

## **Resource Management Guide**

### **Compartment 14 Tract 04**

Pike State Forest  
Amanda Bradshaw-Burks  
Sit Index: 70

November 19, 2009

**Location:** This tract is located in parts of the E ½ S ½, W ½ S ½ of Section 23 T2S R7W Pike County, IN. It lies about two miles east of Augusta, IN.

**General Description:** This tract is 90.5 acres. The majority of the tract is closed canopy hardwood forest, but 15 acres of this tract is non-commercial mine. This area consists of both reclaimed mine area and mine spoils. It is located in the northwest corner of the tract and spreads to the south. There is a small ephemeral stream located in the southwest corner of this tract and on the reclaimed mining area in the northwest corner of the tract. The general topography is gently rolling hills with an overall sloping southward.

**History:** This land was purchased from James C. Ellis on September 27, 2007 in a large purchase. Due to the recent acquisition of this land, this inventory is one of the first actions taken on it by the DNR DoF. The eastern and southern boundaries have been marked by pink ribbon and orange paint by the DoF. A pipe marks the surveyed corner in the southeast.

Coal mining was done in the northwest corner of the tract. After the mining operations part of the land was reclaimed by leveling out the soil and planting plants well suited to such disturbed sites (river birch and Virginia pine were planted sporadically in this area). The rest was left as mine spoils and some planting was done to stabilize the soil (river birch, white pine, Virginia pine, and Black Locust are all present and assumed to be planted).

The wooded area on this tract was harvested sometime in the 1970's. This is evidenced by the stumps still present over the majority of the tract. Most of the merchantable timber was taken with the exception of a few small pockets scattered over the compartment. It is also possible that some trees were taken for firewood after the larger trees were cut.

**Landscape Context:** This tract is connected to two other tracts within compartment 14 on its northern boundary. The east, south, and western boundaries are along private land. Compartment 14 connects to compartment 12 which lies to the north.

Historically this land, as well as the land to the north, was used for timber production and coal mining. The current goal of the tract is for multiple use. The surrounding land that is not owned by the state is currently held privately. Previous to private ownership, much of the land was mined for coal and is now reclaimed mine areas.

**Topography, Geology and Hydrology:** This tract is located in the watershed surrounding the Patoka River. The topography is rolling hills and a general sloping to the south.

There is a wetland located in the reclaimed mine area in the northwest corner of the tract. There is a small ephemeral stream surrounded by an area of wetlands here. This area of wetland is indicated by the plants present. There is also a small ephemeral stream located in the southwest corner of the tract. This stream has a riparian area along it. These areas most likely have standing water on a seasonal basis and this is dependant on the amount of rain received on a yearly basis.

The geology of this area consists of underlying shale and sandstone. As indicated by the history of mining, there are seams of coal in the northwest corner of the tract.

**Soils:**

Gilpin Silt Loam (GnE), 15-30% slopes- This is a strongly sloping to steep, moderately deep and well drained soil on side slopes in uplands. The subsoil is 29" thick and fractured sandstone bedrock occurs at 35 inches. The soil's available water capacity is low, permeability is moderate and surface runoff is rapid. Organic matter content in the surface layer is moderate. Erosion is a major hazard. The soil's land capability is VIe, the woodland ordination symbol is 4R and the site index is 80.

Zanesville Silt Loam (ZaB), 2-6% slopes- This soil is found on gently sloping, deep, and moderately well drained soil on ridgetops in uplands. Sandstone bedrock is found at 78 inches. The soil has moderate available water capacity and permeability is moderate above the fragipan and slow in the fragipan. Surface runoff is medium. There is a firm and brittle fragipan at 24-32 inches and a perched seasonal high water table is in or above this fragipan during winter and early spring. Organic matter content is moderately low. Erosion is the major hazard for this soil. The soil has a land capability classification of IIe, a woodland ordination symbol of 4A and a site index of 68.

Fairpoint-Bethesda complex (FbG) – These steep and very steep, deep, well drained soils are in surface-mined areas on uplands. Included with these soils in mapping are abandoned haul roads and narrow, elongated pits that contain water. The pits and roads are extremely acid and can support little, if any, vegetation unless major reclamation measures are applied. They occur as narrow elongated mounds of discarded overburden. In some areas the slope is less than 25 or more than 70%. The subsoil is 60" deep. Available water capacity is low and permeability is moderately slow. Surface runoff is very rapid. The organic matter content is very low in the surface layer. Most areas are used a woodland. The land capability classification is Vlle. No woodland ordination symbol or site index is assigned.

Wellston Silt Loam (WeE), 15-30% slopes- This soil is found on strongly sloping to steep hills. It is a deep, well drained soil on sideslopes in uplands. There is sandstone bedrock at 60 inches. The available water capacity is high, permeability is moderate and surface runoff is rapid. Organic matter is moderately low. The major hazard for this soil

is erosion. The soil has a land capability classification of VIe, has a woodland ordination symbol of 4R and a site index of 71.

Zanesville Silt Loam (ZaC3) 6-12% slopes, severely eroded- This soil is found on moderately sloping, deep and moderately well drained soils. The Available water capacity is moderate. Permeability is moderate above the fragipan and slow in the fragipan. Surface runoff is moderate in cultivated areas. There is a slowly permeable fragipan at a depth of about 2 feet. The perched seasonal high water table is above the fragipan during winter and early spring. Organic matter content is low. The land capability class is IVe, it has a woodland ordination symbol of 3D and a site index of 60.

Zanesville Silt Loam (ZaD3), 12-18% slopes, severely eroded -This is a strongly sloping, deep and moderately well drained soil on narrow sideslopes. The available water capacity is moderate. There is a slowly permeable, brittle fragipan at 2 feet restricts roots and downward movement of water. Surface runoff is very rapid. There is a perched seasonal high water table in or above the fragipan in winter and early spring. Organic matter content is low. Erosion is a hazard. The land capability classification is VIe, it has a woodland ordination symbol is 3D and a site index of 60.

Fairpoint-Bethesda complex (FbC) - These moderately sloping and strongly sloping, deep, well drained soils occur as mine spoil in surface-mined areas on uplands that have been shaped and smoothed. Also included are some abandoned haul roads. The subsoil is 60" thick. Available water capacity is low and permeability is moderately slow. Surface runoff is medium or rapid. The abandoned haul roads and mine dumps cannot support vegetation unless major reclamation measures are applied but they are fairly well suited to a wide variety of grasses and legumes for hay or pasture. The organic matter content is very low in the surface layer. The land capability class is VI<sub>s</sub>. No woodland ordination symbol is assigned. No sight index is given.

Fairpoint silt loam (FaB), reclaimed – This a nearly level to strongly sloping, deep, well drained soil in surface-mined areas on uplands that have been shaped and smoothed. It formed in medium textured or moderately fine textured material over nonacid mine spoils. The mine spoil consists of partially weathered soil and rock material and fragments of shale, siltstone, sandstone, and coal. Available water capacity is low and permeability is moderately slow. The rooting depth is restricted in some areas due to compaction of the underlying mine spoil. The organic matter content is very low in the surface layer. The land capability classification is IV<sub>s</sub>. No woodland ordination symbol or site index is assigned.

**Note:** When the site index for this tract was found, it was found with the exclusion of the Fairpoint-Bethesda complex (FbC) and Fairpoint silt loam (FaB). The reason for this is that no site index is given to these soils within their soil description. Also, as these soils are present in mine spoils, any timber produced is non-commercial due to steepness or extremely poor soil quality. Because of these facts, the soil was omitted when finding the site average. The site index given is for the commercial timber sites.

**Access:** Access is a bit difficult to this tract. There is no public access directly to the tract. The easiest way is to take 275 and go to where it dead ends in tract 1405. From here there is an ATV trail that runs along the north side of the lake located in tract 1405 and hooks to the west of it. From here it goes south and it can be followed to where it ends in tract 1404. It is also possible to walk into this tract via the same path. From this trail further access to the interior of the tract is on foot.

**Boundary:** The east and southern boundaries are marked with pink ribbon and orange paint. A surveyor's pipe was located and marked in the southeast corner of the tract. The western boundary is not marked at this time. The northern boundary runs along a ridgeline.

In relation to boundaries there are two locations where "Private Property" signs have been put up on this tract. The signs were put up on the state land but far enough away from the true boundary that they should be removed. Both areas are located on ATV trails. The first spot is located in the northeast corner. The signs are facing west so they are visible as you are heading toward the eastern boundary of the tract. The second set of signs is located in the northwest corner. These signs are located on the edge of the mine reclamation area facing east so they are visible as you are heading toward the western boundary of the tract. At this location a tree was cut down on state land in an attempt to block an ATV trail and a sign was affixed to this tree. All the signs in this area were labeled with "Augusta Cemetery Hunt Club."

**Wildlife:** This tract most likely supports animals that are typical to the area. The majority of the tract consists of closed canopy hardwood forests. Animals witnessed were whitetail deer, squirrels, crows, hawks, geese (to the south), downy woodpecker, and multiple songbirds.

The northwest corner of the tract consists of an open area due to reclaimed mine spoils. The area here consists of grass, wetland plants, and small planted trees sporadically present. River birch and Virginia pine were planted in this area. The trees in this area are sparse and small; averaging about 4" in diameter and are located mostly along the small ephemeral stream that runs through the field. This early successional area has the potential to support a variety of species that require this habitat; specifically, songbirds. Due to the degradation of the soil here, it would require no maintenance to maintain this area as a wildlife clearing if desired. Whitetail deer trails were also noted in this area. There is some edge habitat where the mine spoils transition to forest. This edge habitat is especially favored by whitetail deer.

A search of the Natural Heritage Database was dated 6/15/09. If any endangered, threatened, or rare species were noted, the plan of activities for this tract took those into consideration.

Current policy on managing for the federally endangered Indiana bat requires a certain component of snags and live trees of specific sizes and species. This tract does not meet the live tree target in the 20"+ size class. To meet this requirement 186 additional trees

are needed within the tract. The best way to achieve this is to allow pre-selected trees that are relatively close to the size requirement the time needed to mature to this size. This tract does not meet the snag requirements in the 9"+ or the 19"+ size classes. In order to meet the requirements 52 additional snags of 9"+ and 30 snags of 19"+ need to be created. This is easily done by girdling trees that are appropriate to reach this goal.

**Communities:** The dominant forest type on this tract is oak/hickory. There are some areas of almost pure yellow poplar located along some of the ridge tops. These stands have large pole to small sawtimber sized trees.

Honeysuckle is present over much of this tract especially along the ATV trails and in areas that are relatively open. The number of plants present isn't sufficient enough to cause concern at this time. The infestation can be monitored for now and further action could be taken if they spread further.

Mistletoe was found in two trees in the central northern portion of the tract. No other trees appeared to be infected. The trees were flagged in pink so that they could be taken out when TSI is done.

**Recreation:** There are currently many deer hunting stands present on this tract. The majority of these are temporary stands that are not labeled. This tract was inventoried over the Indiana deer hunting season so it is possible that all of these stands will be taken down at the commencement of the season. However; there were some permanent stands noted as well as some temporary stands that appeared to have been in that location for an extended amount of time. These stands will need to be removed.

There are wildly used illegal ATV trails on this tract. There are some very heavily used trails (as marked on the Tract Features Map) as well as many secondary trails that are used only sporadically or are created as needed. This tract is adjacent to privately held land so it is unclear how easy this tract is to access from other borders. In addition to the illegality of these trails; the threat of soil compaction, erosion, spread of exotics, and impediment of seedling establishment dictates that extensive measures should be taken to block further use of these trails. Because of the recent acquisition of this land it would behoove the DNR DoF to send letters to all the neighbors informing them of the change of status on the land as well as what activities are acceptable or not acceptable on state owned land.

**Cultural:** Cultural resources are to be protected on State Forests. If any resources were noted on this tract the plan of activities took them into consideration.

#### **Tract Subdivision Description and Silvicultural Prescription:**

The majority of the timber on this tract is oak/hickory cover type. The stand is dominated by black oak, red oak, white oak with yellow poplar scattered widely throughout the stand as well. As stated earlier much of this stand was harvested sometime in the 1970's. It is possible that once the sawtimber was harvested smaller

trees were taken for firewood. This harvest is evidenced by a number of stumps present over the entire area. There are areas of the stand that have a smaller average DBH (diameter at breast height) than the tract as a whole. These areas are located on the eastern and southeastern boundaries. Also there is an area on the northern portion of the tract between the two fingers of yellow poplar. The timber here is generally pole sized or smaller and on the scrubby side. It is possible that these areas were harvested heavier than the interior of the tract and this is the result. These poorer stands will be treated the same within the oak/hickory prescription. The rest of the oak/hickory consists of larger trees; generally pole to small sawtimber size. There are some larger trees scattered among the tract. Specifically there are some double and triple stumped yellow poplar that are very large (25"+) as well as sporadic large trees of various species. It is likely that these are the trees that were left after the 1970's harvest.

Also present on this tract are some smaller stands of almost pure yellow poplar. These are located along the northern border and head south in two fingers to the middle of the tract. There is also one small pocket of yellow poplar located in the southwest corner. These stands consist of somewhat densely stocked sapling - poles sized trees with some sawtimber sized trees present. Some areas are almost sapling "thickets". There are some larger trees scattered within the yellow poplar. Most of these trees are large sawtimber yellow poplars but there are some larger trees of other various species present as well. These large trees are widely scattered.

Even though there are two different cover types within the closed canopy forest of this tract; the silvicultural treatment will be the same for the entire commercial portion of the tract. The overall form of the timber on this tract is good and the closed canopy portion of the tract is fully stocked at about 82%. This is halfway between the A and B lines on the Gingrich Table. The volume on this tract does not support a harvest at this time. Despite this the entire tract would be greatly benefited by TSI to release the crop trees. By taking out undesired, damaged, overmature, or diseased trees the quality of the remaining trees will improve. This TSI cut coupled with time to mature will create a much healthier and desirable stand.

The rest of the stand consists of previously mined land. It is located in the northwest corner and spreads south along the western border. A portion of this area is reclaimed and a portion of it is still in spoils. The entire area is non-commercial either because there are no trees present or due to the steepness of the slope. The reclaimed area is open and consists of grass cover and a few sporadic planted trees. There is also a small ephemeral stream running through the field and some riparian area. Due to the degradation of the soil through strip mining these sites will most likely maintain themselves as openings with no intervention. This is recommended for wildlife habitat. Due to soil compaction on these areas, tree planting is not recommended. Planting is not recommended as the tree species that would thrive here are generally undesirable species and the quality of timber produced would not offset the cost of establishing the timber. The rest of this area is mine spoils. On this area a mixture of trees has been planted and there is also naturally occurring trees as well. Virginia pine, red pine, river birch, black locust, and white pine are all present. Due to the steepness of these slopes the timber here is non-commercial as equipment cannot be operated here. In addition to this, the

trees present are keeping the mine spoil soil from eroding. The trees should be left as is for now to keep performing this function and then be reevaluated at the next inventory.

**Summary Tract Silvicultural Prescription and Proposed Activities:**

2010 – Remove permanent deer stands

2010 – Block ATV trails

2011 – TSI (both timber and vine)

2011 – Mark western boundary

2029 – Inventory

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