

Master Site Development Plan for Upper Saucon Township Sustainable Community Parks

PREPARED FOR:

UPPER SAUCON TOWNSHIP

5500 CAMP MEETING ROAD

CENTER VALLEY, PA 18034



August 9, 2017

Acknowledgements

The Upper Saucon Township Board of Supervisors

Stephen Wagner	Chairman
Patrick Leonard	Vice Chairman
Dennis Benner	Supervisor
Philip Spaeth	Supervisor
Brian Farrell	Supervisor

Master Site Plan Study Committee

Doris Clegg
Sam Falcone
Judy Krasnicke
John Kukitz
Craig Roth
Philip Spaeth
Sidney Stevens

Township Manager

Thomas F. Beil

Special Projects Coordinator

Joseph Geib

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Prepared By:



BOUCHER & JAMES, INC.
Consulting Engineers

CORPORATE HEADQUARTERS
1456 FERRY ROAD, BUILDING 500
DOYLESTOWN, PA 18901
215.345.9400

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INTRODUCTION

The Upper Saucon Township Board of Supervisors has recognized the need to prepare a Master Site Development Plan for the Benckini and Haring Tracts to provide all residents of Upper Saucon Township with opportunities for passive recreational enjoyment, to connect residents with recreational facilities throughout the Township and beyond, and to encourage reconnection with important natural resources through Green, Healthy and Playful Parks best practices within a sustainable environment.

The 15.5 acre+/- Benckini Tract is located within proximity to the Upper Saucon Township Community Park and the Saucon Valley Rail, and is bisected by the Cold-Water Fish streams designated Laurel Run. This property will preserve valuable natural lands, provide environmental education opportunities and create important connections to the expanding network of trails within Upper Saucon Township.

This property also offers the opportunity to preserve and restore wetland, stream, and woodland habitat. The log cabin and former nursery areas on site offer a valuable opportunity to preserve the past and educate the public. These areas are important to preserve in light of the Township's continued population growth, and will result in unique environmental and historical education opportunities for school groups, nature lovers, and others interested in learning about the ecology, flora, fauna, and history of Upper Saucon Township.

The 73.9 acre+/- Haring Tract is located within proximity to the Saucon Rail Trail and a Cold-Water Fish designated tributary of Tumble Brook. This property will preserve a large contiguous area of valuable natural lands, provide environmental education opportunities and create important connections to the expanding network of trails within Upper Saucon Township.

This property also offers the opportunity to preserve large areas of wetland, stream, and woodlands and to expand existing woodland areas. These areas are important to preserve in light of the Township's continued population growth, and will result in unique environmental and passive recreation opportunities school groups, residents, and visitors alike. The site also offers the opportunity to provide a much-requested dog park.

Parks and recreation can have a measurable impact on state and local economies, but they can have important non-economic benefits as well. Severe health problems that Pennsylvanians currently face include obesity, diabetes, and cardiovascular disease. A sedentary lifestyle has been identified as a major contributor toward these alarming health trends while also playing a part in such societal concerns as increased crime and juvenile delinquency. To curb these trends, physical activity must be made fun, safe, and accessible by making recreation opportunities more readily available. Additionally, access to preserved natural spaces offers immeasurable benefits for mental health and stress management for people of a variety of ages and backgrounds.

A goal of the 2014-2019 Statewide Comprehensive Outdoor Recreation Plan is to provide accessible connections to preserved natural areas near population centers for all ages and abilities. By providing residents of this rapidly growing community with increased opportunities for passive recreation and opportunities to connect to nature by biking and

hiking the overall physical and mental health and welfare of Township citizens of all ages will improve, leading to a better quality of life and a more sustainable, desirable and attractive community in which to live.

The use of sustainable design principals, construction techniques, maintenance practices and materials will also provide financial, environmental, and quality of life benefits to residents through the reduction of construction and maintenance costs, and a reduction in the overall impact of the proposed improvements to the park. These Master Site Development Plans are a step toward creating recreational facilities to achieve these benefits.

Through analysis of these sites and the community's needs, these Master Site Development Plans endeavor to establish sustainable parks that meet the needs of the community both now and in the future, and provide recreational opportunities in a way that is environmentally responsible, meets the needs of community residents of all ages and walks of life, and that helps people reconnect to the environment.

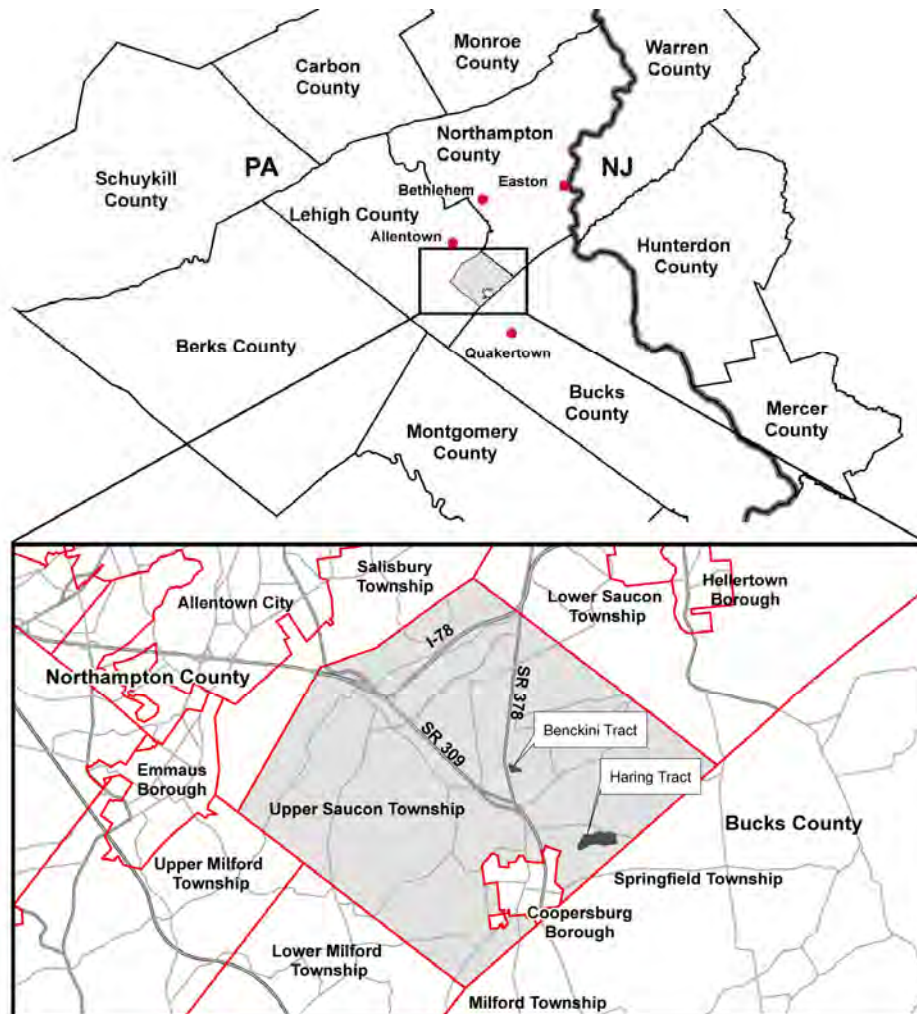
BACKGROUND INFORMATION AND DATA

Community Introduction

Township Geographic Location and Size

Upper Saucon Township covers 24.66 square miles (approximately 15,783 acres) in southeastern Lehigh County and is located less than 10 miles south of the cities of Allentown and Bethlehem. It is bordered by Bucks County to the south, Northampton County to the east, and Lower Milford, Upper Milford, and Salisbury Townships to the west and northwest. Upper Saucon Township is located within the Lehigh Valley, the third most populous region in Pennsylvania behind the cities of Pittsburgh and Philadelphia.¹

Map 1: Regional Location



Data Sources: Pennsylvania Department of Transportation, 2016; New Jersey Department of Information Technology, 2008; Lehigh Valley Planning Commission, 2016.

¹Lehigh Valley Economic Development Corporation, Why Lehigh Valley? 2016.

Township Character

Upper Saucon Township is a growing community with an even blend of suburban residential development and rural agriculture. Neighboring Coopersburg Borough serves as a population center. This trend is replicated in many of Upper Saucon's neighboring Townships. Emmaus, Allentown, and Hellertown all function as population centers for the rural-suburban Townships surrounding them.

The primary land use within Upper Saucon Township is Residential, which in 2012 covered 5,964.1 acres or 37.8% of the Township's land area. The second largest land use is Agricultural and Vacant, with a total of 5,863.4 acres (37.1%) and the third is Parks and Other Outdoor Recreation Facilities, at 1,530.2 acres (9.7%). Agricultural and Residential properties are distributed evenly throughout the Township, and Parks and Other Outdoor Open Space land uses are scattered throughout the Township. The largest areas of recreational land use are several golf courses located in the northern portion of the Township.

Between 2010 and 2012 there was a 0.4% increase in the acreage devoted to Residential uses, and a 0.5% decrease in Agricultural and Vacant land. This represents an overall increase of 63.5 acres of residential land use, and a loss of 78.7 acres of agricultural and vacant land use. There was also a 16.3-acre increase in Parks and Other Outdoor Recreation Facilities, due to several open space property acquisitions made by Upper Saucon Township.^{2 3} This indicates that while Upper Saucon is an even mix of rural and residential there are development pressures that require the Township to address active and passive recreation needs for residents.

The acquisition of park and open space lands such as the Benckini and Haring tracts is one way the Township is working to preserve existing open space. Such measures ensure that ecologically valuable properties, which are representative of the rural nature and historic character of Upper Saucon, remain preserved while providing recreation opportunities for all.

Table 1: Upper Saucon Township Land Use 2010-2012

<u>Land Use</u>	<u>2010⁴</u>		<u>2012⁵</u>		<u>Change 2010-2012</u>	
	<u>Acres</u>	<u>%</u>	<u>Acres</u>	<u>%</u>	<u>Acres</u>	<u>%</u>
Residential	5,900.6	37.4%	5,964.1	37.8%	63.50	0.40%
Commercial	244.0	1.5%	244.5	1.5%	0.50	0.00%
Industrial	83.5	0.5%	84.0	0.5%	0.50	0.00%
Wholesale & Warehousing	80.2	0.5%	71.4	0.5%	-8.80	0.00%
Transportation, Communication & Utilities	1,192.6	7.6%	1,182.7	7.5%	-9.90	-0.10%
Public & Quasi-Public	827.1	5.2%	843.9	5.3%	16.80	0.10%
Parks & Other Outdoor Recreation Facilities	1,513.9	9.6%	1,530.2	9.7%	16.30	0.10%
Agricultural & Vacant	5,942.1	37.6%	5,863.4	37.1%	-78.70	-0.50%
Total	15,784.0	100%	15,784.1	100.0%	0.10	0.00%

² Lehigh Valley Planning Commission, Municipal Profiles Lehigh and Northampton Counties, 2011.

³ Lehigh Valley Planning Commission, Municipal Profiles Lehigh and Northampton Counties, 2016.

⁴ Lehigh Valley Planning Commission, Municipal Profiles Lehigh and Northampton Counties, 2011.

⁵ Lehigh Valley Planning Commission, Municipal Profiles Lehigh and Northampton Counties, 2016.

Township Natural Resources

Large areas of woodlands surround South Mountain and the southeast portion of the Township. All streams found in the Township are located within the Saucon Creek watershed. Chapter 93 Water Quality Standards of the Clean Streams Law classifies Saucon Creek, located within Upper Saucon Township, as CWF, MF (Cold Water Fishes and Migratory Fishes) which are protected uses.⁶

Several natural areas within Upper Saucon Township have been noted in the Lehigh and Northampton Counties Natural Areas Inventory Update (2005) and in the Natural Heritage Inventory of Lehigh and Northampton Counties, PA, 2013 Update as sites of statewide or local importance:

Saucon Creek Wetlands/Limeport Wetlands – (Formerly recognized as Mill Road Wetlands) Site of Statewide Significance. This site includes the headwaters of Saucon Creek and its tributaries is home to a series of wetlands located along an unnamed creek on the northern boundary of Coopersburg. The Baltimore Checkerspot is listed as a species of special concern for this site, and due to available habitat may still live on the site. Further surveys are encouraged to determine if the species still lives here.

Friedensville Quarry – Area of Statewide Significance. The site contains a sizable population of Eared False-Foxglove (*Agalinis auriculata*), which is a Pennsylvania endangered and a globally-rare plant. The landowner has agreed to exclude the site from development plans. However, the species is still threatened by competition from other vegetation as well as natural succession.

Mest Marsh – Area of Local Significance. This area contains several acres of cat-tail sedge marsh and neighbors an area of swamp-floodplain along Leibert Creek. This site is valuable habitat for numerous bird species in addition to several types of amphibians and reptiles. Due to the rarity of open marsh habitat throughout the county, the quality of Mest marsh is significant and it may contain rare species.

Bauer Rock – Area of Local Significance. This prominent geologic formation is a pinnacle of banded gneiss rising approximately 40 feet above the ridgeline. Due to its lack of cracks and joints (compared to nearby formations) it has eroded more slowly, and is largely intact. The top of Bauer Rock features a panoramic view of Saucon Valley to the south.

Robert Rodale Reserve – Area of Statewide Significance. This site encompasses over 600 acres, only a handful of which occur in northwestern Upper Saucon Township. The reserve offers a maturing second growth forest which supports a fair to good quality Northern Appalachian Circumneutral Seeps Natural Community (NC617). This area includes plants, a community, and a sensitive species of concern.

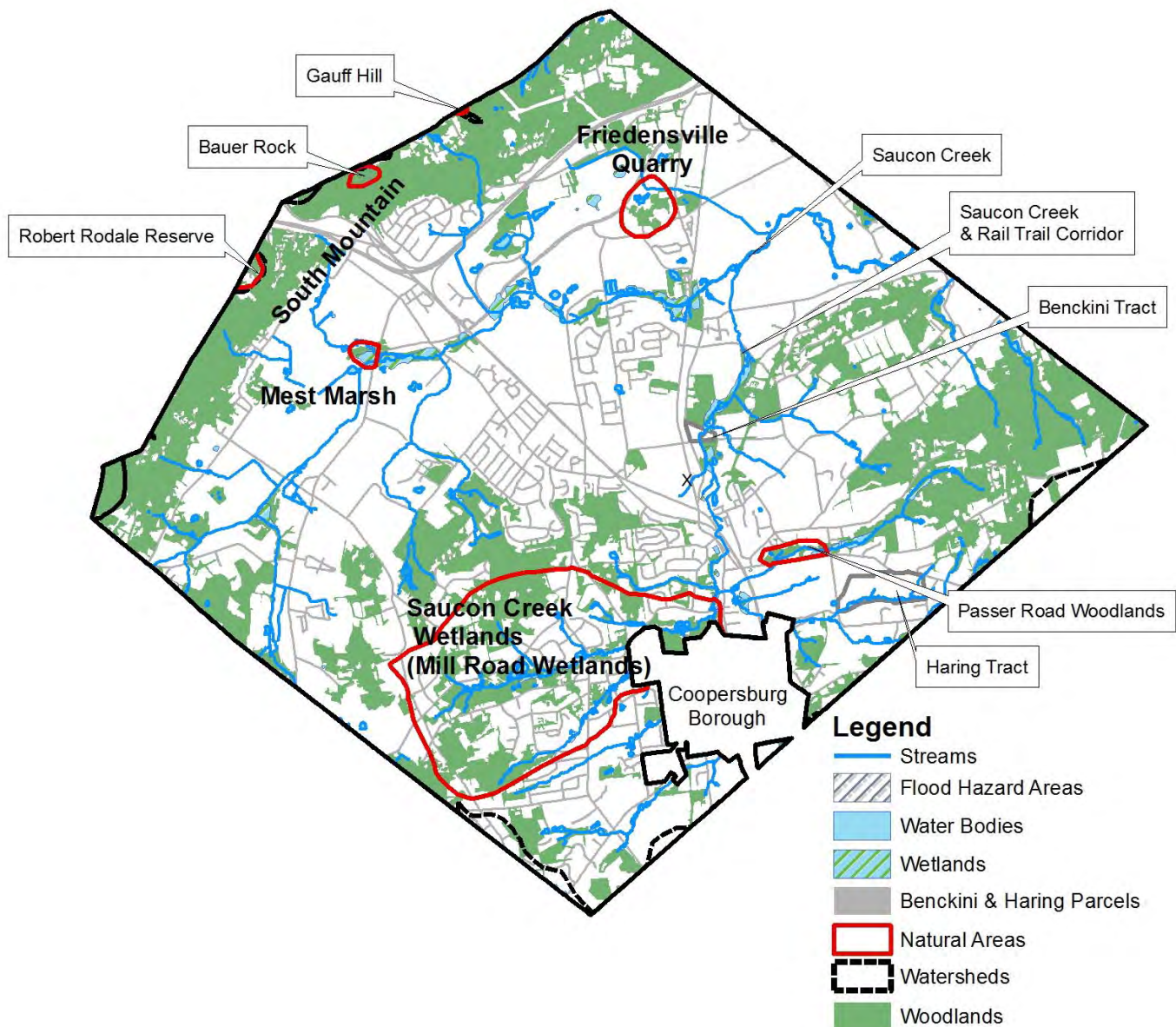
Passer Road Woodland – Area of Statewide Significance. This area is a small early-successional woodlot. The edges of a railroad embankment which surround the woodland provide habitat for Virginia Rose, which is a species of concern.

Saucon Creek Watershed – Area of Regional Significance. This watershed encompasses most of Upper Saucon Township, and is based on the entire HUC 12

⁶ The Clean Streams Law (35 P.S. §§ 691.5 and 691.402 Chapter 93, Water Quality Standards adopted September 10, 1971 as amended December 10, 2010.

(Hydrologic Unit Code) sub watershed of Saucon Creek. One sensitive species of Concern is listed for this area. The report indicates that the sensitive species of concern inhabits wetlands within the watershed and requires shallow, open, herbaceous dominated wetlands with a connected matrix of open and closed canopied wetland habitats.⁷⁸⁹

Map 2: Upper Saucon Township Natural Resources



Data Source: Lehigh Valley Planning Commission. 2016

⁷ Lehigh Valley Planning Commission. Lehigh and Northampton Counties Natural Areas Inventory Summary. April 1999.

⁸ Lehigh Valley Planning Commission. A Natural Areas Inventory of Lehigh and Northampton Counties, Pennsylvania Update 2005.

⁹ Pennsylvania Natural Heritage Program. Natural Heritage Inventory of Lehigh and Northampton Counties, Pennsylvania – Update 2013.

Township Population

Year 2010 census data indicates a current population of 14,808 within Upper Saucon Township.¹⁰ The 2016 LVPC municipal profile of Upper Saucon Township predicted an increase of 715 people by 2013 for a total predicted population of 15,523. Between 2000 and 2010, Upper Saucon Township experienced a 24% increase in population, from 11,939 people to 14,808. This represents an increase from 483.9¹¹ people per square mile to 601¹² people per square mile. Between 2010 and 2040, the Lehigh Valley Planning Commission projects an increase of 13,864 people (46.2%) for a total projected population of 28,672 people in Upper Saucon Township.¹³

As the population continues to rise within the Township, the need for active and passive recreational areas will increase, while amount of available open space will decrease. The implementation of a Master Plan for Upper Saucon Township Sustainable Community Park(s) will help to address the area's current passive recreation needs while securing the adequate provision of passive recreation facilities for the future.

Existing Natural Resources

Benckini Tract Natural Resources Overview

Most of the Benckini Tract land was once under cultivation as a tree nursery. The rest of the site is covered in vacant natural resource land. Natural resources present on the Benckini tract include streams, and wetlands which drain into Saucon Creek, a stream designated CWF, meaning cold water fishes are a protected use by PADEP.¹⁴ Wetlands on the site are designated as "Freshwater Forested/Shrub Wetland" (PF01A) by the National Wetlands Inventory.¹⁵

Woodlands cover most the western side of the site. The woodlands are located along the creek and spread west, overlapping with the wetlands located onsite.

The site is located on former agricultural land and the maturing remnants of a tree nursery. Thus, a variety of mature trees are scattered throughout the site. Saucon Creek (Laurel Run) bisects the site along with wetland and wooded areas adjacent to the creek in the north central portion of the site.

The property is in Zone 'X' as depicted on the Flood Insurance Rate Map for Lehigh County, Pennsylvania – 42077CO627F. Zone 'X' is noted as "areas determined to be outside of the 500-year floodplain."¹⁶

¹⁰ U.S. Census Bureau. DP-1 Profile of General Population and Housing Characteristics: 2010. Upper Saucon Township, Pennsylvania.

¹¹ U.S. Census Bureau. Table GCT-PH1. Population, Housing Units, Area, and Density: 2000. Lehigh County, Pennsylvania – County Subdivision and Place.

¹² Lehigh Valley Planning Commission. Municipal Profiles Lehigh and Northampton Counties. 2016.

¹³ Lehigh Valley Planning Commission. Municipal Profiles Lehigh and Northampton Counties. 2013.

¹⁴ Pennsylvania Code. Chapter 93 – Water Quality Standards. 2013.

¹⁵ U.S Fish & Wildlife Service. National Wetlands Inventory. 2016.

¹⁶ FEMA. Flood Map Service Center. 2016

Haring Tract Natural Resources Overview

The Haring tract is comprised primarily of fallow farmland. The site vegetation consists mainly of tall grass fields, woodlands, wet meadows, stream and wetland areas, and a distinctive large white oak tree. The southern portion of the site is crossed by an unnamed tributary of Tumble Brook. There are several dilapidated farm structures located onsite.

There are several areas of wetland along the stream corridor. Two patches are classified as “Freshwater Emergent Wetlands” (PEM5A) by the National Wetlands Inventory and one, located towards the eastern edge of the property, is classified as a “Freshwater Pond” (PUBHx).¹⁴

The property is in Zone ‘X’ as depicted on the Flood Insurance Rate Maps for Lehigh County, Pennsylvania – 42017CO019J and Panel42077CO288F (which is non-printed because it has “no special flood hazard areas”). Zone ‘X’ is noted as “areas determined to be outside of the 500-year floodplain.”¹⁷

Existing Parks and Recreation

The Lehigh Valley Planning Commission’s report “Lehigh County Parks – 2005” indicates that in 2005, 1,484.5 total acres of parks, open space and outdoor recreation land were present in Upper Saucon Township.¹⁸ Through a combination of open space dedicated to the Township by developers, and land purchased by the Township, Upper Saucon Township has managed to see an increase in park and open space acreage. However, due to the loss of large recreation properties like Camp Helena to developers this increase has been modest.

Approximately 18.3% of the total parks, open space, and outdoor recreation land are conservation and open space lands owned by the Township or Lehigh County. These are comprised largely of open space and conservation parcels associated with residential developments. This number also represents South Mountain Big Rock Park, and Scholl Mountain Preserve which make up a sizable portion of the 313.6-acre total. These parks provide nature oriented, passive recreation opportunities. The Saucon Valley Rail Trail is also included in this number, which provides over 40 acres of active and passive recreation through a linear park.

Private open space and conservation properties make up a much smaller portion of this category. 6.4% of open space and conservation lands in the Township are privately held. This amounts to 110.64 acres.

School recreation land and other privately held recreation areas account for 131.64 acres, or 6.4% of all park, recreation, conservation, and open space areas. The largest portion of this total is provided by the Southern Lehigh Living Memorial Park. The park’s land is split between Upper Saucon and Coopersburg Borough, with nearly 47 acres located in Upper Saucon Township. This park functions as a public, active-recreation, community park, but is privately held and leased to the Southern Lehigh School District.

¹⁷ FEMA. Flood Map Service Center. 2016

¹⁸ Lehigh Valley Planning Commission. Lehigh County Parks – 2005.

The clear majority of park, recreation, and open space areas are privately owned special uses. These many special uses encompass 969.7 acres (56.4%). This high percentage of the total open space results almost directly from several private golf courses within the Township. The largest of these is Saucon Valley Country Club, which occupies over 542 acres.¹⁹

Most of the park and open space resources within Upper Saucon Township focus on active recreation. There is a clear focus on golf courses and athletic fields (at the school district and municipal level). A lot of land that has been set aside as open space is not open to the public.

Table 2: Upper Saucon Township Parks, Recreation, Conservation, and Open Space Areas (as of 2013)

	Classification	Owner	Public Access	Acres
Assumption Parish Playground	School Parks	Religious Organization	No	0.08
Anastasio Tract	Conservation	Privately Owned	No	10.1
Blue Ridge Estates	Conservation	Upper Saucon Township	No	8.23
Buehler Properties	Conservation	Wildlands Conservancy	Yes	36.69
Center Valley Manor	Conservation	Upper Saucon Township	No	1.25
Colonial Crest	Conservation	Upper Saucon Township	No	.08
Curley Horse Open Space	Conservation	Upper Saucon Township	No	36.
Deerwood Estates	Conservation	Upper Saucon Township	No	1.51
DeSales University Athletic Fields	School Parks	DeSales University	No	32.53
East Valley Road	Conservation	Upper Saucon Township	No	14.5
Elim Grove	Conservation	Upper Saucon Township	No	8.44
Haring, Telago, & Te Tracts	Conservation	Upper Saucon Township	No	90.1
Heritage Subdivision Open Space	Conservation	Privately Owned	No	16.4
Hopewell Elementary School Recreational Area	School Parks	School District	Yes	6.52
Jewish Community Center Day Camp	Special Use	Religious Organization	No	53.99
The Laurels	Conservation	Upper Saucon Township	No	2.14
Living Memorial Park	Community Park	Private Ownership	Yes	46.73
Locust Valley Country Club	Special Use	Private Ownership	Yes	100.65
Locust Valley Estates	Conservation	Upper Saucon Township	No	8.36
Mountain Glen at Saucon Valley Open Space	Conservation	Privately Owned	No	21.80
Mill Estates	Conservation	Privately Owned	No	1.51
Mill Road Natural Area	Conservation	Upper Saucon Township	No	10.0
Moyer's Lake	Special Use	Private Ownership	Yes	20.36
Olympus America Softball Field	Special Use	Private Ownership	No	4.32
Oristaglio Tract	Conservation	Upper Saucon Township	No	10.00
Putt U Miniature Golf	Special Use	Private Ownership	Yes	2.94
Ridge & Valley Rod & Gun Club	Conservation	Private Ownership	No	24.14
Robert Rodale Reserve	Conservation	Lehigh County	Yes	9.6
Saint Michael the Archangel School (5-8 grades) Recreational Area	School Parks	Religious Organization	No	3.52

¹⁹ Lehigh Valley Planning Commission. GIS Data. 2016

Saint Michael the Archangel School (K-4 grades) Athletic Field	School Parks	Religious Organization	No	0.50
Saucon Creek Estates Open Space	Conservation	Upper Saucon Township	No	10.00
Saucon Valley Country Club (Lehigh County)	Special use	Private Ownership	No	542.99
Saucon Valley Rail Trail (Proposed) (Lehigh County)	Rail Trail	SEPTA	Yes	42.31
Scholl Woodlands Preserve	Conservation	Lehigh County	Yes	21.62
South Mountain Big Rock Park	Conservation	Lehigh County	Yes	55.71
Southern Lehigh School District Athletic Fields	School Parks	School District	Yes	41.37
Spring Valley Sportsman's Club	Special Use	Private Ownership	No	5.72
Swim- in-Zone	Special Use	Private Ownership	No	2.36
Upper Saucon Township Community Park	Community Park	Upper Saucon Township	Yes	76.85
Upper Saucon Township Municipal Golf Course at Tumblebrook	Special Use	Upper Saucon Township	Yes	71.40
Upper Saucon Twp. Land Adjacent to Saucon Rail Trail	Special Use	Upper Saucon Township	Yes	1.99
US Homes	Conservation	Upper Saucon Township	Yes	4.582
Vera Cruz Road	Conservation	Upper Saucon Township	No	3.37
Wedgewood Golf Course	Special Use	Private Ownership	Yes	236.38
Weyhill Drive	Conservation	Upper Saucon Township	No	.027
Wittman Vineyards	Conservation	Upper Saucon Township	No	18.13
Total:				1,717.80
Subtotal: Township Open Space/Conservation Properties:	313.649	18.3%		
Subtotal: Private Open Space/ Conservation Properties:	110.64	6.4%		
Subtotal: Private/School Recreation Land:	131.25	7.6%		
Subtotal: Township Park & Rec. Areas:	192.55	11.2%		
Subtotal: Special Uses, Etc.:	969.71	56.4%		
Total:	1,717.8	100%		

Source: Lehigh Valley Planning Commission. 2016.

Municipal Parks

Upper Saucon Township Community Park– The Upper Saucon Township Community Park consists of approximately 70 acres, spread across two sites which are bisected by Preston Lane. The site presently contains full-size and short-sided soccer fields, baseball fields, basketball courts, all-purpose fields, two tot lots, a pavilion, restroom/concession stand facilities, and several miles of walking/jogging trails. This park serves as the main sports facility for many of the areas recreation leagues. Additionally, it offers passive recreation through its many walking paths and access to the Saucon Rail Trail.

Upper Saucon Township Municipal Golf Course at Tumblebrook – Tumblebrook is Upper Saucon Township's municipal golf course. This 9-hole course is spread over 71 acres. The course features a golf shop and a snack bar. The management for Tumblebrook golf course is contracted out to private groups, but the course and property are owned by Upper Saucon Township. The focus here is on active recreation

Saucon Valley Rail Trail - The Saucon Rail Trail extends for just over 4 miles within Upper Saucon Township and covers about 42 acres. This gravel paved, long-distance path accommodates walkers, joggers, and bikers. It extends into both Lower Saucon and Hellertown to the North and ends in Coopersburg towards the South. Within Upper

Saucon Township the trail features access points at Washington Lane, Upper Saucon Township Community Park, Station Avenue, and Southern Lehigh Living Memorial Park. The connection between Upper Saucon Township Community Park and Southern Lehigh Living Memorial Park was completed in 2013.

Community Parks (Privately Owned)

Southern Lehigh Living Memorial Park – Southern Lehigh Living Memorial park is a 54-acre park. Thirty-two (32) of those acres fall in Upper Saucon Township with the remainder in Coopersburg Borough. The park is owned by the Living Memorial Association and leased to the Southern Lehigh School District. Specific amenities such as the pool and community building are also leased to public entities in a similar manner. The park features a large variety of active recreation amenities including a swimming pool, baseball fields, a football field, pavilions, tennis courts, basketball courts, multi-purpose fields, picnic areas, grills, snack bars, playground areas, restroom facilities, sand volleyball courts, and a community building. The park also contains a large wooded area that houses a boy scout cabin. The park is open to the public and serves many active recreation needs in the community.

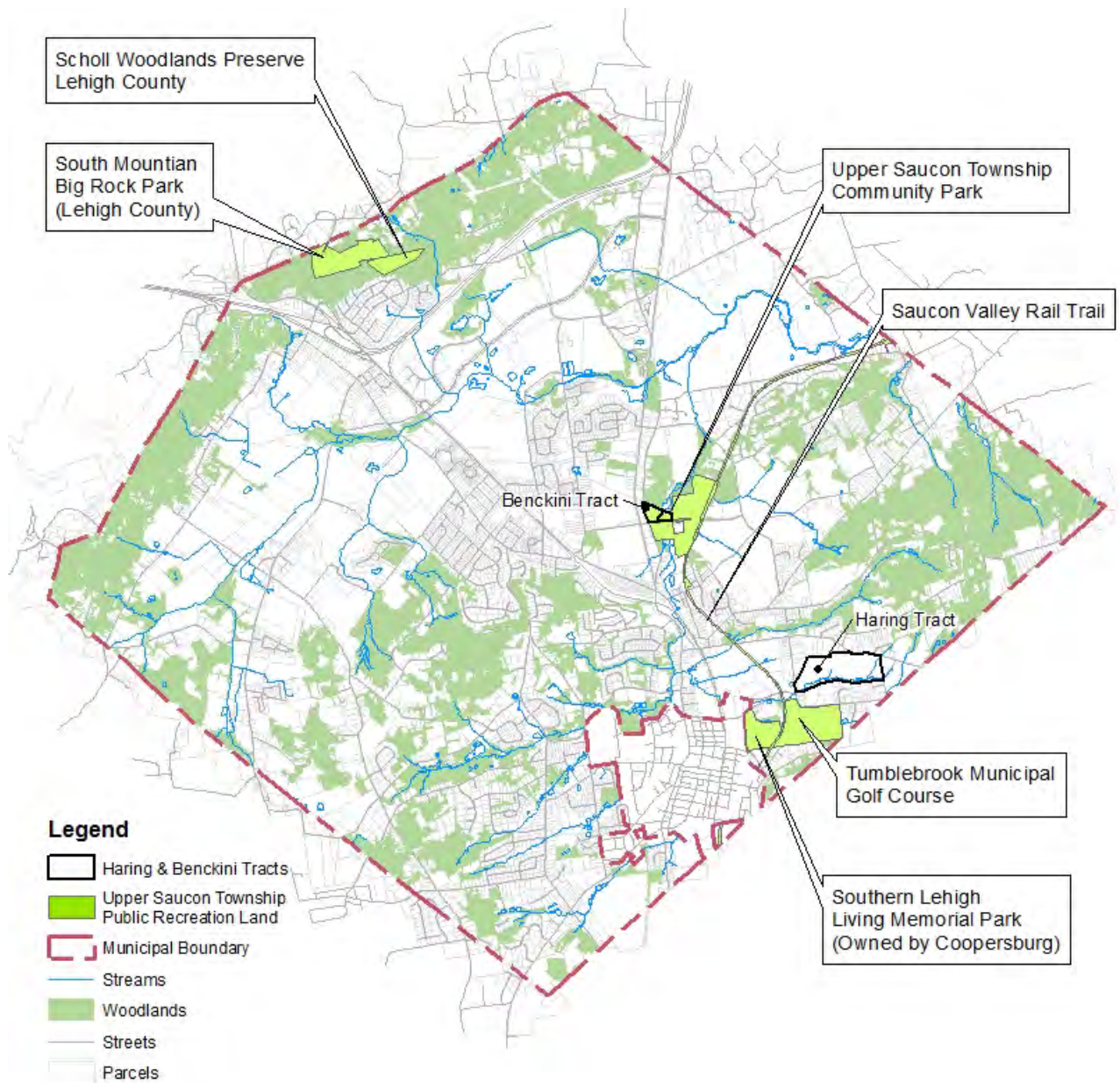
County Parks (Lehigh)

Scholl Woodlands Preserve- Scholl Woodlands is a 21-acre wooded parcel, located at the base of South Mountain Big Rock Park. It serves many of the same passive recreational functions as Big Rock Park. Both South Mountain and Big Rock park are mentioned as nodes for the proposed Pennsylvania Highlands Greenway, as outlined in the Lehigh Valley Planning Commission's 2009 Greenways Plan.

South Mountain – Big Rock Park - South Mountain Big Rock park covers 77 acres (in total) of wooded land on the slopes of South Mountain. The land is split between Upper Saucon and Salisbury Townships with approximately 56 acres located in Upper Saucon. The key feature of this park is Bauer Rock, a large and geologically important gneiss formation which features prominently on the crest of South Mountain. The park is a fair mix of active and passive recreation. There are trails for hiking, and nature study is encouraged. South Mountain Big Rock Park is mentioned as a node for the proposed Pennsylvania Highlands Greenway, as outlined in the Lehigh Valley Planning Commission's 2009 Greenways Plan.²⁰

²⁰ Lehigh Valley Planning Commission. Lehigh Valley Greenways Plan. 2007.

Map 3: Public Parks and Facilities Map



Data Source: Lehigh Valley Planning Commission. 2016

Relationship of Benckini Tract to the Overall Park System

The Benckini tract is located adjacent the Upper Saucon Township (UST) Community Park. The UST Community Park also has two access points to the adjacent Saucon Valley Rail Trail. This creates an opportunity to provide a connection from the Benckini tract to the rail trail. This in turn allows users to access the Tumblebrook Municipal Golf Course and Southern Lehigh Living Memorial Park. A tributary of Saucon Creek bisects the site along with a small section of wooded wetlands, which adds both conservation appeal and a challenge for creating access to the UST Community Park. Access to the

creek and wooded wetland onsite provide an educational opportunity that is not currently available elsewhere in the Township. Large established trees leftover from when the site was a nursery are surrounded by open fields. This landscape offers a great opportunity for passive recreation or a meandering path. An old log cabin and farm house exist on site. With extensive documentation, partial demolition, and preservation of important architectural features of the structure, opportunities abound for educational opportunities about the history of Upper Saucon Township and important environmental issues. The Benckini tract offers a variety of much-needed conservation and passive recreation opportunities in a setting that can connect to some of the Township's largest public recreation areas.

Relationship of Haring Tract to the Overall Park System

The Haring tract is somewhat secluded and is not adjacent to any Township parklands. It is surrounded by largely residential properties and is adjacent to a large corporate campus. However, it could connect with relative ease (via sidewalk or trail) to the Tumblebrook Municipal Golf Course, the Saucon Valley Rail Trail, and Southern Lehigh Living Memorial Park. Access from the site to the Saucon Valley Rail Trail would also provide access to Upper Saucon Township Community Park and the Benckini Tract (via a walk or bike ride). The site provides a large area of open former farmland (just over 70 acres) that would make a good location for a loop trail. Towards the southern end of the site a tributary creek and wetland areas offer valuable habitat that could be accessed by visitors. The Haring tract offers a large area of conservation-oriented land that could offer many opportunities for passive recreation.

Existing Community Planning

Existing and Future Land Use

Upper Saucon is mainly residential/rural and located outside of the urban cities of Allentown and Bethlehem, and the small city of Quakertown. State routes 378 and 309 and Interstate 78 are the major roadways through the Township. The Township is dominated by a nearly even mix of agricultural/vacant land and residential land. The main commercial area is quickly shifting in the Township. Retail and office development along Center Valley Parkway have quickly manifested following the development of a large outdoor mall. Many businesses are also loosely clustered along Route 309. The densest residential areas are located around 309 and extending south towards Coopersburg on the western side of the Township.

The openness of the Township is desirable for a residential location away from dense urban areas, and attracts more residents every year. Upper Saucon Township experienced a loss of agricultural and vacant land (692 acres) between 1985 (when the comprehensive plan was written) and 2012. During this time, residential land uses shifted from 25% of the total land to just under 38%. While this reflects a considerable loss of agricultural land and a gain for residential land, these are relatively small changes considering the 27-year period over which they have occurred. Despite recent indications that residential land use is overtaking agricultural and vacant land uses in the Township, the two uses remain somewhat even.

The primary land use within Upper Saucon Township is Residential, which in 2012 encompassed 5,964.1 acres or 37.8% of the Township's land area. The second most prominent land use within the Township is Agricultural/Vacant, with a total of 5,863.4 acres (or 37.1%) and Parks and Other Outdoor Recreation Facilities is the third largest, at 1,530.2 acres (or 9.7%).

Table 3: Land Use 2012

Land Use	2012 ²¹	
	Acres	%
Residential	5,964.1	37.8%
Commercial	244.5	1.5%
Industrial	84.0	0.5%
Wholesale & Warehousing	71.4	0.5%
Transportation, Communication & Utilities	1,182.7	7.5%
Public & Quasi-Public	843.9	5.3%
Parks & Other Outdoor Recreation Facilities	1,530.2	9.7%
Agricultural & Vacant	5,863.4	37.1%
Total	15,784.1	100.0%

According to the Upper Saucon Township 1985 Comprehensive Plan, one objective of the "Major Township Goal" is to enhance the Township's value for both agricultural and residential uses.²² The focus is upon creating a mix of scenic rural character and open space as well as an attractive setting for a diverse mix of residential uses. The Plan emphasizes that small pockets of commercial uses are to be located along routes 309 & 378. One of the main goals of the Future Land Use Plan is to preserve agricultural land and protect natural features, such as South Mountain, from inappropriate development.

Surrounding the Haring tract, future land uses as shown in the Upper Saucon Comprehensive Plan are designated as suburban residential. Except for the properties adjacent the northeast and northwest corners of the site, which are proposed for agricultural and preservation agricultural land uses. The Benckini tract has been previously proposed for suburban residential development. It is surrounded to the northeast, northwest, and southwest by proposed suburban residential land uses. Only along the southwestern boundary of the site does the proposed land use change. Here, public/and quasi-public recreation facilities are the proposed use, signaling a shift to the land uses seen there today. Conservation future land uses are shown along the northern edge of the site to protect the South Mountain area. Other patches of conservation/agricultural preservation land uses are located directly below South Mountain in the northeast and north-central portions of the Township.

Existing Zoning

Ordinance No. 141, The Upper Saucon Township Zoning Ordinance of 2009

The Township contains the following Zoning Districts: South Mountain Conservation Zone, Agricultural Preservation, Open Space Residential, Rural Residential, Suburban Residential, Multi-family Residential, Age Qualified Community Overlay, the Village Commercial Overlay, Commercial, Industrial, and an Enterprise zone. The Benckini tract

²¹ Lehigh Valley Planning Commission. Municipal Profiles Lehigh and Northampton Counties. 2016.

²² URDC. Upper Saucon Township Comprehensive Plan. July 1985. "The Plan's Major Goal and Overall Policies". pg.12.

is located within the Suburban Residential Zoning District (R-2). The Haring tract is located within the Suburban Residential Zoning District (R-2) as well.²³ The districts are further described as follows by the Upper Saucon Township Zoning Ordinance:

South Mountain Conservation (SMC): is meant to “to protect the large concentrations of sensitive environmental and recreational features prevalent on South Mountain which is an important natural area within the Township and the larger Lehigh Valley.”

Agricultural Preservation (A): is meant to “protect areas within the municipality possessing prime agricultural soils (Class I, II, and III soils) which are highly productive soil types most capable of supporting agricultural activities, so that agriculture as an on-going economic activity in the municipality is preserved.”

Open Space Residential (OSR): is meant to “blend low density residential uses amid environmentally sensitive lands that have no or limited access to public infrastructure. This Zone seeks to permanently preserve open spaces characterized by woodlands, steep slopes and stream valleys. In addition, this Zone will promote the preservation and enhancement of historical and cultural resources that contribute to the character and heritage of the community.”

Rural Residential (R-1): is meant to “blend low density residential uses amid environmentally sensitive lands that have proximity to agricultural activity. This Zone seeks to permanently preserve open spaces characterized by woodlands, steep slopes and stream valleys. In addition, this Zone will promote the preservation and enhancement of historical and cultural resources that contribute to the character and heritage of the community. Conservation design developments are encouraged to offer the greatest density and design flexibility.”

Suburban Residential (R-2): is meant to “accommodate medium density residential uses in areas with sufficient infrastructure to support such densities. Selected locations provide for the accommodation of future developments in accordance with the Township’s Comprehensive Plan and acknowledge the location of existing land uses with these suburban characteristics.”

Multi-Family Residential (R-3): is meant to “provide areas for multi-family development and associated compatible land uses. This is intended to broaden the Township’s housing base and serve a greater variety of housing needs of its residents. This Zone provides for various types of residential dwelling units and residential living environments by.”

Age Qualified Community Overlay (AQC): is meant to “permit development of age qualified communities within the areas designated on the Township Zoning Map.”²⁴

Village Commercial Overlay (VC): is meant to permit development of a small scale and locally oriented retail, service, and entertainment businesses that comply with specific design standards that foster a local character of development that replicates historic commercial uses and settings.”²⁵

²³ Upper Saucon Township Zoning Map. Adopted January 12, 2012.

²⁴ Ordinance No. 141 Upper Saucon Township Zoning Ordinance. RothPlan. June 2009.

²⁵ Ordinance No. 141-B. Upper Saucon Township. 2010

Commercial (C): is meant to “provide suitable locations for retail, service, and entertainment businesses. The uses permitted vary widely and some may involve outdoor activities and/or storage areas like automobile, boat and trailer sales, and service establishments. The uses provided in this Zone are meant to serve residents, as well as those motorists passing through the Township.”

Industrial (I): is meant to “provides for a wide variety of industrial uses and activities that contribute to the Township’s economy and tax base while offering local and regional employment opportunities. Small scale and light industrial uses are permitted by right while larger and heavier forms of industry require conditional use approval.”

Enterprise (E): is meant to “promote and provide, in appropriate and convenient locations, areas for industries and business organizations and institutions which have common characteristics and interests with respect to site requirements, desired amenities, compatibility of operations and highway access to locate employment centers oriented to research and development, administration, processing and related business activities (not including manufacturing processes except as hereinafter provided) in an environment relatively free from common commercial activities and general public traffic and relatively free from nuisances such as noise, vibration, air pollution or other generally detrimental aspects of common commercial and/or industrial and/or manufacturing uses.”²⁶

Other Relevant Planning Documents

Saucon Region – Official Comprehensive Recreation & Open Space Plan - 2006

Natural Resources Plan: The importance of the preservation of environmental and agricultural resources is stressed in this report. The plan recommends the preservation of streams and wetlands including a 90’ riparian buffer. It also recommends a 90’ wide radius buffer from all streambanks. This width is based upon environmental conditions within the Saucon region that will sustain natural streamside buffers.²⁷

Saucon Creek Watershed Conservation Management Plan – 2009

This report provides an extensive study of the Saucon Creek Watershed in both Lehigh and Northampton County. Detailed recommendations for severely eroded creek areas within Upper Saucon Park (near the Benckini tract) are provided, and recommendations are provided for the Tributary to Tumble Brook at Suter Road, as well as the South Branch of Saucon Creek at Main Street Bridge. The last two of these sites are located close to the Haring tract site. Recommendations for conservation and restoration of these areas, as well as recommendations for outreach and education, should be considered during the preparation of detailed construction plans for these sites and when planning for educational programming on the sites.²⁸

²⁶ Ordinance No. 141 Upper Saucon Township Zoning Ordinance. RothPlan. June 2009.

²⁷ Saucon Region Official Comprehensive Recreation & Open Space Plan. RothPlan. & Recreation & Park Solutions. October 2006.

²⁸ Saucon Creek Watershed Conservation Management Plan. Lehigh Valley Conservation District. March 2009.

Lehigh Valley Greenways Plan - 2007

A significant objective of this plan is to promote and propose the idea of a Pennsylvania Highlands Greenway. This greenway would cover 10,773 acres of conservation land and 34,902 acres of scenic lands. The highlands region is part of the Appalachian Mountains chain that runs from Georgia to Maine. The Lehigh Valley portion of the Highlands region encompasses the entire southern portion of Lehigh County. Within Upper Saucon Township, South Mountain Big Rock Park and Scholl Woodlands Preserve would serve as nodes within the corridor.

The Saucon Creek Greenway is also proposed as part of this plan and would follow the Saucon Creek as it crosses Upper Saucon Township. This 15-mile corridor would protect natural areas like Mest Marsh and would connect to the Pennsylvania Highlands Greenway. Many agricultural conservation easements have already been purchased for the land surrounding the Saucon Creek within Upper Saucon Township. However, more easements and land will need to be purchased to complete the corridor.

The Benckini tract is shown on the Greenways Plan as part of the Upper Saucon Township Community park parcel. This park is featured as part of the Greenways Plan as a park (>5 Acres). ²⁹

Pennsylvania Statewide Comprehensive Outdoor Recreation Plan – 2014-2019

One of several priorities of the Pennsylvania Statewide Comprehensive Outdoor Recreation Plan is to connect residents to recreation and green space opportunities near their homes. A recommended action for this goal calls for creating diverse local park systems that serve residents and whole families of many ages and abilities. Reducing barriers in park accessibility and launching websites and mobile-apps for local parks are additional steps to create accessible local recreation areas. ³⁰

Another priority of the PA Comprehensive Outdoor Recreation Plan is the conservation and protection of natural areas within the Commonwealth. Within this goal two action steps help guide park development within Upper Saucon Township. One action is to protect critical wildlife habitat, forested watersheds, wetlands and riparian corridors through nature preserves and land conservation programs. The plan also encourages increasing access to wildlife viewing and fishing opportunities close to population centers. Increasing these opportunities can help cultivate resident support for wildlife protection. ³¹

Public Participation Process

Key Person Interviews

Key person interviews for the Sustainable Park Master Site Development Plans took place on November 17th and December 22nd, 2016 and January 5th, 2017. Those interviewed included Tom Beil, Tom Gettings, Dave Marchek, Rick Dreves, Lynnette

²⁹ Lehigh Valley Planning Commission. Lehigh Valley Greenways Plan. 2007

³⁰ PA DCNR. Pennsylvania Statewide Comprehensive Outdoor Recreation Plan 2014-2019. Priority – Local Parks and Recreation. Pg. 55.

³¹ PA DCNR. Pennsylvania Statewide Comprehensive Outdoor Recreation Plan 2014-2019. Priority – Resource Management and Stewardship. Pg. 79.

Saeger, Erin Frederick, and Phil Spaeth. Community groups represented in these interviews included Upper Saucon Township, the Township's Environmental Advisory Committee, the Southern Lehigh School District, the Lehigh Valley PSU Extension, and the Southern Lehigh Library.

From these interviews, a list was compiled of recommendations that key people would most like to see implemented at the Benckini tract. These included but are not limited to:

- Educational components and interpretive signage (both environmental and historic)
- Staging area for hands-on student learning
- Benches and or picnic tables
- A small pavilion
- Preserve and showcase natural habitat
- Trails and trail connection to the UST Community Park
- Reuse of all or part of the log cabin presently on site
- Universal accessibility
- Safe connections to the park – especially for school students
- Stream restoration projects
- Demonstration garden plots
- Demonstration rain garden BMPs (i.e. rain barrels, rain gardens, etc.)
- Wildlife observation

In addition, a list was compiled of recommendations that key people would most like to see implemented at the Haring tract. These included:

- Wildlife viewing
- Succession/ Arrested Succession land management
- Preserve natural habitat
- Staging area for hands-on student learning
- Walking path, loop or otherwise
- Sell property as a preserved farm
- Picnic area
- Possible seed farm
- Make land available for beginning farmers

Please see *Appendix A: Key Person Interview Notes* for full notes from the Key Person Interviews.

Committee Meetings

The Upper Saucon Township Board of Supervisors approved the creation of an ad hoc committee to work with and advise the Planning Consultant during the creation of the Master Site Development Plans. The ad hoc committee met on November 30, 2016, January 11, March 8, May 10, June 15th, July 19th and August 9th of 2017.

All meetings were open to the public, and the January 11, March 8, and May 10, meetings were conducted with an elected official present (Board of Supervisors member Philip Spaeth). Members of the ad hoc committee are Doris Clegg, Sam Falcone, Judy Krasnicke, John Kukitz, Craig Roth, Philip Spaeth, and Sidney Stevens. Committee members also represented the Environmental Advisory Council, the Park and Recreation Commission, and the Planning Commission and as such were able to represent their interests in the planning process.

Lengthy discussion was conducted and many draft site development plans were reviewed by the committee to determine the best use, configuration, goals, and purpose for each of the properties. Detailed minutes for each of the meetings conducted by the committee can be found in *Appendix B: Committee Meeting Minutes*.

It was also determined that improvements should be installed in accordance with Best Management Practices associated with Green, Healthy and Sustainable Parks in order to combine environmentally sound, sustainable design and ADA compliance into a recreation facility that will reconnect children and Township residents of all ages and abilities to nature. The signage vocabulary and templates currently being developed as part of streamlining and standardizing of park signage throughout the Township are to be used for park signage upon development of detailed construction plans for each of the parks.

Public Visioning Meeting

One method for garnering public involvement and input was a Community Visioning Session, held on January 25, 2017 at the Southern Lehigh Public Library. Attendees were broken into groups, with each group taking turns answering a series of questions. Following are the questions, with top answers in no particular order:

- What opportunities for passive recreation, education, and sustainable management do you envision for the Benckini Property?
 - Re-establish wildlife with native plants
 - Trails
 - Dog Park
 - Walking trail, hiking trail with markers to explain history, reuse of existing building for educational purposes.
- What opportunities for passive recreation, education, and sustainable management do you envision for the Haring Property?
 - Dog Park
 - Restricted access dog park
 - Nature trails
 - Natural dog park
 - Covered picnic area, benches, kid's playground, sledding area, privacy barrier for houses, minimal lighting.
- What concerns do you have about the implementation of passive recreation and sustainable management on the Benckini Property?
 - Preserve cabin
 - Disturbing wetlands
 - Wildlife and habitat preserve

- Stream preservation, flood control
- What concerns do you have about the implementation of passive recreation and sustainable management on the Haring Property?
 - Preservation of natural features
 - Disturbing wetlands
 - Preservation of existing features
 - Vandalism/illegal activity
 - Over development of site and existing trees, don't remove trees.
- What aspects of the Benckini property, the Haring property, or both properties would you like to see changed?
 - Invasive (remove)
 - Remove structures, save relics (Haring)
 - Stream restoration
 - Natural/native plantings
 - No residential/commercial development
- What aspects of the Benckini property, the Haring property, or both properties would you like to see preserved?
 - Preserve wildlife/natural habitat
 - Preservation of open space (both)
 - Buildings (historic preservation)
 - Topography/hills, no flat park, keep wet

Each person's answer to each question was recorded on a large writing pad. Each person was then given four markers for each question to vote for the responses to each question that they felt they agreed with the most. The top three responses for each question for each group were then read aloud to all the attendees of the visioning session by a person designated by each group. In the case of a tie for the third-place vote getter, two responses would be read. If there was a tie for first or second place, only three responses would be read. For a list of all of the responses to each question and the number of votes received by each, please refer to *Appendix C, Visioning Meeting Data*.

General Public Meetings

At their advertised public meeting on August 9, the Study Committee voted to recommend approval of the Master Site Development Plans for Sustainable Community Parks to the Upper Saucon Township Board of Supervisors, with the provision that outstanding PNDI issues be addressed to the satisfaction of the US Fish and Wildlife Service prior to submission of the final report to DCNR.

An advertised public meeting with elected officials was held at the regular Upper Saucon Township Board of Supervisors meeting on September 11, 2017 where the draft Master Site Development Plans for Sustainable Community Parks was reviewed and ratified in accordance with the recommendations made by the Study Committee. (*Please refer to Appendix B, Committee Meeting Minutes.*)

Additional Applicable Public Opinion Surveys

Saucon Region – Official Comprehensive Recreation & Open Space Plan – 2006

A public survey was conducted in March 2005 by RothPlan as part of the preparation of the Saucon Region Official Comprehensive Recreation & Open Space Plan. This survey was distributed to a municipally-selected random sample of 1,000 of the regions households (500 per Township). The Saucon Region study area consisted of the municipalities of Upper Saucon Township and Lower Saucon Township. The survey had a return rate of 29%. Major findings of that survey which are relevant to this Master Site Development Plan include:

- “The acquisition and protection of open space scored as a higher priority than formal park and recreation program improvements.
- Residents favorite local park features were natural features (such as open space, woodlands, wildlife habit, and streams).
- All age groups aside from seniors (youth, teens, & adults) responded that they would be most likely to participate in outdoor recreation activities. Seniors would be most likely to participate in exercise and fitness activities.
- Among young adults (ages 19-39) over half felt that there was not enough recreation program availability.
- The top future priorities residents selected were open space, pedestrian connections, and trails in that order.
- Bike/walking paths were selected as the outdoor facility most needed now.
- Residents top three recommended park improvements were protected open space, create trails, and provide better promotion and information about parks.”³²

2010 Lehigh Valley Land Use Public Opinion Survey

In January 2010, the Lehigh Valley Planning Commission conducted a survey of public opinions regarding land use in the region by mailing the subject survey to a 1.25% sample of active registered voters in Lehigh and Northampton Counties. Following is a summary of the planning issues relevant to this plan identified by the survey and as summarized in the report prepared by the Lehigh Valley Planning Commission.

“Open Space Preservation

Preservation of open space is a big issue in the Lehigh Valley. Ninety-two percent of the respondents favor preservation of farmland. Preservation of rivers, creeks, streams and lakes are given high environmental protection priority. Development of trails for hiking, biking, rollerblading and horseback riding and development of nature preserves rank highest in terms of needed park, recreation and cultural facilities. Seventy-one percent of respondents either agreed or strongly agreed that more parks, recreation facilities and open space should be acquired. Farmland preservation and open space protection also rank high in terms of important planning issues.”³³

³² Saucon Region Official Comprehensive Recreation & Open Space Plan. Roth Plan & Recreation & Park Solutions. 2006

³³ Lehigh Valley Planning Commission. 2010 Lehigh Valley Land Use Public Opinion Survey Results and Analysis. May 2010.

Other Public Comment

Additional public comment was received via Facebook and Social Media and were compiled by Study Committee Members. Printouts of these comments are available for review in *Appendix D: Additional Public Comments*.

SITE INFORMATION AND ANALYSIS

Benckini Tract

Physical, Natural and Cultural Resources

Location and Access

The Benckini tract consists of 15.49 acres +/- of land, within Upper Saucon Township at the intersection of Preston Lane and Old Bethlehem Pike. It is located east of S.R. 378 and North of the S.R. 309 and S.R. 378 intersection. Rights-of-way are required by the Township Zoning Ordinance Along Old Bethlehem Pike and Preston Lane. Preston Lane is designated as a connector road and requires a 70' right-of-way. Old Bethlehem Pike is designated as a local road and requires a 50' right-of-way. A drainage easement crosses the northwestern corner of the site, in which stormwater is moved via a culvert under Old Bethlehem Pike and drains to the north of the site via a swale. The site is currently vacant, former nursery land, with access from Old Bethlehem Pike via a gravel/grass path. *(Please see Appendix E: Benckini Tract Existing Features Plan)*

Surrounding Land Uses and Zoning

Land uses adjacent to the site to the north and northeast include vacant land & Township open space land. Upper Saucon Township Community Park is conveniently located on the adjacent parcel to the west of the site. The site is near the local U.S. Post Office on the opposite side of Preston Lane. The Southern Lehigh Public Library is located across Preston Lane towards the southeast corner of the site. Many parcels along the western boundary of the site are residential and a privately-owned parcel of wooded land is located north of the property. The Benckini tract is located within the Suburban Residential Zoning District (R-2). Towards the southwest corner of the site, adjacent parcels are part of the Commercial District (C.) *(Please see Appendix F: Benckini Tract Site Analysis)*

Environmental Resources

Natural resources present on the Benckini tract include streams, forest, wetlands and marshes. The stream on site, Laurel Run, is designated as CWF or a Cold-Water Fish stream by PADEP³⁴. The banks of the portions of Laurel Run which runs through the site are severely eroded, especially around the curve of the stream. Wetlands on the site are designated as "Freshwater Forested/Shrub Wetland" (PF01A) by the National Wetlands Inventory³⁵.

Woods cover much of the site to the east of Laurel Run with some additional woodlands on the western side of Laurel Run. Wetlands are located within the wooded area in the northeastern portion of the site. Many large trees are on site, including some that were planted as part of operations for the former nursery, and are now mature. The northeastern corner of the site is covered in meadows which are scattered with unfilled tree pits in some areas and large vegetated soil mounds in others. The nursery trees in the

³⁴ Pennsylvania Code. Chapter 93 – Water Quality Standards. 2013.

³⁵ U.S Fish & Wildlife Service. National Wetlands Inventory. 2016.

southeast corner of the site are interspersed with unpaved nursery paths, tall grasses, and shrubs.

The Upper Saucon Township Zoning Ordinance requires streams to have a 3-zone buffer totaling no less than 100' "measured from the streambank edge under typical flow conditions or the high-water level for pond or lake shorelines." Zone one is a 20' buffer measured from the streambank edge under typical flow conditions. Zone two begins at the edge of zone one and is measured 65' perpendicular to the streambank or shoreline edge or the edge of any adjoining wetlands. Zone three begins at the edge of zone two and is measured an additional 15' extending perpendicular from zone two. The Upper Saucon Township Zoning Ordinance requires a 50' buffer to be provided from all wetlands areas. The 50' buffer must be measured from either the edge of the delineated wetland or from the edge of areas of 10% or greater slope adjoining the wetland.³⁶

The property is in Zone 'X' as depicted on the Flood Insurance Rate Map for Lehigh County, Pennsylvania – 42077CO627F. Zone 'X' is noted as "areas determined to be outside of the 500-year floodplain."³⁷

The site is relatively flat with few steep slopes. The site slopes slightly downhill towards the stream and the eastern portion of the site. The streams and wetlands drain to the north and they converge with Saucon Creek about a mile north of the site. Much of north central portion of the site, as well as parts the northwestern and northeastern corners are covered in wet areas, as shown by the wetlands delineated by AMT, Inc. in 2005.

There is a log cabin on site that may be of some historic value. In its present state, the log cabin is mainly comprised of a timber, stone and mud foundation wall. The timber structure within the house has also been noted as architecturally interesting for the roman numeral markings found on the beams, which indicate how the joints were to be assembled.³⁸ For additional information and recommendations on this structure, please see the *Benckini Tract Structural Assessment* later in this document.

There are roughly 2.24 total acres of woodland vegetation on site. Areas where nursery stock are planted are not counted toward this total. Some non-native vegetation on the site is located within the abandoned nursery area, and consists of standard nursery stock species, trees and shrubs. For more description of the nursery stock, please see the section of this report titled *Benckini Tract Nursery Tree Inventory*. Non-nursery stock within the wooded area of the site consists largely of riparian and wet-tolerant plant species such as Weeping Willow, Black Willow, Tulip Poplar, and Sycamore. Other trees present on the site include Black Walnut, Elm, Catalpa, Oak, Sumac, and Maple species. Mown areas of the site consist largely of grasses, sedges, Goldenrod, and Milkweed species. Invasive species on the site include Callery Pear and Crown Vetch, which are working hard to spread throughout the site, as well as Norway Maple. As part of the preparation of the 2013 Natural Heritage Inventory of Lehigh and Northampton Counties, access to the Benckini Tract was granted by the Township to the Pennsylvania Natural Heritage Program for the purposes of documenting natural resources on the site. A portion of the field survey along Preston Lane took place on the Benckini Tract. Plant

³⁶Upper Saucon Township Zoning Ordinance. June 2009.

³⁷ FEMA. Flood Map Service Center. 2016

³⁸ Existing Facility Evaluation. Samantha Ciotti Falcone. May 2011.

species documented as part of the survey include Box Elder, Red and Sugar Maples, Hickory, Ash, Walnut, Oak, Bebb's Willow, and Basswood. Invasive species documented include Reed Canary Grass, Norway Maple, Purple Loosestrife, Creeping Jennie, Multiflora Rose, and Privet. For a full list of plants documented in the survey, please see *Appendix H: Benckini Tract Natural Heritage Inventory Vegetation Survey*.

Soil Types

Soil structure can affect and ultimately determine the layout of park facilities. Four different soil categories, as identified in the USDA Natural Resource Conservation Services' Web Soil Survey, are found on the Benckini tract.³⁹ They are as follows.

Holly Series – These soils are deep, poorly drained and a common feature of floodplains. They are made up of alluvium derived from sandstone and shale. These soils are considered farmland of statewide importance. They are typically formed on base slopes of hills. They have a moderately high capacity to transmit water and a relatively low depth to the water table. The hazard of frequent flooding and occasional ponding are the main limitation for most uses. The depth to restrictive features was found to be greater than 80". Holly soils are found on either side of the stream which bisects the site.

Lamington Series – This soil series consists of poorly drained, somewhat shallow soils. Lamington soils are old reddish alluvium derived from sedimentary rock. They are formed on tread areas. They have a very high runoff class and a moderately low to moderately high capacity to transmit water. The hazard of high runoff potential is the main limitation for most uses. The depths to restrictive features is relatively low, with only 15-30" to fragipan and 60-99" to lithic bedrock.

Middlebury Series – This soil series consists of moderately well drained, deep soils that have been formed from post glacial alluvium derived from sandstone and shale. They are often found in floodplains which are in low slope areas. All areas are considered prime farmland. These soils have a very high runoff class, a moderately high capacity to transmit water, and a low depth to the water table (6-24"). The hazards of high runoff potential present the greatest limitation for most uses. On site, these soils are found in the areas adjacent to the soils (in this case Holly series) surrounding the stream. They are primarily covered by open field conditions on the site.

Washington Series – This series consists of deep soils that are well drained. These soils have a dark-brown, silty surface layer. Their subsoil is strong-brown, yellowish-red, and brown silty clay loam. The underlying material, mainly a yellowish-brown silt loam or silty clay loam, is glacial till or frost-churned material weathered from limestone. These soils are a common feature of valleys and form on side slopes. They have a very high depth to the water table (80"), and medium runoff class. All areas of this soil are considered prime farmland. Of all the soils on site the area of Washington soil was found to have the least amount of restrictions for most uses. These soils are found along Old Bethlehem pike on the Western end of the site and extending slightly along Preston Lane on the Southern portion of the site.

All the soils described above present limitations in one form or another to development of the site for recreational uses. (*Please see Appendix F: Benckini Tract Site Analysis*)

³⁹ USDA, Natural Resource Conservation Service. Web Soil Survey. 2016

Benckini Tract Nursery Tree Inventory

An inventory was conducted of the nursery trees located on the Benckini tract, geocoding each tree, identifying the species, and noting any general defects, health issues, or structural conditions. All work for the Nursery Tree Inventory was performed by Valerie Liggett, ASLA, R.L.A., who is an ISA Certified Arborist® (Certification Number PD-2334A, Tree Risk Assessment Qualified). A total of 292 trees were tagged, located and evaluated. It is possible that some of the trees evaluated are volunteer species based on how long the nursery has been inactive. It is also possible that additional nursery trees are located within wooded and riparian areas on the site. Tagging and evaluation of trees was based primarily on the locations of the trees within nursery areas and whether baskets and bindings were visible.

Tree species and quantities found on the site include the following:

Boxelder	11
Callery Pear	99
Catalpa	4
Chinese Elm	3
Colorado Blue Spruce	10
Crabapple	2
Crimson King Norway Maple	74
Douglas Fir	23
Eastern Hemlock	18
Japanese Cherry	1
Japanese Maple	1
Norway Maple	3
Norway Spruce	10
Pin Oak	14
Purple Leaf Plum	6
Red Maple	12
Silver Birch	10
Slippery Elm	1
Sugar Maple	3
Sweetbay Magnolia	1
Sycamore	2
Thornless Honeylocust	8
Weeping Cherry	11
White Pine	1
White Spruce	15
Zelkova	16



This tree is out of the ground in its basket. Originally it was laid parallel to the ground; the tree then diverted upward growth to a branch facing skyward.

Of the trees evaluated on site, recommendations are to remove 134 of these trees, and keep and/or rehabilitate 158 trees. For the purposes of this report, the information provided in *Appendix G: Benckini Tract Tree Inventory Data and Map* include Genus and Species, Common Name, Caliper Size, Overall Tree Health, Species Origin, and general Recommendations. A map of the geotagged tree locations is provided, showing the locations of trees to be removed, trees to keep, and trees to be rehabilitated. A detailed excel spreadsheet indicating specific conditions and rehabilitation recommendations for each tree has been provided to the Township, along with the GIS Shapefile providing general locations for each tree. Locations are not shown to a survey level of accuracy, but should be accurate enough to be able to find specific trees.

Tree Removal Recommendations

Trees recommended for removal have received this designation based on several criteria:

- The tree is a non-native, invasive plant species. Callery Pear, which is seeding rapidly throughout the site, should be removed. Continued mowing of meadow areas of the site will assist with keeping this species from spreading further.
- The tree basket is completely out of the ground, tipped over, and as a result the tree is growing in such a manner as to have significant structural issues and is unsalvageable (see photo above). An exception for some native trees in this condition could be made for the educational opportunity to discuss how trees grow and how they adapt to changing environmental conditions.
- Due to overcrowding in certain areas, removal of the tree is recommended to permit additional growing space to adjacent, healthier trees.
- Other structural or health issues render the tree unsafe.

Trees removed from the site should be recycled or ‘up-cycled’ in a sustainable manner. The wood could be donated to woodworking groups or artists that can re-use the wood from the site in a sustainable and meaningful way. The Center for Art in Wood, Stable Tables, and Citilog are examples of organizations in Pennsylvania and New Jersey that have up-cycled trees into furniture and works of art. It is likely that there are many local artists and organizations that could use trees removed from the site for creative purposes. There are also historically significant ways to use the trees, such as in the creation of furniture and educational features for the site. Where trees or tree parts cannot be used for up-cycling or for educational or historical purposes, the trees can still



Weeping Cherry Tree Reverting to Original Elm Rootstock

be used sustainably. Trees can be used for mulching the trees to be kept on the site, and leaves can be converted to compost. Using the trees in a sustainable way will also create educational opportunities in the park, where people can be educated about the many different ways materials that would otherwise be discarded can be reused.

Trees to Keep

There are a small number of trees on the site simply designated ‘keep,’ which indicates that these trees need no additional rehabilitation work aside from mulching the root zone to provide additional protection for the tree, and ongoing monitoring and maintenance. Some dead and/or dying trees on the site are marked as to remain; the purpose of this is to retain snags on the site to benefit wildlife (See *Appendix U, Conceptual Details, Specifications, and Best Management Practices*). Trees that are not native, but are also not invasive, are to be kept wherever possible. Even though they will not provide the same benefit as native trees, they are not harmful to the site and will still provide some benefit. Keeping these trees on the site may also present the opportunity for education about the development of different tree varieties and species, including the development of ornamental species by grafting them to rootstock from other species, as a number of ornamental trees on the site have begun reverting to their original rootstock. The condition of the trees on the site also presents educational opportunities to learn how tree roots grow, how plants adapt to different environments and stressful conditions, and how humans modify and influence the growth of plants within our own environment.

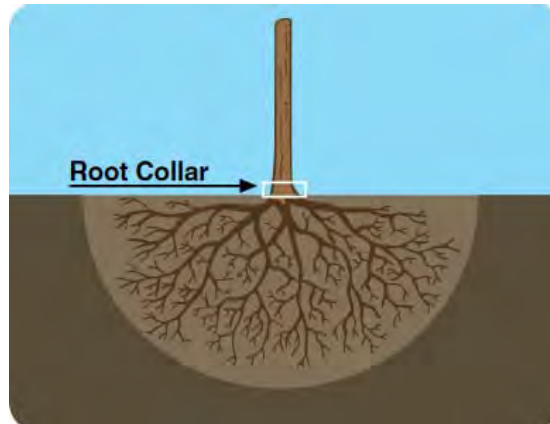
Rehabilitating Trees

Due to the previous nursery use on the site, many trees were left bound and in metal baskets at the time of property transfer. Most of the trees have proved very resilient, and continue to thrive despite these conditions. For the trees that are recommended to be rehabilitated in place, methods for caring for these trees are outlined below. Transplant of these trees is not recommended, as digging the trees again would likely exacerbate the stressful condition that the trees are in. It should be noted that much of this work could be performed on a volunteer basis, with some exceptions. For additional information on these tree care techniques, please see *Appendix U: Conceptual Details, Specifications and Best Management Practices*.

- Of primary concern for safety reasons; any unfilled holes where trees were removed should be filled prior to permitting the public onto the site.
- Cut visible metal basket tops and remove as much of the root bindings as possible. In particular ensure that any bindings remaining around the trunk of the tree are cut free.
- Weed root balls and cut back saplings, shrubs, or other woody growth from the vicinity of the trees.
- Remove vines growing into the tree canopies.
- Prune dead branches and sucker/water sprout growth. Pruning should be performed in accordance with current Best Practices, ANSI A300 Part 1 – Pruning, 2008 or most recent edition, and Best Management Practices Tree

Pruning, published by the International Society of Arboriculture. See *Appendix U: Conceptual Details, Specifications and Best Management Practices*.

- Mulch around the bases of the trees to remain. Where root balls are partially out of the ground, provide a depth of mulch to reach the top of the root ball, but do not cover the root flare at the base of the tree. Mulch should be applied in a circle at least the diameter of the dripline of the tree. See *Appendix U: Conceptual Details, Specifications and Best Management Practices*.
- Root flare excavation is recommended for several trees whose root flares have been buried below ground. This work should be performed by an ISA Certified Arborist.
- Root pruning is recommended for specific trees that have been identified as having girdling roots. This work should be performed by an ISA Certified Arborist.
- Any rehabilitation work to be done on trees should be performed in consultation with an ISA Certified Arborist.



Protection During Construction

Tree Protection Zones and tree protection measures as outlined in the attached *Appendix U: Conceptual Details, Specifications and Best Management Practices* should be detailed in construction plans for the site, and implemented and enforced during site construction.

Ongoing Maintenance

In accordance with the sustainable nature of the site, a minimum amount of maintenance should be performed on the trees after initial rehabilitation. We recommend the following measures be implemented to maintain trees remaining on the site:

- Annually mulch remaining nursery trees in accordance with the specifications outlined in this section and the information provided in *Appendix U*. Where trees will not be mown near and will not encounter much traffic, mulch does not need to be maintained.
- Periodically remove weeds, vines, and other competing vegetation from the vicinity of the trees.
- Monitor to prune and remove dead limbs or dead trees that are in the vicinity of trails or where park users will be standing.
- Where dead trees or limbs are out of the way of park activity and will not pose a danger, leave dead wood to benefit wildlife on the site.
- Mow annually to remove invasive woody species and to encourage the growth of native herbaceous vegetation on the site.
- Periodically plant new native nursery stock to re-forest and increase the diversity of native vegetation on the site within the woody plant education and streambank stabilization/ riparian forest management areas.
- A survey of remaining vegetation on the property is recommended, for the purpose of finding invasive species that should be removed, cataloging native vegetation on the property, and locating any additional nursery trees on the site. Additional nursery stock should be either rehabilitated or removed based on the tree care measures outlined in this report. An example tree survey form has been included in *Appendix G: Benckini Tract Tree Inventory Data and Map*.

Educational Opportunities

For community members looking to volunteer to assist with maintenance of trees on the site, a number of opportunities exist. These organizations listed below can also provide continuing education opportunities for Township staff involved with the care trees on the site.

- Tree Tenders (Through the Pennsylvania Horticultural Society)
 - <https://phsonline.org/programs/tree-tenders/>
- The Pennsylvania State University Agricultural Extension
 - <http://extension.psu.edu/>
- The Morris Arboretum
 - http://www.business-services.upenn.edu/arboretum/ed_classes.shtml

Physical Features Analysis

Please see the Site Analysis prepared as part of this report and attached as *Appendix F: Benckini Tract Site Analysis*.

Advantages

Most of the site is open, and has very flat slopes suitable for accessible trail use. The variety of habitat and vegetation on site provides opportunities for walking and hiking through a unique natural environment. Access to Laurel Run provides opportunities for education in addition to recreational opportunities such as fishing. The wetlands located on site provide opportunities for education, wildlife viewing, and recreation in a unique setting. There is also an opportunity for access between the site and Upper Saucon Township Community Park through the Township-owned parcel adjacent to the Benckini tract. The existing paved areas on site provide a foundation for amenities like a pavilion or other outdoor classroom facilities. The existing house on site provides opportunities for re-use, historical preservation, and additional facilities for outdoor education, gathering spaces, or restroom/ concession facilities.

All areas of the site present the opportunity to develop a passive recreation facility in accordance with Green, Healthy and Sustainable Parks best practices to encourage an understanding of and connection to natural resources among Township residents.

Disadvantages

The soils, wetlands, and streams onsite could restrict some passive recreation amenities. Wetland areas are not suitable for public use except where they can be crossed by boardwalks in accordance with applicable environmental and ADA regulations. In addition, natural drainage courses must be protected. Amenities must be designed as not to disturb important natural features. The site's current informal use as additional parking for the Copperhead Grille and lack of existing parking present potential conflicts for access. Additionally, a pedestrian bridge will be necessary to connect the two pieces of the tract. Natural resources on the site such as the Cold-Water Fish designated Laurel Run and the wetlands present some restrictions for development. The site is close to the Township's Community Park as well as Southern Lehigh High School and Middle School. However, connectivity between the site and the schools will present some safety issues as it requires crossing S.R.378.

Special Protection and Mitigation Measures

Wetlands, streams, dense woodlands, and riparian and wetland buffers are considered areas of high quality habitat and must be protected in accordance with all applicable local, State and federal regulations, and in accordance with applicable best management practices. Streams on the site should be protected and restored where necessary to ensure the continued classification of Laurel Run as CWF (Cold Water Fish Stream). Any wetland disturbance must be kept to an absolute minimum and must be in accordance with the aforementioned regulatory agencies' requirements and with applicable best management practices.

Other Limiting Aspects

Many of the soils on site retain water and present challenges for certain park features such as paving. Boardwalk or bridge crossings will be necessary where the crossing of wetland or stream areas is required.

Neighborhood Compatibility

The park is in the east-central portion of the Township. While located near a relatively busy, high-traffic area (Route 378 & Preston Lane), the park itself is expected to field a relatively low volume of traffic in comparison to active-recreation parks like the neighboring Upper Saucon Township Community Park. The largest traffic volume will come from the school groups who will be a primary user group for the site. Primary activities at the park are expected to be educational in nature along with walking, hiking, fishing and picnicking. Parking will likely present an issue on site. The existing street parking appears to be frequently used by staff and patrons at the Copperhead Grille. There are several paved and gravel/grass areas on the site that could be repurposed to provide needed additional parking. The park will close at dusk, and there will be no loud noises or lighting for adjacent residents to worry about at night. The northern boundary of the site is properly buffered by a large woodland. The western and southern boundaries though may require additional buffering which will be provided if necessary. Ease of access and proximity to Upper Saucon Township Community Park, the Southern Lehigh Public Library, and the Post Office are largely beneficial to the park as they create opportunities for connectivity. The park will likely be impacted by the proximity to the Copperhead Grille, Preston Lane, and S.R. 378. Noise and traffic related to the busy roads, intersections, and the Copperhead Grille could all pose issues or create conflicts for the park. Lighting from the Copperhead Grille, Post Office, and street lights along S.R. 378 are the primary light sources surrounding the park.

Pennsylvania Natural Diversity Inventory (PNDI)

The original PNDI search completed as part of the DCNR Planning Grant application was performed on March 27, 2012 (ID 20120327346671), and has therefore expired. A second PNDI search was submitted on May 22, 2017 (ID PNDI-631635). Search results indicated that more information is required by the US Fish and Wildlife Service due to potential impacts, and that a Phase I Bog Turtle Habitat Survey is required in accordance with USFWS guidelines for bog turtle surveys. All wetlands within 300 feet of the project area including all areas that will be impacted by earth disturbance or project features must be surveyed, and results provided to USFWS. At this time, the Township is working with a Qualified Bog Turtle Surveyor to have the required work completed, and the results will be forwarded to USFWS. Upon receipt of a clearance or recommendation letter from USFWS, any recommendations provided will be addressed within this report prior to submission to DCNR, and the report will be included in the appendices to this report. Please see *Appendix I: Benckini Tract PNDI Receipt and Correspondence*.

Should it be determined that viable Bog Turtle habitat exists on the site, the following measures are to be implemented:

- Assume presence of bog turtles in each of the identified potential bog turtle habitat areas and avoid direct impacts to the potential core habitat areas.

- Proceed with the project during the inactive season between November and March. Following this schedule should avoid risks of inadvertently harming active bog turtles during the active season if they do in fact occur in any of the potential habitat areas.
- If the above time period cannot be adhered to and if construction must occur during the active season, conduct construction monitoring at proposed crossings immediately prior to, during, and through the completion of construction activities.

Any other recommendations included in the Phase 1 Bog Turtle Survey and the resulting USFWS correspondence will be incorporated into the final Master Site Development Plan.

Haring Tract

Physical, Natural and Cultural Resources

Location and Access

The Haring tract consists of 73.62 acres +/- of land within Upper Saucon Township. Passer Road runs along the northeast boundary of the site and Suter Road borders the southwest edge of the property. Suter Road is designated by the Township Zoning Ordinance as a local road, requiring a 50' right-of-way. Passer Road is designated as a collector road, requiring a 70' right-of-way⁴⁰. The site is currently vacant, former farmland with access from Passer Road via an unpaved grass path. A 50' utility right-of-way for the Buckeye Pipeline passes through the northern portion of the site. (*Please see Appendix K: Haring Tract Existing Features Plan*)

Surrounding Land Uses and Zoning

Land uses adjacent to the site to the north are entirely residential. Most to the east are residential with a few vacant and agricultural uses to the southeast. Towards the south end of the property, adjacent uses are largely residential with two vacant (Township-owned) properties near the southwest corner of the site. Along the western boundary, the use is industrial (Lutron Electronics). Just south of Lutron Electronics, and south west of the Haring tract, the adjacent parcel's use is utilities (PPL Corporation). A few additional residential properties are also located along the northwest border of the site. The Haring tract is located within the Suburban Residential Zoning District (R-2.) To the east of the site is the Rural Residential District (R-1). To the west of the site is the Industrial Zoning District (I). (*Please see Appendix L: Haring Tract Site Analysis*)

Environmental Resources

Natural resources present on the Haring tract include streams and wetlands which drain to the adjacent Tumble Brook, a stream designated as CWF for Cold Water Fishes by PADEP⁴¹. There are several areas of wetland along the stream corridor. Two patches are classified as "Freshwater Emergent Wetlands" (PEM5A) by the National Wetlands Inventory and one, located towards the eastern edge of the property, is classified as a "Freshwater Pond" (PUBHx)⁴².

A large portion of the southern edge of the site is covered in woodlands and wet meadow vegetation. Some smaller patches of woodland exist on the northern side of the stream along the southern border. There are also areas of woodland and hedgerow vegetation on either side of the stream running toward western edge of the site. The area along the stream corridor on the southern and western edges of the site is surrounded by wet meadow vegetation and some shrubs. A large wet meadow area bisects the central portion of the site. The wet meadow area is fed by a stream that crosses via a culvert under Passer Road. The tributary to Tumble Brook that meanders through the site also passes under another culvert that drains under Passer Road on the eastern portion of the site. The rest of the site is covered in open, mown, vacant agricultural fields with the occasional

⁴⁰ Upper Saucon Township Zoning Ordinance. June 2009.

⁴¹ Pennsylvania Code. Chapter 93 – Water Quality Standards. 2013.

⁴² U.S Fish & Wildlife Service. National Wetlands Inventory. 2016.

scattered large shrubs and early successional trees like Eastern Redcedar. A large white oak (*Quercus alba*) is located in the field in the northeastern part of the site. Several evergreen windbreaks are scattered throughout the open fields. Substantial areas of steep slopes are located along the southern and eastern boundaries of the site and along the interior edge of the stream corridor. The rest of the site is covered in rolling hills with some areas of relatively steep slopes along the wet meadow bisecting the center of the site. For additional information on existing site vegetation and the large white oak, please see the sections titled *Haring Tract Tree Risk Assessment* and *Haring Tract Conservation Plan*.

The Upper Saucon Township Zoning Ordinance requires streams to have a 3-zone buffer totaling no less than 100' "measured from the streambank edge under typical flow conditions or the high-water level for pond or lake shorelines." Zone one is a 20' buffer measured from the streambank edge under typical flow conditions. Zone two begins at the edge of zone one and is measured 65' perpendicular to the streambank or shoreline edge or the edge of any adjoining wetlands. Zone three begins at the edge of zone two and is measured an additional 15' extending perpendicular from zone two. When proposed, pasture is located just beyond zone two, no zone three is required, reducing the riparian buffer by 15'. The Upper Saucon Township Zoning Ordinance requires a 50' buffer be provided from all wetlands areas. The 50' buffer must be measured from either the edge of the delineated wetland or from the edge of areas of 10% or greater slope adjoining the wetland.⁴³

The property is in Zone 'X' as depicted on the Flood Insurance Rate Maps for Lehigh County, Pennsylvania – 42017CO019J and Panel42077CO288F (which is non-printed because it has "no special flood hazard areas"). Zone 'X' is noted as "areas determined to be outside of the 500-year floodplain."⁴⁴ Several ponds, likely manmade, are in the riparian buffer area near the farm buildings.

The site naturally slopes to the southwest. The streams and wetlands drain to the west, where they converge with Tumble Brook on the nearby Pennsylvania Power & Light Company property. The wet meadow that bisect the center of the site splits the large open field which covers much the property and may present some access issues.

No historic features are known to be located on the site.

There are roughly 13.2 total acres of woodland vegetation on site. Large portions within this vegetated area are open, wet areas with large amounts of invasive vegetation including Multiflora Rose, Honeysuckle, Wineberry, and Crown Vetch. Outer boundaries of the wooded area contain large quantities of early woodland successional species such as Ash, Black Walnut, Elm, and Sassafras. Travelling downhill from Passer Road, vegetation begins to mix with other longer-lived species including Red Oak, Pin Oak, and Hickory. The large quantity of Ash trees on the site that are in decline, most likely due to Emerald Ash Borer, is notable. Many of the largest trees are clustered near the barn, house, and other farm outbuildings that are being demolished. For additional information on the existing site vegetation, please see the *Haring Tract Conservation Plan* section below.

⁴³ Upper Saucon Township Zoning Ordinance. June 2009.

⁴⁴ FEMA. Flood Map Service Center. 2016

Soil Types

Soil structure can affect and ultimately determine the layout of park facilities. Five different soil categories, as identified in the USDA Natural Resource Conservation Services' Web Soil Survey⁴³, are found on the Haring tract. They are as follows.

Arendtsville Series - These soils are very deep and well drained. They are formed of residuum weathered from red fanglomerate and are found primarily on the side slopes of hills. Arendtsville soils are generally 60-99" to lithic bedrock and over 80" to the water table. These soils have a low runoff class and a high to moderately high ability to transmit water. They have a moderate ability to store water in their profile and no risk of flooding or ponding. These soils are some of those least limited for development of the series which are found on site. Their primary limitations are low strength, low exchange capacity, and frost-action.

Gladstone Series - These soils are deep and well-drained. They are often the product of loamy colluvium derived from granite and gneiss and/or loamy residuum weathered from granite and gneiss. They are typically located on the side slopes of hills. They are 60-80" from lithic bedrock and often have a depth of 80" inches or greater to the water table. Therefore, they have a very low ability to transmit water and a very low frequency of ponding or flooding. These soils post very few limitations to development; however, some concerns include frost-action, and low strength. These soils are found on either side of the stream towards the western side of the site.

Holly Series - These soils are deep, poorly drained and a common feature of floodplains. They are alluvium derived from sandstone and shale. These soils are considered farmland of statewide importance. They are typically formed on base slopes. They have a moderately high to high capacity to transmit water and a relatively low depth to the water table. The hazard of frequent flooding and occasional ponding are the main limitation for most uses. The depth to restrictive features was found to be greater than 80". These soils are found surrounding the stream which follows the site's southern border.

Calvin-Klinesville Series - These soils are shallow, well-drained, and formed from acid reddish-brown residuum weathered from shale and siltstone. These soils are a fixture of hills. They feature a low runoff class and are typically 20-40" deep before hitting lithic bedrock. The depth to the water table is nearly 80" and these soils present little to risk of flooding or ponding. This soil's low strength and shallow depth to bedrock are its primary drawback for development activities. This soil is found in one small patch in the north-central area of the site.

Readington Series - This series consists of soils that are deep and moderately well to somewhat poorly drained. These soils are found on gently rolling slopes and formed from materials that have been weathered from red to reddish-brown Triassic shale, siltstone, and fine-grained sandstone. These soils have a low runoff class and a relatively short depth to restrictive features. They are not suitable for most intensive development projects beyond general lawns and landscaping. The main development limitations are low strength and depth to saturated zone. They are found in the northwest and southeast corners of the site. They are also found in a narrow patch running down the center of the

site.⁴⁵

All the soils described above present limitations in one form or another to development of the site for recreational uses. (*Please see Appendix L: Haring Tract Site Analysis*)

⁴⁵ USDA, Natural Resource Conservation Service. Web Soil Survey. 2016

Tree Risk Assessment of Large White Oak Tree

A large, White Oak is located within the large field south of Passer Road. As part of the analysis of the Haring Tract, a Level 2 Basic Tree Risk Assessment was performed, with the intent of assessing the overall health and condition of the tree, the risks and consequences of failure for all or parts of the tree, and to provide a determination of the overall risk rating associated with the tree. All work for the Tree Risk Assessment was performed by Valerie Liggett, ASLA, R.L.A., who is an ISA Certified Arborist® (Certification Number PD-2334A, Tree Risk Assessment Qualified).



The descriptions provided below each correspond to a section of the International Society of Arboriculture's (ISA) Basic Tree Risk Assessment Form, attached here as *Appendix M: Haring Tract Tree Risk Assessment*. The assessment method used is a standardized and systematic process for assessing tree risk. According to the ISA Website, "the results of a tree risk assessment can provide tree owners and risk managers with the information to make informed decisions to enhance tree benefits, health and longevity." The person who performed the assessment is an ISA Certified Arborist® who is ISA Tree Risk Assessment Qualified (TRAQ.) Risk Categorization was performed both for the tree and the site as they are today, and for the tree and the site with the proposed park improvements. It should be noted that this assessment was performed at ground level, and with visual observation only. Other defects and issues may be present that could not be detected by the methods used for this particular inspection.

General Information

This section contains basic information about the tree, client, and the time frame (or time period for which the likelihood of failure is being estimated.) The inspection was performed on June 28, 2017 at 9:30 am. The White Oak (*Quercus alba*) measures 50" in diameter at a height of 4.5' above ground level, stands approximately 85' high, and has a

crown spread diameter of approximately 80'. Based on standardized growth factors, it appears that the tree is somewhere in the vicinity of 250 years old. The time frame for this assessment is for the risk of failure within next five years.

Target Assessment

This section discusses the different targets (i.e. structures, people, or property) that could be injured or damaged by a tree failure within the target zone (striking distance) of the tree or tree part of concern. At this point in time, the tree is within an empty field. The only current target would be a person conducting infrequent mowing at the site, which would bring them within the dripline of the tree, within 1x the height of the tree, and within 1.5x the height of the tree. Occupancy of the target area is very rare, as mowing is conducted only a few times a year. It would be both practical to move the target or restrict access to the target area.

Site Factors

Conditions of the surrounding site and the environment in which the tree lives may contribute to failure. The tree shows a history of previous failures with numerous 'shed' limbs within the vicinity of the tree, some of which measure 4-6" in diameter. The tree is located on terrain that slopes gently to the southwest. There are recent changes (such as grading or construction) on the surrounding site. There do not appear to be any limiting soil conditions. The tree is regularly exposed to strong winds, ice, snow, and heavy rain.



Previous Limb Failures

Tree Health and Species Profile

In this section, additional assessments are made to the tree's overall health and the tree's species' tendencies to failure. The tree's vigor (a term used to describe overall tree health) is low. Foliage size and color are normal with about 60-70% of the crown present. No insect or other pest infestations were visible from ground level; however, dieback has occurred in 30-40% of the tree's crown. As a species, White Oak is known for being sturdy and resisting decay, has a low failure rate, and is ranked as "low hazard" as a species.⁴⁶

Load Factors

This section evaluates the different types of forces that act against the tree. Dynamic load from wind is one force that impacts the tree, as is gravity which is a static load. These

⁴⁶ A Photographic Guide to the Evaluation of Hazard Trees in Urban Areas, 2nd Ed. Matheny, Nelda P. and James R. Clark. International Society of Arboriculture. 1994.

two loads can also interact with each other, putting different stresses on the tree. The subject tree has full wind exposure, with no structures or other feature blocking any wind load. The crown size is medium with dense interior branches and normal crown density, which means the tree is subject to significant wind resistance but branches and leaves also provide a damping effect. Poison Ivy is present in a very small amount, but not in significant enough quantities to be a load factor.

Tree Defects and Conditions Affecting the Likelihood of Failure

This section is a systematic checklist for assessing the tree according to its major sections – the crown and branches, the trunk, and the roots and root collar.

Crown and Branches

The Oak has an unbalanced crown with an 88% live crown ratio. Live crown ratio is the ratio of the height of the live crown to the height of the entire tree. This means that the live portion of the crown of the tree is equal to 88% of the overall height of the tree.) Approximately 35% of the twigs and branches within the canopy are dead. Some of the dead branches have an estimated diameter close to 1' at the point of attachment. There are 5 broken and hanging branches within the canopy (at the time of assessment) with a maximum estimated diameter of 6". It does not appear that the tree has been previously pruned; if the tree has been pruned before, it was long enough ago that evidence is not clear from the ground. A number of branches show large cracks, have large areas of dead or missing bark, burls are present on some of the branches. Response growth around wound wood on the branches was not clear or prominent enough to be viewed from the ground. Main concerns for this part are the large number of very large dead and dying branches. Load on the subject branches is significant due to the size; likelihood of failure of one of these branches at some point in the next five years is probable.

Trunk

Sapwood damage in the trunk is clear from large dead areas with missing bark, (possibly due to lightning strike based on the configuration of the crack in the trunk which reaches from the ground into the canopy) and possible heartwood decay is indicated by conk/mushroom/fungal growth. The possible lightning damage is located on the south side of the tree's trunk; additional cracks and decay are visible on the opposite side of the tree. A bee or wasp nest is located within a cavity in the upper trunk; depth and size was unable to be determined by visual inspection. Load on the defects within the trunk is significant, and likelihood of failure within the next five years is probable.



Above: Crack on southern side of trunk, decay, fungal growth, and insect damage.
Below: crack on northern side of the tree and decay.



Roots and Root Collar

A thorough assessment of the roots and root collar was not able to be conducted, due to the root collar being buried (likely due to numerous years of tilling and debris removal from the adjacent fields). However, signs of ant activity were visible, indicating possible decay within the root collar. Load on the defect is significant, with likelihood of failure in the next five years being possible.

Risk Categorization and Mitigation

This section focuses on defining and categorizing what risks the tree poses and describing possible mitigation techniques. The overall risk rating is determined by weighing likelihood of failure and the likelihood of the failed part impacting a target, versus the consequences for if the failure and impact were to occur. Likelihood of failure uses four ratings: imminent, probable, possible, and improbable. Likelihood of impact ratings are high, medium, low, and very low. Consequences of impact and failure can range from negligible (little to no damage) to minor, significant, and then severe, which would include serious personal injury or death, or damage to high-value property

There are two main tree parts of concern: the crown/branches and the trunk. As the park has not been constructed at this time, this section is completed twice to determine the tree's risk rating before and after park construction. This is because upon construction of the park, the possible targets and likelihood of impact will be different from the site's current condition.

Risk Categorization – Existing Conditions

For the crown/branches, the primary concern is the large dead branches. With failure within the next five years as probable, and likelihood of impact very low, the likelihood matrix (shown on the form in Appendix M) indicates an “unlikely” likelihood of both failure and impact. Using this result and cross-referencing against severe consequences (impact with the specified target could result in severe injury or death) in the risk rating matrix, the overall risk rating for this part of concern is low.

For the trunk, the primary concern is decay and damage. With failure within the next five years as probable, and likelihood of impact very low, the likelihood matrix (shown on the form in Appendix M) indicates an “unlikely” likelihood of both failure and impact. Using this result and cross-referencing against severe consequences in the risk rating matrix, the overall risk rating for this part of concern is low for this part as well.

While the consequences of a failing branch or the tree hitting a person would be severe, with the site's current configuration and use the likelihood of impact is very low. Therefore, at this time, with the site's current use and rare occupancy rate, the tree's overall rating is Low Risk.

Risk Categorization – Proposed Conditions

Under the proposed park conditions, there would be an increase in the number of possible targets. In this assessment, Park Users/Dogs, Park Maintenance Crew, and the Dog Park Fencing have been included.

Park Users and Dogs would have high occupancy rate; again, failure would be probable, but because people and dogs would be moving and are not static the likelihood of impact would be low. With both failure and impact unlikely, and consequences severe, the risk rating for both the crown/branches and trunk is low.

Parks maintenance crews would be in the park more frequently than current rates, but would have a lower occupancy rate than park users and dogs. With failure, probably and likelihood of impact very low, and a failure and impact rating of unlikely, and severe consequences the risk rating for both the crown/branches and trunk is low.

Dog park fencing would provide a static target, with a medium likelihood of impact. Consequences for the fence would be minor, and therefore the risk rating for the crown/branches and trunk is low as well.

Mitigation

Despite the factors indicating that this tree is indeed a low risk, it would be imprudent to allow the tree to remain on the site without providing some mitigation for its existing condition. There are a number of options available, including pruning to remove dead limbs and clean the crown, root collar excavation to determine the condition of the root collar and roots, addition of a fence at a location 1.5 x the height of the tree to keep people from approaching it, and designing the park so that no paths, portions of the dog park, or other passive activities go within 2x the height of the tree. In addition, the option to remove the tree is a possibility, which would remove all risk associated with the tree.

If the tree is to remain, a Level 3 assessment should be performed to get a closer look at the crown of the tree and the roots, using methods such as root collar excavation, a canopy inspection performed by climbing, and decay testing in the trunk using techniques such as increment boring or resistance recording drilling. This will give a much clearer picture of the internal condition of the tree, the amount of decay, and will indicate if additional mitigation measures should be taken.

If the tree is removed, as much salvageable wood as possible should be used for sustainable purposes. As with the trees to be removed from the Benckini tract, wood from the oak tree can be repurposed for artistic or other creations. A piece of furniture to be displayed in the Township building would be of significant historical importance. Parts of the tree that cannot be repurposed due to decay or other reasons should be composted and used to enrich the soil for tree plantings on the site.

Physical Features Analysis

Please see the Site Analysis prepared as part of this report and attached as *Appendix L: Haring Tract Site Analysis*.

Advantages

Most of the site is open with gently rolling slopes that make accessible trail access possible. Wetland areas are not suitable for public use except where wetland areas can be crossed by boardwalks in accordance with environmental and ADA regulations. In addition, natural drainage courses must be protected. The variety of habitat and vegetation on the site provides the opportunity for walking and hiking through a variety of natural environments. The stream, wetlands, woodlands, and pond all provide unique education and recreation opportunities. A connection to the Lutron Electronics campus and the Tumblebrook Golf Course could easily be established through the installation of sidewalks and pedestrian crossings. The existing pond provides the opportunity for fishing. The flat areas in and around the existing farm buildings provide an ideal spot for gathering spaces or an outdoor classroom. The dilapidated farm buildings offer the opportunity to re-use building materials or potentially restore some of the structures.

All areas of the site present the opportunity to develop a passive recreation facility in accordance with Green, Healthy and Sustainable Parks best practices to encourage the understanding of and connection to natural resources among Township residents.

Disadvantages

The soils, wetlands, woodlands, steep slopes, and stream onsite could restrict some passive recreation amenities and uses. Amenities must be designed as not to disturb important natural features. A road will need to be paved or graveled to provide access to the site as there are currently no paved roads or parking areas. There is no existing vehicular access to the site from Suter road, directly adjacent to Lutron Electronics.

Special Protection and Mitigation Measures

Wetlands, streams, dense woodlands, and riparian and wetland buffers are considered areas of high quality habitat and should be protected in accordance with all applicable local, State and federal regulations, and in accordance with applicable best management practices. Streams on the site should be protected and restored where necessary to ensure the continued classification of this branch of Tumble Brook as a Cold-Water Fish stream. Additional riparian buffer plantings and space from encroaching park amenities shall be provided to comply with the Township's Zoning Ordinance requirements for riparian buffers. Any wetland disturbance will be kept to an absolute minimum and will be in accordance with the aforementioned regulatory agencies' requirements and with applicable best management practices.

Other Limiting Aspects

Some slopes within the tract are steep, and any pathways that are to consist of crushed limestone should avoid these areas. Boardwalk or bridge crossings will be necessary where the crossing of streams, wetlands, or wet meadows is required. Additionally, a

boardwalk crossing may be required to traverse the wet meadow areas bisecting the center of the site, or other wetland areas.

Neighborhood Compatibility

The park will be in the southeastern portion of the Township. Despite being located off of Passer Road (a collector road) and near Lutron Electronics (a large employment center in the area) the park itself is expected to field a relatively low volume of traffic in comparison to active-recreation parks. Three primary user groups will likely be dog park users, Lutron employees and school groups. Primary activities at the park are expected to be using the dog park, walking, hiking, wildlife viewing, and perhaps fishing, picnicking, and some educational opportunities. A parking lot will need to be added to provide access to the site. The park will close at dusk, and there will be no loud noises or lighting for adjacent residents to worry about at night. Proximity to Lutron Electronics could allow the site to be utilized as a recreation opportunity for employees during breaks or after-work hours. However, the park may also be affected negatively by traffic from Lutron's campus, especially at the beginning and end of the workday. All properties along the southern and western boundaries are buffered by woodlands. The eastern properties are buffered by a tree line. However, additional plant materials and buffering may be needed along the northern border of the site. The Lutron Electronics campus has lit parking lots and exterior building lights which are currently the only light source near the park.

Pennsylvania Natural Diversity Inventory (PNDI)

The original PNDI search completed as part of the DCNR Planning Grant application was performed on March 27, 2012 (ID 20110414293418), and has therefore expired. A second PNDI search was submitted on May 22, 2017 (ID PNDI-631641). Search results indicated that more information is required by the US Fish and Wildlife Service due to potential impacts, and that a Phase I Bog Turtle Habitat Survey is required in accordance with USFWS guidelines for bog turtle surveys. All wetlands within 300 feet of the project area including all areas that will be impacted by earth disturbance or project features must be surveyed, and results provided to USFWS. At this time, the Township is working with a Qualified Bog Turtle Surveyor to have the required work completed, and the results will be forwarded to USFWS. Upon receipt of a clearance or recommendation letter from USFWS, any recommendations provided will be addressed within this report prior to submission to DCNR, and the report will be included in the appendices to this report. Please see *Appendix N: Haring Tract PNDI Receipt and Correspondence*.

Should it be determined that viable Bog Turtle habitat exists on the site, the following measures are to be implemented:

- Assume presence of bog turtles in each of the identified potential bog turtle habitat areas and avoid direct impacts to the potential core habitat areas.
- Proceed with the project during the inactive season between November and March. Following this schedule should avoid risks of inadvertently harming active bog turtles during the active season if they do in fact occur in any of the potential habitat areas.
- If the above time period cannot be adhered to and if construction must occur during the active season, conduct construction monitoring at proposed crossings

immediately prior to, during, and through the completion of construction activities.

Any other recommendations included in the Phase 1 Bog Turtle Survey and the resulting USFWS correspondence will be incorporated into the final Master Site Development Plan.

ACTIVITIES AND FACILITIES ANALYSIS

Many planning documents such as the Lehigh Valley Greenways Plan, The Saucon Region Comprehensive Recreation & Open Space Plan, and the Pennsylvania Statewide Comprehensive Outdoor Recreation Plan have the preservation of open space and natural areas, and connections between these places listed as important objectives.

The 2010 Census indicates that the population in Upper Saucon Township is 14,808 people. Between 2010 and 2014 the population was estimated to have grown by 1,070 people placing the 2015 estimated population at 15,878. The Lehigh Valley Planning Commission (LVPC), projects that this population will be 28,000 by 2040. With a growing and expanding population, the preservation of these open spaces, and connectivity between them, is an important community recreational need.

Benckini Tract

Recreational, conservation, and public uses /facilities proposed for the Benckini Tract, as identified by the public participation process, include crushed stone ADA accessible trails, mown trails, a gathering area (including tables, a shade structure, electrical outlets, water access, picnic tables, and preserved portions of the log cabin structure), an outdoor classroom (including benches, a shade structure, a repaired existing concrete pad, and a kiosk/whiteboard), a stream access area, a bird blind, educational signage, and a park/township welcome sign. For prioritization of community needs, please see the *Public Participation Process* section of this report, and *Appendices A, B, C and D*. Proposed required support facilities including two gravel parking areas & one bus turnaround, paved ADA parking pads, rehabilitation of the existing gravel driveway, a bridge, and a restroom/storage building. Several management areas are also proposed including a meadow management/ pollinator habitat area, a riparian forest management area, a wet meadow management area, a woody plant education area, and streambank restoration/ stabilization areas. Annual mowing is proposed to maintain the meadow/pollinator and wet meadow areas. Planting of native vegetation for stabilization and reforestation is proposed in the riparian forest, woody plant education, and streambank restoration/stabilization management areas. Addition of port-a-potties to the site is a possibility. No water or electricity is available to the site, and addition of these utilities is not planned. Rain gardens, and vegetated swales are proposed for landscaping and storm water management. Lastly, two pedestrian crosswalks, and paved trails (to Upper Saucon Township Park and Southern Lehigh schools) are proposed to increase connectivity. No active recreation uses are proposed on the site. (*Please see Appendix Q: Benckini Tract Final Master Site Development Plan.*)

Table 4: Passive Recreation Activities/Amenities

Facility	Use
Nursery Trees/ Vegetation	Habitat, Plantings, education
Paved Area	Low-impact gathering space, passive recreation
Gravel Driveway	Low-impact site access,
Log Cabin Structure	Gathering space, structural element, educational component
Crushed Stone ADA- Accessible Trails, Paved Trails and Boardwalks	Hiking, biking, wildlife viewing, birding, access to Upper Saucon Community Park & Saucon Rail Trail, environmental education, passive recreation
Mown Trails	Hiking, wildlife viewing, birding, environmental education, passive recreation
Gravel Parking Areas	Low impact parking areas, site access
Bus Turnaround	School group/ bus access
Paved ADA Parking Pads	ADA accessible site access
Gathering Areas	Educational staging area, water and power access, social space
Outdoor Classroom	Educational opportunity, gathering space, social space
Rain Gardens	Watershed protection, Educational component
Vegetated Swales	Stormwater management, watershed protection, Educational component
Bird Blind	Accessible wildlife viewing, education, wildlife protection, relaxation, passive recreation
Stream Access Area	Educational opportunity, recreational access, relaxation, passive recreation
Streambank Restoration / Stabilization Areas	Wildlife protection, watershed protection, wetland/critical habitat protection and restoration, erosion reduction, preservation of stream quality, education
Meadow Management/ Pollinator Habitat Area	Watershed protection, wildlife habitat protection and restoration, pollinator habitat
Riparian Forest Management Area	Watershed protection, wetland/critical habitat protection and restoration, reforestation, wildlife protection, education
Wet Meadow Management Area	Watershed protection, wetland/critical habitat protection and restoration, reforestation, wildlife protection, education
Woody Plant Education Area	Re-use of existing nursery trees, environmental education, relaxation
Park/ Township Welcome Sign	Park identification, township sense-of-place, historic identifier
Bridges	Watershed protection, wetland/ critical habitat protection, wildlife protection
Pedestrian Crosswalks	Pedestrian safety, public & school group access
Paved Trails	Connectivity with UST community park, Safe connections to SL schools and the Park, passive recreation
Educational Signage	Environmental education, historical/ cultural education
Restroom/Storage Building	Comfort facility, utility, educational accessibility

As a sustainable community park, the Benckini Tract will preserve environmentally sensitive areas on the site. These areas include woodlands, wetlands, floodplain soils, and a stream. Riparian and wetland buffers will be planted and maintained around the wetlands and waterways. One of the main purposes of the park is the preservation of the site as open space, for the passive enjoyment of users in addition to educational opportunities, and maintaining these environmentally sensitive areas is vital to fulfilling that purpose. Several educational components proposed for the site also provide passive

recreation opportunities. These include the ADA accessible crushed stone, paved and mown trails, as well as a gathering area, outdoor classroom, bird blind, and a stream access area. The variety of management areas also provide both education and passive recreation opportunities. The rain gardens, vegetated swales, and educational signage provide additional education amenities.

The existing agricultural area located on the adjacent former sewer plant site is to be preserved and selectively planted as one large wet meadow management area. The central area of the site is to be preserved and selectively planted as a riparian forest management area. The western edge of the site along Old Bethlehem Pike, is to be managed and seeded as a pollinator friendly meadow. Each of these management areas will allow for habitat protection, watershed protection, wildlife viewing, contemplative areas for relaxation in a natural setting, and environmental education opportunities. Should warm season meadows be planted in a portion or throughout the entire meadow area, a variety of warm season grasses such as Little Bluestem and native wildflower seed should be planted to promote a diversity of plant and wildlife species. The use of species that promote monocultures (such as Switchgrass) should be avoided. The wet meadow management area on the eastern portion of the site is proposed to be seeded in a wet meadow seed mix. Proposed streambank restoration and stabilization efforts shall include streambank and erosion control measures as well as riparian buffer plantings. Steep slope areas on the site are not proposed to be disturbed.

Significant weekday usage rates are anticipated for use by school groups for educational purposes. However, it is anticipated that these trips will be scheduled and coordinated with the School District and will therefore not overload the site. Aside from school groups and volunteer work groups, it is anticipated that overall use of the site will be consistent but not heavy. Spring, summer and fall use are anticipated to be at higher levels than winter use.

Basic standards and requirements for the proposed accessible trail and park facilities are as follows:

Table 5: Standards and Requirements for Recreation Facilities

Facility	Standards
Crushed Stone ADA-Accessible Trails, Paved Trails and Boardwalks	Limestone Trails and Paved Trails shall comply with Section 1017 of the Architectural Barriers Act, including but not limited to the following: <ul style="list-style-type: none"> • Not more than 30% of the total length of a trail shall have a running slope steeper than 8.33%. • Where the running slope of the trail is greater than 5% but less than 8.33%, the maximum length of the trail segment shall be 200' • Where the running slope of the trail is greater than 8.33% but less than 10%, the maximum length of the trail segment shall be 30' • Where the running slope of the trail is greater than 10% but less than 12%, the maximum length of the trail segment shall be 10' • The cross slope shall not be steeper than 1:48
Restrooms	Shall Comply with Chapter 6: Plumbing Elements and Facilities of the 2010 ADA Standards for Accessible Design, specifically with regards to wheelchair accessible facilities.
Parking Spaces	Shall Comply with Section 206.2 Minimum Number of Parking Spaces and Section 502.2 Vehicle Spaces of the 2010 ADA Standards for Accessible Design, including but not limited to the following:

	<ul style="list-style-type: none"> • Car parking spaces shall be 96 inches wide minimum and van parking spaces shall be 132 inches wide minimum, shall be marked to define the width, and shall have an adjacent access aisle. • Van parking spaces shall be permitted to be 96 inches wide minimum where the access aisle is 96 inches wide minimum. • Access aisles shall adjoin an accessible route. Two parking spaces shall be permitted to share a common aisle. • Access aisles serving car and van parking spaces shall be 60 inches. • Access aisles shall extend the full length of the parking spaces they serve, and shall be marked to discourage parking in them.
Outdoor Classroom	<p>Shall comply with Section 221 Assembly areas, section 802 Wheelchair Spaces, Companion seats, Designated Aisle Seats and Chapter 4 Accessible Routes of the 2010 ADA Standards for Accessible Design, including but not limited to:</p> <ul style="list-style-type: none"> • Wheelchair spaces shall be provided in assembly areas with fixed seating • At least one companion seat shall be provided for each wheelchair space.
Gathering Areas	<p>Shall comply with Section 221 Assembly areas, section 802 Wheelchair Spaces, Companion seats, Designated Aisle Seats and Chapter 4 Accessible Routes of the 2010 ADA Standards for Accessible Design, including but not limited to:</p> <ul style="list-style-type: none"> • Wheelchair spaces shall be provided in assembly areas with fixed seating • At least one companion seat shall be provided for each wheelchair space.
Stream Access Area	Shall comply with Chapter 4 Accessible Routes, and Section 221 Assembly Areas of the 2010 ADA Standards for Accessible Design, specifically with regards to wheelchair accessible facilities.
Bridges	Shall comply with Chapter 4: Accessible Routes of the 2010 ADA Standards for Accessible Design, specifically with regards to wheelchair accessible facilities.
Boardwalks	Shall comply with Chapter 4: Accessible Routes of the 2010 ADA Standards for Accessible Design, specifically with regards to wheelchair accessible facilities.
Pedestrian Crosswalk	<p>Shall comply with Section 406 Curb Ramps, Section 403.3 Slope, Section 403.5 Clearances, and Section 705 Detectable Warnings of the 2010 ADA Standards for Accessible Design including but not limited to the following:</p> <ul style="list-style-type: none"> • Newly constructed or altered street level pedestrian walkways must contain curb ramps or other sloped areas at intersections to streets, roads, or highways. • Changes in level greater than a ½" high shall be ramped, and shall comply with 405 or 406. • The Clear width of walking surfaces shall be 36" Min.

For additional information regarding ADA requirements for outdoor recreation facilities, please see *Appendix U, Conceptual Details, Specifications, and Best Management Practices*.

Proposed support facilities for this recreational area include ADA accessible limestone trails, gravel driveways and two associated parking areas, two proposed paved ADA parking areas, paved trails, pedestrian crosswalks, restroom and storage facility, water access, electrical outlets for the gathering space, a kiosk/ whiteboard, a bridge, a bird blind, two shade structures, educational & entry signage, rain gardens, vegetated swales, site furniture, and a landscape evergreen buffer along Old Bethlehem Pike & Preston Lane.

Proposed limestone trails (3,500 LF +/-) and mown/earthen trails (1,170 LF +/-) will create a trail system within the park of approximately 4,970 LF or .11 miles. In order to be ADA accessible, the limestone trails will be 8' in width, and will be field located based on surveyed wetland points in order to avoid all delineated wetlands and wetland

buffers. Where wetland crossings are required, boardwalks will be used in place of trails to protect critical habitat areas. Motorized vehicles and equestrian activity are to be prohibited on all trails on the Benckini Tract. Construction will be crushed stone and boardwalk or bridge crossings or mown trails, depending on location and underlying features. Please see *Appendix U, Conceptual Details, Specifications, and Best Management Practices* for conceptual details for each type of trail construction. Amenities such as benches and waste receptacles may be provided along the trails as necessary.

Based on the options presented in the structural assessment of the existing house and barn, (See Benckini Tract Structural Assessment), the Committee recommends implementation of Option 2, extensive documentation and then partial demolishment of the existing structure, with a possible pavilion or other protective structure used to protect those parts of the dwelling that remain, the provision of educational signage, and the provision of other educational elements such as of rain chains, rain barrels or other items for education on stormwater best management practices. Other educational opportunities could be implemented by volunteers such as demonstration gardens or other displays meant to provide environmental or historical educational opportunities. These changes to the structure would result in an additional gathering area, rather than an actual structure, and would be subject to the same ADA requirements as the other outdoor gathering and classroom areas.

Driveways and parking facilities are to be constructed of crushed stone, except for the ADA parking pads, which are to be constructed of bituminous asphalt. The parking lot entry drives are to be approximately 50' in length each, with a total of fourteen regular parking spaces, one bus parking space, and two ADA accessible parking spaces. The second parking lot is to have an entry drive of approximately 80 feet in length with a total of 7 regular spaces and one ADA accessible parking space. The number and dimension of handicap accessible parking spaces is to meet the 2010 ADA Standards for Accessible Design. The existing entry drive is to be re-graveled covering approximately 160 feet in length of rehabilitated access drive. Each driveway is proposed to have a security swing gate at the entrance to provide off-hours security.

One bus parking space shall be provided as part of the main parking area. As required by the Upper Saucon Township Zoning ordinance, Article 314-B, oversize parking spaces shall be 70' by 12' minimum. One oversize parking space to be used for buses will be provided.

In accordance with Article 314-V of the Upper Saucon Township Zoning Ordinance, Outdoor Recreation Areas with picnic areas are required to provide 1 parking space for every picnic table. 4 picnic tables are proposed, therefore at least 4 parking spaces are required. In this case, 22 parking spaces have been proposed for the entire site.

Paved trails approximately 2,150 feet in length are to be provided. Paved Trails are to be a minimum of 5' in length and constructed of bituminous asphalt.

Pedestrian crosswalks are to include ADA accessible ramps from the adjoining paved or limestone trail and constructed of a material consistent with the trail that it connects. Detectable warnings shall be provided at the pedestrian crossing along Preston Lane as well as the crossing along Old Bethlehem Pike. As required by the Township zoning

ordinance, crosswalks shall be a minimum of 6' in width. The crosswalk will be demarcated and striped with paint.

The restroom and storage facility will be approximately 400 sf in size and provide ADA accessible bathroom use and storage of educational and site needs.

Water access and electrical utility access will be provided as part of the gathering area. A hookup to the existing water and electrical utility lines on site may be possible.

A kiosk/ whiteboard of approximately 6' in length is to be provided along with the outdoor classroom. The kiosk is to be constructed of wood.

Two bridges each of approximately 60 feet in length are to be provided in order to offer a safe and accessible crossing of Laurel Run. The bridge is to be a minimum of 6' in length or as required by the waterway opening permit, and will be constructed of wood.

A bird blind is to be provided directly off the crushed gravel trail. The bird blind will be approximately 100 sf and constructed of wood. The bird blind will be placed and designed as to provide adequate visual observation of wildlife and security, without creating an "attractive nuisance."

Shade structures may be provided for both outdoor classroom and the gathering area.

Educational and entry signage is to be provided at several places throughout the park. Signage will be constructed of metal, composite, or other long-wearing outdoor materials and shall be of varying sizes.

Rain gardens and vegetated swales are to be of varying sizes covering an approximate total area of 9,800 square feet, or as determined to be required during preparation of construction drawings. Rain gardens and vegetated swales shall be planted with native seed mixes and native plants which are appropriate for the quantity of storm water to be handled in each area and the rate of drainage. Native perennial plugs, shrubs, and trees may also be proposed in the rain gardens.

All Benches are to be ADA compliant (including back supports, bump-out seating, and arms. Benches will be constructed of timber.

Phasing of this park is proposed in two parts, where the section between the creek and Preston Lane to be developed first. Bridge construction would then be completed to provide access to the eastern section of the site, and then lastly improvements would be completed on the eastern portion of the site. The gathering area west of the creek would be used as a temporary outdoor classroom and gathering area until the second phase of work can be completed.

Haring Tract

Recreational, conservation, and public uses /facilities proposed for the Haring Tract, as identified by the public participation process, include crushed stone ADA accessible trails, a picnic/ gathering area, a dog park, and a successional forest management area. For prioritization of community needs, please see the *Public Participation Process* section of this report, and *Appendices A, B, C and D*. Proposed required support facilities including a gravel parking area, paved ADA parking pad, a rain garden, riparian and other buffer plantings, and a gravel access drive. A trail connection to the Saucon Valley Rail Trail is also proposed along with a pedestrian crosswalk. No active recreation uses are proposed on the site. (*Please see Appendix R: Haring Tract Final Master Site Development Plan.*)

Table 6: Passive Recreation Activities/Amenities

Facility	Use
Crushed Stone ADA-Accessible Trails and Boardwalks	Hiking, biking, wildlife viewing, birding, access to the Saucon Rail Trail, environmental education, passive recreation
Gravel Parking Area	Low impact parking areas, site access
Paved ADA Parking Pads	ADA accessible site access
Gathering/ Picnic Area	Social space, relaxation space, environmental education, passive recreation
Dog Park	Recreation, social space, passive recreation
Pedestrian Crosswalk	Pedestrian safety, public access
Future Trails	Connections between park and trails proposed in UST official map, Component 3, passive recreation
Successional Forest Management Area	Watershed protection, wildlife habitat, environmental education, passive recreation
Rain Gardens	Watershed protection, Educational component
Buffer Plantings	Screening, shade, delineation of uses

As a sustainable community park, the Haring Tract will preserve environmentally sensitive areas on the site. These areas include woodlands, wetlands, floodplain soils, a pond and a stream. Riparian and wetland buffers will be planted and maintained around the wetlands and waterways. One of the main purposes of the park is the preservation of the site as open space. This is important for the passive enjoyment of users in addition to providing educational opportunities, and maintaining these environmentally sensitive areas is vital to fulfilling these purposes. Several facilities proposed for the site provide both educational and passive recreation opportunities. These include the crushed stone trails, the gathering/ picnic area, the successional forest management area, and the future trails. The dog park provides passive recreation while the rain garden provides and additional educational component.

Much of the former agricultural field land is to be managed and selectively planted as a long-term successional forest. The area should be monitored periodically for invasive species. The use of species that promote monocultures should be avoided. Steep slope areas on the site are not proposed to be disturbed.

Significant usage rates are anticipated for the dog park portion of the park. For this reason, further study of anticipated usage rates and associated dog park spatial requirements should be conducted as part of the preparation of detailed construction plans. Occasional use by school groups for educational purposes is anticipated.

However, it is anticipated that these trips will be scheduled and coordinated with the School District and will therefore not overload the site. Aside from school groups and volunteer work groups, it is anticipated that overall use of the site will be consistent but not heavy. Spring, summer and fall use are anticipated to be at higher levels than winter use.

Basic standards and requirements for the proposed accessible trail and park facilities are as follows:

Table 7: Standards and Requirements for Recreation Facilities

Facility	Standards
Crushed Stone ADA-Accessible Trails and Boardwalks	Limestone Trails and Paved Trails shall comply with Section 1017 of the Architectural Barriers Act, including but not limited to the following: <ul style="list-style-type: none"> • Not more than 30% of the total length of a trail shall have a running slope steeper than 8.33%. • Where the running slope of the trail is greater than 5% but less than 8.33%, the maximum length of the trail segment shall be 200’ • Where the running slope of the trail is greater than 8.33% but less than 10%, the maximum length of the trail segment shall be 30’ • Where the running slope of the trail is greater than 10% but less than 12%, the maximum length of the trail segment shall be 10’ • The cross slope shall not be steeper than 1:48
Parking Spaces	Shall Comply with Section 206.2 Minimum Number of Parking Spaces and Section 502.2 Vehicle Spaces of the 2010 ADA Standards for Accessible Design, including but not limited to the following: <ul style="list-style-type: none"> • Car parking spaces shall be 96 inches wide minimum and van parking spaces shall be 132 inches wide minimum, shall be marked to define the width, and shall have an adjacent access aisle. • Van parking spaces shall be permitted to be 96 inches wide minimum where the access aisle is 96 inches wide minimum. • Access aisles shall adjoin an accessible route. Two parking spaces shall be permitted to share a common aisle. • Access aisles serving car and van parking spaces shall be 60 inches. • Access aisles shall extend the full length of the parking spaces they serve, and shall be marked to discourage parking in them.
Gathering Area	Shall comply with Section 221 Assembly areas, section 802 Wheelchair Spaces, Companion seats, Designated Aisle Seats and Chapter 4 Accessible Routes of the 2010 ADA Standards for Accessible Design, including but not limited to: <ul style="list-style-type: none"> • Wheelchair spaces shall be provided in assembly areas with fixed seating • At least one companion seat shall be provided for each wheelchair space.
Pedestrian Crosswalk	Shall comply with Section 406 Curb Ramps, Section 403.3 Slope, Section 403.5 Clearances, and Section 705 Detectable Warnings of the 2010 ADA Standards for Accessible Design including but not limited to the following: <ul style="list-style-type: none"> • Newly constructed or altered street level pedestrian walkways must contain curb ramps or other sloped areas at intersections to streets, roads, or highways. • Changes in level greater than a ½” high shall be ramped, and shall comply with 405 or 406. • The Clear width of walking surfaces shall be 36” Min.

For additional information regarding ADA requirements for outdoor recreation facilities, please see *Appendix U, Conceptual Details, Specifications, and Best Management Practices*.

Proposed support facilities for this recreational area include ADA accessible limestone trails, a gravel driveway, a gravel parking area, a paved ADA parking area, and a pedestrian crosswalk.

Proposed limestone trails (8,100 LF +/-) will create a trail system within the park of approximately 1.5 miles. In order to be ADA accessible, the limestone trails will be 8' in width, and will be field located based on surveyed wetland points in order to avoid all delineated wetlands. Motorized vehicles and equestrian activity are to be prohibited on all trails on the Haring Tract. Trails will be constructed of crushed stone, and boardwalks will be used where necessary to cross wetland and wet meadow areas. Please see *Appendix U, Conceptual Details, Specifications, and Best Management Practices* for conceptual details of trail construction. Amenities such as benches and waste receptacles may be provided along the trails as necessary.

The Dog Park will be graded and seeded with turfgrass and shall include respective fenced-in areas for small, medium, and large dogs as well as a rotation area. The fenced-in areas shall be approximately 7.5 acres in total. Benches and a shade structure may also be included. Buffer plantings of native deciduous and evergreen trees shall be provided to screen the dog park from the nearby picnic/ gathering area. Fencing for the dog park shall be located a minimum of 170' from the trunk of the large white oak tree, or 2x the height of the tree.

Driveways and parking facilities are to be constructed of crushed stone, except for the ADA parking pad, which is to be constructed of bituminous asphalt. The parking lot entry drive is to be approximately 153' in length, with a total of sixteen regular parking spaces, and two ADA accessible parking spaces. The number and dimension of handicap accessible parking spaces is to meet the 2010 ADA Standards for Accessible Design.

In accordance with Article 314-V of the Upper Saucon Township Zoning Ordinance, Outdoor Recreation Areas with picnic areas are required to provide 1 parking space for every picnic table. 6 picnic tables are proposed, therefore at least 6 parking spaces are required. In this case, 25 parking spaces have been proposed along with two ADA accessible parking spaces. An additional 10 parking spots and 2 ADA accessible parking spots may be added later to accommodate trail users accessing the trail on Suter Road.

The pedestrian crosswalk is to include ADA accessible ramps from the adjoining limestone trail and constructed of a material consistent with the trail that it connects. Detectable warnings shall be provided at the pedestrian crossing along Suter Road. As required by the Township zoning ordinance, the crosswalk shall be a minimum of 6' in width. The crosswalk will be demarcated and striped with paint.

A shade structure may be provided for the picnic/gathering area.

Educational and entry signage may be provided at several places throughout the park. Signage will be constructed of metal, composite, or other long-wearing outdoor materials and shall be of varying sizes.

A rain garden of approximately 2,000 square feet, or as determined to be required during preparation of construction drawings, will be provided. The rain garden shall be planted with native seed mixes appropriate for the quantity of storm water to be handled in each

area and the rate of drainage. Additional trees and shrubs used within these areas will be native and water tolerant.

Benches which are ADA compliant (including back supports, bump-out seating, and arms) may be included at various locations throughout the park. Benches will be constructed of timber.

Phasing of these improvements is proposed as follows:

Phase One will consist primarily of the dog park which may offer small, medium, and large dog areas as well as a rotation area. The dog park may also include benches and an electronic entry system. This phase will also include parking access to the site, and selective mowing for encouraging successional growth of the successional forest management area.

Phase Two will consist of construction of trails throughout the park, a trail connection to the Saucon Valley rail trail, implementation of vegetation management strategies on the remainder of the property, riparian buffers, a picnic area, and educational amenities.

DESIGN CONSIDERATIONS

Benckini Tract

1. Please see the “Site Information and Analysis” and “Activities and Facilities Analysis” sections for information regarding the site’s limitations and positive points, as well as the various generally accepted design standards related to the proposed areas, facilities, and activities.
2. All proposed facilities are to be designed and constructed in accordance with all applicable local, state and federal laws, as well as the Upper Saucon Township Code of Ordinances and the Uniform Construction Code.
3. All proposed facilities are to be constructed in compliance with the Americans with Disabilities Act.
4. All proposed facilities are to be in areas where existing site topography is suitable, or can be easily graded without the disturbance of natural resources in excess of ordinance standards to meet ADA and other requirements, and to meet sustainable design requirements.
5. ASTM Compliance – Not Applicable
6. Stream and wetland buffers are to be stabilized, planted and maintained within a minimum distance of 100’ of streams and 50’ of wetlands.
7. Areas of wetlands, streams, ponds, dense woodlands, and stream and wetland buffer areas are considered areas of high quality habitat and are to be protected in accordance with all applicable local, State and federal regulations, and applicable best management practices. Streams on the site are to be protected and should be restored where possible to ensure the continued classification of this branch of Laurel Run as a Cold-Water Fish Stream.
8. Sustainable design principles, Green, Healthy and Sustainable Parks practices, green infrastructure, and Best Management Practices are to be incorporated wherever possible.

DCNR Principles of Sustainable Community Park and Landscape Design are to be addressed as follows:

- 1) **Minimize impacts or changes to the natural landscape; protecting steep slopes, hillsides, forests and tree cover, rock outcroppings, native vegetation, and soil structure.** All proposed features on the site are to be located to minimize and avoid impact on slopes, forests, wetlands, and other natural features. Paths within forest areas are to be field located to reduce tree removal and to avoid delineated wetlands and other high-value features. Wetlands are not proposed to be disturbed.
- 2) **Maintain high quality soils; Ensure that the soil is weed and invasive species free.** Minimal earth disturbance is proposed on site and all

management areas and stormwater areas are to be monitored for invasive species.

- 3) **Connect landscape components to create larger contiguous areas of habitat and native vegetation.** The Benckini parcel is adjacent to several parcels of Township-owned land which are covered in stream, wetland, and woodland habitat. Additionally, a privately-owned lot to the north of the parcel contains extensive woodlands. Natural resource habitat areas on site are to be minimally maintained and left undisturbed to provide continued habitat connection.
- 4) **Create natural stormwater management and other green infrastructure such as rain garden and swales.** Rain Gardens and vegetated swales and other Best Management Practice methods are to be used to manage and infiltrate stormwater on the site. The only impervious surfaces proposed are the ADA parking pad, the paved trails, and the roofs for the storage area/ toilet.
- 5) **Protect wetlands from disturbance and fill caused by construction activity.** No construction activity is to be proposed in delineated wetlands.
- 6) **Use integrated pest management (IPM) strategies.** Wherever possible, integrated pest management strategies are to be used.
- 7) **Minimize non-porous surfaces.** All trails and paths are to be constructed with pervious crushed limestone. The gathering space is to be constructed with pervious pavers. The only impervious surfaces proposed are the ADA parking pad, the paved trails, and the roof of the storage area/ toilet.
- 8) **Use green building practices in retrofit construction projects.** Any construction involved in the restoration of all/ part of the historic log cabin structure will use green building practices.
- 9) **Reduce turf to only those areas essential for recreational and other human use activities.** No turf is proposed.
- 10) **If you must have some turfgrass follow mowing guidelines.** No turf is proposed.
- 11) **Use native plants, especially in riparian areas.** Existing native plants are to be preserved wherever possible. All installed landscape material and seed mixes on the site are to be native plant material.
- 12) **Identify and remove invasive plant species whenever possible.** Seeded areas and minimal management areas are to be monitored for invasive species. Invasive species that are found should be removed wherever it is appropriate. Supplemental native plants and seed mixes are to be planted where needed. Interpretative signage regarding natural resources, environmental issues, and natural habitat may be added in order to educate the public.

DCNR Green Principles for Park Development and Sustainability are to be addressed as follows:

- 1) **Maintain and Enhance Trees and Natural Landscaping.** Existing nursery trees and other existing vegetation on site is to be largely preserved. Any proposed landscaping shall be native and consistent with the plant communities found on site.
- 2) **Connect People to Nature.** Mown trails & crushed stone trails, a stream access area, a bird blind and several benches within minimal management areas provide opportunities for people to experience passive recreation and interaction with nature on the site. The stream access area, outdoor classroom and educational signage all provide educational opportunities for adults and children. The gathering space and outdoor classroom both provide spaces for social interaction.
- 3) **Manage Stormwater Naturally.** Riparian buffers are to be proposed and enhanced along Laurel Run and the surrounding the wetlands. Rain gardens and vegetated swales are proposed to handle the runoff from proposed parking areas on site.
- 4) **Conserve Energy.** Renewable energy sources will be considered in order to provide electrical outlets for the gathering area.
- 5) **Integrate Green Design and Construction.** The site is designed with minimal disturbance to existing natural features and wildlife habitat. Trees removed from the site are to be repurposed and used sustainably.

SITES, which refers to the sustainable sites initiative, is a comprehensive rating system administered by the Green Business Certification Inc. It focuses heavily on measuring the performance and value of sustainable practices in development projects. The rating system provides performance measures aimed at protecting ecosystems which can in turn, reduce water use, filter and reduce stormwater runoff, provide wildlife habitat and reduce energy consumption.

SITES rating system credits are to be addressed as follows:

- 1) **Water Credit 3.5. Design functional stormwater features as amenities:** Rain gardens and vegetated swales are proposed to manage the additional runoff caused by the proposed parking on the site. Additionally, educational signage and attractive native plantings are proposed to create interest and educational opportunity from these features.
- 2) **Water Credit 3.6. Restore Aquatic Ecosystems:** Streambank restoration and stabilization areas are designed to repair and restore the eroding streambanks of Laurel Run. This will protect the wildlife of the stream and the habitat that it provides, as well as improve runoff quality.
- 3) **Soil + Vegetation Credit 4.6. Conserve and Use Native Plants:** The preservation of existing former nursery trees, primarily those that are native, is proposed throughout the site. Any additional plantings and or

seed mixes for the rain gardens, vegetated swales, and meadow/ pollinator habitat management area are to be native plants.

- 4) **Materials Credit 5.2. Maintain On-site Structures and Paving:**
Existing paved areas and gravel/ mown access drives are to be improved and utilized in several places. Portions of the existing log cabin are to be retained and preserved on site for educational purposes. House/structural materials to be removed from the site are to be re-purposed wherever possible.
- 5) **Human Health + Wellbeing Credit 6.4: Support Mental Restoration:**
The bird blind and stream access area provide quiet spaces for wildlife viewing and reflection in a place where wildlife habitat has been preserved. Meandering paths with benches along them provide opportunities for passive recreation and relaxation in a natural setting.
9. Potential “green” materials are to be used wherever possible in the proposed facilities and will include but not be limited to crushed limestone and mown trails, permeable pavers, timber and other renewable resources,
 - 1) Crushed limestone trails and mown paths tend to be cheaper than impervious paved paths. Timber used for the bridge, kiosk, benches, and other potential site furniture will likely be cheaper than metal alternatives. Pervious pavement is likely to be more expensive than impervious pavement in most cases.
 - 2) Low impact design and benefits are likely to result in less impact and degradation to the site as well as less construction and related costs than traditional design would. Additionally, low impact design and maintenance saves time and money for Township employees who would be performing the required maintenance.
 - 3) Crushed limestone is not the longest lasting trail material but it does offer a cheaper and lower impact alternative to paving, which stands up relatively well to time. Permeable paving can require some additional maintenance as compared to impervious pavement. However, it has an equal lifespan to impervious pavement and can often be cost comparable to traditional paving because it often eliminates the need for additional stormwater management features. Timber, as a material for site amenities, is not likely to have a long of a lifespan as metal. However, it tends to be cheaper than metal as a material for the construction of park amenities and is easily locally sourced.
10. The log cabin located on the site has some historic value. However, it is not listed in any national, state, or municipal register of historic sites or structures. Please see the structural assessment for more information.

Haring Tract

1. Please see the “Site Information and Analysis” and “Activities and Facilities Analysis” sections for information regarding the site’s limitations and positive points, as well as the various generally accepted design standards related to the proposed areas, facilities, and activities.
2. All proposed facilities are to be designed and constructed in accordance with all applicable local, state and federal laws, as well as the Upper Saucon Township Code of Ordinances and the Uniform Construction Code.
3. All proposed facilities are to be constructed in compliance with the Americans with Disabilities Act.
4. All proposed facilities are to be in areas where existing site topography is suitable, or can be easily graded without the disturbance of natural resources in excess of ordinance standards to meet ADA and other requirements, and to meet sustainable design requirements.
5. ASTM Compliance – Not Applicable
6. Stream and wetland buffers are to be stabilized, planted and maintained within a minimum distance of 100’ of streams and 50’ of wetlands.
7. Areas of wetlands, streams, ponds, dense woodlands, and stream and wetland buffer areas are considered areas of high quality habitat and are to be protected in accordance with all applicable local, State and federal regulations, and applicable best management practices. Streams on the site are to be protected and should be restored where possible to ensure the continued classification of this tributary of Tumble Brook as a Cold-Water Fish Stream.
8. Sustainable design principles, Green, Healthy and Sustainable Parks practices, green infrastructure, and Best Management Practices are to be incorporated wherever possible.

DCNR Principles of Sustainable Community Park and Landscape Design are to be addressed as follows:

- 1) **Minimize impacts or changes to the natural landscape; protecting steep slopes, hillsides, forests and tree cover, rock outcroppings, native vegetation, and soil structure.** All proposed features on the site are to be located to minimize and avoid impact on slopes, forests, wetlands, and other natural features. Paths within forest areas are to be field located to reduce tree removal and to avoid delineated wetlands and other high-value features. Wetlands are not proposed to be disturbed.
- 2) **Maintain high quality soils; Ensure that the soil is weed and invasive species free.** Minimal earth disturbance is proposed on site and all management areas and stormwater areas are to be monitored for invasive species.

- 3) **Connect landscape components to create larger contiguous areas of habitat and native vegetation.** The Haring parcel is a very large tract (over 73 Acres) of land covered in many areas by important natural resources including woodlands, wetlands, and streams. The implementation of a long-term successional forest management area presents a great opportunity to create a large area of ecologically valuable habitat in area of the township that is quickly being developed.
- 4) **Create natural stormwater management and other green infrastructure such as rain garden and swales.** A rain garden will be used to manage and infiltrate stormwater on the site. The only impervious surface proposed is the ADA parking pad.
- 5) **Protect wetlands from disturbance and fill caused by construction activity.** No construction activity is proposed in delineated wetlands.
- 6) **Use integrated pest management (IPM) strategies.** Wherever possible, integrated pest management strategies are to be used.
- 7) **Minimize non-porous surfaces.** All trails and paths are to be constructed with pervious crushed limestone. The picnic/ gathering area is to be constructed with pervious pavers. The only impervious surface proposed is the ADA parking pad.
- 8) **Use green building practices in retrofit construction projects.** No retrofit construction projects are proposed on the Haring Tract.
- 9) **Reduce turf to only those areas essential for recreational and other human use activities.** Minimal turf will be proposed on the site. The only turf area proposed will potentially be the dog park.
- 10) **If you must have some turfgrass follow mowing guidelines.** All recommended guidelines for mowing will be followed for the potential turfgrass in the dog park.
- 11) **Use native plants, especially in riparian areas.** Existing native plants are to be preserved wherever possible. All installed landscape material and seed mixes on the site are to be native plant material.
- 12) **Identify and remove invasive plant species whenever possible.** Seeded areas and minimal management areas are to be monitored for invasive species. Invasive species that are found should be removed wherever it is appropriate. Supplemental native plants and seed mixes are to be planted where needed. Interpretative signage regarding natural resources, environmental issues, and natural habitat may be added in order to educate the public.

DCNR Green Principles for Park Development and Sustainability are to be addressed as follows:

- 1) **Maintain and Enhance Trees and Natural Landscaping.** Existing vegetation on site is to be largely preserved. Any proposed landscaping shall be native and consistent with the plant communities found on site.

- 2) **Connect People to Nature.** Crushed stone trails, a stream access area, a minimal management forest area, and a naturalized dog park provide opportunities for people to experience passive recreation and interaction with nature on the site. The picnic/ gathering area and trail access to the stream and wetlands both provide potential educational opportunities for adults and children. The gathering space and outdoor classroom both provide spaces for social interaction.
- 3) **Manage Stormwater Naturally.** A rain garden is proposed to handle stormwater from the impervious ADA parking pad on site. Riparian buffers are to be proposed and enhanced along Laurel Run and the surrounding the wetlands.
- 4) **Conserve Energy.** Renewable energy sources will be considered in order to provide electric and water for the dog park entrance and picnic/ gathering area if needed.
- 5) **Integrate Green Design and Construction.** The site is designed with minimal disturbance to existing natural features and wildlife habitat. Trees (including the large white oak) that may be removed from the site are to be used sustainably.

SITES, which refers to the sustainable sites initiative, is a comprehensive rating system administered by the Green Business Certification Inc. It focuses heavily on measuring the performance and value of sustainable practices in development projects. The rating system provides performance measures aimed at protecting ecosystems which can in turn, reduce water use, filter and reduce stormwater runoff, provide wildlife habitat and reduce energy consumption.

SITES rating system credits are to be addressed as follows:

- 1) **Water Credit 3.6. Restore Aquatic Ecosystems:** Riparian buffers are proposed along the tributary of Tumble Brook located on site. This will protect the wildlife of the stream and the habitat that it provides, in addition to improving runoff quality.
- 2) **Soil + Vegetation Credit 4.6. Conserve and Use Native Plants:** The preservation of existing vegetation, especially native vegetation, is proposed throughout the site. Any additional plantings and or seed mixes are to be native plants.
- 3) **Materials Credit 5.2. Maintain On-site Structures and Paving:** Existing barn and other structures on the site are currently being demolished. Materials to be removed from the site are to be re-purposed wherever possible.
- 4) **Human Health + Wellbeing Credit 6.4: Support Mental Restoration:** The preservation and enhancement of the site as open space is enhanced by trails with periodic benches, the picnic/gathering area, and the naturalized dog park to provide a variety of opportunities for people to relax in nature.

9. Potential “green” materials are to be used wherever possible in the proposed facilities and will include but not be limited to, crushed limestone for the trails, permeable pavers, timber and other renewable resources,
 - 1) Crushed limestone trails tend to be cheaper than impervious paved paths. Timber used for benches, picnic tables and other potential site furniture will likely be cheaper than metal alternatives. Pervious pavement is likely to be more expensive than impervious pavement in most cases.
 - 2) Low impact design and benefits are likely to result in less impact and degradation to the site as well as less construction and related costs than traditional design would. Additionally, low impact design and maintenance saves time and money for Township employees who would be performing the required maintenance.
 - 3) Crushed limestone is not the longest lasting trail material but it does offer a cheaper and lower impact alternative to paving, which stands up relatively well to time. Permeable paving can require some additional maintenance as compared to impervious pavement. However, it has an equal lifespan to impervious pavement and can often be cost comparable to traditional paving because it often eliminates the need for additional stormwater management features. Timber, as a material for site amenities, is not likely to have a long of a lifespan as metal. However, it tends to be cheaper than metal as a material for the construction of park amenities and is easily locally sourced.
10. There are no historic structures on site.

DESIGN PROCESS

Benckini Tract

Throughout the design process, committee members discussed passive recreation facilities needed by the community, such as trails, an outdoor classroom, environmental education signage, access to the stream, and a variety of management areas that protect and enhance vegetation on site.

Key concerns regarding design of the site included the following:

- Maintaining Open Space and Preserved Vegetation on site
- Accessibility and safety for the school groups who will likely be a primary user group.
- Connection to Upper Saucon Township Community Park
- Preservation or Re-use of the structures of historical value located onsite.

A Preliminary Sketch Plan was developed and presented at the March 8, 2017 meeting, where the plan was discussed and evaluated. Recommendations and revisions to the Sketch Plan discussed at this meeting include the following:

- Move parking more to the north so that it is not directly across from the Copperhead Grille.
- Possibly include more parking and connector paths on adjacent former sewer plant parcel. Site is wet, there are wetland restrictions on the site.
- Expand streambank stabilization – along all creek banks. Consider implementing an educational component of the stabilization work – partner with the Conservation District for projects and classes.
- Include creek access for education and fishing
- Will park be fenced? – No.
- Add gate with swing arm at parking lot entrance.
- Sketch too busy – more open space. Aesthetics are important, should look more connected with the rest of the park.
- Add traffic quieting at the intersection; make safer for pedestrians.
- Consider aesthetics of Preston/Old Bethlehem Intersection; entryway signage/lighting. Signage to mark corridor to park/library, etc.
- Stormwater management for parking lots – include an educational component.

Sketch plans are included in *Appendix S, Benckini Tract DRAFT Progress Sketch Plans*. Revisions were made twice more for the May 10 and June 14, 2017 Committee Meetings. The final Master Site Development Plan was revised and developed as a result of this dynamic interactive process. For facilities and uses desired by the community, please see

the *Public Participation Process* section; for site limitations, please see *Appendix F: Benckini Tract Site Analysis*; for applicable laws and regulations, the need to balance habitat protection with recreation, and accepted good design practices and standards, please see the *Design Considerations* section. For full Study Committee meeting minutes, please see *Appendix B Committee Meeting Minutes*.

Park improvements are proposed in areas containing the fewest natural resources possible. The trails, gathering area, restroom/storage building, bird blind, stream access area, rain gardens, parking areas, and other proposed features are to be field located to avoid delineated wetlands, steep slopes, woodlands, and other important natural resources as much as is possible. Vehicular access is proposed in two locations. The main parking area located along Old Bethlehem Pike has been located for adequate site distance mitigation of traffic conflicts. All efforts to minimize disturbance to delineated wetlands will be made during preparation of engineered plans and at the time of construction. The second parking area located along Preston Lane has been sited to avoid disturbance will be minimal and sight distance adequate. All proposed facilities are to be accessible and are sited so as to meet ADA requirements, with the exception of 1,170 LF of mown trails. However, the crushed stone trails on the site will provide access to all features and experiences on the site for users.

Trails throughout the park are sited to provide passive recreation, connection to the Upper Saucon Township Community Park and the Saucon Rail Trail, and opportunities for natural resource and wildlife education.

Please see Appendix Q: Benckini Tract Final Master Site Development Plan.

Haring Tract

During the initial study committee meeting on November 30, 2016, committee members discussed passive recreation facilities needed by the community, such as trails and trail connections to the Saucon Rail Trail and the Lutron Campus, a dog park as well as the preservation and enhancement of existing open space, and educational components to highlight and explain the site's natural resources.

Key concerns regarding design of the site included the following:

- Maintaining, preserving, and enhancing natural resources, habitat and open space on the site.
- Keeping to site's design and constructed improvements minimal.
- Providing and large, accessible dog park for the township
- Providing trail connections that fit with the intention of those proposed on Upper Saucon Township's Official Map.
- Taking action on the site's existing dilapidated farm structures.

A Preliminary Sketch Plan was developed and presented at the March 8, 2017 meeting, where the plan was discussed. Recommendations and revisions to the Sketch Plan discussed and evaluated at this meeting include the following:

- Consider adding a dog park
- Remove trash and debris from the site
- Look into the potential re-use of existing structures or material from removed structures
- Examining possible amphitheater or gathering space locations
- Possible CSA with educational component
- Possible seed farm program
- Potential sale of the property if no improvements are proposed

Sketch plans are included in *Appendix T, Haring Tract DRAFT Progress Sketch Plans*. The final Master Site Plan was revised and developed as a result of this dynamic interactive process. For facilities and uses desired by the community, see the *Public Participation Process* section; for site limitations, please see *Appendix L: Haring Tract Site Analysis*; for applicable laws and regulations, the need to balance habitat protection with recreation, and accepted good design practices and standards, please see the *Design Considerations* section. For full Study Committee minutes please see *Appendix B: Committee Meeting Minutes*.

Park improvements are proposed in areas containing the fewest natural resources possible. The trails, gathering/picnic area, parking area, rain garden, dog park and other proposed features are to be field located so as to avoid delineated wetlands, steep slopes, wooded areas, and other natural features of importance, and to avoid unnecessary tree removal. Vehicular access is proposed along Passer Road where disturbance will be minimal. At this time, it appears that adequate sight distance is available at this location, but conformance with sight distance requirements should be confirmed as part of the preparation of detailed construction documents. Potential future parking access is proposed in the Township-owned lot near the southwest corner of the site along Jacoby Road. Disturbance will be minimal and site distance will be adequate in this location as well. All proposed facilities are to be accessible and are sited so as to meet ADA requirements. The crushed stone trails and boardwalks on the site will provide access to all features and experiences on the site for users.

Trails throughout the park are sited to provide passive recreation, connection to the Saucon Rail Trail, the Lutron Electronics campus, and opportunities for natural resource and wildlife education. *Please see Appendix R: Haring Tract Final Master Site Development Plan.*

DESIGN COST ESTIMATE - BENCKINI TRACT

Table 10: Benckini Tract Opinion of Probable Cost

**BENCKINI TRACT IMPROVEMENTS
OPINION OF PROBABLE COST FOR DESIGN AND CONSTRUCTION*
UPPER SAUCON TOWNSHIP, LEHIGH COUNTY, PENNSYLVANIA**

PHASE ONE – 2 to 7 Years

	DESCRIPTION	UNIT	UNIT COST	QUANT.	TOTAL
A	<u>Erosion Control Measures and Stormwater Management</u>				
	Erosion Control Measures	LS	\$5,000.00	1	\$5,000.00
	Stormwater Management	LS	\$5,000.00	1	\$5,000.00
	<u>Subtotal</u>				\$10,000.00
B	<u>Demolition & Restoration</u>				
	Partial Demolition of Existing Farmhouse (Including Hauling & Disposal)	LS	\$30,000.00	1	\$30,000.00
	Restoration and Preservation of Log Cabin Structure (Including Hauling & Disposal)	LS	\$40,000.00	1	\$40,000.00
	Log Cabin Gathering Area	LS	\$35,000.00		\$35,000.00
	Grub/ Clear Invasive Vegetation and Selected Nursery Trees*	LS	\$10,000.00	1	\$10,000.00
	Nursery Tree Rehabilitation*	LS	\$10,000.00	1	\$10,000.00
	Filling in Nursery Tree Holes	LS	\$2,000.00	1	\$2,000.00
	<u>Subtotal</u>				\$127,000.00
C	<u>Seeding</u>				
	Meadow Management/ Pollinator Habitat Area Seeding	LS	\$5,000.00	1	\$5,000.00
	<u>Subtotal</u>				\$5,000.00
D	<u>Rain Gardens & Vegetated Swales</u>				
	Rain Garden Installation & Planting*	EA	\$10,000.00	2	\$20,000.00
	Vegetated Swale Installation & Planting*	EA	\$8,000.00	1	\$8,000.00
	<u>Subtotal</u>				\$28,000.00
E	<u>Riparian Plantings & Streambank Restoration</u>				
	Riparian Forest Management Area Plantings*	LS	\$30,000.00	1	\$30,000.00
	Streambank Stabilization & Restoration*	LS	\$50,000.00	1	\$50,000.00
	<u>Subtotal</u>				\$80,000.00

F	<u>Woody Plant Education Area</u>				
	Tree Planting	LS	\$10,000.00		\$10,000.00
	Subtotal				\$10,000.00
G	<u>Stream Access Area</u>				
	Stream Access area (Materials & Installation)	LS	\$10,000.00	1	\$10,000.00
	Subtotal				\$10,000.00
H	<u>Shade Structures and Site Amenities</u>				
	Shade Structure/ Gathering Area Paving	LS	\$50,000.00	1	\$50,000.00
	Benches*	EA	\$1,500.00	5	\$7,500.00
	Picnic Tables	EA	\$2,000.00	5	\$10,000.00
	Bird Blind*	LS	\$8,000.00	1	\$8,000.00
	Restroom/ Storage Building	EA	\$50,000.00	1	\$50,000.00
	Interpretive Signage*	EA	\$750.00	5	\$3,750.00
	Subtotal				\$129,250.00
I	<u>Parking Lot and Access Driveway</u>				
	Gravel Parking Lot and Access Driveway	SY	\$20.00	1,500	\$30,000.00
	Paved Handicapped Parking Pad	SY	\$27.00	65	\$1,755.00
	Park/ Township Welcome Sign	EA	\$2,000.00	1	\$2,000.00
	Crosswalks (including curb cuts, detectable warnings, and striping)	EA	\$8,000.00	2	\$16,000.00
	Security Swing Gates	EA	\$2,000.00	2	\$4,000.00
	Subtotal				\$53,755.00
J	<u>Walking Trails</u>				
	Boardwalks	SF	\$50.00	2,000	\$100,000
	Crushed Stone Trails	LF	\$17.00	1,500	\$25,500
	Mown/Earthen Trails	M.S.F	\$75.00	4	\$300
	Paved Trails	SY	\$40.00	500	\$20,000
	Subtotal				\$145,800.00
K	<u>Additional Services and Project Administration</u>				
	Engineering Services	LS	\$20,000.00	1	\$20,000.00
	Construction Observation and Inspections	LS	\$5,000.00	1	\$5,000.00
	Project Administration	LS	\$2,000.00	1	\$2,000.00
	Subtotal				\$27,000.00

L	<u>OVERALL SUBTOTAL</u>	\$625,805.00
	15% Contingency	\$93,870.75
	<u>TOTAL</u>	<u>\$719,675.75</u>

Costs are approximate, are in 2017 dollars, and are subject to change due to changes in site conditions, materials costs, or other unforeseen factors.

M.S.F = Thousand Square Feet

*Indicates tasks or amenities where portions of the work could be completed by volunteers in

accordance with engineered drawings and under Township direction or the direction of an expert authorized by the Township:

Clear/Grub Invasive Vegetation*: removal of herbaceous and small woody invasive plants.

Nursery Tree Rehabilitation*: removing root ball bindings, weeding, mulching, and light pruning.

Rain Garden Installation & Planting*: Planting of herbaceous or other small rain garden plantings.

Vegetated Swale Installation & Planting*: Planting of herbaceous or other small rain garden plantings

Riparian Forest Management Area Plantings*: Planting and care of saplings and shrubs.

Streambank Stabilization & Restoration*: Small stabilization, streambank restoration, and planting projects.

Benches*: Construction and/or installation of benches.

Bird Blind*: Design, construction, locating and installation.

Interpretive Signage*: Research, writing of educational text, and collaboration with designer.

Kiosk*: Construction and installation.

BENCKINI TRACT IMPROVEMENTS
OPINION OF PROBABLE COST FOR DESIGN AND CONSTRUCTION*
UPPER SAUCON TOWNSHIP, LEHIGH COUNTY, PENNSYLVANIA

PHASE TWO – 7 to 10 Years

	DESCRIPTION	UNIT	UNIT COST	QUANT.	TOTAL
A	<u>Erosion Control Measures and Stormwater Management</u>				
	Erosion Control Measures	LS	\$5,000.00	1	\$5,000.00
	Stormwater Management	LS	\$5,000.00	1	\$5,000.00
	<u>Subtotal</u>				\$10,000.00
B	<u>Demolition & Restoration</u>				
	Grub/ Clear Invasive Vegetation*	LS	\$5,000.00	1	\$5,000.00
	<u>Subtotal</u>				\$5,000.00
C	<u>Wet Meadow Management Area</u>				
	Seeding and Planting	LS	\$1,500.00	1	\$1,500.00
	<u>Subtotal</u>				\$1,500.00
D	<u>Riparian Plantings & Streambank Restoration</u>				
	Riparian Forest Management Area				
	Plantings	LS	\$10,000.00	1	\$10,000.00
	Streambank Stabilization and				
	Restoration	LS	\$25,000.00	1	\$25,000.00
	<u>Subtotal</u>				\$35,000.00
E	<u>Parking Lot and Access Driveway</u>				
	Gravel Parking Lot and Access				
	Driveway	SY	\$20.00	550	\$11,000.00
	Paved Handicapped Parking Pad	SY	\$27.00	33	\$891.00
	Security Swing Gates	EA	\$2,000.00	1	\$2,000.00
	<u>Subtotal</u>				\$13,891.00
F	<u>Rain Gardens & Vegetated Swales</u>				
	Rain Garden Installation & Planting*	EA	\$10,000.00	1	\$10,000.00
	Vegetated Swale Installation &				
	Planting*	EA	\$4,000.00	1	\$4,000.00
	<u>Subtotal</u>				\$14,000.00

G	<u>Walking Trails</u>				
	Pedestrian Bridges	EA	\$100,000.00	2	\$200,000
	Boardwalks	SF	\$50.00	190	\$9,500
	Crushed Stone Trails	LF	\$17.00	700	\$11,900
	Paved Trails	SY	\$40.00	300	\$12,000
	Repairs to Existing Concrete Pad	LS	\$10,000.00	1	\$10,000
	<u>Subtotal</u>				\$243,400.00
H	<u>Shade Structures and Site Amenities</u>				
	Shade Structure	LS	\$40,000.00	1	\$40,000.00
	Kiosk*	EA	\$7,500.00	1	\$7,500.00
	Benches*	EA	\$1,500.00	10	\$15,000.00
	Interpretive Signage*	EA	\$750.00	2	\$1,500.00
	<u>Subtotal</u>				\$64,000.00
I	<u>Additional Services and Project Administration</u>				
	Engineering Services	LS	\$20,000.00	1	\$20,000.00
	Construction Observation and Inspections	LS	\$8,000.00	1	\$8,000.00
	Project Administration	LS	\$3,000.00	1	\$3,000.00
	<u>Subtotal</u>				\$31,000.00
J	<u>OVERALL SUBTOTAL</u>				\$417,791.00
	15% Contingency				\$62,668.65
	<u>TOTAL</u>				<u>\$480,459.65</u>

Costs are approximate, are in 2017 dollars, and are subject to change due to changes in site conditions, materials costs, or other unforeseen factors.

M.S.F = Thousand Square Feet

*Indicates tasks or amenities where portions of the work could be completed by volunteers in accordance with engineered drawings and under Township direction or the direction of an expert authorized by the Township:

Clear/Grub Invasive Vegetation*: removal of herbaceous and small woody invasive plants.

Nursery Tree Rehabilitation*: removing root ball bindings, weeding, mulching, and light pruning.

Rain Garden Installation & Planting*: Planting of herbaceous or other small rain garden plantings.

Vegetated Swale Installation & Planting*: Planting of herbaceous or other small rain garden plantings

Riparian Forest Management Area Plantings*: Planting and care of saplings and shrubs.

Streambank Stabilization & Restoration*: Small stabilization, streambank restoration, and planting projects.

Benches*: Construction and/or installation of benches.

Bird Blind*: Design, construction, locating and installation.

Interpretive Signage*: Research, writing of educational text, and collaboration with designer.

Kiosk*: Construction and installation.

DESIGN COST ESTIMATE – HARING TRACT

Table 11: Haring Tract Opinion of Probable Cost

**HARING TRACT IMPROVEMENTS
OPINION OF PROBABLE COST FOR DESIGN AND CONSTRUCTION*
UPPER SAUCON TOWNSHIP, LEHIGH COUNTY, PENNSYLVANIA**

PHASE ONE

	DESCRIPTION	UNIT	UNIT COST	QUANT.	TOTAL
A	<u>Erosion Control Measures and Stormwater Management</u>				
	Erosion Control Measures	LS	\$5,000.00	1	\$5,000.00
	Stormwater Management	LS	\$5,000.00	1	\$5,000.00
	<u>Subtotal</u>				\$10,000.00
B	<u>Rain Garden</u>				
	Rain Garden Installation & Planting*	LS	\$10,000.00	1	\$10,000.00
	<u>Subtotal</u>				\$10,000.00
C	<u>White Oak Tree</u>				
	Hazard Mitigation or Removal	LS	\$20,000.00	1	\$20,000.00
	Fencing	LS	\$10,000.00	1	\$10,000.00
	<u>Subtotal</u>				\$30,000.00
D	<u>Successional Forest Management Area</u>				
	Selective Mowing	LS	\$10,000.00	1	\$10,000.00
	<u>Subtotal</u>				\$10,000.00
E	<u>Dog Park</u>				
	Fencing	LF	\$48.00	3,400	\$163,200.00
	Electronic Entry System	EA	\$20,000.00	1	\$20,000.00
	Benches*	EA	\$1,000.00	3	\$3,000.00
	Fine Grading and Seeding	LS	\$50,000.00	1	\$50,000.00
	Buffer Plantings	LS	\$5,000.00	1	\$5,000.00
	<u>Subtotal</u>				\$241,200.00
F	<u>Signage</u>				
	Entry & Dog Park Signage	EA	\$2,000.00	1	\$2,000.00
	<u>Subtotal</u>				\$2,000.00

G	<u>Parking Lot and Access Driveway</u>				
	Gravel Parking Lot and Access Driveway	SY	\$20.00	1,848	\$36,960.00
	Paved Handicapped Parking Pad	SY	\$27.00	63	\$1,701.00
	<u>Subtotal</u>				\$38,661.00
H	<u>Trails & Permeable Pavers</u>				
	Crushed Stone Trail	LF	\$17.00	250	\$4,250
	<u>Subtotal</u>				\$4,250.00
I	<u>Additional Services and Project Administration</u>				
	Engineering and Design Services	LS	\$20,000.00	1	\$20,000.00
	Construction Observation and Inspections	LS	\$5,000.00	1	\$5,000.00
	Project Administration	LS	\$3,000.00	1	\$3,000.00
	<u>Subtotal</u>				\$28,000.00
J	<u>OVERALL SUBTOTAL</u>				
	15% Contingency				\$56,116.65
	<u>TOTAL</u>				\$430,227.65

Costs are approximate, are in 2017 dollars, and are subject to change dues to changes in site conditions, materials costs, or other unforeseen factors.

*Indicates tasks or amenities where portions of the work could be completed by volunteers in accordance with engineered drawings and under Township direction or the direction of an expert authorized by the Township:

Rain Garden Installation & Planting*: Planting of herbaceous or other small rain garden plantings.

Benches*: Construction and/or installation of benches.

HARING TRACT IMPROVEMENTS
OPINION OF PROBABLE COST FOR DESIGN AND CONSTRUCTION*
UPPER SAUCON TOWNSHIP, LEHIGH COUNTY, PENNSYLVANIA

PHASE TWO

	DESCRIPTION	UNIT	UNIT COST	QUANT.	TOTAL
A	<u>Erosion Control Measures and Stormwater Management</u>				
	Erosion Control Measures	LS	\$5,000.00	1	\$5,000.00
	Stormwater Management	LS	\$5,000.00	1	\$5,000.00
	<u>Subtotal</u>				\$10,000.00
B	<u>Picnic Area</u>				
	Shade Structure	LS	\$40,000.00	1	\$40,000.00
	Benches*	EA	\$1,000.00	3	\$3,000.00
	Picnic Tables	EA	\$1,500.00	6	\$9,000.00
	<u>Subtotal</u>				\$54,250.00
C	<u>Signage</u>				
	Interpretive Signage*	EA	\$750.00	3	\$2,250.00
	<u>Subtotal</u>				\$2,250.00
D	<u>Trails</u>				
	Boardwalks	SF	\$50.00	2,500	\$125,000
	Crushed Stone Trails	LF	\$17.00	8,000	\$136,000
	Crosswalk	EA	\$8,000.00	1	\$8,000
	<u>Subtotal</u>				\$269,000.00
E	<u>Riparian Buffers</u>				
	Plantings and Streambank Stabilization*	LS	\$40,000.00	1	\$40,000.00
	<u>Subtotal</u>				\$40,000.00
F	<u>Vegetation Management</u>				
	Selective Clearing and Grubbing of Invasive Species*	LS	\$20,000.00	1	\$20,000.00
	Selective Removal of Dead Trees	LS	\$40,000.00	1	\$40,000.00
	Supplemental Native Vegetation Planting	LS	\$20,000.00	1	\$20,000.00
	<u>Subtotal</u>				\$80,000.00

G	<u>Additional Services and Project Administration</u>				
	Engineering Services	LS	\$30,000.00	1	\$30,000.00
	Construction Observation and Inspections	LS	\$5,000.00	1	\$10,000.00
	Project Administration	LS	\$2,000.00	1	\$2,000.00
	<u>Subtotal</u>				\$42,000.00
H	<u>OVERALL SUBTOTAL</u>				\$509,250.00
	15% Contingency				\$76,387.50
	<u>TOTAL</u>				\$585,637.50

Costs are approximate, are in 2017 dollars, and are subject to change due to changes in site conditions, materials costs, or other unforeseen factors.

*Indicates tasks or amenity where portions of the work could be completed by volunteers in accordance with engineered drawings and under Township direction or the direction of an expert authorized by the Township.

Rain Garden Installation & Planting*: Planting of herbaceous or other small rain garden plantings.

Benches*: Construction and/or installation of benches.

Interpretive Signage *: Research, writing of educational text, and collaboration with designer.

Clear/Grub Invasive Vegetation*: removal of herbaceous and small woody invasive plants.

Riparian Buffer Plantings and Streambank Stabilization*" Planting and care of small trees and shrubs Planted to expand riparian buffer and improve streambank stabilization; small stabilization, streambank

Plantings*: Riparian buffer plantings could be completed by volunteers.

HARING TRACT IMPROVEMENTS
OPINION OF PROBABLE COST FOR DESIGN AND CONSTRUCTION*
UPPER SAUCON TOWNSHIP, LEHIGH COUNTY, PENNSYLVANIA

POTENTIAL FUTURE PHASE

	DESCRIPTION	UNIT	UNIT COST	QUANT.	TOTAL
A	<u>Erosion Control Measures and Stormwater Management</u>				
	Erosion Control Measures	LS	\$5,000.00	1	\$5,000.00
	Stormwater Management	LS	\$3,000.00	1	\$3,000.00
	<u>Subtotal</u>				\$8,000.00
B	<u>Trails</u>				
	Boardwalks	SF	\$50.00	1,700	\$85,000
	Crushed Stone Trails	LF	\$17.00	850	\$14,450
	<u>Subtotal</u>				\$99,450.00
C	<u>Parking Lot and Access Driveway</u>				
	Gravel Parking Lot and Access Driveway	SY	\$20.00	740	\$14,800.00
	Paved ADA Accessible Parking Pad	SY	\$27.00	62	\$1,674.00
	<u>Subtotal</u>				\$16,474.00
D	<u>Additional Services and Project Administration</u>				
	Engineering Services	LS	\$15,000.00	1	\$15,000.00
	Construction Observation and Inspections	LS	\$4,000.00	1	\$10,000.00
	Project Administration	LS	\$2,000.00	1	\$2,000.00
	<u>Subtotal</u>				\$27,000.00
	<u>OVERALL SUBTOTAL</u>				\$150,924.00
	15% Contingency				\$22,638.60
	<u>TOTAL</u>				\$173,562.60

PHASED CAPITAL DEVELOPMENT PROGRAM

Funds are budgeted every year in the Upper Saucon Township Budget and Fiscal Plan for capital improvements for Parks and Recreation within the Recreation Fund Budget. Funds for maintenance, materials, equipment, contracted services and utilities are budgeted within the General Fund.

Table 8: 2017 General Fund Recreation Budget

<u>Expenditures</u>	<u>2017⁴⁷</u>
Fuel, Light and Water	\$15,000
Materials & Supplies	\$25,300
Band Concert Expense	\$1,000
Contracted Services	\$75,700
Advertising Expense	\$800
Maintenance & Repairs	\$2,000
Contribution to Saucon Valley Living Memorial Park	\$18,500
Contribution to Limeport Stadium	\$5,000
Minor Equipment Purchases	\$48,500
Total Recreation General Services	\$191,800

Table 9: 2017 Recreation Fund Budget

	<u>Revenue⁴⁸</u>	<u>Expenditures⁴⁹</u>
Beginning Balance	\$986,315	
Subdivision Fees	\$500,000	
Interest Earnings	\$4,000	
State Capital and Operating Grants – Culture/Recreation	\$500,000	
Transfer from General Fund	\$250,000	
Bond Proceeds	\$2,000,000	
Total Revenue	\$3,254,000	
	=\$4,240,315	
Capital Purchases		\$4,217,000
Ending Balance	\$23,315	

The 2017 Recreation Fund Budget includes a \$4,217,000 line item for capital expenditures. Improvements proposed for the Benckini Tract and Haring Tract will not be completed in one phase. This will divide up expenses over several years and make them more manageable. It is anticipated that these improvements may be implemented in conjunction with DCNR Community Conservation Partnerships Program (C2P2) or other grants at a 50/50 match. For a detailed breakdown of expenses for each proposed development phase, please see *Tables 10 and 11, Opinions of Probable Cost*. Following is a description of the proposed phasing implementation:

⁴⁷ Upper Saucon Township 2017 Budget and Fiscal Plan. Adopted December 19, 2016.

⁴⁸ Upper Saucon Township 2017 Budget and Fiscal Plan. Adopted December 19, 2016.

⁴⁹ Upper Saucon Township 2017 Budget and Fiscal Plan. Adopted December 19, 2016.

Benckini Tract

Phase One: 2-7 Years (Approximate)

All improvements proposed in the section of the park between the creek and Preston Lane. The gathering area west of the creek will be used as a temporary outdoor classroom and gathering area until the bridges can be designed and constructed, thereby enabling access to the other side of the creek. Improvements in this phase include documentation and partial demolition of the existing farmhouse, restoration of the log cabin and construction of the log cabin gathering area, grubbing and clearing invasive vegetation and selected nursery trees, nursery tree rehabilitation, meadow and pollinator habitat seeding, parking lot and access driveways and stormwater management features, walking trails and boardwalks, shade structures and amenities, the stream access area, and riparian plantings and streambank restoration.

Phase Two – 7-10 Years (Approximate)

Design and construction of the two bridge crossings and all improvements between the creek and the eastern property boundary, including clearing and grubbing of invasive vegetation, seeding and planting the wet meadow area, plantings in the riparian forest and streambank stabilization management areas, walking trails and boardwalks, and shade structures and amenities.

Haring Tract

Phase One: 2-7 Years (Approximate)

Design and construction of the dog park, parking lot and access drive, stormwater management for the parking lot, trail access to the dog park and picnic area, hazard mitigation or removal of the large white oak tree and fencing (if needed), and park signage. Construction of these initial improvements will provide general access to the park in the eastern portion of the site and construction of the dog park which the community has indicated is a priority. Implementation of selective mowing for the successional forest management area in this phase will enable ongoing management of invasive and other undesirable species in this area, whereas waiting to implement selective mowing in this area until phase two would ensure much more invasive vegetation that would need to be removed.

Phase Two – 7-10 Years (Approximate)

Consists of implementation of the remainder of the conservation plan including riparian buffer plantings and streambank stabilization, selective invasive species and dead tree removal, and planting of supplemental native vegetation. Also included is installation of a shade structure and amenities for the picnic area, interpretive signage, boardwalks, crushed stone trails and a crosswalk to connect the site to the Saucon Valley Rail Trail. This phase focuses on providing access and stewardship for the remainder of the site.

Potential Future Phase

Includes a possible additional parking lot in the Township-owned parcel to the south, with trail access to the park, boardwalk crossing of riparian areas, and ADA parking.

Funding Opportunities

DCNR Community Conservation Partnerships Program (C2P2)

- Overview of PA DCNR Grant process:
 - 50/50 local match required
 - Online grant application
 - Grant round opens in January of each year
 - Applications are due in early April of each year
 - Site visit/meeting with PA DCNR representative is required prior to application
- Types of projects funded through PA DCNR C2P2 grants include (but are not limited to):
 - **Development and/or Rehabilitation**
 - “Rehabilitation and development of public parks, recreation facilities, greenways, and rivers conservation projects”.
 - Park Construction (may include detailed engineering)
 - **Riparian Forest Buffer Program**
 - “Provides financial assistance to identify locations in need of riparian forest buffers and to design, establish, monitor and provide short-term maintenance for these buffers. Applicants are encouraged to include the Multifunctional Buffer Concept in their proposed project.”
 - Minimum grant amount is \$50,000; minimum project including match would be \$100,000.
 - Property must be owned by applicant or applicant must have the permission of the landowner through a legal agreement permitting installation and long-term monitoring, an easement for a term of at least 25 years, or a property lease for at least 25 years.
- <http://www.dcnr.state.pa.us/brc/grants/>

Department of Community & Economic Development Grants (DCED)

- Overview of Grant Process
 - 15% cash match required
 - Online grant application (DCED Single Application for Assistance) with \$100 non-refundable application fee due at the time of submission.
 - Grant applications are accepted between February 1st and May 31st each year.
- Types of projects funded through DCED grants:
 - **Watershed Restoration and Protection Program**
 - For the restoration and maintenance of restored stream reaches impaired by the uncontrolled discharge of nonpoint source polluted runoff, and ultimately the removal of these streams from the Department of Environmental Protection’s (DEP’s) Impaired Waters list. This may be accomplished by the implementation of watershed based Best Management Practices (BMP’s) for agriculture, stormwater, stream bank and channel restoration, as well as for BMP repair, upgrade or operation and maintenance of existing practices.
 - Grants shall not exceed a total of \$300,000 for any project, not including match amount. Project costs must be incurred within the time frame established by the grant agreement. Construction contingency is limited to

5% of actual construction costs; no more than 10% of the grant may be used of engineering and construction oversight.

- <http://dced.pa.gov/programs/watershed-restoration-protection-program-wrpp/>
- **Greenways, Trails and Recreation Program (GTRP)**
 - Funding is provided through the Marcellus Legacy Fund for the planning, acquisition, development, rehabilitation and repair of greenways, recreational trails, open space, parks and beautification projects.
 - Grants shall not exceed a total of \$250,000 for any project, not including match amount. No more than 10% of the grant award may be used for engineering and construction oversight costs; construction contingency is limited to 5% of actual construction costs, and administrative costs shall not exceed 2% of the grant.
 - <http://dced.pa.gov/programs/greenways-trails-and-recreation-program-grp/>

TreeVitalize Grants

- **Watersheds**
 - Focuses on tree planting along stream corridors, wetlands, adjacent upland areas, headwaters, and “naturalized” stormwater basins.
 - Funded through PA DEP and Aqua PA, as well as in-kind contributions.
 - “Anyone with a good project on permanently protected land can apply.”
 - Grant covers plant costs including delivery, and may also be applied toward site preparation, mulch, watering bags and tree shelters. Requires a 25% match. In-kind contributions such as volunteer and staff time, maintenance and site preparation are applicable toward the match.
 - A maximum of \$1,000 may be used toward consultant’s fees. The use of consultants is discouraged for most projects.
 - To apply, contact the Lehigh County Conservation District Watershed Specialist. Applications can be completed online.
 - <https://phsonline.org/programs/plant-one-million/treevitalize-watersheds-grant-program-2017>
- **Tree Planting**
 - Aimed at providing assistance for tree plantings in community and urban areas along streets, parks, and other publicly accessible areas.
 - All trees funded through this grant must be added to the PA Community Tree Map.
 - Maximum \$1,500 grant request with a 1:1 match. Cash or in-kind donations may be used for the match.
 - Municipalities and non-profit organizations are eligible.
 - Allowable expenses include tree costs, mulch, stakes, watering bags and items specific to the project.
 - <https://treepennsylvania.org/treevitalize-grants-program/>
- **Community Forestry Management Grants**
 - Provides assistance for tree care management plans, tree inventories, pruning, short term employment (including internships), educational workshops, webinars, urban wood utilization, ordinance development, and other aspects of urban forestry.

- Funding is not provided for tree planting for this grant.
- Minimum of \$5,000/Max \$50,000 grant request with 1:1 match of any combination of at least 75% cash/25% non-cash match must be included in the proposed budget.
- <https://treepennsylvania.org/treevitalize-grants-program/>
- **Urban Riparian Buffers**
 - Provides assistance for urban riparian buffer tree plantings adjacent to community and urban waterways.
 - All funded trees must be added to the PA Community Tree Map.
 - Minimum of \$5,000/max \$25,000 grant request with a 1:1 match of any combination of cash/non-cash must be included with the proposed budget.
 - <https://treepennsylvania.org/treevitalize-grants-program/>

MAINTENANCE, OPERATING COSTS, AND REVENUE

Existing and Proposed Level of Operation

Maintenance for Upper Saucon Township Parks is funded through the General Fund Budget (*please see Table 8 General Fund Recreation Budget*). The 2017 General Fund Recreation budget allocates a total of \$191,800 for general recreation services, including utilities, materials and supplies, contracted services, maintenance and repairs, and minor equipment purchases. Approximately 10% of the 2017 Recreation Fund will be used for park maintenance and repair in Upper Saucon Township.

One permanent Township employees will provide maintenance services for these parks. The majority of maintenance work at the parks will consist in annual mowing of seeded areas and periodic maintenance mowing of paths, as well as more frequent mowing and maintenance in the dog park area. No increase in the number of Public Works employees is anticipated based on the proposed changes to the park.

Maintenance and Operating Costs

The life cycle cost for the proposed improvements can be lowered by using a variety of sustainable design materials and practices. Proposed sustainable design materials and practices include the use of Best Management Practices for stormwater management, the use of native, locally sourced plant material and seed mixes that are site-appropriate and will require minimal care once established, the use of renewable resources such as timber, the use of crushed stone and mowing for the trails, and locally sourced materials such as the potential re-use of building materials from the existing structures.

It is not anticipated that administrative costs will increase as a result of the proposed improvements. Administrative functions will be handled by existing Township staff.

One permanent Township employee will be responsible for the maintenance of the proposed park facilities. Wages for the employees are \$21.36 per hour. No overtime or fringe benefits beyond existing levels are anticipated.

Township maintenance equipment available to be utilized in the maintenance of these parks include a wide variety of mowers, trimmers, snow blowers, tractors, hand tools, and power tools.

It is not anticipated that additional maintenance equipment will need to be purchased for the proposed improvements.

Revenue

It is not anticipated that any revenue of significance will be generated from the construction of these improvements. It is anticipated that any fees that may be generated for dog park membership will be used for maintenance and upkeep of the dog park, and that the dog park will be self-sustaining through those membership fees.

BENCKINI TRACT STRUCTURAL ASSESSMENT

The house in question is a two-story structure, built approximately in 1800 with a small additional structure adjoining but not connected. The primary building faces west, with the secondary structure on the north side.

The original construction of this building is an interesting and fairly unique log and stone construction. The log cabin logs were squared off on the sides and left mostly round top and bottom. The gaps between logs appears to be fairly large and has been infilled with stonework rather than traditional mud or mortar chinking, giving a distinctive look. The corner joints are dove-tail joints and lock together tightly, showing good craftsmanship during construction.

The house has a fairly recent roof that appears weather tight, with little evidence of leaking. The walls of the house have been covered with lath strips and siding. The front (west side) and south end of the house have aluminum siding and the rear (east) side has wood clapboard. The north end of the house is exposed log construction with wood clapboard on the upper half. A porch is along the front of the house has rotted posts and is starting to settle away from the house.

The interior of the house is in poor condition. Ceilings are collapsing showing old plaster and lath. The first floor, in the south end of the house has a hole in the floor approximately 3-5 feet wide. It appears the a few floor joists may have failed and that end of the house is questionable to walk into, probably unsafe. The basement was not accessible as the stairs were blocked. The second floor is accessed by a small winding stair and the floor close to the stair landing is sagging and approaching collapse, restricting access to the second-floor bedrooms. Evidence of possible squatters was noted and an old mattress is in one bedroom. Several holes were seen in the flooring from where we could stand. When the second-floor sag was investigated, it was noted that several floor beams have been deeply notched and at least one cut through. (see photos 2207 and 2208). There is evidence of the exterior walls sagging in several locations where windows were installed. All the windows are in poor condition and boarded over. There is no working plumbing in the house and the electricity has been disconnected. Given the age of this building, it is very possible that lead paint would be found and possibly asbestos in the plaster or pipe insulation.

The adjoining structure is an old timber framed building, possibly a “summer kitchen”. The siding is off on the north side of the building (away from the main house). Where this framing is exposed, it is evident that the structure is out of plumb and square and may be approaching collapse. Visible through this gap of siding is the old brickwork for the fireplace. This brickwork is starting to collapse and shows many gaps. The roof has a pronounced sag along the ridge line and was not accessible. After opening the boards to look into the structure, I felt it would be unsafe to enter and climb the stairs to the second floor.

The log house has many interesting and historic features. The dovetail corner joints are tight and well made (at least the ones that are visible). Some of the lowest logs sitting on the stone foundation are very soft and allowed a 3" steel blade to be inserted without trouble, showing evidence of dry rot. The log and stone construction is attractive and fairly unique and seems to be in good condition. Many of the first-floor planks are 14" wide or more and most exceed 12" in width. After an environmental review and abatement if necessary, the floors could be assessed for structural repair by an architect or structural engineer. The property as it stands is not accessible to the public, but ramping could be investigated if the interior was to be opened. If the house was only visible from the outside, the exterior could be used to show a "time line" of how this house has changed through the years, first as a log house, then wood clapboard, then aluminum siding. The porch needs repair or removed, although it provides a nice feature to the house. The "summer kitchen" should be assessed by a structural engineer but appears to be beyond repair unless a great deal of money is spent.

In summary, I would suggest that this structure be viewed as two parts of one building. The "summer kitchen" area, the detached structure shows some serious structural settling and is probably not worth saving. The main building has several interesting features, although a structural engineer would need to be brought in to design the repairs required to repair the damaged and settling floors. It is not accessible, and as such could not be opened for use where public or township personnel would use the space.

Possible uses for this space would include several options, and I will offer a few suggestions here:

1. The house and adjoining structure could have extensive documentation photographs taken, and research done to date the house (I found info dating it around 1850) and then they could be completely demolished. If this choice is followed, I would point out that I saw very nice wide pine floor boards that would possibly provide some income, as could some of the logs forming the structure of the house.
2. The secondary "summer kitchen" could be demolished and removed, the main building repaired enough to be structurally sound, and it could be used as a walk-past example of older building construction. It currently shows a log cabin construction, partial wood clapboard siding, and aluminum siding over that, showing how a very old house is "hiding" inside of some nondescript aluminum siding.
3. The main building could be partially demolished, with the advice and design of a structural professional. This could be used to allow people to "walk" around the outside and inside of the house and see how the older log house was finished on the inside, as well as giving them a close look at the outside of a well-built log home, with the distinctive river rock chinking used at this location.

Committee Recommendation:

Based on the options presented in the structural assessment, the Committee recommends implementation of Option 2, extensive documentation and then partial demolishment of the existing structure, with possible pavilion or other protective structures used to protect existing features, the provision of educational signage, and the provision of other educational elements such as the installation of rain chains and/or rain barrels for education on stormwater best management practices.



BENCKINI HOUSE ATTIC MAY 2011



MAY 2011 BENCKINI HOUSE BASEMENT



BENCKINI HOUSE BASEMENT MAY 2011

HARING TRACT CONSERVATION PLAN

As part of the preparation of this Master Site Development Plan, it was requested that a Forest Stewardship Plan be prepared. Over the course of discussing the site, the Study Committee determined that the primary stewardship goal for the wooded areas of the site is ecosystem and forest health.

A traditional Forest Stewardship Plan often focuses primarily selective on logging as a method of forest regeneration, by removing trees from overgrown areas, or removing undesirable trees or species. Much of the forested area on the site is very wet, and it would be impractical to use such a method in these areas. Fortunately, there are many open areas already located within the wooded and riparian areas on the site that can be used for the promotion of forest growth, and the majority of the open field areas on the site are to be converted to successional forest management areas. This provides prime opportunity to encourage biodiversity within the site and the growth of desirable canopy, understory, and ground layer plants. Therefore, this section focuses instead on methods that can be employed, aside from logging or tree removal, to encourage biodiversity and a healthy forest ecosystem.

The diversity of site conditions presents the opportunity to cultivate different ecosystem environments such as wet meadow, wet forest, dry upland forest, wetland and marshland. Each of these areas have the potential to foster a great many plant and animal species by providing food, cover water and space.

Existing Vegetation (Stewardship Units)

Several basic ecosystem areas (or stewardship units for the purposes of this report) are located on the site. Meadow, wet meadow and wetland areas that are not dominated by woody vegetation are included as well. In order to manage the growth of a healthy successional forest, to improve the health of the existing forest, and to improve the riparian buffer, all areas of the site must be considered. As part of preparing the Conservation Plan, a general survey of site vegetation was made. This is not meant to be a comprehensive list, but an overview of the existing plant communities on the site. Please see *Appendix P Haring Tract Conservation Plan* for a diagram showing the locations of each of these stewardship units.

Hedgerows

Hedgerows are created as a result of former agricultural activities on the site; vegetation ranges from young volunteer species such as Sassafras, Black Cherry, Black Walnut, Ash, and Slippery Elm to larger trees that were allowed to stand in place to serve various purposes for the farmer. A number of sizeable trees can be found in the hedgerow on the western end of the site, and include species



such as Hickory, and Red Oak. Interspersed in the hedgerows are shrubs, which are primarily invasive species such as Russian Olive and Honeysuckle. In addition, a number of Norway Maple trees, which are also invasive, are located throughout the site.

Mature Forest

Most mature forest areas on the site are located on the opposite sides of the stream from the remainder of the site. These are the areas where large, mature trees can be found. These areas have a mature canopy, but as with other areas on the site, understory vegetation is crowded with invasive species. Large tree species include White Oak, Hickory, Maple, Elm, Linden, Red Oak, and Ash. Along the forest edges, Black Cherry and Walnut can be found. Again, Russian Olive, Honeysuckle, and some Multiflora Rose take up most of the understory, with Wild Grape and Oriental Bittersweet competing with the shrubs and trees for light. There are upland, drier areas within this forested area, but the majority of the area is taken up with wet-tolerant vegetation due to the riparian areas on the site. Wettest areas have large amounts of Japanese Stiltgrass, Skunk Cabbage, ferns, and other wet and shade-tolerant herbaceous vegetation.



Stream Corridor surrounded by mature forest vegetation.

Farmhouse Vegetation

It appears that tree growth was encouraged around the farmhouse to provide shade and shelter, due to the size of the trees in this location. Trees in this area include Maple, Sycamore, Ash and Black Walnut, with little understory vegetation aside from some shrubs and herbaceous vegetation, likely due to regular mowing or other disturbance and the shade provided by the mature canopy.



Farmhouse Vegetation

Wetlands & Wet Meadow

This area consists of a large swath of wet, often saturated growth surrounding the creek along the southern property line. Only portions of this area have been delineated as wetlands at this time. Vegetation within this area to the rear of the farmhouse contains a large amount of Japanese Stiltgrass, an invasive species that appears to be doing quite well in this area. However, within the Stiltgrass are a number of native herbaceous plants that are quite valuable to wildlife, including sedges, ferns, Skunk Cabbage, and Arrow Arum, which all appear to be holding their own. The stream meanders out into the open as it moves to the west, and in several locations, shows signs of eroding cut banks. Moving north the terrain slopes upward, resulting in drier areas that provide habitat for thistles and goldenrod. The wetland area closest to the western property line is dominated by cattails, sedges, grasses and ferns. Throughout this area are also several invasive species, including Honeysuckle, Multiflora Rose, Japanese Stiltgrass, Wineberry, and Oriental Bittersweet. Wild Grape competes with plants as well.



Mature Vegetation on Left, Stream and Wetland Vegetation in Center, Drier Uphill Herbaceous Vegetation on Right.



Arrow Arum with Japanese Stiltgrass

Wet Meadow

Several areas of wet meadow are located on the site. One of these areas, as discussed previously in the Site Information and Analysis section, essentially bisects the site. Water drains from a culvert under Passer Road down through the center of the site, creating a large marshy area with sedges, ferns, cattails, and thistle. This area gradually drains into the Tumblebrook tributary. It appears that this large marshy area acts as a delta, slowing the water down before it reaches the stream.



The second area is located in the eastern portion of the site, and is surrounded by hedgerows. The Tumblebrook tributary moves through a culvert under Passer Road just east of the intersection with Dogwood Drive. In the vicinity of Passer Road, the site is dominated by grasses, and moving down into the site invasive shrubs and vines become prevalent. These include Honeysuckle, Wineberry, Russian olive, Multiflora Rose, and Wild Grape. Younger volunteer type tree species dominate the surrounding hedgerows. Moving downhill into the wetter areas, larger trees can be found.



Looking south from the Passer Road Culvert to the Tributary to Tumblebrook. Wild Grape and other vines can be seen on the tree to the right.

Meadows

The remainder of the site is taken up in meadow areas that are regularly mowed. Interspersed are a number of volunteer old field species, including Eastern Redcedar, Russian Olive, and Callery Pear. The site is currently mown regularly, so little other vegetation aside from grasses and these few larger woody plants is present.



Site Opportunities and Constraints for Forest Stewardship

On any site where ecological health is considered, a number of opportunities and constraints present themselves. As with the Existing Vegetation Conditions description, this is not meant to be a comprehensive list but an outline of the overarching issues present on the site.

Constraints

- There are a large number of Ash trees on the site. Some of these trees are very large, and some are already in decline due to the Emerald Ash Borer. This may present an issue as more of these trees die, leaving many large, dead trees on the site.
- Invasive species on the site create challenges for promoting the growth of native vegetation.
- Wet conditions may make removal of invasive species, planting, or other work in those areas difficult.
- Invasive species removal and management of invasive species on the site may be time consuming and expensive, and will never be 100% complete.
- Forest areas are not ‘intact’ and provide mostly edge forest habitat as opposed to large interior forests that many species need.

Opportunities

- The large number of Ash trees creates opportunities to provide snags (standing dead wood), a valuable resource for birds, insects, and other animals that use these trees for food and shelter.
- There are many very large, mature trees on site, in a variety of native species.
- The native vegetation on the site is not monocultural and contains a variety of species that benefit native wildlife. This presents a great ‘jumping off’ point to further improve ecosystems on the site.
- Wetlands and other wet areas on the site, in combination with the dry areas and forested/meadow areas, are conducive to many different ecosystems that can support a wide variety of native plant and animal species.
- Large mown areas on the site, if managed carefully, can grow into a healthy, ecologically sound forest that will expand small existing forest fragments into a more ecologically diverse ecosystem that connects to the larger surrounding forest and expands habitat for forest interior dwelling species.

Recommendations

Following are recommendations for conservation and maintenance strategies for the Haring Tract, to be used to maximize ecological health and biodiversity on the site. It should be noted that many of these strategies may be used on the Benckini Tract as well.

Site Monitoring

Strategic monitoring, in particular by interested volunteer groups, can provide valuable long-term information about the wildlife and ecosystems on the site and can shape the direction of management activities to maximize ecological benefit. Volunteers can periodically survey the property to take a ‘snapshot’ of plant, bird, mammal, insect etc.

species found on the property. This can provide valuable information as to whether current management strategies are functioning as intended, or if a change of conservation methods is needed.

Use A Strategic Approach to Invasive Species Management

Invasive species are prevalent on this site, as they are in many places. A focus on removing all invasive species on the site would be both time consuming and exorbitantly expensive. Instead, the focus should be on managing invasive species in such a way as to permit desirable native species to remain competitive and grow to maturity, and where new plantings are installed, to protect them from competition until they are established and have gained a foothold on the site. For additional information on the species mentioned in this report, please see *Appendix U: Conceptual Details, Specifications, and Best Management Practices*. For additional information on best practices for invasive species management and removal techniques, please see the *Additional Resources* section. Recommended methods and best management practices to accomplish this goal include:

1. Use only best management practices for invasive species removal:

Soil Disturbance

- Minimize soil disturbance whenever possible.
- Stabilize disturbed soils as soon as possible by seeding and/or using mulch or hay that is free of invasive plant material. Seeds of native species should be used; species on the DCNR invasive species list should never be used.
- Do not bring materials such as fill, loam, mulch, hay, rip-rap and gravel from sites where invasive plants are known to occur. If the absence of invasive plant parts in these materials cannot be guaranteed, recent work sites should be monitored for invasive plants for a minimum of two years after project completion.

Mowing and Equipment Maintenance

- Invasive species to be mown should be mown before seed maturation (prior to August 1st in most cases.)
- If equipment must be used in areas where invasive plants occur, all equipment, machinery, and hand tools should be cleaned of all visible soil and plant material before leaving the project site.
- Equipment should be cleaned at the site of infestation. Acceptable methods of cleaning include, but are not limited to:
 - Portable wash station that contains runoff from washing equipment (in compliance with wastewater discharge regulations);
 - High pressure air;
 - Brush broom, or other hand tools (used without water).
- Mowing equipment should be cleaned at least daily, as well as prior to transport, particularly if mowing occurs after seed maturation (August 1st).
- Locate and use staging areas that are free of invasive plants to avoid spreading seeds and other viable plant parts.

Disposal of Plants and Other Site Work

- Invasive plant material may be composted only if the compost pile reaches very high temperatures and the finished compost can be monitored for invasive species emergence.
 - Invasive plant material must be tightly covered or bagged during transport.
 - Place soils, seeds and other debris in plastic bags in the trash, or incinerate.
 - Do not transport woody plant materials that may contain non-native invasive species.
 - Inspect and clean clothing, footwear and gear for soils, seeds, plant parts before and after activities and properly dispose of.
 - Herbicide applications must be carried out by a licensed applicator with a Pesticide Applicator Certification from the Pennsylvania Department of Agriculture. All label and state requirements should be followed.
 - Select locally native species for re-vegetation and restoration activities.
2. Focus on invasive species removal efforts that will yield the most benefit:
- Remove invasive and competing vines such as Wild Grape, Oriental Bittersweet, and Honeysuckle from trees on a regular basis. Vines should be cut at ground level prior to fruiting and can be left to die in the tree. If cut after fruiting, all vines and fruit should be disposed of and bagged as described above. Vines will re-sprout and should be re-cut several times per growing season until the vine dies.
 - Remove invasive species from the vicinity of new plantings and maintain the planting area free of invasive vegetation until the desired plantings are established and are vigorous enough to compete on their own.
 - Strategic brush-hogging or using a weed wrench on shrubs prior to fruiting can be useful in removing large and small shrubs. Brush hogging may need to be performed at periodic intervals until the plants' energy reserves have been depleted.
 - Consider the removal of several particular invasive species that are prolific seeders prior to permitting the large Successional Forest Management area to convert to an old field. Species to consider are Norway Maple, Callery Pear, and Russian Olive. While the seed bank will still be active after the removal of these plants, removing continued seeding from mature plants of these species will go a long way to reducing the quantity of seeds in the soil.

Selectively Remove Ash and Other Dead Trees

A large number of dead, dying and healthy Ash trees are located on the property. It is likely that all the Ash on the property will be killed in the next several years due to the Emerald Ash Borer. Removal of all of these trees would be difficult and very expensive. However, dead standing trees provide innumerable benefits to wildlife, and can be very important in the development of ecosystems. Any dead Ash trees in the vicinity of trails, the dog park, picnic area, or other locations where people will be regularly should be removed. Otherwise the trees should stand in order to benefit wildlife.

Plant Within the Riparian Buffer Area and Stabilize Streambank

Planting the entire Successional Forest Management Area in seedlings and container plants would be costly, time consuming, and would require significant maintenance. Instead, focus should be placed on the portion of the site where the most benefit can be gained in the shortest amount of time; within the riparian buffer area. The entire area need not be planted all at one time. Sections that need immediate attention, such as where an erosion issue is present, should be addressed first. For additional information on strategies, best management practices, and other recommendations for riparian buffer planting and streambank stabilization, please see the documents listed in the *Additional Resources* section.

Successional Forest Management Area

Developing a Successional Forest Management Area can be tricky. Permitting the fields to grow on their own can result in large amounts of invasive species on the property. Planting the entire area would be economically unfeasible. Instead, the use of a ‘semi-passive’ method of successional growth is recommended. The steps are as follows:

- Prior to mowing any of the successional forest areas, the barbed wire fence running westward from the Farmhouse area along the boundary of the riparian buffer should be removed for safety reasons and to permit the free passage of wildlife.
- Implement a temporary rotation mowing cycle where the successional forest management area is divided into thirds, with one third being mowed each year.
- Prior to the first mowing, flag desirable tree and shrub species to remain with brightly colored flagging (such as Eastern Redcedar, White Pine, Aspens, Birches, Cherries, Sweetgum, Tulip Tree, Serviceberry, and Bayberry.) Mow all herbaceous vegetation and brush hog undesired woody species within one of the rotation areas.
- In the subsequent year repeat the procedure with the second area, and in the third year mow the third area.
- Continue this for two more cycles, and re-evaluate whether the desired native tree and shrub species are dominant and are able to compete effectively with invasive species. At this point, mowing can be discontinued.
- Mowing should not be done between April 1 and June 20 to protect ground nesting bird species.
- Do not mow in wet meadow, wetland, or riparian buffer areas.
- Periodic spot-checks for infestations of invasive species as the succession area moves toward becoming a mature forest should be performed, to ensure the continued dominance of native species.
- Where volunteer or other groups wish to plant trees within the succession area, it is recommended that those trees be planted close to pathways and are protected from deer and invasive species. Volunteer groups should, in addition to planting the trees, provide maintenance for a year or two after installation to ensure the success of the trees and shrubs.

Plant for Biodiversity and Ecological Benefit

Care should be given to the selection of native plants that will be planted on the site. First, consideration should be given to the environment in which the plant is to be located. Wet-tolerant plants should be planted in wet areas, plants that require dry conditions should be located uphill. For information on native plants, their preferred environments, and wildlife benefits, please see *Appendix U: Conceptual Details, Specifications, and Best Management Practices*.

Protect Volunteer Native Species for Ecological Benefit

Consideration to wildlife value is of great importance, as is the ability of the plant to compete with invasive species. For example, Wild Grape is located in a number of locations throughout the site. Earlier in this report, a recommendation was made to remove vines from trees. Overall, removing vines from trees will provide a great benefit to the site. However, Wild Grape is a native plant, and while aggressive, can provide many wildlife benefits. It may be beneficial to remove the Wild Grape from desirable native plants, and leave the vine in an invasive shrub to simultaneously allow the vine to choke out the invasive plant, and to provide food for animals.

Another method of encouraging and protecting native vegetation is to perform a ‘tree release’, which is essentially removing surrounding plants from competition whether it be removing plants that are shading the desired species from overhead, or completely removing adjacent herbaceous species to eliminate root competition.

Protect New and Volunteer Desired Plants from Invasives, Deer and other Predators

Make periodic surveys of the property for new volunteer native plants and prioritize those that would be ecologically beneficial to the property. Focus can be placed on these plants for protection by removing invasive species within the vicinity of the plants, the use of tree tubes, boost the ability of the plant to compete with surrounding invasive species and animal predators.

IPM Strategies

Consider development and implementation of an Integrated Pest Management policy. Integrated Pest Management (IPM) is an ecologically sound approach to suppressing and eliminating pest populations. IPM involves a decision-making process for managing pests that uses monitoring (to determine pest injury levels) and combines biological, cultural, physical, and chemical tools to minimize health, environmental, and financial risks. The method uses extensive knowledge about pests, such as infestation thresholds, life histories, environmental requirements, and natural enemies to complement and facilitate biological and other natural control of pests. IPM uses site-specific information about pest biology and behavior, environmental conditions and the dynamics of human characteristics and activities to prevent and control pests. The method uses the least toxic synthetic pesticides only as a last resort.

IPM policies often include the components and strategies outlined below. Where feasible, consideration should be given to a range of potential treatments for the pest problem and employ non-pesticide management tactics first, consider the use of

chemicals only as a last resort, and select and use chemicals in accordance with the provisions of a Township adopted IPM Policy.

- Monitor pests to determine pest population size, occurrence, and natural enemy population, if present. Identify decisions and practices that could affect pest populations. Keep records of monitoring results.
- Set treatment levels for each pest at each site based on how much biological, aesthetic, or economic damage the site can tolerate.
- Determine the most effective treatment time, based on pest biology and other variables, such as weather, seasonal changes in wildlife use, and local conditions. Pesticides shall not be applied when wind speeds are greater than 10 mph, when relative humidity is low, when temperature inversions are likely or when temperatures are above 80 degrees Fahrenheit.
- Design construction and building remodels to reduce or eliminate pest habitats and improve efficiency in facility and landscape maintenance and sanitation.
- Reduce pest incidences by modifying management practices such as watering, mulching, fertilizer use, and pruning.
- Modify pest ecosystems, including waste management and food storage, to reduce pest food, living space, and access.
- Use physical controls such as hand-weeding, traps and barriers, heat and cold.
- Use biological controls such as introducing or enhancing pests' natural enemies i.e., providing bat houses in large open areas to promote habitats for local bat populations.
- When indoors, use baits or least toxic methods of pest control rather than sprays.
- Monitor treatment to evaluate effectiveness.
- Maintain detailed records.

Provide Cover for Wildlife

In order to attract and retain wildlife, the four basic needs of each species must be met: food, water, space and cover. The food and water elements are self-explanatory; to attract a certain species, the food it eats and the water it needs (temperature, depth, location, etc.) must be provided. Space refers to the area that a specific species needs. Larger areas of continuous forest cover and larger meadows tend to attract more species. As the landscape converts back to a forested state, more and more species will be attracted to the site. The last key element is cover. Wildlife needs cover to raise their young, hide from predators, and gain protection from the elements. Following are examples of 'cover' that can be provided for wildlife on the site:

- Dead trees or snags. As discussed earlier, dead trees are invaluable for many types of wildlife. Dead trees, both standing and fallen, provide

cover and habitat for over 35 species of birds, 20 species of mammals and many other reptiles, insects, and amphibians.⁵⁰

- Brush piles
- Some native plant species provide cover for animals, such as plants with hollow stems that provide shelter for some types of bees.
- Build and locate nesting boxes or other nesting structures for birds and bats, or nesting platforms for certain waterfowl.
- Provide turtle docks for turtles.

Many of these cover structures can be created by volunteer groups, school classes, or boy scouts and girl scouts, all while providing important educational opportunities.

⁵⁰ Creating Sustainable Community Parks and Landscapes: A Guide to Improving Quality of Life by Protecting Natural Resources. 2nd Edition. PA DCNR. March 2010.

ADDITIONAL RESOURCES

Alliance for the Chesapeake Bay. September 1998. Stream ReLeaf Forest Buffer Toolkit.

Bushkill Stream Conservancy. 2009. Establishing Streamside Buffer Areas in Your Park or Community.

Lehigh Valley Conservation District. March 2009. Saucon Creek Watershed Conservation Management Plan.

Natural Lands Trust. 2008. Stewardship Handbook for Natural Lands in Southeastern Pennsylvania.

Natural Lands Trust. 2008. Land for Life: A Handbook on Caring for Natural Lands.

PA DCNR. March 2010. Creating Sustainable Community Parks and Landscapes: A Guide to Improving Quality of Life by Protecting Natural Resources.

PA DCNR Invasive Plants Fact Sheets.

<http://www.dcnr.state.pa.us/forestry/plants/invasiveplants/index.htm>

PA DCNR Invasive Plant Management Tutorial for Natural Lands Managers.
<http://www.dcnr.state.pa.us/forestry/plants/invasiveplants/invasiveplanttutorial/index.htm>

PA DEP Bureau of Watershed Management. December 30, 2006. Pennsylvania Stormwater Best Management Practices Manual.

PSU College of Agricultural Sciences, Cooperative Extension. 1979. Woodlands and Wildlife.

PSU College of Agricultural Sciences, Cooperative Extension. 1998. Management Practices for Enhancing Wildlife.

PSU College of Agricultural Sciences, Cooperative Extension. 2001. Best Management Practices for Pennsylvania Forests.

PSU College of Agricultural Sciences, Cooperative Extension. 2005. A Guide to Preserving Trees in Development Projects.

The Nature Conservancy Wildland Invasive Species Team. 2001. Weed Control Methods Handbook: Tools & Techniques for Use in Natural Areas.

USDA Forest Service. 1998. Chesapeake Bay Riparian Handbook: A Guide for Establishing and Maintaining Forest Buffers.

Xerces Society. 2011. Attracting Native Pollinators: The Xerces Society Guide to Conserving North American Bees and Butterflies and their Habitat.

Zimmerman, Catherine. 2010. Urban & Suburban Meadows: Brining Meadowsaping to Big and Small Spaces.

APPENDIX A: KEY PERSON INTERVIEW NOTES

APPENDIX B: COMMITTEE MEETING MINUTES

APPENDIX C: VISIONING MEETING DATA

APPENDIX D: ADDITIONAL PUBLIC COMMENT

APPENDIX E: BENCKINI TRACT EXISTING FEATURES

APPENDIX F: BENCKINI TRACT SITE ANALYSIS

APPENDIX G: BENCKINI TRACT TREE
INVENTORY DATA AND MAP

**APPENDIX H: BENCKINI TRACT
NATURAL HERITAGE INVENTORY
VEGETATION SURVEY**

**APPENDIX I: BENCKINI TRACT PNDI RECEIPT AND
CORRESPONDENCE**

**APPENDIX J: BENCKINI TRACT
PHASE I BOG TURTLE SURVEY**

APPENDIX K: HARING TRACT EXISTING FEATURES

APPENDIX L: HARING TRACT SITE ANALYSIS

APPENDIX M: HARING TRACT TREE RISK ASSESSMENT

**APPENDIX N: HARING TRACT PNDI RECEIPT AND
CORRESPONDENCE**

**APPENDIX O: HARING TRACT
PHASE I BOG TURTLE SURVEY**

APPENDIX P: HARING TRACT CONSERVATION PLAN

**APPENDIX Q: BENCKINI TRACT FINAL MASTER SITE
DEVELOPMENT PLAN**

**APPENDIX R: HARING TRACT FINAL MASTER SITE
DEVELOPMENT PLAN**

**APPENDIX S: BENCKINI TRACT DRAFT
PROGRESS SKETCH PLANS**

**APPENDIX T: HARING TRACT DRAFT
PROGRESS SKETCH PLANS**

APPENDIX U: CONCEPTUAL DETAILS, SPECIFICATIONS, AND BEST MANAGEMENT PRACTICES

APPENDIX V: ADVERTISEMENTS AND PUBLICITY

