

FOREST STEWARDSHIP PLAN

FOR

Maryland Department of Natural Resources
Forest Service
Cedarville State Forest
10201 Bee Oak Road
Brandywine, MD 20613
Phone: (410) 535-1303



Maryland
Department of
Natural Resources

LOCATION

10201 Bee Oak Road
At the intersection of Bee Oak Road and Dent Road
Brandywine, MD

Sub-watershed: Mattawoman Creek (#02140111)
Zekiah Swamp (#02140108)

IN

Charles & Prince George's Counties

ON

Property Wide

3,789.0 Wooded Acres
13.9 Field Acres
7.1 Pond Acres
11.4 Marsh Acres
39.3 Fish Hatchery Acres
5.8 Residential Acres
3,866.5 Total Acres

Wooded Area

2,412.0 Forest Management Zone Acres
1,302.0 Riparian Habitat Buffer Zone Acres
(includes Zekiah Swamp)
75.0 Campground Acres

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Initial Plan: 2/26/2016



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PARCEL INFORMATION

<u>COUNTY</u>	<u>TAX MAP</u>	<u>PARCEL</u>	<u>ACCOUNT NUMBER</u>
Prince George's	165	11	11-1184886
Prince George's	165	29	11-1184928
Prince George's	165	33	11-1184902
Prince George's	165	34	11-1184894
Prince George's	165	36	11-1184837
Prince George's	166	6	11-1156439
Prince George's	166	64	08-0842393
Prince George's	166	65	08-0842401
Prince George's	166	154	11-3566817
Prince George's	172	4	08-0833491
Prince George's	172	8	08-0833509
Prince George's	173	12	08-0843581
Charles	9	0000	08-032831
Charles	9	18	08-032823
Charles	16	93	08-043175

INTRODUCTION

The Maryland Department of Natural Resources owns the Cedarville State Forest in Brandywine, MD. The property is jointly managed by the Maryland Forest Service, which oversees the forest management on the property, and the Maryland Park Service, which oversees the recreation management on the property. The Maryland Fisheries Service also manages the 39.2 acre Manning Fish Hatchery in the southwest part of the property. The forest is managed under a sustainable, multiple use concept covering all aspects of natural resources. The forest is managed primarily for timber products, forest health, public recreation, wildlife habitat, soil erosion control, water quality improvement and natural heritage. These goals correspond to the stewardship objectives of **Forest Products** (primary objective) and Natural **Heritage and Recreation** (secondary objective). The overall goal of this Forest Stewardship Plan is to ensure the long-term health and sustainability of the forest.

PROPERTY OVERVIEW

The property is located on the border between Charles County and Prince George's County and is made up of a central main tract and three outlying tracts (Ryon, Chapman & Howard). The property is subdivided into eight (8) compartments for logistical purposes. There are thirteen (13) individual forest stands throughout the property. A powerline right-of-way is located along the western edge of the main tract (Compartment 5) and cuts off three additional sections of the property. A railroad line bisects the Ryon tract (Compartment 8) and runs north to south. The forest is accessed by Bee Oak Road and Cedar Forest Road for the main tract and Horsehead Road, Sims Lane, Poplar Hill Road and Holly Spring Drive for the Ryon, Chapman and Howard tracts). The property consists mostly of rolling terrain with some sections of moderate slopes and some flat areas. Recreation resources consist of 19.5 miles of multiple use trails (hiking, biking & equestrian), 20+ campsite pads, picnic areas, archery ranges, a fishing pond and a large public hunting area. Due to its close proximity to Waldorf and Upper Marlboro, Cedarville State Forest is a popular recreation area.

WATER RESOURCES

Two major blue line streams are located in Cedarville State Forest, Zekiah Swamp Run and Wolf Den Branch, as well as ten additional blue line streams. There are fourteen non-tidal wetland types scattered throughout the forest (PEM5A, PEM5C, PFO1A, PFO1C, PFO1E, PFO1/3A, PFO1/EM5A, PFO1/EM5C, PFO/SS1C, PFO4/1A, POWFH, POWKZH, POWZH & PSS1C). Both Zekiah Swamp Run and Wolf Den Branch are also considered Wetlands of Special State Concern (WSSC). The entire property is located outside of the Chesapeake Bay Critical Area.

FOREST TYPES

Cedarville State Forest has a diverse mixture of tree species. There are three main forest types; upland hardwood forest, bottomland hardwood forest and pine (natural and plantations). The upland hardwood forest type consists mostly of red oaks and white oaks, with some hickory and red maple. They are found primarily in the well drained, upland portions of the property.

The bottomland hardwood forest types consists mostly of tulip poplar, sweetgum and blackgum and are found in the moderately to poorly drained bottomland portions of the property. The pine forest type consists of naturally occurring stands of Virginia pine and loblolly pine plantations. Oaks are often found mixed in the Virginia pine stands. Several timber harvests have been conducted in the last fifteen years, resulting in an uneven aged forest.

NATURAL HERITAGE RECOMMENDATIONS

Cedarville State Forest lies at the headwaters of Zekiah Swamp. The Zekiah is specially designated and regulated by the Maryland Department of the Environment as a WSSC in recognition of the ecological significance of this vast wetland complex. Extensive hardwood swamp forests include smaller areas of shrub swamp, emergent marshes, mudflats, gravel bars, vernal pools and beaver ponds, providing a variety of rare plant and wildlife habitats. Nearly a mile wide throughout much of its 16 mile length, Zekiah Swamp's approximately 15,000 acres make it the largest hardwood swamp on the Western Shore. The biological resources and remote, wild character of the swamp led the Smithsonian Institution to designate Zekiah as a "Primary Natural Area Recommended for Protection" in its report on ecological priorities for the Chesapeake Bay Region (1974). The swamp was also included in the Department of State Planning's "Catalog of Natural Areas in Maryland" in 1968. The Wicomico River, to which Zekiah Swamp is the largest contributor of freshwater, was designated a Maryland Scenic River in 1971. In 2005, the Department of Natural Resources identified the Zekiah as the highest ranking watershed in the state based upon the rarity of aquatic animal species present in the watershed, the density of migratory fish, and the composition of the fish species present in the streams.

Protecting forested headwaters areas such as Cedarville State Forest is vital to maintaining the hydrology and water quality of the rare species' aquatic and wetland habitats downstream. Headwater forests and wetlands regulate stream flow and maintain the hydrology of downstream wetland and aquatic habitats. Headwater forests and wetlands are also vital to the aquatic food chain. The leaves, woody debris, and insects from headwaters forests, wetlands and streams form the base of the aquatic food chain. Floods carry this organic matter from headwaters areas downstream, providing food sources to the aquatic system. The headwaters areas also play an important role in maintaining the water quality of the wetland and aquatic habitats downstream by retaining nutrients from runoff as well as sediment and other pollutants. Two rare fish, the flier (*Centrarchus macropterus*, state-listed as Threatened), and the swamp darter (*Etheostoma fusiforme*, state-listed as In Need of Conservation) have been documented in Zekiah Swamp Run less than one mile downstream of Cedarville Forest. The flier reaches the northern edge of its range in Maryland and occurs only in the Lower Potomac River drainage area in our state. This omnivorous fish inhabits clear, shallow, acidic water in streams and ponds. The Zekiah is identified as a stronghold watershed for the flier due to the frequency of its occurrence and the abundance of fish documented in this watershed. While the swamp darter has a broad range, from southern Maine to Florida west to Texas, it is identified as rare in the northeast, Midwest, and most Mid-Atlantic States. The swamp darter feeds on invertebrates (insect adults and larvae, small crustaceans) in slow-moving streams and still water in swamps and ponds.

Streams and groundwater-fed seepage wetlands at five documented locations at Cedarville support five rare and uncommon dragonfly species: the sable clubtail (*Gomphus rogersi*), listed in Maryland as In Need of Conservation; Sely's sunfly (*Helocordulia selysii*), state-listed as Threatened; and three species tracked on the state Watch List, the brown spiketail (*Cordulegaster bilineata*), gray petaltail (*Tachopteryx thoreyi*), and eastern red damsel (*Amphiagrion saucium*). The Sable clubtail is a medium-sized, predominantly black dragonfly whose larvae require clear, moderately flowing headwaters streams with rocky or sandy substrates. Its flight season is mid-April through late July. This species is primarily Appalachian in its distribution, extending from Alabama to New York, and is rare throughout the northern half of its range. Sely's sunfly is near the northern edge of its range here in Maryland, and is more common in southeastern states. Also known as Sely's sundragon, Sely's sunfly can be found in sunny openings in forested wetlands from April to mid-May. Its larvae inhabit slow moving streams. At two locations at Cedarville, groundwater-fed seepage wetlands and the sandy-bottomed rivulets that they feed support the larvae of brown spiketail. Adults fly in May-June. Brown spiketail is rare throughout the northern portion of its range, from Pennsylvania to Michigan, and more common to the south. All of these dragonfly species are identified as species of Greatest Conservation Need in Maryland's Wildlife Diversity Conservation Plan. The larvae of these rare dragonflies are aquatic and are vulnerable to siltation, chemical runoff (such as pesticides), and changes in hydrology. Due to this sensitivity, these dragonfly species are important indicators of the quality of freshwater streams and wetlands. They are important in the wetland and aquatic ecosystems both as predators (adults feed on many times their body weight in mosquitoes, gnats, midges and other insects) and prey (the aquatic larvae are important prey for amphibians and fish).

Along the edge of the man-made Cedarville Pond a small 'bog' mat has formed where groundwater seepage maintains saturated soils year-round. Referred to as a "fen" due to the importance of groundwater to the hydrology, this small sphagnum mat harbors several rare and uncommon plant species. A letter from a botanist who frequented this site in the 1960's makes clear that some of these rare species were planted. Some of the rare plant species noted below, however, may be naturally occurring and rely on the acidic, perennially saturated soil conditions to survive. A small population of the globally vulnerable Long's rush (*Juncus longii*, state-listed as Endangered, tracked as globally vulnerable due to range-wide rarity) and a large stand of twisted spikerush (*Eleocharis tortilis*, state Watch List) grow along the perimeter. Within the pond, the aquatic plant, swollen bladderwort (*Utricularia inflata*, state-listed as Endangered) blooms in May and June. This carnivorous species uses air-filled sacs (bladders) to lure and capture its prey. The brown spiketail, an uncommon dragonfly noted above, inhabits Cedarville Pond. Some of these rare species may have occurred on site prior to the damming of the stream in areas where the sandy, gravelly soils provided saturated conditions.

A Coastal Plain Acidic Seepage Swamp along a tributary to Zekiah Swamp Run at Cedarville State Forest harbors a large population of Kidneyleaf grass-of-parnassus (*Parnassia asarifolia*). This rare wildflower, state-listed as Endangered, grows in the southern Appalachian mountains from Alabama to Virginia, and Maryland's populations lie at the northern edge of its range. Kidneyleaf grass-of-Parnassus requires perennially saturated soils that seldom flood. Sand and gravel in the adjacent upland soils allow for groundwater flow to the wetland at the base of the slope at this site. Plants more common in northern and mountain regions, the White

Hellebore and Canada mayflower, grow in these cool, spring-fed seeps. The seepage swamp also provides excellent habitat for amphibians. Four amphibian species were documented as larvae and adults during recent surveys, indicating that these species breed here. Along another tributary to the Zekiah at Cedarville State Forest, a second Coastal Plain Acidic Seepage Swamp was documented. At this location surveyors documented the gray petaltail and larvae of the eastern red damsel, two uncommon dragonfly species noted above. Coastal Plain Acidic Seepage Swamps are an uncommon habitat in Maryland, and provide key wildlife habitat to a variety of amphibians, reptiles, dragonflies and damselflies. The plant communities in these swamps are considered uncommon in Maryland and nationally.

MANAGEMENT RECOMMENDATIONS

1. Avoid disturbance to non-tidal wetlands.
2. Retain a minimum of 300ft buffer to intermittent and perennial streams and wetlands. This will provide important riparian habitat for a variety of nongame wildlife, including FIDS, and help to maintain water quality and hydrology of the streams and wetlands.
3. Avoid crossing the perennial and intermittent streams with equipment.
4. Avoid logging during the wettest times of the year. Logging between early August and late November may avoid the period when precipitation is high and the soils are wettest.
5. Avoid logging during the spawning period for the rare fish species, March through May.
6. Retain dead and downed woody debris on the forest floor. This material provides wildlife habitat and absorbs rainwater, reducing runoff and erosion. As it decays it increases the water holding capacity of the soil.
7. Retain snags. These dead trees offer habitat to cavity nesting wildlife such as woodpeckers, flying squirrels and bats.
8. Control the growth of invasive vines such as Japanese honeysuckle, Oriental bittersweet, English ivy, Porcelain berry, Kudzu and Climbing euonymus, and vine-like species such as Mile-a-minute. These vines can inhibit the growth of saplings and slow the process of forest regeneration as they grow over and around saplings, shading them and prohibiting growth. Invasive vines can also kill larger trees by shading them and causing branches to break off under their added weight.
9. Avoid disturbance to steep slopes (15% or greater). Due to the presence of rare wetland and aquatic species that are sensitive to sedimentation, soil stabilization should occur immediately (within 24 hours) after activities that disturb soil. Special effort should be made to retain fine particle silt, sand and clay sediments; for example, incorporate redundant/additional control measures in the sediment and erosion control plan to ensure maximum filtration of any sediment-laden runoff (e.g. accelerated stabilization, super silt fence instead of silt fence, etc.).

10. Incorporate the guidelines for logging in high quality FIDS habitat in the forest stewardship plan for any logging proposed in the deciduous stands and mixed pine-hardwood stands.
11. Avoid additional conversion of stands to loblolly pine. Pursue management activities that, over time, would increase the proportion of hardwoods in planted loblolly pine stands at Cedarville to improve wildlife habitat.

In addition, the property provides an important habitat for a group of bird species that are considered in need of conservation. These groups of bird species are collectively called "Forest Interior Dwelling Species" (FIDS). The large size of the contiguous forest in this area and the age of this forest make this site suitable habitat for a variety of forest interior breeding birds. As the forest on this parcel ages it provides better habitat for a variety of reptiles, amphibians, birds, and small mammals that nest in tree cavities and in the well developed leaf litter or woody debris of the forest floor, and that forage for insects or fungi on the snags and dead branches of standing trees as well as in the leaf litter and woody debris. The well-stratified canopy of the older forest provides excellent habitat for a variety of birds, including forest interior dwelling species that are declining through much of their range.

The large size of the contiguous forest in this area make this site suitable habitat for a great diversity of forest interior breeding birds, many of which are declining in the region. These declines have been attributed largely to the loss and fragmentation of forests in the eastern United States due to urbanization, agriculture and some forest management practices. Tropical deforestation on the wintering grounds also is an important factor. The key to maintaining suitable breeding habitat for FIDS, and halting or reversing their declines, is the protection of extensive, unbroken forested areas throughout the region.

The conservation of FIDS habitat is mandated within the Chesapeake Bay Critical Area, and strongly encouraged outside of the Critical Area. The following are management recommendations for FIDs that should be considered when forest management operations are planned.

- 1) Minimize forest disturbances during the breeding season (May 1 - August 31) whenever possible.
- 2) The forest canopy should not be removed in excess of 70% crown closure with selective cutting or timber stand improvement practices.
- 3) Retain or encourage snags 10 inches diameter at breast height or greater. Cluster snags where possible. Snags which protrude above a closed forest canopy should be removed.
- 4) Maintain forested buffers along streams and shorelines. Day lighting (widening) of access roads in forest interiors should be discouraged.

Forest Interior Breeding Birds of Coastal Maryland

Red Shouldered Hawk*	Pileated Woodpecker	Northern Parula
American Redstart*	Ovenbird	Scarlet Tanager
Barred Owl*	Acadian Flycatcher	Black-and-White Warbler
Prothonotary Warbler	Louisiana Waterthrush	Swainson's Warbler*
Whip-poor-will	Yellow-throated Vireo	Hooded Warbler
Worm-eating Warbler*	Kentucky Warbler*	<i>*species especially</i>
Hairy Woodpecker	Red-eyed Vireo	<i>sensitive to disturbance</i>

In a general sense, the natural heritage and recreational opportunities of the forest can be enhanced through a variety of forest management practices, which can increase habitat diversity and food sources for wildlife. This will provide frequent recreational opportunities for watching birds and other animals, and promote a diverse forest habitat.

SOILS

Annemessex Series: The Annemessex series consists of somewhat poorly drained soils. Runoff in these soils is low to very high. Slope ranges from 0 to 5 percent. Mean annual temperature ranges from 52 to 58 degrees F. Mean annual precipitation ranges from 40 to 50 inches.

Aquasco Series: The Aquasco series consists of somewhat poorly drained soils. Runoff in these soils is high to very high. Slope ranges from 0 to 5 percent. Mean annual temperature ranges from 52 to 57 degrees F. Mean annual precipitation ranges from 40 to 50 inches.

Beltsville Series: The Beltsville series consists of moderately well drained soils. Runoff in these soils is low to very high. Slope ranges from 0 to 40 percent. Mean annual temperature ranges from 48 to 61 degrees F. Mean annual precipitation ranges from 35 to 55 inches.

Croom Series: The Croom series consists of well drained soils. Runoff in these soils is low to high. Slope ranges from 0 to 40 percent. Mean annual temperature ranges from 46 to 59 degrees F. Mean annual precipitation ranges from 30 to 50 inches.

Dodon Series: The Dodon series consists of moderately well drained soils. Runoff in these soils is low to high. Slope ranges from 0 to 80 percent. Mean annual temperature ranges from 52 to 57 degrees F. Mean annual precipitation ranges from 40 to 50 inches.

Downer Series: The Downer series consists of well drained soils. Runoff in these soils is very low to medium. Slope ranges from 0 to 80 percent. Mean annual temperature ranges from 52 to 58 degrees F. Mean annual precipitation ranges from 40 to 50 inches.

Elkton Series: The Elkton series consists of poorly drained soils. Runoff in these soils is negligible to very high. Slope ranges from 0 to 5 percent. Mean annual temperature ranges from 52 to 58 degrees F. Mean annual precipitation ranges from 40 to 50 inches.

Fallsington Series: The Fallsington series consists of poorly drained soils. Runoff in these soils is negligible to very high. Slope ranges from 0 to 2 percent. Mean annual temperature ranges from 50 to 58 degrees F. Mean annual precipitation ranges from 40 to 50 inches.

Galestown Series: The Galestown series consists of somewhat excessively drained soils. Runoff in these soils is negligible to medium. Slope ranges from 0 to 30 percent. Mean annual temperature ranges from 52 to 58 degrees F. Mean annual precipitation ranges from 40 to 50 inches.

Grosstown Series: The Grosstown series consists of well drained soils. Runoff in these soils is very low to high. Slope ranges from 0 to 40 percent. Mean annual temperature ranges from 52 to 57 degrees F. Mean annual precipitation ranges from 40 to 50 inches.

Hammonton Series: The Hammonton series consists of moderately well drained soils. Runoff in these soils is very low to medium. Slope ranges from 0 to 15 percent. Mean annual temperature ranges from 52 to 58 degrees F. Mean annual precipitation ranges from 40 to 50 inches.

Hoghole Series: The Hoghole series consists of excessively drained soils. Runoff in these soils is very low to medium. Slope ranges from 0 to 40 percent. Mean annual temperature ranges from 52 to 57 degrees F. Mean annual precipitation ranges from 40 to 50 inches.

Ingleside Series: The Ingleside series consists of well drained soils. Runoff in these soils is negligible to low. Slope ranges from 0 to 15 percent. Mean annual temperature ranges from 52 to 58 degrees F. Mean annual precipitation ranges from 40 to 50 inches.

Issue Series: The Issue series consists of somewhat poorly drained soils. Runoff in these soils is low to very high. Slope ranges from 0 to 5 percent. Mean annual temperature ranges from 52 to 57 degrees F. Mean annual precipitation ranges from 40 to 50 inches.

Lenni Series: The Lenni series consists of poorly drained soils. Runoff in these soils is low to very high. Slope ranges from 0 to 5 percent. Mean annual temperature ranges from 52 to 58 degrees F. Mean annual precipitation ranges from 40 to 50 inches.

Marr Series: The Marr series consists of well drained soils. Runoff in these soils is low to high. Slope ranges from 0 to 80 percent. Mean annual temperature ranges from 52 to 57 degrees F. Mean annual precipitation ranges from 40 to 50 inches.

Matapeake Series: The Matapeake series consists of well drained soils. Runoff in these soils is medium. Slope ranges from 0 to 15 percent. Mean annual temperature ranges from 52 to 58 degrees F. Mean annual precipitation ranges from 40 to 50 inches.

Potobac Series: The Potobac series consists of poorly drained soils. Runoff in these soils is very high. Slope ranges from 0 to 2 percent. Mean annual temperature ranges from 52 to 57 degrees F. Mean annual precipitation ranges from 40 to 50 inches.

Quindocqua Series: The Quindocqua series consists of poorly drained soils. Runoff in these soils is negligible to very high. Slope ranges from 0 to 2 percent. Mean annual temperature ranges from 52 to 58 degrees F. Mean annual precipitation ranges from 40 to 50 inches.

Sassafras Series: The Sassafras series consists of well drained soils. Runoff in these soils is very low to high. Slope ranges from 0 to 40 percent. Mean annual temperature ranges from 45 to 64 degrees F. Mean annual precipitation ranges from 35 to 55 inches.

Woodstown Series: The Woodstown series consists of moderately well drained soils. Runoff in these soils is negligible to high. Slope ranges from 0 to 25 percent. Mean annual temperature ranges from 52 to 58 degrees F. Mean annual precipitation ranges from 40 to 50 inches.

Zekiah Series: The Zekiah series consists of poorly drained soils. Runoff in these soils is negligible to very high. Slope ranges from 0 to 2 percent. Mean annual temperature ranges from 52 to 58 degrees F. Mean annual precipitation ranges from 38 to 48 inches.

PROPERTY-WIDE RECOMMENDATIONS

EMERALD ASH BORER

The emerald ash borer (EAB) is a small metallic green insect that specifically infests and kills ash trees. This pest was first discovered in Prince George's County in August 2003 and has since spread to almost every county in the state. EAB is also found in a majority of the states in the Northeast and Mid-West and is spreading to the South. In response to this forest threat, a federal quarantine has been placed on the movement of any and all ash products (logs, stumps, branches, etc.) out of the quarantine zone and to a non-infested state. However, ash products can be moved within the quarantine zone. This is especially important if you harvest timber off the land. For more information about EAB and the latest quarantine map, please visit the MD Dept. of Agriculture website (www.mda.maryland.gov/plants-pests/Pages/eab.aspx).

FOREST HEALTH

Maintaining the health of the forest is important to help prevent damaging problems from interfering with the benefits received from the forest. In order to maintain forest health, consider the following general guidelines:

1. Remove excessive numbers of over mature, weakened or damaged trees.
2. Encourage a mixture of tree species to minimize damage from problems that attack specific tree species.
3. Discourage tree species that are not well suited to the climate or site conditions.
4. Maintain a density of trees that provide adequate growing space.
5. Avoid wounding trees and compacting soil during silvicultural treatments and recreational activities.
6. Stay informed of pest alerts and current pest outbreaks in the area.
7. Monitor the forest at least annually for symptoms of forest pest.
8. Prevent livestock from grazing in the woods

GYPSY MOTH

The Gypsy Moth has been a major problem in the Northeastern U. S. since 1869. Over the years they have become a defoliator of hardwood trees in Southern Maryland. Defoliation by the Gypsy Moth will weaken a tree, reduce growth, and often kill the tree.

Several factors determine the likelihood of a woodlot being infested by the Gypsy Moth. The type of tree present is one factor, oaks are among the most preferred species, and also favorable are sweetgum, blackgum, dogwood, hickory, maple and pine. Least preferred species include American holly, American sycamore, ash, black locust, and tulip poplar.

The condition of the woodland is also important. Areas with a considerable percentage of cull, damaged and deformed trees are highly susceptible. These conditions provide structural refuges and hiding places for larvae, pupae, and eggs.

If a stand is attacked by Gypsy Moth, its vulnerability will determine the amount of mortality. Trees in stressed conditions (overcrowded, over mature, overtopped, or damaged), are highly vulnerable. Good forest management can reduce the susceptibility of woodland to attacks by Gypsy Moth. Thinning can be used to reduce the amount of structural refuges and the percentage of preferred food species present. Maintaining a healthy, vigorous forest is the best tool in controlling susceptibility and reducing vulnerability.

INTEGRATED PEST MANAGEMENT

Insects and disease damage or destroy trees of all ages. Being observant of changes and unusual conditions during the growing season helps to detect these agents before they become hazardous. Insects and disease can attack the roots, trunk, branches and leaves of a tree. Forest pests include, but are not limited to: anthracnose, galls, fungi, root rot, borers, leaf miners, sawflies, mites, scales, aphids and caterpillars.

STAND DESCRIPTION & RECOMMENDED PRACTICES

Stand: 1

Acres: 766.0

Large Tree Species: white oak, southern red oak, Virginia pine

Small Tree Species: American holly, white oak, southern red oak

Shrub Species: highbush blueberry

Herbaceous Species: woodfern

Vine Species: greenbriar

Development Stage: sawtimber: 61%, poletimber: 26%, small tree: 13%

Age: Uneven (30-115 years, avg. 70 years)

Stocking: High (Overstocked at 126%)

Density: 175 trees/acre

Basal Area: 153 sq. ft./acre

Mean Diameter: 12.7 in.

Site Growth Potential: Good

Soil Types: Aquasco Silt Loam (ApA, ApB), Annemessex Silt Loam (AsA), Beltsville Silt Loam (BaA, BaC), Beltsville-Aquasco Complex (BcA), Beltsville-Grosstown-Woodstown Complex (BgB), Downer-Hamonton Complex (DoC), Grosstown Gravelly Silt Loam (GgB, GgC), Grosstown-Marr-Hoghole Complex (GmD, GmF), Grosstown-Woodstown-Beltsville Complex (GwD), Hoghole-Grosstown Complex (HgB), Issue Silt Loam (Is), Lenni And Quindocqua Soils (LQA), Marr-Dodon Complex (MnC), Matapeake Silt Loam (MpB), Potobac-Issue Complex (Pu, Px), Sassafras Sandy Loam (SaB, SaC), Udorthents, Reclaimed Gravel Pits (UdgB), Woodstown Sandy Loam (WoA, WoB).

Stand Description:

This 766.0 ac stand consists primarily of white oak (26%), southern red oak (13%) and Virginia pine (10%) with tulip poplar, sweetgum, red maple, American beech, black gum, northern red oak, loblolly pine, hickory, chestnut oak, black cherry and willow oak scattered throughout the stand. Combined, oaks make up 44% of the stand. Current growth rates are fair, taking an average of 13 years to grow 2.0 inches in diameter, and the stand has a good growth

potential with a site index average of 65 feet for oaks, 81 feet for tulip poplar and 74 feet for Virginia pine.

The stand is located in every compartment throughout the property and is characterized as an oak/hardwood mix. The stand is located in the upland portions of the property and the terrain varies from moderate slopes to flat or rolling uplands. Three blue line streams are located throughout the stand. Three non-tidal wetlands types (PFO1A, PFO1E & PSS1C) are found at four locations (Compartments 1, 3, 7 & 8). The understory is thick with American holly, white oak, southern red oak, American beech, highbush blueberry, woodferns and greenbriar.

To meet your management objectives, implement the following practices:

Commercial Timber Harvest

In order to reduce the stocking in this stand and to improve forest health, a commercial timber harvest operation should be implemented using the selective harvest method. This method of timber harvesting targets single trees or small groups of trees for removal, leaving a stand with a reduced, but adequate stocking level. The goal of the harvest is to reduce the basal area from 153 ft²/ac to not less than 80-90 ft²/ac. Trees to be removed should be a mix of those with high quality/good form and those with low quality/poor form. This will allow the forest to be reseeded with high quality stock, while still attracting loggers to bid on the timber.

Of the 766.0 acres in this stand approximately 225.0 acres are unavailable for a timber harvest. This is due to stream & wetland buffers as prescribed by the DNR Wildlife & Heritage Service. These buffers protect ecologically important areas such as Zekiah Swamp Run, Wolf Den Branch, their tributaries and any rare or endangered species/habitat on the property.

It is recommended that the stand be selectively harvested in sections of 40-65 acres spread out over the next 13 years. Care should be taken during the harvest to avoid any stream crossings or wetland areas in order to minimize soil erosion and to protect water quality of any nearby streams. **Completion date: February 2029.**

STAND DESCRIPTION & RECOMMENDED PRACTICES

Stand: 2

Acres: 1,076.0

Large Tree Species: white oak, southern red oak, Virginia pine

Small Tree Species: American holly, American beech, sweetgum

Shrub Species: highbush blueberry, paw-paw, spicebush

Herbaceous Species: woodfern, crows foot, grass

Vine Species: greenbriar, grapevine

Development Stage: sawtimber: 68%, poletimber: 22%, small tree: 10%

Age: Uneven (30-120 years, avg. 77 years)

Stocking: Adequate (Fully stocked at 95%)

Density: 147 trees/acre

Basal Area: 113 sq. ft./acre

Mean Diameter: 11.9 in.

Site Growth Potential: Good

Soil Types: Aquasco Silt Loam (ApA), Annemessex Silt Loam (AsB), Beltsville Silt Loam (BaA, BaB, BaC), Beltsville-Grosstown-Woodstown Complex (BgB), Croom-Marr Complex (CwD, CwE), Downer-Hamonton Complex (DoB), Fallsington Sandy Loam (FaA), Grosstown Gravelly Silt Loam (GgB, GgC), Grosstown-Marr-Hoghole Complex (GmF), Grosstown-Woodstown-Beltsville Complex (GwD), Hoghole-Grosstown Complex (HgB), Issue Silt Loam (Is), Lenni And Quindocqua Soils (LQA), Marr-Dodon Complex (MnC), Matapeake Silt Loam (MpB), Potobac-Issue Complex (Pu, Px), Sassafras Sandy Loam (SaB), Woodstown Sandy Loam (WdB, WoB).

Stand Description:

This 1,076.0 ac stand consists primarily of white oak (35%), southern red oak (15%) and Virginia pine (9%) with tulip poplar, sweetgum, red maple, American beech, black gum, northern red oak, loblolly pine, hickory, chestnut oak, black locust and sycamore scattered throughout the stand. Combined, oaks make up 55% of the stand. Current growth rates are fair, taking an average of 15 years to grow 2.0 inches in diameter, and the stand has a good growth

potential with a site index average of 62 feet for oaks, 90 feet for tulip poplar and 64 feet for Virginia pine.

The stand is located in every compartment on the property, except Compartment 7, and is characterized as an oak/hardwood mix. The stand is located in the upland portions of the property and the terrain varies from moderate slopes to flat or rolling uplands. Two blue line streams are located throughout the stand. One non-tidal wetland type (PFO1A) is found at four locations (Compartments 2, 3, 6 & 8). The understory is thick to sparse with American holly, American beech, sweetgum, blackgum, misc. oaks, highbush blueberry, paw-paw, spicebush, devils walking stick, woodferns, crows foot, grass greenbriar and grapevine.

To meet your management objectives, implement the following practices:

Commercial Timber Harvest

In order to reduce the stocking in this stand and to improve forest health, a commercial timber harvest operation should be implemented, **beginning in 2024**, using the selective harvest method. This method of timber harvesting targets single trees or small groups of trees for removal, leaving a stand with a reduced, but adequate stocking level. The goal of the harvest is to reduce the basal area from an estimate 130 ft²/ac to not less than 80-90 ft²/ac. Trees to be removed should be a mix of those with high quality/good form and those with low quality/poor form. This will allow the forest to be reseeded with high quality stock, while still attracting loggers to bid on the timber.

Of the 1,076.0 acres in this stand approximately 438.0 acres are unavailable for a timber harvest. This is due to stream & wetland buffers as prescribed by the DNR Wildlife & Heritage Service and the campground area located in Compartment 2. These buffers protect ecologically important areas such as Zekiah Swamp Run, Wolf Den Branch, their tributaries and any rare or endangered species/habitat on the property.

It is recommended that the stand be selectively harvested in sections of 50-100 acres spread between the years 2024 to 2031. Care should be taken during the harvest to avoid any stream crossings or wetland areas in order to minimize soil erosion and to protect water quality of any nearby streams. **Completion date: February 2031.**

STAND DESCRIPTION & RECOMMENDED PRACTICES

Stand: 3

Acres: 68.0

Large Tree Species: white oak, American beech, southern red oak

Small Tree Species: white oak, American holly, sweetgum

Shrub Species: highbush blueberry

Herbaceous Species: grass

Vine Species: greenbriar

Development Stage: sawtimber: 71%, poletimber: 19%, small tree: 10%

Age: Uneven (98-116 years, avg. 107 years)

Stocking: Adequate (Fully stocked at 81%)

Density: 83 trees/acre

Basal Area: 103 sq. ft./acre

Mean Diameter: 11.9 in.

Site Growth Potential: poor

Soil Types: Beltsville Silt Loam (BaB), Beltsville-Aquasco Complex (BcA), Beltsville-Grosstown-Woodstown Complex (BgB), Grosstown-Marr-Hoghole Complex (GmD), Grosstown-Woodstown-Beltsville Complex (GwD),

Stand Description:

This 68.0 ac stand consists primarily of white oak (53%), American beech (13%) and southern red oak (13%) with blackgum, hickory, red maple, sweetgum and Virginia pine scattered throughout the stand. Combined, oaks make up 66% of the stand. Current growth rates are fair, taking an average of 15 years to grow 2.0 inches in diameter, and the stand has a poor growth potential with a site index average of 45 feet for oaks.

The stand is located in Compartments 4 & 5 and is characterized as an oak/hardwood mix. The stand is located in the upland portions of the property and the terrain varies from moderate slopes to flat or rolling uplands. There are no streams or wetlands in this stand. The understory is thick to sparse with white oak, American holly, sweetgum, highbush blueberry, grass and greenbriar. This stand was selectively harvested in 2006 and 2013.

To meet your management objectives, implement the following practices:

Invasive Species Monitoring

As mention earlier, this stand was selectively harvested between 2006 and 2013 with a targeted basal area of 90-100. The stand is currently growing well and an increase in growth rates is expected. The stand should be allowed to grow freely until the average basal area has exceeded 130 sq.ft./ac.

The stand should also be monitored for the presence of any invasive species. Since the canopy has been opened up due to the timber harvest operation, more sunlight is reaching the forest floor which could cause any invasive species to spread. Periodic inspections of the stand should be made yearly. **Completion date: February 2031.**

STAND DESCRIPTION & RECOMMENDED PRACTICES

Stand: 4

Acres: 284.0

Large Tree Species: Virginia pine, southern red oak, white oak

Small Tree Species: American holly, southern red oak, blackgum

Shrub Species: highbush blueberry

Herbaceous Species: crowsfoot, ground pine

Vine Species: greenbriar, grapevine

Development Stage: sawtimber: 55%, poletimber: 33%, small tree: 12%

Age: Uneven (40-90 years, avg. 60 years)

Stocking: High (Overstocked at 119%)

Density: 204 trees/acre

Basal Area: 138 sq. ft./acre

Mean Diameter: 11.2 in.

Site Growth Potential: Good

Soil Types: Beltsville Silt Loam (BaB, BaC), Beltsville-Grosstown-Woodstown Complex (BgB), Downer-Hamonton Complex (DoB), Grosstown-Marr-Hoghole Complex (GmD), Grosstown-Woodstown-Beltsville Complex (GwD), Hoghole-Grosstown Complex (HgB), Ingleside Sandy Loam (InA), Issue Silt Loam (Is), Lenni And Quindocqua Soils (LQA), Marr-Dodon Complex (MnE), Potobac-Issue Complex (Pu), Woodstown Sandy Loam (WdB, WoA).

Stand Description:

This 284.0 ac stand consists primarily of Virginia pine (43%), southern red oak (18%) and white oak (14%) with loblolly pine, sweetgum, northern red oak, American beech, blackgum and tulip poplar scattered throughout the stand. Combined, oaks make up 37% of the stand. Current growth rates are fair, taking an average of 15 years to grow 2.0 inches in diameter, and the stand has a good growth potential with a site index average of 62 feet for oaks, 90 feet for tulip poplar and 64 feet for Virginia pine.

The stand is located in Compartments 1, 2, 3 & 5 and is characterized as a Virginia pine/oak mix. The stand is located in the upland portions of the property and the terrain varies

from moderate slopes to flat or rolling uplands. One blue line stream is located in the stand and one non-tidal wetland type (PFO1A) is found at two locations (Compartments 1 & 3). The understory is thick with American holly, southern red oak, sweetgum, blackgum, highbush blueberry, crows foot, ground pine, greenbriar and grapevine.

To meet your management objectives, implement the following practices:

Commercial Timber Harvest

In order to reduce the stocking in this stand and to improve forest health, a commercial timber harvest operation should be implemented, using the regeneration harvest method. This method of timber harvesting removes all trees within the harvest area, allowing the stand to regenerate naturally from surrounding trees or artificially through planted seedlings. Regeneration harvests are typically used to regenerate species that are shade intolerant, such as pine.

Of the 284.0 acres in this stand approximately 58.0 acres are unavailable for a timber harvest. This is due to stream & wetland buffers as prescribed by the DNR Wildlife & Heritage Service. These buffers protect ecologically important areas such as Zekiah Swamp Run, Wolf Den Branch, their tributaries and any rare or endangered species/habitat on the property.

It is recommended that the stand be regeneration harvested in sections of 40-70 acres spread out over the next five years. Care should be taken during the harvest to avoid any stream crossings or wetland areas in order to minimize soil erosion and to protect water quality of any nearby streams. **Completion date: February 2021.**

Artificial Regeneration

Once the individual harvest areas have been harvested, work can begin on regeneration of the stands. Although Virginia pine is shade intolerant and a native to Maryland, it is considered a pioneer species and has a rather short lifespan (60-75 years). After 50 years of age, Virginia pine can become infected with red heart rot (*Phellinus pini*), which can cause extensive decay in the tree. In addition, modified row thinnings are not considered effective due to the species' poor rooting structure which makes the trees susceptible to windthrow. The loss from windthrow would offset any increase in the stand's growth due to the thinning. According to North Carolina Cooperative Extension Service (Woodland Owner Notes, Gardner, 1994) this lack of wind firmness and poor growth response after 15 years of age makes commercial thinning ineffective.

Due to the limitation of Virginia pine, it is recommended that the stand be regenerated with loblolly pine seedlings. The harvested stands should be planted within one year of the harvest. In order to successfully regenerate loblolly pine seedlings, competition from other species must be eliminated or reduced. This can be accomplished by either herbicide spraying or prescribed burning. Both options cost anywhere from \$110-190/acre to implement.

Herbicide spraying can be done prior to planting or within one year of the planting, using a herbicide that will kill any broadleaf plant, but not injure any pine trees. Care must be taken by the applicator to select the appropriate herbicide and not to exceed the recommended application

rates. Herbicides such as atrazine (AAtrex 9-0), glyphosate (Accord, Round-up), imazapyr (Arsenal, Chopper), triclopyr (Garlon) and sulfometuron methyl (Oust) should be considered. The weather conditions during the spray operations must be monitored to reduce the amount of spray drift to non-target vegetation and any nearby water bodies. Applicators should be licensed by the MD Dept. of Agriculture.

Prescribed burning should be done after the harvest, but prior to the planting. The purpose of the burn is to reduce the amount of logging slash in the planting area and kill any competing vegetation. Site preparation will include the construction of control lines around the perimeter of the burn area. A DNR Forest Service approved burn plan and local county burn permit are required prior to any burning. Adequate resources (personnel & equipment), trained to agency standards, are also required.

Both site prep options require planning and timing is an issue with each option.
Completion date: February 2022.

STAND DESCRIPTION & RECOMMENDED PRACTICES

Stand: 5

Acres: 362.0

Large Tree Species: loblolly pine, Virginia pine, southern red oak

Small Tree Species: loblolly pine, American holly, sweetgum

Shrub Species: highbush blueberry

Herbaceous Species: grass

Vine Species: greenbriar, poison ivy, multiflora rose

Development Stage: sawtimber: 33%, poletimber: 48%, small tree: 18%

Age: Uneven (25-80 years, avg. 40 years)

Stocking: High (Overstocked at 185%)

Density: 385 trees/acre

Basal Area: 210 sq. ft./acre

Mean Diameter: 10.0 in.

Site Growth Potential: Very Good

Soil Types: Aquasco Silt Loam (ApA), Beltsville Silt Loam (BaB, BaC), Beltsville-Grosstown-Woodstown Complex (BgB), Downer-Hamonton Complex (DoB), Elkton Silt Loam (EkA), Fallsington Sandy Loam (FaA), Galestown-Hammonton Complex (GcB), Grosstown Gravelly Silt Loam (GgB, GgC), Grosstown-Hoghole Complex (GhC), Grosstown-Marr-Hoghole Complex (GmD), Grosstown-Woodstown-Beltsville Complex (GwD), Hoghole-Grosstown Complex (HgB), Ingleside Sandy Loam (InA), Matapeake Silt Loam (MpB), Potobac-Issue Complex (Pu, Px), Sassafras Sandy Loam (SaA, SaB, SaC), Woodstown Sandy Loam (WdA, WdB, WoA, WoC.).

Stand Description:

This 362.0 ac stand consists primarily of loblolly pine (61%), Virginia pine (16%) and southern red oak (8%) with tulip poplar, sweetgum, white oak, red maple, blackgum and black cherry scattered throughout the stand. Combined, pines make up 76% of the stand. Current growth rates are good, taking an average of 12 years to grow 2.0 inches in diameter, and the stand has a good growth potential with a site index average of 75 feet for loblolly pine and 70 feet for Virginia pine.

The stand is located in Compartments 1, 2, 3, 5, 7 & 8 and is characterized as a loblolly pine/Virginia pine/oak mix. The stand is located in the upland portions of the property and the terrain is mostly flat or rolling uplands. The stand does not appear to be an artificially regenerated pine plantation. There are no blue line streams in the stand, but one non-tidal wetland type (PFO1A) is found at two locations (Compartments 1 & 7). The understory is thick with loblolly pine, American holly, southern red oak, sweetgum, highbush blueberry, grass, greenbriar, poison ivy and multiflora rose.

To meet your management objectives, implement the following practices:

Commercial Timber Harvest

In order to reduce the stocking in this stand and to improve forest health, a commercial timber harvest operation should be implemented, using the selective harvest method. This method of timber harvesting targets single trees or small groups of trees for removal, leaving a stand with a reduced, but adequate stocking level. The goal of the harvest is to reduce the basal area from an estimate 210 ft²/ac to not less than 90-100 ft²/ac. Trees to be removed should be a mix of those with high quality/good form and those with low quality/poor form. This will allow the forest to be reseeded with high quality stock, while still attracting loggers to bid on the timber.

Of the 362.0 acres in this stand approximately 74.0 acres are unavailable for a timber harvest. This is due to stream & wetland buffers as prescribed by the DNR Wildlife & Heritage Service. These buffers protect ecologically important areas such as Zekiah Swamp Run, Wolf Den Branch, their tributaries and any rare or endangered species/habitat on the property.

It is recommended that the stand be selectively harvested in sections of 50-100 acres spread out over the next five years. Care should be taken during the harvest to avoid any stream crossings or wetland areas in order to minimize soil erosion and to protect water quality of any nearby streams. **Completion date: February 2021.**

STAND DESCRIPTION & RECOMMENDED PRACTICES

Stand: 6

Acres: 255.0

Large Tree Species: loblolly pine, southern red oak, Virginia pine

Small Tree Species: loblolly pine, American holly, sweetgum

Shrub Species: highbush blueberry

Herbaceous Species: woodfern, crows foot, Japanese stiltgrass

Vine Species: greenbriar, poison ivy

Development Stage: sawtimber: 38%, poletimber: 53%, small tree: 9%

Age: Uneven (27-42 years, avg. 34 years)

Stocking: High (Overstocked at 110%)

Density: 218 trees/acre

Basal Area: 126 sq. ft./acre

Mean Diameter: 10.3 in.

Site Growth Potential: Excellent

Soil Types: Beltsville Silt Loam (BaB, BaC), Beltsville-Aquasco Complex (BcA), Beltsville-Grosstown-Woodstown Complex (BgB), Downer-Hamonton Complex (DoB), Fallsington Sandy Loam (FaA), Grosstown Gravelly Silt Loam (GgB, GgC), Grosstown-Marr-Hoghole Complex (GmD, GmF), Grosstown-Woodstown-Beltsville Complex (GwD), Hoghole-Grosstown Complex (HgB), Ingleside Sandy Loam (InA), Woodstown Sandy Loam (WdB, WoA, WoB,).

Stand Description:

This 255.0 ac stand consists primarily of loblolly pine (79%), southern red oak (10%) and Virginia pine (6%) with tulip poplar, white oak, sweetgum, American beech and red maple scattered throughout the stand. Combined, pines make up 85% of the stand. Current growth rates are good, taking an average of 10 years to grow 2.0 inches in diameter, and the stand has an excellent growth potential with a site index average of 83 feet for loblolly pine.

The stand is located in Compartments 1, 3, 4, 7 & 8 and is characterized as a loblolly pine plantation. The stand is located in the upland portions of the property and the terrain is mostly flat or rolling uplands. The stand was artificially regenerated between 1985 and 1990 and was

thinned between 2006 and 2013. No streams or wetlands are present in the stand. The understory is thick with loblolly pine, American holly, sweetgum, highbush blueberry, Japanese stiltgrass, greenbriar and poison ivy.

To meet your management objectives, implement the following practices:

Future Commercial Timber Harvest

As mentioned above, the majority of the stand was thinned using the modified row thinning method between 2006 and 2013. This was done to reduce competition between individual trees and to provide more growing resources (sunlight, water, growing space, nutrients) to the remaining trees. The stand should be allowed to grow for an additional 10-15 years, at which time the stand should be re-examined for a second thinning. **Completion date: February 2026-2031.**

Invasive Species Control

One invasive species is found in the western portion of the stand in Compartment 7. Invasive species are considered destructive since they outcompete the native species for space, water and sunlight. Left unchecked, these invasive species can spread throughout the property and on to adjacent properties.

There are two possible goals for invasive species control: eradication or containment. Eradication focuses on the complete elimination of the invasives from a particular area (stand, property, etc.). If the affected area is relatively small (0-10 acres) eradication may be a viable option. However, as the affected area gets bigger, total eradication may not be feasible due to costs or equipment limitations. Containment focuses on limiting the spread of invasives from their current area. Containment is a more feasible option when dealing with a large affected area (10+ acres). Regardless of which goal is selected, removal of some or all invasives is required.

Removal Options

There are two options for removing invasives, chemical and mechanical. Both require time, effort and funding. Chemical control consists of the application of various types of herbicides to the invasives. Herbicide control is generally a cost-effective way to control invasive species as it doesn't require a lot of manual labor or use of heavy machinery. However, special care must be taken when mixing herbicides to the correct ratio, applying the herbicides when weather conditions are favorable and using appropriate personal protective equipment (PPE, gloves, respirators, coveralls, etc.). Drawbacks also include possible removal of nearby desired species (i.e. spray drift).

Mechanical control consists of cutting or removing the invasive species either by hand, equipment or by animal. Frequent cuttings will exhaust the energy reserves of the plant and will eventually lead to the plant's death. Removal of the entire plant and its root system will ensure that the plant will not re-grow. Use of grazing animals (goats, etc.) can be done with very little human labor. Drawbacks to mechanical control include time spent repeatedly mowing or cutting the invasives, limited accessibility of the affected area for the equipment, possible loss of desired native plants due to equipment or animal grazing.

Often a combination of chemical and mechanical control methods are use to remove invasive species, depending on the landowner's financial and labor resources. Regardless of which eradication option is chosen, it may take multiple applications of mowing, herbicides, grazing or a combination of all three before the invasives are truly dead. Government cost-sharing programs may be available to help defray the cost of controlling invasives. Contact your local forester for more information.

The following invasive species are found in the stand:

- Japanese stiltgrass - an annual grass that spreads across disturbed areas, open fields and semi-open forests. One stiltgrass stem can produce 100 to 1,000 seeds that are capable of germinating for at least 5 years. Seeds remain viable in the soil for up to 5 years and can easily be transported to other areas on the property or to other non-infested areas. Control is through mowing or herbicides such as glyphosate (e.g. Roundup® Pro) and Fluazifop-P-Butyl (e.g. Fusilade® DX). Since Japanese stiltgrass is an annual grass, a foliar spray during the growing season is the most common herbicide application.

Completion date: February 2018.

STAND DESCRIPTION & RECOMMENDED PRACTICES

Stand: 7

Acres: 118.0

Large Tree Species: Virginia pine, loblolly pine, southern red oak

Small Tree Species: American holly, Virginia pine, American beech

Shrub Species: highbush blueberry

Herbaceous Species: N/A

Vine Species: greenbriar

Development Stage: sawtimber: 25%, poletimber: 56%, small tree: 19%

Age: Uneven (20-50 years, avg. 38 years)

Stocking: High (Overstocked at 126%)

Density: 290 trees/acre

Basal Area: 139 sq. ft./acre

Mean Diameter: 9.4 in.

Site Growth Potential: Good to Fair

Soil Types: Beltsville-Grosstown-Woodstown Complex (BgB), Grosstown-Marr-Hoghole Complex (GmD), Hoghole-Grosstown Complex (HgB), Potobac-Issue Complex (Pu)

Stand Description:

This 118.0 ac stand consists primarily of Virginia pine (55%), loblolly pine (12%) and southern red oak (7%) with tulip poplar, sweetgum, white oak, red maple and big tooth aspen scattered throughout the stand. Combined, pines make up 67% of the stand. Current growth rates are fair, taking an average of 15 years to grow 2.0 inches in diameter, and the stand has a good growth potential with a site index average of 67 feet for loblolly pine and 59 feet for Virginia pine.

The stand is located in Compartments 3 & 4 and is characterized as a loblolly pine/Virginia pine mix. The stand is located in the upland portions of the property and the terrain is mostly flat or rolling uplands. There are no streams or wetlands present in the stand. The understory is thick with American holly, Virginia pine, American beech, blackgum, loblolly pine, highbush blueberry and greenbriar.

The stand appears to have been previously harvested using the shelterwood method, where the stand is partially harvested in a manner that leaves a portion of the stand behind to “shelter” the next generation of seedlings. In this case, Virginia pine stand had been thinned to allow loblolly pines to “shelter” and grow. However, the remaining Virginia pine was never removed after the loblolly pines established themselves, and in Compartment 4 the loblolly pine did not have sufficient survival rates and the Virginia pine re-established itself.

To meet your management objectives, implement the following practices:

Commercial Timber Harvest

In order to reduce the stocking in this stand and to improve forest health, a commercial timber harvest operation should be implemented, using the regeneration harvest method. This method of timber harvesting removes all trees within the harvest area, allowing the stand to regenerate naturally from surrounding trees or artificially through planted seedlings. Regeneration harvests are typically used to regenerate species that are shade intolerant, such as pine.

Of the 118.0 acres in this stand approximately 22.5 acres are unavailable for a timber harvest. This is due to stream & wetland buffers as prescribed by the DNR Wildlife & Heritage Service. These buffers protect ecologically important areas such as Zekiah Swamp Run, Wolf Den Branch, their tributaries and any rare or endangered species/habitat on the property.

It is recommended that the stand be regeneration harvested in sections of 40-65 acres spread out over the next two years. Care should be taken during the harvest to avoid any stream crossings or wetland areas in order to minimize soil erosion and to protect water quality of any nearby streams. **Completion date: February 2018.**

Artificial Regeneration

Once the individual harvest areas have been harvested, work can begin on regeneration of the stand. Although Virginia pine is shade intolerant and a native to Maryland, it is considered a pioneer species and has a rather short lifespan (60-75 years). After 50 years of age, Virginia pine can become infected with red heart rot (*Phellinus pini*), which can cause extensive decay in the tree. In addition, modified row thinnings are not considered effective due to the species’ poor rooting structure which makes the trees susceptible to windthrow. The loss from windthrow would offset any increase in the stand’s growth due to the thinning. According to North Carolina Cooperative Extension Service (Woodland Owner Notes, Gardner, 1994) this lack of wind firmness and poor growth response after 15 years of age makes commercial thinning ineffective.

Due to the limitation of Virginia pine, it is recommended that the stand be regenerated with loblolly pine seedlings. The harvested stands should be planted within one year of the harvest. In order to successfully regenerate loblolly pine seedlings, competition from other species must be eliminated or reduced. This can be accomplished by either herbicide spraying or prescribed burning. Both options cost anywhere from \$110-190/acre to implement. See the Stand #5 Recommendations for detailed information on site preparation options. **Completion date: February 2019.**

STAND DESCRIPTION & RECOMMENDED PRACTICES

Stand: 8

Acres: 170.0

Large Tree Species: N/A

Small Tree Species: loblolly pine, Virginia pine, sweetgum

Shrub Species: highbush blueberry

Herbaceous Species: grass, Japanese stiltgrass

Vine Species: greenbriar, multiflora rose, grapevine

Development Stage: sawtimber: 0%, poletimber: 0%, small tree: 100%

Age: Even (7-12 years, avg. 8 years)

Stocking: High (Overstocked at 189%)

Density: 1,374 trees/acre

Basal Area: 151 sq. ft./acre

Mean Diameter: 4.5 in.

Site Growth Potential: Poor

Soil Types: Annemessex Silt Loam (AsA), Beltsville Silt Loam (BaB), Beltsville-Grosstown-Woodstown Complex (BgB), Grosstown-Marr-Hoghole Complex (GmD, GmF), Hoghole-Grosstown Complex (HgB).

Stand Description:

This 170.0 ac stand consists primarily of loblolly pine (66%), Virginia pine (15%) and sweetgum (9%) with tulip poplar, white oak, and southern red oak scattered throughout the stand. Combined, pines make up 81% of the stand. Current growth rates are excellent, taking an average of 6 years to grow 2.0 inches in diameter, however the stand has a poor growth potential with a site index average of 44 feet for loblolly pine.

The stand is located in Compartments 3, 4, 5 & 7 and is characterized as a loblolly pine plantation. The stand is located in the upland portions of the property and the terrain is mostly flat or rolling uplands. The stand was regeneration harvested between 2005 and 2010 and replanted. No streams or wetlands are present in the stand. The understory is thick with loblolly

pine, southern red oak, sweetgum, Virginia pine, highbush blueberry, Japanese stiltgrass, greenbriar, multiflora rose, grapevine and wine raspberry.

To meet your management objectives, implement the following practices:

Future Timber Crop

As mentioned above, this stand was harvested and replanted with loblolly pine between 2005 and 2010. Additionally, 75 acres was sit-prepared through prescribed burning, while the remaining 95 acres received no site preparation. This has resulted in a mixture of pure pine sections and mixed pine & hardwood sections. The stand should be allowed to grow for an additional 15 years, at which time the stand should be re-examined for its first thinning.

Completion date: February 2031.

Invasive Species Control

One invasive species is found in the southern most stand of Compartment 7. Invasive species are considered destructive since they outcompete the native species for space, water and sunlight. Left unchecked, these invasive species can spread throughout the property and on to adjacent properties.

There are two possible goals for invasive species control: eradication or containment. Eradication focuses on the complete elimination of the invasives from a particular area (stand, property, etc.). If the affected area is relatively small (0-10 acres) eradication may be a viable option. However, as the affected area gets bigger, total eradication may not be feasible due to costs or equipment limitations. Containment focuses on limiting the spread of invasives from their current area. Containment is a more feasible option when dealing with a large affected area (10+ acres). Regardless of which goal is selected, removal of some or all invasives is required.

Removal Options

There are two options for removing invasives, chemical and mechanical. Both require time, effort and funding. Chemical control consists of the application of various types of herbicides to the invasives. Herbicide control is generally a cost-effective way to control invasive species as it doesn't require a lot of manual labor or use of heavy machinery. However, special care must be taken when mixing herbicides to the correct ratio, applying the herbicides when weather conditions are favorable and using appropriate personal protective equipment (PPE, gloves, respirators, coveralls, etc.). Drawbacks also include possible removal of nearby desired species (i.e. spray drift).

Mechanical control consists of cutting or removing the invasive species either by hand, equipment or by animal. Frequent cuttings will exhaust the energy reserves of the plant and will eventually lead to the plant's death. Removal of the entire plant and its root system will ensure that the plant will not re-grow. Use of grazing animals (goats, etc.) can be done with very little human labor. Drawbacks to mechanical control include time spent repeatedly mowing or cutting the invasives, limited accessibility of the affected area for the equipment, possible loss of desired native plants due to equipment or animal grazing.

Often a combination of chemical and mechanical control methods are use to remove invasive species, depending on the landowner's financial and labor resources. Regardless of which eradication option is chosen, it may take multiple applications of mowing, herbicides, grazing or a combination of all three before the invasives are truly dead. Government cost-sharing programs may be available to help defray the cost of controlling invasives. Contact your local forester for more information.

The following invasive species are found in the stand:

- Japanese stiltgrass - an annual grass that spreads across disturbed areas, open fields and semi-open forests. One stiltgrass stem can produce 100 to 1,000 seeds that are capable of germinating for at least 5 years. Seeds remain viable in the soil for up to 5 years and can easily be transported to other areas on the property or to other non-infested areas. Control is through mowing or herbicides such as glyphosate (e.g. Roundup[®] Pro) and Fluazifop-P-Butyl (e.g. Fusilade[®] DX). Since Japanese stiltgrass is an annual grass, a foliar spray during the growing season is the most common herbicide application.

Completion date: February 2018.

STAND DESCRIPTION & RECOMMENDED PRACTICES

Stand: 9

Acres: 16.0

Large Tree Species: white pine, loblolly pine, Virginia pine

Small Tree Species: American holly, southern red oak, white oak

Shrub Species: highbush blueberry, paw-paw

Herbaceous Species: ground pine

Vine Species: greenbriar

Development Stage: sawtimber: 58%, poletimber: 36%, small tree: 6%

Age: Even (44-68 years, avg. 56 years)

Stocking: High (Overstocked at 126%)

Density: 160 trees/acre

Basal Area: 157 sq. ft./acre

Mean Diameter: 13.4 in.

Site Growth Potential: Very Good

Soil Types: Beltsville-Aquasco Complex (BcA), Grosstown Gravelly Silt Loam (GgA, GgB)

Stand Description:

This 16.0 ac stand consists primarily of white pine (53%), loblolly pine (13%) and Virginia pine (13%) with tulip poplar, white oak, southern red oak and American beech scattered throughout the stand. Combined, pines make up 79% of the stand. Current growth rates are good, taking an average of 12 years to grow 2.0 inches in diameter, and the stand has a very good growth potential with a site index average of 76 feet for white pine.

The stand is located in Compartments 1 & 3 and is characterized as a white pine plantation. The stand is located in the upland portions of the property and the terrain is mostly flat or rolling uplands. No streams or wetlands are present in the stand. The understory is sparse with American holly, southern red oak, white oak, American beech, highbush blueberry, paw-paw, ground pine and greenbriar.

The section of the stand in Compartment 3 was planted in 1948 and was selectively harvested in 1984. The section of the stand in Compartment 1 was planted in 1958 and serves as a control to monitor growth and development differences compared to the section in Compartment 3.

To meet your management objectives, implement the following practices:

Wildlife Habitat – Pine

While the stand is currently overstocked, due to the relatively small size of the stand and the lack of demand for white pine products, it is recommended to allow the stand to serve as valuable wildlife habitat. The stand, with its closed canopy, serves as excellent habitat for white-tailed deer, gray and fox squirrel, bobwhite quail, wild turkey, mourning doves, and rabbits. Wild turkeys also inhabit upland pine-hardwood forests. Compared to a hardwood stand that sheds its foliage each fall, the needles retained by the pines trap heat beneath the canopy. By maintaining this closed canopy, wildlife viewing opportunities may increase as the stand may be used as a gathering location for a variety of wildlife species. **Completion date: February 2031.**

STAND DESCRIPTION & RECOMMENDED PRACTICES

Stand: 10

Acres: 26.0

Large Tree Species: N/A

Small Tree Species: Virginia pine

Shrub Species: highbush blueberry

Herbaceous Species: N/A

Vine Species: N/A

Development Stage: sawtimber: 0%, poletimber: 0%, small tree: 100%

Age: Even (13 years)

Stocking: High (Overstocked at 433%)

Density: 6,800 trees/acre

Basal Area: 260 sq. ft./acre

Mean Diameter: 2.6 in.

Site Growth Potential: Excellent

Soil Types: Croom-Marr Complex (CwE), Grosstown Gravelly Silt Loam (GgA, GgB, GgC), Grosstown-Urban Land Complex (GuB).

Stand Description:

This 26.0 ac stand consists entirely of Virginia pine (100%). Current growth rates are excellent, taking an average of 7 years to grow 2.0 inches in diameter, and the stand has an excellent growth potential with a site index average of 106 feet for Virginia pine.

The stand is located in Compartment 1 and is characterized as a Virginia pine stand. The stand is located in the upland portions of the property and the terrain is mostly flat uplands. No streams or wetlands are present in the stand. The understory is very thick with Virginia pine and highbush blueberry. The stand is currently under an easement by the adjacent Cedarville Mobile Park to be used as a 4.0 acre septic field and 1.0 acre powerline clearing. A small portion of the easement is located in the adjacent stand #12.

To meet your management objectives, implement the following practices:

Future Timber Crop

Due to Virginia pine's susceptibility to windthrow that was discussed in the Stand #4 Recommendations and the age of the stand, it is recommended to allow the stand to grow naturally for fifteen years. During that time it will serve as wildlife habitat. **Completion date: February 2031.**

STAND DESCRIPTION & RECOMMENDED PRACTICES

Stand: 11

Acres: 100.0

Large Tree Species: tulip poplar, sweetgum, red maple

Small Tree Species: tulip poplar, American holly, sweetgum

Shrub Species: highbush blueberry, spicebush

Herbaceous Species: woodfern, crows foot, ground pine

Vine Species: greenbriar

Development Stage: sawtimber: 65%, poletimber: 25%, small tree: 10%

Age: Even (40-77 years, avg. 62 years)

Stocking: High (Overstocked at 134%)

Density: 221 trees/acre

Basal Area: 161 sq. ft./acre

Mean Diameter: 11.5 in.

Site Growth Potential: Excellent

Soil Types: Aquasco Silt Loam (ApA), Beltsville Silt Loam (BaB, BaC), Beltsville-Grosstown-Woodstown Complex (BgB), Beltsville-Urban Land Complex (BuB), Downer-Hamonton Complex (DoC), Grosstown-Marr-Hoghole Complex (GmD), Grosstown-Woodstown-Beltsville Complex (GwD), Hoghole-Grosstown Complex (HgB), Issue Silt Loam (Is), Potobac-Issue Complex (Pu), Woodstown Sandy Loam (WdB).

Stand Description:

This 100.0 ac stand consists primarily of tulip poplar (41%), sweetgum (17%) and red maple (17%) with American beech, black gum, northern red oak, southern red oak, white oak, loblolly pine and Virginia pine scattered throughout the stand. Current growth rates are good, taking an average of 10 years to grow 2.0 inches in diameter, and the stand has an excellent growth potential with a site index average of 99 feet for tulip poplar.

The stand is located in Compartments 2, 3 & 5 and is characterized as a tulip poplar/hardwood mix. The stand is located in the bottomland portions of the property and the terrain is mostly flat to gently sloping. Two blue line streams are located throughout the stand.

Two non-tidal wetlands types (PFO1A & PEM5C) are found at two locations (Compartments 2 & 3). The understory varies from thick to sparse with tulip poplar, American holly, sweetgum, American beech, highbush blueberry, spicebush, crows foot, ground pine, woodferns and greenbriar.

To meet your management objectives, implement the following practices:

Commercial Timber Harvest

In order to reduce the stocking in this stand and to improve forest health, a commercial timber harvest operation should be implemented using the selective tree harvest method. This method of timber harvesting targets single trees or small groups of trees for removal, leaving a stand with a reduced, but adequate stocking level. The goal of the harvest is to reduce the basal area from 161 ft²/ac to not less than 80-90 ft²/ac. Trees to be removed should be a mix of those with high quality/good form and those with low quality/poor form. This will allow the forest to be reseeded with high quality stock, while still attracting loggers to bid on the timber.

Of the 100.0 acres in this stand approximately 58.0 acres are unavailable for a timber harvest. This is due to stream & wetland buffers as prescribed by the DNR Wildlife & Heritage Service. These buffers protect ecologically important areas such as Zekiah Swamp Run, Wolf Den Branch, their tributaries and any rare or endangered species/habitat on the property. It is recommended that the stand be selectively harvested in sections of 20-40 acres within the next six years. Care should be taken during the harvest to avoid any stream crossings or wetland areas in order to minimize soil erosion and to protect water quality of any nearby streams.

Completion date: February 2022.

STAND DESCRIPTION & RECOMMENDED PRACTICES

Stand: 12

Acres: 528.0

Large Tree Species: tulip poplar, red maple, sweetgum

Small Tree Species: sweetgum, tulip poplar, American holly

Shrub Species: highbush blueberry, spicebush, paw-paw

Herbaceous Species: woodfern, crows foot, ground pine,

Vine Species: greenbriar, grapevine

Development Stage: sawtimber: 71%, poletimber: 20%, small tree: 9%

Age: Uneven (37-90 years, avg. 68 years)

Stocking: High (Overstocked at 119%)

Density: 121 trees/acre

Basal Area: 153 sq. ft./acre

Mean Diameter: 15.2 in.

Site Growth Potential: Excellent

Soil Types: Annemessex Silt Loam (AsB), Beltsville Silt Loam (BaB, BaC), Beltsville-Grosstown-Woodstown Complex (BgB), Croom-Marr Complex (CwE), Grosstown Gravelly Silt Loam (GgB), Grosstown-Hoghole Complex (GhC), Grosstown-Marr-Hoghole Complex (GmD, GmF), Grosstown-Woodstown-Beltsville Complex (GwD), Hoghole-Grosstown Complex (HgB), Marr-Dodon Complex (MnE), Potobac-Issue Complex (Pu, Px), Sassafras Sandy Loam (SaB, SaC), Udorthents, Reclaimed Gravel Pits (UdgB), Woodstown Sandy Loam (WoA, WoB).

Stand Description:

This 528.0 ac stand consists primarily of tulip poplar (34%), red maple (22%) and sweetgum (15%) with blackgum, white oak, southern red oak, northern red oak, willow oak, Virginia pine, loblolly pine, hickory, American beech, American elm and sycamore scattered throughout the stand. Current growth rates are good, taking an average of 11 years to grow 2.0 inches in diameter, and the stand has an excellent growth potential with a site index average of 83 feet for tulip poplar.

The stand is located in every compartment on the property, except Compartment 7, and is characterized as a bottomland hardwood mix. The stand is located in the bottomland portions of the property and the terrain varies from moderate slopes to flat stream bottoms. Ten blue line streams are located throughout the stand. Three non-tidal wetlands types (PFO1A, PFO1C PFO1/3A, PFO4/1A & PEM5A) are found at eighteen locations across the stand. The understory is very thick with sweetgum, tulip poplar, American holly, muscledwood, red maple, highbush blueberry, spicebush, paw-paw, crows foot, ground pine, grass, Japanese stiltgrass, woodferns, greenbriar & grapevine.

To meet your management objectives, implement the following practices:

Riparian Forest Buffer

This stand serves as a riparian forest buffer, absorbing runoff, sediments and nutrients before they reach the streams. Trees within 100 feet of a stream or wetland should be retained as a riparian forest buffer. The duff layer on the forest floor, composed of dead and decomposing leaves, slows the overland flow of water and reduces erosion. The tree roots serve as anchors, holding the soil in place along the stream bank. It is recommended that the stand continue to serve as a buffer. **Completion date: Continuous.**

Invasive Species Control

One invasive species is found in Compartments 1, 2, 5, 6 & 8. Invasive species are considered destructive since they outcompete the native species for space, water and sunlight. Left unchecked, these invasive species can spread throughout the property and on to adjacent properties.

There are two possible goals for invasive species control: eradication or containment. Eradication focuses on the complete elimination of the invasives from a particular area (stand, property, etc.). If the affected area is relatively small (0-10 acres) eradication may be a viable option. However, as the affected area gets bigger, total eradication may not be feasible due to costs or equipment limitations. Containment focuses on limiting the spread of invasives from their current area. Containment is a more feasible option when dealing with a large affected area (10+ acres). Regardless of which goal is selected, removal of some or all invasives is required.

Removal Options

There are two options for removing invasives, chemical and mechanical. Both require time, effort and funding. Chemical control consists of the application of various types of herbicides to the invasives. Herbicide control is generally a cost-effective way to control invasive species as it doesn't require a lot of manual labor or use of heavy machinery. However, special care must be taken when mixing herbicides to the correct ratio, applying the herbicides when weather conditions are favorable and using appropriate personal protective equipment (PPE, gloves, respirators, coveralls, etc.). Drawbacks also include possible removal of nearby desired species (i.e. spray drift).

Mechanical control consists of cutting or removing the invasive species either by hand, equipment or by animal. Frequent cuttings will exhaust the energy reserves of the plant and will eventually lead to the plant's death. Removal of the entire plant and its root system will ensure

that the plant will not re-grow. Use of grazing animals (goats, etc.) can be done with very little human labor. Drawbacks to mechanical control include time spent repeatedly mowing or cutting the invasives, limited accessibility of the affected area for the equipment, possible loss of desired native plants due to equipment or animal grazing.

Often a combination of chemical and mechanical control methods are use to remove invasive species, depending on the landowner's financial and labor resources. Regardless of which eradication option is chosen, it may take multiple applications of mowing, herbicides, grazing or a combination of all three before the invasives are truly dead. Government cost-sharing programs may be available to help defray the cost of controlling invasives. Contact your local forester for more information.

The following invasive species are found in the stand:

- Japanese stiltgrass - an annual grass that spreads across disturbed areas, open fields and semi-open forests. One stiltgrass stem can produce 100 to 1,000 seeds that are capable of germinating for at least 5 years. Seeds remain viable in the soil for up to 5 years and can easily be transported to other areas on the property or to other non-infested areas. Control is through mowing or herbicides such as glyphosate (e.g. Roundup[®] Pro) and Fluazifop-P-Butyl (e.g. Fusilade[®] DX). Since Japanese stiltgrass is an annual grass, a foliar spray during the growing season is the most common herbicide application.

Completion date: February 2018.

STAND DESCRIPTION & RECOMMENDED PRACTICES

Stand: 13

Acres: 20.0

Large Tree Species: sweetgum, red maple, American holly

Small Tree Species: American holly, sweetgum, red maple

Shrub Species: highbush blueberry

Herbaceous Species: N/A

Vine Species: greenbriar

Development Stage: sawtimber: 34%, poletimber: 48%, small tree: 18%

Age: Even (20 years)

Stocking: Adequate (Fully stocked at 99%)

Density: 290 trees/acre

Basal Area: 105 sq. ft./acre

Mean Diameter: 8.1 in.

Site Growth Potential: Excellent

Soil Types: Aquasco Silt Loam (ApA), Beltsville Silt Loam (BaB, BaC), Lenni And Quindocqua Soils (LQA).

Stand Description:

This 20.0 ac stand consists primarily of sweetgum (38%), red maple (29%) and American holly (29%) with blackgum scattered throughout the stand. Current growth rates are very good, taking an average of 6 years to grow 2.0 inches in diameter, and the stand has an excellent growth potential with a site index average of 82 feet for sweetgum.

The stand is located in Compartment 1 and is characterized as a sweetgum/red maple mix. The stand is located in a flat lowland portion of the property and the terrain is flat. There are no streams in the stand, however one non-tidal wetland type (PFO1A) is found at two locations in the stand. The understory is thick with American holly, sweetgum, red maple, southern red oak, highbush blueberry and greenbriar.

To meet your management objectives, implement the following practices:

Wildlife Habitat

While the stand is small in size and its species composition is undesirable as a timber product, it does provide valuable wildlife habitat. The stand, with its thick understory, serves as excellent nesting habitat for several species of animals. By maintaining this thick understory, wildlife viewing opportunities may increase as the stand may be used as a gathering location for deer or other animals. No additional management practices are required for this stand.

Completion date: Continuous.

STAND SUMMARY TABLE

Stand	Acres	Dominant Spp.	Age	Stocking	Basal Area	Timber Size	Recommendations/ Practices
1	766.0	white oak red oak Virginia pine	Even	High	153	Immature sawtimber	Timber harvest - selective
2	1,076.0	American beech white oak red oak	Uneven	High	130	Immature sawtimber	Timber harvest - selective
3	68.0	white oak American beech red oak	Even	Adequate	114	Mature/ immature sawtimber	Let grow
4	284.0	Virginia pine red oak white oak	Uneven	High	138	Mature/ immature sawtimber	Timber harvest - regeneration
5	362.0	loblolly pine Virginia pine red oak	Uneven	High	210	Poletimber/ immature sawtimber	Timber harvest - selective
6	255.0	loblolly pine red oak	Even	High	126	Poletimber/ immature sawtimber	Future commercial timber harvest. Invasive species control
7	118.0	Virginia pine loblolly pine	Uneven	High	139	Poletimber/ immature sawtimber	Timber harvest - regeneration
8	170.0	loblolly pine Virginia pine	Even	High	151	Small tree	Let grow
9	16.0	white pine loblolly pine	Even	High	157	Mature sawtimber	Let grow
10	26.0	Virginia pine	Even	High	260	Small tree	Wildlife habitat
11	100.0	tulip poplar sweetgum	Even	High	161	Mature/ immature sawtimber	Timber harvest - selective
12	528.0	tulip poplar red maple sweetgum	Uneven	High	153	Mature/ immature sawtimber	Riparian forest buffer
13	20.0	sweetgum red maple	Even	Adequate	105	Poletimber	Wildlife habitat

MANAGEMENT PRACTICE SCHEDULE

Completion Date	Description	Comp	Stands	Acres
Feb 2017	Regeneration timber harvest – 7A	4	7	65.0
Feb 2017	Select timber harvest – 1B	3	1	53.0
Feb 2018	Artificial regeneration – 7A	4	7	65.0
Feb 2018	Monitor & control invasive species.	1, 2, 5, 6, 7, 8	6, 8, 12	N/A
Feb 2018	Regeneration timber harvest – 7B	3	7	43.0
Feb 2018	Select timber harvest – 5A	3	5	48.0
Feb 2019	Artificial regeneration – 7B	3	7	43.0
Feb 2019	Regeneration timber harvest – 4B	7	4	55.0
Feb 2019	Select timber harvest – 5C	7	5	32.0
Feb 2020	Artificial regeneration – 4B	7	4	55.0
Feb 2020	Regeneration timber harvest – 4A	2, 3	4	70.0
Feb 2020	Select timber harvest – 5B	2	5	71.0
Feb 2021	Artificial regeneration – 4A	2, 3	4	70.0
Feb 2021	Regeneration timber harvest – 4C	1	5	40.0
Feb 2021	Regeneration timber harvest – 5D	1	5	43.0
Feb 2022	Artificial regeneration – 4C	1	5	40.0
Feb 2022	Artificial regeneration – 5D	1	5	43.0
Feb 2022	Select timber harvest – 11A	3	11	24.0
Feb 2022	Select timber harvest – 1A	8	1	50.0
Feb 2022	Select timber harvest – 1F	2	1	27.0
Feb 2023	Select timber harvest – 1C	3, 4	1	41.0
Feb 2023	Select timber harvest – 1G	1, 5	1	55.0
Feb 2024	Select timber harvest – 2A	2	2	40.0
Feb 2025	Select timber harvest – 2B	2	2	77.0
Feb 2025	Select timber harvest – 2J	3	2	20.0
Feb 2026	Select timber harvest – 2C	3	2	110.0
Feb 2027	Select timber harvest – 2D	3	2	87.0
Feb 2028	Select timber harvest – 1D	4, 5	1	60.0
Feb 2028	Select timber harvest – 2E	4	2	41.0
Feb 2029	Select timber harvest – 1H	6	1	41.0
Feb 2029	Select timber harvest – 2I	6	2	30.0
Feb 2030	Select timber harvest – 2G	5	2	54.0
Feb 2030	Select timber harvest – 2H	4, 5	2	38.0
Feb 2031	Mark and maintain property boundary lines.	All	All	3,866.5
Feb 2031	Protect forest from wildfire, insects and disease.	All	All	3,789.0
Feb 2031	Riparian buffer	All	12	528.0
Feb 2031	Select timber harvest – 2F	5	2	69.0

Completion Date	Description	Comp	Stands	Acres
Feb 2031	Stabilize and maintain all roads and trails.	All	All	3,789.0
Feb 2031	Update forest stewardship plan.	All	All	3,789.0

To provide you with further assistance in carrying out the recommended practices please contact Brian Stupak, Project Manager, Maryland DNR-Forest Service, 6904 Hallowing Lane, Prince Frederick, MD 20678. Phone: (410) 535-1303. E-mail: brian.stupak@maryland.gov.

ADDITIONAL COMMENTS

1. A Sediment and Erosion Control Plan is required prior to beginning a commercial timber harvest operation.
2. Boundary location and marking is essential in order to eliminate the potential threat of timber trespass during active timber cutting operations, and will deter unwanted intruders. Boundary lines should be clearly marked with blue paint at eye level facing away from the property. A law passed a few years ago makes posting land much easier and cheaper by allowing the use of vertical strips of blue paint as an alternative to signs. Article 27, Section 576-576A states that paint marks must be at least 2 inches in width and 8 inches in length, and centered from 3 to 6 feet from the ground or water surface.
3. Tree seedlings are available at cost for reforesting cut over areas, afforesting old fields or improving wildlife habitat. Contact the project forester for ordering and planting details.
4. This property was checked for cultural and historic resources as part of the Forest Stewardship Planning process using data provided by the Maryland Historical Trust (MHT). The MHT maps indicate there may be a historic or cultural feature on the property, specifically in Compartments 2, 3, 6 & 8. If any forest management practices are undertaken on the property which require a Federal or State permit for management activities regulated under the authority of an Army Corps of Engineering permit (ex. a stream crossing permit or a regulated activity in a non-tidal wetland), the landowner should contact MHT for project specific comments as part of the permit planning process.