

APPENDIX F

SILVAH - MANAGEMENT UNIT #2 PRINTOUT

Silvah-7 SILVICULTURE OF ALLEGHENY HARDWOODS AND OAK

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SIL file: C:\Users\Barry Rose\Documents\2016 Gov Dick\2-SILVAH7-Gov Dick Files\Mgmt Unit #2 - North Slope - Mixed Oak.sil7 (version: 7.0.6)

DEF file: C:\Users\Barry Rose\Documents\2016 Gov Dick\2-SILVAH7-Gov Dick Files\2016 Gov Dick CAP 106.def7 (version: 7.0.2)

SCR file: current SCR file (modified) (version: 7.0.5)

Report date: Jan 26, 2017

Owner/Agency: Gov Dick

County/District: Lebanon

Compartment/Unit: AH21

Stand name: Mgmt Unit #2

Area: 225.0

Effective age: 114.7

Site index: 67 for BO

Forest type: mixed oak

Allegheny NF Forest type: Mixed oaks

Size class: large sawtimber

Relative density: 106.7

Remarks: North Slope - Mixed Oak Plots #10-15, #19-25, #28, #30-36, #50, b, c, d, e

Trees to include: live only

Contents:

2016: Original Stand Conditions

-Cruise Information (Type, Sampling Error, etc.)

-Narrative Summary and Analysis

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-Overstory Species x Diameter Table: Relative density (live trees only)

-Overstory Species x Diameter Table: Number of trees (live trees only)

Initial treatment: SILVAH recommended prescription: Fence, Site Prep. Burn or Herbicide, Monitor Acorns,

Re-inventory

-Treatment Description with Marking Instructions

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Overstory Cruise Information

Overstory data is from a prism cruise, using a 20 factor prism, and with trees tallied by 1 inch dbh classes, Overstory data is based on 26 plots. Only live trees are included in calculations.

Mean basal area is 130.4 plus or minus 14.8 square feet per acre at 90% confidence (11.4% of mean).

- No additional plots needed to reach 15% of mean basal area.
- 7 additional plots needed to reach 10% of mean basal area.

Mean net bdfv volume is 10107.1 plus or minus 1471.9 bdfv per acre at 90% confidence (14.6% of mean) using the International 1/4 inch log rule.

- No additional plots needed to reach 15% of mean net bdfv volume.
- 29 additional plots needed to reach 10% of mean net bdfv volume.

Mean net pulpwood is 17.2 plus or minus 2.3 cords per acre at 90% confidence (13.3% of mean).

- No additional plots needed to reach 15% of mean net pulpwood.
- 20 additional plots needed to reach 10% of mean net pulpwood.

Understory Cruise Information

Data on competitive regeneration, site limitations and understory is from an extended regeneration cruise using 6-ft radius plots. Understory data is based on 30 plots.

Warning: regeneration data is not based on an adequate number of plots. To give reliable results, at least 76 additional plots are needed for this stand.

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Narrative Summary and Analysis (2016 inventory data)

Nonnative invasive species have the potential to displace native vegetation, including desirable timber species. There were no invasives in the overstory, three invasives in the overstory (Japanese stiltgrass, Japanese barberry and multiflora rose), and nine that were found outside the plots (Japanese stiltgrass, Japanese barberry, multiflora rose, ailanthus, garlic mustard, unspecified non-native shrub, Norway maple, Tatarian honeysuckle and elaeagnus)

This mixed oak stand is dominated by Chestnut Oak, Black Oak, Black Birch, Red Oak, Yellow-poplar and Red Maple which together comprise 88 percent of the basal area.

This is a large sawtimber stand, with average medial diameter of 16.6 inches.

If this stand is managed under an even-age silvicultural system, the several species groups will mature at markedly different times. The average time to maturity (MDM = 18 inches) is 0 years. The manager wishes to regenerate the stand now. Effective stand age is about 115 years.

If this stand is managed under an all-age silvicultural system, the distribution of diameters, proportion of sawtimber, and density of shade-tolerant species would make it difficult to apply selection cutting.

Relative stand density is 107 percent of the average maximum stocking expected in undisturbed stands of similar size and species composition. This density is well above the optimum for best individual tree growth. At this relative density, growth rate of the biggest trees is probably moderate, while growth rate of the medium and smaller-sized trees is probably poor and mortality due to crowding high.

Total growing stock amounts to 130 sq. ft. of basal area per acre. Net total volume in all trees, to a 4-inch top, is 31.1 cords per acre; if divided into pulpwood and sawtimber, the net merchantable volume is 17.2 cords of pulp wood and 10107.1 board feet of sawtimber (International 1/4 inch log rule). The total stand value is estimated to be about 3322 dollars per acre.

Trees of acceptable quality for future growing stock provide a fully stocked stand by themselves. Non-commercial saplings and poles represent 17 sq. ft. of basal area and may need to be treated prior to final harvest cutting.

Competitive regeneration of all types is insufficient; harvest cuttings at this time will not likely result in a satisfactory new stand.

Undesirable understory plants may interfere with development of regeneration. Undesirable plants in this stand include dense low woody cover, dense tall woody cover and dense fern cover.

Overstory Summary- Quality, Diameters, Age, Structure, Density, Volumes, Values: (2016 inventory data)

Composition - BA, percent BA, trees per acre

	all species	CO	BO	BB	NRO	TP	RM	BG	SAS	AB	SO	WO	HIC
Total BA	130.4	38.8	28.5	24.6	13.1	5.4	4.6	3.8	3.8	3.1	2.3	1.5	0.8
Percent BA	100	30	22	19	10	4	4	3	3	2	2	1	1
Trees per acre	348	26.8	13.6	146.1	5.9	1.1	27.7	68.3	49.7	5.3	1.0	1.6	0.6

Quality - percent in AGS

	all species	CO	BO	BB	NRO	TP	RM	BG	SAS	AB	SO	WO	HIC
Saplings	44	80	89	66	100	100	33	60	60	75	100	0	100
Poles	29	80	89	66	100	100	33	60	60	75	100	0	100
Small sawtimber	74	80	89	66	100	100	33	60	60	75	100	0	100
Medium sawtimber	97	80	89	66	100	100	33	60	60	75	100	0	100
Large sawtimber	100	80	89	66	100	100	33	60	60	75	100	0	100
All sizes	79	80	89	66	100	100	33	60	60	75	100	0	100

Diameters and Ages - inches, years

	all species	CO	BO	BB	NRO	TP	RM	BG	SAS	AB	SO	WO	HIC
Medial diameter		16.6	17.1	20.6	11.4	21.2	29.9	7.8	4.2	5.6	15.5	20.7	13.5
Merchantable medial diameter		18.2	17.1	20.6	13.7	21.2	29.9	11.3	7.0	14.0	15.5	20.7	13.5
Quadratic mean diameter		8.3	16.3	19.6	5.6	20.1	29.6	5.5	3.2	3.8	10.3	20.6	13.3
Years to maturity		0	6	0	29	0	0	33	73	27	17	0	30
Effective age		115	114	137	91	106	149	57	47	93	103	138	90

Structure

	all species	CO	BO	BB	NRO	TP	RM	BG	SAS	AB	SO	WO	HIC
Q factor	1.13	1.19	1.10	1.12	1.13	1.06	1.18	0.00	0.00	1.17	1.56	1.16	0.00

Relative density - percent

	all species	CO	BO	BB	NRO	TP	RM	BG	SAS	AB	SO	WO	HIC
Rel. Density	107	36	26	18	6	1	4	4	4	3	2	1	0
AGS only	80	29	23	10	6	1	1	2	2	2	2	0	0

Volumes and Values (per acre) - International 1/4 inch Log Rule

	all species	CO	BO	BB	NRO	TP	RM	BG	SAS	AB	SO	WO	HIC
Gross Total Cords	38.9	13.3	10.1	5.4	4.7	2.0	0.7	0.2	0.3	0.8	0.8	0.5	0.2
Net Total Cords	31.1	10.6	8.1	4.3	3.7	1.6	0.5	0.1	0.2	0.7	0.7	0.4	0.2
Net Pulpwood Cords	17.2	5.9	3.8	3.5	1.7	0.5	0.4	0.1	0.2	0.5	0.3	0.3	0.1
Gross Board-foot	11422.9	3830.1	3381.8	888.6	1578.4	1029.6	79.2	0.0	0.0	211.6	279.0	69.6	75.0
Net Board-foot	10107.1	3395.6	3176.6	478.0	1486.1	997.9	61.1	0.0	0.0	124.0	262.7	59.7	65.3
Dollars	3321.6	703.5	1171.3	99.9	736.8	484.2	12.9	0.3	0.0	16.8	67.2	17.0	11.7

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Overstory Species x Diameter Table: Basal area (live trees only) (2016 inventory data)

Basal area (live trees only)

	all species	CO	BO	BB	NRO	TP	RM	BG	SAS	AB	SO	WO	HIC
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	2.3	0.0	0.0	1.5	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0
3	3.1	0.0	0.0	0.8	0.0	0.0	0.0	0.8	1.5	0.0	0.0	0.0	0.0
4	6.2	0.0	0.0	2.3	0.0	0.0	1.5	0.8	1.5	0.0	0.0	0.0	0.0
5	2.3	0.0	0.0	0.8	0.0	0.0	0.8	0.8	0.0	0.0	0.0	0.0	0.0
6	2.3	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0
7	1.5	0.0	0.0	0.8	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0
8	0.8	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0
9	1.5	0.0	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0
10	0.8	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	3.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	4.6	3.1	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0
13	2.3	1.5	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	5.4	3.1	0.8	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.0	0.0	0.0
15	9.2	4.6	2.3	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0
16	10.8	6.2	0.8	1.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
17	8.5	0.8	2.3	3.1	1.5	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0
18	16.5	8.8	3.8	2.3	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	4.6	1.5	1.5	0.0	0.8	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0
20	12.3	4.6	3.1	1.5	1.5	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0
21	3.8	1.5	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	3.8	0.8	1.5	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0
23	8.5	2.3	3.1	0.0	2.3	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0
24	3.8	0.0	3.1	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	1.5	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	3.1	0.0	0.8	0.0	1.5	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	2.3	0.0	1.5	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	2.3	0.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	1.5	0.0	0.0	0.0	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	0.8	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SAPS	13.8	0.0	0.0	5.4	0.0	0.0	2.3	3.1	3.1	0.0	0.0	0.0	0.0
POLE	10.8	0.0	0.0	7.7	0.0	0.0	1.5	0.8	0.0	0.8	0.0	0.0	0.0
SM SAW	40.8	19.2	6.2	7.7	3.1	0.0	0.8	0.0	0.8	0.8	0.0	1.5	0.8
MD SAW	49.6	19.6	15.4	3.8	6.9	0.0	0.0	0.0	0.0	1.5	2.3	0.0	0.0
LG SAW	15.4	0.0	6.9	0.0	3.1	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	130.4	38.8	28.5	24.6	13.1	5.4	4.6	3.8	3.8	3.1	2.3	1.5	0.8
Percent		29.8	21.8	18.9	10.0	4.1	3.5	2.9	2.9	2.4	1.8	1.2	0.6

Basal area (live trees only) acceptable growing stock only

	all species	CO	BO	BB	NRO	TP	RM	BG	SAS	AB	SO	WO	HIC
SAPS	6.2	0.0	0.0	2.3	0.0	0.0	0.8	1.5	1.5	0.0	0.0	0.0	0.0
POLE	3.1	0.0	0.0	2.3	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0
SM SAW	30.0	13.1	3.1	7.7	3.1	0.0	0.8	0.0	0.8	0.8	0.0	0.0	0.8
MD SAW	48.1	18.1	15.4	3.8	6.9	0.0	0.0	0.0	0.0	1.5	2.3	0.0	0.0
LG SAW	15.4	0.0	6.9	0.0	3.1	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	102.7	31.2	25.4	16.2	13.1	5.4	1.5	2.3	2.3	2.3	2.3	0.0	0.8

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Overstory Species x Diameter Table: Relative density (live trees only) (2016 inventory data)

Relative density (live trees only)

	all species	CO	BO	BB	NRO	TP	RM	BG	SAS	AB	SO	WO	HIC
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	2.9	0.0	0.0	1.9	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
3	3.7	0.0	0.0	0.9	0.0	0.0	0.0	0.9	1.9	0.0	0.0	0.0	0.0
4	6.6	0.0	0.0	2.5	0.0	0.0	1.7	0.8	1.7	0.0	0.0	0.0	0.0
5	2.2	0.0	0.0	0.7	0.0	0.0	0.7	0.7	0.0	0.0	0.0	0.0	0.0
6	2.2	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0
7	1.3	0.0	0.0	0.6	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
8	0.6	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0
9	1.1	0.0	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
10	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	2.5	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	4.1	2.9	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0
13	1.9	1.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	4.8	2.9	0.7	0.0	0.0	0.0	0.0	0.0	0.4	0.7	0.0	0.0	0.0
15	8.1	4.3	2.2	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0
16	8.5	5.7	0.7	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
17	5.7	0.7	2.1	1.6	0.8	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0
18	13.7	8.2	3.6	1.2	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	3.9	1.4	1.4	0.0	0.4	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0
20	10.0	4.2	2.8	0.8	0.8	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0
21	3.5	1.4	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

22	3.2	0.7	1.4	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0
23	6.7	2.1	2.8	0.0	1.1	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0
24	3.2	0.0	2.8	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	1.4	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	1.6	0.0	0.7	0.0	0.7	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	1.6	0.0	1.4	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	0.6	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	0.5	0.0	0.0	0.0	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SAPS	15.5	0.0	0.0	6.1	0.0	0.0	2.4	3.5	3.5	0.0	0.0	0.0	0.0
POLE	8.1	0.0	0.0	5.5	0.0	0.0	1.1	0.6	0.0	0.8	0.0	0.0	0.0
SM SAW	33.1	18.1	5.7	4.2	1.6	0.0	0.4	0.0	0.4	0.7	0.0	1.5	0.4
MD SAW	41.0	18.1	14.1	1.9	3.4	0.0	0.0	0.0	0.0	1.4	2.1	0.0	0.0
LG SAW	9.0	0.0	6.3	0.0	1.3	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	106.7	36.1	26.2	17.8	6.3	1.4	3.9	4.1	4.0	2.9	2.1	1.5	0.4
Percent		33.9	24.5	16.7	5.9	1.3	3.7	3.8	3.7	2.7	2.0	1.4	0.4

Relative density (live trees only) acceptable growing stock only

	all species	CO	BO	BB	NRO	TP	RM	BG	SAS	AB	SO	WO	HIC
SAPS	6.8	0.0	0.0	2.7	0.0	0.0	0.8	1.6	1.7	0.0	0.0	0.0	0.0
POLE	2.1	0.0	0.0	1.5	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
SM SAW	23.0	12.3	2.9	4.2	1.6	0.0	0.4	0.0	0.4	0.7	0.0	0.0	0.4
MD SAW	39.6	16.7	14.1	1.9	3.4	0.0	0.0	0.0	0.0	1.4	2.1	0.0	0.0
LG SAW	9.0	0.0	6.3	0.0	1.3	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	80.5	28.9	23.3	10.4	6.3	1.4	1.2	2.2	2.1	2.1	2.1	0.0	0.4

Overstory Species x Diameter Table: Number of trees (live trees only) (2016 inventory data)

Number of trees (live trees only)

	all species	CO	BO	BB	NRO	TP	RM	BG	SAS	AB	SO	WO	HIC
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	105.8	0.0	0.0	70.5	0.0	0.0	0.0	35.3	0.0	0.0	0.0	0.0	0.0
3	62.7	0.0	0.0	15.7	0.0	0.0	0.0	15.7	31.3	0.0	0.0	0.0	0.0
4	70.5	0.0	0.0	26.4	0.0	0.0	17.6	8.8	17.6	0.0	0.0	0.0	0.0
5	16.9	0.0	0.0	5.6	0.0	0.0	5.6	5.6	0.0	0.0	0.0	0.0	0.0
6	11.8	0.0	0.0	7.8	0.0	0.0	0.0	0.0	0.0	3.9	0.0	0.0	0.0
7	5.8	0.0	0.0	2.9	0.0	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0
8	2.2	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0
9	3.5	0.0	0.0	1.7	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0
10	1.4	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	5.8	0.0	0.0	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	5.9	3.9	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
13	2.5	1.7	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	5.0	2.9	0.7	0.0	0.0	0.0	0.0	0.0	0.7	0.7	0.0	0.0	0.0
15	7.5	3.8	1.9	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0
16	7.7	4.4	0.6	1.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
17	5.4	0.5	1.5	2.0	1.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0
18	9.4	5.0	2.2	1.3	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	2.3	0.8	0.8	0.0	0.4	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0
20	5.6	2.1	1.4	0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0
21	1.6	0.6	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	1.5	0.3	0.6	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0
23	2.9	0.8	1.1	0.0	0.8	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
24	1.2	0.0	1.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26	0.8	0.0	0.2	0.0	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28	0.5	0.0	0.4	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	0.5	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	0.3	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
33	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SAPS	255.9	0.0	0.0	118.3	0.0	0.0	23.3	65.4	49.0	0.0	0.0	0.0	0.0
POLE	30.4	0.0	0.0	19.7	0.0	0.0	3.9	2.9	0.0	3.9	0.0	0.0	0.0
SM SAW	34.0	17.1	4.6	6.1	2.1	0.0	0.5	0.0	0.7	0.7	0.0	1.6	0.6
MD SAW	23.3	9.6	7.0	2.0	3.1	0.0	0.0	0.0	0.0	0.7	1.0	0.0	0.0
LG SAW	3.9	0.0	2.0	0.0	0.8	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	347.6	26.8	13.6	146.1	5.9	1.1	27.7	68.3	49.7	5.3	1.0	1.6	0.6
Percent		7.7	3.9	42.0	1.7	0.3	8.0	19.6	14.3	1.5	0.3	0.5	0.2

Number of trees (live trees only) acceptable growing stock only

	all species	CO	BO	BB	NRO	TP	RM	BG	SAS	AB	SO	WO	HIC
SAPS	100.6	0.0	0.0	59.7	0.0	0.0	8.8	14.5	17.6	0.0	0.0	0.0	0.0
POLE	6.4	0.0	0.0	3.5	0.0	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0
SM SAW	24.0	11.0	2.3	6.1	2.1	0.0	0.5	0.0	0.7	0.7	0.0	0.0	0.6
MD SAW	22.5	8.8	7.0	2.0	3.1	0.0	0.0	0.0	0.0	0.7	1.0	0.0	0.0
LG SAW	3.9	0.0	2.0	0.0	0.8	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	157.4	19.8	11.3	71.4	5.9	1.1	9.3	17.3	18.3	1.4	1.0	0.0	0.6

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Treatment Description with Marking Instructions (2016)

SILVAH - MANAGEMENT UNIT #3 PRINTOUT

Silvah-7 SILVICULTURE OF ALLEGHENY HARDWOODS AND OAK

Generated by: SILVAH-7 (version: 7.0.2.30)

SIL file: C:\Users\Barry Rose\Documents\2016 Gov Dick\2-SILVAH7-Gov Dick Files\Mgmt Unit #3 - Black Birch

Saplings no residuals.sil7 (version: 7.0.6)

DEF file: C:\Users\Barry Rose\Documents\2016 Gov Dick\2-SILVAH7-Gov Dick Files\2016 Gov Dick CAP 106.def7
(version: 7.0.2)

SCR file: current SCR file (modified) (version: 7.0.5)

Report date: Jan 26, 2017

Owner/Agency: Gov Dick

County/District: Lebanon

Compartment/Unit: AH21 changed to BB23

Stand name: Mgmt Unit #3

Area: 28.0

Effective age: 50.8

Site index: 67 for BO

Forest type: Allegheny hardwood

Allegheny NF Forest type: unknown type

Size class: small poletimber

Relative density: 76.8

Remarks: Black Birch Saplings/Without residuals included - Plots 16, 17, 26, 27, 29

Trees to include: live only

Contents:

2016: Original Stand Conditions

-Cruise Information (Type, Sampling Error, etc.)

-Narrative Summary and Analysis

-Overstory Summary- Quality, Diameters, Age, Structure, Density, Volumes, Values

Initial treatment: SILVAH recommended prescription: Defer Cutting (low relative density)

-Treatment Description with Marking Instructions

Overstory Cruise Information

Overstory data is from a prism cruise, using a 20 factor prism, and with trees tallied by 1 inch dbh classes, Overstory data is based on 5 plots. Only live trees are included in calculations.

Mean basal area is 96.0 plus or minus 32.0 square feet per acre at 90% confidence (33.3% of mean).

- 20 additional plots needed to reach 15% of mean basal area.
- 51 additional plots needed to reach 10% of mean basal area.

There is no net bdft volume.

Mean net pulpwood is 11.7 plus or minus 6.0 cords per acre at 90% confidence (50.8% of mean).

- 52 additional plots needed to reach 15% of mean net pulpwood.
- 124 additional plots needed to reach 10% of mean net pulpwood.

Understory Cruise Information

Data on competitive regeneration, site limits, and understory was not collected.

Narrative Summary and Analysis (2016 inventory data)

Nonnative invasive species have the potential to displace native vegetation, including desirable timber species. None were recorded in or near this stand during the 2016 inventory data.

This Allegheny hardwood stand is dominated by Black Birch, Black Cherry and Misc Comm. Species which together comprise 88 percent of the basal area.

This is a small poletimber stand, with average medial diameter of 7.2 inches. Sapling trees too small to be merchantable represent a significant proportion of stand stocking and should be included in any thinnings.

If this stand is managed under an even-age silvicultural system, the several species groups will mature at markedly different times. The average time to maturity (MDM = 18 inches) is 53 years. Effective stand age is about 51 years.

If this stand is managed under an all-age silvicultural system, the distribution of diameters, proportion of sawtimber, and density of shade-tolerant species would make it difficult to apply selection cutting.

Relative stand density is 77 percent of the average maximum stocking expected in undisturbed stands of similar size and species composition. This density is in the optimum range for best individual tree growth. At this relative density, growth rate of the biggest trees is probably excellent, while growth rate of the medium and smaller-sized trees is probably good and mortality due to crowding low.

Thinning to provide more growing space for the better stems is not necessary at this time.

Total growing stock amounts to 96 sq. ft. of basal area per acre. Net total volume in all trees, to a 4-inch top, is 11.7 cords per acre; if divided into pulpwood and sawtimber, the net merchantable volume is 11.7 cords of pulp wood and 0.0 board feet of sawtimber (International 1/4 inch log rule). The total stand value is estimated to be about 23 dollars per acre.

Trees of acceptable quality for future growing stock provide a fully stocked stand by themselves. Non-commercial saplings and poles represent 40 sq. ft. of basal area and may need to be treated prior to final harvest cutting.

Data on site, understory, and competitive regeneration was not collected.

Overstory Summary- Quality, Diameters, Age, Structure, Density, Volumes, Values: (2016 inventory data)

Composition - BA, percent BA, trees per acre

	all species	BB	BC	BG	TP	SAS
Total BA	96.0	44.0	28.0	12.0	8.0	4.0
Percent BA	100	46	29	13	8	4
Trees per acre	799	635.1	95.5	17.2	22.3	29.3

Quality - percent in AGS

	all species	BB	BC	BG	TP	SAS
Saplings	71	82	71	100	100	100
Poles	86	82	71	100	100	100
Small sawtimber	100	82	71	100	100	100
Medium sawtimber	0	82	71	100	100	100
Large sawtimber	0	82	71	100	100	100
All sizes	83	82	71	100	100	100

Diameters and Ages - inches, years

	all species	BB	BC	BG	TP	SAS
Medial diameter		7.2	5.7	7.6	11.3	8.5
Merchantable medial diameter		8.6	8.6	7.6	11.3	8.5
Quadratic mean diameter		4.7	3.6	7.3	11.3	8.1
Years to maturity		53	63	52	44	47
Effective age		51	57	38	76	43

Structure

	all species	BB	BC	BG	TP	SAS
Q factor	1.34	1.20	1.39	2.38	1.27	0.00

Relative density - percent

	all species	BB	BC	BG	TP	SAS
Rel. Density	77	43	18	8	5	4
AGS only	61	33	12	8	5	4

Volumes and Values (per acre) - International 1/4 inch Log Rule

	all species	BB	BC	BG	TP	SAS
Gross Total Cords	14.7	3.8	5.7	3.4	1.8	0.0
Net Total Cords	11.7	3.0	4.6	2.7	1.5	0.0
Net Pulpwood Cords	11.7	3.0	4.6	2.7	1.5	0.0
Gross Board-foot	0.0	0.0	0.0	0.0	0.0	0.0
Net Board-foot	0.0	0.0	0.0	0.0	0.0	0.0
Dollars	23.5	6.0	9.1	5.5	2.9	0.0

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Treatment Description with Marking Instructions (2016)

SILVAH has recommended a Defer Cutting (low relative density).

The stand is not yet mature (53 years to maturity) and the user does not wish to begin regeneration now. The relative density is 76.8% which is below the 80% threshold considered necessary for a partial cut. Immature or all-aged stands that are within or below the optimum range of stand density do not need any sort of partial cutting. In such a stand, the best prescription is to leave the stand alone for 10 or 15 years, and then re-examine it to see what treatment is appropriate at that time.

Warnings:

- The relative density (76.8) is just below the 80% decision point in Chart C; A Thinning Prescription may be appropriate.

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SILVAH - MANAGEMENT UNIT #4 PRINTOUT

Silvah-7 SILVICULTURE OF ALLEGHENY HARDWOODS AND OAK

Generated by: SILVAH-7 (version: 7.0.2.30)

STL file: C:\Users\Barry Rose\Documents\2016 Gov Dick\2-SILVAH7-Gov Dick Files\Mgmt Unit #4 - Northern

Hardwoods.stl7 (version: 7.0.6)

DEF file: C:\Users\Barry Rose\Documents\2016 Gov Dick\2-SILVAH7-Gov Dick Files\2016 Gov Dick CAP 106.def7

(version: 7.0.2)

SCR file: current SCR file (modified) (version: 7.0.5)

Report date: Jan 26, 2017

Owner/Agency: Gov Dick

County/District: Lebanon

Compartment/Unit: TM12

Stand name: Mgmt Unit #4

Area: 39.0

Effective age: 101.2

Site index: 82 for BO

Forest type: Allegheny hardwood

Allegheny NF Forest type: Mixed upland hardwoods

Size class: large sawtimber

Relative density: 64.0

Remarks: Allegheny Hardwoods (8,9,13,37,38,.51(007))

Trees to include: live only

Contents:

2016: Original Stand Conditions

-Cruise Information (Type, Sampling Error, etc.)

-Narrative Summary and Analysis

-Overstory Summary- Quality, Diameters, Age, Structure, Density, Volumes, Values

Initial treatment: SILVAH recommended prescription: Fence, Liberation Cut, Site Prep Burn or Herbicide,

Art. Regen. Follow-up

-Treatment Description with Marking Instructions

-Wildlife Habitat Considerations for Prescriptions

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Overstory Cruise Information

Overstory data is from a prism cruise, using a 20 factor prism, and with trees tallied by 1 inch dbh classes, Overstory data is based on 8 plots. Only live trees are included in calculations.

Mean basal area is 120.0 plus or minus 17.6 square feet per acre at 90% confidence (14.7% of mean).

- No additional plots needed to reach 15% of mean basal area.

- 9 additional plots needed to reach 10% of mean basal area.

Mean net bdfv volume is 10240.1 plus or minus 2972.1 bdfv per acre at 90% confidence (29.0% of mean) using the International 1/4 inch log rule.

- 22 additional plots needed to reach 15% of mean net bdfv volume.

- 59 additional plots needed to reach 10% of mean net bdfv volume.

Mean net pulpwood is 17.4 plus or minus 4.1 cords per acre at 90% confidence (23.8% of mean).

- 12 additional plots needed to reach 15% of mean net pulpwood.

- 37 additional plots needed to reach 10% of mean net pulpwood.

Understory Cruise Information

Data on competitive regeneration, site limitations and understory is from an extended regeneration cruise using 6-ft radius plots. Understory data is based on 12 plots.

Warning: regeneration data is not based on an adequate number of plots. To give reliable results, at least 18 additional plots are needed for this stand.

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Narrative Summary and Analysis (2016 inventory data)

Nonnative invasive species have the potential to displace native vegetation, including desirable timber species. There were no invasives in the overstory, no invasives in the overstory, and seven that were found outside the plots (Japanese barberry, Japanese stiltgrass, ailanthus, garlic mustard, multiflora rose, Tatarian honeysuckle and Norway maple)

This Allegheny hardwood stand is dominated by Yellow-poplar, Black Birch, White Ash, Chestnut Oak, Hickory and Beech which together comprise 88 percent of the basal area.

This is a large sawtimber stand, with average medial diameter of 17.7 inches.

If this stand is managed under an even-age silvicultural system, the several species groups will mature at markedly different times. The average time to maturity (MDM = 18 inches) is 2 years. The manager wishes to regenerate the stand now. Effective stand age is about 101 years.

If this stand is managed under an all-age silvicultural system, the distribution of diameters, proportion of sawtimber, and density of shade-tolerant species would make it difficult to apply selection cutting.

Relative stand density is 64 percent of the average maximum stocking expected in undisturbed stands of similar size and species composition. This density is in the optimum range for best individual tree growth. At this relative density, growth rate of the biggest trees is probably excellent, while growth rate of the medium and smaller-sized trees is probably good and mortality due to crowding low.

Thinning to provide more growing space for the better stems is not necessary at this time.

Total growing stock amounts to 120 sq. ft. of basal area per acre. Net total volume in all trees, to a 4-inch top, is 30.7 cords per acre; if divided into pulpwood and sawtimber, the net merchantable volume is 17.4 cords of pulp wood and 10240.1 board feet of sawtimber (International 1/4 inch log rule). The total stand value is estimated to be about 3877 dollars per acre.

Trees of acceptable quality for future growing stock provide enough stocking by themselves to warrant stand management. Non-commercial saplings and poles represent 13 sq. ft. of basal area and may need to be treated prior to final harvest cutting.

Competitive regeneration of all types is insufficient; harvest cuttings at this time will not likely result in a satisfactory new stand.

Undesirable understory plants may interfere with development of regeneration. Undesirable plants in this stand include dense low woody cover, dense tall woody cover and dense fern cover.

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Overstory Summary- Quality, Diameters, Age, Structure, Density, Volumes, Values: (2016 inventory data)

Composition - BA, percent BA, trees per acre

	all species	TP	BB	WA	CO	HIC	AB	BO	BC	BG	NRO	WO
Total BA	120.0	37.5	35.0	12.5	7.5	7.5	5.0	5.0	2.5	2.5	2.5	2.5
Percent BA	100	31	29	10	6	6	4	4	2	2	2	2
Trees per acre	119	14.4	36.3	14.0	5.6	8.2	13.8	7.1	4.6	12.7	0.8	1.8

Quality - percent in AGS

	all species	TP	BB	WA	CO	HIC	AB	BO	BC	BG	NRO	WO
Saplings	0	87	64	40	67	67	50	50	0	0	100	100
Poles	0	87	64	40	67	67	50	50	0	0	100	100
Small sawtimber	80	87	64	40	67	67	50	50	0	0	100	100
Medium sawtimber	91	87	64	40	67	67	50	50	0	0	100	100
Large sawtimber	91	87	64	40	67	67	50	50	0	0	100	100
All sizes	67	87	64	40	67	67	50	50	0	0	100	100

Diameters and Ages - inches, years

	all species	TP	BB	WA	CO	HIC	AB	BO	BC	BG	NRO	WO
Medial diameter	17.7	24.3	14.6	15.6	15.7	14.3	13.5	13.5	10.0	6.0	24.0	16.0
Merchantable medial diameter	17.7	24.3	14.6	15.6	15.7	14.3	13.5	13.5	10.0	6.0	24.0	16.0
Quadratic mean diameter	13.6	21.9	13.3	12.8	15.6	13.0	8.2	11.4	10.0	6.0	24.0	16.0
Years to maturity	2	0	22	12	16	24	30	30	40	80	0	13
Effective age	101	122	98	78	104	96	90	90	50	40	120	107

Structure

	all species	TP	BB	WA	CO	HIC	AB	BO	BC	BG	NRO	WO
Q factor	1.16	1.07	1.15	1.14	0.57	1.15	1.18	1.17	0.00	0.00	0.00	0.00

Relative density - percent

	all species	TP	BB	WA	CO	HIC	AB	BO	BC	BG	NRO	WO
Rel. Density	64	11	20	5	7	4	5	5	1	2	1	2
AGS only	38	10	12	2	5	3	2	2	0	0	1	2

Volumes and Values (per acre) - International 1/4 inch Log Rule

	all species	TP	BB	WA	CO	HIC	AB	BO	BC	BG	NRO	WO
Gross Total Cords	38.4	13.6	10.3	4.0	2.5	2.3	1.1	1.6	0.7	0.4	0.9	0.8
Net Total Cords	30.7	10.9	8.3	3.2	2.0	1.8	0.9	1.2	0.6	0.3	0.7	0.7
Net Pulpwood Cords	17.4	3.5	6.6	1.8	1.1	1.2	0.7	0.9	0.6	0.3	0.3	0.4
Gross Board-foot	11964.6	6543.7	1999.7	1092.1	744.2	491.5	249.4	276.5	0.0	0.0	328.5	239.1
Net Board-foot	10240.1	6184.8	1031.7	1006.8	645.3	430.3	162.7	255.4	0.0	0.0	314.9	208.3
Dollars	3877.0	2689.6	213.9	428.3	120.4	80.4	24.3	86.7	1.2	0.7	167.8	63.6

Treatment Description with Marking Instructions (2016)

SILVAH has recommended a Fence, Liberation Cut, Site Prep Burn or Herbicide, Art. Regen. Follow-up.

A Liberation cut is useful in rehabilitating a degraded stand. It entails removing older, less desirable trees that are over-topping desirable young trees to ensure adequate sunlight for planted seedlings. Implement this practice by cutting or killing undesirable and poor-quality trees from all canopy positions until the relative density of the stand is less than 20 percent. The harvest may or may not be commercial depending on the condition of the cut trees. Concentrate the liberation cut on portions of the stand where there already is vigorous desirable regeneration so that it can take advantage of the release. Five years after the cut, do a follow-up examination of the stand to check on the growth and survival of planted seedlings.

Warnings:

- The merchantable medial diameter (17.7) is just below the 18 inch decision point in Chart A; the stand may be mature.
- The relative density of AGS (38.4) is just above the 35% decision point in Chart A; the stand may not be mature.

Additional treatments

- Apply a site-prep burn when conditions are appropriate, or treat the undesirable understory plants with an application of herbicide during the appropriate part of the growing season. This type of prescribed fire prepares an oak stand for eventual oak seedling establishment after a future acorn crop. The objective is to reduce dense understory shade and litter loadings so that a larger proportion of an acorn crop successfully germinates and becomes seedlings. Burning can be done in the dormant season (fall or early spring) or growing season (late spring) and at any intensity. However, high-intensity fires (flame lengths greater than 2 feet) in the late spring decrease dense understory shade more quickly than low intensity fires in the fall or early spring. Generally, multiple fires spread over several years are necessary to reduce dense understory shade to a level that improves the survival and growth of new oak seedlings. Do not burn if an acorn crop has just fallen or if new oak seedlings from a recent acorn crop are needed to help regenerate the stand as fire kills acorns and small oak seedlings (Auchmoody and Smith 1993). Please refer to the silvicultural guide for details about implementing this prescription.

- Competitive regeneration is lacking, probably due to inadequate seed supply. Artificial regeneration (tree planting) is suggested. Johnson and others (2002) and Dey and others (2008) provide thorough discussions on the intricacies associated with planting oaks. Please refer to the silvicultural guide for details about implementing this prescription.

- Current deer levels will likely prevent regeneration developing into a new stand. Fencing is recommended to protect seedlings from deer. A fence can be constructed either before or after treatment. If fencing is constructed after treatment, fencing should be done as soon as possible.

These prescriptions generally produce the desired results, requires an investment, and usually will yield an economic return at the same time. If such investment meets your organization's economic criteria, we recommend it. If not, we recommend no treatment. In the case of regeneration prescriptions, stands generally will not reproduce without the recommended treatment.

Yields

- A combined sawlog/pulpwood sale will yield 8620 bd.ft./ac. (International 1/4 inch) and 16 cords./ac.
- A sawlog-only sale will yield 8620 bd.ft./ac. (International 1/4 inch)
- A pulpwood-only sale will yield 27 cords./ac.

About 37% of the basal area harvested (108 sq.ft.) will be UGS. This will result in removal of about 100% of the UGS in this stand, and 100% of the merchantable-size UGS.

Cut Guides

Reduce relative stand density to 5%. Within the size and quality constraints below, favor the best trees wherever possible. Try to preserve seed sources of scarce species if they are desired in the regeneration, and strive for uniform spacing among residuals whenever possible.

- Cut all of the trees in the pole size class.
- Cut all of the trees in the small sawtimber size class.
- Cut 3 out of 4 trees in the medium sawtimber size class.
- Cut 4 out of 5 trees in the large sawtimber size class.

Leave Guides

Leave 12 sq.ft. of basal area per acre using the basal area distribution below.

Basal area distribution

Size class	Basal Area
Saplings	0
Pole	0
Small sawtimber	0
Medium sawtimber	6
Large sawtimber	6

Wildlife Habitat Considerations for Prescriptions: (2016)

The tables below have a common format. For each wildlife habitat attribute, the table shows the basal area by broad size classes, indicating roughly how much basal area is occupied by species whose value for that attribute is HIGH. As marking plans are developed, the prescriber/marker can make an effort to conserve trees with high wildlife value while achieving other objectives of the prescription.

In some cases, removing species with high wildlife value may be an essential element of a prescription, such as a prescription removing mid- and understory shade to create a positive environment for establishment and growth of seedlings. In these cases, we recommend selecting islands across the stand where the wildlife value will be retained through the regeneration period.

Valuable Hard Mast Resources

	Total Basal Area	BA High Value	CO	AB	BO	NRO	WO
Saplings	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Poles	27.50	5.00	0.00	2.50	2.50	0.00	0.00
Small Saw	37.50	10.00	7.50	0.00	0.00	0.00	2.50
Medium Saw	27.50	5.00	0.00	2.50	2.50	0.00	0.00
Large Saw	27.50	2.50	0.00	0.00	0.00	2.50	0.00
Total	120.00	22.50	7.50	5.00	5.00	2.50	2.50

Valuable Soft Mast Resources

	Total Basal Area	BA High Value	BC	BG
Saplings	0.00	0.00	0.00	0.00
Poles	27.50	5.00	2.50	2.50
Small Saw	37.50	0.00	0.00	0.00
Medium Saw	27.50	0.00	0.00	0.00
Large Saw	27.50	0.00	0.00	0.00
Total	120.00	5.00	2.50	2.50

Valuable Structural Contribution

	Total Basal Area	BA High Value	TP	AB	BG
Saplings	0.00	0.00	0.00	0.00	0.00
Poles	27.50	5.00	0.00	2.50	2.50
Small Saw	37.50	7.50	7.50	0.00	0.00
Medium Saw	27.50	7.50	5.00	2.50	0.00
Large Saw	27.50	25.00	25.00	0.00	0.00
Total	120.00	45.00	37.50	5.00	2.50

SILVAH - MANAGEMENT UNIT #5 PRINTOUT

Silvah-7 SILVICULTURE OF ALLEGHENY HARDWOODS AND OAK

Generated by: SILVAH-7 (version: 7.0.2.30)

SIL file: C:\Users\Barry Rose\Documents\2016 Gov Dick\2-SILVAH7-Gov Dick Files\Mgmt Unit #5 - South Slope - Tulip Poplar.sil7 (version: 7.0.6)

DEF file: C:\Users\Barry Rose\Documents\2016 Gov Dick\2-SILVAH7-Gov Dick Files\2016 Gov Dick CAP 106.def7 (version: 7.0.2)

SCR file: current SCR file (modified) (version: 7.0.5)

Report date: Jan 26, 2017

Owner/Agency: Gov Dick

County/District: Lebanon

Compartment/Unit: TM11

Stand name: Mgmt Unit #5

Area: 527.0

Effective age: 118.1

Site index: 90 for TP

Equivalent black oak site index: 85

Forest type: Allegheny hardwood

Allegheny NF Forest type: Mixed upland hardwoods

Size class: large sawtimber
Relative density: 61.3
Remarks: South Slope - Tulip poplar Plots 1-5 from 2015 inventory + Plot 42-47 current SILVAH set
Trees to include: live only

Contents:

- 2016: Original Stand Conditions
- Cruise Information (Type, Sampling Error, etc.)
- Narrative Summary and Analysis
- Overstory Summary- Quality, Diameters, Age, Structure, Density, Volumes, Values
- Initial treatment: SILVAH recommended prescription: Fence and Artificial Regeneration
- Treatment Description with Marking Instructions

=====

Overstory Cruise Information

Overstory data is from a prism cruise, using a 20 factor prism, and with trees tallied by 1 inch dbh classes, Overstory data is based on 11 plots. Only live trees are included in calculations.

Mean basal area is 125.5 plus or minus 11.0 square feet per acre at 90% confidence (8.8% of mean).

- No additional plots needed to reach 15% of mean basal area.
- No additional plots needed to reach 10% of mean basal area.

Mean net bdfv volume is 13919.0 plus or minus 2218.9 bdfv per acre at 90% confidence (15.9% of mean) using the International 1/4 inch log rule.

- 1 additional plots needed to reach 15% of mean net bdfv volume.
- 17 additional plots needed to reach 10% of mean net bdfv volume.

Mean net pulpwood is 16.7 plus or minus 1.3 cords per acre at 90% confidence (8.0% of mean).

- No additional plots needed to reach 15% of mean net pulpwood.
- No additional plots needed to reach 10% of mean net pulpwood.

Understory Cruise Information

Data on competitive regeneration, site limitations and understory is from an extended regeneration cruise using 6-ft radius plots. Understory data is based on 23 plots.

Warning: regeneration data is not based on an adequate number of plots. To give reliable results, at least 203 additional plots are needed for this stand.

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Narrative Summary and Analysis (2016 inventory data)

Nonnative invasive species have the potential to displace native vegetation, including desirable timber species. There were no invasives in the understory, three invasives in the overstory (Japanese stiltgrass, multiflora rose and Japanese barberry), and six that were found outside the plots (Japanese stiltgrass, multiflora rose, Japanese barberry, Norway maple, ailanthus and garlic mustard)

This Allegheny hardwood stand is dominated by Yellow-poplar, Black Birch, White Oak and Hickory which together comprise 88 percent of the basal area.

This is a large sawtimber stand, with average medial diameter of 21.1 inches.

If this stand is managed under an even-age silvicultural system, the several species groups will mature at markedly different times. The average time to maturity (MDM = 18 inches) is 0 years. The manager wishes to regenerate the stand now. Effective stand age is about 118 years.

If this stand is managed under an all-age silvicultural system, the distribution of diameters, proportion of sawtimber, and density of shade-tolerant species would make it difficult to apply selection cutting.

Relative stand density is 61 percent of the average maximum stocking expected in undisturbed stands of similar size and species composition. This density is in the optimum range for best individual tree growth. At this relative density, growth rate of the biggest trees is probably excellent, while growth rate of the medium and smaller-sized trees is probably good and mortality due to crowding low.

Total growing stock amounts to 125 sq. ft. of basal area per acre. Net total volume in all trees, to a 4-inch top, is 34.2 cords per acre; if divided into pulpwood and sawtimber, the net merchantable volume is 16.7 cords of pulp wood and 13919.0 board feet of sawtimber (International 1/4 inch log rule). The total stand value is estimated to be about 5925 dollars per acre.

Trees of acceptable quality for future growing stock provide enough stocking by themselves to warrant stand management. Non-commercial saplings and poles represent 9 sq. ft. of basal area and may need to be treated prior to final harvest cutting.

Competitive regeneration of all types is insufficient; harvest cuttings at this time will not likely result in a satisfactory new stand.

A combination of undesirable understory plants and site limitations are likely to interfere with development of regeneration. Undesirable plants in this stand include dense low woody cover, dense tall woody cover, dense fern cover and dense grass cover. The limitations on this stand include rocky surfaces.

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Overstory Summary- Quality, Diameters, Age, Structure, Density, Volumes, Values: (2016 inventory data)

Composition - BA, percent BA, trees per acre

	all species	TP	BB	WO	HIC	BO	NRO	WA	CO	RM
Total BA	125.5	58.2	30.9	14.5	7.3	3.6	3.6	3.6	1.8	1.8
Percent BA	100	46	25	12	6	3	3	3	1	1
Trees per acre	79	20.9	36.7	6.1	10.3	1.0	0.8	2.1	0.7	0.7

Quality - percent in AGS

	all species	TP	BB	WO	HIC	BO	NRO	WA	CO	RM
Saplings	0	97	18	75	75	100	100	50	100	100
Poles	14	97	18	75	75	100	100	50	100	100
Small sawtimber	29	97	18	75	75	100	100	50	100	100
Medium sawtimber	90	97	18	75	75	100	100	50	100	100
Large sawtimber	96	97	18	75	75	100	100	50	100	100
All sizes	72	97	18	75	75	100	100	50	100	100

Diameters and Ages - inches, years

	all species	TP	BB	WO	HIC	BO	NRO	WA	CO	RM
Medial diameter		21.1	25.3	13.4	21.6	12.5	26.0	29.0	19.5	22.0
Merchantable medial diameter		21.1	25.3	13.4	21.6	12.5	26.0	29.0	19.5	22.0
Quadratic mean diameter		17.0	22.6	12.4	21.0	11.4	25.8	28.9	18.0	22.0
Years to maturity		0	0	31	0	37	0	0	0	0
Effective age		118	127	89	144	83	173	145	98	147

Structure

	all species	TP	BB	WO	HIC	BO	NRO	WA	CO	RM
Q factor	1.10	1.06	1.18	1.28	1.00	1.08	1.07	1.11	0.00	0.00

Relative density - percent

	all species	TP	BB	WO	HIC	BO	NRO	WA	CO	RM
Rel. Density	61	17	18	13	4	3	2	1	2	1
AGS only	40	16	3	10	3	3	2	1	2	1

Volumes and values (per acre) - International 1/4 inch Log Rule

	all species	TP	BB	WO	HIC	BO	NRO	WA	CO	RM
Gross Total Cords	42.8	21.3	8.9	5.2	2.1	1.3	1.4	1.3	0.7	0.7
Net Total Cords	34.2	17.0	7.1	4.2	1.7	1.1	1.1	1.0	0.5	0.5
Net Pulpwood Cords	16.7	5.8	6.2	2.0	1.1	0.5	0.4	0.4	0.2	0.3
Gross Board-foot	15237.1	9910.5	1165.4	1694.5	480.3	495.6	520.9	521.1	228.1	220.6
Net Board-foot	13919.0	9497.8	598.0	1557.3	405.4	477.3	503.6	477.9	210.4	191.3
Dollars	5924.9	4300.9	124.2	634.6	67.0	204.2	297.2	198.1	50.5	48.3

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Treatment Description with Marking Instructions (2016)

SILVAH has recommended a Fence and Artificial Regeneration.

A Shelterwood sequence, which would normally be recommended here, may not work because relative density is already low and competitive regeneration is lacking; further reductions in density probably won't help. A Shelterwood sequence, which would normally be recommended here, may not work because relative density is already low and competitive regeneration is lacking; further reductions in density probably won't help. Identify long-term residuals and islands with complex vertical structure. Retain these through the final overstory removal. Favor species (yellow poplar, white oak, black oak, northern red oak and chestnut oak) with high wildlife value for retention and planting.

Warnings:

- The relative density of AGS (39.8) is just above the 35% decision point in Chart A; the stand may not be mature.

Additional treatments

- Competitive regeneration is lacking, probably due to inadequate seed supply. Artificial regeneration (tree planting) is suggested. Johnson and others (2002) and Dey and others (2008) provide thorough discussions on the intricacies associated with planting oaks. Please refer to the silvicultural guide for details about implementing this prescription.

- Current deer levels will likely prevent regeneration developing into a new stand. Fencing is recommended to protect seedlings from deer. A fence can be constructed either before or after treatment. If fencing is constructed after treatment, fencing should be done as soon as possible.

These prescriptions generally produce the desired results, requires an investment, and usually will yield an economic return at the same time. If such investment meets your organization's economic criteria, we recommend it. If not, we recommend no treatment. In the case of regeneration prescriptions, stands generally will not reproduce without the recommended treatment.

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SILVAH - MANAGEMENT UNIT #7 PRINTOUT

Silvah-7 SILVICULTURE OF ALLEGHENY HARDWOODS AND OAK

Generated by: SILVAH-7 (version: 7.0.2.30)
SIL file: C:\Users\Barry Rose\Documents\2016 Gov Dick\2-SILVAH7-Gov Dick Files\Mgmt Unit #7 - Mature Black Birch - Old Route 72.sil7 (version: 7.0.6)
DEF file: C:\Users\Barry Rose\Documents\2016 Gov Dick\2-SILVAH7-Gov Dick Files\2016 Gov Dick CAP 106.def7 (version: 7.0.2)
SCR file: current SCR file (modified) (version: 7.0.5)
Report date: Jan 26, 2017

Owner/Agency: Gov Dick
County/District: Lebanon
Compartment/Unit: BB22
Stand name: Mgmt Unit #7
Area: 21.0
Effective age: 111.9
Site index: 67 for B0
Forest type: northern hardwood
Allegheny NF Forest type: Oak-hardwoods
Size class: large sawtimber
Relative density: 79.3
Remarks: Mature black Birch - Old Route 72 - Plots 1-7 + 18
Trees to include: live only

Contents:

- 2016: Original Stand Conditions
 - Cruise Information (Type, Sampling Error, etc.)
 - Narrative Summary and Analysis
 - Overstory Summary- Quality, Diameters, Age, Structure, Density, Volumes, Values
- Initial treatment: SILVAH recommended prescription: Shelterwood Seed Cut- herbicide, fence
 - Treatment Description with Marking Instructions
 - Wildlife Habitat Considerations for Prescriptions

=====

Overstory Cruise Information

Overstory data is from a prism cruise, using a 20 factor prism, and with trees tallied by 1 inch dbh classes, Overstory data is based on 8 plots. Only live trees are included in calculations.

Mean basal area is 120.0 plus or minus 14.4 square feet per acre at 90% confidence (12.0% of mean).

- No additional plots needed to reach 15% of mean basal area.
- 4 additional plots needed to reach 10% of mean basal area.

Mean net bdfv volume is 7288.1 plus or minus 1335.4 bdfv per acre at 90% confidence (18.3% of mean) using the International 1/4 inch log rule.

- 4 additional plots needed to reach 15% of mean net bdfv volume.
- 19 additional plots needed to reach 10% of mean net bdfv volume.

Mean net pulpwood is 20.3 plus or minus 2.9 cords per acre at 90% confidence (14.2% of mean).

- No additional plots needed to reach 15% of mean net pulpwood.
- 8 additional plots needed to reach 10% of mean net pulpwood.

Understory Cruise Information

Data on competitive regeneration, site limitations and understory is from an extended regeneration cruise using 6-ft radius plots. Understory data is based on 12 plots.

Warning: regeneration data is not based on an adequate number of plots. To give reliable results, at least 12 additional plots are needed for this stand.

=====

Narrative Summary and Analysis (2016 inventory data)

Nonnative invasive species have the potential to displace native vegetation, including desirable timber species. There was one invasive in the overstory (ailanthus), no invasives in the overstory, and seven that were found outside the plots (ailanthus, Japanese barberry, Japanese stiltgrass, garlic mustard, multiflora rose, Norway maple and Tatarian honeysuckle)

This northern hardwood stand is dominated by Black Birch, Black Oak, white Oak, yellow-poplar and Beech which together comprise 88 percent of the basal area.

This is a large sawtimber stand, with average medial diameter of 17.4 inches.

If this stand is managed under an even-age silvicultural system, the several species groups will mature at markedly different times. The average time to maturity (MDM = 18 inches) is 4 years. The manager wishes to regenerate the stand now. Effective stand age is about 112 years.

If this stand is managed under an all-age silvicultural system, the distribution of diameters, proportion of sawtimber, and density of shade-tolerant species would make it difficult to apply selection cutting.

Relative stand density is 79 percent of the average maximum stocking expected in undisturbed stands of similar size and species composition. This density is in the optimum range for best individual tree growth. At this relative density, growth rate of the biggest trees is probably excellent, while growth rate of the medium and smaller-sized trees is probably good and mortality due to crowding low.

Thinning to provide more growing space for the better stems is not necessary at this time.

Total growing stock amounts to 120 sq. ft. of basal area per acre. Net total volume in all trees, to a 4-inch top, is 30.7 cords per acre; if divided into pulpwood and sawtimber, the net merchantable volume is 20.3 cords of pulp wood and 7288.1 board feet of sawtimber (International 1/4 inch log rule). The total stand value is estimated to be about 2325 dollars per acre.

Trees of acceptable quality for future growing stock provide a fully stocked stand by themselves. Non-commercial saplings and poles represent 13 sq. ft. of basal area and may need to be treated prior to final harvest cutting.

Competitive regeneration of all types is insufficient; harvest cuttings at this time will not likely result in a satisfactory new stand.

Undesirable understory plants may interfere with development of regeneration. Undesirable plants in this stand include dense low woody cover, dense tall woody cover and dense fern cover.

Overstory Summary- Quality, Diameters, Age, Structure, Density, Volumes, Values: (2016 inventory data)

Composition - BA, percent BA, trees per acre

	all species	BB	BO	WO	TP	AB	RM	AIL	BG	CO	HIC
Total BA	120.0	55.0	17.5	12.5	12.5	7.5	5.0	2.5	2.5	2.5	2.5
Percent BA	100	46	15	10	10	6	4	2	2	2	2
Trees per acre	101	40.8	11.3	5.9	13.6	7.3	4.3	4.6	5.7	1.8	5.7

Quality - percent in AGS

	all species	BB	BO	WO	TP	AB	RM	AIL	BG	CO	HIC
Saplings	0	86	57	100	80	100	50	0	0	100	0
Poles	20	86	57	100	80	100	50	0	0	100	0
Small sawtimber	92	86	57	100	80	100	50	0	0	100	0
Medium sawtimber	95	86	57	100	80	100	50	0	0	100	0
Large sawtimber	86	86	57	100	80	100	50	0	0	100	0
All sizes	77	86	57	100	80	100	50	0	0	100	0

Diameters and Ages - inches, years

	all species	BB	BO	WO	TP	AB	RM	AIL	BG	CO	HIC
Medial diameter	17.4	17.5	20.7	20.6	16.2	15.0	16.0	10.0	9.0	16.0	9.0
Merchantable medial diameter	17.4	17.5	20.7	20.6	16.2	15.0	16.0	10.0	9.0	16.0	9.0
Quadratic mean diameter	14.8	15.7	16.8	19.6	13.0	13.8	14.6	10.0	9.0	16.0	9.0
Years to maturity	4	4	0	0	9	20	10	53	60	13	60
Effective age	112	116	138	137	81	100	80	67	60	107	60

Structure

	all species	BB	BO	WO	TP	AB	RM	AIL	BG	CO	HIC
Q factor	1.14	1.14	1.13	1.10	1.12	1.14	1.14	0.00	0.00	0.00	0.00

Relative density - percent

	all species	BB	BO	WO	TP	AB	RM	AIL	BG	CO	HIC
Rel. Density	79	29	16	11	5	7	3	2	2	2	2
AGS only	59	24	9	11	4	7	1	0	0	2	0

Volumes and Values (per acre) - International 1/4 inch Log Rule

	all species	BB	BO	WO	TP	AB	RM	AIL	BG	CO	HIC
Gross Total Cords	38.4	17.0	6.1	4.4	4.1	2.2	1.7	0.7	0.7	0.8	0.6
Net Total Cords	30.7	13.6	4.9	3.6	3.2	1.7	1.3	0.6	0.5	0.7	0.5
Net Pulpwood Cords	20.3	9.9	2.5	1.7	1.9	1.4	1.0	0.6	0.5	0.4	0.5
Gross Board-foot	9599.9	4120.1	1896.8	1406.4	1202.9	433.9	287.1	0.0	0.0	252.7	0.0
Net Board-foot	7288.1	2398.8	1803.7	1281.7	1101.9	232.8	249.0	0.0	0.0	220.1	0.0
Dollars	2325.0	535.8	714.8	503.7	437.9	29.5	58.7	0.0	1.1	42.4	1.0

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Treatment Description with Marking Instructions (2016)

SILVAH has recommended a Shelterwood Seed Cut- herbicide, fence.

Use a Two-cut Shelterwood sequence to increase competitive regeneration. The first (seed) cut should reduce relative stand density to 60 percent to provide for the establishment of a large number of additional advance seedlings, without allowing them to grow rapidly enough to become attractive to deer. The seed cut made now can be followed in 5 to 10 years by final overstory removal (assuming adequate competitive seedlings develop). A combination of high deer density and low seed production will probably make it difficult to get adequate competitive regeneration established. Protect the stand from deer browsing with a fence. Overstory density is low enough and seed supply sufficient for competitive regeneration to become established within 3 - 10 years. Fencing is recommended to protect seedlings from deer.

Warnings:

- The merchantable medial diameter (17.4) is just below the 18 inch decision point in Chart A; the stand may be mature.
- The relative density (79.3) is just above the 75% decision point in Chart E; a Shelterwood Seed Cut may not be appropriate.

Additional treatments

- Treat the undesirable understory plants with an application of herbicide during the appropriate part of the growing season. Herbicide is an effective, safe and economical technique for removing vegetation that interferes with establishment and growth of oak regeneration. There are five different application techniques for using herbicides to control interfering vegetation. Each is matched with a specific set of conditions where it will provide effective control. With all, be sure to follow all instructions on the herbicide label, wear appropriate safety clothing and equipment, and follow applicable laws with regard to herbicide applicator licensing. Please refer to the silvicultural guide for details about implementing this prescription.

- Current deer levels will likely prevent regeneration developing into a new stand. Fencing is recommended to protect seedlings from deer. A fence can be constructed either before or after treatment. If fencing is constructed after treatment, fencing should be done as soon as possible.

These prescriptions generally produce the desired results, requires an investment, and usually will yield an economic return at the same time. If such investment meets your organization's economic criteria, we recommend it. If not, we recommend no treatment. In the case of regeneration prescriptions, stands generally will not reproduce without the recommended treatment.

Yields

- A combined sawlog/pulpwood sale will yield 592 bd.ft./ac. (International 1/4 inch) and 5 cords./ac.
- A sawlog-only sale will yield 592 bd.ft./ac. (International 1/4 inch)
- A pulpwood-only sale will yield 6 cords./ac.

About 100% of the basal area harvested (26 sq.ft.) will be UGS. This will result in removal of about 96% of the UGS in this stand, and 96% of the merchantable-size UGS.

Cut Guides

Reduce relative stand density to 60%. Within the size and quality constraints below, favor the best trees wherever possible. Try to preserve seed sources of scarce species if they are desired in the regeneration, and strive for uniform spacing among residuals whenever possible.

Cut 4 out of 5 trees in the pole size class.
Cut 1 out of 10 trees in the small sawtimber size class.
Cut a few (<10%) of the trees in the medium sawtimber size class.
Cut 1 out of 10 trees in the large sawtimber size class.

Leave Guides

Leave 94 sq.ft. of basal area per acre using the basal area distribution below.

Basal area distribution	
Size class	Basal Area
Saplings	0
Pole	6
Small sawtimber	28
Medium sawtimber	45
Large sawtimber	15

=====

Wildlife Habitat Considerations for Prescriptions: (2016)

The tables below have a common format. For each wildlife habitat attribute, the table shows the basal area by broad size classes, indicating roughly how much basal area is occupied by species whose value for that attribute is HIGH. As marking plans are developed, the prescriber/marker can make an effort to conserve trees with high wildlife value while achieving other objectives of the prescription.

In some cases, removing species with high wildlife value may be an essential element of a prescription, such as a prescription removing mid- and understory shade to create a positive environment for establishment and growth of seedlings. In these cases, we recommend selecting islands across the stand where the wildlife value will be retained through the regeneration period.

Valuable Hard Mast Resources

	Total Basal Area	BA High Value	BO	WO	AB	CO
Saplings	0.00	0.00	0.00	0.00	0.00	0.00
Poles	25.00	5.00	2.50	0.00	2.50	0.00
Small Saw	30.00	7.50	0.00	2.50	2.50	2.50
Medium Saw	47.50	17.50	10.00	5.00	2.50	0.00
Large Saw	17.50	10.00	5.00	5.00	0.00	0.00
Total	120.00	40.00	17.50	12.50	7.50	2.50

Valuable Soft Mast Resources

	Total Basal Area	BA High Value	BG
Saplings	0.00	0.00	0.00
Poles	25.00	2.50	2.50
Small Saw	30.00	0.00	0.00
Medium Saw	47.50	0.00	0.00
Large Saw	17.50	0.00	0.00
Total	120.00	2.50	2.50

Valuable Structural Contribution

	Total Basal Area	BA High Value	TP	AB	BG
Saplings	0.00	0.00	0.00	0.00	0.00
Poles	25.00	10.00	5.00	2.50	2.50
Small Saw	30.00	7.50	5.00	2.50	0.00
Medium Saw	47.50	2.50	0.00	2.50	0.00
Large Saw	17.50	2.50	2.50	0.00	0.00
Total	120.00	22.50	12.50	7.50	2.50

APPENDIX G

PNDI SEARCH RESULTS

Pennsylvania Department of Conservation and Natural Resources
PNDI Receipt: project_receipt_gov_dick_cap_106_plan_620775_FINAL_1.pdf

Project Search ID: PNDI-620775

1. PROJECT INFORMATION

Project Name: **Gov Dick CAP 106 Plan**
Date of Review: **2/2/2017 12:17:08 AM**
Project Category: **Forest Stewardship Plan**
Project Area: **1,115.31 acres**
County(s): **Lebanon**
Township/Municipality(s): **CORNWALL; MOUNT GRETN; WEST CORNWALL**
ZIP Code: **17042; 17545**
Quadrangle Name(s): **LEBANON; MANHEIM**
Watersheds HUC 8: **Lower Susquehanna; Lower Susquehanna-Swatara**
Watersheds HUC 12: **Conewago Creek; Little Chickies Creek; Snitz Creek-Quittapahilla Creek; Upper Chickies Creek**
Decimal Degrees: **40.248816, -76.451129**
Degrees Minutes Seconds: **40° 14' 55.7361" N, 76° 27' 4.627" W**

2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	Potential Impact	FURTHER REVIEW IS REQUIRED, See Agency Response
PA Fish and Boat Commission	No Known Impact	No Further Review Required
U.S. Fish and Wildlife Service	Potential Impact	FURTHER REVIEW IS REQUIRED, See Agency Response

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

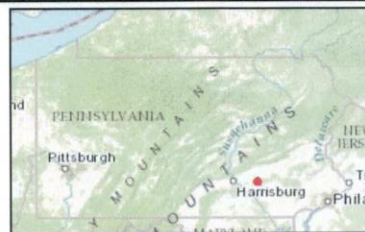
Note that regardless of PNDI search results, projects requiring a Chapter 105 DEP individual permit or GP 5, 6, 7, 8, 9 or 11 in certain counties (Adams, Berks, Bucks, Carbon, Chester, Cumberland, Delaware, Lancaster, Lebanon, Lehigh, Monroe, Montgomery, Northampton, Schuylkill and York) must comply with the bog turtle habitat screening requirements of the PASPGP.

Gov Dick CAP 106 Plan

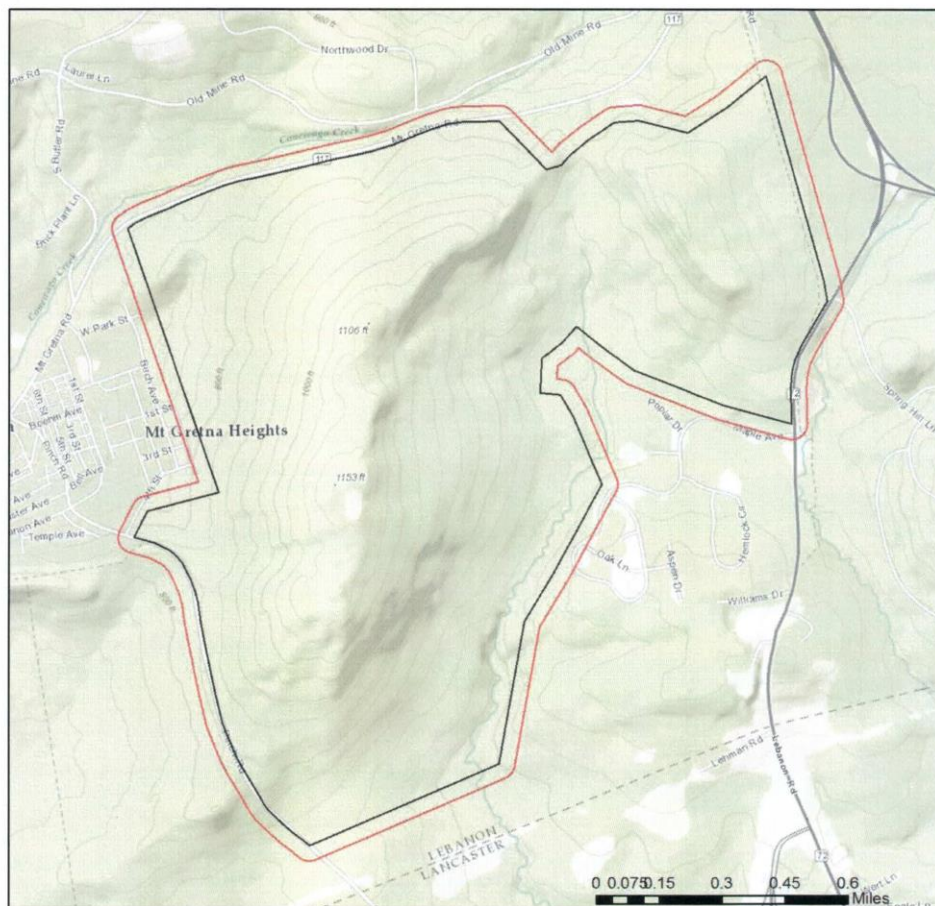


- ☐ Project Boundary
- ☐ Buffered Project Boundary

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user



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- Project Boundary
- Buffered Project Boundary

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community



3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jurisdictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission

RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Department of Conservation and Natural Resources

RESPONSE:

Further review of this project is necessary to resolve the potential impact(s). Please send project information to this agency for review (see WHAT TO SEND).

DCNR Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below. After desktop review, if a botanical survey is required by DCNR, we recommend the DCNR Botanical Survey Protocols, available here: http://www.gis.dcnr.state.pa.us/hgis-er/PNDI_DCNR.aspx.)

Scientific Name	Common Name	Current Status	Proposed Status	Survey Window
Dryopteris clintoniana	Clinton's Wood Fern	Special Concern Species*	Threatened	Deciduous; survey summer - fall
Magnolia virginiana	Sweet Bay Magnolia	Threatened	Threatened	flowers late May - June
Poa paludigena	Bog Bluegrass	Threatened	Special Concern Species*	late may - June
Rudbeckia fulgida	Eastern Coneflower	Special Concern Species*	Threatened	flowers August - october

PA Fish and Boat Commission

RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

U.S. Fish and Wildlife Service

RESPONSE:

Further review of this project is necessary to resolve the potential impact(s). Please send project information to this agency for review (see WHAT TO SEND).

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.

** Sensitive Species - Species identified by the jurisdictional agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

WHAT TO SEND TO JURISDICTIONAL AGENCIES

If project information was requested by one or more of the agencies above, upload* or email* the following information to the agency(s). Instructions for uploading project materials can be found [here](#). This option provides the applicant with the convenience of sending project materials to a single location accessible to all three state agencies. Alternatively, applicants may email or mail their project materials (see AGENCY CONTACT INFORMATION).

***Note:** U.S.Fish and Wildlife Service requires applicants to mail project materials to the USFWS PA field office (see AGENCY CONTACT INFORMATION). USFWS will not accept project materials submitted electronically (by upload or email).

Check-list of Minimum Materials to be submitted:

____ Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.

____ A map with the project boundary and/or a basic site plan (particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)

In addition to the materials listed above, USFWS REQUIRES the following

____ SIGNED copy of a Final Project Environmental Review Receipt

The inclusion of the following information may expedite the review process.

____ Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)

____ Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams.

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. Two review options are available to permit applicants for handling PNDI coordination in conjunction with DEP's permit review process involving either T&E Species or species of special concern. Under sequential review, the permit applicant performs a PNDI screening and completes all coordination with the appropriate jurisdictional agencies prior to submitting the permit application. The applicant will include with its application, both a PNDI receipt and/or a clearance letter from the jurisdictional agency if the PNDI Receipt shows a Potential Impact to a species or the applicant chooses to obtain letters directly from the jurisdictional agencies. Under concurrent review, DEP, where feasible, will allow technical review of the permit to occur concurrently with the T&E species consultation with the jurisdictional agency. The applicant must still supply a copy of the PNDI Receipt with its permit application. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. The applicant and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at <https://conservationexplorer.dcnr.pa.gov/content/resources>.

5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources
Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552
Harrisburg, PA 17105-8552
Email: RA-HeritageReview@pa.gov
Fax: (717) 772-0271

PA Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane, Bellefonte, PA 16823
Email: RA-FBPACENOTIFY@pa.gov

U.S. Fish and Wildlife Service
Pennsylvania Field Office
Endangered Species Section
110 Radnor Rd; Suite 101
State College, PA 16801
NO Faxes Please

PA Game Commission
Bureau of Wildlife Habitat Management
Division of Environmental Planning and Habitat Protection
2001 Elmerton Avenue, Harrisburg, PA 17110-9797
Email: RA-PGC_PNDI@pa.gov
NO Faxes Please

7. PROJECT CONTACT INFORMATION

Name: Barry S. Rose
Company/Business Name: Forest Regeneration Svc.
Address: PO Box 1260
City, State, Zip: Gouldsboro, PA 18424
Phone: (717) 228-4854 Fax: ()
Email: frs.barry@gmail.com

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

Barry S. Rose
applicant/project proponent signature

2/2/2017
date