LLCOA Copy

FOREST MANAGEMENT SERVICES

Duke Grimes

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Forest Stewardship Plan
for the property of

Longwood Lake Cabin Owners' Association
c/o Frank Cagnina
556 Hillsdale Ave.
Hillsdale, NJ 07642
212-866-4458

Property Information

Total Acreage: 668.02 Municipality: Jefferson Twp.

Woodland Acreage: 610 County: Morris

Block(s) & Lot(s): Bl.336, Lot 43.01; Bl.338, Lot 2; Bl.339, Lot 2

Location: Berkshire Valley Rd., 4.5 miles north of Rt.15

Date Plan Prepared: October, 1988 (Realty Transfer Co.)
January, 1992 (LLCOA)
Update – May, 2002
Stewardship Plan – May 21, 2012

Management Plan Period: 2011 – 2020

As a forest landowner I believe the right to own land also carries the responsibility for stewardship of the natural resource in my care. I have read the attached ten year Forest Stewardship Plan and agree to implement it to the best of my ability.

_____
Landowner Signature Date

_____
Plan Preparer Signature Date

_____
State Forester's Representative Signature Date

SOCIETY OF AMERICAN FORESTERS 1900
MEMBER

FOREST MANAGEMENT SERVICES

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A Forest Stewardship Plan for the Longwood Lake Cabin Owners' Association

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Jefferson Twp., Morris Co.
May 21, 2012

Background

This stewardship plan has been prepared for the Longwood Lake Cabin Owners' Association (hereafter referred to as LLCOA), owners of 668.02 acres in Jefferson Township, Morris County identified as Bl.336, Lot 43.01; Bl.338, Lot; and Bl.339, Lot 2. Although the entire property is occupied by woodland and Longwood Lake, for the purposes of farmland assessment 610 acres are identified as "non-appurtenant woodland," with the remainder of the area serving as the residential portion of the property.

The Morris County Soil Survey shows that much of the property contains soils of the Rockaway series which "consists of deep, gently sloping to very steep, well drained and moderately well drained soils on uplands," "soils that have a moderately developed fragipan" (see Soils Map). These soils, along with the smaller areas with soils of the Hibernia, Riverhead and Preakness series, are well-suited to woodland, and are generally capable of supporting good-quality stands of upland oaks, tulip poplar, ash, maples and hickory. Significant management limitations are imposed by excessive stoniness and steepness – features that are particularly notable in areas labeled "RNRE" on the Soils Map.

The 1930 aerial photo provides a good look at the agricultural history of the property. The open fields that flank either side of the lake once served as cropland, although it appears that by 1930 their agricultural use would have been limited to pasture, and that woodland may already have begun to emerge in some of the fields. The fine texture of the what appears to be young woodland to the east (southeast) of the fields shows the extent of the original clearing of the lower slope of Green Pond Mountain for agriculture, a use that had been abandoned by the end of the 19th century. Variability of the appearance of the woodland on both this property and the surrounding lands hints at a history of harvesting that would have been at its peak from 1890 to 1910.

A formal management process of the woodland began in 1983 with assistance provided to the previous owner, Realty Transfer Company, by Forest Management

Services. Repeated, severe defoliations by the gypsy moth during 1978-1982 had caused significant mortality of the oaks within the area now designated as Stand 1, and it was therefore decided to conduct a harvest designed to salvage as much of the value as possible from the dead and dying oak. The initial block of timber that was eventually put out for bid in late 1984 involved a 25-acre block with 150 live oaks and 150 dead oaks with an estimated volume of 87,255 board feet. By the time the harvest was ready to commence in the summer of 1986, following a drawn out permitting process with the township, and then by being blocked by repairs to Longwood Rd. bridge, a buildup of gypsy moth egg masses was noted. Recognizing that another series of defoliations of already-stressed oaks would likely result in another round of significant mortality, it was subsequently decided, after consultation with the township forester, that the harvest would be expanded to include more trees within what was essentially all of Stand 1. The final harvest of 70 acres ended up producing 243,427 board feet of sawlogs, generating $42,113. As noted in the summary letter to the landowner at the completion of the harvest, "some areas look a bit rough," but that the residual stand that remained would soon return to its former, sylvan appearance.

In 1988, a forest management plan was prepared to be in compliance with the what was then a newly-enacted amendment to the Farmland Assessment Act, and this plan was subsequently approved by the NJ Forest Service (forestry #, A-246), and placed on file with the township tax assessor. Faced with an absentee landowner with no capability to conduct small-scale forestry activities, the recommendations in that 1988 plan necessarily had to rely on what could be achieved through the periodic, large-scale harvesting of timber. Following the acquisition of the property by LLCOA in 1990, forestry activity initially remained focused on timber harvesting, primarily due to the demand of the tax assessor for the demonstration of income from forestry activity – a requirement that was apparently not being satisfied by the production of firewood. In 1992, a harvest by Brown & Lounsberry, Inc. of a 20-acre block in the northern corner of what is now Stand 5 removed 206 trees with a total of 77,636 bd.ft., generating receipts of $26,950. A little over a year later, in late 1993 – records indicate again at the demand of the tax assessor, a 23-acre harvest of timber by Heacock Lumber from what is now labeled area "6b" removed an additional 259 trees with 58,787 bd.ft. that produced $21,000.

By the end of 1993, the tax assessor and the township forester were eventually persuaded that the LLCOA property, as large as it is, could not sustain frequent, much less annual, harvests of timber, and that smaller-scale forestry activities should instead be accepted as satisfying the requirements for the demonstration of "active devotion to agriculture" and the production of annual income. Management activity for the last 20 years has therefore focused on timber stand improvement work designed to improve the overall quality and value of the woodland through the removal of low-value trees. After an initial weeding of a small block of woodland on the north side of Berkshire Valley Rd. (Stand 4), all other activity has concentrated on the woodland on the side and at the base of Green Pond Mountain, and to-date treated a total of about 60 acres of Stands 1, 2 & 3. Each year's activity has produced impressive volumes of firewood with values that have greatly surpassed the annual income requirement.

Management Objectives

1. Continue to utilize the productive potential of the woodlot through the harvest of low-value trees and the salvage of dead and storm-damaged trees for firewood.

2. Demonstrate the "active devotion to agriculture" required to sustain the property's farmland status.

3. Qualify as a forest stewardship property under the Forest Stewardship Act by fulfilling the planning and activity requirements that will eventually be promulgated by the NJ Forest Service.

4. Mitigate the loss of ash that is predicted to occur with a future infestation of the emerald ash borer, possibly with a preemptive harvest of ash timber.

5. Avoid woodland disturbance that would contribute to the development of non-native shrubs and brambles in the understory, or that would reduce the recreational enjoyment of the property.

Stand Descriptions & Recommendations

Stand 1

The 1988 plan noted that this 85-acre stand was formerly occupied by woodland dominated by the oak-hickory cover type that had suffered heavy damage from the gypsy moth-caused defoliations of 1978-82. It was estimated by oak mortality was 50% within the 25-acre section that was originally marked for harvest in 1983, and from 15% to 25% over the rest of the stand. The harvest was designed to salvage the value of the dead oak timber, including enough live trees to create a commercially-viable operation while leaving the site in a fully-stocked condition. The harvest was subsequently expanded to include essentially the rest of the stand when, upon commencement of the harvest in 1986, it became evident that an imminent resurgence of gypsy moth populations would result in additional mortality and the loss of that timber value.

The heavy debris load that resulted from all of the topwood that remained after the harvest of 825 trees created an admittedly-unsightly appearance that had to be endured through the 1980s – although it could also be debated the disruption of the appearance of the woodland would have been just a severe, and even longer-lasting, had the dead and declining oaks been left standing, unsalvaged and allowed to fall to ground on their own schedule during the next 20+ years. In any regard, wood-decaying fungi quickly went to work and by the early 1990s, with the help of some cleanup of tops for firewood, the post-harvest debris had diminished to the point where it was no longer the predominant feature, and it was finally possible to see that the stand was intact and, as planned, in a fully-stocked condition. Although oak remained, it was no longer the dominant component – a good change inasmuch as periodic flare-ups of the gypsy

moth are now a permanent part of the system. Instead, sugar maple had become the dominant species within a broader mix that, along with a smaller percentage of oaks, included black birch, red maple, beech, hickory, blackgum and basswood. Witch hazel, frequently in thick patches, was the dominant feature of an understory that was otherwise quite open and park-like. With the exception of some black birch saplings that had emerged within patch openings created by the 1986 harvest, and some root suckering of beech, there was no regeneration of trees species throughout the stand.

Timber stand improvement cutting began in the mid-1990s and has treated the 38 acres in the northern half of the stand. This work focused on the removal of low-value trees – black birch, red maple, blackgum and basswood, that were in a subordinate position to the first tier of maturing timber, i.e.- the suppressed trees that would eventually succumb to a lack of sunlight, die and fall to the ground. The exception to the rule was that understory sugar maple would be maintained. Witch hazel would also be cut with the intent that, along with removal of the lower-tier of "unacceptable growing stock," the additional sunlight that would then reach the ground would stimulate the regeneration of diverse mix of trees and shrubs. It was also hoped that the debris of branches and witch hazel that would remain after the removal of the firewood would serve to discourage deer from browsing on the emerging vegetation.

Point sample data are presented in the following section.

Amazingly, the treated section of the stand now has the appearance of a park with an understory devoid of the vegetation, with the exception of some ferns, that it was hoped would develop after the removal of trees and witch hazel. The debris that was supposed to provide some protection from browsing decayed very quickly, allowing the deer easy access to every sprig of green that emerges.

No additional T.S.I. work of the former design will be attempted within the remainder of the stand. If there is a need for a demonstration of "active devotion" following the completion of scheduled work in other areas, a harvest of culls and otherwise unusable trees can serve as a show of activity and a source of firewood. The scattering of ash timber may also be included with a preemptive harvest of ash in Stand 2.

Stand 2

A scattering of large and low-branching oaks are remnants of the time when this 37-acre strip of land at the base of Green Pond Mountain served as lightly-wooded pasture. The woodland that now occupies the site is formed by a somewhat variable mix of immature/maturing sawtimber and poletimber that includes white ash, sugar and red maples, black and yellow birches and blackgum. A variable mix of ironwood and witch hazel occupies the understory. Its proximity to the access road, as well as the modest slope, made this a relatively easy site for LLCOA firewood harvesting during the mid-1990s. Like the subsequent treatment of Stand 1, harvesting focused mainly on the removal of understory UGS trees, although it also created the opportunity to cut

grapevines, and to provide for some release of crop-tree quality ash and sugar maple. The treatment of about 14 acres occurred on the south side of the access road kept the temporary disturbance of the harvests from encroaching on the residential portion of the woodlot where activity has been limited to the cleanup of downed and storm-damaged trees.

Point sample data are presented in the following section.

In hindsight, it may have been a mistake to harvest the mix of birch, gum and red maple for firewood, or to do any other tree removal that would favor the continued faster growth of the ash inasmuch as the region is now threatened with an infestation of the emerald ash borer (EAB) – one of our newest, non-native insect pests that has also demonstrated the ability to kill 99+% of the ash wherever it has appeared. Currently known to be in counties in both the Catskills and the Poconos, at this point there is little reason to hope that its continued spread will be checked, and we can reasonably be certain that it will be in Morris County in the foreseeable (2013? 10 years from now?) future. Therefore, now that this stand is threatened with the loss of its ash, no additional cutting of non-ash species will be allowed.

Point sample data indicate that the stand contains a total volume of 102,120 board feet of ash, although it is estimated that the volume of "merchantable" ash timber is probably closer to 74,000 bd.ft.. Current value of that volume is estimated to be $16,000+, but it can be predicted that, when the EAB does infest the area, most landowners will attempt to liquidate the ash in their woodlots, and the value of that timber will immediately go to zero. It is therefore recommended that a preemptive harvest of ash should be considered as a way to salvage the value of timber that, like the oak in 1986, seems otherwise destined to turn into a heck of a lot of firewood.

Stand 3

This is a 15-acre portion of the area shown as open field in the 1930 aerial photo. The undulating terrain of a site identified as a Riverhead gravelly sandy loam is the primary factor in the variability of this 40-60-year woodland. Raised areas are well-drained to the point of being a bit droughty during the summer, and are therefore dominated by a mix of black, scarlet and white oaks that now range from 6"-12" in diameter. A drop in the terrain creates a somewhat wetter condition that shifts the woodland into a mix of ash, black and gray birches, and red maple. Depressions that are seasonally wet are dominated by a wet-site mix of red maple and pin oak. All sections of the stand are in a fully-stocked to slightly-overstocked condition.

A very convenient location from which to harvest firewood, timber stand improvement work in the early 1990s treated the "upland," oak-dominated portion of the stand with a removal of the low-value black cherry, sassafras, blackgum and gray birch, leaving a full stocking of the sapling and polesize oak. Following the gypsy moth-caused trauma of the 1980s, no attempt was made at a thinning that would reduce the basal area of the oaks (only to have it then reduced to an understocked condition

following an infestation of gypsy moth caterpillars), and during the last 15+ years the oak has become overstocked and is in the process of thinning itself. A harvest of firewood that utilizes the trees that are losing the battle for sunlight can be conducted at any time during this next 10-year planning period. Other section of the stand which are dominated by low-value species and ash may be held in reserve as an easy source of firewood to be harvested when needed.

Stand 4

Like Stand 3, this 14-acre site was open in 1930. Its woodland is now formed by a scattering of old-pasture oaks and maple standing within a 40-60-year variable mix of polesize (4"-12") red and sugar maples, black and gray birch, bigtooth aspen, and red, black, white and scarlet oaks. All sections of the stand are in a fully-stocked condition.

Timber stand improvement work that serves as the basic demonstration of "active devotion to agriculture" will be shifted to this stand during the next several years. Harvesting of firewood, in additional to utilizing suppressed trees, will look for opportunities to release crop-tree quality oaks and sugar maple from competition with low-value species and poorly-formed trees. The rate of harvesting will be determined by the volume of firewood needed to satisfy the annual income requirement. Average volume of firewood from the trees that will be marked by the forester is expected to 5 cords per acre.

Stand 5

This stand identifies 190 acres that, for the most part, are precipitously steep and impossibly rocky. The woodland that stabilizes this side of the ridge includes pockets of tulip poplar, hemlock and birch, as well as rock outcrops with stunted chestnut oaks, but is otherwise formed by an uneven-aged mix of red, black, white and scarlet oaks, red and sugar maples, black and yellow birches, hickory and basswood that ranges from saplings to mature sawtimber. With the exception of the rock outcrops, all areas are fully-stocked with basal areas that range from 105-120 sq.ft. per acre.

The one opportunity for vehicular access that would allow for any sort of management activity is provided by an old logging road that traverses a steep and difficult route from the powerline's intersection with Berkshire Valley Rd. up to the northern corner of the lot. This route was re-opened for the harvest in 1992 of the 206 trees by Brown & Lounsberry. This harvest, which was designed to satisfy the need for woodland income, removed an average of 10 trees per acre (at 376 bd.ft./tree), and left the site area in a fully-stocked condition. It is now indistinguishable from the surrounding, unharvested woodland.

Although the 1992 harvest treated only 20+ acres, it is estimated that, with some effort, the total accessible area could be 47 acres. Point sample data of this acreage is presented in the following section.

As shown on the point sample data, AGS timber that remained after the 1992 harvest – primarily sugar maple, is shifting into "mature" diameters of 20"+. An average volume of 2,000 board feet per acre is currently available, theoretically offering (if 47 acres are accessible) a total of 94,000 with a conservative value of $28,000 that may be harvested at any time. The post-harvest stand would remain in a fully-stocked condition with an average basal area of 80 sq.ft./acre.

Stand 6

Stand 6 identifies the 115 acres of woodland dominated by a fully-stocked, maturing/mature mix of red, white, chestnut and black oaks and sugar maple with a generally-subordinate component of associate species that includes hickories, red maple, black and yellow birches, and blackgum. With the exception of a 4-acre patch of mountain laurel, understory vegetation primarily consists of blueberry. Oak regeneration in the form of 1'-4' browsed seedlings is scattered throughout. Area 6b, harvested in 1993, now supports a full stocking of immature timber (12"-16") dominated by chestnut and red oaks with an average basal area of 90 sq.ft.

Point sample data are presented in the following section.

It is estimated that a total volume of 250,000 board feet of mature oak and sugar maple timber with a current value of $75,000 is available for harvest at any time that additional income is desired. The residual stand would be left in a fully-stocked condition with a total basal area of 84 sq.ft./acre.

Stand 7

Clinging to the 75 acres of extremely steep and stony land along the upper slope of Green Pond Mountain is an uneven-aged mix of black and chestnut oaks, black birch, red maple, a variable scattering of wooly adelgid-infested hemlock. No activity is expected on this impossibly-difficult site.

Stand Management Activity Schedule

Stand	Acres	Management Recommendation	Year(s)	Activity	Productivity Level
1	85	Maintain mix of sugar maple, oak and birch timber.	2012-2021	No additional treatment required. Include scattered ash in harvest of Stand 2.	24MBF and $5,000
2	37	Preemptive harvest of ash prior to infestation of EAB.	???	Harvest merchantable ash timber. Smaller-diameter ash can be harvested for firewood.	75MBF and $16,400 Firewood as needed.
3	15	Utilize suppressed oak from upland portions of the stand.	2012-2021	Harvest oaks that will succumb to competitive pressure.	25 cords available.
4	14	Utilize firewood while maintain old-field woodland.	2012-2021	Harvest of suppressed trees and UGS competing with crop trees will serve as primary demo of "active devotion."	At rate that produces enough firewood to satisfy the income requirement – about 2 ac./yr.
5	194	Continue to utilize the productive potential through the periodic harvest of timber from accessible area.	???	Harvest mature sugar maple, oak and birch from 47(?) acres.	94MBF and $28k.
6	131	Harvest of mature oak from 115 acres.	???	Harvest of 20 sq.ft./ac. of oak timber 20"+.	250MBF and $75k.
7	75	Maintain steep and rocky mixed woodland.	2012-2021	None required.	

Point Sample Data

Stand 1

Stand 2

Stand 5

Stand 6

Stand Summary

Stand #: 1
Acreage: 85

Owner's Name: LLCOA
Date Prepared: 11-Apr-12

Stand Attributes: Per Acre Acceptable Growing Stock (AGS)	BA Total	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords
S.Maple	28	128.5	1910	7.8
W. Oak	11	9.7	875	3.1
R. Oak	13	7.5	1250	4.4
B. Oak	1	0.5	100	0.3
Tulip	1	0.6	90	0.3
Ash	7	3.7	700	2.3
Total	**61**	**150.5**	**4925**	**18.3**

Unacceptable Growing Stock (UGS)	BA Total	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords
Hickory	7	6.3	515	2.0
R. Maple	8	15.3	675	2.2
Misc.	17	21.4	1460	5.1
Total	**32**	**43**	**2650**	**9.3**

Cull	BA Total	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords
Total	**0**	**0**	**0**	**0.0**

Grand Totals Per Acre	***93***	***193.5***	***7575***	***27.6***

Stand Attributes: Entire Stand Acceptable Growing Stock (AGS)	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords	$ Value
S.Maple	10922.5	162350	659.0	$64,940.00
W. Oak	824.5	74375	266.7	$22,312.50
R. Oak	637.5	106250	376.1	$42,500.00
B. Oak	42.5	8500	28.1	$2,550.00
Tulip	51.0	7650	25.2	$1,683.00
Ash	314.5	59500	196.4	$20,825.00
Total	**12792.5**	**418625**	**1551.4625**	**$154,810.50**

Unacceptable Growing Stock (UGS)	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords
Hickory	535.5	43775	170.0
R. Maple	1300.5	57375	189.3
Misc.	1819.0	124100	435.0
Total	**3655**	**225250**	**794.325**

Cull	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords
Total	**0.0**	**0**	**0.0**

Grand Totals Entire Stand	***16447.5***	***643875***	***2345.8***

Data Collected By: Forest Management Services
Sheet Developed By: ForesTree Consultants

Point Sample Sheet

(10 Factor)

Stand #: 1
Acreage: 85

Owners Name: LLCOA
Date Prepared: 11-Apr-12

Basal Area Computations

DBH	Acceptable Growing Stock						AGS Total	Unacceptable Growing Stock			UGS Total	Cull Total	Total BA
	S.Maple	W. Oak	R. Oak	B. Oak	Tulip	Ash		Hickory	R. Maple	Misc.			
2	2						2				0		2
4	1						1		1	1	2		3
Sub	**3**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**1**	**1**	**2**	**0**	**5**
6	1						1				0		1
8	1	1					2				0		2
10	3		1				4	1		1	2		6
Sub	**5**	**1**	**1**	**0**	**0**	**0**	**7**	**1**	**0**	**1**	**2**	**0**	**9**
12	1						1				0		1
14	3	2	1			1	7	3			3		10
16	1	3					4	1	1	2	4		8
18	5	4	1		1	2	13	1	3	7	11		24
Sub	**10**	**9**	**2**	**0**	**1**	**3**	**25**	**5**	**4**	**9**	**18**	**0**	**43**
20	5	1	5	1		1	13	1	1	2	4		17
22	3		2			2	7		2	3	5		12
24	2		3			1	6				0		6
26							0			1	1		1
28							0				0		0
Sub	**10**	**1**	**10**	**1**	**0**	**4**	**26**	**1**	**3**	**6**	**10**	**0**	**36**
30							0				0		0
32							0				0		0
34							0				0		0
36							0				0		0
38							0				0		0
40							0				0		0
Sub	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Tot.	28	11	13	1	1	7	***61***	7	8	17	***32***	***0***	93

Misc.- bl.birch, blackgum, beech

AGS Reproduction:
3.71 Radius

Total:
Total/Acre: 0
Stand Tot: 0

Data Collected By: Forest Management Services
Sheet Developed By: ForesTree Consultants

Stand Table Computations
Trees Per Acre

Stand #: 1
Acreage: 85

Owners Name: LLCOA
Date Prepared: 11-Apr-12

		Acceptable Growing Stock (AGS) Number of Trees Per Acre						Total AGS	Unacceptable Growing Stock Number of Trees Per Acre			Total UGS	Total Cull
DBH	Factor	S. Mapl	W. Oak	R. Oak	B. Oak	Tulip	Ash	Per Acre	Hickory	R. Maple	Misc	Per Acre	Per Acre
2	45.8	91.6	0.0	0.0	0.0	0.0	0.0	91.6	0.0	0.0	0.0	0.0	0.0
4	11.5	11.5	0.0	0.0	0.0	0.0	0.0	11.5	0.0	11.5	11.5	23.0	0.0
Sub		**####**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**103.1**	**0.0**	**11.5**	**11.5**	**23.0**	**0.0**
6	5.1	5.1	0.0	0.0	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.0	0.0
8	2.9	2.9	2.9	0.0	0.0	0.0	0.0	5.8	0.0	0.0	0.0	0.0	0.0
10	1.8	5.4	0.0	1.8	0.0	0.0	0.0	7.2	1.8	0.0	1.8	3.6	0.0
Sub		**13.4**	**2.9**	**1.8**	**0.0**	**0.0**	**0.0**	**18.1**	**1.8**	**0.0**	**1.8**	**3.6**	**0.0**
12	1.3	1.3	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0
14	0.9	2.7	1.8	0.9	0.0	0.0	0.9	6.3	2.7	0.0	0.0	2.7	0.0
16	0.7	0.7	2.1	0.0	0.0	0.0	0.0	2.8	0.7	0.7	1.4	2.8	0.0
18	0.6	3.0	2.4	0.6	0.0	0.6	1.2	7.8	0.6	1.8	4.2	6.6	0.0
Sub		**7.7**	**6.3**	**1.5**	**0.0**	**0.6**	**2.1**	**18.2**	**4.0**	**2.5**	**5.6**	**12.1**	**0.0**
20	0.5	2.5	0.5	2.5	0.5	0.0	0.5	6.5	0.5	0.5	1.0	2.0	0.0
22	0.4	1.2	0.0	0.8	0.0	0.0	0.8	2.8	0.0	0.8	1.2	2.0	0.0
24	0.3	0.6	0.0	0.9	0.0	0.0	0.3	1.8	0.0	0.0	0.0	0.0	0.0
26	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0
28	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sub		**4.3**	**0.5**	**4.2**	**0.5**	**0.0**	**1.6**	**11.1**	**0.5**	**1.3**	**2.5**	**4.3**	**0.0**
30	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sub		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Gtot		128.5	9.7	7.5	0.5	0.6	3.7	***150.5***	6.3	15.3	21.4	***43.0***	***0.0***

Total Number of Trees Per Acre: 193.5
Total Number of Trees In Stand: 16447.5

Data Collected By: Forest Management Services
Sheet Developed By: ForesTree Consultants

Stand Table Computations

Volume

Stand #: 1
Acreage: 85

Owner's Name: LLCOA
Date Prepared: 11-Apr-12

		Acceptable Growing Stock (AGS) Volume Per Acre						Total AGS	Unacceptable Growing Stock Volume Per Acre			Total UGS	Total Culi
DBH	Factor	S. Maple	W. Oak	R. Oak	B. Oak	Tulip	Ash	Vol/Acre	Hickory	R. Maple	Misc.	Vol/Acre	Vol/Acre
2	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.10	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.2	0.0
Sub		**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.1**	**0.1**	**0.2**	**0.0**
6	0.20	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
8	0.25	0.3	0.3	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
10	0.30	0.9	0.0	0.3	0.0	0.0	0.0	1.2	0.3	0.0	0.3	0.6	0.0
Sub	Tcords	**1.5**	**0.3**	**0.3**	**0.0**	**0.0**	**0.0**	**2.0**	**0.3**	**0.0**	**0.3**	**0.6**	**0.0**
12	65	65	0	0	0	0	0	65	0	0	0	0	0
14	80	240	160	80	0	0	80	560	240	0	0	240	0
16	85	85	255	0	0	0	0	340	85	85	170	340	0
18	90	450	360	90	0	90	180	1170	90	270	630	990	0
Sub		**840**	**775**	**170**	**0**	**90**	**260**	**2135**	**415**	**355**	**800**	**1570**	**0**
20	100	500	100	500	100	0	100	1300	100	100	200	400	0
22	110	330	0	220	0	0	220	770	0	220	330	550	0
24	120	240	0	360	0	0	120	720	0	0	0	0	0
26	130	0	0	0	0	0	0	0	0	0	130	130	0
28	145	0	0	0	0	0	0	0	0	0	0	0	0
Sub		**1070**	**100**	**1080**	**100**	**0**	**440**	**2790**	**100**	**320**	**660**	**1080**	**0**
30	150	0	0	0	0	0	0	0	0	0	0	0	0
32	160	0	0	0	0	0	0	0	0	0	0	0	0
34	155	0	0	0	0	0	0	0	0	0	0	0	0
36	155	0	0	0	0	0	0	0	0	0	0	0	0
38	155	0	0	0	0	0	0	0	0	0	0	0	0
40	155	0	0	0	0	0	0	0	0	0	0	0	0
Sub		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Gtot	Bd Ft	1910	875	1250	100	90	700	***4925***	515	675	1460	***2650***	***0***

Total AGS Bd.Ft.:	4925	Total Cull Bd. Ft.:	0	Total AGS Cords:	2.1	Total Cull Cords:	0.0
Total UGS Bd.Ft.:	2650			Total UGS Cords:	0.8		

Data Collected By: Forest Management Services
Sheet Developed By: ForesTree Consultants

Stand Summary

Stand #: 2
Acreage: 37

Owner's Name: LLCOA
Date Prepared: 11-Apr-12

Stand Attributes: Per Acre Acceptable Growing Stock (AGS)	BA Total	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords
S.Maple	20	20	1510	6.0
W. Oak	1	0.5	100	0.3
R. Oak	1	0.4	110	0.4
B. Oak	0	0	0	0.0
Tulip	1	0.6	90	0.3
Ash	30	20.9	2760	9.7
Total	**53**	**42.4**	**4570**	**16.7**

Unacceptable Growing Stock (UGS)	BA Total	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords
Hickory	1	0.9	80	0.3
R. Maple	25	23.2	1970	7.6
Misc.	24	32.1	1590	7.0
Total	**50**	**56.2**	**3640**	**14.9**

Cull	BA Total	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords
Total	**0**	**0**	**0**	**0.0**

Grand Totals Per Acre	***103***	***98.6***	***8210***	***31.6***

Stand Attributes: Entire Stand Acceptable Growing Stock (AGS)	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords	$ Value
S.Maple	740.0	55870	223.2	$22,348.00
W. Oak	18.5	3700	12.2	$1,110.00
R. Oak	14.8	4070	13.4	$1,628.00
B. Oak	0.0	0	0.0	$0.00
Tulip	22.2	3330	11.0	$732.60
Ash	773.3	102120	357.3	$25,530.00
Total	**1568.8**	**169090**	**617.197**	**$51,348.60**

Unacceptable Growing Stock (UGS)	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords
Hickory	33.3	2960	9.8
R. Maple	858.4	72890	281.2
Misc.	1187.7	58830	260.7
Total	**2079.4**	**134680**	**551.744**

Cull	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords
Total	**0.0**	**0**	**0.0**

Grand Totals Entire Stand	***3648.2***	***303770***	***1168.9***

Data Collected By: Forest Management Services
Sheet Developed By: ForesTree Consultants

Point Sample Sheet

(10 Factor)

Stand #: 2
Acreage: 37

Owners Name: LLCOA
Date Prepared: 11-Apr-12

Basal Area Computations

DBH	Acceptable Growing Stock						AGS Total	Unacceptable Growing Stock			UGS Total	Cull Total	Total BA
	S.Maple	W. Oak	R. Oak	B. Oak	Tulip	Ash		Hickory	R. Maple	Misc.			
2							0				0		0
4							0				0		0
Sub	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
6							0		1	2	3		3
8	3					1	4			2	2		6
10	1					1	2		3	3	6		8
Sub	**4**	**0**	**0**	**0**	**0**	**2**	**6**	**0**	**4**	**7**	**11**	**0**	**17**
12						3	3		1	1	2		5
14	2					1	3	1	1	3	5		8
16	4					3	7		5	1	6		13
18	5				1	4	10		4	4	8		18
Sub	**11**	**0**	**0**	**0**	**1**	**11**	**23**	**1**	**11**	**9**	**21**	**0**	**44**
20	1	1				6	8		7	4	11		19
22	2		1			6	9		2	4	6		15
24	2					4	6		1		1		7
26						1	1				0		1
28							0				0		0
Sub	**5**	**1**	**1**	**0**	**0**	**17**	**24**	**0**	**10**	**8**	**18**	**0**	**42**
30							0				0		0
32							0				0		0
34							0				0		0
36							0				0		0
38							0				0		0
40							0				0		0
Sub	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Tot.	20	1	1	0	1	30	***53***	1	25	24	***50***	***0***	103

Misc.- bl.birch, y.birch, blackgum

AGS Reproduction:					
3.71 Radius					

Total:
Total/Acre: 0
Stand Tot: 0

Data Collected By: Forest Management Services
Sheet Developed By: ForesTree Consultants

Stand Table Computations
Trees Per Acre

Stand #: 2
Acreage: 37

Owners Name: LLCOA
Date Prepared: 11-Apr-12

		Acceptable Growing Stock (AGS) Number of Trees Per Acre							Unacceptable Growing Stock Number of Trees Per Acre				
DBH	Factor	S. Maple	W. Oak	R. Oak	B. Oak	Tulip	Ash	Total AGS Per Acre	Hickory	R. Maple	Misc	Total UGS Per Acre	Total Cull Per Acre
2	45.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	11.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sub		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
6	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1	10.2	15.3	0.0
8	2.9	8.7	0.0	0.0	0.0	0.0	2.9	11.6	0.0	0.0	5.8	5.8	0.0
10	1.8	1.8	0.0	0.0	0.0	0.0	1.8	3.6	0.0	5.4	5.4	10.8	0.0
Sub		**10.5**	**0.0**	**0.0**	**0.0**	**0.0**	**4.7**	**15.2**	**0.0**	**10.5**	**21.4**	**31.9**	**0.0**
12	1.3	0.0	0.0	0.0	0.0	0.0	3.9	3.9	0.0	1.3	1.3	2.6	0.0
14	0.9	1.8	0.0	0.0	0.0	0.0	0.9	2.7	0.9	0.9	2.7	4.5	0.0
16	0.7	2.8	0.0	0.0	0.0	0.0	2.1	4.9	0.0	3.5	0.7	4.2	0.0
18	0.6	3.0	0.0	0.0	0.0	0.6	2.4	6.0	0.0	2.4	2.4	4.8	0.0
Sub		**7.6**	**0.0**	**0.0**	**0.0**	**0.6**	**9.3**	**17.5**	**0.9**	**8.1**	**7.1**	**16.1**	**0.0**
20	0.5	0.5	0.5	0.0	0.0	0.0	3.0	4.0	0.0	3.5	2.0	5.5	0.0
22	0.4	0.8	0.0	0.4	0.0	0.0	2.4	3.6	0.0	0.8	1.6	2.4	0.0
24	0.3	0.6	0.0	0.0	0.0	0.0	1.2	1.8	0.0	0.3	0.0	0.3	0.0
26	0.3	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0
28	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sub		**1.9**	**0.5**	**0.4**	**0.0**	**0.0**	**6.9**	**9.7**	**0.0**	**4.6**	**3.6**	**8.2**	**0.0**
30	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sub		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Gtot		20.0	0.5	0.4	0.0	0.6	20.9	***42.4***	0.9	23.2	32.1	***56.2***	***0.0***

Total Number of Trees Per Acre: 98.6
Total Number of Trees In Stand: 3648.2

Data Collected By: Forest Management Services
Sheet Developed By: ForesTree Consultants

Stand Table Computations

Volume

Stand #: 2
Acreage: 37

Owner's Name: LLCOA
Date Prepared: 11-Apr-12

		Acceptable Growing Stock (AGS) Volume Per Acre						Total AGS	Unacceptable Growing Stock Volume Per Acre			Total UGS	Total Cull
DBH	Factor	S. Maple	W. Oak	R. Oak	B. Oak	Tulip	Ash	Vol/Acre	Hickory	R. Maple	Misc.	Vol/Acre	Vol/Acre
2	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sub		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
6	0.20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.6	0.0
8	0.25	0.8	0.0	0.0	0.0	0.0	0.3	1.0	0.0	0.0	0.5	0.5	0.0
10	0.30	0.3	0.0	0.0	0.0	0.0	0.3	0.6	0.0	0.9	0.9	1.8	0.0
Sub	Tcords	**1.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.6**	**1.6**	**0.0**	**1.1**	**1.8**	**2.9**	**0.0**
12	65	0	0	0	0	0	195	195	0	65	65	130	0
14	80	160	0	0	0	0	80	240	80	80	240	400	0
16	85	340	0	0	0	0	255	595	0	425	85	510	0
18	90	450	0	0	0	90	360	900	0	360	360	720	0
Sub		**950**	**0**	**0**	**0**	**90**	**890**	**1930**	**80**	**930**	**750**	**1760**	**0**
20	100	100	100	0	0	0	600	800	0	700	400	1100	0
22	110	220	0	110	0	0	660	990	0	220	440	660	0
24	120	240	0	0	0	0	480	720	0	120	0	120	0
26	130	0	0	0	0	0	130	130	0	0	0	0	0
28	145	0	0	0	0	0	0	0	0	0	0	0	0
Sub		**560**	**100**	**110**	**0**	**0**	**1870**	**2640**	**0**	**1040**	**840**	**1880**	**0**
30	150	0	0	0	0	0	0	0	0	0	0	0	0
32	160	0	0	0	0	0	0	0	0	0	0	0	0
34	155	0	0	0	0	0	0	0	0	0	0	0	0
36	155	0	0	0	0	0	0	0	0	0	0	0	0
38	155	0	0	0	0	0	0	0	0	0	0	0	0
40	155	0	0	0	0	0	0	0	0	0	0	0	0
Sub		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Gtot	Bd Ft	1510	100	110	0	90	2760	***4570***	80	1970	1590	***3640***	***0***

Total AGS Bd.Ft.:	4570	Total Cull Bd. Ft.:	0	Total AGS Cords:	1.6	Total Cull Cords:	0.0
Total UGS Bd.Ft.:	3640			Total UGS Cords:	2.9		

Data Collected By: Forest Management Services
Sheet Developed By: ForesTree Consultants

Stand Summary

Stand #: 5
Acreage: 47

Owner's Name: LLCOA
Date Prepared: 11-Apr-12

Stand Attributes: Per Acre Acceptable Growing Stock (AGS)	BA Total	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords
S.Maple	34	94	2370	10.0
W. Oak	4	3	345	1.1
R. Oak	6	3.2	600	2.0
B. Oak	4	1.9	410	1.4
Tulip	0	0	0	0.0
Ash	2	1.2	185	0.6
Total	**50**	**103.3**	**3910**	**15.1**

Unacceptable Growing Stock (UGS)	BA Total	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords
Hickory	16	14.1	1165	4.7
R. Maple	3	2	260	0.9
Misc.	25	83.4	1575	7.1
Total	**44**	**99.5**	**3000**	**12.7**

Cull	BA Total	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords
Total	**0**	**0**	**0**	**0.0**

Grand Totals Per Acre	***94***	***202.8***	***6910***	***27.8***

Stand Attributes: Entire Stand Acceptable Growing Stock (AGS)	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords	$ Value
S.Maple	4418.0	111390	468.6	$44,556.00
W. Oak	141.0	16215	53.5	$4,864.50
R. Oak	150.4	28200	93.1	$11,280.00
B. Oak	89.3	19270	63.6	$5,781.00
Tulip	0.0	0	0.0	$0.00
Ash	56.4	8695	28.7	$3,043.25
Total	**4855.1**	**183770**	**707.491**	**$69,524.75**

Unacceptable Growing Stock (UGS)	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords
Hickory	662.7	54755	223.0
R. Maple	94.0	12220	40.3
Misc.	3919.8	74025	333.6
Total	**4676.5**	**141000**	**596.9**

Cull	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords
Total	**0.0**	**0**	**0.0**

Grand Totals Entire Stand	***9531.6***	***324770***	***1304.4***

Data Collected By: Forest Management Services
Sheet Developed By: ForesTree Consultants

Point Sample Sheet

(10 Factor)

Stand #: 5
Acreage: 47

Owners Name: LLCOA
Date Prepared: 11-Apr-12

Basal Area Computations

DBH	Acceptable Growing Stock						AGS Total	Unacceptable Growing Stock			UGS Total	Cull Total	Total BA
	S.Maple	W. Oak	R. Oak	B. Oak	Tulip	Ash		Hickory	R. Maple	Misc.			
2	1						1			1	1		2
4	1						1			1	1		2
Sub	**2**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**2**	**2**	**0**	**4**
6	1						1				0		1
8	5						5			4	4		9
10	2						2	3		3	6		8
Sub	**8**	**0**	**0**	**0**	**0**	**0**	**8**	**3**	**0**	**7**	**10**	**0**	**18**
12	1	1					2			1	1		3
14	3		1				4	3			3		7
16	1					1	2	5	2	5	12		14
18	6	2	1	2			11	2	1	2	5		16
Sub	**11**	**3**	**2**	**2**	**0**	**1**	**19**	**10**	**3**	**8**	**21**	**0**	**40**
20	4	1	1			1	7	2		2	4		11
22	5		3	1			9			4	4		13
24	3			1			4	1		1	2		6
26	1						1				0		1
28							0			1	1		1
Sub	**13**	**1**	**4**	**2**	**0**	**1**	**21**	**3**	**0**	**8**	**11**	**0**	**32**
30							0				0		0
32							0				0		0
34							0				0		0
36							0				0		0
38							0				0		0
40							0				0		0
Sub	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Tot.	34	4	6	4	0	2	***50***	16	3	25	***44***	***0***	94

Misc. - black birch, beech

AGS Reproduction:
3.71 Radius

Total:
Total/Acre: 0
Stand Tot: 0

Data Collected By: Forest Management Services
Sheet Developed By: ForesTree Consultants

Stand Table Computations
Trees Per Acre

Stand #: 5
Acreage: 47

Owners Name: LLCOA
Date Prepared: 11-Apr-12

		Acceptable Growing Stock (AGS) Number of Trees Per Acre						Total AGS	Unacceptable Growing Stock Number of Trees Per Acre			Total UGS	Total Cull
DBH	Factor	S. Mapl	W. Oak	R. Oak	B. Oak	Tulip	Ash	Per Acre	Hickory	R. Maple	Misc	Per Acre	Per Acre
2	45.8	45.8	0.0	0.0	0.0	0.0	0.0	45.8	0.0	0.0	45.8	45.8	0.0
4	11.5	11.5	0.0	0.0	0.0	0.0	0.0	11.5	0.0	0.0	11.5	11.5	0.0
Sub		**57.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**57.3**	**0.0**	**0.0**	**57.3**	**57.3**	**0.0**
6	5.1	5.1	0.0	0.0	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.0	0.0
8	2.9	14.5	0.0	0.0	0.0	0.0	0.0	14.5	0.0	0.0	11.6	11.6	0.0
10	1.8	3.6	0.0	0.0	0.0	0.0	0.0	3.6	5.4	0.0	5.4	10.8	0.0
Sub		**23.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**23.2**	**5.4**	**0.0**	**17.0**	**22.4**	**0.0**
12	1.3	1.3	1.3	0.0	0.0	0.0	0.0	2.6	0.0	0.0	1.3	1.3	0.0
14	0.9	2.7	0.0	0.9	0.0	0.0	0.0	3.6	2.7	0.0	0.0	2.7	0.0
16	0.7	0.7	0.0	0.0	0.0	0.0	0.7	1.4	3.5	1.4	3.5	8.4	0.0
18	0.6	3.6	1.2	0.6	1.2	0.0	0.0	6.6	1.2	0.6	1.2	3.0	0.0
Sub		**8.3**	**2.5**	**1.5**	**1.2**	**0.0**	**0.7**	**14.2**	**7.4**	**2.0**	**6.0**	**15.4**	**0.0**
20	0.5	2.0	0.5	0.5	0.0	0.0	0.5	3.5	1.0	0.0	1.0	2.0	0.0
22	0.4	2.0	0.0	1.2	0.4	0.0	0.0	3.6	0.0	0.0	1.6	1.6	0.0
24	0.3	0.9	0.0	0.0	0.3	0.0	0.0	1.2	0.3	0.0	0.3	0.6	0.0
26	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
28	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0
Sub		**5.2**	**0.5**	**1.7**	**0.7**	**0.0**	**0.5**	**8.6**	**1.3**	**0.0**	**3.1**	**4.4**	**0.0**
30	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sub		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Gtot		94.0	3.0	3.2	1.9	0.0	1.2	***103.3***	14.1	2.0	83.4	***99.5***	***0.0***

Total Number of Trees Per Acre: 202.8
Total Number of Trees In Stand: 9531.6

Data Collected By: Forest Management Services
Sheet Developed By: ForesTree Consultants

Stand Table Computations

Volume

Stand #: 5
Acreage: 47

Owner's Name: LLCOA
Date Prepared: 11-Apr-12

		Acceptable Growing Stock (AGS) Volume Per Acre						Total AGS	Unacceptable Growing Stock Volume Per Acre			Total UGS	Total Cull
DBH	Factor	S. Maple	W. Oak	R. Oak	B. Oak	Tulip	Ash	Vol/Acre	Hickory	R. Maple	Misc.	Vol/Acre	Vol/Acre
2	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.10	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0
Sub		**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.0**	**0.0**	**0.1**	**0.1**	**0.0**
6	0.20	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
8	0.25	1.3	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	1.0	1.0	0.0
10	0.30	0.6	0.0	0.0	0.0	0.0	0.0	0.6	0.9	0.0	0.9	1.8	0.0
Sub	Tcords	**2.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.2**	**0.9**	**0.0**	**1.9**	**2.8**	**0.0**
12	65	65	65	0	0	0	0	130	0	0	65	65	0
14	80	240	0	80	0	0	0	320	240	0	0	240	0
16	85	85	0	0	0	0	85	170	425	170	425	1020	0
18	90	540	180	90	180	0	0	990	180	90	180	450	0
Sub		**930**	**245**	**170**	**180**	**0**	**85**	**1610**	**845**	**260**	**670**	**1775**	**0**
20	100	400	100	100	0	0	100	700	200	0	200	400	0
22	110	550	0	330	110	0	0	990	0	0	440	440	0
24	120	360	0	0	120	0	0	480	120	0	120	240	0
26	130	130	0	0	0	0	0	130	0	0	0	0	0
28	145	0	0	0	0	0	0	0	0	0	145	145	0
Sub		**1440**	**100**	**430**	**230**	**0**	**100**	**2300**	**320**	**0**	**905**	**1225**	**0**
30	150	0	0	0	0	0	0	0	0	0	0	0	0
32	160	0	0	0	0	0	0	0	0	0	0	0	0
34	155	0	0	0	0	0	0	0	0	0	0	0	0
36	155	0	0	0	0	0	0	0	0	0	0	0	0
38	155	0	0	0	0	0	0	0	0	0	0	0	0
40	155	0	0	0	0	0	0	0	0	0	0	0	0
Sub		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Gtot	Bd Ft	2370	345	600	410	0	185	***3910***	1165	260	1575	***3000***	***0***

Total AGS Bd.Ft.:	3910	Total Cull Bd. Ft.:	0	Total AGS Cords:	2.3	Total Cull Cords:	0.0
Total UGS Bd.Ft.:	3000			Total UGS Cords:	2.9		

Data Collected By: Forest Management Services
Sheet Developed By: ForesTree Consultants

Stand Summary

Stand #: 6
Acreage: 100

Owner's Name: LLCOA
Date Prepared: 11-Apr-12

Stand Attributes: Per Acre Acceptable Growing Stock (AGS)	BA Total	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords
S.Maple	15	35.5	785	3.9
W. Oak	26	37.3	1755	7.3
R. Oak	40	29.2	3665	12.8
B. Oak	3	3.9	195	0.6
Tulip	0	0	0	0.0
Ash	2	1.1	190	0.6
Total	**86**	**107**	**6590**	**25.3**

Unacceptable Growing Stock (UGS)	BA Total	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords
Hickory	7	19.5	325	1.6
R. Maple	8	37.9	110	1.7
Misc.	5	20	80	1.1
Total	**20**	**77.4**	**515**	**4.3**

Cull	BA Total	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords
Total	**0**	**0**	**0**	**0.0**

Grand Totals Per Acre	***106***	***184.4***	***7105***	***29.6***

Stand Attributes: Entire Stand Acceptable Growing Stock (AGS)	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords	$ Value
S.Maple	3550.0	78500	389.1	$31,400.00
W. Oak	3730.0	175500	729.2	$52,650.00
R. Oak	2920.0	366500	1284.5	$146,600.00
B. Oak	390.0	19500	64.4	$5,850.00
Tulip	0.0	0	0.0	$0.00
Ash	110.0	19000	62.7	$6,650.00
Total	**10700.0**	**659000**	**2529.7**	**$243,150.00**

Unacceptable Growing Stock (UGS)	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords
Hickory	1950.0	32500	162.3
R. Maple	3790.0	11000	166.3
Misc.	2000.0	8000	106.4
Total	**7740**	**51500**	**434.95**

Cull	Total # Trees	Vol. Total Bd. Ft.	Vol. Total Cords
Total	**0.0**	**0**	**0.0**

Grand Totals Entire Stand	***18440.0***	***710500***	***2964.7***

Data Collected By: Forest Management Services
Sheet Developed By: ForesTree Consultants

Point Sample Sheet

(10 Factor)

Stand #: 6
Acreage: 100

Owners Name: LLCOA
Date Prepared: 11-Apr-12

Basal Area Computations

DBH	Acceptable Growing Stock						AGS Total	Unacceptable Growing Stock			UGS Total	Cull Total	Total BA
	S.Maple	W. Oak	R. Oak	B. Oak	Tulip	Ash		Hickory	R. Maple	Misc.			
2							0				0		0
4	1	1					2	1	2	1	4		6
Sub	**1**	**1**	**0**	**0**	**0**	**0**	**2**	**1**	**2**	**1**	**4**	**0**	**6**
6	2	1	1				4		1		1		5
8	2		1				3	1	2	2	5		8
10	1	4	1				6	1	2	1	4		10
Sub	**5**	**5**	**3**	**0**	**0**	**0**	**13**	**2**	**5**	**3**	**10**	**0**	**23**
12		1		3			4	1			1		5
14	2	1	1				4			1	1		5
16	3	8	2				13	2			2		15
18	3	8	14			1	26	1			1		27
Sub	**8**	**18**	**17**	**3**	**0**	**1**	**47**	**4**	**0**	**1**	**5**	**0**	**52**
20	1	1	11			1	14				0		14
22		1	6				7		1		1		8
24			1				1				0		1
26			1				1				0		1
28			1				1				0		1
Sub	**1**	**2**	**20**	**0**	**0**	**1**	**24**	**0**	**1**	**0**	**1**	**0**	**25**
30							0				0		0
32							0				0		0
34							0				0		0
36							0				0		0
38							0				0		0
40							0				0		0
Sub	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Tot.	15	26	40	3	0	2	***86***	7	8	5	***20***	***0***	106

Misc.- bl.birch, blackgum, y.birch

AGS Reproduction: 3.71 Radius					

Total:
Total/Acre: 0
Stand Tot: 0

Data Collected By: Forest Management Services
Sheet Developed By: ForesTree Consultants

Stand Table Computations
Trees Per Acre

Stand #: 6
Acreage: 100

Owners Name: LLCOA
Date Prepared: 11-Apr-12

		Acceptable Growing Stock (AGS) Number of Trees Per Acre						Total AGS	Unacceptable Growing Stock Number of Trees Per Acre			Total UGS	Total Cull
DBH	Factor	S. Mapl	W. Oak	R. Oak	B. Oak	Tulip	Ash	Per Acre	Hickory	R. Maple	Misc	Per Acre	Per Acre
2	45.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	11.5	11.5	11.5	0.0	0.0	0.0	0.0	23.0	11.5	23.0	11.5	46.0	0.0
Sub		**11.5**	**11.5**	**0.0**	**0.0**	**0.0**	**0.0**	**23.0**	**11.5**	**23.0**	**11.5**	**46.0**	**0.0**
6	5.1	10.2	5.1	5.1	0.0	0.0	0.0	20.4	0.0	5.1	0.0	5.1	0.0
8	2.9	5.8	0.0	2.9	0.0	0.0	0.0	8.7	2.9	5.8	5.8	14.5	0.0
10	1.8	1.8	7.2	1.8	0.0	0.0	0.0	10.8	1.8	3.6	1.8	7.2	0.0
Sub		**17.8**	**12.3**	**9.8**	**0.0**	**0.0**	**0.0**	**39.9**	**4.7**	**14.5**	**7.6**	**26.8**	**0.0**
12	1.3	0.0	1.3	0.0	3.9	0.0	0.0	5.2	1.3	0.0	0.0	1.3	0.0
14	0.9	1.8	0.9	0.9	0.0	0.0	0.0	3.6	0.0	0.0	0.9	0.9	0.0
16	0.7	2.1	5.6	1.4	0.0	0.0	0.0	9.1	1.4	0.0	0.0	1.4	0.0
18	0.6	1.8	4.8	8.4	0.0	0.0	0.6	15.6	0.6	0.0	0.0	0.6	0.0
Sub		**5.7**	**12.6**	**10.7**	**3.9**	**0.0**	**0.6**	**33.5**	**3.3**	**0.0**	**0.9**	**4.2**	**0.0**
20	0.5	0.5	0.5	5.5	0.0	0.0	0.5	7.0	0.0	0.0	0.0	0.0	0.0
22	0.4	0.0	0.4	2.4	0.0	0.0	0.0	2.8	0.0	0.4	0.0	0.4	0.0
24	0.3	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
26	0.3	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
28	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Sub		**0.5**	**0.9**	**8.7**	**0.0**	**0.0**	**0.5**	**10.6**	**0.0**	**0.4**	**0.0**	**0.4**	**0.0**
30	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
38	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sub		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Gtot		35.5	37.3	29.2	3.9	0.0	1.1	***107.0***	19.5	37.9	20.0	***77.4***	***0.0***

Total Number of Trees Per Acre: 184.4
Total Number of Trees In Stand: 18440.0

Data Collected By: Forest Management Services
Sheet Developed By: ForesTree Consultants

Stand Table Computations

Volume

Stand #: 6
Acreage: 100

Owner's Name: LLCOA
Date Prepared: 11-Apr-12

		Acceptable Growing Stock (AGS) Volume Per Acre						Total AGS	Unacceptable Growing Stock Volume Per Acre			Total UGS	Total Cull
DBH	Factor	S. Maple	W. Oak	R. Oak	B. Oak	Tulip	Ash	Vol/Acre	Hickory	R. Maple	Misc.	Vol/Acre	Vol/Acre
2	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.10	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.1	0.4	0.0
Sub		**0.1**	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.2**	**0.1**	**0.2**	**0.1**	**0.4**	**0.0**
6	0.20	0.4	0.2	0.2	0.0	0.0	0.0	0.8	0.0	0.2	0.0	0.2	0.0
8	0.25	0.5	0.0	0.3	0.0	0.0	0.0	0.8	0.3	0.5	0.5	1.3	0.0
10	0.30	0.3	1.2	0.3	0.0	0.0	0.0	1.8	0.3	0.6	0.3	1.2	0.0
Sub	**Tcords**	**1.3**	**1.5**	**0.8**	**0.0**	**0.0**	**0.0**	**3.6**	**0.6**	**1.3**	**0.8**	**2.7**	**0.0**
12	65	0	65	0	195	0	0	260	65	0	0	65	0
14	80	160	80	80	0	0	0	320	0	0	80	80	0
16	85	255	680	170	0	0	0	1105	170	0	0	170	0
18	90	270	720	1260	0	0	90	2340	90	0	0	90	0
Sub		**685**	**1545**	**1510**	**195**	**0**	**90**	**4025**	**325**	**0**	**80**	**405**	**0**
20	100	100	100	1100	0	0	100	1400	0	0	0	0	0
22	110	0	110	660	0	0	0	770	0	110	0	110	0
24	120	0	0	120	0	0	0	120	0	0	0	0	0
26	130	0	0	130	0	0	0	130	0	0	0	0	0
28	145	0	0	145	0	0	0	145	0	0	0	0	0
Sub		**100**	**210**	**2155**	**0**	**0**	**100**	**2565**	**0**	**110**	**0**	**110**	**0**
30	150	0	0	0	0	0	0	0	0	0	0	0	0
32	160	0	0	0	0	0	0	0	0	0	0	0	0
34	155	0	0	0	0	0	0	0	0	0	0	0	0
36	155	0	0	0	0	0	0	0	0	0	0	0	0
38	155	0	0	0	0	0	0	0	0	0	0	0	0
40	155	0	0	0	0	0	0	0	0	0	0	0	0
Sub		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Gtot	Bd Ft	785	1755	3665	195	0	190	***6590***	325	110	80	***515***	***0***

Total AGS Bd.Ft.:	6590	Total Cull Bd. Ft.:	0	Total AGS Cords:	3.8	Total Cull Cords:	0.0
Total UGS Bd.Ft.:	515			Total UGS Cords:	3.1		

Data Collected By: Forest Management Services
Sheet Developed By: ForesTree Consultants

Forestry Best Management Practices

An assortment of land-use rules regulating activity within forested riparian zones and wetlands now require the incorporation of Forestry Best Management Practices (BMPs) as they apply to the recommendations and planned activities presented in a forest management plan. As described in the NJ Forest Service manual, these BMPs *"are designed to minimize soil erosion, protect water quality by preventing non-point source pollution, enhance fish and wildlife habitat and improve recreational opportunities. A BMP, as defined by the Clean Water Act of 1987, is any method, measure or practice used to protect, maintain and preserve water quality."*

The BMP manual includes nine considerations, or sections, that should be examined during the management plan process. Each of the following nine sections includes a review of the potential impact from, and of the mitigating action that will be required by, the management activities proposed for the subject property. *Italicized* phrases and sentences come directly from the BMP manual (prepared by: State Forest Service, Bureau of Forest Management, October, 1995). The full text of the manual may be found at the NJ Forest Service weblink:
http://www.state.nj.us/dep/parksandforests/forest/nj_bmp_manual1995.pdf

Section I – Streamside Management Zones

The purpose of an SMZ *"is to protect a water body from adjacent land-use activities by providing a relatively undisturbed vegetative zone to trap and filter out sediments and other pollutants before they enter the water resource."* Forestry activities, while permitted within an SMZ, should be designed to create minimal site disturbance. The required width of an SMZ is a function of both the degree of slope and the erodability of the soil.

Most recommended forestry activity will not occur with an SMZ. Considerations for a harvest of timber within the SMZ that flanks the creek that drains through Stand 6 will be covered by the practice plan that will be prepared prior to the harvest.

Section II – Filter Strips

"Filter strips are defined as undisturbed areas consisting of natural vegetation and litter, such as leaves, brush and branches, located between a wetland or water course" and the *"truck roads, skid trails, and harvest or loading areas."* Equipment use should be restricted within the filter strip. Other than the recommendation that filter strips should increase in width as the slope increases, widths are not defined.

Most of the recommended forestry activity will use existing roads, and will otherwise create no disturbance within filter strip areas. Considerations for operations within the riparian zone of the creek that drains Stand 6 will be included in a practice plan that will be prepared prior to any harvesting.

Section III – Stream Crossings

A stream crossing should *"provide a stable bottom or surface that allows for equipment to cross intermittent or perennial streams without increasing stream sedimentation."* Whenever possible, the crossing of streams should be avoided. If needed, a temporary crossing will require a "Letter of Interpretation" from the NJDEP, while a construction of a permanent crossing will require acquisition of a "Stream Encroachment Permit."

Details regarding the crossing of the creek in Stand 6 will be covered in the event that the area is to be harvested.

Section IV – Access Road

Roads providing access into forest land are *"a major source of erosion...sediment production from forestry operations. In addition to increasing erosion, poorly constructed roads also can reduce and degrade wildlife habitats." In general, every effort should be made to limit the size of any access system, including the number of roads and miles traversed, the size and number of loading areas, and the number and total length of skid trails. Permanent roads, if properly constructed and maintained, can enhance the management and overall quality of the forest. Temporary roads are designed for a single use, and are then stabilized and closed.*

Any access trails created by the use of pickup truck or tractor to remove firewood will be temporary, will create no disturbance, and will quickly disappear once the activity is completed.

Section V – Timber Harvesting

The commercial harvesting of timber has the potential to create significant disturbance to the forest. In addition to the considerations presented in the other BMP sections, the harvest design for any particular property will include variables such as pre-harvest site preparation, post-harvest regeneration, post-harvest follow-up treatment, reduction of debris load, mitigation of aesthetic impact, and its appearance within the long-range viewscape. These issues should be anticipated and addressed as part of any harvest process.

A practice plan that anticipates all considerations will be prepared prior to the harvesting of any timber.

Section VI – Site Preparation

In the context of the BMPs, site preparation refers to the post-harvest treatment that would be required to secure the satisfactory regeneration of sites that have been harvested by clearcutting or seed-tree cut. Inasmuch as even-aged silvicultural

techniques are not permitted within wetlands or riparian zones, the need to address site preparation concerns will be quite infrequent.

Site preparation will not be required.

Section VII – Forest Pesticides

"Pesticides for forest purposes are valuable, practical tools when used in accordance with the labeling instructions. The use of pesticides is regulated on both the state and federal level." Herbicides in the control of invasive, non-native plants are the most common use of pesticides in forest land. Operators hired to perform the application of any type of pesticide should be Certified Pesticide Applicators registered with the NJDEP.

Use of forest pesticides is not recommended.

Section VIII – Reforestation

"Reforestation includes the planting of tree seedlings and direct seeding." These reforestation tactics typically cause little site disturbance, although manipulation of existing vegetation either prior to or after planting/seeding may need to be anticipated. Needs for machine planting, inasmuch as it would be required following clearcutting or a seed tree cut, would be an infrequent concern.

Reforestation will not be required.

Forest Protection

The BMP manual presents forest protection as a matter of using prescribed burning to reduce the level of combustible fuel that could otherwise support forest-damaging wildfire. This silvicultural technique is limited to the Pinelands region. For the purposes of the current management plan process for properties throughout the rest of New Jersey, forest protection will also address potential hazards from insects and disease and from invasive, non-native plants.

Fire protection will not be required. Woodland disturbance that could possibly encourage the development of invasive, non-native plants will be kept to a minimum.

NJ Threatened & Endangered Species

Although forestry activity conducted as per an approved forest management plan has never been cited as having a negative impact on special-status wildlife species in New Jersey, some land-use regulations, including those produced for the Freshwater Wetlands Protection Act and the Flood Hazard Area Protection Act, require a check of species that might be found on a particular site, as well as a review of management plan recommendations and their potential impact on those species.

A search by the Office of Natural Lands Management revealed that the LLCOA property has occurrences of or suitable habitat for sixteen special-status species of wildlife (see attached). Detailed descriptions of these wildlife species, as well as an abundance of photos, are readily available from an internet search by either the common or scientific name (ex: http://www.state.nj.us/dep/fgw/tandespp.htm). It is noted here, however, that the wood turtle and the longtail salamander require aquatic habitat, that Longwood Lake provides a foraging site for the bald eagle and the great blue heron, and that the other twelve species are generally associated with woodland habitat.

The presumption is made that a management plan that proposes to essentially maintain the woodland conditions that currently allow the presence of the woodland-inhabiting species would therefore favor their continued presence. The light weeding proposed for Stand 4, and the harvest of suppressed trees in Stand 3 will create minimal disturbance to the woodlot, and will affect no negative change in its composition. Harvesting of timber from Stands 1, 2, 5 or 6, while creating a short-term visual disturbance, will result in no change in woodland composition that would be harmful for any of the listed species. Special consideration will be given to maintaining roosting and nesting opportunities for the red-headed woodpecker and the two species of bat.

State of New Jersey

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Division of Parks and Forestry
Mail Code 501-04
ONLM -Natural Heritage Program
P.O. Box 420
Trenton, NJ 08625-0420
Tel. #609-984-1339
Fax. #609-984-1427

BOB MARTIN
Commissioner

February 2, 2012

Duke Grimes
Forest Management Services
P.O. Box 18
Rosemont, NJ 08556

Re: LLCOA Management Plan

Dear Mr. Grimes:

Thank you for your data request regarding rare species information for the above referenced project site in Jefferson Township, Morris County.

Searches of the Natural Heritage Database and the Landscape Project (Version 3 for the highlands region, Version 2.1 elsewhere) are based on a representation of the boundaries of your project site in our Geographic Information System (GIS). We make every effort to accurately transfer your project bounds from the topographic map(s) submitted with the Request for Data into our Geographic Information System. We do not typically verify that your project bounds are accurate, or check them against other sources.

We have checked the Natural Heritage Database and the Landscape Project habitat mapping for occurrences of any rare wildlife species or wildlife habitat on the referenced site. Please see Table 1 for species list and conservation status.

Table 1 (on referenced site).

Common Name	Scientific Name	Federal Status	State Status	Grank	Srank
bald eagle	*Haliaeetus leucocephalus*		E	G4	S1B,S1N
barred owl	*Strix varia*		T/T	G5	S2B,S2N
bobcat	*Lynx rufus*		E	G5	S1
Cooper's hawk	*Accipiter cooperii*		T/T	G5	S2B,S4N
eastern small-footed myotis	*Myotis leibii*		U	G3	S3
golden-winged warbler	*Vermivora chrysoptera*		SC/SC	G4	S3B,S3N
great blue heron forage	*Ardea herodias*		SC/S	G5	S3B,S4N
indiana bat	*Myotis sodalis*	LE	E	G2	S1
longtail salamander	*Eurycea longicauda longicauda*		T	G5T5	S2
northern copperhead snake	*Agkistrodon contortrix contortrix*		SC	G5T5	S3
northern goshawk	*Accipiter gentilis*		E/SC	G5	S1B,S3N
red-headed woodpecker	*Melanerpes erythrocephalus*		T/T	G5	S2B,S2N
red-shouldered hawk	*Buteo lineatus*		E/T	G5	S1B,S2N
timber rattlesnake	*Crotalus horridus horridus*		E	G4T4	S1
veery	*Catharus fuscescens*		SC/S	G5	S3B
wood turtle	*Glyptemys insculpta*		T	G4	S2

We have also checked the Natural Heritage Database and the Landscape Project habitat mapping for occurrences of any rare wildlife species or wildlife habitat within 1/4 mile of the referenced site. Please see Table 2 for species list and conservation status. This table excludes any species listed in Table 1.

Table 2 (additional species within 1/4 mile of referenced site).

Common Name	Scientific Name	Federal Status	State Status	Grank	Srank
ski-tailed emerald	*Somatochlora elongata*		SC	G5	S3

We have also checked the Natural Heritage Database for occurrences of rare plant species or ecological communities. The Natural Heritage Database has a record for an occurrence of *Adlumia fungosa* that may be in the immediate vicinity of the site. The attached list provides more information about this occurrence. **Because some species are sensitive to disturbance or sought by collectors, this information is provided to you on the condition that no specific locational data are released to the general public. This is not intended to preclude your submission of this information to regulatory agencies from which you are seeking permits.**

A list of rare plant species and ecological communities that have been documented from Morris County can be downloaded from http://www.state.nj.us/dep/parksandforests/natural/heritage/countylist.html. If suitable habitat is present at the project site, the species in that list have potential to be present.

Status and rank codes used in the tables and lists are defined in EXPLANATION OF CODES USED IN NATURAL HERITAGE REPORTS, which can be downloaded from http://www.state.nj.us/dep/parksandforests/natural/heritage/nhpcodes_2008.pdf.

The Natural Heritage Program reviews its data periodically to identify priority sites for natural diversity in the State. Included as priority sites are some of the State's best habitats for rare and endangered species and ecological communities. One of these sites is located within or near the areas you have outlined. Please refer to the enclosed Natural Heritage Priority Site Map for the location and boundary of this site. On the back of each Priority Site Map is a report describing the significance of the site.

If you have questions concerning the wildlife records or wildlife species mentioned in this response, we recommend that you visit the interactive I-Map-NJ website at the following URL, http://www.state.nj.us/dep/gis/depsplash.htm or contact the Division of Fish and Wildlife, Endangered and Nongame Species Program at (609) 292-9400.

PLEASE SEE 'CAUTIONS AND RESTRICTIONS ON NHP DATA', which can be downloaded from http://www.state.nj.us/dep/parksandforests/natural/heritage/newcaution2008.pdf.

Thank you for consulting the Natural Heritage Program. The attached invoice details the payment due for processing this data request. Feel free to contact us again regarding any future data requests.

Sincerely,

Robert J. Cartica
Administrator

c: NHP File No. 12-4007485-0716

Federally-Listed Threatened & Endangered Species

A list prepared by the U.S. Fish & Wildlife Service shows that Jefferson Township has hibernacula of Indiana bats, that the bog turtle can be found in the township, and that there is the potential for a member of the orchid family, the small whorled pagonia (see following sheet). Inasmuch as determination of the actual presence of any species would require a site inspection by the USF&WS, this plan review makes the assumption that the species are present on the property.

A review of the actions that could possibly cause an impact to Indiana bats (see attached) allows for the conclusion that the light weeding and thinning of small-diameter trees from Stands 3 & 4 has little potential for impact. The recommended limitations for the cutting of trees in excess of 5" in diameter suggest that any future harvesting of either firewood or sawtimber from the property should be timed so that the felling of the trees occurs between September 30th and April 1st. As for bog turtles, potential habitat is limited to the 6-acre swamp that would not be disturbed during any harvesting within Stand 6. Woodland composition that would allow the presence of small whorled pagonia will be not be changed by any forestry activity.

E = Extant (present), P = Potential (may be present), H = Historic (may still be present), X = Extirpated (no longer present)
Extant occurences of Indiana bat: MA = Maternity (April 1 to Sept. 30), HI = Hibernation

County	Municipality	Bog Turtle (T)	Piping Plover (T)	Indiana Bat (E)	Dwarf Wedgemussel (E)	NE Beach Tiger Beetle (T)	Small Whorled Pogonia (T)	Swamp Pink (T)	Knieskern's Beaked Rush (T)	American Chaffseed (E)	Sensitive Joint-vetch (T)	Seabeach Amaranth (T)	Red Knot (C)	Bog Asphodel (C)	Hirsts' Panic Grass (C)
MONMOUTH	Colts Neck Township							E	E						
MONMOUTH	Deal Borough		P									P			
MONMOUTH	Farmingdale Borough								P						
MONMOUTH	Freehold Borough								P						
MONMOUTH	Freehold Township	E						E	P						
MONMOUTH	Gateway National Recreation Area		E			E						E	P		
MONMOUTH	Highlands Borough		P									P			
MONMOUTH	Howell Township	E						E	E						
MONMOUTH	Keansburg Borough		P									P			
MONMOUTH	Keyport Borough		P									P			
MONMOUTH	Loch Arbour Village		P									P			
MONMOUTH	Long Branch City	X	E									E			
MONMOUTH	Manalapan Township	E						E							
MONMOUTH	Manasquan Borough		P									E			
MONMOUTH	Middletown Township		P									P			
MONMOUTH	Millstone Township	E						E							
MONMOUTH	Monmouth Beach Borough		E									E			
MONMOUTH	Neptune Township		P						H			P			
MONMOUTH	Roosevelt Borough	E						P							
MONMOUTH	Sea Bright Borough		E									E			
MONMOUTH	Sea Girt Borough		E									E			
MONMOUTH	Spring Lake Borough		E									E			
MONMOUTH	Tinton Falls Borough								P						
MONMOUTH	Union Beach Borough		P									P			
MONMOUTH	Upper Freehold Township	E						P							
MONMOUTH	Wall Township	E						H	E						
MORRIS	Boonton Town	P		HI											
MORRIS	Boonton Township	E		HI											
MORRIS	Butler Borough			HI											
MORRIS	Chatham Borough	P		MA											
MORRIS	Chatham Township	E		MA											
MORRIS	Chester Borough	E		MA											
MORRIS	Chester Township	E		HI		P									
MORRIS	Denville Township	H		HI											
MORRIS	Dover Town	H		HI											
MORRIS	East Hanover Township			MA	X										
MORRIS	Florham Park Borough	H		MA											
MORRIS	Hanover Township	H		HI											
MORRIS	Harding Township	E		MA											
MORRIS	Jefferson Township	E		HI		P									
MORRIS	Kinnelon Borough	P		HI		P									
MORRIS	Lincoln Park Borough			HI											
MORRIS	Long Hill Township	E		MA											

U.S. Fish and Wildlife Service
New Jersey Field Office
Forest Management Recommendations for Indiana Bats
Near Hibernacula

The following general recommendations were developed by the U.S. Fish and Wildlife Service, New Jersey Field Office (NJFO) to assist land managers and land owners in managing forests to protect the federally-listed endangered Indiana bat (*Myotis sodalis*) as required under the Endangered Species Act (ESA). The recommendations consider the Indiana bat's needs for suitable foraging and roosting habitat for survival and successful reproduction. Adherence to these recommendations will result in habitat that is suitable for Indiana bat use, but may not represent optimal habitat. Creating optimal habitat typically would require more intensive management practices than described herein. This document will be periodically revised as new information becomes available.

Section 9 of the ESA prohibits unauthorized 'take" of federally listed wildlife by killing, wounding, harming, or harassing a species. Harm includes significant habitat modification or degradation; harass includes an intentional or negligent act or omission that significantly disrupts normal behavioral patterns such as breeding, feeding, or sheltering. The risk of incidental take of Indiana bats in forest stands managed in accordance with these recommendations is likely discountable or insignificant and, therefore, not likely to adversely affect (cause take) of the species. If these management recommendations cannot be followed or conflict with other management goals or directives, forest managers or land owners should contact the NJFO for site specific guidance to avoid adverse effects to Indiana bats.

FOREST MANAGEMENT RECOMMENDATIONS

1. Maintain at least 60% canopy closure after timber harvest within forested stands.

2. Retain standing snags, except where they pose a serious human safety hazard due to their location near a building, yard, road or powerline. A live tree with less than 10% canopy should be considered a snag. Snags with no remaining bark and no visible cracks, splits, or hollows may be felled, as well as any snags leaning more than 45° from vertical. When possible, delay removal of hazard trees until bats are hibernating (between November 15 and March 31).

3. Do not harvest or manipulate shagbark hickory trees (*Carya ovata*) unless the density of shagbark hickory exceeds 16 trees per acre. If present, maintain at least 16 live shagbark hickory greater than 11" dbh (diameter at breast height) per acre. If there are no shagbark hickory trees greater than 11" dbh, then the live shagbark hickory trees retained per acre must include the largest specimens in the stand.

4. Maintain at least 16 live high value roost trees per acre on average with at least 3 live trees > 20" dbh and 6 live trees > 11" dbh. The remaining trees retained per acre should be among the largest or highest roost value trees present within the stand.

The following tree species have been identified as having relatively high value as potential Indiana bat roost trees:

red maple (*Acer rubrum*)
silver maple* (*Acer saccharinum*)
sugar maple* (*Acer saccharum*)
yellow birch (*Betula alleghaniensis*)
gray birch (*Betula populifolia*)
bitternut hickory (*Carya cordiformis*)
sweet pignut hickory *(Carya ovalis*)
shagbark hickory* (*Carya ovata*)
other hickories (*Carya* spp.)
white ash (*Fraxinus americana*)
green ash* (*Fraxinus pennsylvanica*)
white pine (*Pinus strobus*)
eastern cottonwood8 (*Populus deltoides*)
white oak* (*Quercus alba*)
pin oak (*Quercus palustris*)
northern red oak (*Quercus rubra*)
post oak (*Quercus stellata*)
American elm* (*Ulmus americana*)
slippery elm (*Ulmus rubra*)

*preferred roost tree species

The above list is based on review of literature and data on Indiana bat roosting requirements. Other species may be added as they are identified. Trees with characteristics such as loose or shaggy bark, crevices, or hollows are more important than tree species.

5. Do not harvest trees or conduct timber stand improvement within 300 feet of a stream bank or wetland or within 500 feet of a known bat hibernaculum.

6. Do not fell trees > 3" dbh while Indiana bats may be present, generally April 1 through November 15. Trees may be felled from November 16 to March 31.

7. Avoid prescribed burns from April 1 to November 15 in forest stands containing potential Indiana bat live roost trees and / or snags.

8. Avoid prescribed burns year round within 1,000 feet of a known bat hibernaculum.

A Review of the Carbon Sequestration Issue as it Relates to the LLCOA Forest Stewardship Plan

The latest component to be required in management plans for New Jersey woodlands is a discussion of how the management recommendations will affect the site's ability to store carbon. A summary of the carbon management issue printed on the following page was obtained from:
http://nj.gov.dep.parksandforests/forest/good_forest_mgt_is_good_carbon_mgt.pdf.

The firewood harvested from the LLCOA woodlands will be used for home heating, replacing the fossil fuels that would otherwise be required. Firewood salvaged from dead, downed and understory trees will make use of the stored solar energy that would otherwise decay, releasing carbon into the atmosphere. Maintenance of a fully-stocked woodland will also maintain the maximum volume of carbon within the woodlot. Sawtimber that is manufactured into an assortment of products will prolong the storage of the carbon in the lumber.

Good Forest Management is Good Carbon Management

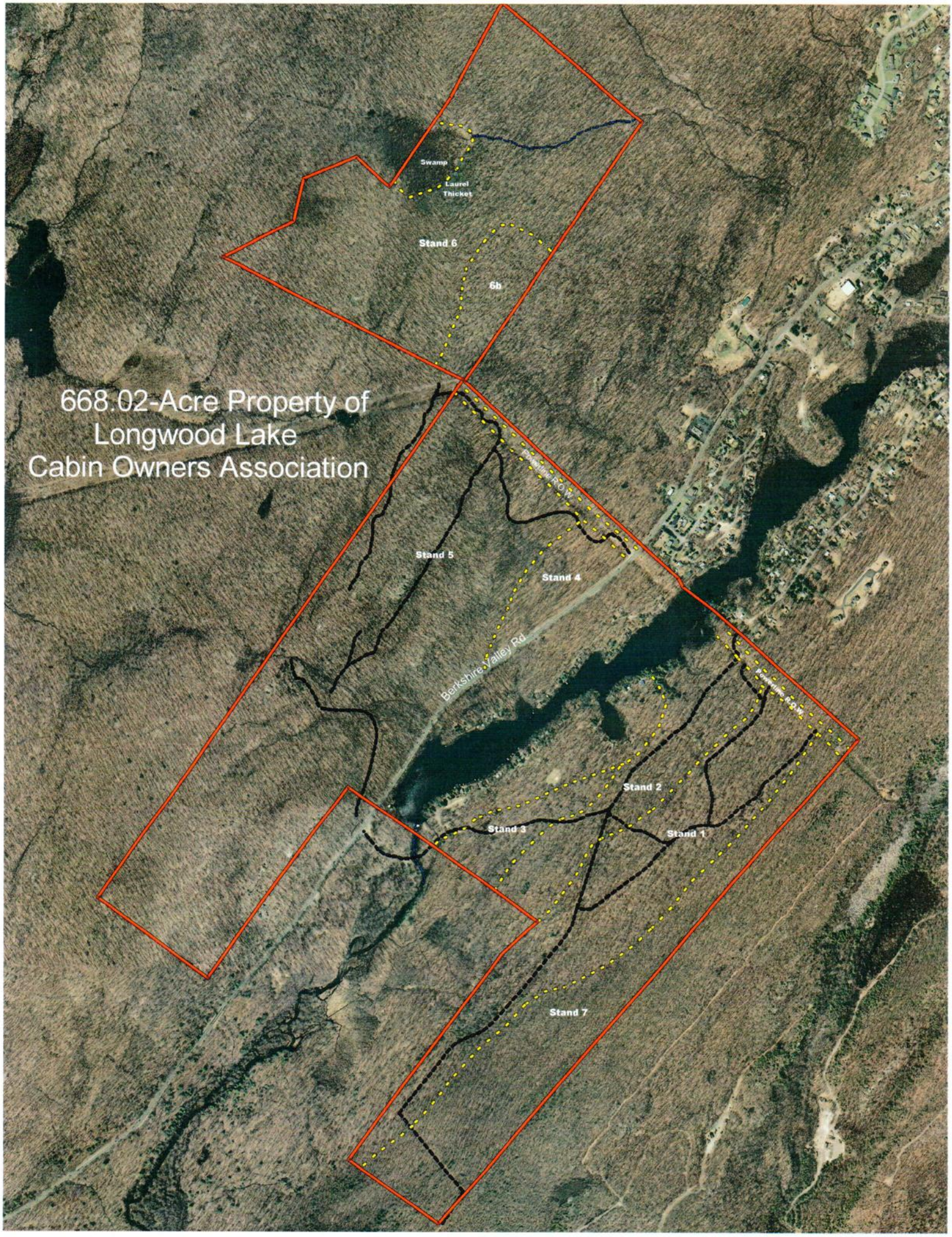
Summary: Based on existing research and emerging case studies, a well-managed forest is better for reducing atmospheric carbon dioxide (CO_2) than a poorly managed forest. Besides growing faster and taking up more CO_2 from the atmosphere, managed forests yield abundant timber products that store CO_2 while in use, and those products may be produced with less energy from fossil fuels than competing products such as aluminum or concrete.

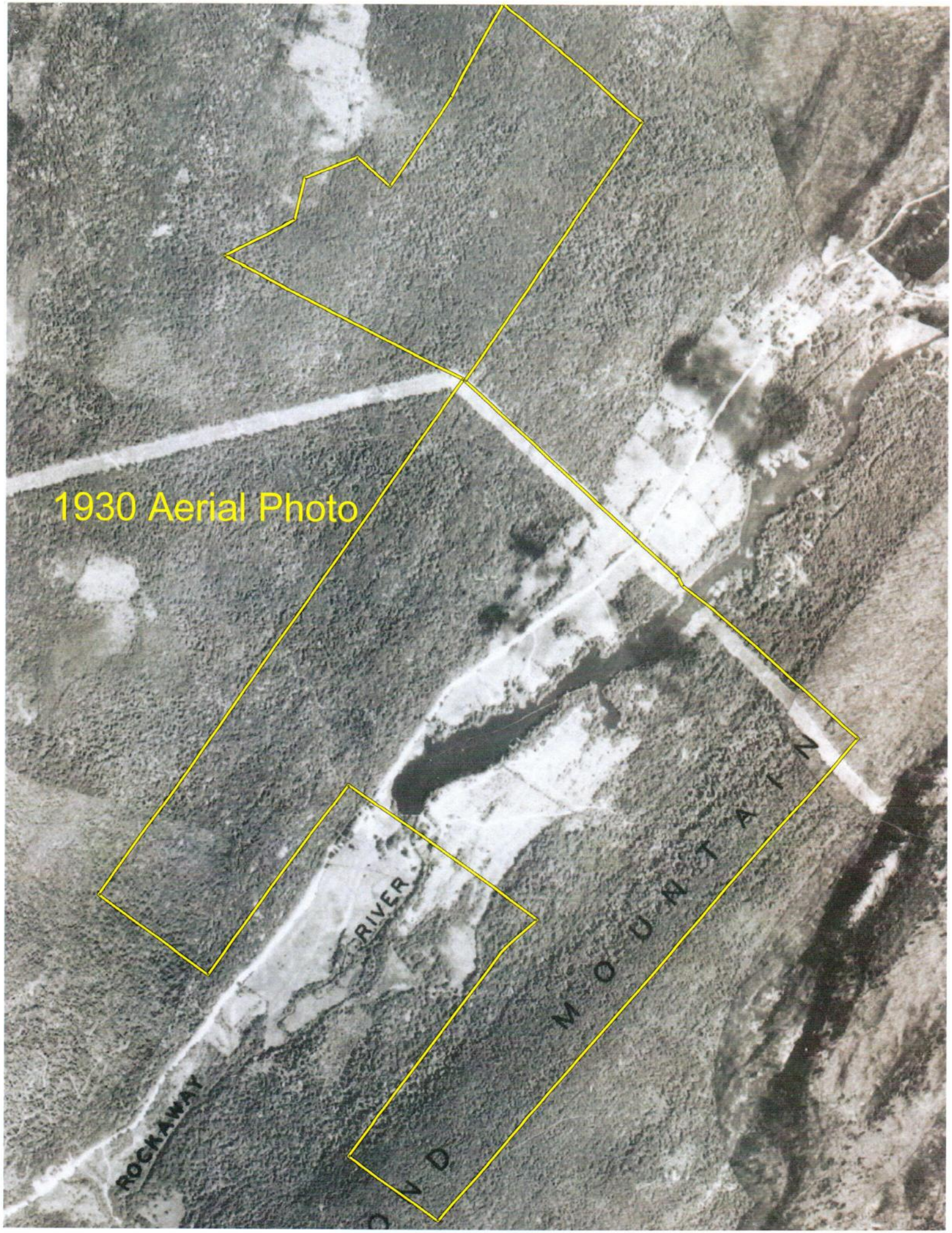
Key points

- There are 3 basic ways to reduce atmospheric CO_2 through forestry: increase the amount of carbon stored on land and in soil; use harvested wood for durable products; and substitute biomass for fossil fuels.
- The best combination of these 3 approaches is not the same everywhere. Existing forest conditions and landowner objectives will determine the best mix.
- Poorly managed forests are usually not growing biomass to the full potential of the site. Improved management can increase the rate of CO_2 removal from the atmosphere.
- Forests damaged from large-scale disturbances such as insects, wildfire, or wind may emit significant quantities of CO_2 from decaying wood and disturbed soils. Good carbon management includes utilizing the damaged wood for products or energy, and most importantly, restoring the sites.
- Incentive programs or an active carbon trading market that includes forestry activities will be necessary to induce landowners to improve forest and carbon management.
- Some additional research is required to develop and identify the specific "best practices" that are optimal for both forest and carbon management, and to develop efficient methods to monitor and verify changes in forest and wood products carbon.

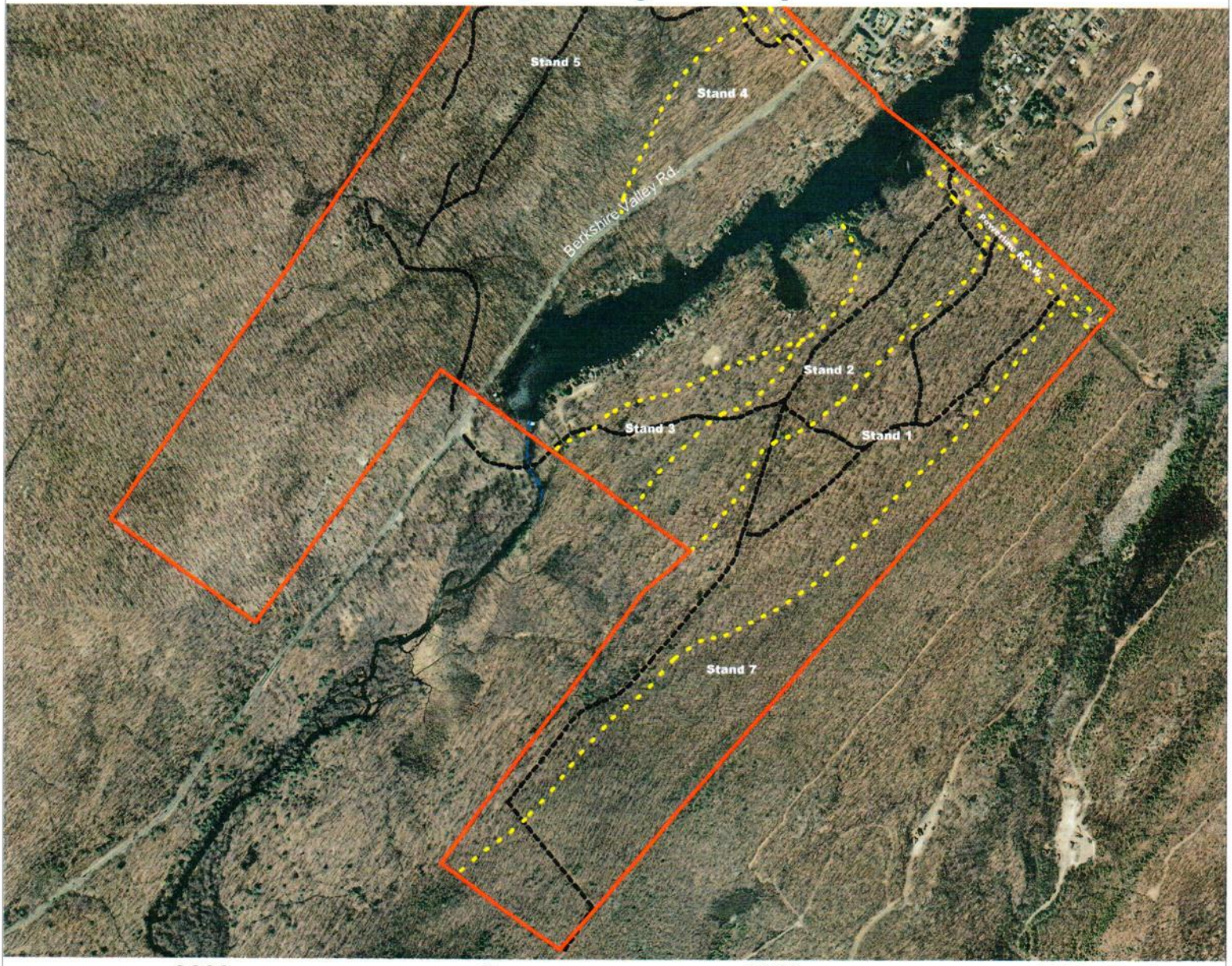
Some statistics

- Forests of the U.S. remove about 700 million tons of CO_2 from the atmosphere each year and store the carbon in biomass, soils, and wood products. This offsets about 10% of U.S. emissions from using fossil fuels.
- Electricity use of the average U.S. household emits 6 tons CO_2 per year.
- An average acre of forest land in Pennsylvania removes about 3 tons of CO_2 from the atmosphere each year. Much higher rates are possible with intensive management.
- Using more forest biomass for fuel and wood products from existing forests could increase the current forest offset from 10% to 18% of fossil carbon emissions.
- Ecological analyses indicate that there is the potential to increase carbon uptake of U.S. forests by 170%.
- In aggregate, forests could offset one-fourth of current CO_2 emissions.


668.02-Acre Property of
Longwood Lake
Cabin Owners Association
Swamp
Laurel
Thicket
Stand 6
6b
Stand 5
Stand 4
Berkshire Valley Rd.
Stand 2
Stand 3
Stand 1
Stand 7


1930 Aerial Photo
RIVER
ROCKAWAY
MOUNTAIN

Property Map



2000 0 2000 4000 Feet

Partial View of 668.02-Acre Property of Longwood Lake Cabin Owners Association
556 Hillsdale Ave.
Hillsdale, NJ 07642

Property boundaries are partially-marked with posters.

N
W E
S

Property boundary
Woodland boundary
Trail
Drainage

This map, prepared by Forest Management Services, has been designed to facilitate the implementation of the management plan for the subject property. It is not to be used as a substitute for a sealed property survey.

May 15, 2012

This map was produced using New Jersey Department of Environmental Protection Geographic Information Systems digital data, but this secondary product has not been verified by NJDEP and is not State-authorized.
NJ State Plane Feet, 1983.

Property Map

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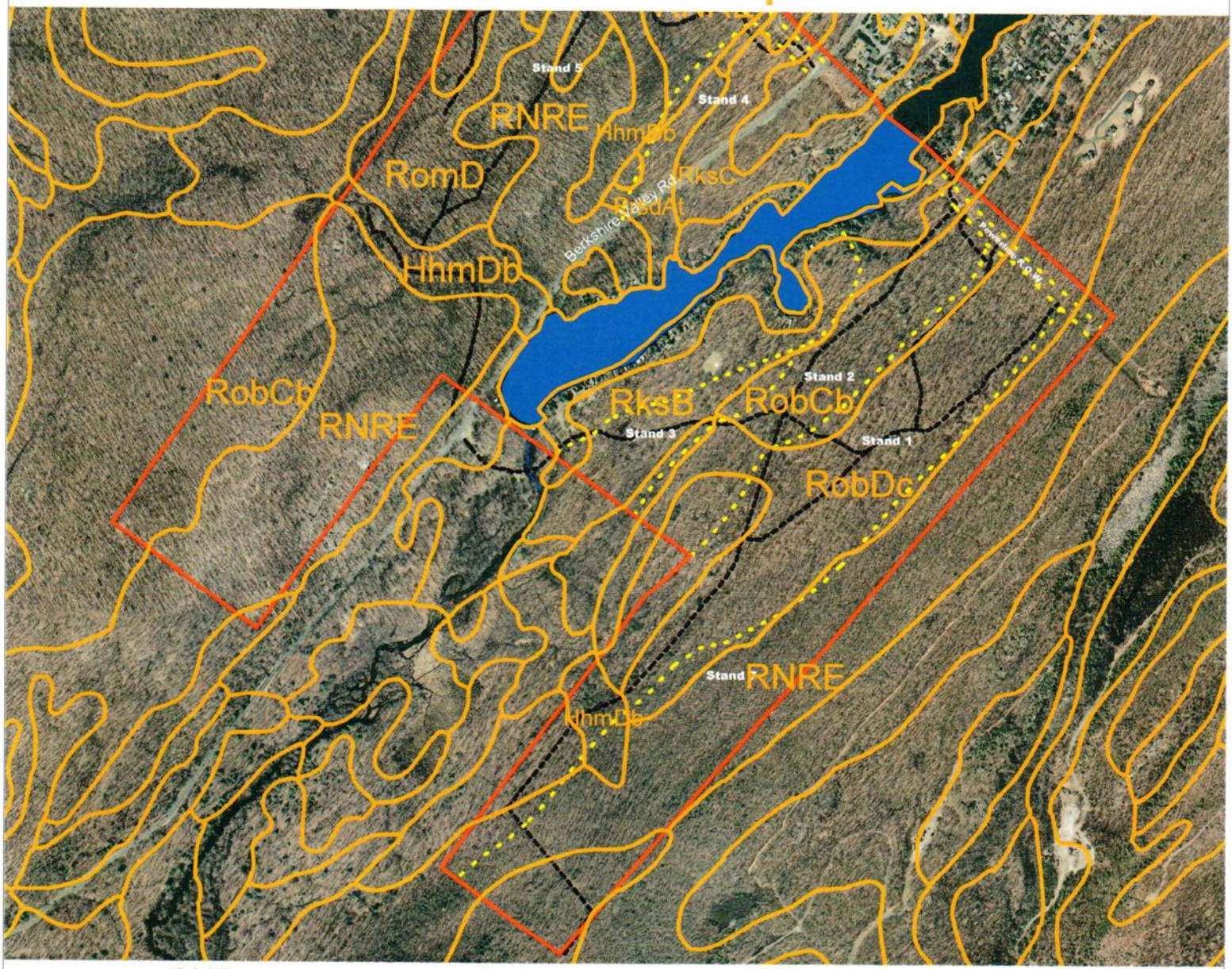
Soils Map



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Partial View of 668.02-Acre Property of Longwood Lake Cabin Owners Association
556 Hillsdale Ave.
Hillsdale, NJ 07642

Property boundaries are partially-marked with posters.

- Soil boundary
- Property boundary
- Woodland boundary
- Trail
- Drainage
- Lake

HhmDb - Hibernia loam
PrsdAt - Preakness dark surface variant sandy loam
RksB, RksC - Riverhead gravelly sandy loam
RNRE - Rock outcrop - Rockaway complex
RobCb, RobDc - Rockaway sandy loam
RomC, RomD - Rockaway - Rock outcrop complex

N
W E
S

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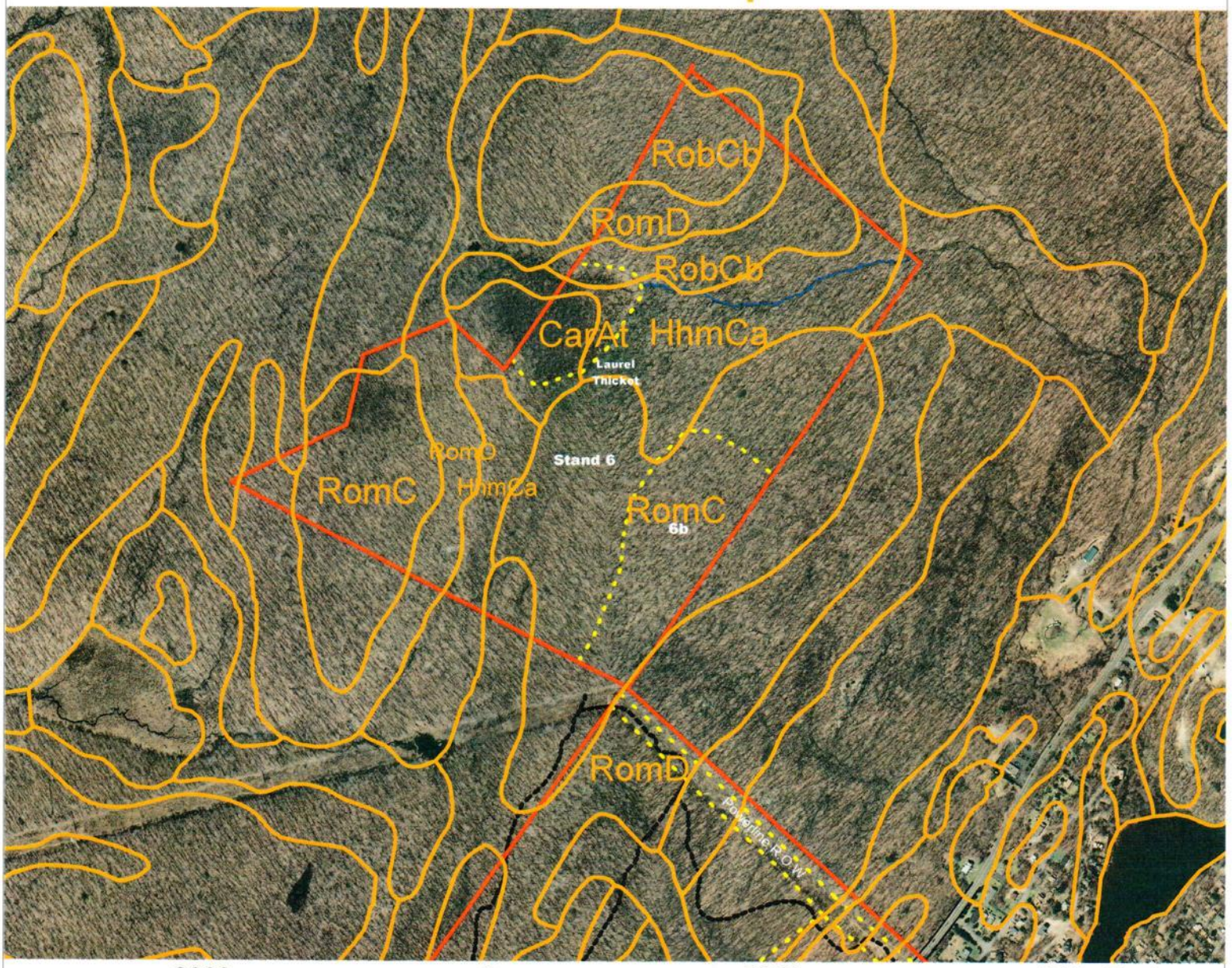
Soils Map



2000 0 2000 4000 Feet

Partial View of 668.02-Acre Property of Longwood Lake Cabin Owners Association
556 Hillsdale Ave.
Hillsdale, NJ 07642

Property boundaries are partially-marked with posters.

N
W E
S

- Soil boundary
- Property boundary
- Woodland boundary
- Trail
- Drainage
- Road

CarAt - Carlisle muck
HhmCa - Hibernia loam
RobCb - Rockaway sandy loam
RomC, RomD - Rockaway- Rock outcrop complex

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May 15, 2012

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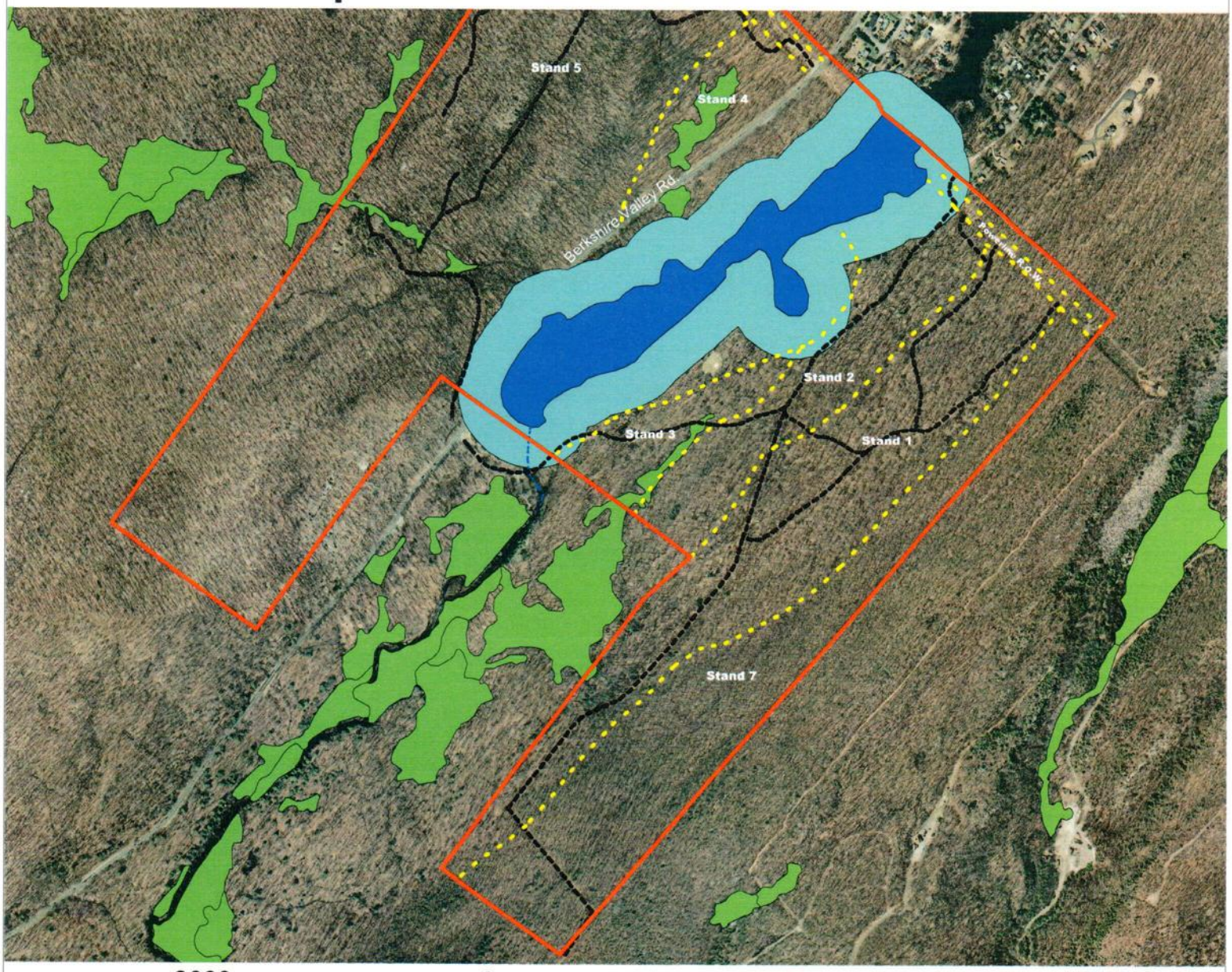
NJ State Plane Feet, 1983.

Riparian Zone & Wetlands



2000 0 2000 4000 Feet

Partial View of 668.02-Acre Property of Longwood Lake Cabin Owners Association 556 Hillsdale Ave. Hillsdale, NJ 07642

Property boundaries are partially-marked with posters.

N
W E
S

- Property boundary
- Woodland boundary
- Trail
- Drainage
- Lake
- Riparian zone of FW2-NTC1 waterway
- Wetlands as per NJDEP GIS mapping

This map, prepared by Forest Management Services, has been designed to facilitate the implementation of the management plan for the subject property. It is not to be used as a substitute for a sealed property survey.

May 15, 2012

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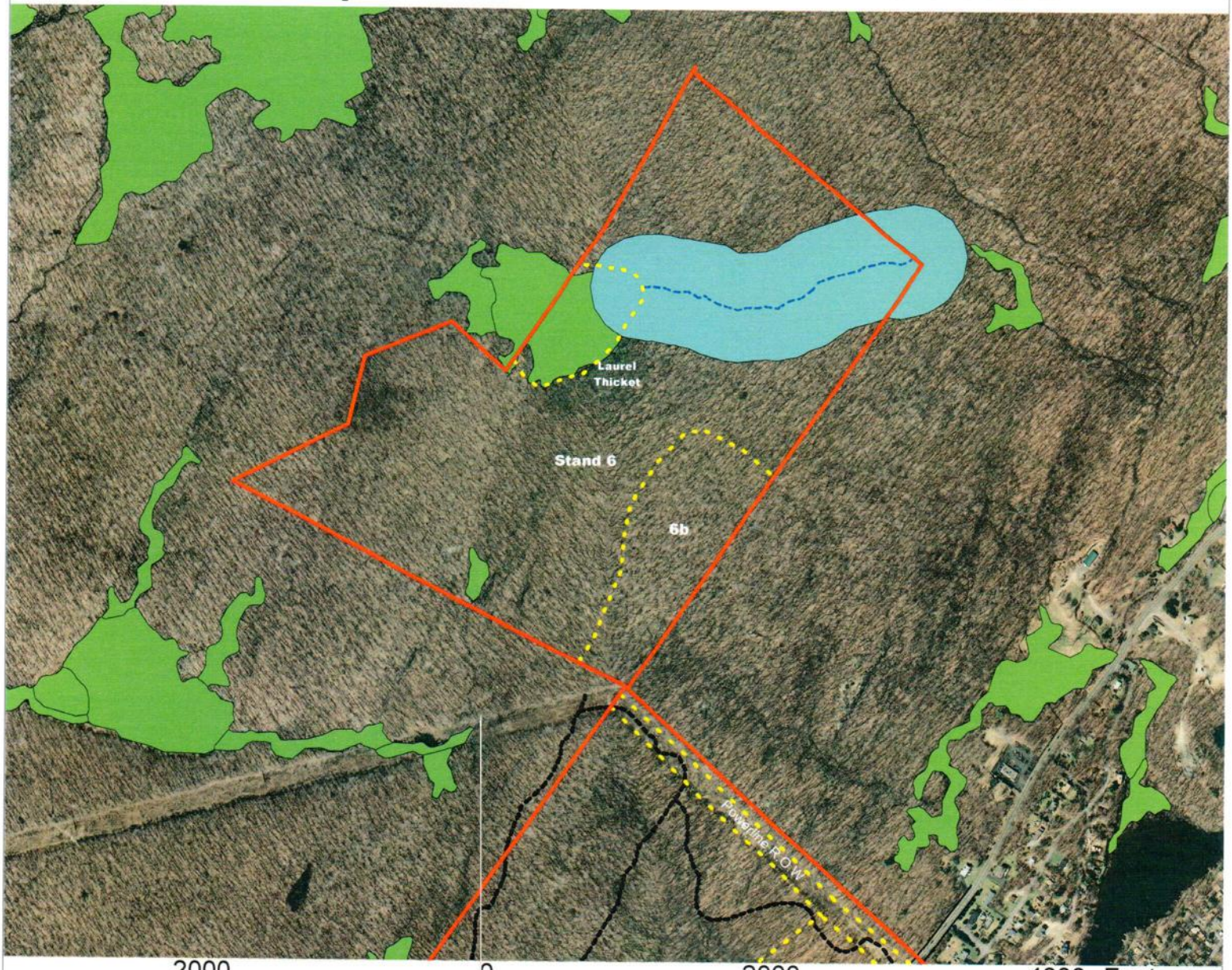
Riparian Zone & Wetlands



Partial View of 668.02-Acre Property of Longwood Lake Cabin Owners Association
556 Hillsdale Ave.
Hillsdale, NJ 07642

Property boundaries are partially-marked with posters.

- Property boundary
- Woodland boundary
- Trail
- Drainage
- Road
- Riparian zone of FW2-NTC1 waterway
- Wetlands as per NJDEP GIS mapping

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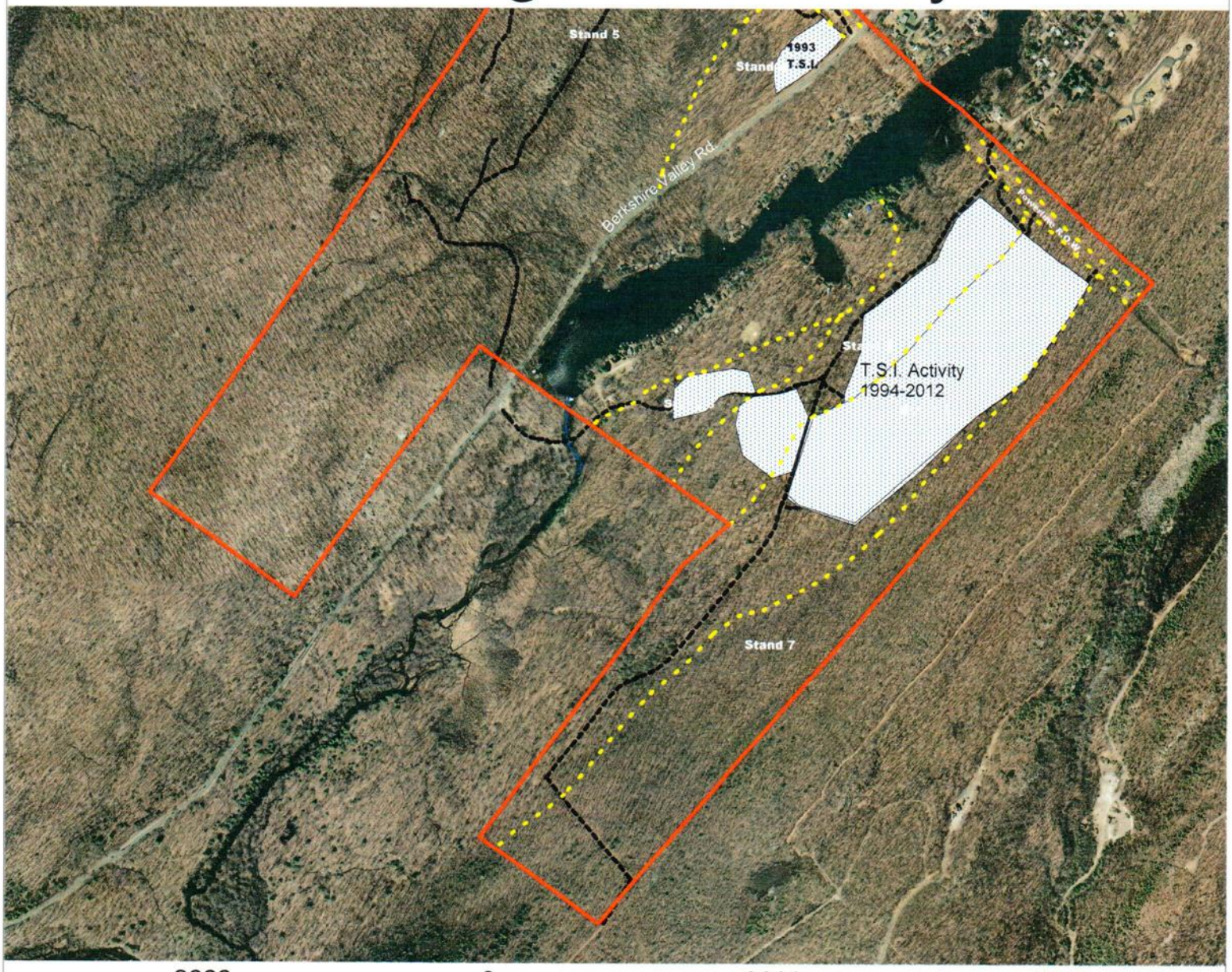
May 15, 2012

This map was produced using New Jersey Department of Environmental Protection Geographic Information Systems digital data, but this secondary product has not been verified by NJDEP and is not State-authorized.
NJ State Plane Feet, 1983.

Management History



2000 0 2000 4000 Feet

Partial View of 668.02-Acre Property of Longwood Lake Cabin Owners Association
556 Hillsdale Ave.
Hillsdale, NJ 07642

Property boundaries are partially-marked with posters.

N
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- Property boundary
- Woodland boundary
- Forestry activity
- Trail
- Drainage

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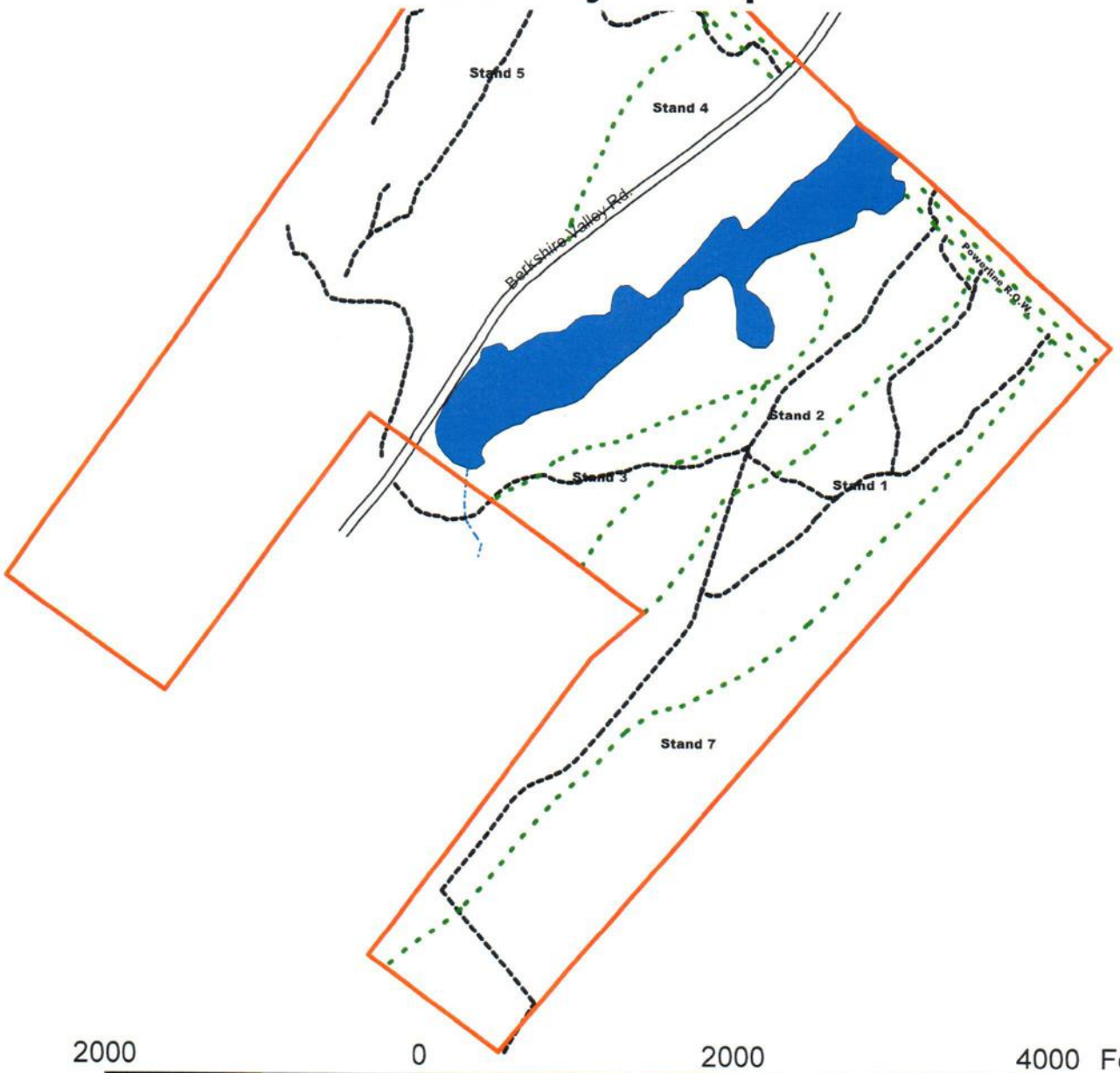
Activity Map



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- Property boundary
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- Trail
- Drainage
- Road
- Lake

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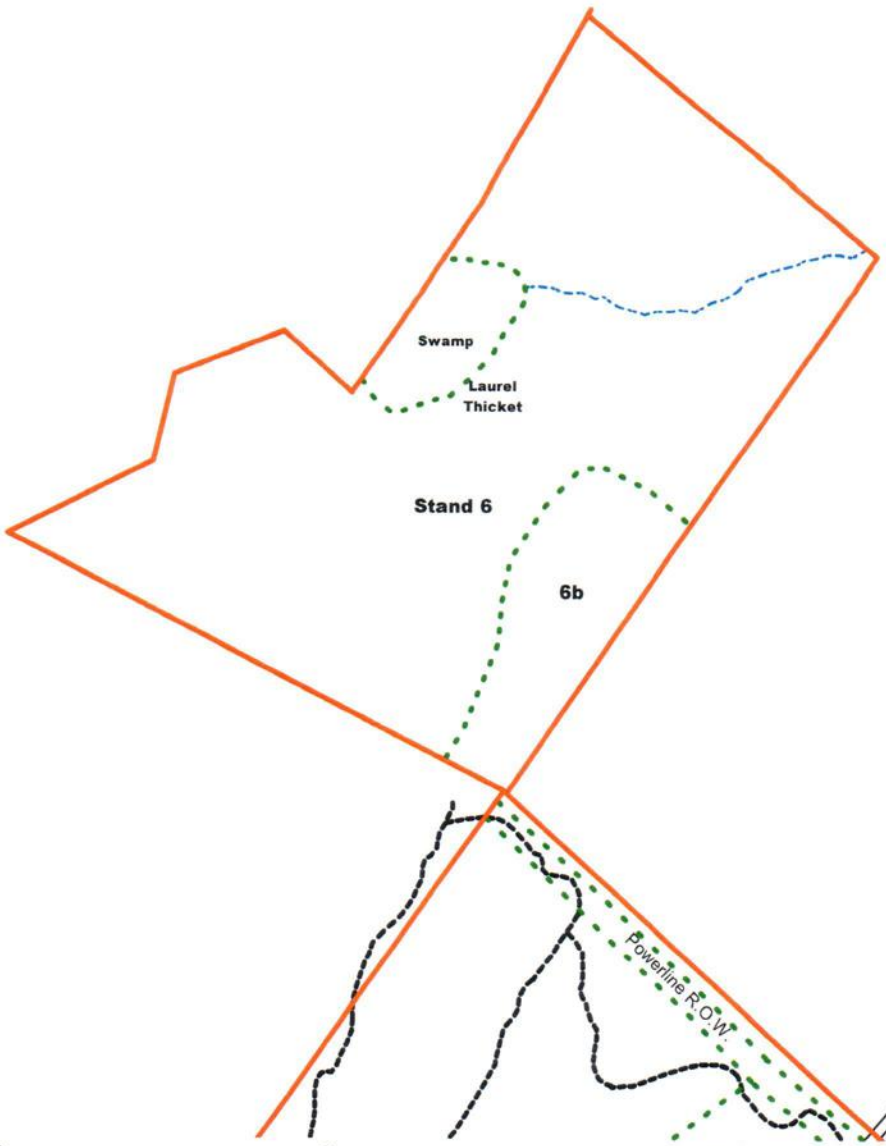

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