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INVENTORY & ANALYSIS



Data Collection & Methodology

Data found within this report was compiled from many different sources, including Woolwich Township, Borough of Swedesboro, Gloucester County, New Jersey Department of Environmental Protection, previous planning studies, and field reconnaissance data developed by the consultant.

Geographic Information System (GIS) base map information was used to prepare field maps and planning documents consisting of the base aerial photography, municipal boundaries, roadways, parcels, contour lines, and other identifying land use features.

The consultants performed initial field reconnaissance with Township representatives and committee members on 5/16/14 and 6/16/14 to inventory, analyze and document existing conditions. Field data was recorded by the consultant onto the field maps, and photographs were taken of existing site conditions for use in evaluating trails and site plan alternatives. Follow-up field verification



was conducted to verify the feasibility of the proposed trail alignments and concept plans.

The project was guided by Open Space and Recreation Plan committee. The committee provided valuable insight and direction to the consultant for development of the plan. A series of committee meetings and public meetings were held throughout the planning process. These meetings provided additional information and community feedback that contributed to the development of the Woolwich Township / Borough of Swedesboro Open Space and Recreation Plan.

Additionally, several meetings were held with local developers of the Weatherby Development and Auburn Road Village to discuss coordination of their future developments with this plan.

A 22 question online citizen survey was opened to the public from June to September. The survey received over 400 respondents and the results are discussed later in this section.

This Park and Recreation Plan will provide Woolwich Township and the Borough of Swedesboro with guidance

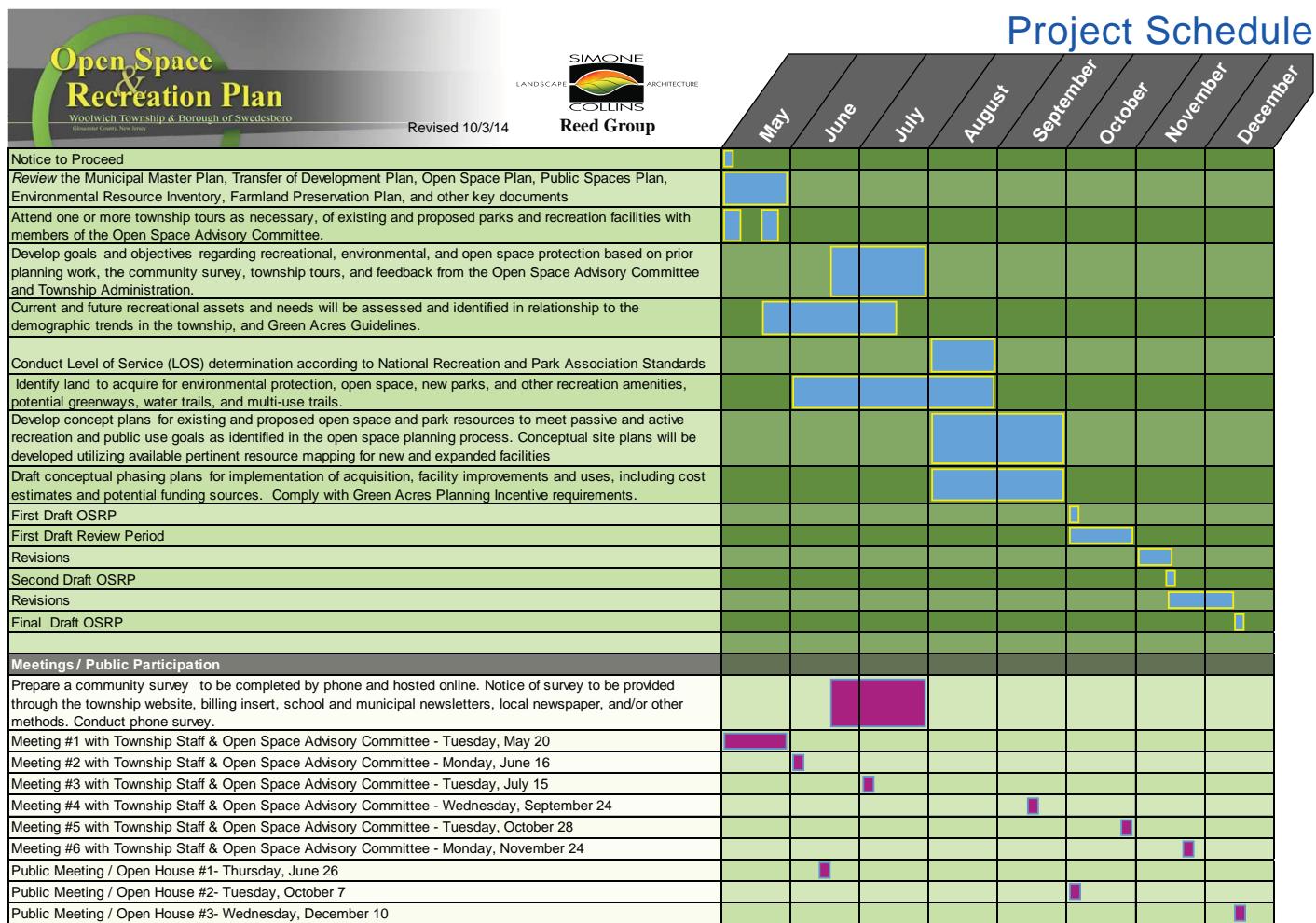
for future open space acquisition, trail development and park development. It should be noted that a boundary and topographic survey of existing conditions must be prepared for any specific park or trail sections prior to commencing design development and construction documentation.

Public Participation Summary

Public participation is a vital part of the planning process. Public meetings were held to involve the community by soliciting input about existing conditions and desired improvements; keep the community aware of the project status; and to address any comments, questions, or concerns about the project. To the right is a list of the

Meeting Schedule

May 20, 2013	Committee Meeting #1
June 16	Committee Meeting #2
June 26	Public Meeting #1
July 15	Committee Meeting #3
Sept. 24	Committee Meeting #4
Oct. 7	Public Meeting #2
Oct. 28	Committee Meeting #5
Nov. 24	Committee Meeting #6
Dec. 10	Public Meeting #3



meetings held by the consultants during the development of the Park and Recreation Plan.

Attendance lists and meeting minutes can be found in the appendix of this report.

Public Meetings

Three public meetings were held during the course of the project. Summaries of these meetings are as follows:

June 26, 2014—Public Meeting #1

Matthew Blake, Director of Community Development for Woolwich Township, began the meeting by introducing the planning consultants and providing a general overview of the project. The planning consultants introduced the project committee, discussed the meeting schedule, project scope, and project purpose. The consultants then went through a series of Township and Borough inventory mapping that described existing features in the area. The consultants then discussed the telephone survey that would be conducted as well as an online survey that is available. The meeting was then opened up for comments and questions from the meeting attendees. The response from attendees was informative and generally supportive of the project. All attendees were invited to take an online citizen survey accessible on the Woolwich Township web site.

The meeting was publicized on the Township web site and through flyers passed out at community events. Please see the meeting minutes in the appendix of the report for a summary of the responses solicited from public meeting attendees.

October 7, 2014 – Public Meeting #2

The second public meeting was attended held on October



7th, 2014. The consultants presented the draft plan that included recommendations for trail alignments, additional facilities, and park layouts. Several public comments from the meeting included prioritizing redevelopment of the former Nike missile base site, improving connections to existing parks, and improving maintenance of existing recreation facilities.

December 10, 2014 – Public Meeting #3

At the third public meeting, the consultants presented the Final Plan that included inventory and analysis, proposed park concepts and trail alignments, open space recommendations, a recommended implementation process, potential partners, and funding sources.

Meeting minutes and attendance lists for all three of the public meetings can be found in the appendix of this report.

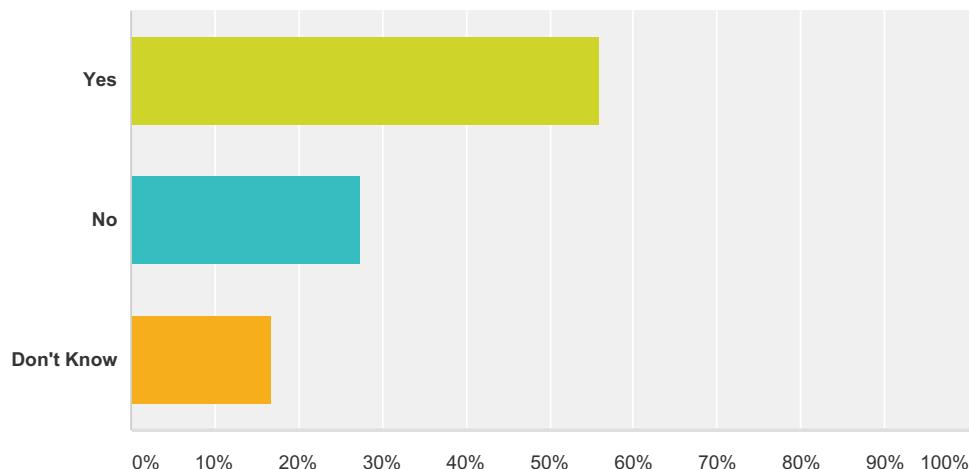
Online Survey

The 22 question online citizen survey was open to the public from June 25, 2014 to December 1, 2014 as another means of obtaining comments and input from the community about the park and open space use within the Township and Borough. The survey received over 460 responses. All responses were confidential and respondents were not identified by name. All the survey responses were compiled together and analyzed as a group.

Woolwich Township/Borough of Swedesboro Open Space & Recreation Plan

Q17 Do you think that Woolwich Township and the Borough of Swedesboro need more sports fields (soccer, baseball, football, etc.)?

Answered: 325 Skipped: 135



One key finding from the online survey results is that, of the respondents, 56% felt that Woolwich and Swedesboro need more active recreation fields indicating that there is a perception that more fields are needed to serve the population. When asked which types of fields are needed, the most common responses include soccer, baseball, softball, field hockey, lacrosse, basketball, football and tennis.

Respondents were also asked about recreational activities in the Township and Borough and how well

Answer Choices	Responses
Yes	56.00% 182
No	27.38% 89
Don't Know	16.62% 54
Total	325

they are provided for. Activities that rated very poorly include swimming (32%), camping (27%), and mountain biking (27%). Facilities that were rated somewhat poorly include fitness trails (25%), basketball (21%), and road cycling (21%). These responses provide an idea as other recreational facilities that may be needed in the Township and Borough.

When asked where the respondents went for recreational purposes in the past year, the overwhelming majority had visited Locke Avenue/High Hill Park (93%) at least once. Other popular destinations include Charles Harker School (47%), Lake Narraticon Park (46%), Kingsway Regional School (45%), Charles Stratton School (45%), Township Line Park in Logan Township (38%), and Riverwinds Community Center in West Deptford Township (37%). Please refer to the complete and detailed survey results found in the appendix of this report.





Telephone Survey

A telephone survey of 200 randomly chosen households (land lines only) in both Woolwich Township and the Borough of Swedesboro was conducted by Reed Group between June 24 and June 29, 2014.. Qualified respondents included any household adult 18 years or older. Data was gathered using a CATI (computer assisted telephone interviewing) system in which the interviewer directly inputs responses into a computer. The survey asked questions about park use, facilities, and recreation activities similar to that of the online survey. The telephone survey was intended to be a complement to the online survey by providing a purely random and statistically valid survey. The online survey tends to be more self-selecting in that typically only those interested in parks and recreation respond.

One key finding from the telephone survey is that a large majority (80%) of the respondents have visited Locke Avenue/High Hill Park over the last year. The only other parks that more than 5% of the respondents have been to in the past year are Lake Narraticon Park (16%) and Township Line Park in Logan Township (7%). This result helps to confirm that the existing parks are heavily used because the options for recreation in the Township/Borough are limited. The result also help to confirm that most Township and Borough residents prefer to use parks within a close proximity to their home.

40% of the survey respondents indicated that Locke Avenue/High Hill Park had inadequate rest room facilities and 83% of the respondents indicated that Lake Narraticon

Park had inadequate rest room facilities. This result demonstrates that additional rest rooms or rest room improvements should be considered for these parks.

Regarding outdoor activities, the survey respondents generally felt that activities that were not adequately provided for in the community include archery (5%), motor boating (6%), camping (9%), hunting, (15%), adult sports leagues (15%), and swimming (16%). This result helps to inform this plan of additional activities and facilities that could be added to broaden the spectrum of recreational options in the community.

Activities that respondents felt are very well provided for in the community include youth sports leagues (81%), walking and jogging (78%), festivals and special events (73%), and tot lots/playgrounds (71%). It should be noted that while the telephone survey respondents generally felt these activities are provided for in the community, anticipated population growth of the Township and discussions with community sports organizations and municipal representatives have indicated that additional facilities and improvements are needed in order to adequately service of the community with these activities.

Summary of Existing Planning Documents

Analytical Data Report - Regional, County, and Municipal Population Forecasts, 2010-2040

Completed in 2013 by the Delaware Valley Regional Planning Commission (DVRPC), this report forecasts populations for municipalities within the Philadelphia metropolitan area consisting of 5 Pennsylvania counties which are Bucks, Chester, Delaware, Montgomery, and Philadelphia, and four New Jersey counties including Burlington, Camden, Gloucester, and Mercer County.

Of the counties studied, Woolwich Township is listed as having the second greatest forecasted absolute change (+12,898) in population from 2010 to 2040 and the greatest forecasted percent change (+127%) in population from 2010 to 2040. The anticipated population for Woolwich Township in 2040 is 23,098. The Borough of Swedesboro is anticipated to grow from 2,584 residents in 2010 to 2,971 residents in 2040. This represents an increase of 387 residents or 15.0%.

County / Municipality	2010 Census	2015 Forecast	2020 Forecast	2025 Forecast	2030 Forecast	2035 Forecast	2040 Forecast	Absolute Change 2010-2040	Percent Change 2010-2040
								2040	2040
Glassboro Borough	18,579	18,877	19,725	21,721	23,716	24,564	24,862	6,283	33.8%
Greenwich Township	4,899	4,920	4,981	5,123	5,266	5,326	5,348	449	9.2%
Harrison Township	12,417	12,796	13,873	16,408	18,942	20,020	20,398	7,981	64.3%
Logan Township	6,042	6,102	6,272	6,671	7,071	7,241	7,300	1,258	20.8%
Mantua Township	15,217	15,546	16,481	18,682	20,882	21,818	22,146	6,929	45.5%
Monroe Township	36,129	36,794	38,688	43,143	47,598	49,492	50,157	14,028	38.8%
National Park Borough	3,036	3,050	3,088	3,179	3,270	3,309	3,323	287	9.5%
Newfield Borough	1,553	1,560	1,579	1,625	1,670	1,690	1,696	143	9.2%
Paulsboro Borough	6,097	6,113	6,158	6,264	6,370	6,415	6,431	334	5.5%
Pitman Borough	9,011	9,060	9,199	9,526	9,853	9,992	10,041	1,030	11.4%
South Harrison Township	3,162	3,229	3,418	3,864	4,310	4,499	4,566	1,404	44.4%
Swedesboro Borough	2,584	2,602	2,655	2,778	2,901	2,953	2,971	387	15.0%
Washington Township	48,559	48,924	49,963	52,406	54,850	55,889	56,254	7,695	15.8%
Wenonah Borough	2,278	2,294	2,340	2,449	2,558	2,604	2,620	342	15.0%
West Deptford Township	21,677	21,954	22,744	24,601	26,459	27,248	27,526	5,849	27.0%
Westville Borough	4,288	4,317	4,399	4,591	4,784	4,866	4,894	606	14.1%
Woodbury City	10,174	10,195	10,253	10,390	10,528	10,586	10,607	433	4.3%
Woodbury Heights Borough	3,055	3,066	3,097	3,170	3,244	3,275	3,286	231	7.6%
Woolwich Township	10,200	10,812	12,553	16,649	20,745	22,486	23,098	12,898	126.5%

Source: Delaware Valley Regional Planning Commission, March 2013

Table 2: Municipalities with the Greatest Forecasted Absolute Change in Population, 2010-2040

Rank	Municipality/County	Absolute Change	Rank	Municipality/County	Absolute Change
1	Monroe Township/Gloucester	14,028	11	Upper Uwchlan Township/Chester	5,905
2	Woolwich Township/Gloucester	12,898	12	Tredyffrin Township/Chester	5,875
3	Warrington Township/Bucks	8,207	13	West Deptford Township/Gloucester	5,849
4	Harrison Township/Gloucester	7,981	14	Bensalem Township/Bucks	5,692
5	Middletown Township/Bucks	7,955	15	Franklin Township/Gloucester	5,639
6	Washington Township/Gloucester	7,695	16	Upper Providence Township/Montgomery	5,548
7	Mantua Township/Gloucester	6,929	17	Deptford Township/Gloucester	5,527
8	Warminster Township/Bucks	6,694	18	Horsham Township/Montgomery	5,464
9	Glassboro Borough/Gloucester	6,283	19	Limerick Township/Montgomery	5,442
10	Bristol Township/Bucks	6,028	20	Buckingham Township/Bucks	5,373

Source: Delaware Valley Regional Planning Commission, March 2013. Does not include the City of Philadelphia, which is both a county and a municipality.

Table 3: Municipalities with the Greatest Forecasted Percent Change in Population, 2010-2040

Rank	Municipality/County	Percent Change	Rank	Municipality/County	Percent Change
1	Woolwich Township/Gloucester	127%	11	Charlestown Township/Chester	49%
2	Elk Township/Gloucester	72%	12	New Hanover Township/Montgomery	49%
3	Elverson Borough/Chester	72%	13	New London Township/Chester	48%
4	West Brandywine Township/Chester	70%	14	Lower Oxford Township/Chester	47%
5	Modena Borough/Chester	66%	15	Upper Hanover Township/Montgomery	47%
6	Harrison Township/Gloucester	64%	16	Mantua Township/Gloucester	46%
7	Upper Uwchlan Township/Chester	53%	17	West Rockhill Township/Bucks	46%
8	East Vincent Township/Chester	51%	18	East Brandywine Township/Chester	45%
9	Penn Township/Chester	50%	19	Atglen Borough/Chester	45%
10	London Grove Township/Chester	50%	20	Wallace Township/Chester	45%

Source: Delaware Valley Regional Planning Commission, March 2013. Does not include the City of Philadelphia, which is both a county and a municipality.

Open Space and Recreation Plan for the Woolwich Township, NJ, May 2004

The 2004 Open Space and Recreation Plan, completed by the Delaware Valley Regional Planning Commission (DVRPC), serves as the basis for this update of 2014. The DVRPC plan inventories existing features and open space resources and discusses the open space program, its goals, objectives, and needs. The plan provides recommendations and an action plan for 1, 3, and 5 year periods. Several important recommendations from the plan include:

- Identify sites within the Township for additional park and recreation facilities.
- Establish connecting greenway corridors along Township waterways through acquisition or easements.
- Identify sites along Raccoon Creek and Oldmans Creek for canoe, kayak, and boat access.
- Explore eco-tourism opportunities, facilities, and activities.

This Open Space & Recreation Plan update achieves several of these action items that have not yet been completed.

Environmental Resource Inventory (ERI) for the Woolwich Township, NJ, April 2004

Completed in 2004 by the Delaware Valley Regional Planning Commission, this plan identifies and describes the environmental resources within the Woolwich Township and serves as a basis for methods for the preservation and utilization of those resources. The report identifies Township features such as natural resources (physiography, topography, soils, steep slopes, water

resources), biological resources (vegetation, landscape project habitats, animal communities, heritage priority sites), and the built environment (land use, population, transportation, utilities and services, environmental issues). These features all help define the character of the Township.

This Open Space and Recreation Plan seeks to utilize applicable data inventoried in this report as a basis for its recommended facilities. The OSRP proposes a open space, park, and trail system that maximizes the important features and qualities of the Township while preserving the character described in the ERI. Several of the elements described within the ERI that are of high importance to the OSRP include soils, steep slopes, hydrology, and landscape project priority habitats.

Landscape Project Priority Habitats are developed by the NJDEP Division of Fish and Wildlife and they document the value of various types of habitats within New Jersey and ranks the habitats according to importance. The most important habitats are those that have documented occurrences of species on the state or federal Threatened and Endangered Species lists. Most of Woolwich Township and the Borough of Swedesboro critical habitats are located along streams and water bodies. These critical habitats include emergent wetlands, forested wetlands, and upland forested areas. The areas around Raccoon Creek and Oldmans Creek have specifically been identified as critical habitats for bog turtles and bald eagle nesting and foraging. Additionally, some upland forest contiguous with stream corridors and grassland areas on the western side of the Township also provide bald eagle nesting, nest buffer, and foraging land. These areas should be considered by the Township and Borough as areas of high importance and should be considered for acquisition and environmental protection where possible.

Alluvial soils, poorly drained soils, and steep slopes can

be limiting in development of new trails and recreation facilities. According to the report steep slopes are primarily located along waterways with the steepest areas being along Lake Narraticon, Narraticon Run, Battertown Branch, Basgalore Creek, Raccoon Creek, Indian Branch, and Porches Run. These areas will need to be further examined for feasibility of trails and water access points.

Alluvial Land (Ad) makes up 5% of the soils in the Township. Freehold soils make up the largest percent of soils in the Township and is relatively well drained. Much of the Township property along High Hill Road consists of a combination of wetlands, alluvial soils and freehold soils. Wetlands and areas of alluvial soils will generally need to be avoided when considering trails and park development.

Streams and other waterbodies are also integral to the character of Woolwich. These features were examined for potential water trails, trail crossings, and recreational activities, and wildlife habitats. Streams and waterbodies are discussed in more detail in the hydrology section, later in this chapter.

Woolwich Township Stewardship Assessment Report, October 2013

Completed in October 2013 by Natural Lands Trust, this report provides a stewardship assessment for nine Township properties that comprise 398 acres of land located on High Hill Road. The plan analyzes the existing conditions of the properties, identifies current stewardship issues, identifies potential opportunities, and provides recommendations for improvement of the sites in question. The properties evaluated include Block 5, Lots 3, 4, 5, 6.02, 6.07, 7, 10, 11, and 11.01.

Several major recommendations of the Stewardship Assessment Report that relate to this plan include:



- adding trails through woodland and meadow areas, preferably loop or lasso shaped trails and spurs to reach areas of interest or lookout points;
- establishing canoe/kayak launch areas;
- controlling non-native plant species within existing woodland;
- control of runoff from roadways and athletic fields,
- converting mowed turf stormwater management basins to wet meadow habitats, and;
- converting non-essential or unused agricultural land to meadow habitat.

The Open Space and Recreation Plan seeks to help accomplish several of goals mentioned above. This Open Space and Recreation Plan presents concept diagrams for several future park locations on High Hill Road as discussed in the Stewardship Assessment Report. As part of these concept diagrams, several canoe/kayak launch areas are proposed as well as trails through woodland and meadow areas, and several spurs to access and view Raccoon Creek. Additionally, area along Raccoon Creek, and several others elsewhere in the Township have been proposed as meadow.

At a larger scale, a Township wide trail network concept plan is proposed in Chapter 3 of this report. As part of this Township wide network a system of trails along High Hill Road is proposed to connect Swedesboro and Woolwich residents to Locke Avenue/High Hill Park and the adjacent open space owned by the Township on lots High Hill Road. In all, the OSRP proposes 9 boat launch areas throughout the Township. These will be launch sites to the water trails proposed on Raccoon Creek and Oldmans Creek.

As part of the engineering and construction phases of

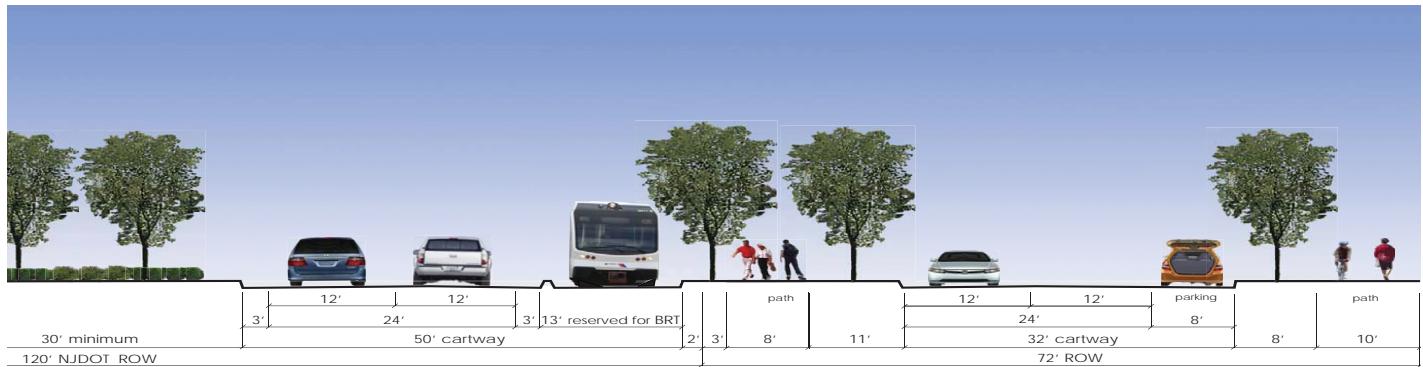
the trail and park improvements proposed herein, the Township should consider other recommendations from the Stewardship Assessment Report such as incorporating wet meadow or constructed wetland stormwater management facilities, appropriately controlling runoff from new roadways and athletic facilities before it enters adjacent waterways, and using a wide selection of native plant species.

Woolwich Township Transfer of Development Rights Plan

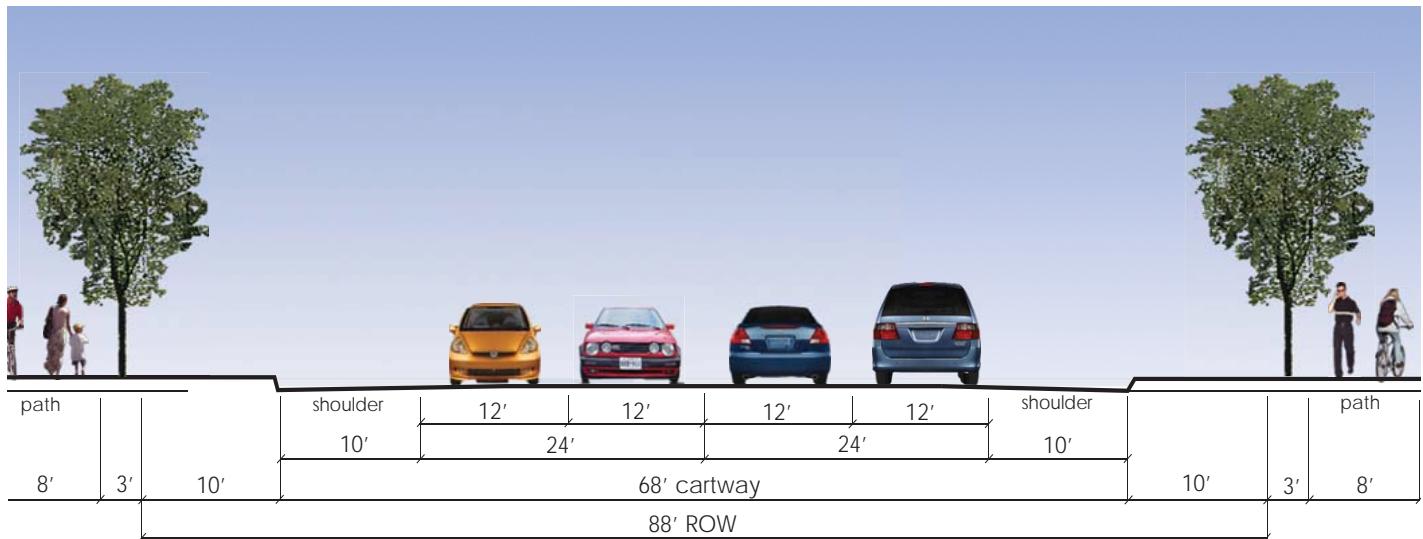
This plan, completed in February 2007 by Melvin Kernan Development Strategies, discusses the transfer of development rights (TDR) plan developed through a grant awarded by the State of New Jersey. Section 4 describes the plan's goals as listed below:

- To preserve and enhance the quality of life in Woolwich Township in the face of rapid development
- To promote orderly growth within the Township
- To provide a safe and attractive residential environment
- Provide conveniently located and well designed retail and commercial opportunities to serve the residents of Woolwich and the surrounding area.

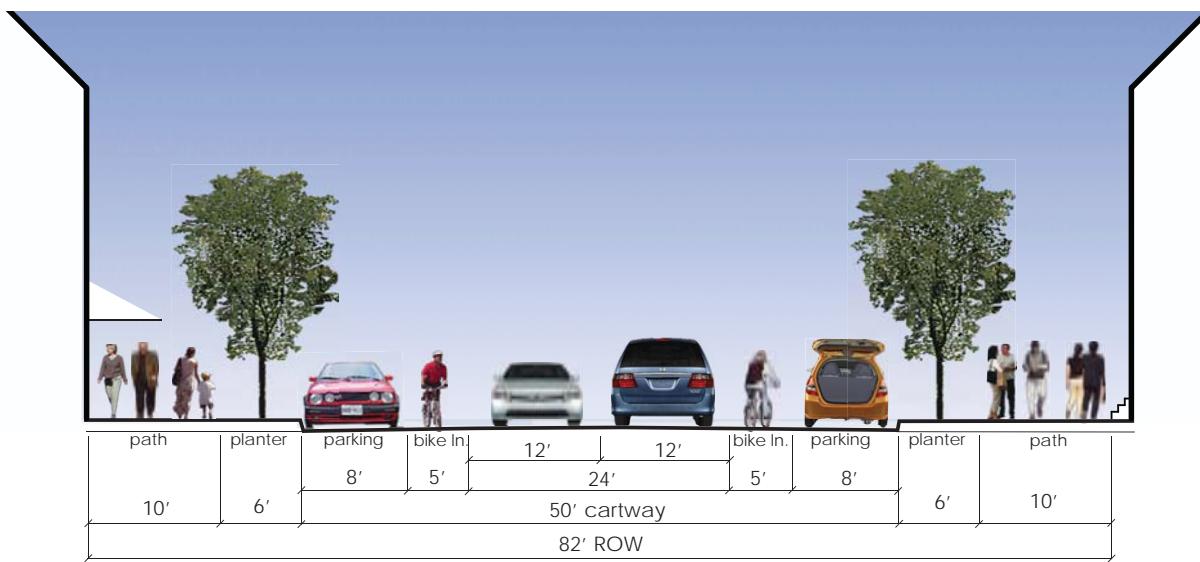
Section 6 of the TDR plan describes the TDR sending area parcels to which development credits are assigned, with expectation that they will be transferred to the receiving area. The Township's sending area includes 15 tax parcels, totaling 4,011 acres with approximately 3,000 acres (73.9%) being agricultural land. All sending area properties are located in residential districts.



Route 322 Boulevard 'A'



Kings Highway



Commercial Main Street

Source: 2007 TDR Circulation Plan, Melvin Kernan



Section 7 of the TDR plan describes the Route 322 TDR receiving area located within the proposed Woolwich Township regional center. The receiving area is approximately 744 acres with Route 322 as the central corridor. The receiving area is designed to accommodate a mixed use development including residential, commercial, institutional, and public uses in a walkable, compact environment.

The Open Space and Recreation Plan will be informed by where and how future development is planned to take place with the Township. The TDR receiving zones will represent important destinations within the community and will be primary locations for future development. Park, trail, and open space connections to these receiving areas are crucial to the success of the Open Space and Recreation Plan.

Transfer of Development Rights Circulation Plan

This plan, completed by Melvin Kernan Development Strategies discusses the proposed transportation system to be associated with the TDR plan. The plan features a multi-modal circulation system for both the 322 Regional Center and Auburn Road Village. The plan proposes to integrate pedestrian and bicycle accommodations with vehicular transportation routes.

The main commercial corridor within the 322 Regional Center is designated as Swedesboro Paulsboro Road between Kings Highway and Route 322. Most of the proposed residential areas are located within a half mile of the Swedesboro Paulsboro Road and Route 322 intersection to promote walking and biking to the commercial district. Route 322 is designated as the

primary east-west boulevard through the regional center while Kings Highway and Locke Avenue are the primary north-south corridors. Kings Highway provides an important connection from northern Swedesboro to Kingsway Regional Schools and farther north to East Greenwich Township. Locke Avenue provides a linkage from southern Swedesboro and Locke Avenue/High Hill Park to the proposed Regional Center.

Typical cross sections of the proposed hierarchical street system are provided. These cross sections provide for pedestrian circulation in the form of multiuse trails and pedestrian paths of varying widths. Bicycle lanes are proposed along the commercial main street (Swedesboro Paulsboro Road). 10' wide shoulders are proposed on Kings Highway.

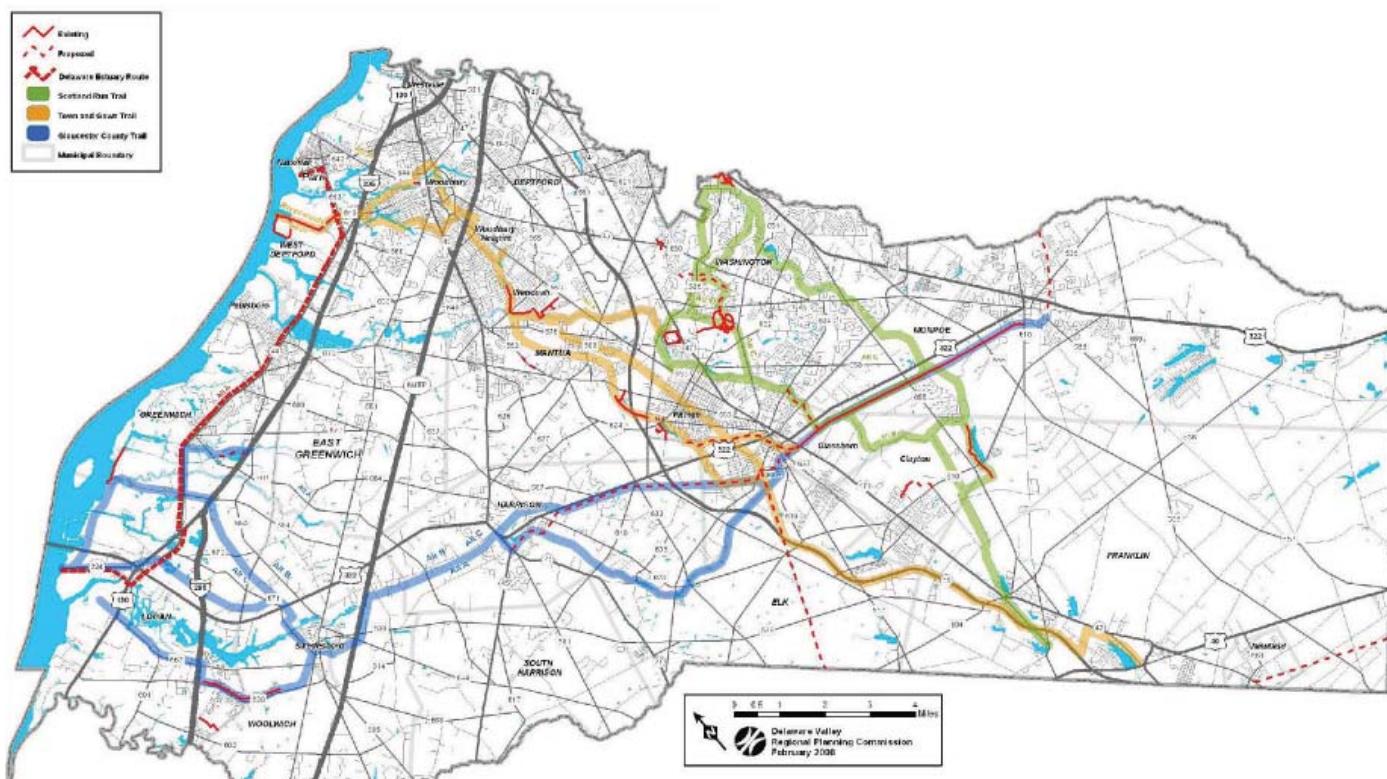
Main gateways to and from the Regional Center are proposed at the intersection of Route 322 with Locke Avenue and Oak Grove Road to the west and at the intersection of Route 322 and the NJ Turnpike ramps to the east. The one access point proposed to Auburn Road Village is off of Auburn Road. Interior circulation

recommendations for this development is detailed in the General Development Plan for Auburn Road Village.

These proposed circulation prototypes serve as a basis for the trail network plan proposed in chapter 3 of this report. The Open Space and Recreation plan connects to and extends the pedestrian and bicycle network of the 322 Regional Center and Auburn Road Village where feasible to make this area accessible to Swedesboro and Woolwich residents.

Transfer of Development Rights Public Spaces Plan

This plan, developed by Melvin Kernan Development Strategies discusses the foundation necessary to achieving successful and sustainable public spaces and linkages within Woolwich. The plan is separated into two parts with the first discussing Township wide links that connect open space, parks, activity centers, and landmarks, within the Township. The second part of the plan discusses specific



public spaces proposed in the TDR Regional Center.

Four goals identified in Part 1 of the plan relating to Township linkages include:

- Support a healthy, active living style of walking, bicycling and outdoor activity
- Promote safe and efficient means of travel that are alternatives to the automobile.
- Enhance network connectivity and linkages to civic, natural and historic nodes and to activity centers
- Build public appreciation for green and gray infrastructure as community assets to be enjoyed and utilized

The plan identifies key nodes in the Township such as downtown Swedesboro, Woolwich Regional Center, and Weatherby. Other activity centers and secondary nodes include schools, municipal buildings, proposed Auburn Road Village, Locke Avenue Park, Governor Stratton House, the Nike missile base sites, Mt. Zion African Methodist Episcopal Church, and public space within the planned retail center along Route 322. Proposed links to these nodes include:

- Off-road multi-use paths
- On road bike lanes
- Town Boulevard (Route 322)
- Town green links (accommodates pedestrians, bicycles, and vehicular parking within the Regional Center)
- Rural green links (accommodates pedestrians and bicycles without vehicular parking outside of the Regional Center)

Four goals identified in Part 2 of the plan relating to specific Woolwich Regional Center public spaces include:

- Creating a highly accessible and diverse system of public spaces in New Town within proximity of residential neighborhoods
- View the design of public spaces as a unique opportunity to spawn social interaction and heighten community spirit
- Utilize green space for low-impact and natural approaches to stormwater management
- Protect wildlife and natural features, particularly in wetlands and forested areas in and adjacent to New Town.

The plan identifies 20 different parks within five neighborhoods of the overall Regional Center plan. The largest park is identified as Linear Park (14.3 Acres) which extends from the Nike missile launching site south to Route 322. The park would serve several functions including:

- Creating a connection between downtown commercial mixed use main street and residential neighborhoods
- Providing a green link for pedestrians from the northern edge of the Regional Center to Route 322
- Providing environmental functions as a stormwater system by providing stormwater movement and infiltration
- Providing a civic space and public greens for active and passive recreation
- Serving as a gateway to the Township Park to the north



Photo: Matthew Blake



Photo: Matthew Blake

The remaining parks proposed are smaller neighborhood parks and civic spaces meant to serve the community at a more local level by providing various recreational opportunities such as basketball courts, tennis courts, bocce courts, dog parks, playgrounds, seating areas, performance areas, community gardens, and picnic areas.

This Open Space and Recreation Plan looks to build upon the proposals in this plan with the understanding that the overall layout of the Regional Center will likely change based upon future reevaluations of the area and specific developer interests. The proposed Trail Map found in Chapter 3 of this report identifies several primary trails within the Regional Center. These trails align with major roadways as proposed in the Regional Center plan as well as the large Linear Park. A trail is also proposed through the planned open space along Raccoon Creek west of Locke Avenue in the southwest corner of the Regional Center. Because this area is not in the sewer service area it is anticipated that it will remain as open space in future iterations of the Regional Center Plan.

A goal of the trail network proposed in this OSRP is to enhance and expand upon the network proposed in the Public Space Plan while keeping consistent with its goals. This Open Space and Recreation Plan will defer to the TDR plan for specific locations of potential parks within the Regional Center as well as trails and bike routes along minor roadways.

General Development Plan for Auburn Road Village

This report completed in September 2010 by Alberto & Associates details the General Development Plan for the Auburn Road Village TDR receiving area. The plan

proposes a main boulevard off of Auburn Road with a mixed use development that includes a commercial district, single family detached residential, townhouses, and twin homes. A central park and several neighborhood green areas have also been proposed throughout the development. Wetlands exist on the northern and western portions of the property.

The circulation network for the development proposes minimum 5' wide sidewalks on both sides of streets throughout the community. Bicycle circulation will be accommodated through shared road designations on village roadways. Multiuse trails will be incorporated along village open space areas.

The proposed trail plan in Chapter 3 of this report shows an off road connection to Auburn Road Village on the western side of the property along Indian Branch. It is recommended that this trail be implemented into the final site plans for Auburn Road Village so this proposed trail continues safely through the development with a connections to the central green space, commercial area, and Auburn Road.

Gloucester County Multi-Use Trails Network Study

This study, completed in 2008 by the Delaware Valley Regional Planning Commission (DVRPC) examines opportunities for the creation of a county-wide network of routes for non-motorized travel serving important destinations including open spaces, recreational areas, employment centers, schools, transportation facilities and existing trails. The Multi-Use Trails Network proposes several trail alignment alternatives through Swedesboro and Woolwich. These planned routes were analyzed and mapped in order to maximize regional connectivity of the

trails proposed in the Open Space and Recreation Plan which proposes connections to these planned trails at several locations within the Township and Borough.

Gloucester County Official Bicycle Lanes & Multipurpose Trail Map

This map provided by Gloucester County displays existing and proposed county wide bicycle and multiuse trails. The only trail proposed within Woolwich Township or the Borough of Swedesboro is the Kings Highway Bike Route. This route is proposed along Kings Highway from the Swedesboro boundary traveling northeast through Woolwich Township until it enters East Greenwich Township. The proposed route continues through East Greenwich Township into West Deptford where it terminates at another proposed trail on Route 660/Jessup

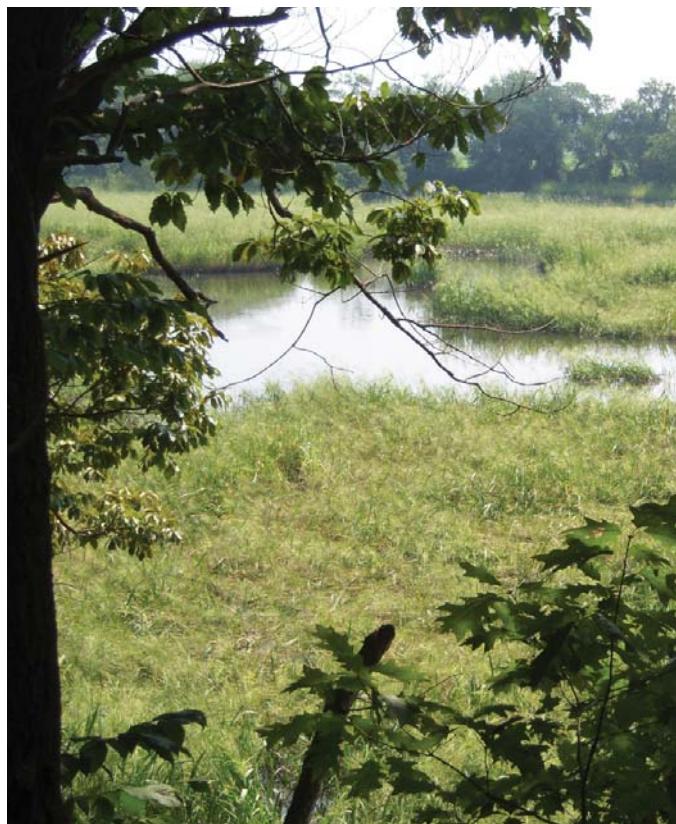


Photo: Matthew Blake

Road. This route has been incorporated into the proposed trail plan in Chapter 3 of this report.

Hydrology

All of Woolwich Township's water drains west to the Delaware River via three watersheds. Oldmans Creek watershed lies to the south, Raccoon Creek watershed lies in the center of the Township, and Repaupo Creek watershed is in the northern part of the Township. The Raccoon Creek watershed is classified by the New Jersey Department of Protection (NJDEP) as freshwater with moderate water quality that is non-trout producing and is within the special estuarine region.

These watersheds contain three main streams within Woolwich. These streams are Oldmans Creek, Raccoon Creek, and Pargey Creek. Notable tributaries to these streams within the Township include Indian Branch, Ebenezer's Branch, Rainey's Run, Porches Run, Narraticon Run, Basgalore Creek, Grand Sprute Run, and Little Timber Creek.

Several ponds and lakes also exist within Woolwich and Swedesboro. These water bodies are all man-made and include Lake Narraticon, Warrington Millpond, Hendrickson Millpond, Oliphants Millpond and Lake Basgalore. In total there is a total of 233 acres of lakes within Woolwich Township.

Raccoon Creek

Raccoon Creek is a 19 mile tidal creek that flows east to west through Woolwich Township. The creek flows from Elk and Harrison Townships, across Harrison, Woolwich, and Logan Townships, to the Delaware River. Raccoon Creek lies within Woolwich for 4.4 miles and it also borders the Borough of Swedesboro to the north. The creek is



tidal to a point approximately 3/4 of mile east of the New Jersey Turnpike and tidal wetlands are found throughout the main channel. Tidal flows bring Delaware River water into the stream twice a day. These tidal flows can be both beneficial and detrimental to the stream as they bring in nutrients beneficial to aquatic life but limit the ability to flush out silt and pollution in the water.

East of the NJ turnpike, tidal wetlands turn to forested wetlands which are also found on all of Raccoon Creek's tributaries. The length of Raccoon Creek between Swedesboro and the NJ turnpike has been identified as a prime destination for migratory waterfowl in the spring and fall.

Woolwich Township currently owns seven parcels just west of Swedesboro. Three of these parcels border Raccoon Creek. These parcels present an opportunity to provide public access to the creek for canoeing and kayaking, while also creating an interconnected park system with Locke Avenue/High Hill Park. These three parcels are currently separated from Locke Avenue/High Hill Park by an NJDEP owned parcel, however acquisition of this parcel by the Township is likely via a land swap. An unowned parcel directly north of Locke Avenue/High Hill Park is also being pursued by the Township for acquisition and would provide convenient access to Raccoon Creek in close proximity to the existing park.

The Township also owns a small parcel on the creek just north of Swedesboro (Block 8, Lot 14). This parcel could also provide an opportunity for water access however it is isolated from any roadway. Access from Kings Highway is needed through acquisition or easements on the adjacent parcel in order to adequately utilize this property for water access.

Oldmans Creek

Oldmans Creek is a 20 mile long tidal creek that lies along the south western border of Woolwich Township. The creek separates Woolwich Township from Oldmans Township and Pilesgrove Township and also delineates the boundary between Gloucester and Salem Counties. The creek is affected by tidal flows from the Delaware River and has wetlands along both sides for most of its length in Woolwich. At its lower end near the Delaware River is Pedricktown Marsh which is an extremely large wetland area known as being a prime location for birds and bird watchers.

Portions of Oldmans Creek in the eastern corner of the Township are designated by NJDEP as category 1 waters. According to NJDEP, Category 1 waters are waters "protected from any measurable changes in water quality because of their exceptional ecological significance, exceptional recreational significance, exceptional water supply significance, or exceptional fisheries resources."

The largest tributary to Oldmans Creek in the Township is Indian Branch. Other tributaries in Woolwich include Ebenezer's Branch, Rainey's Run, and Porches Run. Porches Run was dammed in the 19th century to power a gristmill. The resulting Porches Millpond still exists today and is a privately owned pond. Porches Run and Porches Millpond are also designated as Category 1 waters.

Oldmans creek has been identified as a prime destination for boating, canoeing, kayaking, and other water recreation activities. The Township owns two parcels bordering Oldmans Creek though these are both open spaces associated with residential developments and access is limited. It is possible that the western most parcel owned by the Township could obtain access through acquisition or easements. The Township should consider this possibility to gain access to the creek for

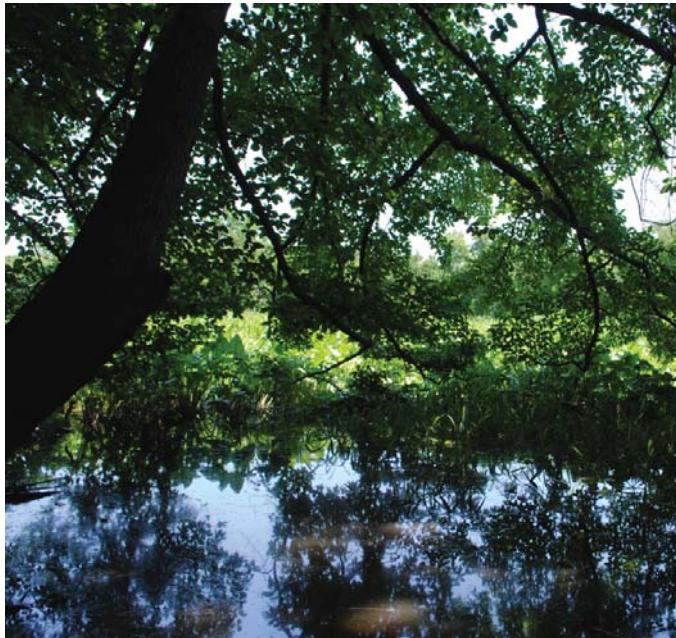


Photo: Matthew Blake

boaters. Several other large parcels that border the creek exist on the western side of the Township. The Township should consider these parcels for potential acquisition in order to protect open space and provide public access to the creek.

Pargey Creek

The Pargey Creek lies in the northern section of the Township where it creates the border between Woolwich and East Greenwich Township. This creek is part of the Repaupo Creek Watershed and it starts just inside the border of Woolwich. The stream continues west through Warrington Mill Pond and eventually creating the boundary between Logan Township and Greenwich Township where it becomes the Repaupo Creek. The Pargey Creek is a freshwater creek that is not affected by the Delaware River tides.

Indian Branch

Indian Branch is located in the western portion of the

Township and is a tributary to Oldmans Creek. Indian Branch begins to the west of Auburn Road and south of Center Square Road adjacent to the existing Weatherby development. Much of the land adjacent to the western portion of the stream near Oldmans Creek is inundated by 100-year flooding and is considerably wet. Several large privately owned wooded parcels in this area provide important wildlife habitats and one parcel is known to contain an active bald eagle nest. These parcels are also located along Township Line Road and are directly across from Beckett Park in Logan Township. Because of their prominent location and important natural features, these parcels should be considered for future active recreation and open space protection. Acquisition of these parcels could also allow for an off road connection from Auburn Village and the Weatherby development to Township Line Road and Beckett Park.

Lake Narraticon

Lake Narraticon is a man-made lake, approximately two acres in size, that lies on two parcels in both Swedesboro and Woolwich. The lake is fed by Narraticon Run to the east and drains into Raccoon Creek via Church Run. The lake is used by boaters, however, due to the dam at Franklin Street, there is no direct connection for boaters to access Raccoon Creek from the lake.



Photo: Matthew Blake



The north and southwestern sides of the lake are directly bordered by residential properties while most of the southeastern side of the lake is wooded and publicly owned. The far eastern side of the lake is bordered by New Jersey Turnpike Authority property.

Preserved Farm Lands

In the recent years, Woolwich Township has established one of the most successful farmland preservation programs in New Jersey. State and County funding programs have enabled Woolwich to preserve 1,530 acres of farmland to date, with nearly 1,200 of those acres preserved since 2008. A large majority of the preserved farmlands in Woolwich lie to the eastern side of the New Jersey Turnpike. Woolwich has also preserved 575 acres of open space which, when added to the amount of preserved farmland, totals 2,105 acres of preserved lands in the Township.

The Township's permanently preserved farms present various opportunities for agritourism within the Township. One opportunity is to develop trails along perimeters of preserved farmland with the establishment easements or agreements. These trails could provide important viewing access to farmland that can help promote the agricultural heritage of the area.

Farmlands of Statewide Importance. These are soils that can sustain high yields of crops when correctly managed with favorable conditions. 50% of Woolwich's soils are a variation of the Freehold series which are mostly gently sloping and well drained.

The USDA Natural Resources Conservation Service (NRCS) classifies soils into four hydrologic soil groups (A, B, C, or D) based on rate of water infiltration when the soil is not covered by vegetation. Certain wet soils can also be classified into dual classes (A/D, B/D, or C/D). Group A soils generally have high infiltration rates and are considered very well drained. Group B soils have a moderate infiltration rate and are considered moderately well drained. Group C soils have a slow infiltration rate and consists of soils that have a layer that impedes the downward movement of water. Group D soils are extremely poorly drained and typically consist of clays or soils that have a high water table. For dual class soils, the first letter indicates the hydrologic group for drained areas and the second for undrained areas. Only soils that are of group D in their natural state can be classes as dual soils.

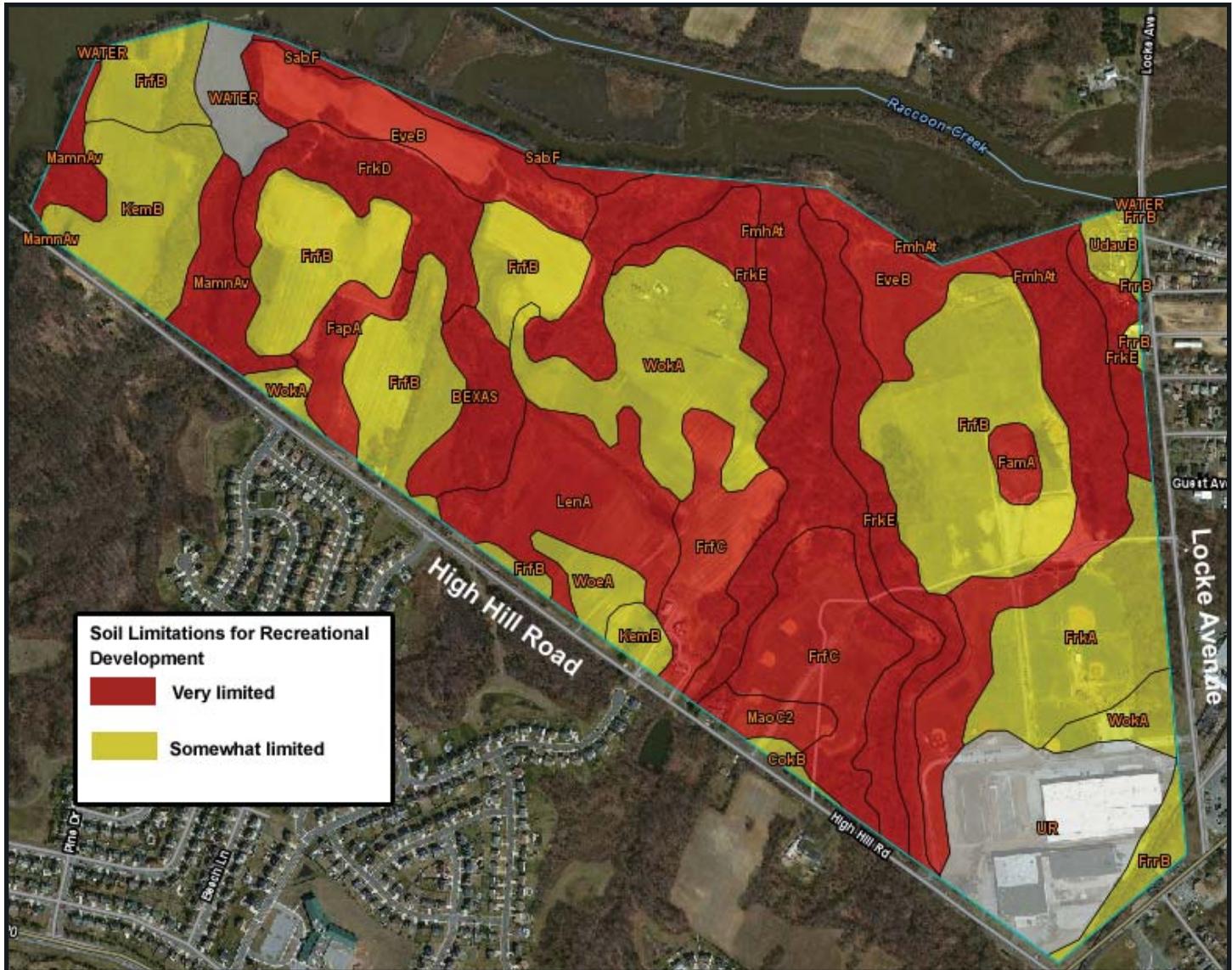
In order for soils to adequately support recreational areas (areas intensively for games, such as baseball and football, and similar activities), soils should be nearly level, free of stones, and can have the ability to withstand intensive foot traffic. The NRCS categorizes soils as "not limited", "somewhat limited", and "very limited". These categories are based on limitations such as shallow depth to water table, steep slopes, sand content, organic matter content, and potential for flooding and ponding.

High Hill Road

The area along High Hill Road that includes the existing Locke Avenue/High Hill Park and several adjacent parcels has been identified by the Township as a possible location

Soils

According to the Woolwich Township Environmental Resource Inventory, 70% of Woolwich Township's soils are classified as Prime Farmlands. These are lands that have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. 19% of Woolwich's soils are classified as

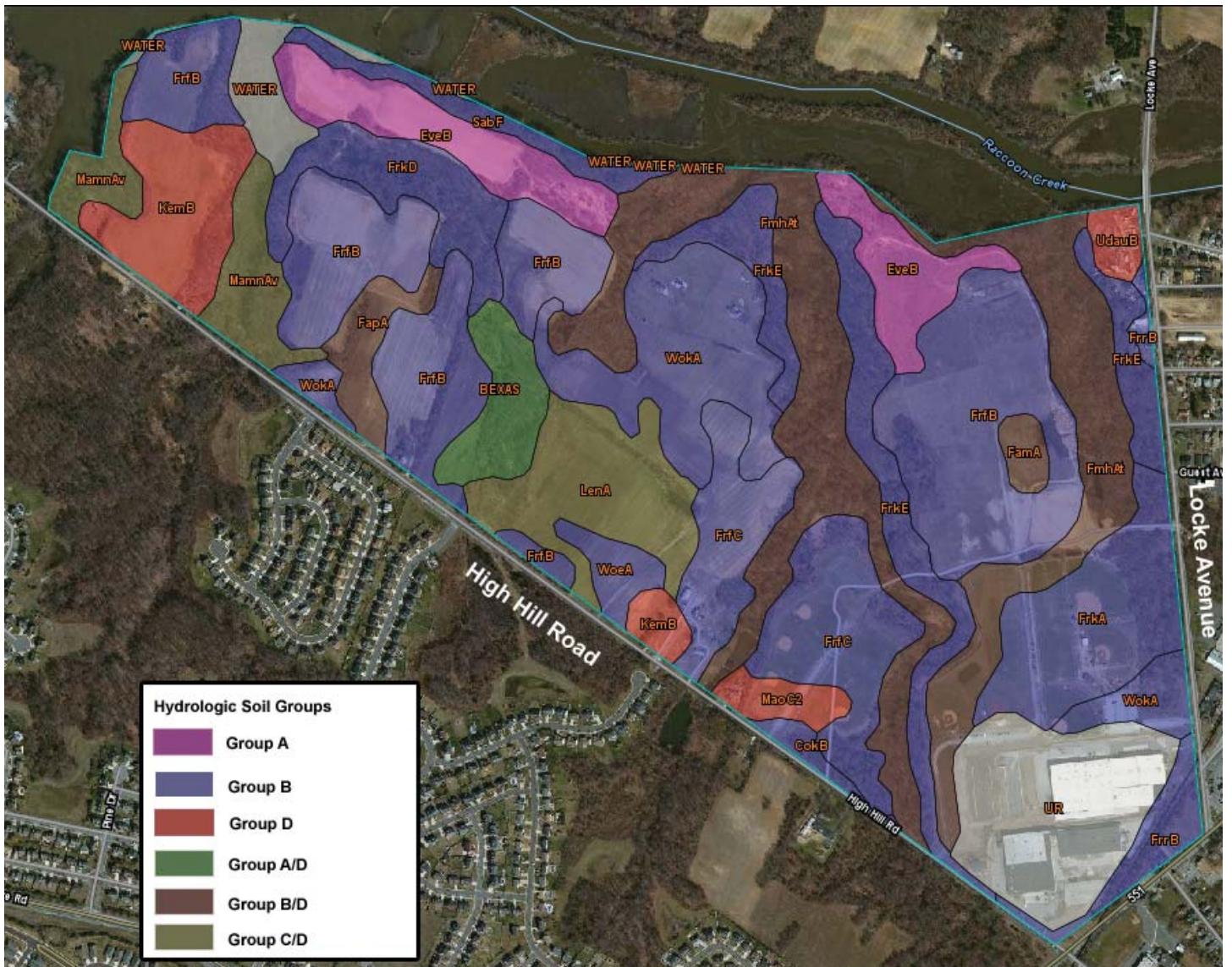


High Hill Road - Soil Limitations for Recreational Development

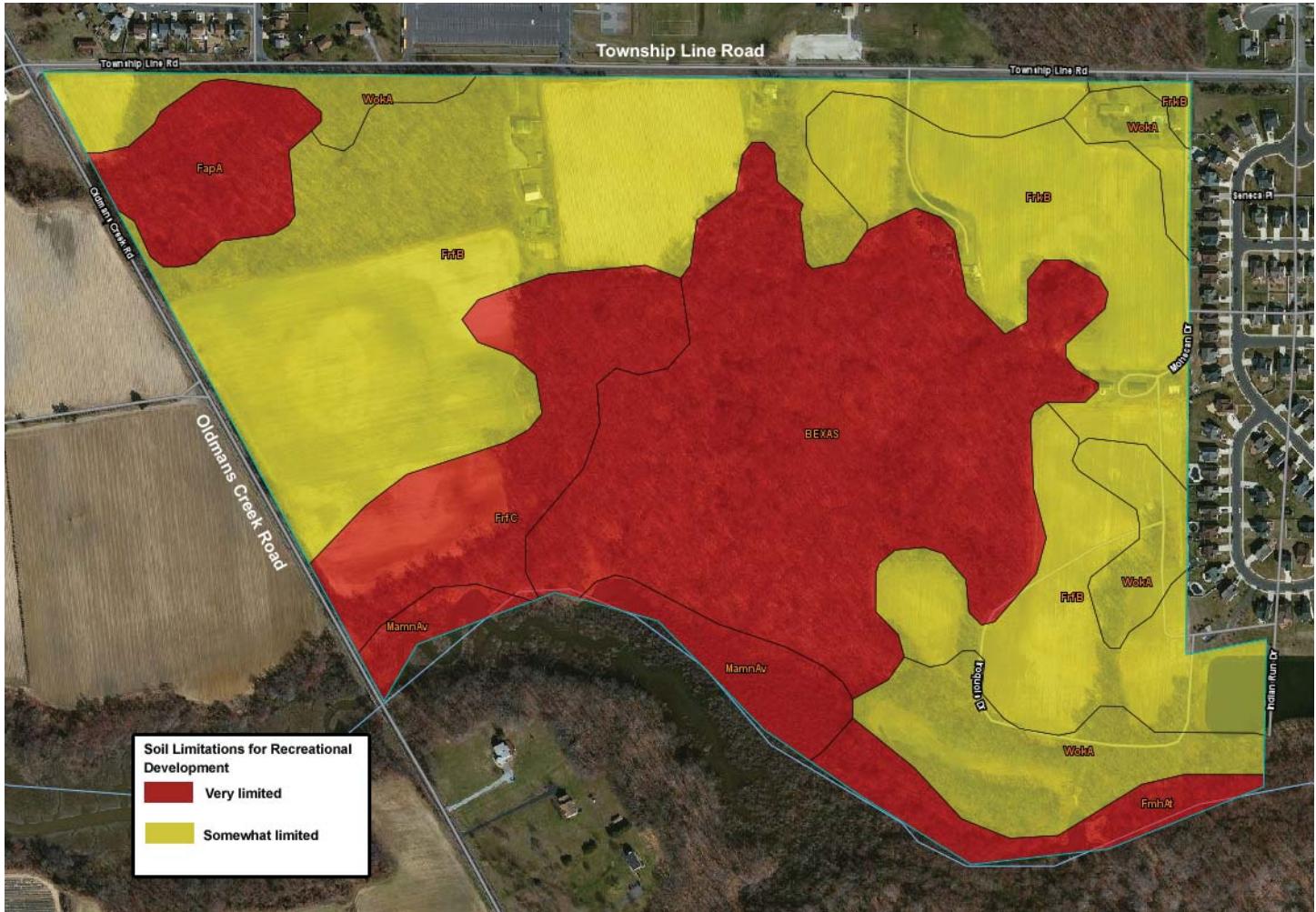
for future park development. According to NRCS, 5.9% of the soils in this area are categorized as being well drained (Group A), 52.7% are classified as being moderately drained (Group B), 5.9% are classified as being very poorly drained (Group D), 2.2% are classified as wet soils with a dual class A/D, 17.6% is classified as a dual class B/C, 7.9% are classified as a dual class C/D, 8.0% are not rated. These classifications are shown on the adjacent Hydrologic Soils Map.

In terms of suitability for recreational development, the NRCS indicates that 53.0% of the soil in the area delineated along High Hill Road are very limited, 39.0% are somewhat limited, and 8.0% are not rated.

Areas that are somewhat limiting are indicated in yellow on the adjacent map. These areas mostly contain Groups



High Hill Road - Hydrologic Soil Groups



Indian Branch - Soil Limitations for Recreational Development

A and B soils and represent the areas that could best support recreational development. The concept plans for this area are shown in Chapter 3 of this report and have generally aligned proposed active recreational areas so they avoid areas that are considered very limited" by NRCS.

Indian Branch

Areas identified for potential active recreation fields in the southern portion of the Township near Indian Branch

were also analyzed. According to NRCS, 63.4% of the soils in this area are categorized as being moderately well drained (Group B) while 26% are classified as being wet soils with a dual class A/D, 7% are classified as being a dual class B/D, and 3.4% are classified as being dual class C/D soil.

55.2% of the soils in this area were determined to be "somewhat limited" for recreational development while 44.8% were determined to be "very limited". Much of the "very limited" soils are areas that contain wetlands while

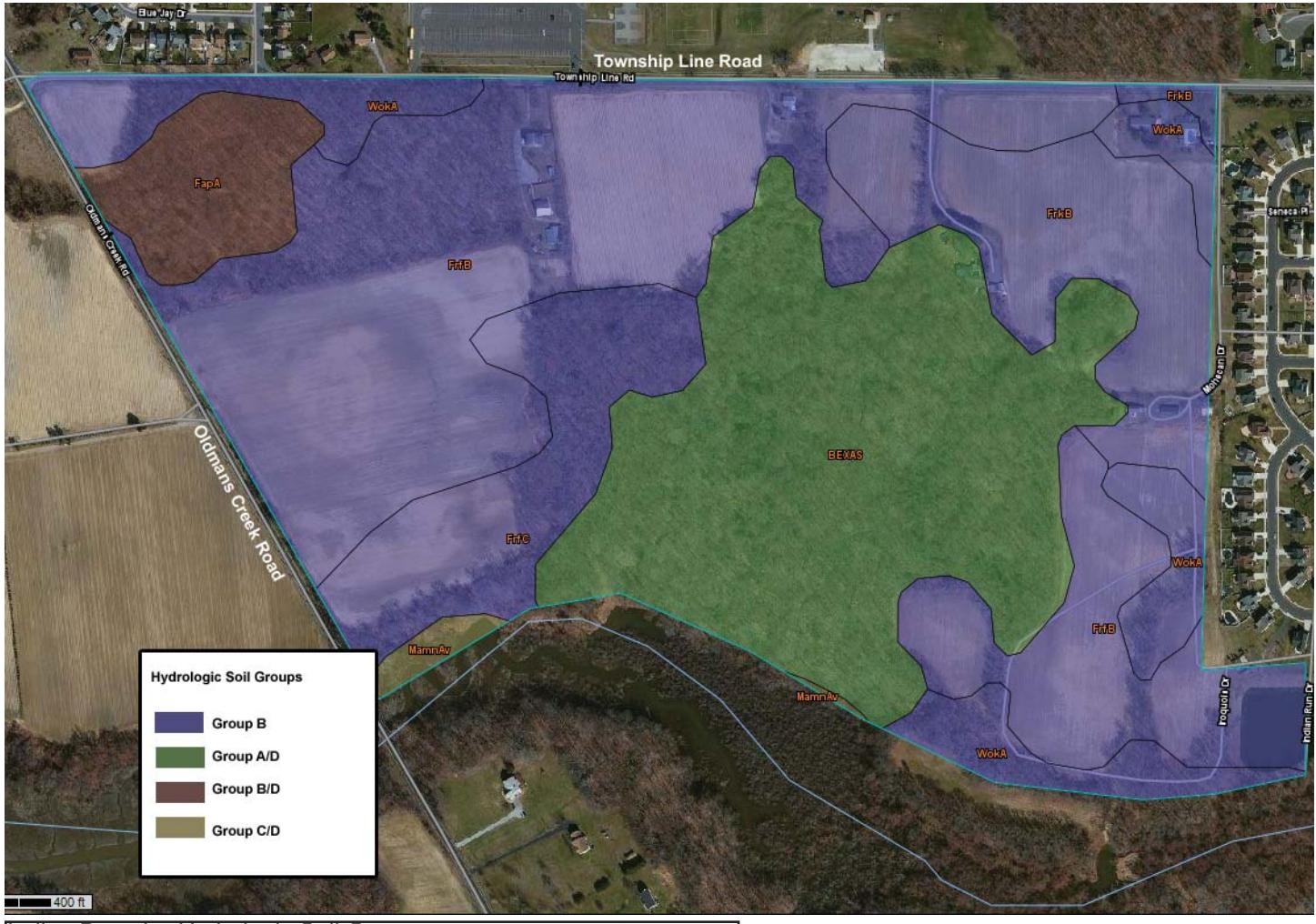




Photo: Matthew Blake

areas that are “somewhat limited” contain the Group B, moderately drained soils. The concept plan for this area is shown in Chapter 3 of this report and generally the plan avoids wet and “very limited” soils and proposes active recreation facilities in areas that are only “somewhat limited” with Group B soils as these will provide the conditions for development.

Park and Open Space Inventory Mapping

The Park and Open Space Inventory Map, located at the end of this chapter also displays municipal owned lands, state owned lands, permanently preserved farm land, schools, proposed TDR receiving areas, water bodies, and other parcels of interest to the Township and borough.

Parcels identified as “other parcels of interest” are areas that the Township and borough have identified as having particular characteristics that could be beneficial to the community including but, not limited to prominent location, important natural features or wildlife habitats, access to water bodies, or land currently for sale.

Each parcel is identified by a number on the inventory map. These numbers correspond to the descriptions after this page.

1. Locke Avenue/High Hill Park (Block 5, Lots 7 & 10)

Locke Avenue/High Hill Park is one of three parks within the Township/borough and is the only active recreation park. Swedesboro Lake Park (Lake Narraticon) and the Swedesboro Outdoor Ice Rink at the Auction Park are the other existing parks in Swedesboro or Woolwich.





Photo: Matthew Blake

Locke Avenue/High Hill Park is located to the west of Swedesboro Borough and is comprised of two separate parcels equaling approximately 79 acres. Facilities here include parking, active recreation fields/courts, and playgrounds. Two adjacent parcels to the north totaling 71.5 acres are currently undeveloped. The developed portion of the park contains two (2) softball fields, three (3) coach pitch/tee ball fields, two little league fields, one (1) multi base path field, and one (1) 60/90 field. The park also contains five (5) soccer fields, three (3) youth soccer fields/practice fields, two (2) basketball courts, two (2) playgrounds, and one (1) pavilion. Due to current demand, the Locke Avenue/High Hill Park fields are also shared with other sports such as field hockey, lacrosse, and football. These fields are bisected by a small stream that flows northwest to Raccoon Creek. An existing bridge provides a pedestrian connection between the two groups of fields.

The park has three main vehicular access points to gravel parking areas. Two access points are off of High Hill Road

and one is off of Locke Avenue. The park currently has approximately 528 parking spaces.

The remainder of these parcels contain mature wetland forests containing mostly red maple as well as old field succession, and brush lands. Also refer to Site Analysis Map 2 at the end of this chapter.

2. Former PMC Site (Block 5, Lot 11.01)

The former PMC site is approximately 9.5 acres. The parcel is owned by Woolwich Township and has access off of Locke Avenue. The parcel is adjacent to the existing Locke Ave/High Hill Park and could provide for future park expansion. The Township has had previous conversations about utilizing the parcel for a swim club. The site has some wetlands which could limit the developable area. The site is also not currently in the sewer service area. Any new sewer service in this area would likely need to tie into the existing system servicing Swedesboro. Also refer to the Existing Conditions 2 at the end of this chapter.

3. Locke Avenue/High Hill Park - undeveloped (Block 5, Lot 11)

The undeveloped parcel of Locke Avenue/High Hill Park provides a good opportunity for future park expansion as the grades are gently sloping (0.5-3.5%). Much of the gently sloping land is contains upland meadow. Existing wetlands and steeper slopes exist around an on site tributary to Raccoon Creek and also in the northeastern section of the park around a second small stream somewhat limit the developable area. The perimeter of the parcel contains some of the most mature forest on Township property in this area with large caliper tulip poplar, sweet gum, American beech, as well as willow oak / southern red oak hybrids.

This parcel has one vehicular access point from Locke Avenue and an existing pathway from Locke Avenue



Photo: Matthew Blake



exists to the northeastern portion of the site and crosses the existing stream into the site. This path provides a good opportunity for a pedestrian connection to any future park development. This parcel would also provide a good access point to Raccoon Creek and could accommodate woodland trails. Also refer to the Existing Conditions Map 2 at the end of this chapter.

4. Privately Owned Parcel (Block 5, Lot 11.02)

This privately owned site is of interest to the Township because of its access to Raccoon Creek and close proximity to Locke Ave/High Hill Park. The site could be used for group recreation activities and as a boat access point to Raccoon Creek.



Photo: Matthew Blake

5. Former Japanese Internment Camp Site (Block 5, Lot 16)

The former Japanese Internment Camp site is a privately owned parcel located on Locke Avenue adjacent to Oldmans Creek and the undeveloped area of Locke Avenue/High Hill Park. The site contains remnants of the former internment camp and is in a prominent location within the Township as it serves as a “gateway” to Swedesboro, the center of Woolwich, and Locke Avenue/

High Hill Park. The site also provides access and elevated views to Raccoon Creek.

6. Swedesboro Auction Park (Block 4, Lot 1)

The Swedesboro Auction Park is primarily used as an ice rink during winter months. The Auction Park is located at the intersection of Locke Avenue and Fow Avenue and still contains several old buildings and structures previously

used at the site. The parcel is approximately 2.3 acres in size. The rink is created and maintained by the Borough when temperatures permit. The rink provides a temporary facility for ice skating and ice hockey. The park also has bleachers and portable toilets on site.

The Swedesboro Auction Park is located approximately 300 feet from the existing path that runs from Locke Avenue to the undeveloped portion of Locke Avenue/High Hill Park. With proper pedestrian and bicycle links between the two parks there is a great opportunity to utilize the Auction Park as a gateway between Swedesboro Borough and Locke Avenue/High Hill Park in Woolwich. Also refer to the Existing Conditions Map 6 at the end of this chapter.

7. NJDEP Wildlife Management Area (Block 5, Lot 6.07)

This 64 acre parcel is located just to the west of Locke Avenue/High Hill Park and is currently a NJDEP owned site. Discussions with the project committee indicated that NJDEP has expressed their willingness to exchange this parcel for a Township owned parcel. NJDEP has identified Block 1, Lot 3 (Maccarone Farm) as a parcel they would like to receive as part of this exchange. It is likely that the Township will acquire the Maccarone Farm parcel and trade it to NJDEP to acquire Block 5, Lot 6.07.

Block 5, Lot 6.07 is currently undeveloped and contains agriculture use as well as emergent meadow and palustrine forest containing red maple, black cherry, sweet gum, black walnut, red mulberry, and sassafras. There is an existing pond on site has been observed to be a habitat for green frogs, bullfrogs, and black rat snakes.



Photo: Matthew Blake

The pond, if cleaned, could be a destination for swimming or fishing. The site has existing access off of High Hill Road and is bordered to the north by two residential properties. Much of the site contains gently sloping topography.

It is recommended that the Township continue to pursue and finalize this land swap which would allow for a contiguous park system and trail network along High Hill Road. Please also refer to Existing Conditions Map 2 at the end of this chapter.

8. LaPalomento Family Park (Block 5, Lots 4, 5, & 6.02)

The existing LaPalomento Family Park consists of three parcels totaling approximately 143 acres. The parcels are preserved by the Township as open space through the New Jersey Green Acres Trust program. The land is primarily used for farming. The existing farm road on site takes access from High Hill Road and a pond on site provides irrigation to the ongoing farming activities. The



land is mostly gently sloping, however, extensive wetlands on site and steep slopes adjacent to Raccoon Creek limit the available area for active recreation field development. As a result of the sandy soil conditions on Lots 4 and 6.02, there exists several tree species not found elsewhere on the property. These species include blackjack oak and post oak, northern red oak, and mockernut hickory. These lots also support emergent and tidal marsh containing swamp white oak, sweet gum, and other species tolerant of these conditions. Please refer to Existing Conditions Map 1 at the end of this chapter.

9. Palladino Field (Block 5, Lot 3)

This Township owned parcel contains active farming and is directly west of LaPalomento Family Park. The site is located off of High Hill Road and has access to Raccoon Creek to the east, north, and west. The existing farm fields are bordered by a woodland buffer that slopes down to Raccoon Creek. The woodland buffer is primarily an upland native forest containing white oak, red oak, black oak, willow oak, southern red oak, American beech, black cherry, hickory, sassafras, and black walnut. Also refer to Existing Conditions Map 1 at the end of this chapter.

10. Weatherby Development Open Space Parcels

The Weatherby residential development, located off of Center Square Road and High Hill Road contains several registered open space parcels dedicated to the Township. These parcels are mostly wooded and also contain several stormwater management basins and a sanitary sewer pump station. There are 9 maintenance access points from the residential development to the open space parcels. These access points provide an opportunity for future trail connections to the open space which could be used for trail recreation and connections to Locke



Photo: Matthew Blake

Avenue/High Hill Park. The topography is quite steep in several areas and should be taken into consideration for any future trail development. Several of the parcels also contain wetlands which limit the area available for trail development. Also refer to Existing Conditions Maps 3 and 4 at the end of this chapter.

11. Privately Owned Parcel (Block 2, Lot 22)

This privately owned parcel is located directly across Township Line Road from Beckett Park in Logan Township. The parcel is in the TDR sending area and contains a large, flat clearing that could be a prime location for additional active recreation fields. Indian Branch runs along the southern border of the property. Portions of the parcel near Indian Branch contain wetlands due which

could limit the area available for field development. The parcel also contains woodlands that is one of the largest contiguous area of woodlands in the Township and an important habitat for birds. The parcel is adjacent to the Westbrook residential development.

12. Privately Owned Parcel (Block 2, Lot 18)

This privately owned parcel is located directly across Township Line Road from Beckett Park in Logan Township. The parcel contains a large, flat clearing that could be a prime location for additional active recreation fields. This parcel contains significant wetlands which limit the area available for field development. The parcel also contains forest that is one of the largest contiguous area of woodlands in the Township and an important habitat for birds. This parcel is in the TDR sending area and lies



Photo: Matthew Blake

adjacent to several small parcels owned by Woolwich Township.

13. Privately Owned Parcel (Block 2, Lot 17)

This privately owned parcel lies at the intersection of Township Line Road and Oldmans Creek Road. The property is in the TDR sending area and has existing woodlands that contain an active bald eagle nest and is important bird habitat. This area should remain passive and could serve as a bird watching location.

14. Privately Owned Parcel (Block 2, Lot 16)

This privately owned parcel is currently farmed. The parcel is in the TDR sending area and lies directly adjacent to Lot 17 which contains an active bald eagle nest. This parcel could serve as a bird watching location, meadow area, and nature center. The parcel is also adjacent to three small Township owned parcels and Indian Branch.

15. Maccarone Farm - privately owned (Block 1, Lot 3)

This privately owned farm is of interest to the Township due to its access to Oldmans Creek. The Township has been in discussions about purchasing the parcel and swapping it to NJDEP for Block 5, Lot 6.07. This parcel would likely continue to be used as farmland as well as a public boat launch location. The parcel is also in the TDR sending area.

16. Township Owned Parcel (Block 1, Lot 14.07)

This Township owned parcel contains a stormwater basin and has an existing maintenance access to the adjacent housing development. The site also has access to Oldmans Creek.

17. Beckett Golf Club (Block 31, Lots 3.01, 4, 4.01 & Block 40, Lots 12 & 14)

Beckett Golf Club is a privately owned, 27 hole golf course with a driving range and club house. The course is bisected by Kings Highway with 11 holes on the western side and 16 holes on the eastern side. The course contains two ponds and has irrigation systems around putting greens.



Photo: Matthew Blake



The Township has been in conversation with the golf club owners about potential reconstruction of the course from 27 to 18 holes. Also refer to Site Analysis Map 7 at the end of this chapter.

18. Porches Mill Pond - privately owned (Block 36, Lot 5)

Porches Mill Pond is a privately owned pond in the southern corner of the Township. The pond is approximately 30 acres in size and provides very scenic views from Oliphants Mill Road. The pond is man made and was created in the 19th century when Porches Run was dammed to power a gristmill, called Porches Mill, and later Oliphant's Mill.

The property is also in the TDR sending area and is entirely surrounded by residential properties and is in close proximity to Oldmans Creek. The pond is known to have excellent water quality. Should the property ever become available it should be pursued by the Township for acquisition. The property could serve as a neighborhood park with activities such as picnicking, swimming, kayaking/canoeing, or fishing. Alternatively,



if the opportunity arose, the parcel could be acquired by the State, County, or Land Trust in order to ensure future public use and environmental preservation.

19. Township Owned Parcel (Block 35, Lot 4)

This Township owned parcel lies adjacent to Oldmans Creek is almost completely wetlands. The parcel does not have roadway access and is surrounded by existing residential properties.

20. Woolwich Township Municipal Complex (Block 28.01, Lot 1)

The Woolwich Township Municipal Complex is home to various Township administration offices and the Woolwich Township Police department. The complex is located on a 24 acre parcel on Center Square Road. The complex also includes a growing community garden and a large photovoltaic solar field. The remaining land is undeveloped. The existing farm land located on the adjacent parcel to the north along Auburn Road is expected to be developed as a commercial use.

The complex is in a central location within the Township and could accommodate additional uses such as a community garden expansion, dog park, or picnic area. As part of the agreement for development of the parcel, five acres of the parcel is required to remain as open space use. Also refer to Site Analysis Map 5 at the end of this chapter.

21. Former Nike Missile Silo Site (Block 14, Lot 5.01)

Woolwich Township owns a parcel of approximately 20 acres off of Swedesboro Paulsboro Road in the northern



corner of the Township. This site was once used by the U.S. Army as a Nike missile launching site during the Cold War era between 1954 and 1974. The Woolwich site, named “Swedesboro Nike-Hercules Missile Base PH-58”, was one of five Nike missile base locations in New Jersey and seven in Pennsylvania used as part of the Philadelphia air defense system. The sites were used as a perimeter defense against potential Soviet bombing of the Philadelphia region.

The site was abandoned by the military in 1970 and the land was eventually purchased by Woolwich Township in 2007. The purchase agreement restricts the land for passive recreational use only. The site still contains many remnants and artifacts of military activity including three missile silos that extend 30 feet into the ground, concrete slabs, multiple buildings, and other military structures. Many of the existing buildings would likely need to be demolished. The park is currently accessed via a dedicated right of way off of Swedesboro Paulsboro Road.

While currently dilapidated and overgrown, the site is relatively flat with the exception of several earthen berms and has great potential to be rehabilitated as a unique combination of recreational use and historical interpretation of the facility during the Cold War era. The site is in a location that could be accessed by the future Regional Center via a trail system and provides one of the few opportunities for recreational space in the northern section of the Township. It is recommended that the Township take steps towards cleaning the site also begin the process of formally planning future uses and rehabilitation. Please also refer to the appendix of this report for additional information on this parcel.

22. Privately Owned Parcel (Block 1, Lot 1)

Block 1, Lot 1 in Woolwich Township is privately owned and is of interest to the Township due to its access to Oldmans Creek, Oldmans Creek Road, and Township Line Road. The parcel lies in the far western corner of the Township and is also in the TDR sending area.

23. Privately Owned Parcel (Block 25, Lot 1)

This privately owned parcel lies at the end of Moravian Church Road. The parcel is of interest to the Township due to its access to Oldmans Creek and adjacent residential development in the area.

24. Lake Narraticon / Swedesboro Lake Park (Block 41.01, Lot 1 & Block 45, Lot 6)

Lake Narraticon and Swedesboro Lake Park are comprised of two parcels totalling approximately 46 acres. The park is accessed off of Park Avenue at the intersection with East Avenue in Swedesboro. The park has a gravel parking area with one asphalt ADA parking space. The park includes a playground, pavilion, picnic area, a canoe/kayak launch dock, a fishing dock, and a hiking trail that extends east towards the New Jersey Turnpike. The park also has portable toilets on site. The lake is stocked annually with fish and provides the only public fishing and water recreation sites in the Township and borough. Swimming is not currently available at the Lake.



25. Township Owned Parcel (Block 8, Lot 14)

Block 8, Lot 14 is Township owned open space with access to Raccoon Creek. The parcel is in a prominent location just north of downtown Swedesboro and is a possible location for a boat dock. The parcel does not currently have access to Kings Highway. An easement or acquisition of the adjacent parcel would be needed to provide access to the parcel from the roadway.

26. 5 Glen Echo Avenue, Swedesboro (Block 32, Lot 11)

5 Glen Echo Avenue located in Swedesboro is a property that is currently for sale. This parcel is in a prominent location to the downtown area of Swedesboro and has direct access to Raccoon Creek with a small concrete boat ramp.

27. NJDEP Grand Sprute Run NHP (Block 6, Lots 4.01 & 4.02)

These two parcels are owned by the State of New Jersey and are preserved open space parcels adjacent to Grand Sprute Run. The area is considered a Natural Heritage Priority Site which are lands that contain critically important habitats for rare species and natural communities within the state. Specifically, bald eagle and great blue heron are two rare wildlife species that have been documented on site. The site is bordered by Raccoon Creek to the south and Route 322 to the north.

28. Privately Owned Parcel (Block 5, Lot 6.05)

Block 5, Lot 6.05 is privately owned residence is of interest to the Township because of its access to Raccoon Creek and location near the NJDEP wildlife management site, Locke Ave/High Hill Park, and LaPalomento Family Park. The existing residence could be reused as a Township Park and Recreation Department office or as an educational nature center.

29. State Owned Open Space (Block 54, Lot 14)

This land is owned by the State of New Jersey and is permanently preserved open space. The land is primarily wooded and contains significant wetlands. The property lies adjacent to Raccoon Creek, the New Jersey Turnpike, and multiple residential properties.

30. Privately Owned Parcels - Tomlin Station NHP (Block 21, Lot 5 & Block 22, Lot 3)

These two parcels are privately owned and are in the TDR sending area. The parcels both lie adjacent to the existing freight rail line and have access to Warrington Mill Pond. The parcels are located in the Tomlin Station Natural Heritage Priority site.

31. Privately Owned Parcels (Block 7, Lots 2 &3)

These privately owned parcels lie on the northern side of Raccoon Creek in close proximity to the Locke Avenue bridge. The property contains significant wetlands, has access to Raccoon Creek and could serve as a “gateway” parcel to Swedesboro and Locke Ave/High Hill Park from Route 322.

32. Privately Owned Parcel (Block 5, Lot 7.03)

Block 5, Lot 7.03 is a privately owned parcel that is approximately 7 acres in size and lies directly adjacent to Locke Ave/High Hill Park. The parcel is of interest to the Township due to its location adjacent to the existing park and access to High Hill Road.

33. Privately Owned Parcel (Block 3, Lot 6)

Block 3, Lot 6 is a privately owned parcel that lies directly across High Hill Road from Locke Ave/High Hill Park and is adjacent to existing open space lands associated with the Weatherby development. The property could serve as an area for park expansion or trail connectors from the Weatherby development.

34. Privately Owned Parcel (Block 3.16, Lot 2.01)

This privately owned parcel lies adjacent to existing open space associated with the Weatherby development. The parcel has access off of High Hill Road and is directly across from the Palladino Field site. The parcel could accommodate connector trails to link the Weatherby development to High Hill Road and Palladino Field.

35. Privately Owned Parcel (Block 3.07, Lot 14.01)

This privately owned parcel lies adjacent to two open space parcels associated with the Weatherby Development. The parcel has access to Township Line Road and contains an existing Township maintained stormwater management basin.

36. Privately Owned Parcels (Block 40, Lots 9, 10, & 11)

These three parcels are privately owned and lie directly adjacent to Beckett Golf Club. The parcels are of interest to the Township because they lie in the TDR sending area and could potentially be utilized with any future redevelopment of Beckett Golf Club.

37. Township Owned Parcels (Block 2.01, Lot 30 & Block 2.11, Lot 86)

These Township owned parcels are open space associated with the adjacent Westbrook residential development. The parcels contain a stormwater management basin, some wetlands, and are adjacent to Indian Branch.

38. Township Owned Parcels (Block 2, Lot 24, 21, & 22)

These three parcels are Township owned and lie adjacent to Indian Branch. The properties contain some wetlands and do not have road access.

39. Privately Owned Parcel (Block 2, Lot 24)

This parcel is privately owned and is of interest to the Township due to it's proximity to adjacent Township owned lands, parcels of interest #11 and #12, and the proposed Auburn Village. Indian Branch runs through the western side of the parcel. Some wetlands exist on site. The parcel could serve as a connection from Auburn Village to potential development on Township Line Road.

40. Privately Owned Parcels (Block 31, Lots 5 and 5.01)

These two privately owned parcels have access to Kings Highway and are adjacent to the existing Beckett Golf Club. The house that exists on Lot 5.01 is currently abandoned. Should the western side of Beckett Golf Club be acquired by the Township for redevelopment, the acquisition of these two smaller parcels would help provide more development area along Kings Highway.

41. Privately Owned Parcel (Block 5, Lot 6.06)

Block 5, Lot 6.06 is a privately owned parcel that contains a residence in good condition. The parcel is situated between Raccoon Creek, another residence (Block 5, Lot 6.05), LaPalomento Family Park, and the NJDEP wildlife management site. Because it is likely that the NJDEP site is acquired by the Township, this residence and the adjacent residence will remain surrounded by Township owned land. For this reason, it is recommended that this parcel be considered for acquisition. The existing residence could be demolished or reused for events, a Township maintenance facility, or a Township facility for other uses.

42. Privately Owned Parcel (Block 5, Lot 1)

Block 5, Lot 1 is a privately owned property that contains farmland with a woodland buffer along Raccoon Creek, which occupies the northern half of the parcel. The parcel has access off of High Hill Road and lies on the Woolwich Township / Logan Township boundary. The property, if acquired could allow for a trail extension from Palladino Field west to Logan Township and also provide

views to Raccoon Creek. Because the parcel is situated on the Township boundary, there is also an opportunity for this to serve as a gateway to and from Logan Township.

43. Privately Owned Parcel (Block 5, Lot 2)

This 25 acre parcel contains an existing residence and has access off of High Hill Road. The majority of the parcel is occupied by the waters of Raccoon Creek. The parcel could provide access for boating or allow for a trail connection from Palladino Field west toward Logan Township.

44. Privately Owned Parcel (Block 5, Lot 6.08)

Block 5, Lot 6.08 is approximately 2.5 acres in size and holds an existing building that is currently utilized as a performing arts studio. The parcel has access off of High Hill Road and is adjacent to the NJDEP Wildlife Management Area (Block 5, Lot 6.07). For these reasons, the parcel is of interest to the Township. The existing structure has possibilities to be reused for various community or Township use or a VFW location.

45. Privately Owned Parcel (Block 5, Lot 4.01)

Block 5, Lot 4.01 is a small private parcel along High Hill Road adjacent to the LaPalomento Family Park. The parcel is approximately 1 acre in size and contains an existing residence. The existing vehicular access from High Hill Road to LaPalomento Park currently runs through this parcel. Acquisition of this parcel by the Township could provide more frontage along High Hill Road to be used for trails, active recreation fields, access drives, or parking.

46. Privately Owned Parcel, Swedesboro (Block 1, Lot 1)

Block 1, Lot 1 in Swedesboro is approximately 0.9 acres and is directly across Locke Avenue from the former Japanese Internment Camp site (Block 5, Lot 16) in Woolwich. The site has access to Raccoon Creek, is directly adjacent to the Locke Avenue bridge, and contains a vacant and dilapidated residence. The property should be considered for acquisition as its location provides an excellent opportunity for a park that could serve as a gateway to downtown Swedesboro and Locke Avenue park in Woolwich.

All of the sites mentioned above can also be located on the Park and Open Space Inventory Map found at the end of this chapter.



Photo: Matthew Blake

EXISTING FACILITY INVENTORY												
FACILITY TYPE	PARKS			SCHOOLS								GRAND TOTAL
	LOCKE AVE/HIGH HILL	LAKE NARRATICON PARK	PARKS TOTAL	KINGSWAY REGIONAL	WALTER HILL	CHARLES STRATTON	CHARLES HARKER	MARGARET CLIFFORD	SCHOOLS TOTAL			
BASEBALL	7	0	7	2	1	1	1	4	11			
BASKETBALL (OUTDOOR)	2	0	2		2	1	0	4	6			
BASKETBALL (INDOOR)	0	0	0	1	1	1	1	5	5			
FOOTBALL	2	0	2	1				1	3			
FIELD HOCKEY	0	0	0	0				2	2			
MULTIPURPOSE FIELD	1	0	1	1				1	2			
PLAYGROUND	1	1	2		1	1	1	4	6			
SOCCER	4	0	4	4				4	8			
TRACK	0	0	0	1				1	1			
SOFTBALL	2	0	2	2		1	1	4	6			
TENNIS	0	0	0	6				6	6			

COMPARABLE MUNICIPALITIES SUMMARY CHART												
	WOOLWICH/SWEDESBORO	RADNOR, PA	UPPER DUBLIN, PA	UPPER MORELAND, PA	RANDOLPH, NJ	ROXBURY, NJ	SCOTCH PLAINS, NJ	AVERAGE	DIFFERENCE FROM AVERAGE	DIFFERENCE FROM MAXIMUM	GROUP DESIRED FACILITIES	ESTIMATED LOS CALC
POPULATION	26,069 (expected 2040)	30,878	25,569	24,015	25,734	23,324	23,510					
# OF PARKS	2	27	28	19	28	28	28	26.33	-24	-26		
PARK AREA (ACRES)	115.17	346.59	390.6	218.15	935.36	353.1	92.5	389.38	-274.21	-820.19		
FACILITY												
BASEBALL	5	6	23	2	3	8	7	8.17	-3	-18	4	2-3
BASKETBALL	2	6	16	13	4	5	7	8.50	-7	-14		
FIELD HOCKEY	0	0	0	0	0	0	0	0.00	0	0	2	
FOOTBALL	2	1	2	1	2	0	0	1.00	1	0	2-3*	6**
LACROSSE	0	0	0	0	1	0	0	0.17	0	-1		
MULTIPURPOSE FIELD	1	9	16	7	5	2	0	6.50	-6	-15		**
PLAYGROUND	3	9	16	18	4	6	8	10.17	-7	-15		
SKATEPARK	0	1	0	0	1	0	0	0.33	0	-1		
SOCCER	4	3	18	3	7	7	10	8.00	-4	-14	4	6
SOFTBALL	4	6	8	6	11	9	6	7.67	-4	-7	4	2-3
ROLLER HOCKEY	0	1	1	1	0	1	1	0.83	-1	-1		
TENNIS	0	5	20	9	6	5	11	9.33	-9	-20		
VOLLEYBALL	0	1	3	5	1	2	0	2.00	-2	-5		

* Organization did not respond with a specific number of desired fields

** Survey sample indicated high demand for football. Consider multiuse fields for this sport.

Parks and Open Space Analysis Mapping

After analysis of the Township inventory mapping and discussions with the project committee, several sites were chosen to be more closely analyzed for potential recreational uses. These sites were chosen based upon several factors including size, location, ownership, existing on site uses, adjacent uses, existing natural features on site, and their general capability to accommodate various recreational uses desired by the Township and borough. All site analysis maps are located at the end of this chapter.

Recreational Facilities Analysis

Multiple tools were used to analyze current active recreation facility use and demand to make determinations and recommendations for future active recreation facilities. These tools include an facility inventory, a sports groups questionnaire, community benchmarking, level of service calculations, telephone survey results, online survey results, and first hand knowledge and opinions from the project committee and the Woolwich Township Parks Director.

Recreation Facilities and Programs Inventory

The existing facility inventory chart below identifies existing municipal owned recreation facilities within the Township and borough. The chart also identifies facilities located at area schools including Kingsway Regional, Walter Hill School, Charles Stratton School, Charles Harker School, and Margaret Clifford School. Existing facilities examined include baseball fields, softball fields, soccer fields, football fields, field hockey fields, multi purpose fields, running tracks, tennis courts, basketball courts, and playgrounds. The 11 baseball fields in the Township is the most of any facility. Soccer is second with 8 fields followed by basketball, tennis, softball and playgrounds each with 6.

The Swedesboro / Woolwich Parks and Recreation Department has a rapidly growing list of community recreational organizations. The chart located at the end of this chapter identifies these organizations. As part of the planning process, each of these organizations were contacted and to provide information regarding their organizational participation, facility use, facility need, and organizational structure.

Of the 11 organizations, the largest program is currently the Swedesboro Woolwich Soccer Association which has approximately 3,000 participants per year. Youth baseball and softball is the second most popular sport with 5 organizations totaling approximately 2,200 participants. Swedesboro Woolwich Basketball currently has approximately 450 participants, Kingsway Youth Field Hockey, 190 participants, Kingsway Youth Football, approximately 150 participants, and Logan Township Adult Softball, 110 participants.

Six of these organizations have indicated that participation is expected to increase in the upcoming years with

soccer predicting the greatest increase of approximately 1,000 participants. The chart also displays specific facility needs as indicated by each organization.

Community Benchmarking

Community benchmarking was completed as a means of determining how Woolwich and Swedesboro's recreational facilities compare to what will be needed in 2040. 6 municipalities with populations similar to that of Woolwich and Swedesboro's anticipated 2040 population (26,069) were analyzed. Existing recreational facilities in these six municipalities were inventoried and compared to the existing facilities in Woolwich and Swedesboro to determine the extent of deficit or surplus for each type of facility.

The chart on the previous page identifies all facilities inventoried. The chart does not include any school facilities in Woolwich and Swedesboro. Compared to the average of the six comparable municipalities, Woolwich and Swedesboro are deficient in all facility types except football (+1), field hockey (even), lacrosse (even), and skate parks (even)(none). The largest deficiencies compared to the average are tennis (-9), playgrounds (-7), and basketball courts (-7). Soccer is 4 fields deficient, baseball, 3 deficient, and softball, 4 fields deficient.

Level of Service Calculations

In the past, the National Recreation and Park Association (NRPA) advocated a uniform national standard for park land within a community, for example 10 acres per 1,000 residents. This approach has since been discarded by the NRPA for a less arbitrary standard called "Level of Service" (LOS). The NRPA indicates that the Level of Service is needs driven and facility based focused around supply and demand of particular recreational facilities.

The statistically valid telephone survey described earlier in this chapter was used to determine current demand for park facilities. The results of this survey were utilized in the LOS formula and compared to the current facility supply to produce a standard that responds to the specific recreational needs of Woolwich Township and the Borough of Swedesboro.

The level of service calculation was used for existing baseball, softball, and soccer facilities in Woolwich Township. It was determined that soccer facilities currently serve an approximate population of 5,481 which is about 6 fields deficient. Existing baseball and softball facilities currently serve a population of 5,640 which is about 5 fields deficient.

The level of service should not be used as a sole indicator for future facilities. The LOS should be used in conjunction with the other tools mentioned above as well as the input from the project committee and Woolwich Township parks director to help the Township and borough adequately plan their future recreational facilities.

Recommended Active Recreation Facilities

After analysis of the telephone survey results, online survey results, community benchmarking and LOS calculations, determinations were made as to needed facilities within the Township and borough. Current needs were determined as well as anticipated needs 25 years in the future when the population is expected to roughly double in size. Recommended active recreation facilities are summarized in the boxes below. These needs will be dependent on actual population growth, future sports group demand, and future sports group participation. Additionally, use of school facilities by sports organizations and the community may reduce the need for Township fields. Existing use of school facilities is shown in the School Facility Use Chart at the end of this chapter.

RECOMMENDED FACILITIES - NOW	
Baseball	1 60/90 Field & 2 Smaller Fields
Field Hockey	2 Fields
Football	2 Fields
Soccer	6 Fields
Softball	2 Fields
Multi-use	3 Fields

RECOMMENDED FACILITIES - BY 2040	
Baseball	1-5 Fields
Field Hockey	1-2 Fields
Football	1-2 Fields
Soccer	0-8 Fields
Softball	2-5 Fields
Multi-use	4 or More Fields

Note: Recommendations are in addition to recommended facilities needed now.

In addition to the above facilities, the community surveys showed a strong demand for tennis. Tennis is not listed in the chart above because there are currently no Township owned courts to study actual use and demand. In the next chapter, tennis courts are proposed at both Locke Ave/High Hill Park as well as Beckett Golf Club. A future determination will have to be made as to the appropriate number of courts to serve the community.