DAVID E. BEALE
CONSULTING FORESTER
P.O. Box 399, Elderton, PA 15736
Office: 412-354-3086
Home: 412-354-4450

PHASE I

TIMBER CRUISE AND APPRAISAL

AND

TIMBER SALE RECOMMENDATIONS

247 ACRE WHITES WOODS TRACT

WHITE TOWNSHIP, INDIANA COUNTY, PA

FOR

WHITE TOWNSHIP SUPERVISORS

AND

INDIANA AREA RECREATION AND PARKS DEPARTMENT

MARCH 8, 1995

DAVID E. BEALE
CONSULTING FORESTER
P.O. Box 399, Elderton, PA 15736
Office: 412-354-3088
Home: 412-354-4450

March 8, 1995

White Township Supervisors and
Indiana County Recreation and Parks Department
39 North Seventh Street
Indiana, PA 15701

Gentlemen:

Presented herein as authorized by agreement dated February 28, 1995, is the report on Phase I of the proposed Whites Woods Timber Sale.

We look forward to your further instruction regarding the initiation of the timber sale as proposed.

Respectfully Submitted,

David E. Beale
Consulting Forester

TABLE OF CONTENTS

Overview and Procedure

A timber cruise was carried out on the entire Whites Woods Tract as authorized by the agreement with the Consulting Forester. The timber cruise was completed using the point sampling method of forest inventory. A total of 119 basal area factor 10 prism points were used to estimate the volume of merchantable sawtimber 12" dbh and over. These sample points were located on a grid pattern with 200' between sample points on lines spaced 400' apart. These "cruise lines" were located approximately perpendicular to the contour of the land. As the cruise progressed, the various timber types were mapped.

From the field data the volumes in board feet were computed by the Scribner Log Rule Form Class 78. The species composition was computed for each forest type. The value estimate is based on the values received on recent timber sales by this firm, and information in the Timber Market Report from Penn State University.

During the Cruise information was gathered on the overall stocking of the forest including non-merchantable timber in the pole and small tree sizes, generally under 12" dbh. This information was used to compare the subject timber to stocking guides used by the U.S. Forest Service for timber sale prescriptions.

The results of the cruise and subsequent calculations are presented in the accompanying tables.

A wildlife specialist temporarily on staff with this firm was asked to develop a wildlife impact statement for the proposed timber sale. His comments are included with this report.

WHITES WOODS

Estimated Volume and Value Summary By Forest Type

	Area	Volume/Acre	Volume	Value
YELLOW POPLAR SAWTIMBER	85.8 Acres	10,104	866,923	$164,277.00
MIXED HARDWOOD SAWTIMBER	103.4	7,624	778,322	193,156.00
MIXED OAK SAWTIMBER	39.5	5,264	207,928	81,683.00
OLD FIELD, AND MIXED OAK POLETIMBER	12.9	4,154	53,587	15,164.00
TOTALS	241.6 Acres		1,916,760	$454,460.00

The calculated standard error of the estimate is ± 7.6% at the 90% level of probability on the total board foot volume estimate

WHITES WOODS

Tract Stand Table

Number of Trees per Acre By Species and Diameter

Sawtimber Size Trees 12"+ dbh

DBH	RED OAK	MIXED OAK	YELLOW POPLAR	RED MAPLE	MISC.	TOTAL
12"	0.82	1.2	0.41	2.1	0.82	5.4
13"	0.35	1.0	3.1	0	0.7	5.2
14"	1.2	1.5	2.7	0.3	0.9	6.6
15"	0.79	1.1	2.4	0.53	0.26	5.1
16"	1.4	0.23	3.2	0.23	0.23	5.3
17"	1.0	0.41	2.7	0.20	0	4.3
18"	0	0.55	1.5	0	0.18	2.4
19"	0.33	0.33	2.1	0.18	0.16	3.1
20"	0	0.15	1.5	0.16	0	1.7
21"	0.40	0.27	0.67	0	0	1.3
22"	0.12	0	0.37	0	0	.5
23"	0.11	0.11	0.22	0	0	0.4
24"	0.31	0.21	0.82	0	0	1.3
25"	0.19	0	0.28	0	0	.5
26"+	0.26	0	1.1	0	0	1.4
TOT	7.3	7.1	23.1	3.7	3.3	44.5 TREES

SPECIES	AVG. DBH
RED OAK	18.5
MIXED OAK	16.6
YELLOW POPLAR	18.7
RED MAPLE	14.5
MISC.	14.5

Description of the Forest Types

Mixed Hardwoods - Sawtimber 103.4 Acres

This forest type is dominated by Yellow Poplar (62%) combined with a number of other species including Mixed Oak-(Red, Black, Scarlet, White, and Chestnut), Black Cherry, and Red Maple. Other species making up less than 5% combined include White Ash, Hickory, Cucumber, Birch, and others.

This type occurs generally on the upper north and east facing slopes. The dominant trees in this type are over 12" dbh.

This type is over stocked and it is recommended to thin these stands, removing approximately 2,850 board feet per acre.

Yellow Poplar - Sawtimber 85.8 Acres

This forest type consists primarily of Yellow Poplar which comprises 87% of the stocking. Red Oak, Black Oak, Scarlet Oak, Red Maple, Black Cherry and Hickory comprise most of the remaining 13%.

The dominant size class is over 12" dbh.

This type occurs in the valleys and coves of the property

This type is presently very much overstocked. It is recommended that 3,ooo board feet per acre be removed in the proposed timber sale.

Mixed Oak - Sawtimber 39.5 Acres

This type is dominated by various oak species which comprise 72% of the stocking in these stands. The oak species include Red, Black, Scarlet, White, and Chestnut Oak. Red Oak is predominant and comprised 39% of the stocking. Most of the dead oak from Gypsy Moth defoliation occurs in this type. About one half of this type is considered to have heavy Gypsy Moth mortality.

The size of the dominant trees in this type is over 12" dbh.

Mixed Oak - Poletimber

This type is dominated by the various oak species. The general size class of this type is about 8" dbh and is thus described as poletimber. About six acres of this type was heavily damaged by the Gypsy Moth.

This type is not recommended to be thinned except to remove the marketable moth killed sawtimber. No estimate of this material is made in this report.

The overall volume and value estimate for this type is combined with the old field type described below.

Old Field

This type has resulted from the reversion of land in agriculture to forest. This abandonment occurred many years ago and a new stand has developed. The present forest has a heavy stocking of young Aspen which is generally a non-merchantable species, but is very important to the ruffed grouse. Other species include Yellow Poplar, Red Maple, and various oak species. The general size is about 8" dbh.

No operations are anticipated for this type.

WHITES WOODS

Mixed Hardwood Forest Type

Timber Volume and Value Estimate By Species

Area = 103.4 Acres

Volume per Acre = 7,624 Board Feet per Acre

SPECIES	COMPOSITION IN % OF VOLUME	ESTIMATED VOLUME SCRIBNER LOG RULE FORMCLASS 78	ESTIMATED VALUE PER THOUSAND BOARD FEET	ESTIMATED TOT VALUE
RED OAK	15%	117,566 Board Feet	$700.00	$ 82,292.00
BLACK OAK	2	17,371	350.00	6,080.00
SCARLET OAK	3	20,473	200.00	4,095.00
WHITE OAK	-	3,102	250.00	775.00
CHESTNUT OAK	1	11,064	200.00	2,213.00
DEAD OAK	3	25,230	75.00	1,892.00
YELLOW POPLAR	62	491,977	150.00	73,796.00
BLACK CHERRY	4	28,849	600.00	17,309.00
RED MAPLE	4	34,225	70.00	2,396.00
MISC.	5	38,645	60.00	2,308.00
TOTALS	99%	788,322 Board Feet		$193,156.00

WHITES WOODS

Yellow Poplar Sawtimber Forest Type

Timber Volume and Value Estimate By Species

Area = 85.8 Acres

Total Volume = 866,923 Board Feet

SPECIES	COMPOSITION IN % OF VOLUME	ESTIMATED VOLUME SCRIBNER LOG RULE FORMCLASS 78	ESTIMATED VALUE PER THOUSAND BOARD FEET	ESTIMATED TOTAL VALUE
YELLOW POPLAR	87%	758,300 Board Feet	$150.00	$113,745.00
RED OAK	7	60,661	700.00	42,463.00
BLACK OAK	< 1	4,805	300.00	1,442.00
SCARLET OAK	1	9,695	200.00	1,939.00
DEAD OAK	< 1	1,373	75.00	103.00
RED MAPLE	< 1	6,521	70.00	456.00
BLACK CHERRY	< 1	4,805	600.00	2,883.00
HICKORY	1	9,695	60.00	582.00
MISC.	1	11,068	60.00	664.00
TOTALS	100%	866,923 Board Feet		$164,277.00

WHITES WOODS

Mixed Oak Sawtimber Forest Type

Timber Volume and Value Estimate By Species

Area = 39.5 Acres

Volume Per Acre = 5,264 Board Feet

Total Volume = 207,928 Board Feet

SPECIES	COMPOSITION IN % OF VOLUME	ESTIMATED VOLUME SCRIBNER LOG RULE FORMCLASS 78	ESTIMATED VALUE PER THOUSAND BOARD FEET	ESTIMATED TOTAL VALUE
RED OAK	39%	81,528 Board Feet	$700.00	$57,070.00
BLACK OAK	11	22,002	350.00	7,701.00
SCARLET OAK	6	13,430	200.00	2,686.00
WHITE OAK	3	6,281	250.00	1,570.00
CHESTNUT OAK	5	10,349	200.00	2,070.00
DEAD OAK	8	16,590	75.00	1,244.00
YELLOW POPLAR	20	41,791	150.00	6,269.00
BLACK CHERRY	2	4,148	600.00	2,489.00
RED MAPLE	3	5,451	70.00	382.00
MISC.	3	6,360	60.00	382.00
TOTALS	100%	207,930 Board Feet		$81,863.00

WHITES WOODS

Old Field and Oak Poletimber (combined)

Timber Volume and Value Estimate By Species

Estimated Volume per Acre = 4,154 Board Feet

Area = 12.9 Acres

Total Estimated Volume = 53,587 Board Feet

SPECIES	COMPOSITION IN % OF VOLUME	ESTIMATED VOLUME SCRIBNER LOG RULE FORMCLASS 78	ESTIMATED VALUE PER THOUSAND BOARD FEET	ESTIMATED TOTAL VALUE
RED OAK	23%	12,500 Board Feet	$700.00	$ 8,750.00
BLACK OAK	13	7,134	350.00	2,497.00
SCARLET OAK	8	4,424	200.00	885.00
WHITE OAK	3	1,703	250.00	426.00
CHESTNUT OAK	6	3,406	200.00	681.00
DEAD OAK	5	2,838	75.00	213.00
YELLOW POPLAR	37	19,853	150.00	1,608.00
MISC.	3	1,729	60.00	104.00
TOTALS	98%	53,587 Board Feet		$15,164.00

WHITES WOODS

Mixed Hardwood Forest Type

Proposed Timber Sale Prescription

Existing Stand:		Basal Area Per Acre	
Sawtimber: 12+	Acceptable Growing Stock	74	Square Feet
	Unacceptable Growing Stock	9	
	Mature Growing Stock	8	
	Cull Trees	3	
Poletimber: 4-12	Acceptable Growing Stock	19	
	Unacceptable Growing Stock	9	
Small Trees: 2-4"		10	
	Total Stocking =	132	Square Feet Basal Area per Acre
Number of Trees per Acre =		308	Trees
Stocking Level =		110%	
Estimated Required for 70% Stocking =		93	Square Feet Basal Area per Acre

Marking Prescription:	Basal Area per Acre	
Remove Mature Sawtimber Growing Stock	8	Square Feet
Remove Acceptable Sawtimber Growing Stock	15	
Remove Unacceptable Sawtimber Growing Stock	9	
Remove Poletimber and Small Trees	9	
	39	Square Feet Basal Area per Acre
Total Trees To Be Cut =	44	Trees per Acre
Volume per Acre To Be Cut =	2,850	Board Feet per Acre
Total Volume To Be Cut For The Mixed Hardwood Forest Type =	294,700	Board Feet
Total Estimated Value of Timber To Be Sold from the Mixed Hardwood Forest Type	$72,202	

WHITES WOODS

Yellow Poplar Sawtimber Forest Type

Proposed Timber Sale Prescription

Existing Stand:		Basal Area Per Acre	
Sawtimber:	Acceptable Growing Stock	82	Square Feet
	Unacceptable Growing Stock	5	
	Mature Growing Stock	5	
	Cull Trees	3	
Poletimber:	Acceptable Growing Stock	15	
	Unacceptable Growing Stock	3	
Small Trees: (saplings)	Acceptable Growing Stock	6	
	Unacceptable Growing Stock	11	
	Total Stocking =	130	Square Feet Basal Area per Acre
Number of Trees per Acre =		280	Trees
Stocking Level =		110%*	
Estimated Required for 70% Stocking =		93	Square Feet Basal Area per Acre
To Be Cut =		37	Square Feet Basal Area per Acre

Cutting Prescription:

	Basal Area per Acre	
Remove All Mature Sawtimber	5	Square Feet
Remove Acceptable Sawtimber Growing Stock	20	
Remove Unacceptable Sawtimber Growing Stock	5	
Remove Poletimber and Small Trees	7	
	37	Square Feet Basal Area per Acre
Total Trees To Be Cut =	37	Trees per Acre
Volume per Acre To Be Cut =	3,000	Board Feet per Acre
Value per Acre To Be Cut	$ 570	per Acre
Total Estimated Volume To Be Cut From The Yellow Poplar Forest Type =	257,400	Board Feet
Total Estimated Value of Timber To Be Sold from the Yellow Poplar Forest Type	$48,900	

WHITES WOODS

Mixed Oak Forest Type

Proposed Timber Sale Prescription

Existing Stand:		Basal Area Per Acre	
Sawtimber:	Acceptable Growing Stock	40	Square Feet
	Unacceptable Growing Stock	10	
	Mature Growing Stock	10	
	Cull Trees	2	
Pulpwood:	Acceptable Growing Stock	25	
	Unacceptable Growing Stock	7	
Small Trees:		22	
	Total Stocking =	116	Square Feet Basal Area per Acre
Total Trees per Acre =		307	Trees
Stocking Level =		108%	
Removal Required for 70% Stoking =		76	Square Feet Basal Area per Acre

Marking Prescription:

	Basal Area per Acre	
Remove Mature Sawtimber Growing Stock	10	Square Feet
Remove Acceptable Sawtimber Growing Stock	10	
Remove Unacceptable Sawtimber Growing Stock	10	
Cull Trees	1	
Remove Poletimber and Small Trees	4	
Total Take Out	35	Square Feet Basal Area per Acre
Total Trees To Be Cut =	33	Trees per Acre
Volume per Acre To Be Cut =	2,500	Board Feet per Acre
Total Volume To Be Cut For The Mixed Oak Forest Type =	98,750	Board Feet
Total Estimated Value of Timber To Be Sold from the Mixed Oak Forest Type	$38,000	

Total Estimated Yield From Projected Timber Sale

Total Estimated Volume To Be Cut From The Tract	650,850	Board Feet
Total Estimated Value From the Proposed Timber Sale	$159,102	

Implications for Wildlife
Overview

Timber management practices which alter the existing vegetation, may have associated effects on wildlife species. However, the proposed thinning will have only minor changes on the forest structure and the wildlife that inhabits the area, some of which will be beneficial. It is the opinion of this author that no wildlife that inhabits the area will be negatively affected overall. However, wildlife responses to the prescribed thinning will depend on the species (Table 1).

Whitetail deer

These animals are abundant throughout the area. Deer require hard mast (oak nuts) for food, especially during the winter months. Beech trees are a relatively minor component of the tree species, but provide an important mast on the area. Timber cutting will remove some other mast trees, but enough will be left to provide a food source for these animals. It should noted that deer typically have a home range of 1 square mile, which would include lands adjacent to as well as the nature center property; thus they are not dependant on the nature center tract for all their needs.

Gray squirrels

Tree squirrels, including gray squirrels are abundant on the nature center. Den or wolf trees should be left standing to provide shelter. Gray squirrels, flying squirrels, and raccoons all utilize den trees throughout the year. Squirrels also require

hard mast, including hickory and beech nuts during the fall and winter. Their needs are very similar to that of deer in this respect, and the prescribed thinning would probably have little effect on overall populations of both animals.

Ruffed grouse

Grouse are generally sparse in a forest of this age, with little cover near the ground to offer protection. Thinning the tract will provide better habitat for them. If possible, aspen trees should be left intact as their catkins provide critical food during the spring months.

Songbirds

It is estimated that 25-35 breeding species inhabit this stand during the summer months. The light thinning as prescribed, will not cause any species to disappear. It should be noted however, we do not have information regarding rare species possibly found on the nature center. Some of these species may require large tracts of mature forest. Species associated with early successional habitats, such as shrubby areas with little overstory, may increase as a result of the thinning, especially where gypsy moth mortality is high. The thinning will improve vertical structure resulting in potential nesting substrates for more species of songbirds. However, most species will maintain similar populations before and after cutting, as the thinning will not significantly alter the overall forest structure.

The mixed oak stands have heavy advance regeneration taking

place as the result of gypsy moth mortality. Removal of some of these dead trees is warranted as they are a liability regarding the safety of visitors from windfall, blowdowns, etc. Leaving 2-3 dead trees per acre in some areas will provide habitat for many bark foraging songbirds such as woodpeckers and nuthatches which feed on insects associated with dying timber. Trees selected to be left standing should be at least 100' away from established trails to minimize chances of injury to visitors, in the event of windfall.

Skid trails and landing sights

Skid trails and landing sights will increase the amount of edge habitat on the area. These areas will be seeded with vegetation. This is beneficial for two reasons: 1) it can provide plants that wildlife eat for food and 2) they provide stability to minimize erosion caused by disturbing the topsoil, during the skidding process.

Overall, wildlife species will show little or no response to the prescribed timber removal. A 20-30% thinning of this area is compatible with any goals of maintaining populations for wildlife viewing and enjoyment by visitors.

Jeff Nichols

Jeff Nichols

M.S. Wildlife Management

Table 1. List of wildlife species potentially present and their response to prescribed thinning on White's Woods Nature Center, Indiana, PA.

Species	Response
Mammals	
Cottontail Rabbit	none overall - slash left on the ground and piled would provide important cover
Raccoon	none overall
Opossum	none
Striped Skunk	none
Red Fox	none
Gray Squirrel	little effect
Whitetail Deer	little effect - increase in shrubby vegetation may provide additional browse food and cover
Birds	
Wild Turkey	little effect if some mast trees are left intact - similar requirements as deer and squirrel for hard mast
Ruffed Grouse	opening up the forest would improve habitat
Songbirds (25-35 spp.)	generally species-specific response little change overall
* woodpeckers	leaving 2-3 dead oak would provide foraging habitat
* shrub species[a]	provides nesting and foraging cover
* mature forest[b]	little effect overall

[a] shrub species include birds typically associated with early successional habitats (e.g. brushy fields, heavy understory development).

[b] mature forest species include birds that require mature forest for nesting season.