from, any other party for the use of the privilege granted by any lease from the Municipality unless permission is first obtained in writing from the Municipal Forester,
- (e) Leases or licenses may be terminated by resolution of the Municipal Council on ninety days' notice addressed to the lessee or licensee by registered mail for any breach of this By-law, failure to comply with any of the conditions of the said lease or license, absence of bona-fide use of the building or lease or license within six months of date of issue, or should it be deemed expedient in the public interest,

POLICY AND MANAGEMENT

BY-LAWS (Cont'd)

- (f) Commercial lease or license may be awarded for periods not exceeding twenty years provided that the terms of the lease are first approved by the Municipal Council,
- (g) Leases or licenses shall be subject to cancellation on the infraction of any of these regulations or provisos,
- (h) Buildings, structures and improvements shall become the property of the Municipality upon expiry or cancellation of any lease or license granted by the Municipality.

23. The annual rental fixed under a commercial lease in no event shall be less than an amount equal per acre to the amount payable for a private lease.

FOREST DEVELOPMENT FUND

24. All revenue derived from Municipal Forest District, either by the sale of timber, or the collection of rentals, license fees, forest protection taxes, penalties, etc., shall be placed in a FOREST DISTRICT TRUST FUND, and not more than seventy five (75%) per cent of the revenues collected in any one calendar year may be used for any other purpose than for forest development and protection in the Municipal Forest District.

25. Every person who violates any of the provisions of this By-Law or who suffers or permits any act or thing to be done in contravention or in violation of any of the provisions of this By-Law, or who neglects to do or refrains from doing anything required to be done by any of the provisions of this By-Law, or who does any act which violates any of the provisions of this By-Law, shall be deemed to be guilty of an infraction thereof and liable to the penalty hereinafter provided.

PENALTY

26. Any person guilty of an infraction of this By-Law shall, upon conviction thereof before the Police Magistrate or any Justice of the Peace, or other Magistrate or Magistrates having jurisdiction in the Municipality of North Cowichan, on the oath or affirmation of any credible witness, forfeit and pay at the discretion of the said Police Magistrate, Justice of the Peace or other Magistrate or Magistrates convicting, a fine or penalty not exceeding the sum of \$200.00 and costs for each offence; and in default of payment thereof forthwith it shall be lawful for such Police Magistrate, Justice or other Magistrate or Magistrates convicting as aforesaid to issue a warrant under his or their hand and seal to levy the said fine or penalty and costs or costs only by distress and sale of the offender's good and chattels: and in case of not sufficient distress found to satisfy the said fine or penalty it shall and may be lawful for the Police Magistrate, Justice or Magistrate or Magistrates convicting as aforesaid to commit the offender to the common gaol or any lockup house in or for the Municipality of North Cowichan for any period not exceeding thirty (30) days (with or without hard labour) unless the said fine or penalty and costs be sooner paid.

PASSED by the Municipal Council on the _____ day of _____ A.D. 19
A.D. 19 .

RECONSIDERED, ADOPTED and FINALLY PASSED by the Council. SIGNED by
the Reeve and Clerk and SEALED with the Corporate Seal of the Corporation all
on the _____ day of _____ A.D. 19 .

Reeve

Clerk

POLICY AND MANAGEMENT

LICENSE (OR LEASE)

The following specimen contract and clauses dealing with licenses to cut and remove forest products is submitted as a guide.

MUNICIPAL TIMBER SALE CONTRACT NO.

THIS INDENTURE made the day of A.D., 19 .

BETWEEN:

THE CORPORATION OF THE DISTRICT OF NORTH COWICHAN, B.C.
herewith represented and acting by

THE MUNICIPAL CLERK,

who is hereinafter called the "Licensor of the One Part",

A N D:

who, together with his executors, successors and assigns is hereinafter called the "Licensee of the Other Part".

WITNESSETH that, in consideration of the payments and stipulations to be made and observed by and on the part of the Licensee, and of the Licensee's offer to purchase, made under and subject to the provisions of the "Municipal Act", the Licensor doth hereby grant unto the Licensee, subject to the provisions of the said "Act", and for the term and subject to the reservations and conditions hereinafter provided, a license to cut and remove all forest products and/or trees, standing or down, designated for cutting by a Forest Officer, appointed by the Licensor, merchantable as hereinafter defined, upon an area which is agreed to comprise acres, more or less, situated and described hereunder, from the date hereof, for the term of years, ensuing.

1. DESCRIPTION OF THE AREA COVERED BY THIS LICENSE

As shown upon the map, hereto annexed and coloured RED:- More specifically described as:-

2. PAYMENTS

In consideration whereof, the Licensee hereby covenants, promises, and agrees with the Licensor as follows: The Licensee shall pay to the said Licensor the several sums at the times and in the manner following, namely:-

(a) A stumpage price (exclusive of Royalty) for the forest products payable within three (3) days of receipt of Official Scale Account:-

POLICY AND MANAGEMENT

LICENSEE (OR LEASE) (Cont'd)

(b) An annual rental based on _____ acres,
at the rate of fifty (50¢) cents per acre, amounting to _____
dollars (\$) payable in advance of the _____ ()
day of _____ in each year hereafter during the continuance of the
license hereby granted.

(c) A deposit of _____
to be held until completion of the contract; and provided the contract has
been faithfully carried out to the satisfaction of the Licensor will be
refunded; otherwise this amount will be subject to such deductions as the
Licensor may find necessary in order to carry out the full intent and pro-
visions of this contract; or otherwise will be forfeited.

(d) The cost of cruising and advertising incident to this contract,
being the sum of _____
The Licensee further covenants, promises and agrees with the Licensor as
follows:-

(e) To pay punctually all royalties, scale charges, fees and dues,
payable to the Government of British Columbia in respect to this Timber Sale
Contract, on the produce of the timber sale area.

(f) To pay punctually and satisfy as and when the same respectively
become due, all claims for wages, and all other claims against the Licensee,
and to comply with all the provisions of the Laws of the Province of British
Columbia and the Dominion of Canada.

3. CONDITIONS

And the Licensee further covenants, promises and agrees to cut and
remove said timber in strict accordance with the following conditions, and
with all regulations and provisions governing logging operations in the "Forest
Act" and amendments, and with all Municipal By-Laws.

(a) No debris or litter resulting from the Licensee's operations
will be allowed to remain in any creek bed, or within fifty feet (50') of the
banks thereof.

(b) No forest product and/or trees will be removed from the sale
area until it has been conspicuously marked or tagged with a registered mark;
designated for the area.

MARK:-

(c) Trees will be cut so as to cause the least practicable waste,
and will not be cut higher than _____
and in no case higher than ten (10) inches on the side adjacent to the highest
ground, except in unusual cases in the discretion of the officer of the
Municipal Forester in charge.

(d) Timber and/or Forest Products described as follows shall be
considered merchantable under terms of this contract, and may be designated
for cutting by the Municipal Forester:

(e) All trees, designated as hereinafter defined, shall be cut:

POLICY AND MANAGEMENT

LICENSE (OR LEASE) Cont'd

(f) As far as practicable, all branches of the operation shall keep pace with one another, and in no instance shall slash-disposal be allowed to fall behind cutting, except with the written consent of the Municipal Forester in charge.

(g) Unless the place for scaling of the timber is designated in writing by the Provincial District Forester at Vancouver, B.C., or other arrangements are made in writing by the said District Forester, all timber will be scaled before removal from the sale area in accordance with the provisions of the "Forest Act" and amendments, and in no case will any timber be manufactured or sold until it has been properly scaled as provided in the "Forest Act" and amendments.

(h) Trees designated for cutting in clause (e) which are left uncut, waste in tops and stumps, trees cut and left, and culls in excess of five (5%) percent of the gross cut, and any merchantable forest product which is cut and not removed from any portion of the cutting area after logging on that portion of the cutting area is completed shall be scaled, measured, or counted as hereinbefore provided, and paid for as follows:

(i) Slash will be disposed of as follows:

Slash and snags will be disposed of by the Licensee at his own expense, as required by the Municipal Forester in charge.

(j) Provisions for fire-protection: As provided by Part XI of the "Forest Act".

Logging operations shall cease, when in the opinion of the Municipal Forester, a fire hazard exists.

(k) THE LICENSEE WILL BE WHOLLY RESPONSIBLE FOR TRESPASS OR DAMAGE TO MUNICIPAL PROPERTY, OR PRIVATE PROPERTY, CAUSED BY THE OPERATIONS CONDUCTED.

(l) Other Clauses:

POLICY AND MANAGEMENT

4. (a) To indemnify and save harmless the Licensor from all claims, causes of action, proceedings, damages, costs and demands whatsoever occasioned by, or arising out of the operations of the Licensee, and in particular, but without limiting the generality of the foregoing, any claims of the Government of the Province of British Columbia for Royalties, Scaling Fees, etc., any causes of action, claims, proceedings, damages, costs or demands or any loss suffered by the Licensor occasioned by, or resulting from, or arising out of any fire originating upon the licensed area during the term hereof.

(b) To carry out and conduct the operations in a workmanlike manner according to the customs and methods of the business and as adapted to silvicultural requirements of the Licensor.

(c) To maintain, improve, ditch and surface all roads in the license area, to construct and maintain such additional roads and other improvements as may be necessary for the efficient carrying out of logging in the area of the operations herein licensed. Any such improvements or construction shall receive the approval of the Licensor.

5. CANCELLATION

The Forest Officer of the Licensor, by giving notice in writing to the Licensee, or to the person in charge, or conducting salvage operations upon the area, may suspend any operations conducted upon this area, should any violation of the terms, covenants, provisos or conditions of this contract occur; and such violations shall render this contract liable to cancellation by the Licensor.

If the Licensor shall elect to cancel this contract, it shall give notice in writing to the Licensee to that effect, and upon such notice being given, this Contract shall forthwith terminate, and be of no further force or effect, but without prejudice to the right of the Licensor to payment of all monies due from the Licensee.

In the event of the termination of this Contract, the Licensee shall have the right after payment in full by him of all their indebtedness to the Licensor hereunder, to remove from the area, within a reasonable length of time, but in any event not later than thirty (30) days after the termination of these presents, any and all equipment, plant, machinery, livestock, tools and personal property of every nature and kind brought by them upon the premises.

Provided that, upon the expiration of the said term, all rights of the Licensee hereunder shall absolutely terminate, and any and all timber then cut from and lying on the said lands shall be and become the absolute property of the Licensor: Provided that the Municipal Forester may for good cause extend the said term, which he may do for a period not exceeding _____ months.

6. WAIVER

Time is expressly declared and stipulated to be the essence of this Contract, and a waiver by the Licensor of the strict performance by the Licensee of any covenant or provision of this Contract, shall not in itself constitute a waiver of any subsequent breach of such covenant or provision, or of any other covenant, provision or term of this Contract.

7. DEPOSIT

The Licensee agrees that the sum of _____ Dollars (\$) per Acre, being deposit which accompanied the tender for the forest products covered by this Contract, shall be held until the completion of the contract; and provided that the contract has been faithfully carried out to the satisfaction of the Licensor will be refunded; otherwise this amount will be subject to such deductions as the Licensor may find necessary in order to carry out the full intent and provisions of this contract; or otherwise will be forfeited.

POLICY AND MANAGEMENT

8. OTHER CLAUSES

The Licensee covenants with the Licensor:

(a) That the Licensee will not assign, or transfer the license hereby granted without the written consent of the Licensor first had and obtained.

(b) That in carrying out the Salvage and Debris removal operations under this license, the Licensee will in no way block, obstruct or damage any road, trail, or other property, and any obstruction caused, or damage done by the Licensee shall be removed or repaired forthwith at the Licensee's expense.

9. NOTICES IN WRITING

Any notices required to be given by either of the parties hereto to the other of them, shall be well and sufficiently given when addressed and posted by registered mail or delivered personally addressed as follows:

Licensor:-

Licensee:-

and shall be deemed to have been received at the time of delivery or when the same would have been received in the ordinary course of transmission.

10. SUPPLEMENTAL AGREEMENTS

(a) No representations, agreements, promises or understandings other than those contained herein, shall be binding upon the parties hereto, unless such representations, agreements, promises or understandings are set forth in a written instrument supplemental hereto, duly executed by the parties hereto.

(b) The decision of the Municipal Forester will be final in the interpretation of any of the terms and conditions of this Contract.

(c) The Municipal Forester in charge, by giving notice to that effect in writing to the Licensee, or to the person in charge of logging operations upon the area, may suspend any logging operations conducted upon this area, should violation of any of the terms, covenants, provisos, or conditions of this contract have occurred; and such violation shall render this contract liable to cancellation without privilege of reinstatement.

(d) This Agreement shall be binding upon the heirs, executors, administrators and assigns of the parties hereto.

IN WITNESS WHEREOF the Licensee has hereunto set its hand and seal, the day and year first above written, and the Licensor has caused its seal to be affixed in the presence of its officers thereunto duly authorized.

SIGNED, SEALED AND DELIVERED by the)
Licensor in the presence of:)

SIGNED, SEALED AND DELIVERED by the)
Licensee in the presence of:)

NOTE: If contracting party is a copartnership, the instrument must be signed and sealed by each member of the partnership.
If contracting party is a corporation, the corporate seal must be affixed by the officials who are authorized to execute deeds on behalf of the corporation and be accompanied by the signature of these officials.

POLICY AND MANAGEMENT

ALTERNATIVE CLAUSES

The following clauses are submitted as alternates, additions and substitutes to be included in the Contract as the situation may warrant:

Clause 3 (i) - Slash Disposal

(i) - #2

General Clause - Coast Districts: All dead trees and snags ten (10) feet or over in height shall be felled by the licensee and all slash and debris on the area after logging on any portion of the timber sale area is completed shall be burnt by the licensee at his own expense as provided under Section 113A and 113B of the "Forest Act".

(i) - #3

All dead trees and snags ten (10) feet or over in height on the portion of the sale area logged over under this contract, shall be felled by the licensee at his own expense, as provided under Section 113A of the Forest Act and all slash shall be disposed of by the licensee at his own expense as required by the Forest Officer in charge.

(i) - #4

Broadcast Burning: All slash will be burned broadcast by the licensee and such firelines constructed and other measures taken at his own expense as may be considered necessary by the Forest Officer in charge to protect reserved trees and surrounding timber.

(i) - #5

Piling and Burning: The tops of all trees felled will be lopped and all slash piled compactly away from live trees and reproduction as required by the Forest Officer in charge. Slash will be burned by the licensee at his own expense, at a time designated by Forest Officer in charge.

(i) - #6

Lopping & Scattering: The tops of all trees felled will be lopped and all slash scattered in such a manner as to lie close to the ground and away from live trees and reproduction as directed by the Forest Officer in charge.

(i) - #7

Construction of Fire Lines: Such fire lines as the Forest Officer in charge shall designate shall be cleared . . . feet in width and not to exceed . . . chains in total length; all slash and debris thereon shall be piled and burned and the fire lines completed by the licensee at his own expense in such a manner as the Forest Officer in charge shall designate.

(i) - #8

Combination of Methods: Slash shall be either piled and burned or lopped and scattered or both methods of disposal employed, as required by the Forest Officer in charge. Where slash is lopped and scattered it shall be spread in such a manner as to lie close to the ground and away from living trees. Where it is piled, the tops of all trees felled will be lopped and all slash piled compactly away from live trees and reproduction as required by the Forest Officer in charge. Slash will be burned by the licensee at his own expense, at a time designated by the Forest Officer in charge.

(i) - #9

Definition of Slash: The term "Slash" as used in this contract means all slash and debris resulting from logging operations, including stems, limbs, and parts thereof not exceeding . . . inches in diameter.

Clause 3 (e) - Material to be Cut

(e) - #2

All young fir trees suitable for Christmas trees, provided that no tree under 4 feet in height or more than 16 feet in height shall be cut.

POLICY AND MANAGEMENT

ALTERNATIVE CLAUSES (Cont'd)

(e) - #3

Any living, dead or down tree which, in the judgment of the Forest Officer, contains a net total scale of fifty (50) per cent or more of the total volume of the tree suitable for the manufacture of (any grade of Lumber) / shall be considered merchantable under the terms of this Contract and may be designated for cutting by the Forest Officer.

(e) - #4

Cutting to Diameter Limit: All trees . . . in diameter or over at a point four and one-half (4-1/2) feet from the ground, merchantable as defined in Clause (c) above.

Clause (1)

(1) - #2

Marking: Trees to be cut will be marked prior to cutting with a blaze on the stump and the following brand () stamped on the blaze, (or by painting or other method of designation if desired). Trees not so marked are reserved from cutting and will be protected as far as possible by the licensee while logging on the area. Not less than . . . per cent by volume of the total stand of merchantable timber as defined in Clause (c) shall be so designated for cutting.

(1) - #3

Reservation of Seed Trees: Clause No. 1 or 2, and the following:- With the exception of seed-trees or groups of seed-trees which will be marked or otherwise designated by the Forest Officer in charge before cutting begins. Trees so designated are reserved from cutting and will not exceed . . . percent by volume of the total stand of merchantable timber.

Selective Pole or Tie Cutting: All . . . trees . . . inches in diameter and under at a point four and one-half (4-1/2) feet from the ground, merchantable as defined in Clause (c) above. / All other trees are served from cutting unless designated by the Forest Officer in charge. (Last clause to be used if there is no optional cutting).

(1) - #4

Ground Yarding: No highlead or overhead system of logging of any kind whatsoever shall be used on this area.

(1) - #5

Additional Clause Re: Protection of Young Growth: Material shall be yarded away from areas of young growth rather than through or across them, and the approval of the Forest Officer in charge shall be obtained before constructing roads for swinging through such areas.

(1) - #6

If trees or young growth designated to be left standing are badly damaged through carelessness during the process of logging, or are cut, they will be paid for at the rate of

(1) - #7

Cat and arch will be turned on cat roads only.

(1) - #8

Logging methods will be confined to the use of horses.