

# BUCK HILL FALLS PROPERTY

## FOREST MANAGEMENT PLAN 2015

### *Excerpts and Recommendation Summary*

By

Green Leaf Consulting Services, LLC

Josh Flad, CF, CA

---

*This document contains excerpts and recommendation summary information from the 2015 Forest Management Plan. Refer to the original document for detailed information.*

---

# Overview

## Management Plan Land Ownership Summary

Ownership	Compartment 1 Schaffer's Hill	Compartment 2 Mud Swamp	Compartment 3 Chestnut Mountain	Compartment 4 Spruce Mountain	Compartment 5 Jenkin's Woods	Total
BHFCo	± 715 acres	± 1,853 acres	± 512 acres	*238	± 97 acres	± 3,415 ac
BHFCF			± 478 acres	*238	± 125 acres	± 841 ac
Water Co.				± 55 acres		± 55 ac
						± 4,311 ac

## Buck Hill Property Forest Management Goals

- Protect Water Quality
- Enhance and Maintain Wildlife Habitat
- Manage Forest Products Sustainably
- Improve Forest Health Conditions
- Maintain and Enhance Legacy
- Improve Recreation Opportunities

## Pennsylvania Natural Diversity Inventory Search Results

A search of the PNDI database revealed three resource “hits” on the Buck Hill Falls property. All resource hits are listed under the jurisdiction of the Pennsylvania Department of Conservation and Natural Resources (DCNR). Two *special concern resources*, namely **Black spruce - tamarack peatland** and **waterfalls and rapids** have been identified on the property. One State listed – threatened plant commonly known as **white twisted-stalk** (*Streptopus amplexifolius*) has been recorded on the property. Further review of proposed land use projects is necessary to determine the potential impact of activities to threatened species or special concern resources. **This generally requires contacting DCNR and reviewing proposed land use projects prior to commencement of land use activities.** A complete copy of the PNDI report is enclosed in the Appendix of this report.

## Hydrology

Approximately 14 miles of 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> order streams (Strahler-Horton classification) drain the Buck Hill Falls property. Numerous intermittent and ephemeral streams flow through the property as well. These seasonal flows form temporary but important waterways, influencing species abundance and diversity as well as feeding and enhancing other water features on the property.

Under the State of Pennsylvania Code, Chapter 93 Water Quality Standards, a stretch of Buck Hill Creek, from its basin to its confluence with Griscom Creek, has been classified “**Exceptional Value**” or (**EV**)”. According to the PA Department of Environmental Protection, EV waters “are the best or unique quality waters in the State.....we estimate about 2% of our waters are in this category.” Under this designation, anti-degradation measures must be adhered to for all land use activities with potential impact to water quality. Other streams on the Property including Griscom Creek, Rattlesnake Creek, and the Middle Branch Brodhead Creek maintain *High Quality Cold Water Fishery* (HQ CWF) status. These streams have yet to be classified as EV, but maintain fish and other fauna and flora populations indigenous to high quality cold-water habitats (i.e. these waters hold breeding populations of trout and other cold water species). Given the multiple impacts of residential and commercial growth in the region over the past 50 years, HQ CWF for all streams on the Buck Hill property is remarkable.

## Riparian Area Protection

In addition to BMP's, adaptive management strategies are necessary for protecting and maintaining water quality and aquatic ecosystem health. The list below highlights management recommendations adapted from *Riparian Management in Forests*, Verry, Hornbeck and Dolloff, 2000.

- Identify and classify priority protection areas and sensitive sites. Set goals for water resource management. Incorporate riparian protection into silvicultural management objectives.
- Buffer width depends on landscape context. Minimum BMP buffer widths should always be maintained. Additional width or additional buffer zones of varying permitted use should be considered for sites of ecological, historical or aesthetic sensitivity.
- Floral composition of protective buffers should be considered. Diversity of species, size and cover should be maintained. Restore native species by controlling aggressive exotic invasive species (e.g. Japanese knotweed) Native plant species provide a natural detritus that supports the needs of macroinvertebrate communities.
- Sedimentation yields from well-regulated forests are small. Intensify timber sale administration including BMPs to minimize erosion potential.
- Limit "emergency cleanup" of natural woody debris following storm events. Leave dead and down trees for habitat and to avoid destabilizing the integrity of streambanks.
- Dense rhododendron thickets in riparian areas do not provide high-quality detritus or long term potential for wood recruitment as they discourage the development of tree seedlings and saplings.
- Maintain hardwood forest canopies to retain leaf litter, coarse woody debris and microclimate. Maintain conifer cover to maintain microclimate favoring cool water species.
- Manage riparian areas for a continued supply of coarse woody debris, floral diversity and wildlife habitat.
- Harvesting over 25% of basal area on an entire watershed generally increases summer flows. No more than 2/3 of a watershed should be converted to young forest stands (<15 years old) where spring flows may result in channel erosion.
- Develop methods and conventions for evaluating and sharing information on riparian area management, performance evaluation and restoration efforts.

# **Key Issues**

## **1. Native and Exotic Invasive Species**

Native and exotic invasive species displace native vegetation and out-compete native seedlings and desirable herbs. Exotic and endemic species are established at detrimental levels across the property. Japanese barberry, Japanese stilt-grass, hay-scented fern, multiflora rose and Japanese knotweed pose the most significant threats to ecosystem health on the property. Ubiquitous hay-scented fern and Japanese barberry in particular threaten the establishment of desirable seedlings. Knotweed patches are enlarging along Buck Hill Creek. Control treatments are recommended.

## **2. Lack of Adequate Regeneration Levels**

Though some thick patches of hardwood seedlings are found in select areas across the property, overall levels of natural regeneration are inadequate to develop future forests with desirable species composition. The lack of seedlings is due primarily to deer browse pressure and displacement by fern and/exotic species, however, natural conditions (stand age, shade, etc.) contribute in some instances. Future timber harvesting planning should consider regeneration issues. Planning for enhanced seed production and growth of residual canopy trees is strongly recommended.

## **3. Forest Health Issues (pests and pathogens)**

Beech bark disease along with timber harvest practices over the past 40 years have degraded large tracts of forest land in Compartment 2 and 3. Restoration efforts including vegetation control, clearing and planting are recommended to: increase species diversity, improve future forest habitat for wildlife species, and restore forest productivity for future generations.

## **4. Timber Harvests**

Native and exotic invasive species will spread faster in newly harvested forests in response to increased sunlight and growing space. Control treatments of invasive species prior to new harvest projects would benefit native vegetation.

Many Stands on the property are composed of marginal stocking in terms of present timber value. Damaged, deformed and undesirable pulpwood, pallet and sawtimber size trees could be **thinned** from Stands to improve the growing conditions of desirable stocking. In some cases, harvests focused on fostering future forest development such as **two stage shelterwood harvests** are recommended.

## **5. Recreation**

The Buck Hill Property contains many interesting and scenic natural and manmade features. The extensive trails system could be upgraded to attract more users. Mobile navigation and geo-located information apps could be implemented along with traditional signage to further mark and explain natural and cultural features.

# **Recommendations**

## **COMPARTMENT 1**

### **1. APPLIED SILVICULTURE & TIMBER SALES**

<b>STAN D ID</b>	<b>PRIORI TY</b>	<b>SIZE (+/-)</b>	<b>RECOMMENDATION</b>	<b>REVEN UE</b>	<b>PROGRAMS</b>
6	3	15 ac	Consider silvicultural thinning. Remove approximately 1/3 undesirable stocking. Combine harvest with Stand 7.	Deferred	
7	3	3 ac	Consider silvicultural thinning. Remove approximately 1/3 undesirable stocking. Combine harvest with Stand 7.	Deferred	
25	2	30 ac	Release competitive seedlings from poor quality overstory stocking. Shelterwood, seed tree and free thinning cutting methods may be required. Combine harvests with Stands 27 & 29	Low	Possible GWW habitat restoration program.
27	2	20 ac	Release competitive seedlings from poor quality overstory stocking. Shelterwood, seed tree and free thinning cutting methods may be required. Combine harvests with Stands 25 & 29	Low	Possible GWW habitat restoration program.
28	2	10 ac	Consider silvicultural thinning. Remove approximately 1/3 undesirable stocking. Combine harvest with release cuts in Stands 25, 27 & 29.	Deferred	
29	2	25 ac	Release competitive seedlings from poor quality overstory stocking. Shelterwood, seed tree and free thinning cutting methods may be required. Combine harvests with Stands 25 & 27	Low	Possible GWW habitat restoration program.

### **2. INVASIVE AND EXOTIC SPECIES CONTROL**

<b>STAN D ID</b>	<b>PRIORI TY</b>	<b>SIZE (+/-)</b>	<b>RECOMMENDATION</b>	<b>COD E</b>	<b>PROGRA MS</b>
1	1	5+ ac	Develop a herbicide treatment schedule for Japanese knotweed. Start by targeting the large cluster of knotweed in the natural hill slide area upstream.	490	EQIP
5	2	5 ac	Treat barberry and other invasive species with herbicide, mid-late summer.	490	EQIP
5	2	2 ac	Treat parent trees of beech brush saplings with systemic herbicide using the "hack and squirt" method or basal injections.	490	EQIP
16	1	10+ ac	Treat fern and invasive species with herbicide, mid-late summer	490	EQIP
18	3	3 ac	Treat barberry and other invasive species with herbicide, mid-late summer. Japanese barberry may be treating during the dormant season		
19	2	5+ ac	Treat barberry and other invasive species with herbicide, mid-late summer. Start by targeting pioneering individuals trying to spread to new areas. Develop treatment schedule for firmly established clusters.	490	EQIP
38	2	5+ac	Treat barberry and other invasive species with herbicide, mid-late summer.		

### 3. REFORESTATION and CROP/FRUIT PRODUCTION

STAN D ID	PRIORI TY	SIZE (+/-)	RECOMMENDATION	COD E	PROGRA MS
1	1	5+ ac	Reforest treated areas with a mix of tree species including alder, locust, aspen, hemlock and spruce. Shrub species such as steplebush (spirea), witch hazel, elderberry, gray dogwood and flowering dogwood may also suit treated sites	612	EQIP
5	2	5 ac	Plant a mix of hardwood, conifer and shrub seedlings for diversity and wildlife habitat. Plant 200-300, 2-3 year old seedlings per acre. Plant in herbicide treatment areas and other mid to low slope sites	612	EQIP
16	1	10+ ac	Plant a mix red spruce and other conifer seedlings for shade and diversity. Plant 200-300, 2-3 year old seedlings per acre. Plant in herbicide treatment areas and other mid to low slope sites	612	EQIP
19	2	10+ ac	Plant a mix of hardwood, conifer and shrub seedlings for diversity and wildlife habitat. Plant 200-300, 2-3 year old seedlings per acre. Plant in herbicide treatment areas and other mid to low slope sites.	612	EQIP
38	1		Daylight apple trees to restore tree health and vigor and improve fruit production		
38	1		Prune apple trees to improve fruit production	660	EQIP

### 4. RECREATION and AESTHETICS

STAN D ID	PRIORI TY	RECOMMENDATION	COD E	PROGRA MS
4	4	Create scenic vista		
4	4	Create hiking trail to vista from existing access road		
25 & 27	2	Create scenic vista on the central hilltop by felling trees to open viewshed in combination with seedling release.		
25	3	Reclaim skid trails repurposed for hiking and wildlife viewing	655	EQIP
25	1	Grade and seed landings, approaches and bare earth sections of skid trails with conservation seed mix.	655	EQIP
30 & 32	3	Evaluate large trees for aesthetic appeal prior to subdivision lot clearing		
1	2	Restore/create a scenic hiking trail along Buck Hill Creek. Construct signage detailing hydrologic, geologic and cultural features.		

### COMPARTMENT 2

1. APPLIED SILVICULTURE & TIMBER SALES

STAND ID	PRIORITY	SIZE (+/-)	RECOMMENDATION	REVENUE	PROGRAMS
1	3	>60 ac	Consider silvicultural thinning. Remove approximately 1/3 undesirable stocking. Combine harvest with Stand 2	Low	
2	3	>40 ac	Consider silvicultural thinning. Remove approximately 1/3 undesirable stocking. Combine harvest with Stand 1.	Low	
8	2	19 ac	Attempt to promote natural regeneration. Shelterwood and free thinning cutting methods may be required. Combine harvests with Stands 1 & 2	Low	
22	2	+/-100 ac	Attempt to promote natural regeneration, increase biodiversity and improve future forest potential. Use adaptive thinning, shelterwood and patch clear cut methods. Combine with herbicide treatments	Low	Possible GWW habitat restoration program.
23	2	7.9 ac	Daylight oak and sugar maple crop trees. Combine with herbicide treatments	Deferred	Possible EQIP funds

2. INVASIVE AND EXOTIC SPECIES CONTROL

STAND ID	PRIORITY	SIZE (+/-)	RECOMMENDATION	CODE	PROGRAMS
8	1	>10 ac	Develop a herbicide treatment schedule for hay-scented fern, striped maple and beech brush control	490	EQIP
12	3	>10 ac	Develop a herbicide treatment schedule for hay-scented fern, beech brush and Japanese stilt grass control	490	EQIP
14	2	>10 ac	Develop a herbicide treatment schedule for hay-scented fern, striped maple and beech brush control in select patches	490	EQIP
22	2	100 ac	Treat fern, beech brush and invasive species with herbicide, mid-late summer	490	EQIP
23	2	7.9 ac	Treat fern with Oust® herbicide follow crop tree daylighting		
25	2	4.3 ac	Treat barberry and stilt grass with glyphosate herbicide, mid-late summer. Plan to repeat applications for 5 years.	490	EQIP
Fern Openings	3	+/-7ac	Treat fern and undesirable species with glyphosate herbicide to prepare for seedlings planting		

3. REFORESTATION and CROP/FRUIT PRODUCTION

STAND ID	PRIORITY	SIZE (+/-)	RECOMMENDATION	CODE	PROGRAMS
----------	----------	------------	----------------	------	----------

14	2	10+ ac	Plant a mix of hardwood and conifer seedlings in treated patches openings. Refer to Stand recommendations	612	EQIP
22	2	+/-30 ac	Plant a mix of hardwood and conifer seedlings in treated patches openings. Refer to Stand recommendations	612	EQIP
22	2	1 ac	Plant 2-4 American chestnut hybrids for education, legacy and nut production.	612	EQIP
23	2	7.9 ac	Daylight oak and sugar maple crop trees. Combine with herbicide treatments		

**COMPARTMENT 3**



1. APPLIED SILVICULTURE & TIMBER SALES

STAND ID	PRIORITY	SIZE (+/-)	RECOMMENDATION	REVENUE	PROGRAMS
22	2	20 ac	Daylight oak and sugar maple crop trees. Combine with herbicide treatments	Deferred	Possible EQIP funds

2. INVASIVE AND EXOTIC SPECIES CONTROL

STAND ID	PRIORITY	SIZE (+/-)	RECOMMENDATION	CODE	PROGRAMS
12	1	>10 ac	Develop a herbicide treatment schedule for hay-scented fern, Japanese barberry, stilt grass and other exotics	490	EQIP
10	1	>1 ac	Develop a herbicide treatment schedule for Japanese barberry, stilt grass and other exotics	490	EQIP
4	1	>10 ac	Develop a herbicide treatment schedule for hay-scented fern, striped maple and beech brush control in select patches	490	EQIP
20	1	10 ac	Develop a herbicide treatment schedule for Japanese knotweed and other invasive species in the Riparian Corridor		
13	1	15 ac	Treat phragmites, barberry and other invasive species with glyphosate herbicide. Prepare planting sites for conifer seedlings	490	EQIP
22	2	20 ac	Treat fern with Oust® herbicide follow crop tree daylighting		
17	3	>10 ac	Develop a herbicide treatment schedule for hay-scented fern, striped maple and beech brush control in select patches		

3. REFORESTATION and CROP/FRUIT PRODUCTION

STAND ID	PRIORITY	SIZE (+/-)	RECOMMENDATION	CODE	PROGRAMS
22	2	20 ac	Daylight oak and sugar maple crop trees. Combine with herbicide treatments		
13	2	15 ac	Plant a mix of conifer seedlings to restore forest cover and provide species/habitat diversity.	612	EQIP

**COMPARTMENT 4**

1. APPLIED SILVICULTURE & TIMBER SALES

STAND ID	PRIORITY	SIZE (+/-)	RECOMMENDATION	REVENUE	PROGRAMS
3	2	10-20 acres	Timber Stand Improvement (TSI) cuts. Combine with herbicide treatments	Deferred	Possible EQIP funds
15	2	10-20 acres	Timber Stand Improvement (TSI) cuts. Combine with herbicide treatments	Deferred	Possible EQIP funds
14	3	11 acres	Consider a two stage shelterwood harvest with prior control of invasive and unwanted vegetation	Moderate	

## 2. INVASIVE AND EXOTIC SPECIES CONTROL

STAND ID	PRIORITY	SIZE (+/-)	RECOMMENDATION	CODE	PROGRAMS
1	1	4 ac	Develop a herbicide treatment schedule for hay-scented fern, Japanese barberry, stilt grass and other exotics	490	EQIP
3	1	>10 ac	Develop a herbicide treatment schedule for Japanese barberry, stilt grass and other exotics	490	EQIP
15	1	>10 ac	Develop a herbicide treatment schedule for hay-scented fern, stilt grass and beech brush control in select patches	490	EQIP
2	1	10 ac	Develop a herbicide treatment schedule for Japanese barberry and other invasive species in the Riparian Corridor		
10	1	10 ac	Develop a herbicide treatment schedule for Japanese barberry and other invasive species in the Riparian Corridor		
8	1	0.5	Develop a herbicide treatment schedule for hay-scented fern, Japanese barberry, stilt grass and other exotics		
9	2	10 ac	Develop a herbicide treatment schedule for hay-scented fern, Japanese barberry, stilt grass and other exotics	490	EQIP
11	2	10 ac	Develop a herbicide treatment schedule for hay-scented fern, Japanese barberry, stilt grass and other exotics	490	EQIP
14	2	11 ac	Develop a herbicide treatment schedule for hay-scented fern, Japanese barberry, stilt grass and other exotics	490	EQIP
12	3	>10 ac	Develop a herbicide treatment schedule for hay-scented fern, striped maple and beech brush control in select patches		

## 3. REFORESTATION and CROP/FRUIT PRODUCTION

STAND ID	PRIORITY	SIZE (+/-)	RECOMMENDATION	CODE	PROGRAMS
----------	----------	------------	----------------	------	----------

3	2	5 ac	Plant a mix of conifer seedlings to increase species diversity cover and provide thermal cover	612	EQIP
15	3	5 ac	Plant a mix of conifer seedlings to increase species diversity cover and provide thermal cover	612	EQIP
1	3	1 ac	Plant a mix of conifer seedlings to increase species diversity cover and provide thermal cover	612	EQIP

## COMPARTMENT 5

### 1. APPLIED SILVICULTURE & TIMBER SALES

STAND ID	PRIORITY	SIZE (+/-)	RECOMMENDATION	REVENUE	PROGRAMS
1	2	64 acres	Shelterwood and Crop Tree Release cuts. Combined with herbicide treatments	Moderate	Possible EQIP funds
2	2	10 acres	Timber Stand Improvement Thinning cuts. Combine with herbicide treatments	Low	Possible EQIP funds

## 2. INVASIVE AND EXOTIC SPECIES CONTROL

STAND ID	PRIORITY	SIZE (+/-)	RECOMMENDATION	CODE	PROGRAMS
5	1	9.6 ac	Develop a herbicide treatment schedule for hay-scented fern, Japanese barberry, stilt grass and other exotics	490	EQIP
9	1	>10 ac	Develop a herbicide treatment schedule for Japanese barberry, stilt grass and other exotics	490	EQIP
19	1	7 ac	Retreat hay-scented fern, barberry, stilt grass and other exotic species if necessary, inside enclosure	490	EQIP
15	1	10 ac	Develop a herbicide treatment schedule for Japanese barberry and other invasive species		
10	2	10 ac	Develop a herbicide treatment schedule for Japanese barberry and other invasive species in the Riparian Corridor		
21	2	4.5	Develop a herbicide treatment schedule for hay-scented fern, Japanese barberry, stilt grass and other exotics	490	EQIP
12	2	2 ac	Develop a herbicide treatment schedule for hay-scented fern, Japanese barberry, stilt grass and other exotics		
22	2	3.4ac	Develop a herbicide treatment schedule for Japanese Knotweed	490	EQIP
23	2	0.7 ac	Develop a herbicide treatment schedule for Japanese Knotweed	490	EQIP

## 3. REFORESTATION and CROP/FRUIT PRODUCTION

STAND ID	PRIORITY	SIZE (+/-)	RECOMMENDATION	CODE	PROGRAMS
----------	----------	------------	----------------	------	----------

21	2	4.5 ac	Prune apple trees for fruit production	660	EQIP
22	2	5 ac	Plant a mix of riparian species to replace treated knotweed patches	612	EQIP
23	3	1 ac	Plant a mix of riparian species to replace treated knotweed patches	612	EQIP

