Indiana Department of Natural Resources
Division of Forestry
DRAFT

RESOURCE MANAGEMENT GUIDE

State Forest: **Ferdinand**
Tract Acreage: **112**
Forester: **A. Smith**

Compartment: **06** Tract: **09**
Commercial Forest Acreage: **112**
Date: **10/21/2015**

Location

Tract 0609 is located in Perry County, Section 29, T3S, R3W in Clark Township. It is located roughly 5.3 miles west of Ferdinand and 6.0 miles north of Bristow.

General Description

Tract 0609 consists of approximately 112 acres with roughly 12.8 acres of planted pine, 44.8 acres of mixed hardwoods, and 54.4 acres of oak-hickory forest. The overall timber quality of this tract is average and ranges from small to large sawtimber in size. A summary of the forest resources in tract 0609 in relation to species dominance is noted below in Table 1.

Table 1.Overview of Forest Resources in Tract 0609

Overstory Sawtimber Layer	Understory Poletimber Layer	Regeneration Layer
White Oak	Sugar Maple	Sugar Maple
Yellow Poplar	Yellow Poplar	American Beech
Eastern White Pine	American Beech	Virginia Pine
Northern Red Oak	White Oak	Yellow Poplar
Black Oak	Bitternut Hickory	Blackgum
Sugar Maple	Virginia Pine	Dogwood
White Ash	American Sycamore	Shortleaf Pine
American Sycamore	Northern Red Oak	Bitternut Hickory
American Beech	Eastern White Pine	Black Oak
Bitternut Hickory	Pignut Hickory	Sassafras
Black Cherry	Red Pine	
Shagbark Hickory	Shortleaf Pine	
Pignut Hickory	White Ash	
Blackgum	Silver Maple	
Shortleaf Pine		
Virginia Pine		
Bur Oak		
Silver Maple		
Sweetgum		

History

The 220.0 acre area that includes tract 0609 today (see Figure 1) was deeded to the State of Indiana on September 17, 1939 by Mary Guntel. The State planted eastern white pine, red pine, and Jack pine on the "Guntel Farm" in 1950. This land area was described as "open wasteland"

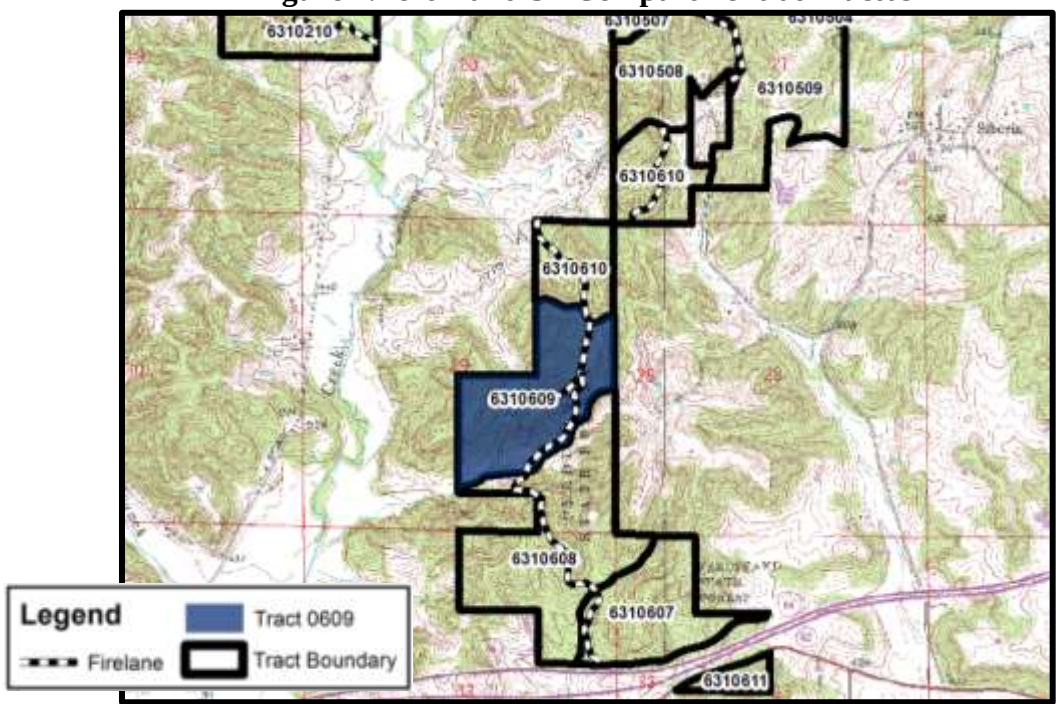
at that time. A 47 Ft. x 45 Ft. x 7 Ft. waterhole was constructed as a Pittman-Robertson project in 1968.

Forester Bill Hahn conducted the first resource inventory in March, 1973 (2,806 BdFt/A total volume estimated for 60 acres of commercial hardwoods). Foresters Janet Eger and Ben Hubbard conducted a timber sale on February 19, 1981. W. H. Worley purchased an estimated 80,474BdFt in 401 trees from 55 acres for $10,175.00. Post-harvest TSI was completed on March 12, 1982 on the 55 acre harvest area by YACC labor. Forester Doug Brown conducted a pine sale on May 16, 1996. Kenneth Jackson purchased an estimated 33,297BdFt in 392 trees and 4 culls from roughly 4.0 acres for $3,995.64. A snowstorm damaged a roughly 7.0 acre area of Jack and red pine in tract 0609 in March 1996. The 7.0 acre opening created by the snowstorm was combined with the 4.0 acre white pine opening for TSI and a grouse management area was created in January of 1997. Forester John Zvirblis conducted a resources inventory in March, 1997 and found there to be an estimated 5,748.5 BdFt/A total volume with 2,144.4 BdFt/A harvest volume for 88acres of commercial hardwoods. Forester Doug Brown conducted a timber sale on April 23, 1998. Waninger Timber Company purchased an estimated 173,693 BdFt in 751 trees and 63 culls for $88,500.00. Post-harvest TSI was completed in November, 2001 on 73 acres. The current tract resource inventory was completed on July 21, 2015 by Jacob Henry.

Landscape Context

The ridgetops are mostly comprised of old field mixed hardwoods and planted pine plantations while, the sideslopes are mostly comprised of oak-hickory and mixed hardwoods. State forest borders tract 0609 on the south and the northeast. Private agriculture land lies to the east of the tract and private forest and agriculture fields lie to the west and northwest of the tract. Water sources on the tract include the mapped intermittent streams and the man-made waterhole for wildlife.

Figure 1.Ferdinand SF Compartment 06Tract09



Topography, Geology and Hydrology
South, east, and west-facing slopes varying from long and gentle to abrupt and steep characterize tract 0609. Signs of past soil erosion exist under the pine plantations- remnants of worn out farmlands.

Soils
Adyeville-Wellston-Deuchars silt loams (AbvD2)complex contains Adeyville, Wellston, and Deuchars soils. They occur on 8 to 20 percent slopes and are eroded. The depth to the watertable is greater than 80 inches for the Adyeville and Wellston soils but only 24 to 36 inches for the Deuchars soils. Available water capacity is low (about 4.1 inches) for Adyeville, moderate (about 8.8 inches) for Wellston, and moderate (about 9.0 inches) for the Deuchars soils. The site index for northern red oak forWellston soils is 81 and 90 for Deuchars soils.

Adyeville-Tipsaw-Ebal complex (AccG)complex contains Adeyville, Tipsaw, and Ebal soils. They occur on 20 to 50 percent slopes and are very rocky. The depth to the watertable is greater than 80 inches for the Adyeville and Tipsaw soils but only 24 to 36 inches for the Ebal soils. Available water capacity is low (about 4.1 inches) for Adyeville, low (about 3.3 inches) for Tipsaw, and moderate (about 7.2 inches) for the Ebal soils. This soil type is moderately well to somewhat excessively well drained and has a high to very high runoff class. The site index for black oak forTipsaw soils is 70 and 80 for Ebal soils.

Apalona-Zanesville silt loams (AgrC2) contains Apalona and Zanesville soils. They occur on 6 to 12 percent slopes and are eroded. The depth to the watertable is 15 to 26 inches for the Apalona soils and 19 to 28 inches for the Zanesville soils. Available water capacity is low (about 4.0 inches) for the Apalona soils and low (about 4.9 inches) for the Zanesville soils. This

soil type is moderately well drained and has a high runoff class. The site index forApalona soils is 60 for white oak.

Ebal-Deuchars-Kitterman complex (EabD2) contains Ebal, Deuchars, and Kitterman soils. They occur on 12 to 24 percent slopes and are eroded. The depth to the watertable is about 24 to 36 inches for Ebal and Deuchars soils and 12 to 24 inches for Kitterman soils. Available water capacity is moderate (about 7.5 inches) for Ebal, moderate (about 9.0 inches) for Deuchars, and low (about 4.1 inches) for the Kitterman soils. This soil type is moderately well drained and has a high to very high runoff class. The site index forEbal soils is 80 for black oak, 90 for northern red oak for Deuchars soils, and 57 for white oak for the Kitterman soils.

Gatchel loam (GacAW) is an occasionally flooded soil for a very brief duration occurring on 0 to 2% slopes. It is a somewhat excessively drained soil with a depth of more than 80 inches to the water table. Available water capacity is moderate at about 6.1 inches. The site index is not given for Gatchel loam soils but common trees to manage for are baldcypress, bitternut hickory, Blackgum, green ash, pin oak, red maple, shingle oak, and swamp white oak.

Access
Tract 0609 is easily accessible off of Calvert Road (formerly Otto Road), by Firelane 20. Firelane 20 runs south through tract 0610 and then forks in tract 0609.

Boundary
Tract 0609 is bounded halfway on the north by a shared ridge top with tract 0610 and a meandering barbed wire fence. The south boundary is indicated by a mapped intermittent stream drainage and is shared with tract 0608. The east boundary is indicated by the tree line, meandering barbed wire fencing, and one corner stone with a Perry County survey marker. The west boundary is indicated by meandering barbed wire fencing and one corner stone. The private property boundary lines need to be better identified and indicated in the field prior to resource management activities.

Wildlife
A Natural Heritage Database review was completed for this tract. If Rare, Threatened or Endangered species (RTE's) were identified for this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the viability of those species.

Typical common wildlife species were observed in the tract during the inventory (various songbirds, chipmunks, squirrels, box turtles, toads, deer). Tract 0609 has an abundant supply of food resources such as soft and hard mast. The mapped intermittent streams and the manmade wildlife pond provide a water source for wildlife during non-droughty times of the year.

The Division of Forestry has instituted procedures for conducting forest resource inventories so that the documentation and analysis of live tree and snag tree densities are examined on a compartment level basis in order to maintain long-term and quality forest habitats Crown release performed during timber harvests will stimulate the growth of the selected croptrees and will enhance the vigor of these sawtimber trees. Timber Stand Improvement (TSI) and crop tree release following the harvest is planned which will increase standing snag counts. Crop tree

release work will focus on legacy tree species increasing the number of legacy trees in the larger diameter ranges over the long term management of the tract. Management practices conducted on 0609 will be conducted in a manner that will maintain diverse, quality forest habitats long term for wildlife populations.

Live Legacy Trees* and Snags inventoried 2015 on F0609

	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal
Legacy Trees *					
11"+ DBH	1,008		2,135	1,127	
20"+ DBH	336		463	127	
Snags (all species)					
5"+ DBH	448	784	901	453	117
9"+ DBH	336	672	646	310	
19"+ DBH	56	112	38		

*** Species Include:** AME, BIH, BLL, COT, GRA, REO, POO, REE, SHH, ZSH, SIM, SUM, WHA, WHO

Communities

Tract 0609 is composed of mesic to dry-mesic upland hardwoods dominated by oak-hickory, mixed hardwoods, and pine plantings. The dominant overstory timber species include white oak, yellow poplar, eastern white pine, northern red oak, black oak, sugar maple, and white ash. The understory contains mainly sugar maple, yellow poplar, American beech, white oak, bitternut hickory, and Virginia pine. The ground cover of tract 0609 consists of mainly mesic to dry mesic species.

During the current resource inventory all portions of the tract were reviewed and evaluated for old growth potential as well as for Representative Sample Areas. No representative stratums of old growth appear to exist within this tract.

Exotic Species

Japanese stiltgrass, autumn olive, and multiflora rose were observed during the inventory. The majority of the invasives were focused along the firelane. Multiflora rose found scattered around the tract. Control measures may be warranted for populations are located in future regeneration openings. The Japanese stilt grass should be reviewed for treatment needs before and after timber harvest activities.

Recreation

Likely recreational activities on this tract include hunting, mushroom hunting, hiking, bird watching, and wildlife viewing.

Cultural

Cultural resources may be present but their location(s) are protected. Adverse impacts to significant cultural resources noted will be avoided during property management activities.

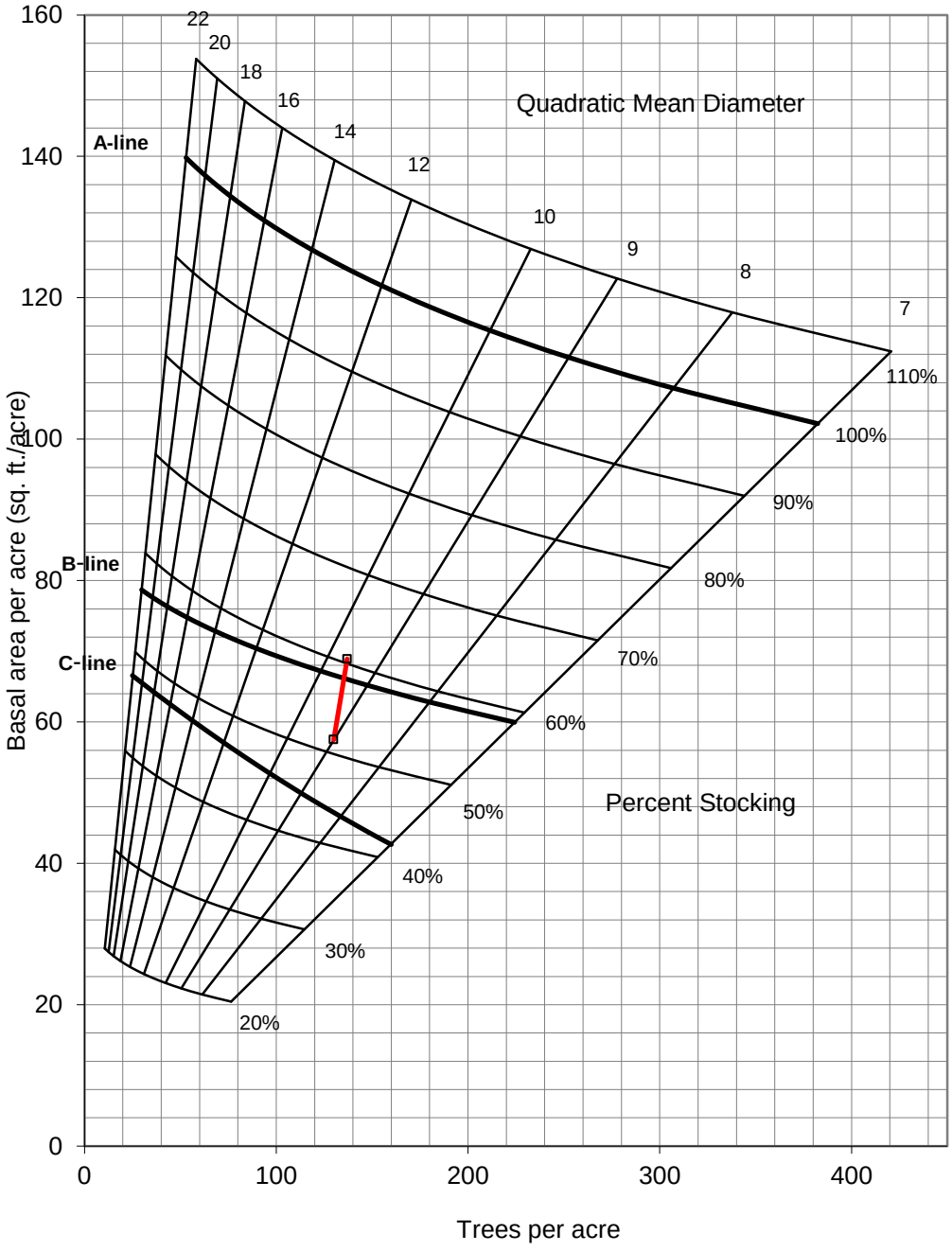
Tract Subdivision Description and Silvicultural Prescription

The overall stand structure for this tract is represented in the following Gingrich Stand and stock table that follows the individual stand summary.

Tract Summary Data

Total Trees/Ac.= **137Trees/Ac.** Overall % Stocking Hardwoods = **61%** (Fully Stocked)
BA/A = **68.9Sq. Ft./Ac.** Sawtimber & Quality Trees/Ac. = **28 Trees/Ac.**
Present Volume = **4,593Bd. Ft./Acre**

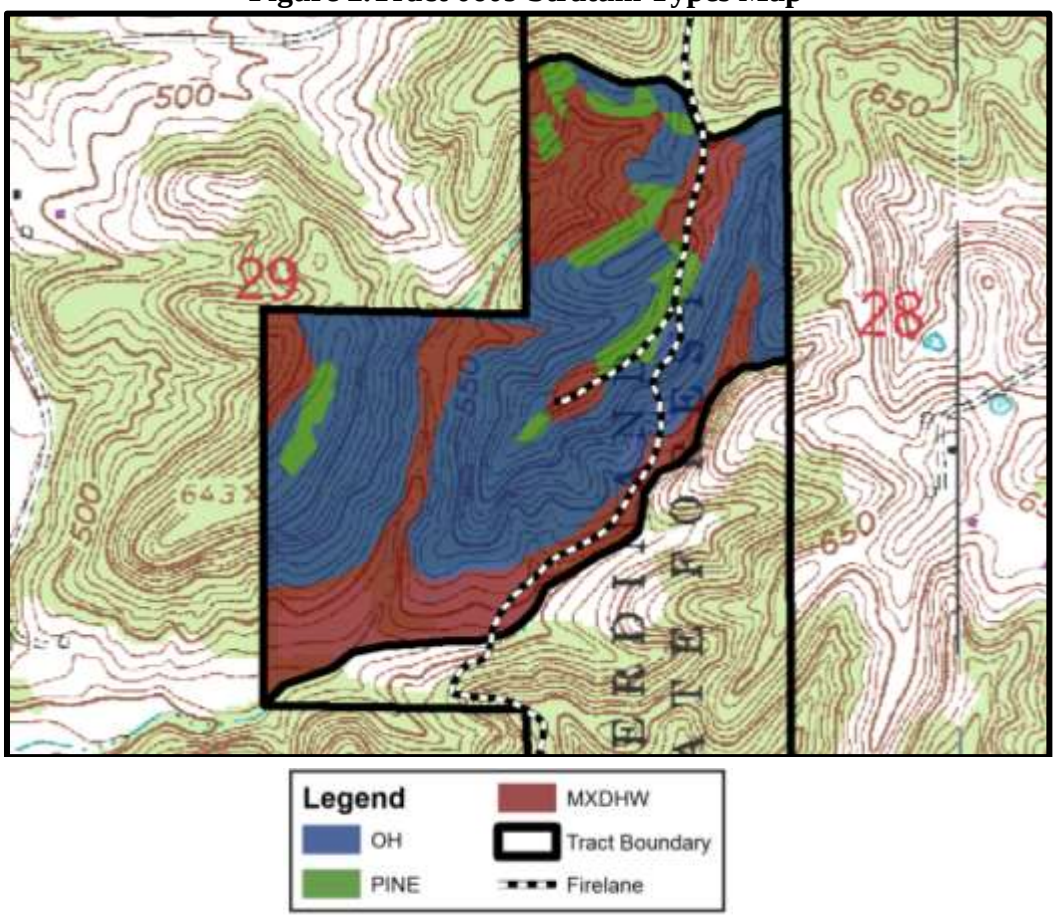
Table 2.Gingrich Stand and Stock Table tract 0609



Summary Tract Silvicultural Prescription and Proposed Activities

The current forest resource inventory was completed in 2015 by Jacob Henry. Thirty-five prism points were sampled over 128.5acres (1 point for every 3.2 acres). A tract summary of the forest resource inventory is given above and a species breakdown of the summary is given in Table 3 below. The tract's forest resource is composed of 3 different stratums based on the 3 major timber types and size classes mentioned below.

Figure 2.Tract 0609 Stratum Types Map



Mixed HardwoodsStratum

The mixed hardwoods timber type can be very variable in composition and thereby have more complicated prescriptions. The mixed hardwoods type covers roughly 37% of the tract or about 41.6 acres with an average basal area of 63.6 square feet per acre. The overstory is dominated by yellow poplar, white ash, American sycamore, sugar maple, and northern red oak. The understory layer consists of mainly sugar maple, yellow poplar, American beech, American sycamore, northern red oak, and pignut hickory. The regeneration layer consists of mainly sugar maple, American beech, yellow poplar, and dogwood.

A fair amount the tract's YEP appeared to be in modest decline as a result of the past few years of drought and the Tulip Poplar Scale insect infestation that occurred in the late spring of 2012. Affected YEP will need careful review when the tract is marked as mortality is expected. A few areas have been hit with some past wind damage.

A light single tree selection harvest is prescribed to remove lower quality stems, declining and mature to overmature trees which will help to improve croptree spacing. White and green ash should be marked for harvest due to the emerald ash borer moving through the area. An improvement cutting is prescribed to release quality oaks, hickories and walnuts from crown competition of lesser-valued timber species. Overall, marking objectives within this component

should consider oak, hickory, walnut, and other species of significant timber and wildlife value as the preferred trees for release. Improvement cuttings in this area will also be applied to remove low-forking, leaning, overtopped/suppressed intermediates, epicormically sprouting, and deformed trees. The long-term result of these prescribed cuttings will increase timber and wildlife habitat diversity. Group selection may be prescribed in areas of low quality, disease/damaged stems, low basal area, or maturity to help maintain long-term forest regeneration and sustainability. Planned regeneration openings are expected to return to mixed hardwoods with a strong component of YEP.

Oak-Hickory Stratum

The Oak-Hickory timber type provides significant wildlife, timber resource, and value. The retention of species in this stratum is important in the Division's long-term timber management objectives. The Oak-Hickory type covers roughly 48.6% of the tract or about 54.4 acres. The overstory is dominated by white oak, black oak, northern red oak, and American beech with an average basal area of 76.4 square feet per acre. The understory layer consists of mainly sugar maple, American beech, white oak, bitternut hickory, northern red oak, and silver maple. The regeneration layer consists of mainly sugar maple, American beech, yellow poplar, shagbark hickory, and dogwood.

Single tree selection is prescribed to remove lower quality stems, declining and mature to overmature trees to release a growing stock of high quality, more vigorous stems. Likewise, careful selection by free thinning of co-dominant stems will help to improve overall croptree spacing. Lower quality trees that include low-forking, leaning, overtopped/suppressed intermediates, epicormically sprouting, and deformed trees are planned to be marked for removal in an improvement cutting. White and green ash should be marked for harvest due to the emerald ash borer moving through the area. Group selection may be implemented in areas of low quality stems, disease/damaged stems, low basal area, or maturity to help maintain long-term forest regeneration and sustainability. Regeneration will likely be mixed hardwoods with a component of yellow poplar and oak. Any areas with advanced oak regeneration present should be released with a group selection opening.

Pine Stratum

Pines were commonly planted for erosion control purposes during the first half of the 20th century. As these pines have matured and individual trees have declined, native hardwoods have become established especially in the stratum's understory and canopy gaps. This timber type covers roughly 14.3% of the tract or about 16.0 acres of the tract with an average basal area of 57.1 square feet per acre. The overstory is dominated by eastern white pine with an understory layer consisting mainly of Virginia pine, eastern white pine, red pine, American beech, and white ash. The regeneration layer consists of mainly Virginia pine, bitternut hickory, shortleaf pine, eastern white pine, American beech, blackgum, northern red oak, and black oak.

The white pine is in fair to poor condition with some of the overstory experiencing crown dieback. The red and Virginia pine are in poor condition with many experience slowed growth and dieback. Some areas of pine should be opened up to release the hardwood regeneration that has moved into the understory. Group selection may be prescribed in areas of low quality, disease/damaged stems, low basal area, or maturity to help maintain long-term forest

regeneration and sustainability. Areas where poletimber hardwoods have emerged and entered the stratum canopy should be prescribed TSI for croptree release if not adequately released during the prescribed timber harvest. Overall, marking objectives within this component should consider oak and other species of significant wildlife value as the best croptrees for future conservation. A selection of quality and vigorous white pine may be retained as they provide some wildlife habitat diversity.

Summary Tract Silvicultural Prescription and Proposed Activities

Given the recent inventory and growth of tract 0609's forest resources, a managed timber harvest over the 112 acre commercial forest area is prescribed within the next five years and will yield an estimated 100-160 MBF. Tract 0609 could be harvested in conjunction with tract 0610. Problem occurrences of invasive species are prescribed for treatment prior to harvest operations. Following the prescribed harvest operation, TSI is to be undertaken along with assessment of invasive species for follow-up treatment.

Table 3. Overview of Sawtimber Volume Estimates for 0609

Species	Harvest	Leave	Total
White Oak	25,250	204,510	229,760
Yellow Poplar	14,420	48,560	62,980
Eastern White Pine	19,800	40,620	60,420
Northern Red Oak	10,760	14,620	25,380
Black Oak	7,400	15,780	23,180
Sugar Maple	6,390	10,070	16,460
White Ash	16,140	0	16,140
American Sycamore	4,990	9,770	14,760
American Beech	5,290	8,450	13,740
Bitternut Hickory	0	10,360	10,360
Black Cherry	940	8,850	9,790
Shagbark Hickory	0	6,270	6,270
Pignut Hickory	0	5,360	5,360
Blackgum	2,740	2,160	4,900
Shortleaf Pine	1,300	3,380	4,680
Virginia Pine	0	3,550	3,550
Bur Oak	0	2,830	2,830
Silver Maple	2,350	0	2,350
Sweetgum	1,500	0	1,500
Tract Totals (Bd. Ft.)	**119,270**	**395,140**	**514,410**
Per Acre Totals (Bd. Ft./Ac.)	**1,065**	**3,528**	**4,593**

Proposed Activities Listing

Proposed Management Activity	***Proposed Period***
Pre-harvest Invasives Treatment	CY2016-2018
DHPA timber sale project review	CY2016-2019
Timber Marking &Invasives Evaluation	CY2016-2021
Timber Sale	CY2016-2021
Postharvest TSI &Invasives Follow-up	CY2017-2022
Regeneration Opening Review	3 yrs post-harvest
Reinventory and Management Guide	CY2030

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