

TIMBER MANAGEMENT PLAN

ODD FELLOWS SIERRA PARK
TUOLUMNE COUNTY, CALIFORNIA

Prepared for:

Odd Fellows Sierra Recreation Association
P.O. Box 116
Long Barn, California 95335

By:

Sierra Forest Management, Inc.
P.O. Box 296
Avery, California 95224

Sierra Forest Management, Inc.

P.O. BOX 296

AVERY, CA 95224

May 22, 1980

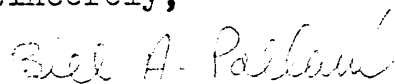
Mr. Del Wallis
Odd Fellows Sierra Park
23536 Skyview Terrace
Los Gatos, CA 95030

Dear Del:

We have completed a timber management plan for Odd Fellows Park in Tuolumne County as requested on March 10, 1980. Our timber management plan report includes a 15% timber cruise report of all trees 12 inches in diameter and larger, projected timber growth, estimate of recent insect killed timber, a map of management areas and set backs, all incorporated in a detailed report of the timber management potential of Odd Fellows Park.

Your attention is directed to the data, descriptions, and discussions in this report.

Sincerely,



Bill A. Pollard
Forester

BAP:sp

Sierra Forest Management, Inc.

P.O. BOX 296

AVERY, CA 95224

June 24, 1980

Mr. Del Wallis
Odd Fellows Park
23536 Skyview Terrace
Los Gatos, CA 95030

Dear Del:

Enclosed is the cutting budget and reference map for Odd Fellows Park.

Briefly, the cutting budget allocates near equal annual harvest for the next cutting cycle. We have, through field inspection, located twelve compartments which is an area that can contribute one annual harvest. The compartments are ranked from 1 to 12, based on the physical characteristics of the compartments and priority for harvest. Once again this was our forestry judgement on what compartments need to be harvested to remove older decadent trees, improve spacing, etc. The compartment harvest schedule can be modified to market conditions or the parks needs.

This is the final step of our timber management plan for Odd Fellows Park. Thank you for the opportunity to complete this project.

Sincerely,

Bill A. Pollard
Forester

BAP:sp
encl.

TABLE OF CONTENTS

Certification.....	i
Introduction.....	1
Forest Description.....	1
Management Objectives.....	2
Regulation.....	3
Silvicultural Treatment.....	5
Economic Situation.....	6
Management Suggestions.....	7
Appendix.....	10
Timber Cruise Summary.....	11
Predicted 10 Year Volume Production.....	12
Average Stumpage Rates Since 1969.....	13

CERTIFICATION

We certify that our payment for this project is not contingent upon the data or results reported in this timber management plan report. In fact our only interest in this project is to provide the Odd Fellows Sierra Recreation Association with a professional timber management plan for our agreed fee and do not expect any future forestry services except upon request. The information contained in this timber management plan was gathered by methods considered to be normal and acceptable forestry practices with no important information being overlooked or withheld.

Sierra Forest Management, Inc.

Bill A. Pollard

Bill A. Pollard
Registered Professional Forester
No. 1065

INTRODUCTION: The Odd Fellows Park is located near Long Barn, California in the Central Sierras. The park is nestled in a small timbered basin at 4,500 feet elevation, containing a large meadow and small stream transversing the middle of the property. The topography is generally gentle with some draws containing steeper slopes.

Historically the property was used for agricultural purposes in the development of the meadow and timber resource. This tract was actively harvested for timber until the late 1940's. These past timber activities have greatly assisted in providing the present healthy second growth timber stand. For approximately the past forty years, the area has developed into an outstanding, beautiful recreational park. The ideal location, climate, and physical characteristics provide an exceptional recreational opportunity for park members.

FOREST DESCRIPTION: The Odd Fellows Park forest contains a typical mixed conifer type for the Central Sierras. The timber stand generally contains coniferous species of Ponderosa Pine, Sugar Pine, Douglas-Fir, White Fir and Incense Cedar and also hardwood species of Black Oak, Dogwood and Maple. The coniferous or softwood species are the most abundant and offer the best timber management alternative.

This area is blessed with ample rain fall, deep fertile soils, and ample ground water along with the timber stand that provides excellent timber growth. Timber growth is normally measured or rated by the term of "Site" or growth potential of an area. In the Central Sierras Site is indexed into five classes, whereby Site I is the highest growth potential and Site V the lowest. The Odd Fellows Park contains mostly Site I areas with some Site II areas. From our experience this tract contains some of the best timberland in small private ownership in Tuolumne County.

The past, present and future growth of any given timber stand is a function of timber stand condition, previous timber harvest, present, and future timber management activities. Originally, all private timberland owners in California inherited virgin timber stands. This virgin, uncut timber is normally regarded as old growth timber,

characterized by large, high quality trees, low growth potential by nature of advanced age (150-400 years), and high susceptibility to insects and disease (mortality) which greatly reduces the timber growth potential.

In contrast, the old growth timber has been harvested providing healthy young timber, regarded as young growth. These young growth stands are characterized by smaller, lower quality trees, high growth potential by nature of young age (0-150 years), and low susceptibility to insects and disease (mortality).

The conversion from old growth to young growth stand was complete in the late forties by previous owners. Since that time the present young growth stand was developed and offers outstanding growth potential through property forest management.

MANAGEMENT OBJECTIVES: Generally these objectives are reviewed in respect to the management of a timber stand and include wood products, range, water, wildlife and recreation.

Because of the historical development and present dominant use of this tract, recreation is a major objective, and greatly influences all activities. Minor activities in regard to range, water and wildlife are reasonably compatible with recreation. At the present, range use is nonexistent in that the meadow area has become the central focal point of most recreation activities. Water use through Sugar Pine Creek and the pond have been intergraded into the present recreational uses.

The development of wood products has been limited in the past, but offers great potential. Potential use of the Odd Fellows timber stand can range from firewood for heat to the sale of timber products (sawlogs, poles and posts) for revenue to assist park developments or maintenance. Through careful and proper forest management techniques, wood products can be harvested without unduly compromising recreational and other management objectives.

REGULATION: In this case, regulation is used in the context of bringing a forest into control through proper forest management techniques to meet the timberland owners objectives. Even though the growth of a mature tree or forest is long term in nature (60-100 years) proper forest management can provide rewards of maintenance or increased growth, regular timber crops, while still portecting associated values of the forest.

The first step in regulation is to survey the forest; normally referred to as a "timber inventory". A timber inventory was completed on Odd Fellows Park in April 1980. On the 400 acres outside the recreation development, field measurements were taken on a relatively small sample (12%) of the individual trees and expanded to give a total estimated timber volume for this area. In contrast, two small timber areas inside the recreational development and the recent insect killed timber were 100% measured. The total timber volume reported in Scribner Decimal "C" Log Rule and for trees 12 inches in diameter and larger is as follows:

<u>Area</u>	<u>Acreage</u>	<u>Volume (Bd. Ft.)</u>
I (outside)	400	8,320,000
II (inside)	30+	390,000
(bug trees)	Total	53,000
	430 ±	<u>8,763,000</u>

For review, Area I is the 400 acres outside the recreation area (including homesites) which lends itself to timber management. Area II is the 30 acres inside the recreational area near the playground and pond. The bug trees were measured and marked with a paint strip and come from the total area. Unfortunately, most of the bug killed trees were lost last year and considering the current log market, conditions have little economic value remaining.

To aid in determining sustained harvest, we performed a "growth study" on Area I assuming Area II would not significantly add to future timber growth because of size and high recreation use. In our growth study we used the standard table projection method, which means the past ten years growth of the stand was measured and projected ten years into the future adjusting for mortality. This is considered a conservative method based on previous stand growth and not adjusting for

future forest management practices.

In detail, our growth study revealed that Area I will grow 2,600,000 Bd. Ft. in the next ten years. When converted to an annual basis, it is 264,000 Bd. Ft. per year. This represents a 3% annual growth rate on the current 8,320,000 Bd. Ft. inventory. This is a reasonable growth rate considering the current unregulated second growth timber stand. Active forest management activities tempered by recreational values could raise this growth rate 5 to 7% in the next ten years. From an exclusive timber management program and excluding any recreational values, the area could potentially grow at an annual rate of 8 to 10% in the future.

In order to bring a timber stand into regulation, the "annual allowable cut" must be determined. This is the annual timber harvest a timberland owner would remove from the timber stand. The sustained allowable cut would be what a timber stand grows each year. Considering Area I, this would amount to 264,000 Bd. Ft. per year which was determined in the growth study.

The projected allowable cut for Odd Fellows Park was carefully considered reviewing many conditions, including rotation age, cutting cycle, set backs, and recreation values. Rotation age is the time it takes mother nature to grow a mature tree, in this case 70 to 100 years and trees would be 22 to 28 inches in diameter. Cutting cycle is the time between harvests on a given area. In this case we suggest twelve years as a cutting cycle which could be one light harvest of the entire property or a combination of light harvest on twelve equal areas but no major harvest occurring before twelve years has elapsed. Set backs, meaning areas around lots, roads, and streams where no timber harvest will occur, or very light selection harvests. The set back generally considered to be 100 feet from all these areas. In Area I this was estimated to be 60 acres of the total 400 acres. Finally, timber harvests can have a negative impact upon recreational values and uses, recreational values were carefully considered. We have determined the allowable cut can safely be in the range of 150,000 to 200,000 Bd. Ft. annually and suggest 180,000 Bd. Ft. annually.

That is to say, 2,160,000 Bd. Ft. can be harvested in the next twelve years and will protect the recreational values of the park. In fact, this harvest will only be 68% of the timber growth in the next twelve years.

The final stage in regulation planning is to establish a "cutting budget", whereby scheduling timber harvests. We suggest twelve compartments averaging approximately 30 acres in size. They could range between 20 and 40 acres depending upon field conditions. Each compartment will be capable of contributing one annual harvest of 180,000 Bd. Ft. Any one compartment or combinations of compartments could provide timber harvests in a cutting cycle in the next twelve years. The priority for harvest will be based on physical traits of the timber, needs for regeneration, and potential to increase growth but not limiting harvest timing for market conditions, species composition, or revenue requirements of Odd Fellows Park.

SILVICULTURAL TREATMENT: The goals of Odd Fellows Park will depend upon silviculture or the art of tending a forest. The "silvicultural treatment" may include pest protection, fire protection, timber stand improvement, planned timber harvests, logging systems, and reforestations.

Since the Odd Fellows timber stand has a history of logging, it has developed into an uneven aged stand (meaning many different age classes of trees) which lends itself to a selection harvest system. Contrasted, an even aged stand (meaning little difference in age classes of trees) which lends itself to a group harvest system or clear-cut. Because of the physical characteristics of the stand and the importance of recreational goals of the area, we suggest a selection harvest system to be used. Timber management goals can be met and maintain a mixture of aged class trees but not limit or greatly impact recreational goals. In the selection system it is very important to harvest over mature trees but smaller imature trees (12 to 20 inches in diameter) to provide growing space for future crop trees.

Pest and fire protection are important to be maintained in tending a forest. As everyone knows, one wildfire can destroy all good forest management plans as well as recreational values. Pests,

mainly bark beetles, can erode the best layed plans but a well tended, healthy forest can reduce these causes.

In using a selection system, reforestation or the establishment of a new forest will generally be through natural regeneration. This is in contrast to artificial regeneration (planting by man). Only some small areas on the Southwest corner of the Park may need artificial regeneration.

Timber stand improvement can be accomplished through selection harvest, pre-commercial thinnings, or pruning. The pre-commercial activities may be fundable through the California Forest Improvement Program.

In review, of the terrain and timber stand, a tractor logging system will be ideal to carry out timber harvests. This is the most inexpensive logging system which will provide an added margin when selling timber.

ECONOMIC SITUATIONS: The local timber resource market ranges from post to sawlogs. The greatest revenue returns will come from sawlog harvests but post and pole harvests can greatly improve tree spacing which in turn will increase future growth.

The most important timber resource market (sawlogs) is dominated by about eight major sawmills. On a normal log market a timberland owner can generally be assured of three to five competitive bids for their timber sales. Log prices or stumpage which a landowner receives can vary greatly with the lumber business and seasonal log requirements of the sawmills. Stumpage prices have greatly increased since 1970. with fluctuations that are a direct result of the home building cycle. From our experience in the local log market, we have developed Graph I which plots the average stumpage rate for timber since 1969. The trend in stumpage for the next ten years appears to be as favorable as from 1969 to 1979. This trend looks positive for two major reasons, a high demand for homes in the 1980's and a general timber shortage for all local sawmills.

Naturally, the Odd Fellows timber stand is located in the center of this log market and contains many positive attributes: (1) good second growth timber, (2) economic logging conditions, and (3) outstanding access to Highway 108, along with a good timber sale policy, these attributes can be very rewarding in the log market.

On developing a timber sale policy, it is important to consider the following factors: (1) allowable cut, (2) cutting cycle, (3) revenue needs of the timber owner, and (4) log market. To maintain a productive timber stand, the allowable cut should be followed and try to avoid liquidation harvests. Try to meet the harvest schedules of the cutting cycles, in this case, harvesting property in the next twelve years with light timber harvests. Still working within the cutting cycle, some timber sales can be placed at peak times of the log market. The most important factor is to meet the revenue needs of the timberland owner.

After reviewing the above factors, we suggest a timber sale policy which would provide annual timber sales or possibly grouping three years harvest into one timber sale. This size timber sale (180,000 to 540,000 Bd. Ft.) would provide some peak timing in log market, generate regular income, and hopefully help accustom residents to regular timber harvests. In contrast, one large timber harvest, the total cutting cycle of 2,160,000 Bd. Ft., could generate a larger timber sale income but would be limiting as to timing of future timber harvests, lengthen income intervals, and possibly create greater pressure on recreational values.

MANAGEMENT SUGGESTIONS: After a complete review of the timber resource conditions of Odd Fellows Park, we have several management suggestions.

- (1) Naturally we would hope the membership of Odd Fellows Park would follow our outlined timber management plan which is based on sound forestry principles.
- (2) With the growing population in Tuolumne County and seasonal visitors, controlled public use of private timberlands is very important. In the future it may be advantageous to post metal signs at access roads indicating to the public the ownership and restrictions.
- (3) To better aid in maintenance and prevention of soil erosion on dirt roads, some should be closed, some need additional culvert drains or water bars, and use during wet season should be controlled.

(4) Fire protection is critical to prevent a wildfire from destroying the timber stand as well as the recreational complex. If a fire plan has not been developed, it may be advantageous to develop one, addressing subjects such as structure fires, water availability, controlled use in timber stand during critical fire periods, and possible fuel break around property boundary.

(5) In developing future timber harvests, a 100 foot set back from lots, main roads, and streams were programed into our annual allowable cut of 180,000 Bd. Ft. The set backs in management Area I amount to the following:

<u>Type</u>	<u>Acreage</u>	<u>(Bd. Ft.) Estimated Volume</u>
Lots	26	520,000
Roads	20	400,000
Stream	<u>14</u>	<u>280,000</u>
	60	1,200,000

If timber harvests are completely excluded from these set back areas 1,200,000 Bd. Ft. of timber would be excluded from timber management activities but proposed annual allowable cut (180,000 Bd. Ft.) can be maintained. We suggest set backs should not be totally excluded from timber management activities but should be harvested under a light selection harvest removing defective, high risk, or hazard trees. Restricted logging practices (end lining, directional falling, and complete slash clean-up) could be implemented to preserve the recreational character of these areas. This type of harvest could greatly increase logging costs but could make available an additional 20,000 Bd. Ft. of annual allowable cut or an additional 240,000 Bd. Ft. in the next twelve years.

(6) In Area II we have projected no timber management activities but the timber stand should be closely observed and when feasible removing any bug killed trees or hazard trees. Complete slash clean-up should be associated with this harvest.

(7) Timber harvest impacts can be lessened by the following logging practices: clean-up of slash near landings and roads, lop and scatter all tops, skid all cull logs to landings for firewood disposal, lop all push overs, crush slash after skidding, and 100% clean-up slash where advisable. All these operations increase logging costs and in turn reduce stumpage prices to the timberland owner.

(8) Previous timber harvest in 1971 was a successful diameter cut but the system has limitations. In an uneven aged stand the system limits the selection of trees; removing most larger trees, some which may be necessary for seed source or contain considerable esthetic values, and limiting the cut of smaller trees which need to be thinned for future growth altogether limit the future use and growth of the timber stand.

(9) Since the use of firewood has greatly increased an economical firewood business, utilizing cull trees, thinnings and logging slash may be feasible.

(10) After reviewing the new California Forest Improvement Program funded by the State, Odd Fellows Park should be eligible. Particularly for limited reforestation, extensive pre-commercial thinning, reducing bank erosion in the meadow, and removing logs and debris from Sugar Pine Creek. This program does carry some requirements for restricted development compatible with forest management.

(11) In our field work we noticed some exterior property corners have not been established. It would be a good policy to get these corners established by a licensed surveyor. In addition, all corners should be protected and property lines regularly maintained to protect against future trespassing or confusion with neighbors.

(12) Also in our field work, we noticed new road right-a-way survey stakes by the Forest Service upon your property for the Mi Wuk Timber Sale. The road standard and location should be closely reviewed in that considerable timber areas are going to be converted to a new road system.

(13) Finally, the suggested allowable cut of 180,000 Bd. Ft. is a projected harvest which we feel will be compatible with current recreational uses. This level can be adjusted downward to preserve greater numbers of larger, older trees or increase set aside areas. We as a forestry consulting firm can advise you of your forestry alternatives but only the Odd Fellows Association Membership will determine what timber harvests will take place if any in the future.

APPENDIX

TABLE 1. Timber Cruise Summary.....11
TABLE 2. Predicted 10 Year Volume Production.....12
GRAPH 1. Average Stumpage Rates Since 1969.....13
TABLE 3. Cutting Budget.....14

TABLE 1. Timber Cruise Summary for Odd Fellows Park, Tuolumne County, T.3N., R.17E., N.D.E.

Species	AREA I		AREA II		(Bug Trees) AREA I		TOTAL	
	(#) Trees	(Bd. Ft.) Net Volume	(#) Trees	(Bd. Ft.) Net Volume	(#) Trees	(Bd. Ft.) Net Volume	(#) Trees	(Bd. Ft.) Net Volume
Ponderosa Pine	12,008	4,030,960	668	268,200	176	39,990	12,852	4,339,150
Sugar Pine	3,232	1,155,280	27	3,940	21	7,840	3,280	1,167,060
Douglas-Fir	1,064	220,880	21	4,660	-	-	1,085	225,540
White Fir	5,488	1,598,960	78	26,970	14	4,820	5,580	1,650,750
Incense Cedar	10,456	1,314,160	727	86,780	-	-	11,183	1,400,940
	<u>32,248</u>	<u>8,320,240</u>	<u>1,521</u>	<u>390,550</u>	<u>211</u>	<u>52,650</u>	<u>33,980</u>	<u>8,763,440</u>

- (1) (#) Number of trees.
- (2) (Bd.Ft.) Volumes reported in Borad Feet, Net Scribner Decimal "C" Log Rule, for all trees 12 inches in diameter and larger.
- (3) Volumes developed from U.S. Forest Service Region 5 Volume Tables.
- (4) Merchantable logs were at least 10 feet long, 8 inches in diameter small end, and 33% sound.
- (5) All cruised trees were measured to an 8 inch top and contained at least 33% of the original volume.
- (6) Area I had a cruise intensity of 12%, Area II and Bug Trees had a cruise intensity of 100%.
- (7) No statistical analysis was required by owner to determine confidence levels.
- (8) Field work was completed on the second half of April 1980.

TABLE 2. Predicted 10-Year Volume Production of Area I in Odd Fellows Park, Tuolumne County, Using Stand Table Projection Method.

Diameter Class (Inches)	Present Stand Table, (# of Stems)	Future Stand Table, (# of Stems)	Volume Per Tree (Bd. Ft.)	Present Stock Table, (Bd. Ft.)	Future Stock Table, (Bd. Ft.)	Volume Production (Bd. Ft.)
10	5,361	2,359	-	-	-	-
12	5,446	5,017	37	201,502	185,629	(15,873)
14	4,651	4,733	70	325,570	331,310	5,740
16	4,039	4,116	113	456,407	465,108	8,701
18	3,470	3,272	188	652,360	615,136	(37,224)
20	2,758	3,366	277	763,966	932,382	168,416
22	2,398	2,421	408	978,384	987,768	9,384
24	1,829	2,263	528	965,712	1,194,864	229,152
26+	3,060	5,465	946	2,894,760	5,169,890	2,275,130
	<u>33,012</u>	<u>33,012</u>		<u>7,238,661</u>	<u>9,882,087</u>	<u>2,643,426</u>

ANNUAL GROWTH

2,643,426 Bd. Ft. ÷ 10 years = 264,343 Bd. Ft./year
 ,264,343 Bd. Ft./year ÷ 400 acres = 660 Bd. Ft./acre/year
 264,343 Bd. Ft./year ÷ 8,320,240 Bd. Ft. = 3%/year

Graph 1. Average second growth stumpage rates from 1969 to 1979 and projected for 1980.

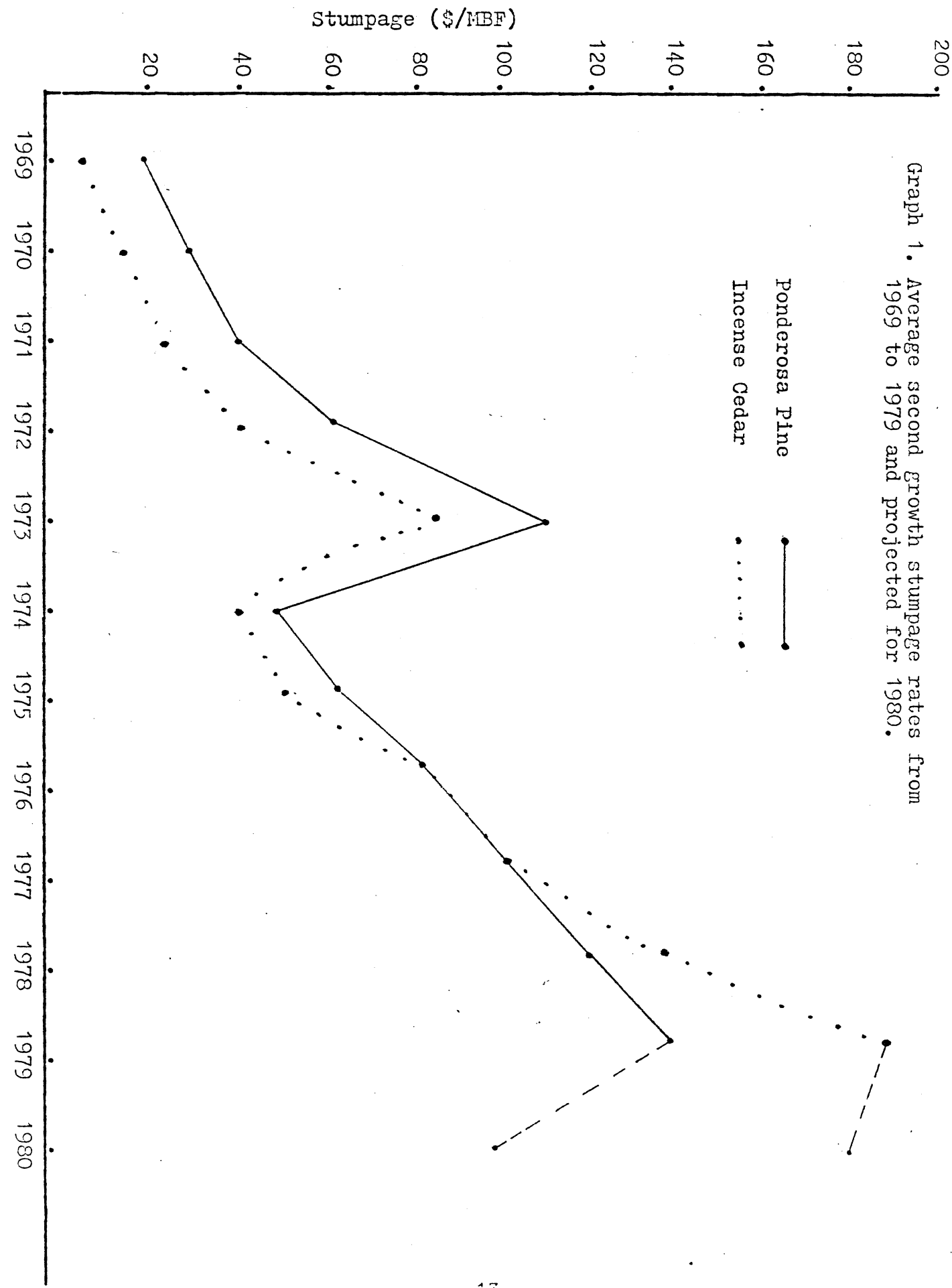


TABLE 3. Cutting Budget for Odd Fellows Park.

Compartment	Acreage	(Bd. Ft./Acre) Harvest	(Bd. Ft.) Total Harvest	Composition		
				Pine	Fir	Cedar
1980						
1	31	7,419	230,000	172,000	12,000	46,000
2	30	7,333	220,000	44,000	44,000	132,000
3	49	3,265	160,000	120,000	8,000	32,000
1981						
4	30	7,333	220,000	154,000	-	66,000
5	35	5,714	200,000	20,000	60,000	120,000
6	34	4,112	150,000	75,000	30,000	45,000
7	39	3,846	150,000	130,000	10,000	10,000
8	32	5,938	190,000	90,000	50,000	50,000
9	30	4,667	140,000	98,000	14,000	28,000
10	31	5,806	180,000	54,000	72,000	54,000
11	30	5,667	170,000	102,000	34,000	34,000
12	29	5,172	150,000	105,000	8,000	37,000
	400	5,400	2,160,000	1,164,000	342,000	654,000