Resource Management Guides
Clark State Forest
30-day Public Comment Period (June 9, 2025 – July 8, 2025)

The Indiana State Forest system consists of approximately 160,251 acres of primarily forested land distributed across the state. These lands are managed under the principle that we're stewards of this land for the future. This work is guided through legislation and comprehensive scientific national and international forest certification standards which are independently audited to help insure long-term forest health, resiliency, and sustainability.

Resource management guides (RMGs) are developed to provide long-term, scientific forest management planning tailored to each forest compartment (300-1,000 acres in size) and tract (10 - 300 acres in size). There are 1,590 tracts across the state forest system statewide. Annually, 50-100 tracts are reviewed, and these guides are developed based on current assessments. Through science-based management practices, we prescribe management actions on select tracts every 15-25 year, diversifying the forested landscape and sustaining ecosystems.

The RMGs listed below and contained in this document are part of the properties annually scheduled forest inventories under review for Clark State Forest.

Compartment 16 Tract 5
Compartment 16 Tract 6
Compartment 16 Tract 8

To submit a comment on this document, go to:

https://www.in.gov/dnr/forestry/state-forest-management/public-comment/submit/

You must indicate the State Forest Name, Compartment number and Tract number in the "subject or file reference" line to ensure that your comment receives appropriate consideration. Comments received within 30 days of posting will be considered and review posted at:

https://www.in.gov/dnr/forestry/state-forest-management/public-comment/

Note: Some graphics may distort due to compression.

Clark State Forest **Compartment:**16 **Tract:** 5
Forester: Amy Hanners and Dustin Alwine **Date:** September 2021 **Acres:** 160
Management Cycle End Year: 2041 **Management Cycle Length:** 20 years

Location
Compartment 16, tract 5, also known as 6301605, is in Clark County, Indiana. This tract is approximately 7 miles west of Memphis, Indiana, located in Sections 29, 30, and 31 of Township 1 N, Range 6 E.

General Description
This tract is made up of three cover types: dry oak-hickory, mixed hardwoods, and conifer (i.e., Virginia pine). The dry oak-hickory is the dominant cover type and the dominant overstory trees are chestnut oaks, followed by yellow-poplar and sugar maple. The mixed hardwoods cover type occurs along the drainages that run through the tract, while the Virginia pine occurs on the ridge top running the center of the tract from the north. Regeneration across this tract is dominated by American beech, sugar maple, red maple, and yellow-poplar. Some Japanese stiltgrass is found along the banks of Dry Fork Creek on the edge of the tract and some ailanthus stems are present in scattered pockets.

History
1939 – Land acquired from Roerk
1940 – Land acquired from Jackson
1987 – Forest inventory completed for State Forest Inventory Program
2021 – Forest inventory completed by Hanners and Alwine
2021 – Resource Management Guide written by Hanners and Alwine

Landscape Context
This tract borders other Clark State Forest tracts on the east and south sides that have had a similar history of forest management. The private property to the north and west is a mixture of forest, residential, and agricultural fields.

Topography, Geology, and Hydrology
The topography of this tract is made up of a finger that runs south through the center of the tract off a ridge to the north. The steep slopes off this finger result in east and west facing slopes. A ridge to the west of the tract, on private property, creates steep east facing slopes that enter this tract. A drainage is located between these two ridges that runs into Dry Fork Creek.

6301605 is within the Muddy Fork watershed. There is one stream, Dry Fork Creek, that forms the eastern boundary of this tract. There are several ephemerals within the tract that flow into Dry Fork and then into Muddy Fork.

Soils

BcrAW- Beanblossom silt loam, 1 to 3 percent slopes, occasionally flooded, very brief duration 5.7 acres

This nearly level, deep, well-drained soil is found along alluvial fans and flood plain. It is well suited to trees. Management planning should consider wet times of year. This soil has not been evaluated for site index.

CtwB- Crider-Bedford-Navilleton silt loams, 2 to 6 percent slopes 7.8 acres

This gently sloping, deep, well-drained soil is on ridgetops in the uplands. It is well suited to trees. Crider has a site index of 90 for white oak and 98 for yellow poplar. Bedford has a site index of 70 for white oak and 90 for yellow poplar. Navilleton has not been evaluated for site index.

GgbG- Gilwood-Brownstown silt loams, 25 to 75 percent slopes 77.9 acres

This moderately to very steep, moderately deep, well-drained complex is on side slopes in the knobs. It is suited to trees. The hazard of erosion is the main management concerns that should be considered when implementing Best Management Practices for Water Quality. Brownstown has a site index of 50 for black oak and Gilwood has not been evaluated.

GmaG- Gnawbone-Kurtz silt loams, 20 to 60 percent slopes 45.2 acres

This moderately to very steep, moderately deep, well-drained complex is found on side. It is well suited to trees. The hazard of erosion and equipment limitations are the main management concerns. These should be considered when planning management activities and implementing Best Management Practices for Water Quality. Kurtz has a site index of 60 for northern red oak and Gnawbone has not been evaluated.

KxkC2- Knobcreek-Navilleton silt loams, 6 to 12 percent slopes, eroded 23.6 acres

This moderately sloping, deep, well-drained complex is on side slopes in the uplands. It is well suited to trees. Erosion hazards are the main management concern that should be considered during the implementation of Best Management Practices for Water Quality. Knobcreek has a site index of 76 for northern red oak, and 86 for yellow poplar and Navilleton has not been evaluated for site index.

Access

The tract can be accessed from Tree Lane Road. At the parking area a fire lane, which also serves as the Tree Lane Loop Horse Trail and Connector Horse Trail, provides access to the desired portion of the tract.

Boundary

The north and west boundaries of this tract border private property which is a mixture of forest lands, residences, and agricultural fields. The eastern boundary of the tract is Dry Fork Creek. The southern boundary is a drainage which separates the tract from 6301609 on the opposite side.

Ecological Considerations
This tract contains diverse vegetation and wildlife resources conducive to providing habitat for a variety of wildlife. Habitat types include dry oak-hickory, mixed hardwoods, and Virginia pine.

The Division of Forestry has developed compartment level guidelines for important wildlife structural habitat features such as snags and legacy trees. Snags are standing dead or nearly dead trees. Snags provide value to a stand in the form of habitat features for foraging activity, den sites, decomposers, bird perching, and bat roosting. Snags eventually contribute to the future pool of downed woody material, which provides habitat for many ground-dwelling species and contributes to healthy soils. Legacy trees are live trees of a certain species and diameter class, that have potential future value to various wildlife species, if retained in the stand.

Current assessments indicate the abundance of these habitat features meet or exceed recommended maintenance levels.

Japanese stiltgrass is found along the banks of Dry Fork Creek on the edge of the tract and along drainages. Some ailanthus stems are present in scattered pockets primarily in the northern half of the tract and along the tract and private boundary on the northwest. Some rose is present as well. The ailanthus is a high priority to be treated prior to additional management activities.

A formal Ecological Review process, which includes a search of Indiana's Natural Heritage Database, is part of the management planning process. If Rare, Threatened, or Endangered species were found to be associated with this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the population viability of those species or communities.

Recreation
Recreation in this tract is likely minimal because there is no road frontage. However, the surrounding tracts are crossed by the Tree Lane Loop Horse Trail and Connector Horse Trail. Hunting, wildlife viewing, and foraging are other recreational opportunities available.

Cultural
Cultural resources may be present, but their location(s) is protected. Adverse impacts to significant cultural resources will be avoided during any activities.

Tract Subdivision Description and Silvicultural Prescription
The current inventory was completed in the summer of 2021 by foresters Alwine and Hanners. An overview of the inventory results are located in the table below. During the forest inventory, stems 4 inches in diameter at breast height (DBH) and greater were measured. Plots were established on a random grid and a variable radius plot (10 BAF) was used to tally trees. This tract had 44 plots which is approximately one plot for every 3.5 acres. Only merchantable trees larger than 11 inches DBH are included in the volume summaries and listed as "Sawtimber Trees."

Tract Summary Data (Trees > 11" DBH)

Species	# of Trees	Total Bd. Ft.
Chestnut oak	2,103	412,120
Yellow-poplar	383	158,120
Sugar maple	679	125,170
American beech	596	112,080
Virginia pine	399	69,430
American sycamore	93	61,500
White oak	249	53,870
Black oak	197	46,980
Scarlet oak	117	43,510
Pignut hickory	202	34,030
Sweetgum	69	13,040
Red maple	58	11,310
Shagbark hickory	43	7,770
Basswood	7	5,860
Blackgum	60	5,720
White ash	14	5,640
Black cherry	55	5,030
Sassafras	21	4,260
Total	5,345	1,175,470

Dry Oak-hickory, 99 acres

This cover type was largely found from mid slope up to the edges of the ridgetops. The overstory was largely chestnut oak, making up over two-thirds the total volume of the cover type. The regeneration was a mixture of American beech, red maple, sugar maple, sassafras, and blackgum.

Lowbush blueberry and roundleaf greenbrier were frequently found in this cover type. This cover type showed moderate mortality and occasionally high mortality in areas where it bordered the Virginia pine cover type. Some invasive species were present in this cover type. One large Paulownia stem was found and GPS recorded along with several ailanthus stems.

Trees per acre: 125	Percent stocking: 82
Basal area: 100	Volume per acre: 6,869

Species	Volume per acre
Chestnut oak	4,782
Black oak	615
White oak	424
Pignut hickory	364
Virginia pine	231
Scarlet oak	185

Sugar maple	121
American beech	68
Shagbark hickory	52
Black cherry	25
Total	6,869

The management objective within this cover type is to promote the already present oak and hickory species. Chestnut oak is the dominant over story species followed by black oak, white oak, and pignut hickory. The natural regeneration of these shade intolerant species is being out competed by the more shade tolerant American beech, sugar maple, and red maple. The desired future condition is a healthy cover type stocked with oak and hickory species that is being succeeded by oak and hickory species.

To encourage the establishment and retention of the desired oak-hickory species, a timber harvest is prescribed for this cover type. The harvest will work towards the removal of declining stems, releasing crop trees, and providing canopy gaps for suppressed oak and hickory regeneration to compete. These areas should be selectively thinned using single-tree and group selection. In pockets where there is high mortality, small patch-cut openings could be used to promote regeneration. In areas with existing oak and hickory regeneration, a shelterwood harvest could be used to improve light to advance saplings and seedlings. Small openings could also be used where the understory is more advanced to release a new cohort of oaks.

A midstory removal in this cover type would also be beneficial to lower the presence of shade tolerant species, specifically American beech, sugar maple, and red maple. This could be accomplished with a variety of methods including mechanically with chainsaws, chemically by basal spraying, and/or with the use of prescribed fire. Prescribed fire, on 2-5-year intervals, would likely be the most cost-effective way if a large burn area could be established. Along with the midstory removal in this cover type, invasive species control could be performed. Treating the scattered stems of invasive species would help keep them from expanding when disturbance occurs in this tract. The post-harvest timber stand improvement (TSI) should work to remove any marked stems that were left from the harvest, treat invasive species, and complete any small openings created through the harvest.

Mixed Hardwood, 50 acres

This cover type was primarily found around Dry Fork Creek and down the slopes along the drainages. The overstory is primarily made up of American beech, yellow-poplar, sugar maple, and American sycamore. The regeneration is a variety of American beech, sugar maple, and red maple. Other species present included sassafras, blackgum, muscle wood, greenbrier, and some grapevines. The wetter areas also had dense cover of pawpaw, ferns, and spicebush. Mortality was mostly low to moderate in much of this cover type. Some areas showed high mortality when Virginia pine was present. Invasive species were mostly prevalent along the drainages, with Japanese stiltgrass being the most dominant.

Trees per acre: 94	Percent stocking: 69
Basal area: 86.3	Volume per acre: 7,545

Species	Volume per acre
American beech	1,729
Yellow-poplar	1,687
Sugar maple	1,627
American sycamore	995
White oak	347
Chestnut oak	281
Sweetgum	211
Red maple	183
Scarlet oak	178
Pignut hickory	101
Basswood	95
Shagbark hickory	178
Black cherry	50
Total	7,545

The management objective within this cover type is to encourage a healthy and diverse cover type. This cover type is fully stocked and could support a light harvest of select trees. Harvesting would be focused on removing declining or less desirable stems to encourage healthier more desirable species. In most cases, entries along drainages and Dry Fork Creek should be minimized to avoid the further spread of Japanese stiltgrass that is already present. Prior to entry with machinery, Japanese stiltgrass should be treated where feasible. Additionally, to achieve the desired future condition, invasive species management, prescribed fire, patch-cut openings, midstory removal, and/or TSI could be conducted in conjunction and in a similar fashion to those performed in the dry oak-hickory cover type.

Conifer, 11 acres

This cover type was found along the ridgetop of the central ridge within this tract. This cover type is characterized by its relatively high Virginia pine mortality from blow down, as well as the overstory of Yellow-poplar and Virginia pine. Regeneration included yellow-poplar, red maple, sugar maple, American beech, and chestnut oak. Even with the moderate to high mortality found throughout this cover type it is overstocked at 101%. A few stems of ailanthus were found in this cover type and recorded with a GPS.

Trees per acre: 174	Percent stocking: 101
Basal area: 122	Volume per acre: 8,458

Species	Volume per acre
Yellow-poplar	2,467
Virginia pine	2,374
Chestnut oak	1,354
Scarlet oak	842
Sugar maple	705
Blackgum	262
White ash	258
Sassafras	195
Total	8,458

The desired future condition is a healthy cover type with an overstory composition of predominately hardwoods. To achieve the desired future condition, a timber harvest, invasive species management, prescribed fire, regeneration openings, midstory removal, and/or TSI could be conducted in conjunction and in a similar fashion to those performed in the other cover types. In the areas of Virginia pine blowdown, the harvest should be light and focused primarily on salvaging any remaining Virginia pine.

Summary Tract Silvicultural Prescription

Overall, the goal for this tract is to promote and sustain oaks, hickories, and other desirable hardwood species while controlling invasive species. In the first few years of the management cycle, focus could be on controlling invasive species preharvest with a focus on minimizing spread to other areas. A timber harvest is prescribed to promote oak regeneration. A selective harvest using single-tree and group selection, shelterwood harvest, midstory removal, and patch-cut openings may be used. Inventory data suggests between 275,000 – 400,000 board feet to be removed. After the harvest is completed, invasive species and post-harvest TSI will be implemented. TSI will focus on releasing oaks, promoting oak regeneration, and working to reduce the presence of maple, beech, and ironwood regeneration. A prescribed fire regime on intervals of 2-5 years may be established to promote a more open midstory forest. This tract could be burned with other surrounding tracts to sustain the oak-hickory cover types.

Other considerations

Regeneration evaluation – Three to five years after the completion of the timber harvest, a regeneration evaluation will be performed to ensure that desired regeneration is occurring within the harvest area. If deemed unsatisfactory, mitigations will be made.

Timber stand improvement (TSI) – TSI shall be performed within two years of timber harvest completion. TSI is prescribed to complete regeneration openings, remove species inhibiting desirable regeneration, and address problem occurrences of invasive species.

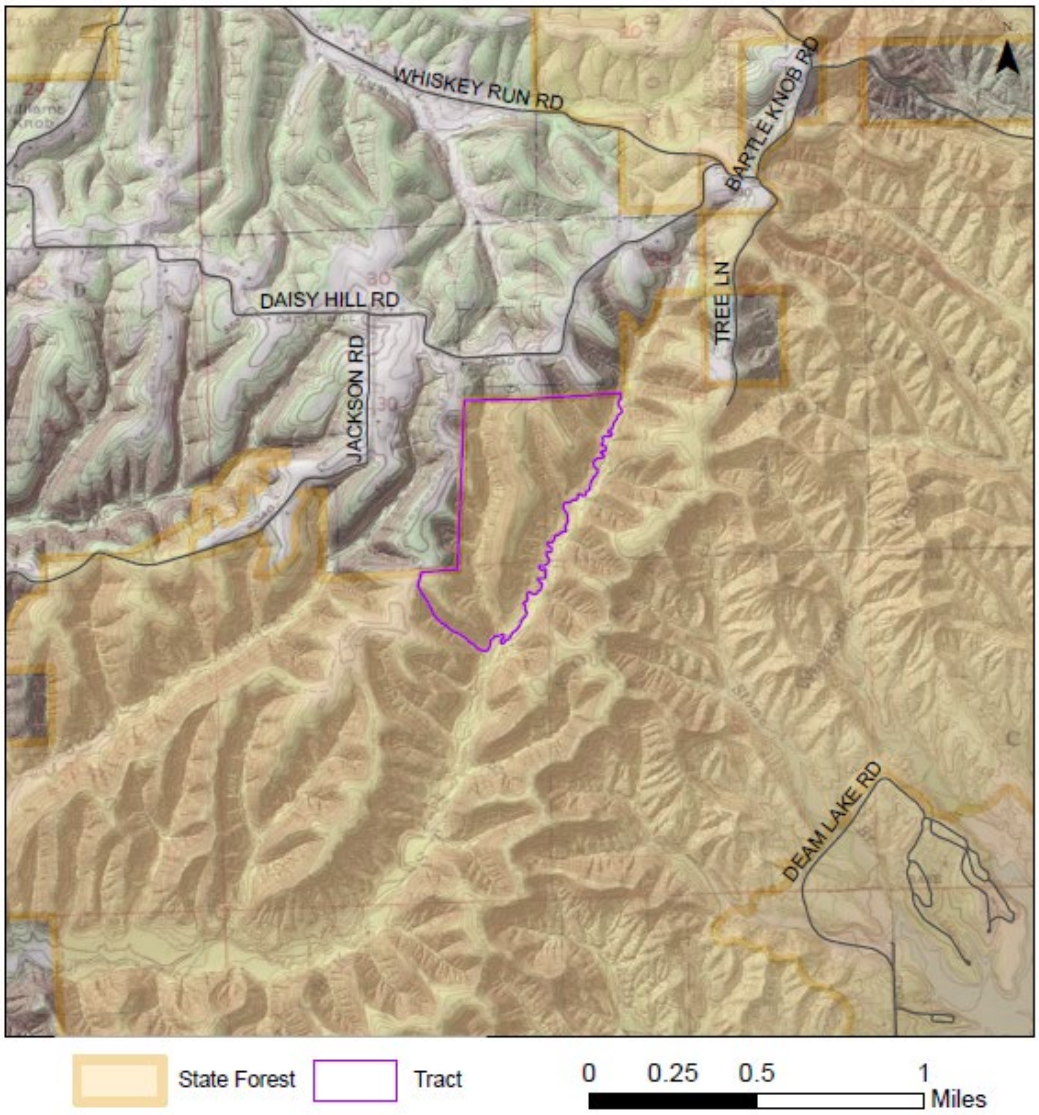
Best management practices (BMP) – During and after completion of the proposed management activity, BMPs will be implemented in order to minimize soil erosion.

Guide revision – This tract should receive another inventory and management guide 20 years following the completion of the inventory.

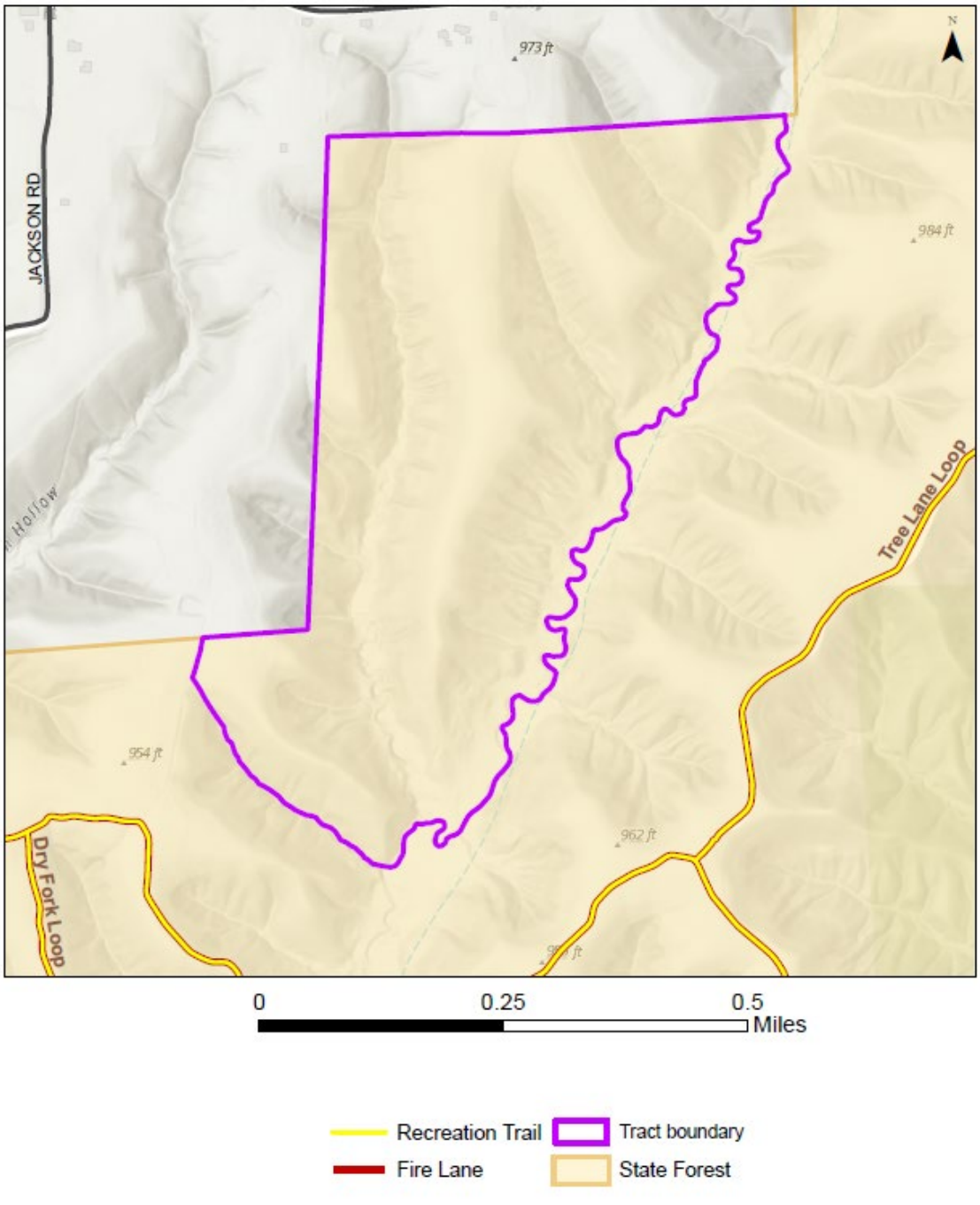
Prescribed fire – A regime of prescribed burns may be started within this tract to reduce the abundance of the shade tolerant species in the midstory and to help control invasive species.

Proposed Management Activity	Proposed Date
Pre-harvest invasive species work	2025-2026
Timber harvest	2026-2027
Post-harvest TSI and invasive species work	Within 2 years post-harvest
3-year regeneration opening review	Three years after harvest
Prescribed fire regime	2027+
Next forest inventory	2045

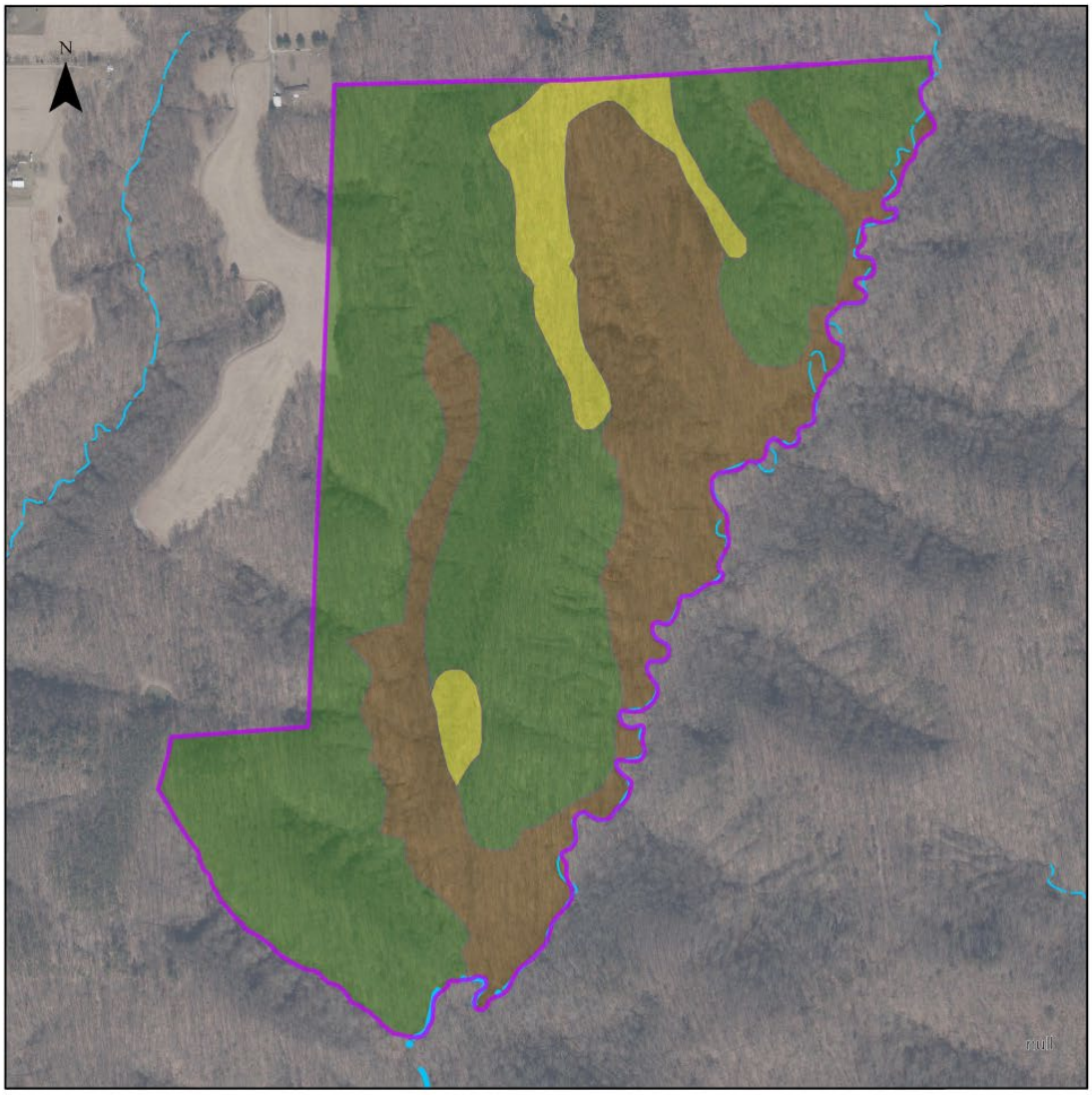
Clark State Forest
Location Map
Compartment 16 Tract 5



Clark State Forest
Compartment 16 Tract 5
Tract Map



Clark State Forest
Compartment 16 Tract 5
Cover Types Map



Clark State Forest **Compartment:**16 **Tract:** 6
Forester: Amy Hanners and Dustin Alwine **Date:** September 2021 **Acres:** 143
Management Cycle End Year: 2041 **Management Cycle Length:** 20 years

Location
Compartment 16, tract 6, also known as 6301606, is in Clark County, Indiana. Specifically, it is found in Sections 29 and 32 of Township 1 N, Range 6 E. This tract is approximately 7 miles west of Memphis, Indiana.

General Description
This tract is characterized by three cover types: dry oak-hickory, mixed hardwoods, and non-forested. The dry oak-hickory and mixed hardwoods cover types are the dominant cover types in this tract. The open, non-forested, cover type occurs due to historical encroachment encompassing approximately 8 acres. Regeneration in this tract is primarily American beech, sugar maple, and red maple.

History
1941 – Land acquired from Loftus
1944 – Land acquired from Hostettler
1987 – Forest inventory
2021 – Forest inventory completed by Hanners and Alwine
2022 – Resource Management Guide written by Hanners and Alwine

Landscape Context
6301606 is in the southern portion of Clark State Forest. It is bordered by five other state forest tracts on the south, east, and west sides. The north of the tract borders a private residence and agricultural fields.

Topography, Geology, and Hydrology
The topography of this tract is a flat ridgetop that runs the eastern tract boundary. The fingers that run off the ridge towards the west create steep topography with predominately north and south facing slopes.

This tract is within the Muddy Fork watershed. There is one mapped intermittent stream, Dry Fork, that forms the western boundary of the tract. There are several ephemerals within the tract that flow into Dry Fork and Dry Fork flows into Muddy Fork.

Soils
CtwB- Crider-Bedford-Navilleton silt loams, 2 to 6 percent slopes 16.8 acres
This gently sloping, deep, well-drained soil is on ridgetops in the uplands. It is well suited to trees. Crider has a site index of 90 for white oak and 98 for yellow poplar. Bedford has a site index of 70 for white oak and 90 for yellow poplar. Navilleton has not been evaluated for site index.

GgbG- Gilwood-Brownstown silt loams, 25 to 75 percent slopes 68.9 acres
This moderately to very steep, moderately deep, well-drained complex is on side slopes in the knobs. It is suited to trees. The hazard of erosion is the main management concerns that should be considered when implementing Best Management Practices for Water Quality. Brownstown has a site index of 50 for black oak and Gilwood has not been evaluated.

GgfD- Gilwood-Wrays silt loams, 6 to 18 percent slopes 1.3 acres
This gently to moderately sloping, moderately deep, well-drained complex is found on side slopes of the uplands knobs. The hazard of erosion is the main management concerns that should be considered when implementing Best Management Practices for Water Quality. Wrays has a site index of 70 for white oak and 90 for yellow poplar and Gilwood has not been evaluated.

GmaG- Gnawbone-Kurtz silt loams, 20 to 60 percent slopes 19.7 acres
This moderately to very steep, moderately deep, well-drained complex is found on side. It is well suited to trees. The hazard of erosion and equipment limitations are the main management concerns. These should be considered when planning management activities and implementing Best Management Practices for Water Quality. Kurtz has a site index of 60 for northern red oak and Gnawbone has not been evaluated.

KxkC2- Knobcreek-Navilleton silt loams, 6 to 12 percent slopes, eroded 37.8 acres
This moderately sloping, deep, well-drained complex is on sideslopes in the uplands. It is well suited to trees. Erosion hazards are the main management concern that should be considered during the implementation of Best Management Practices for Water Quality. Knobcreek has a site index of 76 for northern red oak, and 86 for yellow poplar and Navilleton has not been evaluated for site index.

Access
This tract is easily accessible by fire lane off Tree Lane Road. The fire lane also serves as the Tree Lane Loop Horse Trail. Additionally, there is a designated parking area at the end of Tree Lane Road where the fire lane begins. The Tree Lane Loop runs along a majority of the eastern edge of the tract.

Boundary
The northern boundary of this tract is privately property, the east boundary is the fire lane/Tree Lane Loop Horse Trail, the southern boundary is a drainage between the tract and neighboring 6301607, and the western boundary is Dry Fork stream. The northeast edge of the tract borders private property where animals have historically been allowed to graze. This has resulted in an encroachment, this area is included in the non-forested cover type.

Ecological Considerations
This tract contains diverse vegetation and wildlife resources conducive to providing habitat for a variety of wildlife. Habitat types include dry oak-hickory and Virginia pine.

The Division of Forestry has developed compartment level guidelines for important wildlife structural habitat features such as snags and legacy trees. Snags are standing dead or nearly dead

trees. Snags provide value to a stand in the form of habitat features for foraging activity, den sites, decomposers, bird perching, and bat roosting. Snags eventually contribute to the future pool of downed woody material, which provides habitat for many ground-dwelling species and contributes to healthy soils. Legacy trees are live trees of a certain species and diameter class, that have potential future value to various wildlife species, if retained in the stand.

Current assessments indicate the abundance of these habitat features meet or exceed recommended maintenance levels.

A few ailanthus stems and one paulownia, near Dry Fork stream, were found and recorded using GPS. Ailanthus and multiflora rose were also found along the eastern edge of the tract near the Tree Lane Loop Horse Trail. Japanese stiltgrass was found along Dry Fork stream as well, and Japanese honeysuckle was found in small clusters throughout the tract, especially along the field edge and within the Virginia pine cover type.

A formal Ecological Review process, which includes a search of Indiana's Natural Heritage Database, is part of the management planning process. If Rare, Threatened, or Endangered species were found to be associated with this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the population viability of those species or communities.

Recreation
Recreation in the tract is primarily horseback riding on the Tree Lane Loop Horse Trail on the eastern boundary of the tract. Other recreational opportunities include hunting, foraging, and wildlife viewing.

Cultural
Cultural resources may be present, but their location(s) is protected. Adverse impacts to significant cultural resources will be avoided during any activities.

Tract Subdivision Description and Silvicultural Prescription
The current inventory was completed in the summer of 2021 by foresters Alwine and Hanners. An overview of the inventory results are located in the table below. During the forest inventory, stems 4 inches in diameter at breast height (DBH) and greater were measured. Plots were established on a random grid and a variable radius plot (10 BAF) was used to tally trees. This tract had 40 plots which is approximately one plot for every 3.5 acres. Only merchantable trees larger than 11 inches DBH are included in the volume summaries and listed as "Sawtimber Trees."

Tract Summary Data (Trees > 11" DBH)

Species	# of Trees	Total Bd. Ft.
Chestnut oak	2,289	524,510
Yellow-poplar	470	152,610
Virginia pine	609	128,270
Black oak	161	51,480
White oak	175	36,420
Scarlet oak	137	35,440
Red maple	189	32,030
Pignut hickory	111	30,710
Sugar maple	143	19,700
American beech	57	10,230
Bitternut Hickory	75	9,810
Sweetgum	11	5,170
Blackgum	20	4,190
Total	4,447	1,040,570

Dry Oak-Hickory, 100 acres

This cover type is the dominant type within this tract and is fully stocked at 88 percent. This cover type occurs on the edge of the ridge top and continues down the slopes to Muddy Fork Creek. Chestnut oak is the dominant overstory species. This cover type supports a variety of oak and hickory species which make up about 85 percent of the total merchantable volume within the cover type. Virginia pine is the most dominant non-oak-hickory species within this cover type. However, the Virginia pine is also in decline and experiencing mortality throughout this cover type. The mortality is greatest towards the ridge tops where the Virginia pine is more prevalent.

The regeneration in this cover type is dominated by American beech, followed by a mixture of sugar maple and red maple. A few areas showed some scattered oak and hickory regeneration, but they were accompanied by dense beech and maple regeneration as well. Other understory species found included pawpaw, iron wood, blackgum, white ash, and yellow-poplar.

Lowbush blueberry and maple viburnum were found on the upper slopes or on the edge of the ridge tops within this cover type. Invasive species present included Japanese stiltgrass, Japanese honeysuckle, and ailanthus. The Japanese stiltgrass and ailanthus were found predominantly along the streams and in the drainages.

Trees per acre: 111	Percent stocking: 88
Basal area: 108.3	Volume per acre: 8,656

Species	Volume per acre
Chestnut oak	5,832
Black oak	464
Virginia Pine	445
Scarlet oak	397
Pignut hickory	344
White oak	327
Yellow-poplar	215
Red maple	168
Sugar maple	167
American beech	115
Bitternut hickory	78
Sweetgum	58
Blackgum	47
Total	8,656

The management objective within this cover type is to promote the already present oak and hickory species. Chestnut oak is the dominant over story species followed by black oak, white oak, and pignut hickory. The natural regeneration of these shade intolerant species is being out competed by the more shade tolerant American beech, sugar maple, and red maple. The desired future condition is a healthy cover type stocked with oak and hickory species that is being succeeded by oak and hickory species.

To encourage the establishment and retention of the desired oak-hickory species, a timber harvest is prescribed for this cover type. The harvest will work towards the removal of declining stems, releasing crop trees, and providing canopy gaps for suppressed oak and hickory regeneration to compete. These areas should be selectively thinned using single-tree and group selection. In pockets where there is high mortality, small patch-cut openings could be used to promote regeneration. In areas with existing oak and hickory regeneration, a shelterwood harvest could be used to improve light to advance saplings and seedlings. Small openings could also be used where the understory is more advanced to release a new cohort of oaks.

A midstory removal in this cover type would also be beneficial to lower the presence of shade tolerant species, specifically American beech, sugar maple, and red maple. This could be accomplished with a variety of methods including mechanically with chainsaws, chemically by basal spraying, and/or with the use of prescribed fire. Prescribed fire, on intervals of 2-5 years, would likely be the most cost-effective way if a large burn area could be established. Along with the midstory removal in this cover type, invasive species control could be performed. Treating the scattered stems of invasive species would help keep them from expanding when disturbance

occurs in this tract. The post-harvest timber stand improvement (TSI) should work to remove any marked stems that were left from the harvest, treat invasive species, and complete any small openings that exist.

Mixed Hardwoods, 35 acres

This cover type is dominated by yellow-poplar and Virginia pine. Looking at historical aerial photos from the 1950s, it was dominated by young Virginia pine. Virginia pine is a common invader species in this area after agricultural practices like grazing have ceased. It has very high stocking, at 91 percent, which is approaching overstocked. This cover type had high mortality due to the blow down of Virginia pine. The ridgetop that this cover type is found on appears to have been historically used for grazing. The Virginia pine has reached maturity and is starting to fall out of the overstory and yellow-poplar is becoming the dominant overstory species. The regeneration in this cover type is a mixture of sugar maple, American beech, and yellow-poplar. Hackberry and sassafras regeneration was also present across the ridgetop.

Spicebush, greenbrier, and lowbush blueberry made up most of the ground cover in and around the areas with Virginia pine mortality. Invasive species present included multiflora rose, ailanthus, and Japanese honeysuckle. A paulownia stem was also found and GPS recorded. The ailanthus and multiflora rose found in this cover type were along the edge of the Tree Lane Loop Horse Trail. The multiflora rose also occurred in some of the areas of Virginia pine mortality.

Trees per acre: 166	Percent stocking: 91
Basal area: 109	Volume per acre: 5,743

Species	Volume per acre
Yellow-poplar	2,870
Virginia pine	1,904
Red maple	365
Black oak	216
White oak	154
Sugar maple	104
Chestnut oak	70
Bitternut hickory	60
Total	5,743

The desired future condition is a healthy cover type with an overstory composition of predominately hardwoods. To achieve the desired future condition, a timber harvest, invasive species management, prescribed fire, regeneration openings, midstory removal, and/or TSI could be conducted in conjunction and in a similar fashion to those performed in the dry oak-hickory cover type. In the areas of Virginia pine blowdown, the harvest should be light and focused primarily on salvaging any remaining Virginia pine.

Non-Forested, 8 acres

This cover type is open and not covered with woody vegetation. It is mainly livestock pastures that encroach in from the neighboring property. Future management in this area should be focused on solving the boundary questions and working with the neighboring landowner to protect and promote state forest grounds.

Summary Tract Silvicultural Prescription

Overall, the goal for this tract is to promote and sustain oaks, hickories, and other desirable hardwood species while controlling invasive species. In the first few years of the management cycle, focus could be on controlling invasive species preharvest with a focus on minimizing spread to other areas. A timber harvest is prescribed to promote oak regeneration. A selective harvest using single-tree and group selection, shelterwood harvest, midstory removal, and patch-cut openings may be used. Inventory data suggests between 385,000 – 450,000 board feet to be removed. After the harvest is completed, invasive species and post-harvest TSI will be implemented. TSI will focus on releasing oaks, promoting oak regeneration, and working to reduce the presence of maple, beech, and ironwood regeneration. A prescribed fire regime on intervals of 2-5 years may be established to promote a more open midstory forest. This tract could be burned with other surrounding tracts to sustain the oak-hickory cover types.

Other considerations

Regeneration evaluation – Three to five years after the completion of the timber harvest, a regeneration evaluation will be performed to ensure that desired regeneration is occurring within the harvest area. If deemed unsatisfactory, mitigations will be made.

Timber stand improvement (TSI) – TSI shall be performed within two years of timber harvest completion. TSI is prescribed to complete regeneration openings, remove species inhibiting desirable regeneration, and address problem occurrences of invasive species.

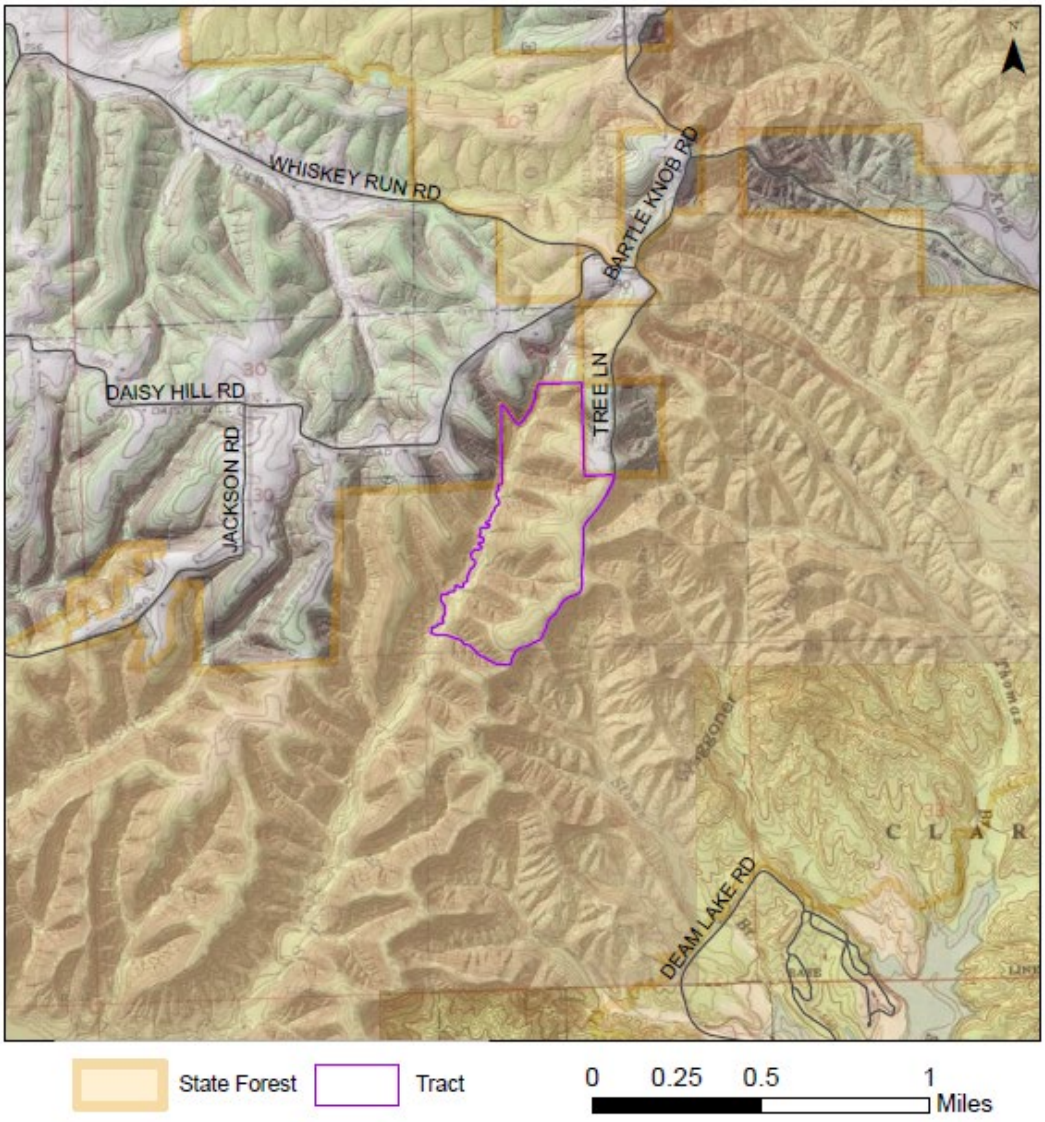
Best management practices (BMP) – During and after completion of the proposed management activity, BMPs will be implemented in order to minimize soil erosion.

Guide revision – This tract should receive another inventory and management guide 20 years following the completion of the inventory.

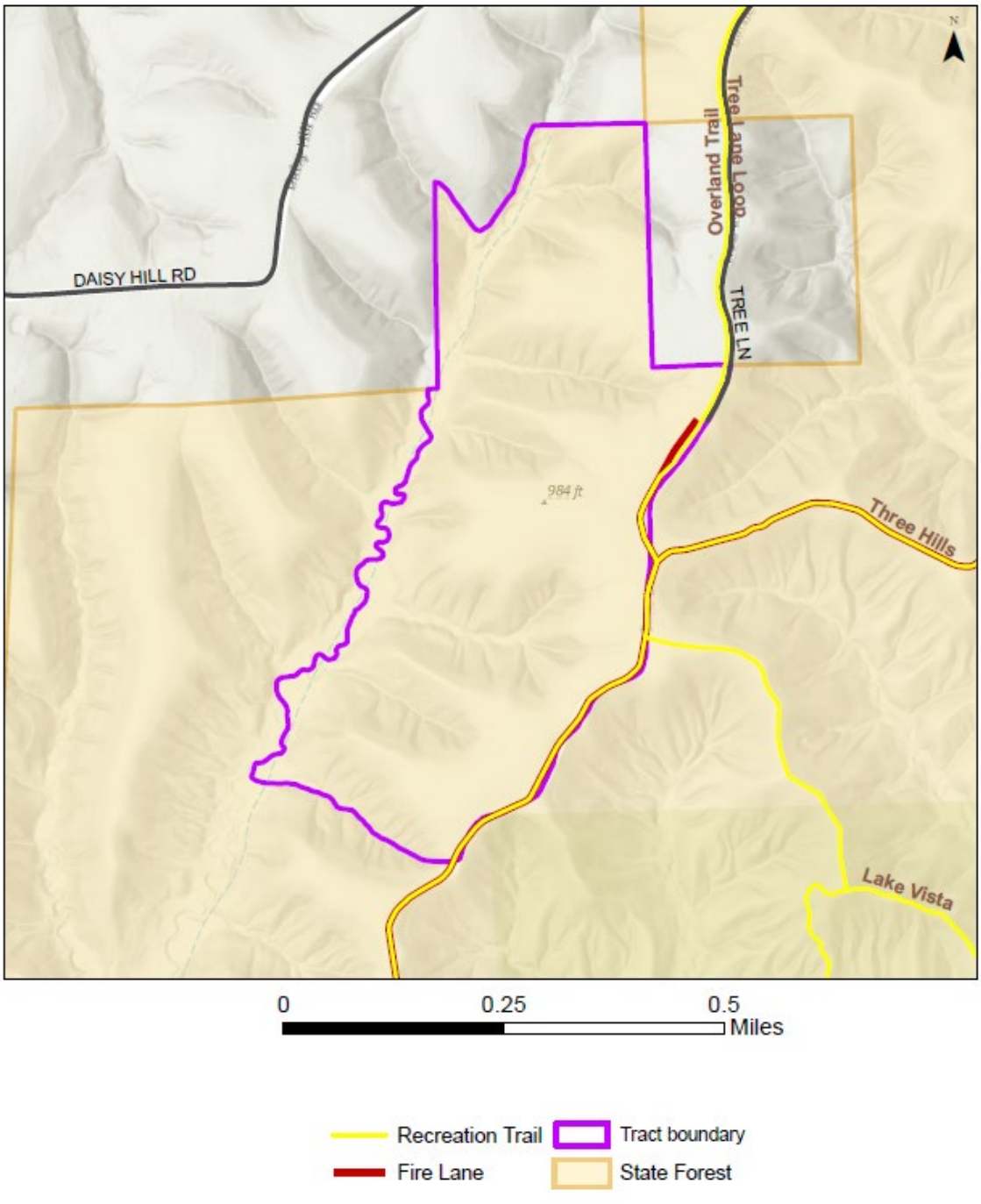
Prescribed fire – A regime of prescribed burns may be started within this tract to reduce the abundance of the shade tolerant species in the midstory and to help control invasive species.

Proposed Management Activity	Proposed Date
Pre-harvest invasive species work	2025-2026
Timber harvest	2027-2030
Post-harvest TSI and invasive species work	Within 2 years post-harvest
3-year regeneration review	Three years after harvest
Prescribed fire regime	2030+
Next forest inventory	2045

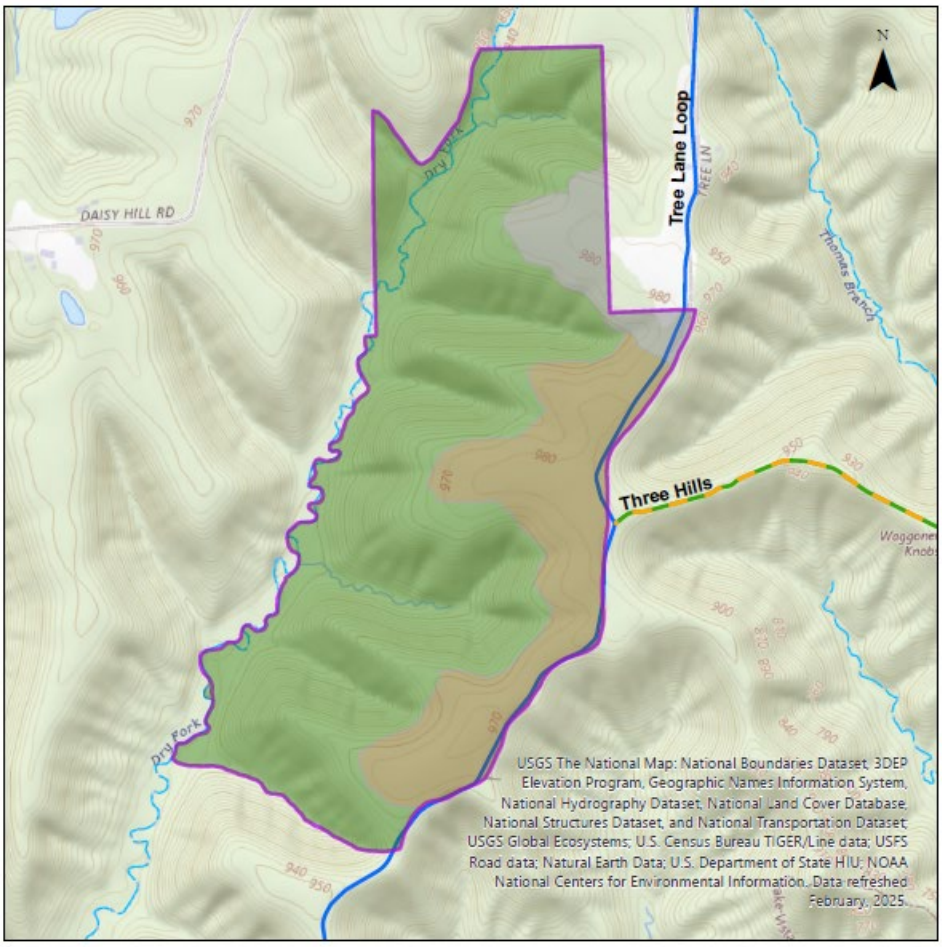
Clark State Forest
Location Map
Compartment 16 Tract 6



Clark State Forest
Compartment 16 Tract 6
Tract Map



Clark State Forest
Compartment 16 Tract 6
Cover Types Map



Clark State Forest	Compartment: 16	Tract: 8
Forester: Dustin Alwine & Will Davis	Date: 9/8/2023	Acres: 113
Management Cycle End Year: 2043	Management Cycle Length: 20 years	

Location
Compartment 16 Tract 8, also known as 6301608, is in Clark County, Indiana, approximately 1 mile west of Deam Lake State Recreation Area and 3 miles east of Borden, Indiana. More specifically, it is located predominately in the southeast corner of Section 31, T1N R6E. 6301608 also has small portions in Section 6 in T1S R6E and Section 32 in T1N R6E.

General Description
This tract has two different cover types: dry oak-hickory and mixed hardwoods. The dominant overstory species are chestnut oak with Virginia pine and yellow poplar also having a notable presence in the overstory. Most of this tract has high stocking with medium quality trees. The invasive species presence is overall very low with only a few high-density areas. The regeneration is mostly mixed throughout. There are some pockets of oak-hickory regeneration, but the majority of the regeneration is shade-tolerant species such as American beech or sugar maple. Management of this tract will aim to lower the stocking via a timber harvest and potential timber stand improvement (TSI) activities in locations throughout to improve the growth of the oaks and hickories. The main goal is to promote the growth of oak and hickory species in areas where it is possible to do so.

History
- 1940 – Land acquisition from Hamilton & Jennie Jackson
- 1951 – Land acquisition from Delrue & Clara Thomas
- 1966 – Land acquisition from Homer & Dorothy Hostettler
- 1987 – Land acquisition from Charles David Heath
- 1987 – Inventory completed for State Forest Inventory Program
- 2023 – Forest inventory completed by Alwine
- 2023 – Resource Management Guide started by Alwine
- 2024 – Resource Management Guide completed by Davis

Landscape Context
Most of the surrounding landscape near this tract is forested land, a majority of which is part of Clark State Forest. Deam Lake State Recreation Area is located approximately 1 mile east of the tract. There are some small areas of agriculture fields and residential sites within 1 mile of the tract, they are less than 5 percent of the land area.

Topography, Geology and Hydrology
The terrain varies from extreme slopes in the deep ravines to relatively flat along the ridgetops and the bottoms near the stream. The two dominant topographic features are the ridgetop that runs the eastern boundary and the drainage that runs the western boundary. The whole tract consists of ridges and fingers that slope downward from this ridgetop to the stream. A lot of these sloping ridges are very broken with high slopes. More than half of this tract has slopes over 45 percent.

6301608 is located entirely in the Muddy Fork watershed. The western border stream is the Dry

Fork which is a mapped 1-mile water stream. There are multiple ephemeral streams that flow between the ridges down to Dry Fork. Dry Fork flows approximately 2 miles until it reaches Muddy Fork. General riparian management zone (RMZ) guidelines will be implemented in these areas in accordance with the 2022 Indiana Logging and Forestry Best Management Practices Field Guide.

Soils

BcrAW- Beanblossom silt loam, 1 to 3 percent slopes, occasionally flooded, very brief duration, 8.5 acres

This nearly level, deep, well-drained soil is found along alluvial fans and flood plain. It is well suited to trees. Management planning should consider wet times of year. This soil has not been evaluated for site index.

CtwB- Crider-Bedford-Navilleton silt loams, 2 to 6 percent slopes, 0.1 acres

This gently sloping, deep, well-drained soil is on ridgetops in the uplands. It is well suited to trees. Crider has a site index of 90 for white oak and 98 for yellow poplar. Bedford has a site index of 70 for white oak and 90 for yellow poplar. Navilleton has not been evaluated for site index.

GgbG- Gilwood-Brownstown silt loams, 25 to 75 percent slopes, 42 acres

This moderately to very steep, moderately deep, well-drained complex is on side slopes in the knobs. It is suited to trees. The hazard of erosion is the main management concerns that should be considered when implementing Best Management Practices for Water Quality. Brownstown has a site index of 50 for black oak and Gilwood has not been evaluated.

GgfD- Gilwood-Wrays silt loams, 6 to 18 percent slopes, 9.3 acres

This gently to moderately sloping, moderately deep, well-drained complex is found on side slopes of the uplands knobs. The hazard of erosion is the main management concerns that should be considered when implementing Best Management Practices for Water Quality. Wrays has a site index of 70 for white oak and 90 for yellow poplar and Gilwood has not been evaluated.

GmaG- Gnawbone-Kurtz silt loams, 20 to 60 percent slopes, 46 acres

This moderately to very steep, moderately deep, well-drained complex is found on side. It is well suited to trees. The hazard of erosion and equipment limitations are the main management concerns. These should be considered when planning management activities and implementing Best Management Practices for Water Quality. Kurtz has a site index of 60 for northern red oak and Gnawbone has not been evaluated.

KxkC2- Knobcreek-Navilleton silt loams, 6 to 12 percent slopes, eroded, 2.0 acres

This moderately sloping, deep, well-drained complex is on sideslopes in the uplands. It is well suited to trees. Erosion hazards are the main management concern that should be considered during the implementation of Best Management Practices for Water Quality. Knobcreek has a site index of 76 for northern red oak, and 86 for yellow poplar and Navilleton has not been evaluated for site index.

SolC2- Spickert-Wrays silt loams, 6 to 12 percent slopes, eroded, 5.2 acres

This moderately sloping, deep, moderately well-drained soil is found on side slopes in the uplands and knobs. It is well suited to trees. A fragipan is present at 20 to 36 inches that inhibits drainage. Erosion hazards are a management concern that should be considered when implementing Best Management Practices for Water Quality. Spickert has a site index of 60 for white oak and 100 for yellow poplar and Wrays has a site index of 70 for white oak and 90 for yellow poplar.

Access

Access to 6301608 is by fire lane, which also serves as the Top of the Rock Horse Trail. Top of the Rock Horse Trail runs the entire eastern boundary of the tract and is accessible by vehicle. Access to Top of the Rock Horse Trail is by fire lane, which also serves as the Tree Lane Loop Horse Trail which is accessed from the day use parking area.

Boundary

6301608 is an interior tract within Clark State Forest. The boundary on the western to northwest side follows a stream for approximately 1-mile with tracts 6301607 and 6301609 on the other side. The southern border is delineated by a large ravine separating it from 6301702. The ridgetop and Top of the Rock Horse Trail make the eastern boundary line with 6301801 and 6301516 as eastern neighbors.

Ecological Considerations

6301608 contains diverse vegetation and wildlife resources conducive to providing habitat for a variety of wildlife species. Habitat types include oak-hickory, mixed hardwoods, scattered Virginia pine, and riparian areas. Evidence of several species of wildlife was noted at the time of inventory including white-tailed deer, eastern box turtles, multiple types of lizards, black rat snakes, garter snakes, and a variety of woodpeckers and songbirds.

The Division of Forestry has developed compartment level guidelines for important wildlife structural habitat features such as snags and legacy trees. Snags are standing dead or nearly dead trees. Snags provide value to a stand in the form of habitat features for foraging activity, den sites, decomposers, bird perching, and bat roosting. Snags eventually contribute to the future pool of downed woody material, which provides habitat for many ground dwelling species and contributes to healthy soils. Legacy trees are live trees of a certain species and diameter class, that have potential future value to various wildlife species, if retained in the stand.

In the compartment that includes this tract, inventory data indicate snag densities exceed Division of Forestry (DoF) targets in all size classes. At the largest size class (>=19" dbh) inventoried density exceeds even the "optimal" target. Additionally, legacy tree densities exceed DoF compartment-level targets in all size classes.

The invasive species located within the tract were: Japanese stilt grass and Japanese honeysuckle. The most prevalent invasive species was Japanese stilt grass. The invasive species were more prevalent near the streams and along the horse trails. Invasive species management could target these areas or a particular species such as Japanese stilt grass.

A formal Ecological Review process, which includes a search of Indiana's Natural Heritage Database, is part of the management planning process. If Rare, Threatened, or Endangered species were found to be associated with this area, the activities prescribed in this guide will be conducted

in a manner that will not threaten the population viability of those species or communities.

Recreation
The main recreational opportunity is likely horseback riding. Top of the Rock Horse Trail runs along the eastern ridgetop in the tract. The Tree Lane Loop Horse Trail enters the tract for a short portion on the northeastern edge. Other likely recreational opportunities include hunting, wildlife viewing, and foraging.

Cultural
Cultural resources may be present on this tract, but their location(s) are protected. Adverse impacts to significant cultural resources will be avoided during any activities.

Tract Subdivision Description and Silvicultural Prescription
The current forest resource inventory was completed in the summer of 2023 by Forester D. Alwine. A summary of the estimated tract inventory results is in the table below.

Tract Summary Data (trees >11"DBH):

Species	# of Trees	Total Bdft
Yellow poplar	1,634	455,580
Chestnut oak	1,206	167,040
Virginia pine	1,011	156,110
Northern red oak	196	81,230
Black oak	171	59,510
American beech	254	40,090
White oak	140	39,380
Sugar maple	537	35,200
American sycamore	42	33,180
Red maple	460	26,430
Scarlet oak	94	23,900
Pignut hickory	91	16,430
Blackgum	32	14,460
Shagbark hickory	46	11,840
Sweetgum	61	10,710
American elm	159	10,260
Basswood	9	530
Total	6,143	1,181,880

For the purposes of this resource management guide, this tract is divided into two management cover types based on forest composition: dry oak-hickory and mixed hardwoods.

Dry oak-hickory, 85 acres

The dry oak-hickory cover type is located on the upper slopes and ridge tops. It is over stocked with the primary species being chestnut oak. There is no previous record of timber harvesting being conducted in this cover type during the state's ownership; therefore, there are some very large trees present. Most of the larger trees are located on the lower slopes and deep drainages. Several trees were measured during the inventory over 30 inches in diameter. The quality of the timber is overall average, and the majority of the chestnut oaks have typical form for that species. Virginia pine is aging out of this cover type, with windthrown mortality being common. With the absence of fire on these slopes, this cover type is attempting to convert to a more mixed hardwoods forest with the main regeneration being sugar maple and American beech.

Cover Type Summary Data (trees >11"DBH):

Species	# of Trees	Total Bdft
Chestnut oak	1,206	167,040
Virginia pine	330	41,990
Northern red oak	92	34,990
Black oak	101	18,690
White oak	105	15,950
Scarlet oak	62	13,790
Yellow poplar	19	7,350
Pignut hickory	52	7,160
Sugar maple	46	3,330
American beech	33	4,270
Red maple	24	1,790
Shagbark hickory	7	1,050
Basswood	9	530
Total	2,086	317,930

The goal is to keep this as an oak-hickory cover type for the foreseeable future. To do this, the oak and hickory species will need a competitive advantage by the removal of less desirable shade tolerant species. A mid-story removal is recommended due to most of the mid-story being undesirable. This could be completed by chemical methods, mechanical methods, or prescribed fire. Fire intervals of 2-5years could assist with reducing shade tolerant species and benefit a wide variety of wildlife species while providing diverse habitat structure. An improvement harvest is also recommended for this cover type to reduce the average basal area to 60-80. This harvest could remove between 100,000 – 150,000 board feet from this cover type. This could be accomplished through the combination of a shelterwood, single-tree selection, or patch-cut openings. Invasive species control is recommended for the high presence pockets and in areas where the timber harvest or TSI creates larger openings allowing high quantities of light to reach the ground.

Mixed hardwoods 28, acres

The mixed hardwoods cover type is along the drainages of this tract and on the lower slopes. This cover type is fully stocked with the dominant overstory species being yellow poplar. There is no record of a timber harvest being conducted in this cover type during the state's ownership; therefore, there are some larger trees present. Given the amount of time these trees have been allowed to grow, and higher quality sites located in deep ravines, there are also high-quality trees present. During inventory, the forester measured several yellow poplar and Northern red oak at or above 100 feet in height and 30+ inches in diameter. The regeneration in this cover type is more diverse than the dry oak-hickory, with additional species like spicebush and pawpaw being common. The most common regeneration is American beech, sugar maple, and yellow poplar. Yellow poplar regeneration is most prevalent in areas where mortality has allowed a greater amount of light to enter the forest.

Cover Type Summary Data (trees >11"DBH):

Species	# of Trees	Total Bdft
Yellow poplar	1,615	448,230
Virginia pine	681	114,120
Northern red oak	104	46,240
American beech	221	35,820
Black oak	70	40,820
Sugar maple	491	31,870
Pignut hickory	39	9,270
American sycamore	42	33,180
Red maple	436	24,640
White oak	35	23,430
Scarlet oak	32	10,110
Blackgum	32	14,460
Shagbark hickory	39	10,790
Sweetgum	61	10,710
American elm	159	10,260
Total	4,057	863,950

An improvement harvest is recommended for this cover type with the goal of reducing the average basal area to 60-80. In this cover type, health and diversity should be priority. An improvement harvest could remove between 300,000 – 350,000 board feet from this cover type. In areas where it is feasible to transition to an oak-hickory cover type, a selective harvest and a mid-story removal can be used. A selective harvest along with patch-cut openings could be used to promote and improve the cover type. A shelterwood harvest could be used throughout this cover type in areas where oak species presence and oak species regeneration allow. Invasive species control can be conducted for the high presence pockets and is recommended in areas where the harvest or TSI creates larger openings allowing high quantities of light to reach the ground.

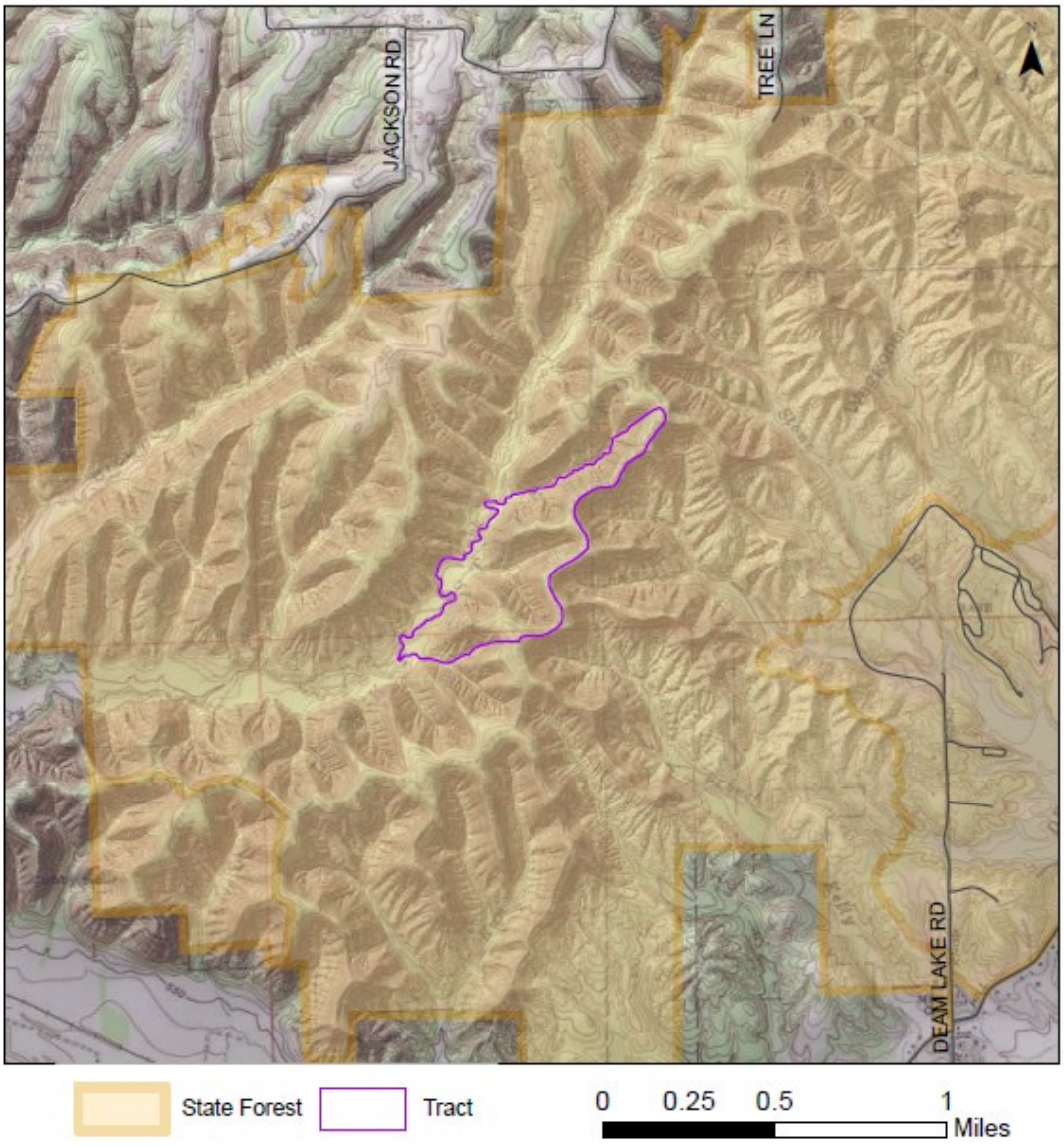
Summary Tract Silvicultural Prescription and Proposed Activities

Management recommendations in this tract could begin with pre-harvest invasive species control

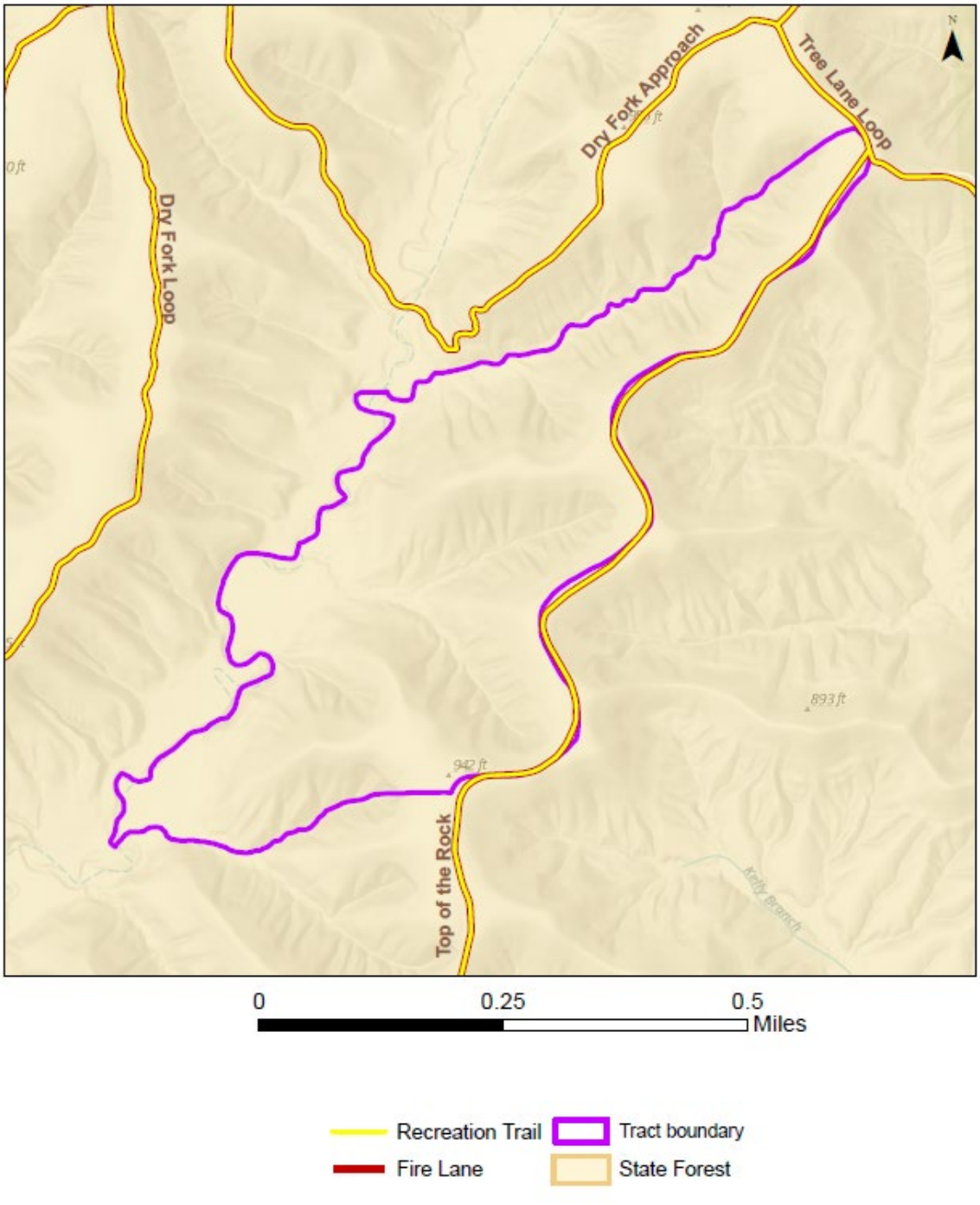
in the higher presence pockets. This control could be used to limit seed producing populations or reduce less pervasive invasive species. Pre-harvest TSI could be utilized to promote desirable regeneration such as oak or hickory species. A timber harvest is recommended to lower the basal area, improve regeneration conditions, or to transition an area of the tract from one cover type to another. An improvement harvest could remove between 400,000 and 500,000 board feet from the tract. This could be accomplished using single-tree selection, a shelterwood, or patch-cut openings. Post-harvest TSI, prescribed fire, and invasive species control could be used to promote and ensure the success of the tract.

Proposed Management Activity	**Proposed Date**
Pre-harvest invasive species work and TSI	2025-2026
Timber Harvest	2025-2027
Post-harvest TSI and invasive species work	Within 2 years of harvest
3-year regeneration opening review	Three years after harvest
Prescribed fire regime	2026+
Next forest inventory	2043

Clark State Forest
Location Map
Compartment 16 Tract 8



Clark State Forest
Compartment 16 Tract 8
Tract Map



Clark State Forest
Compartment 16 Tract 8
Cover Types Map