Indiana Department of Natural Resources – Division of Forestry

Resource Management Guide - DRAFT

State Forest: Yellowwood
Tract Acreage: 71
Forester: James Dye
Management Cycle End Year: 2031

Compartment 06 **Tract** 31
Commercial Acreage: 71
Date: September 21, 2011
Management Cycle Length: 20 years

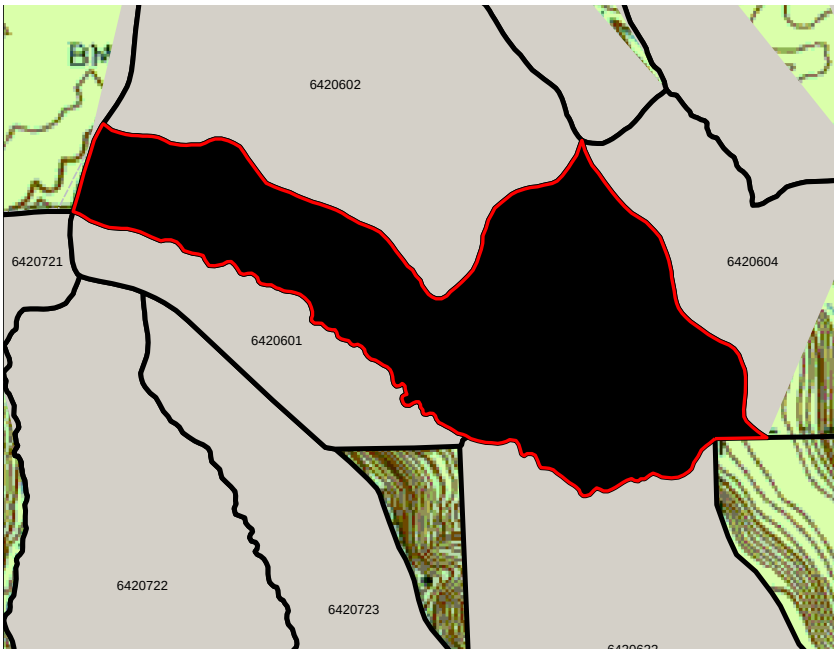
Location:

Compartment 6, Tract 31 lies mostly in the north half of Section 29, but also small portions of the west edge of Section 28, and south edge of Section 20 Township-9-N Range-2-E of Washington Township in Brown County, Indiana. The tract lies approximately 11.7 miles east of the city of Bloomington, Indiana.

General Description:

This tract is an approximately 71 acre managed, multiple-use parcel located in an area of 1913 acres grouped together as various tracts in compartment 6. The timber type is predominantly closed canopy mixed hardwoods, but contains large areas of pine (mostly Virginia) in the eastern half, and some areas of oak-hickory throughout. This is mostly an interior tract of Yellowwood State Forest and shares only one short section of its southern boundary with private property. Tract boundaries are delineated by a mapped intermittent stream along most of the south edge, property boundary along the easternmost portion of the south edge, Dubois Ridge road along the west edge, and topographical features help define the north and east boundaries. A horseback trail runs along the western half of the north boundary and southeast through the bottom

Figure 1 – Yellowwood, Compartment 6, Tract 31



of the tract. The tract is easily accessible via Dubois Ridge road, and a small parking area is located just north of the northwest corner in the adjacent Tract 2. This area exhibits good opportunities for multiple use management, including timber management, wildlife management, and soil and water conservation. It is also ideal for public recreational activities such as hiking, horseback riding, gathering, hunting, and viewing.

Below is a table (table 1) comprised from the 2011 forest inventory data and shows the relative frequency of tree species in this tract:

Table 1 – Basic Forest Structure

Overstory	Understory	Regeneration
white oak	American beech	red maple
chestnut oak	sugar maple	American beech
Virginia pine	red maple	hickory
black oak	dogwood	white ash
yellow poplar	black oak	black oak
Northern red oak	hickory	white oak
sugar maple	Northern red oak	sassafras
pignut hickory	sassafras	Northern red oak
bitternut hickory	white oak	chestnut oak
black cherry	pawpaw	yellow poplar
shortleaf pine	blackgum	scarlet oak
shagbark hickory	yellow poplar	pawpaw
red maple	blue beech	sugar maple
scarlet oak	Eastern red cedar	
largetooth aspen	chestnut oak	
American beech	hackberry	
black walnut		
Eastern red cedar		
white ash		
red elm		

History:

Yellowwood State Forest was created in 1940 when federal land was leased to the State of Indiana. The land was deeded to the state in 1956. Prior to that time, the Civilian Conservation Corps and Works Project Administration completed three lakes, a shelterhouse and a residence, all presently in use. Yellowwood Lake was completed in 1939. The 133-acre lake is about 30 feet deep.

Compartment 6, Tract 31 spans portions of several land acquisitions, all from the federal government and granted to Yellowwood State Forest during the mid 1950's.

In terms of forest management, a "quickie cruise" was conducted in July 1972 which estimated 1,746 board feet (bd. ft.) of harvest sawtimber and 597 bd. ft. of residual sawtimber. In 1976 a timber sale took place, removing 126 trees and an estimated 29,387 bd. ft. of sawtimber. In November 1977 post harvest timber stand improvement (TSI) was conducted, and a sale audit was performed in the following November. In June 1989, a follow up reconnaissance was performed and no further management activities were recommended at that time. In 1995 the tract boundaries were redrawn where it became Tract 31 (it was previously Tract 1B) and gained several additional acres to its eastern extents.

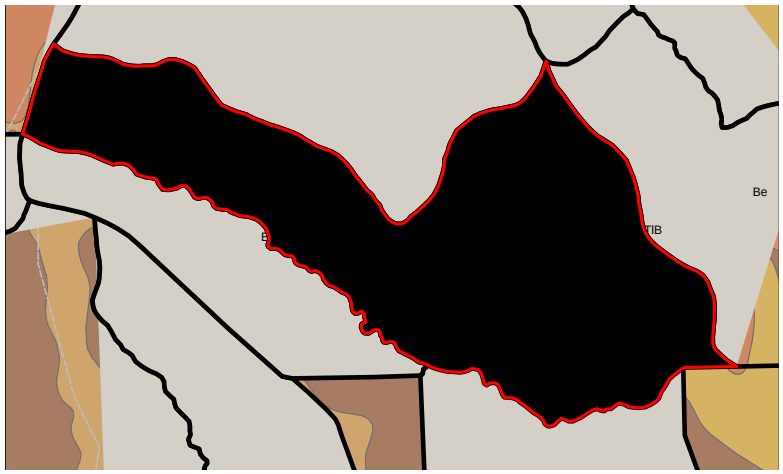
Landscape Context:

This tract is surrounded by closed canopy deciduous forests, pine forests (mostly Virginia pine), and part of the southeastern edge is adjacent to private property with a home, pond, and small yard. Several acres of pine forest (mostly Virginia pine) are present in other tracts adjacent to this one, particularly just to the east. Dubois Ridge road divides the west edge of the tract from closed canopy deciduous forest on the other side.

Topography, Geology, and Hydrology:

This tract consists of south facing slopes throughout the western half and somewhat to much gentler sloping lower land in the eastern half. The southern edge of the tract lies along a mapped intermittent stream. Another mapped intermittent runs through the eastern half of the tract from northwest to southeast. These two intermittent streams connect near the southeast corner of the tract.

Figure 2 – Brown County Soil Survey Map



Soils:

The Berks-Trevlac-Wellston complex (BgF) is the most dominant soil type found in this tract, covering approximately 33 of the tract's 71 acres. It is found on hills and slopes are steep, at 20 to 70 percent. Next most common is the Wellston-Berks-Trevlac complex (WaD) which makes up about 16.5

acres. Also found on hills, slopes here range from 6 to 20 percent.

The remaining soils are Tilsit silt loam (TiB) and Wellston-Gilpin silt loam (WeC2), comprising 9.5 and 12 acres of the tract's soils respectively.

Table 2 – Basic Soil Information for Compartment 6, Tract 31

BgF	**Berks-Trevlac-Wellston complex**		20-70% slopes	Sandstone-shale-36"
	Site Index - 70	Well drained, most areas in woodland, suited to trees Unsuitable for building sites and septic absorption fields		
33 Acres	Erosion *Moderate*	Equipment Limitations *Severe*	Seedling Mortality *Moderate*	Windthrow Hazard *Slight*
WaD	**Wellston-Berks-Trevlac**		6-20% slopes	Sandstone & shale-51"
	Site Index - 70	Well drained, primarily used as woodland, well suited to trees Severe limitations to buildings, septic, and roads due to slope		
16.5 Acres	Erosion *Slight*	Equipment Limitations *Slight*	Seedling Mortality *Slight*	Windthrow Hazard *Slight*
TlB	**Tiltsit silt loam**		2-6% slopes	Sandstone bedrock-58"
	Site Index - 70	Well drained, a few acres found in woodland, soil is suited to trees Severe wetness due to fragipan, somewhat limited for dwellings		
9.5 Acres	Erosion *Slight*	Equipment Limitations *Slight*	Seedling Mortality *Slight*	Windthrow Hazard *Slight*
WeC2	**Wellston-Gilpin silt loam**		6-20% slopes	Sandstone-shale-52"
	Site Index - 71	Well drained, most areas wooded, soil suited to trees Severely limited to building sites due to steepness of slopes		
12 Acres	Erosion *Slight*	Equipment Limitations *Slight*	Seedling Mortality *Slight*	Windthrow Hazard *Slight*

Access:

This tract is accessible via Dubois Ridge road. The surface is gravel, but appears to be in good condition. Additionally, a fire trail extends east from Dubois Ridge road, generally along the west half of the north edge of the tract.

Boundary:

The easternmost portion of the south boundary is the only one adjacent to private land. This line has been recently repainted and is easily visible. The east, north, west, and the remaining portion of the south boundaries all follow existing roads or topographical features and border other state forest tracts.

Wildlife:

Wildlife resources in this tract seem abundant. This tract contains habitat for a variety of wildlife species. Habitat includes mostly mixed hardwoods, but there are large areas of pine and a few areas of oak-hickory. The oaks, hickories, walnut, and beech provide hard mast for deer, turkey and squirrel. Snags (standing dead trees) and cavity trees provide nesting, bugging, and roosting opportunities for woodpeckers, songbirds, and small mammals. Rotten logs, crater knolls, small ponds, and the mapped intermittent stream provide habitat for herptiles and aquatic vertebrates.

Species and sign noted during the 2011 inventory include Eastern gray squirrel, chipmunks, white-tailed deer, various songbirds, woodpeckers, Ruffed Grouse, crickets, and cicadas.

A Natural Heritage Database review was obtained for this tract. If rare, threatened or endangered species were identified for this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the viability of those species.

Wildlife Habitat Features:

According to the data collected during the tract inventory and represented in the following table (table 3), this tract is well represented with habitat in regards to the number, size and species of dead (snag) trees suitable for consideration of the Indiana bat (*Mytolis sodalis*) and its suggested habitat requirements.

Snags, standing dead or dying trees, may be one of the most important wildlife habitat features in Indiana's forests as they are used by a wide range of species as essential habitat features for foraging activity, nest/den sites, decomposers (e.g., fungi and invertebrates), bird perching and

bat roosting. Additionally, snags are an important contributor to the future pool of downed woody material. In terms of snags, only the largest size class falls below maintenance levels, while the two larger size classes fall below optimal levels. One factor to consider is that windthrow was frequently observed and quite severe. High winds in this tract may reduce the average time trees in decline or snags are left standing. Many of the larger Virginia pines have blown down which, while not contributing to standing snags, do contribute greatly to the number of fallen snags and rotten logs present.

Forest wildlife species depend on live trees for shelter, escape cover, roosting and as a direct (e.g., mast, foliage) or indirect (e.g., foraging substrate) food resource. The retention of live trees with certain characteristics (legacy trees and cavity trees) is of particular concern to habitat specialists such as cavity nesters or Species of Greatest Conservation Need like the Indiana bat. Legacy trees of a particular species having certain characteristics suitable as live roost trees for the Indiana bat are very well represented in all size categories. Cavity trees meet and exceed maintenance levels in all size classes.

Legacy trees, standing dead trees (snags) and cavity trees will be given consideration for retention as habitat for the Indiana bat and other wildlife as defined by the Resource Management Strategy for the Indiana bat on State Forest Property and the Management Guidelines for Compartment-level Wildlife Habitat Features. In addition, the girdling of select cull trees could be performed through post harvest timber stand improvement (TSI) to increase snag trees, particularly in the larger size classes.

Table 3 – Wildlife Habitat Summary

Legacy Trees*	Maintenance Level		Inventory	Available Above Maintenance	
11"+ DBH	639		1454	815	
20"+ DBH	213		309	96	

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

Snags (All Species)	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal
5"+ DBH	284	497	1039	755	542
9"+ DBH	213	426	377	164	-49
19"+ DBH	35.5	71	25	-10.5	-46

Table 3 – Wildlife Habitat Summary (continued)

Cavity Trees (All Species)	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal
7"+ DBH	284	426	353	69	-73
11"+ DBH	213	284	294	81	10
19"+ DBH	35.5	71	42	6	-29

Communities:

Currently, there is a relatively low presence of exotic species within this tract. Several light to moderate patches of multiflora rose were observed, but multiflora rose is so widespread that it has naturalized to the area. Though not observed during the most recent inventory, Japanese stiltgrass is always a concern along trails and lanes, such as the horse trail present in this tract.

A Natural Heritage Database review was obtained for this tract. If rare, threatened or endangered species were identified for this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the viability of those species.

Recreation:

The area is accessible via Dubois Ridge road, and a small parking area is located just off the road, near the northwest corner of the tract. This tract exhibits several recreational opportunities. A permanent horse trail (the "Y" trail) follows the north boundary. Additionally, hunting is permitted on State Forest property and this area also offers opportunities for off-trail hiking, gathering, and viewing.

Cultural:

Cultural resources may be present on this tract but their location is protected. Adverse impacts to significant cultural resources will be avoided during any management or construction activities.

Tract Prescription and Silvicultural Prescription:

This tract was not divided into subdivisions (non-stratified).

The timber type is predominantly closed canopy mixed hardwoods with a large patches pine and some oak-hickory. The overstory consists mostly of medium to large sawlog sized white oak, small to medium sawlog sized chestnut oak, small sawlog sized Virginia pine, and a variety of black oak and yellow poplar. The overall quality of merchantable timber is fair to good along the slopes and poor to fair in many of the flatter, lower elevation areas. This tract has a large component of pole-sized timber. Virginia pine, sugar maple are the most common, but red maple, white oak, hickory, chestnut oak, and black oak are also very well represented. The large sapling under-story consists mostly of American beech, sugar maple, red maple, dogwood, black oak, hickories, and Northern red oak trees. Seedling regeneration consists mostly of red maple, American beech, hickories, white ash, black oak, white oak, and sassafras.

The current stocking level of 107% indicates the tract has reached an overstocked condition. The biggest damaging agent is windthrow, commonly observed throughout the tract but heaviest in areas of Virginia pine.

The recommendation is to perform an intermediate harvest using the single tree selection method. This will result in thinning and a reduction of competition with and amongst the maturing, better quality sawtimber trees and preferred species. The composition of the tract will also be improved by harvesting low quality, damaged, diseased, dying and poorly formed trees as well as harvesting less desirable species such as maple, beech, sassafras, and sycamore. Any white ash trees present should be harvested before the Emerald ash borer can infest the area. Group selection openings are recommended where possible in the declining Virginia pine and other low quality areas in order to reestablish native hardwoods and, as in the remainder of the tract, improve tract vigor and composition.

Management in the form of Timber Stand Improvement (TSI) should be performed to control grapevines, release preferred crop trees through the culling of low volume, poorly formed trees and less desirable species, and to encourage early successional (oak) regeneration through the creation of canopy gaps and a reduction in understory shade tolerant species (sugar maple and American beech).

Standing dead trees (snags) and cavity trees will be given consideration for retention as habitat for wildlife. Legacy trees as defined by the Resource Management Strategy for the Indiana bat will be given consideration for retention as habitat for the Indiana bat. In addition, the girdling of select cull trees should be performed through post harvest TSI to address the suggested guidelines of the Strategy for the Consideration of the Indiana bat (IDNR – Division of Forestry, Resource Management Strategy for the Indiana Bat on Indiana State Forests, April 2008).

No prescription is proposed for management of multiflora rose. However, any future detection of Japanese stiltgrass should be documented and treated.

Where present and appropriately laid out, existing skid trails will be reused. Care should be taken with any new skid trails to prevent excessive erosion and damage to water quality. These trails will connect with an old log yard in tract 2. It is proposed that tracts 1, 2, and 31 all receive silvicultural treatments in the form of a combined timber harvest and TSI, thus the sale layout (including skid trails, log yard(s), etc.) will adequately span all of these areas combined.

The overall goal of this prescription is to make an improvement cut which will reduce competition among the larger trees, provide resources for future crop trees through the removal of over-mature and declining trees, improve understory composition in favor of oak regeneration, and improve overall timber species composition while providing forest wildlife habitat.

Proposed Management Activities:	Proposed Period:
Exotic/Invasive Species Control	2012-2013
Timber Sale and Harvest	2012-2014
Timber Stand Improvement	2013-2015
Inventory and New Management Guide	2031

The following attachments are kept in the tract file:

Ecological Resource Review

Aerial photo map with noted special features

Aerial photo map with noted unique areas

Soil type tract map

Indiana Natural Heritage Database Map

TCruise reports

Table 4 – Inventory Summary

Total Number of Trees per Acre: 240 **Average Tree Diameter:** 8.1"

Average Site Index: 70 **Stocking Level:** 107%

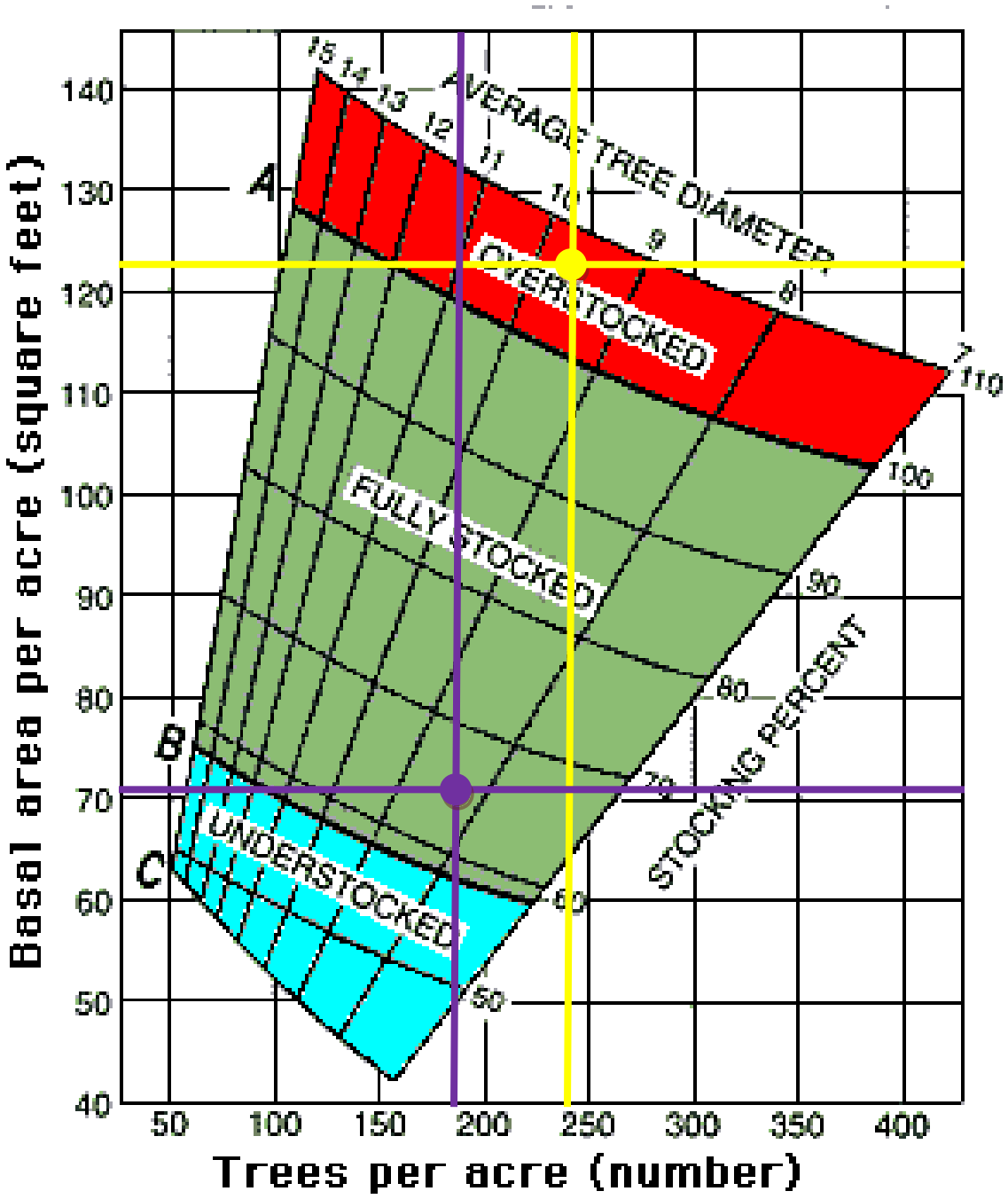
	Acres		Sq. Ft. per Acre
Hardwood Commercial Forest:	45	Basal Area Sawtimber:	80
Pine Commercial Forest:	26	Basal Area Poles:	28.5
Noncommercial Forest:	0	Basal Area Culls:	4.1
Permanent Openings:	0	Sub-merchantable:	9.5
Other Use:	0		
Total:	71	Total Basal Area:	122.1

Table 5 – Estimated Tract Volumes (Commercial Forest Area), Doyle Rule

Species	Harvest (bd. Ft.)	Leave (bd. ft.)	Total Volume (bd. ft.)
white oak	18,660	131,330	149,990
chestnut oak	37,170	73,910	111,080
Virginia pine	92,810	0	92,810
black oak	39,280	49,870	89,160
yellow poplar	33,230	9,470	42,700
Northern red oak	7,880	12,050	19,930
sugar maple	3,750	14,470	18,220
pignut hickory	2,460	10,920	13,380
bitternut hickory	2,070	6,180	8,250
black cherry	0	8,220	8,220
shortleaf pine	0	7,380	7,380
shagbark hickory	0	7,330	7,330
red maple	5,690	0	5690
scarlet oak	4,020	0	4,020
largetooth aspen	2,230	0	2,230
American beech	1,680	0	1,680
black walnut	0	1,400	1,400
Eastern red cedar	0	1,210	1,210
white ash	910	0	910
red elm	0	770	770
American elm	0	0	0
blackgum	0	0	0
dogwood	0	0	0
sassafras	0	0	0
Tract Total	**251,840**	**334,510**	**586,360**
Per Acre Total	**3547**	**4711**	**8259**

Figure 3 – Gingrich Stocking Chart for 2011 Forest Inventory

Yellow lines indicate current values; Purple lines indicate projected values after timber harvest



To submit a comment on this document, click on the following link:

http://www.in.gov/surveytool/public/survey.php?name=dnr_forestry

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.