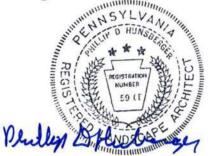
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TWO RIVERS AREA TRAIL IMPLEMENTATION STUDY

Northampton County, Pennsylvania



February 2009

<u>Prepared for</u>: Delaware & Lehigh National Heritage Corridor, Inc.

Prepared by: Urban Research & Development Corporation Bethlehem, Pennsylvania

Two Rivers Area Trail Implementation Study Northampton County, Pennsylvania

This study was prepared by Urban Research and Development Corporation of Bethlehem, Pennsylvania, with the guidance of the Delaware & Lehigh National Heritage Corridor, Inc. and the Two Rivers Area Trail Implementation Study Steering Committee. Steering Committee participants and affiliations are listed below.

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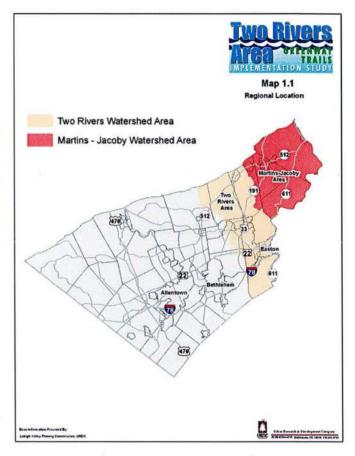
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EXECUTIVE SUMMARY

BACKGROUND FOR THIS STUDY

The overall mission is to complete a trail gap analysis at strategic locations within the Two Rivers Area and plan a regional trail system in northeastern Northampton County ultimately linking 18 miles of trail from the City of Easton at the Delaware River to the Blue Mountain in Wind Gap. Along the 18-mile trail corridor there are nine municipalities which include: one city (Easton), four Boroughs (Wilson, Tatamy, Stockertown and Wind Gap), and four townships (Forks, Palmer, Plainfield, and Bushkill).

This study is a Lehigh Valley Greenways project that is supported jointly by a grant from the Pennsylvania Department of Conservation and Natural Resources (DCNR), Bureau of Recreation and



Conservation, Growing Greener Environmental Stewardship Fund, administered by the D&L NHC, Inc. with additional support from the PPL Corporation. D&L serves as DCNR's administrative partner for the Lehigh Valley Greenways, a DCNR Conservation Landscape Initiative (CLI). A resource conservation specialist works closely with DCNR and the local partnership. Although various trails now exist in the Two Rivers Area of Northampton County, there are missing segments to the trails network at several key locations. In addition, additional planning is needed to identify potential trail routes beyond the Bushkill Creek Watershed to connect into the Martins-Jacoby

Watershed. This study utilizes and builds upon the information, maps, and recommendations contained in the Two Rivers Area Greenway Plan (2005).

STUDY PROCESS

Urban Research & Development Corporation (URDC) served as the consultant for the study. D&L, Inc. coordinated and provided communication with a steering committee of 14 stakeholders representing affected municipalities, Northampton County Parks,



One of the final public meetings

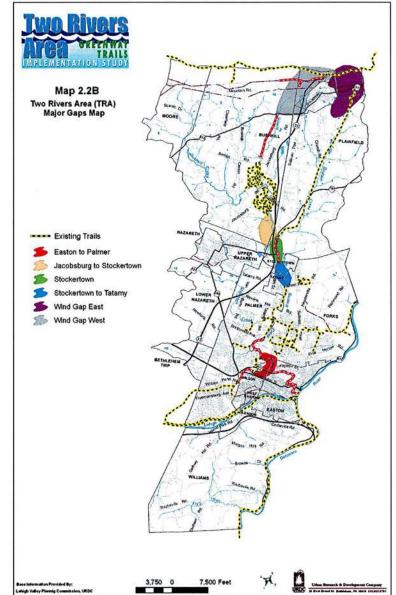
Executive Summary

Bushkill Stream Conservancy, Martins Jacoby Watershed Association, and DCNR. The study process involved various components. Meetings were held with the Steering Committee throughout the process. Seventeen key person interviews were conducted with individuals with diverse backgrounds and specific knowledge of the study area representing municipalities, non-profits and the private sector. The study utilized information gathered and evaluated from field work, existing and new GIS mapping, related plans and studies, and background research and information on such items as population growth, trail user demand, site amenities, and implementation costs. Public workshop meetings were held in May 2008, at two separate locations, to review the study purposes and work maps, and to obtain input of possible trails and trail connections. The draft study was presented for final public review and comment at two separate locations in November 2008.

TWO RIVERS AREA GAPS ANALYSIS

EXISTING CONDITIONS

- Demographics Trail users will largely consist of people already residing within the study area. The total population of the Two Rivers Area municipalities was 127,793 in the year 2000. Estimates for 2006 exceed 143,000, nearly half the population of Northampton County. The Lehigh Valley Planning Commission has projected population figures for 2010, 2020 and 2030, indicate that the Two Rivers municipalities are projected to increase at a significantly higher rate (52.5%) than Northampton County (37.8%).
- **Community Character** The Two Rivers Area is rich in history and exhibits a variety of human landscapes. It is situated in a growth area within the Lehigh Valley, where significant future growth is expected. The Two Rivers Area displays a wide variety of land uses, due in part to its north-south cross-section of the diverse County of Northampton. Potential exists to establish a trail



network that would weave through nearly every type of land use, augmenting and linking existing recreation and open space uses, and providing contrast and relief to the more built-up, intensive land uses.

- **Profile of Potential Users -** Trail users are a very diverse group. The most common trail users include: bikers, hikers, anglers, leisure walkers, community residents, and nature watchers. Other users include: children going to school, animals, runners, hunters, horseback riders, skateboarders, motorized vehicles, and a various other users. Future trail use will continue to be diverse with potential increases anticipated in certain users such as horseback riders, tourists, fitness walkers, and local and regional residents. This diversity points to the demand for multi-use greenway options.
- **Demand for Trails** Several indicators suggest the demand for trails in the Two Rivers Area will increase in the future. Significant population growth, the increased use and growing appreciation of greenways documented in PA DCNR's *Blueprint for Action*, survey data from the *Pennsylvania Outdoor Recreation Plan 2004-2008*, and the input received from the Study Committee, the public and others during this study, all indicate that the demand for trails undoubtedly increase in the future.
- Economic Development A number of studies bring to light the positive effect greenways and trails have on property values. These studies indicate home buyers are willing to pay higher prices for areas where the quality of life is greater because of the presence of greenways and trails. The National Association of Home Builders (NAHB) found in a 2000 survey that trails with opportunities for walking or jogging ranked 2nd highest out of 18 community amenities desired by home buyers. The NAHB also reports that trails consistently rank in the top 5 of home buyer desired amenities. Another economic benefit of trails is increased local spending by trail users. According to the Pine Creek Rail Trail 2006 User Survey and Economic Impact Analysis conducted by Rails-to-Trails Conservancy, the average user spends \$30 per visit on Soft Goods and \$355 on Hard Goods, generating annual revenue between \$3-5 million per year to the economy of the Pine Creek Valley. Business leaders believed that the Pine Creek Rail Trail was a real asset to the valley and to their business, some accounting for 35-49% of their business. URDC's Western Maryland Rail Trail Economic Impact Study found that trail users spend an average of \$16 per trip. Trails can also generate economic savings through the form of lower health care costs. As our nation heads towards an epidemic in obesity, increased opportunities for recreation activities such as walking, jogging and cycling can help people lead more healthy and active lives.
- Significant Recreation, Historical, and Cultural Resources One of the most important functions of a greenway is to provides linkages between sites with recreational, historic, or cultural value. This is especially true in recreation-based greenways, where trails can provide alternative transportation options between locations, or "nodes" such as recreation and open space sites, schools, municipal government properties, cemeteries, preserved farms, and historic resources of national, state and local significance. An inventory of land holdings in the Two Rivers Area reveals 137 parcels or groups of parcels that can be classified as parks, recreation facilities, or open space, representing 7,636 acres. The four largest contiguous park sites in the Two Rivers Area are State Game Land 168 on Blue Mountain, the Jacobsburg Environmental

Education Center, Easton's Hugh Moore Park, and the Mariton Wildlife Sanctuary in Williams Township.

- **Historic Resources** The Two Rivers area contains a seemingly unlimited collection of structures dating from the past three centuries. Some of these houses, buildings, mills, bridges, and other structures remain, while others may be in ruin or completely gone. Nevertheless, these structures and sites serve as important, fascinating reminders of how the area appeared and functioned during those times, and how we have arrived at the present condition.
- PPL Corridor Landowner Outreach Heritage Conservancy has been implementing a recommendation of the Two Rivers Area Greenway Plan (2005) to connect Jacobsburg Environmental Education Center to the Blue Mountain as a recreation and conservation greenway corridor. Landowner outreach was conducted. A PPL electric transmission line right-of-way, which includes a former railroad right-of-way, makes this connection north. Heritage Conservancy and D&L NHC worked with Bushkill Township and PPL Corporation to successfully transfer ownership of the right-of-way from PPL to the Township as a land donation. The Township was also awarded a \$200,000 DCNR Community Conservation Partnerships Program grant to build the first 2.5 mile section of trail from Jacobsburg north to Route 512. Future phases and trail alternatives to continue north are being addressed in this plan.
- Existing Trails Existing trails in the Two Rivers Area vary in size and type, from 8-foot paved bike paths through residential developments, to narrow footpaths on ridgetops. Along the crest of Blue Mountain is the Appalachian National Scenic Trail, a 2,200 mile footpath stretching from Georgia to Maine. In Plainfield Township, the Plainfield Township Trail occupies an abandoned railroad right-of-way from near Wind Gap to Stockertown. In nearby Jacobsburg Environmental Education Center, numerous trails through mature woodlands offer loop options for hikers and mountain bikers alike. Forks Township features a



One of the Palmer Township Trail Segments

network of trails connecting various residential developments and parks. Forks also contains a one-mile gravel rail trail in the northeastern part of the Township, which is slated for extension. Palmer Township, a local pioneer of rail trails, contains the Palmer Bikeway, a popular system of paved trails. Tatamy Borough's trail extends along Bushkill Creek. The Delaware and Lehigh Towpath Trail follows the historic canal of the same name from White Haven in Luzerne County to Bristol in Bucks County, near Philadelphia.

PROPOSED AND FUTURE TRAILS

- **Proposed Trails** Various trails are in the acquisition, design, or construction phase. These "proposed" trails include:
 - the Wilson Trail (bike path) from 25th Street to Wood Avenue (approximately 3/4 mile); funding in place; Spring 2009 bidding and Fall 2009 construction.
 - the Palmer Township trail segment from Penn Pump Park (Northwood Avenue) to Edgewood Avenue to connect existing bike path to Hackett's Park (approximately 1 mile); funding in place (awarded a \$200,000 DCNR Community Conservation Partnerships Program grant, and \$120,000 as matching funds from a Northampton County Open Space Municipal Park Acquisition & Development Program Grant, part of Northampton County's 21st Century Open Space Initiative); preparing for Summer 2009 bidding and Fall 2009 construction.
 - City of Easton's Bushkill Creek Trail which is a 2.5 mile trail connecting the Simon Silk Mill at 13th Street to Riverside Park at the Delaware River; funding in place; working on design; \$3 million secured for acquisition, design, and construction.
 - Bushkill Township PPL Trail which is 2.5 miles in Bushkill Township from Jacobsburg to Route 512; \$200,000 DCNR grant in Place; design in Spring-Summer 2009; construction Fall 2009; implementors include Bushkill Township, D&L and DCNR.
- Future Trails and Alternative Connections Future trails and various alternative trail connections are identified and mapped to "fill the gaps" in the Two Rivers Area trail system. The "future" trails and "alternative" trail segments were suggested during the study process as a result of discussions at Steering Committee Meetings, Key Person Interviews, public workshop meetings, and as a result URDC research and field visits during the study.

SUMMARY OF TRAIL STATUS

• **Bushkill Creek Corridor** - The major trail spine is along the Bushkill Creek Corridor from the Delaware River (at Easton) to the Appalachian Trail. It includes over 9 miles of existing trails. All the existing trails are in public ownership and open to the public. When completed the trail will be nearly 18 miles long. The table below shows the trail status in miles along this trail corridor.

MUNICIPALITY	EXISTING TRAILS	PROPOSED TRAILS	FUTURE TRAILS	ALTERNATIVE TRAIL SEGMENTS	TOTAL MILES
Easton		2.27		0.53	2.80
Palmer	2.10	1.17	0.47		3.74
Tatamy	0.45			0.86	1.31
Stockertown		1.11		0.19	1.30
Plainfield	6.90		1.14		8.04
Wind Gap			0.66		066
Total Miles	9.45	4.55	2.27	1.58	17.85

Trail Status in Miles for

Delaware River (at Easton) to Appalachian Trail via Bushkill Creek Corridor

Additional Trail Section from Stockertown to Appalachian Trail via Jacobsburg and PPL Right-of Way - In addition to the above major trail along the Bushkill Creek Corridor, there will be approximately 9 additional miles of trail extending from Stockertown to the Appalachian Trail (AT) via Jacobsburg Park and the PPL Right-of-Way. Ultimately, this section would serve to provide a "loop" trail connection to the Bushkill Corridor Trail system. The table below shows the trail status in miles along this additional "loop" trail section.

Trail Status in Miles for the <u>Additional Stockertown to Appalachian Trail Section</u> via Jacobsburg Park and PPL Right-of-Way

MUNICIPALITY	EXISTING TRAILS	PROPOSED TRAILS	FUTURE TRAILS	ALTERNATIVE TRAIL SEGMENTS	TOTAL MILES
Plainfield			0.38		0.38
Plainfield Game Lands		0.98			0.98
Bushkill		1.84	2.98		4.82
Bushkill Jacobsburg	2.65				2.65
Total Miles	2.65	2.82	3.36		8.83

• Additional Trails in the Study Area - In addition to the 18-mile Bushkill Creek Corridor, and the nearly 9 miles of trail extending from Stockertown to the Appalachian Trail (via Jacobsburg Park and the PPL Right-of-Way), there are more than 24 miles of other additional existing, proposed, future, and alternative trail segments in the study area. The table below shows the trail status in miles for these additional trails.

MUNICIPALITY	EXISTING TRAILS	PROPOSED TRAILS	FUTURE TRAILS	ALTERNATIVE TRAIL SEGMENTS	TOTAL MILES
Bushkill		1.27	1.35		2.62
Forks	12.0	0.08	0.21	0.77	13.06
Palmer	2.0				2.00
Pen Argyl			0.57		0.57
Plainfield		0.81	1.67		2.48
Tatamy					0.00
Stockertown					0.00
Wind Gap				2.58	2.58
Wilson		0.75			0.75
Total Miles	14.0	2.91	6.38	0.77	24.06

Trail Status in Miles for Other Additional Trails in the Study Area

MARTINS-JACOBY AREA TRAIL STUDY / CONCEPT PLAN

BACKGROUND INFORMATION

- **Total Population** In 2000, the total population of the Martins-Jacoby Watershed area municipalities was 31, 256. The LVPC has projected that the area's population will be 46,672 by year 2030 a 49% increase from the 2000 population.
- **Community Character** Most of the Martins-Jacoby area is rural with rolling hills and small villages and Borough's nestled in between. Much of the development is along the major roadways of Route's 191, 512 and 611 and located in the Pen Argyl Bangor area. Subdivisions are starting to infiltrate the more rural areas of Washington Township. The Delaware Water Gap National Recreation Area encompasses a large swath of land in the northeastern section of Upper Mount Bethel Township. The Minsi Lake area also designates a large area of preserved land for recreational opportunities in Upper Mount Bethel. Various portions of the Delaware River have parkland and/or preserved lands throughout the corridor. Pennsylvania Power & Light (PPL) owns a power facility in Lower Mount Bethel Township along the Delaware River.
- **Natural Features** The Martins-Jacoby area spans from Blue Mountain in the north. The Delaware River creates a natural border with New Jersey, while the western portion of the area is bordered by the Two Rivers area in Plainfield Township and Lower Mount Bethel Township. This rural area allows for large swaths of natural areas, woodlands, steep slopes, streams and lakes.
- Outstanding Natural Areas Critical plant and animal habitat areas and outstanding geologic features in the Martins-Jacoby area also help define the area. Over 20 natural areas were identified in the Natural Areas Inventory report (April 1999) prepared by the Lehigh Valley Planning Commission. The Natural Areas Inventory (NAI) was conducted by the Pennsylvania Science Office (PSO) and the Nature Conservancy to identify critical areas of plant and animal habitat and unique natural features. Recreation and Open Space Sites - An inventory of land holdings in the Martins-Jacoby area reveals 54 parcels or groups of parcels that can be classified as parks, recreation facilities, or



Foul Rift – An Outstanding Natural Area on the Delaware River

Two Rivers Area Greenway Trail Implementation Study

open space. Of these sites, 54 are publicly-owned, either by a municipality, Northampton County, the Commonwealth of Pennsylvania, or the federal government. The remaining sites are owned privately, by conservancies, sportsman clubs, and other entities. While some privately-owned recreation sites require membership or school enrollment for use, many others are open to the public, such as nature preserves and various ball fields. The Martins-Jacoby area is calculated to contain 3,779.3 acres, or 8.6 square miles, of recreation land. This is approximately 6% of total land area of the Martins-Jacoby area.

Martins Creek Environmental Preserve -Martins Creek Environmental Preserve consists of 215 acres of woodland and fields along the shores of the middle Delaware River. The preserve has five miles of hiking trail, including scenic views of the river. The environmental preserve is managed as a natural and recreational resource and provided to the community by PPL's Martin Creek and Lower Mount Bethel power plants. It is situated off Depues Ferry/Foul Rift Road in Lower Mount Bethel Township.



- **Historic Resources** The Martins-Jacoby area contains a collection of structures dating from the past. Some of these houses, buildings, mills, bridges and other structures remain while others may be in ruin or completely gone. While some sites are protected at the government level, many others are recognized only as items in historic inventories.
- **Delaware River Valley Byway** The Delaware River Valley Byway, a designated Pennsylvania Byway, comprises three roads in Lower Mount Bethel Township: Route 611, Little Creek Road and Martins Creek Belvidere Road (see Map 3.11). The Byway passes by preserved farms, historic landmarks, countryside views and some of the oldest villages in the region.
- Delaware River Scenic Drive The segment of Route 611 in the Martins-Jacoby area is part of the Delaware River Scenic Drive that begins in Morrisville, PA and extends to Delaware Water Gap at the south end of the Delaware Water Gap National Recreation Area.
- **Pennsylvania Bike Route V** Bike Route V is a designated Pennsylvania Department of Transportation bike route. A segment of this bike route is along PA Route 611, within and north of Portland Borough. The route provides access over the Delaware River via the pedestrian / bike bridge at Portland.

Two Rivers Area Greenway Trail Implementation Study

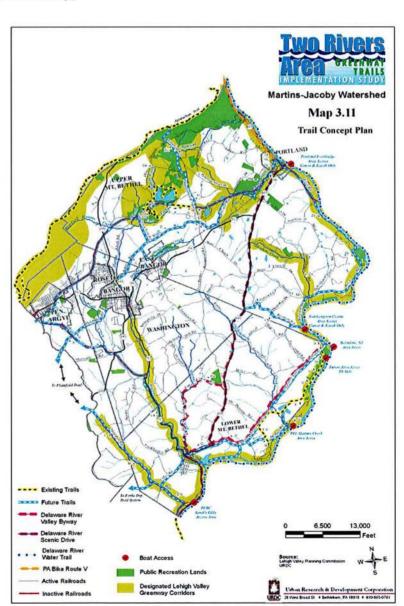
Executive Summary

- Lehigh Valley Greenway Plan The Lehigh Valley Greenways Plan: A Regional Greenways Plan for Lehigh and Northampton Counties was adopted in 2007. The plan, prepared by the Lehigh Valley Planning Commission, incorporates the statewide vision for Pennsylvania's greenways into a regionally specific and valuable network of corridors, hubs and nodes. It was reviewed and used during the preparation of this study. The plan identifies the following greenways within the Martins-Jacoby Watershed:
 - Blue Mountain/ Kittatinny Ridge (Priority, Multi-Use, Scenic Greenway)
 - Delaware River (Priority, Multi-Use Greenway)
 - Greater Minsi Lake Corridor (Priority, Multi-Use Greenway)
 - Jacoby Creek (Conservation Greenway)
 - Martins Creek (Conservation Greenway)
 - Mud Run (Conservation Greenway)

TRAIL CONCEPT PLAN

- Alternative Trail Routes -Various existing and potential "future" trails are shown on the Trail Concept Plan Map (Map 3.11). All together they represent over 104 miles of trails:
 - 47.3 miles of existing trails
 - 56.9 miles of potential future trails (43.8 mile along roads and 13.1 miles on inactive railroads).

These trails provide alternative connections for a regional trail system. The overall objective of the Concept Plan is to provide a loop trail system that links the Blue Mountain with the Delaware River Corridor, connects the Two Rivers Area with the Martins-Jacoby Area, and ties other locations such as the Boroughs, Minsi Lake and others areas together. In order to accomplish these objectives, the proposed trail systems uses



existing trails and roads, ultimately recommends pursuing the use of abandoned railroads as opportunities arises.

- Existing Trail Components Existing components of the trail system include approximately 47.3 miles of trails:
 - 11.1 miles of the Appalachian Trail;
 - 3.2 miles of PennDOT's Bike Route V;
 - 23 miles of the Delaware River Water Trail;
 - 2.5 miles of trails at the PPL's Martins Creek Environmental Preserve;
 - 2.8 miles of Lower Mount Bethel Tails; and
 - 4.7 miles of Minsi Lake Trails.
- New Potential Trails Along Roads New potential trails, consisting of approximately 43.8 miles, could utilize several rural, low-volume roads such as:
 - Totts Gap Road (2 miles);
 - Five Points Richmond Road (1.3 miles);
 - Ridge Road (4.3 miles);
 - Heiden Road (1.3 miles);
 - Jacoby Creek Road (2.1 miles);
 - Bangor Vein Road (0.8 miles);
 - River Road (8.3 miles);
 - Riverton Road (3.4 miles);
 - Uhler Road (1.4 miles);
 - Martins Creek Belvidere Road (6.6 miles);
 - De Pues Road (1.3 miles);
 - Mud Run Road (4.6 miles);
 - Richard Garr Road (0.5 miles);
 - Delabole Road (2.3 miles); and
 - Route 712 (3.6 miles).



When existing roads are being reconstructed or repaved, municipalities and PennDOT should consider ways of making them bike friendly through the widening of shoulders, signage, pavement markings and other enhancements. Where possible, it would be desirable to develop off-road trails along the roads such as the trails recently constructed as part of the Lower Mount Bethel Township trail system. Future acquisitions of abandoned railroad (or portions of) could also be used to develop trails similar those in Palmer and Plainfield Townships, and Tatamy Borough. trails. Other municipalities should prepare Trail Plans and incorporate them into their local parks, recreation, open space and greenway plans.

• Inactive Railroad Corridors - Future acquisitions of abandoned railroad (or portions of) could also be used to develop trails similar those in Palmer and Plainfield Townships, and

Tatamy Borough. Approximately 13 miles of inactive railroad corridors could have potential as future trails.

It is important to pursue all the "future trails" identified on the Concept Plan. In the short range, the identified existing trails and roads can serve to provide basic connections from the Martins-Jacoby Area to the Two Rivers Area.

- Feasibility and Costs URDC and the Steering Committee believe that implementation of the Concept Plan is feasible. The basic, initial framework consists of existing trails and roads. Costs for the existing trail segments including the Appalachian Trail, the Minsi Lake Trails, Tekening Hiking Trails, the existing Lower Mount Bethel Township Trails, Bike Route V and the other existing trail segments relate mostly to continued maintenance costs. Costs for road signs and markings along designated road segments will cost \$1,600 per mile, assuming \$200 for each sign and each pavement marking (4 signs and 4 pavement markings per mile). Land acquisition cost are best determined by appraisal when specific situations and locations are known. General cost guidelines are provided in the Implementation Strategy section of this report for land acquisition and other trail development items.
- Areas of Emphasis Lower Mount Bethel Township (LMBT) should place emphasis on exploring the key 4-mile trail route between the existing trail at Del Haven Road and Martins Creek to connect the entire Township with a trail. LMBT should work with DCNR and the PA Fish and Boat Commission (FBC) to build a boat launch on FBC property at Riverton. Riverton could serve as a trailhead for both land and water trails. Potential opportunities for water trail and land trail access (trailheads) should also be explored in Upper Mount Bethel Township. All the municipalities in the Martins-Jacoby Watershed should meet to review the Concept Plan and discuss implementation. Municipalities are also encouraged to prepare Official Maps and update Subdivision and Land Development Ordinances (SALDO) to address trails.

IMPLEMENTATION STRATEGY

An implementation strategy was developed outlining the specific tasks that need to be completed in order to connect the gaps and establish feasible connections to link the two watersheds. The implementation strategy also outlined high priority projects and possible funding sources for implementation.



The visit by DCNR Secretary DiBerardinis on October 30, 2008 provided an opportunity to review trail maps and high priority projects

HIGH PRIORITY PROJECTS

The high priority projects are listed below, along with cost estimates and possible funding sources. It will be important to review and update the Implementation Strategy each year, and assign new projects for high-priority implementation.

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HIGH PRIORITY PROJECTS		ESTIMATED COST	POSSIBLE FUNDING SOURCES			
•	Wilson Trail (Bike Path) - Trail Segment W1.1 (25 th St. to Wood Ave.)	\$ 260,000 (4,400 LF)	• \$100,000 DCNR (already awarded) and local funds; Spring 2009 bidding and Fall 2009 construction.			
•	Palmer Township Trail -Trail Segment PA 1.2 (Northwood Ave. South to Edgewood Ave.)	\$ 400,000 (6,200 LF @ \$340,000/mile)	 Funding in place (awarded a \$200,000 DCNR Community Conservation Partnerships Program grant, and \$120,000 as matching funds from a Northampton County Open Space Municipal Park Acquisition & Development Program Grant, part of Northampton County's 21st Century Open Space Initiative); preparing for Summer 2009 bidding and Fall 2009 construction. 			
•	 Bushkill Township / PPL Trail Trail Segment B1.2 (Rt. 512 south to Keller Rd.) Trail Segment B1.3 (Keller Rd.) 	<pre>\$551,000 (9,700 LF @ \$300,000/mile) \$50,000 (bridge) \$601,000* (* Note: will be built by township public works crew with assistance from DCNR; costs undoubtedly will be less)</pre>	• Funding in place (\$200,000 DCNR grant); design in Spring-Summer 2009; construction Fall 2009; implementors include Bushkill Township, D&L and DCNR.			
•	City of Easton Bushkill Creek Trail - Trail Segment E1.3 (13 th Street to Riverside Park at the Delaware River	\$3 Million already secured for for acquisition, design, and construction.	• Funding in place; working on design.			
•	 Stockertown Trail (10' wide/stone) Trail Segment S1.1 (from Plainfield Trail to Rt.191) Trail Segment S1.3 (Rt.191 crossing south to Bushkill St.) 	\$216,000 (3,800 LF @ \$300,000/mile) \$ 91,000 (<u>1,600 @ \$300,000/mile)</u> \$307,000 Total	 PA DCNR Northampton County PennDOT Strategic Trail Development Fund Stockertown Borough 			

Trail Development High Priority Projects

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•	Route 191 Trail Crossing at Stockertown - Trail Segment S1.2 - Sidewalk - Road Crossing	\$20,000 (500 LF @ \$40/LF) <u>\$20,000 (1 each)</u> \$ 40,000	 Private Sector (developer) PennDOT PA DCNR
•	Tatamy Trail - North Extension - Trail Segment S1.6 (Main Street north, Equipto property land trade area)	\$98,000 (1,300 LF @ \$400,000/mile)	 PA DCNR Northampton County Strategic Trail Development Tatamy Borough
•	 Trail Landowner Outreach Trail Segments S1.4 & S1.5 (between Tatamy and Stockertown) Trail Segments PL2.1, PL2.2, PL 2.3 (north of Rt. 512 & west of & adjacent to Rt. 33) Trail Alternative SG2.2 (from PPL r-o-w to Center St.) 	\$15,000 - \$25,000 \$20,000 - \$30,000 <u>\$5,000 - \$10,000</u> \$40,000 -\$65,000	 PA DCNR Northampton County Strategic Trail Development Fund Tatamy Borough Stockertown Borough Bushkill Township Plainfield Township Wind Gap Borough
•	 Improvements to former LNE Rail Corridor Trail Segment SG1.2 (Alt.3, 8th St dirt road) Trail Segment SG1.3 (8th St. to old road) Trail Segment SG 1.4 (old RR bed to AT) 	\$10,000 (2,000 LF @ \$5/LF) \$90,900 (2,400 LF @ \$200,000/mile) \$40,000 <u>(800 LF @ \$50/LF)</u> \$140,000	 Bushkill Township Plainfield Township Wind Gap Borough PA Game Commission PA DCNR
•	Municipal Official Maps	\$4,000 - \$5,000 / municipality	 Municipalities PA DCED PA DCNR PennDOT
•	Municipal Ordinances (SALDO provisions for trails)	\$1,000 / municipality	 Municipalities PA DCED PA DCNR PennDOT

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INTRODUCTION

BACKGROUND FOR THIS STUDY

The overall mission of this study is to complete a gap analysis at strategic locations within the Two Rivers Area and plan a regional trail system in northeastern Northampton County ultimately linking 18 miles of trail from the City of Easton at the Delaware River to the Blue Mountain in Wind Gap. Along the 18-mile trail corridor there are nine municipalities which include: one city (Easton), four Boroughs (Wilson, Tatamy, Stockertown and Wind Gap), and four townships (Forks, Palmer, Plainfield, and Bushkill).

This study is a Lehigh Valley Greenways project that is supported jointly by a grant from the Pennsylvania Department of Conservation and Natural Resources, Bureau of Recreation and Conservation, Growing Greener Environmental Stewardship Fund, administered by the D&L NHC, Inc. with additional support from the PPL Corporation. D&L serves as DCNR's administrative partner for the Lehigh Valley Greenways, a DCNR Conservation Landscape Initiative (CLI). A resource conservation specialist works closely with DCNR and the local partnership.

Although various trails now exist in the Two Rivers Area of Northampton County, there are missing segments to the trails network at several key locations. In addition, additional planning is needed to identify potential trail routes beyond the Bushkill Creek Watershed to connect into the Martins-Jacoby Watershed. This study utilizes and builds upon the information, maps, and recommendations contained in the Two Rivers Area Greenway Plan¹, and other studies and plans.

Specific objectives associated with each element are listed below.

Major objectives of this study include:

- Continuing implementation of key trail projects identified in the Two Rivers Area Greenway Plan;
- Making maximum use of available information and findings, conclusions, recommendations from other plans and studies now underway;
- Identifying and evaluating alternative trail connections to fill in gaps in missing trail segments at key priority locations in the Bushkill Creek Watershed;
- Working toward the establishment and enhancement of trails and trail connections along the Kittatiny Ridge (Blue Mountain) in the Upper Bushkill Creek and Martins-Jacoby Creek Watersheds;

¹Urban Research and Development Corporation. *Two Rivers Area Greenway Plan. 2005.* Report prepared for the Two Rivers Area Council of Governments.

- Identifying possible trail routes which highlight the slate industry, railroad transportation and environmental attributes;
- Identifying possible trail routes that provide scenic views and that align with scenic natural areas along the route, with minimal impact;
- Identifying possible trail routes that serve to link regional trails at feasible trailheads;
- Identify trail locations that provide opportunities for tourism, environmental education, and heritage economic development, that provides access to communities and their resources; and
- Placing emphasis on public participation and continual communication throughout the process via key person interviews, public meetings, steering committee meetings, and informing potential neighbors and land owners of potential trail routes with sensitivity to their concerns.

STUDY PROCESS

Urban Research & Development Corporation (URDC) was selected as a consultant with the necessary skills and experience to perform greenway and trails planning requested by this study. URDC was selected through a competitive Request for Proposal (RFP) process by the Delaware & Lehigh National Heritage Corridor, Inc. with input and approval by the review committee consisting of representatives from the Boroughs of Wind Gap, Tatamy, and Stockertown, Northampton County, and the Department of Conservation and Recreation (DCNR).

communication with the trail team, a committee of

Boroughs of Wind Gap, Tatamy, and Stockertown, Northampton County, and the Department of Conservation and Recreation (DCNR). D&L, Inc. coordinated and provided Key person intervie

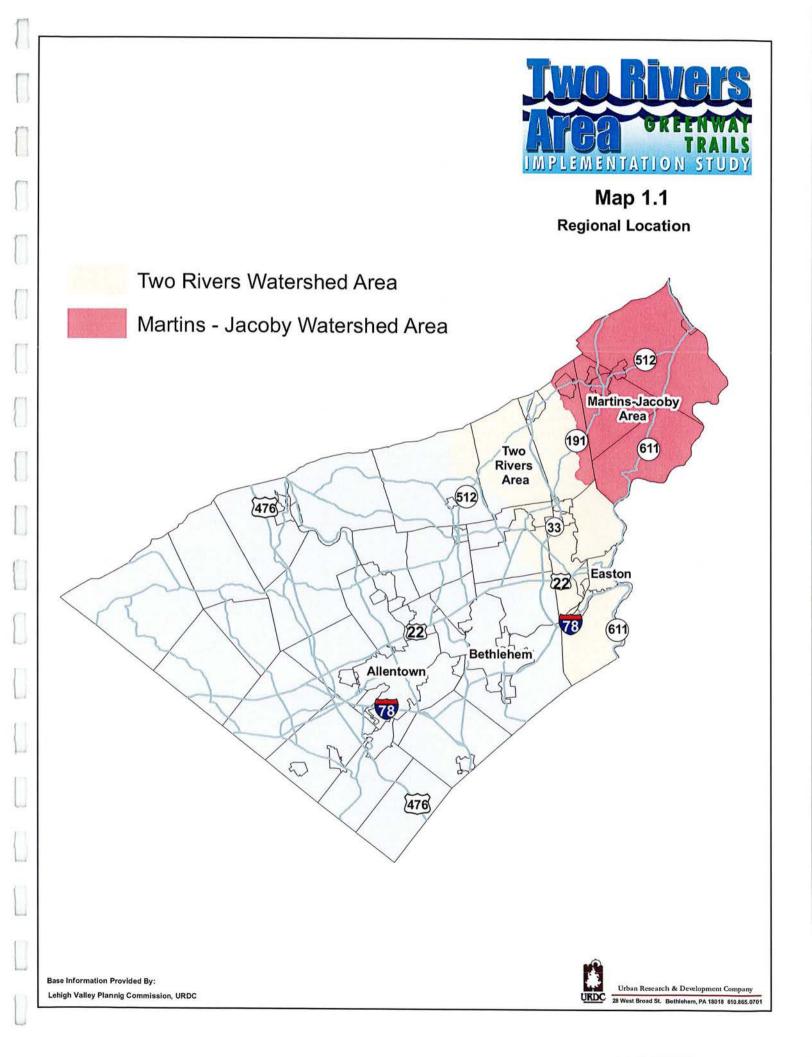


Key person interviews during the study

14 stakeholders representing affected municipalities, Northampton County Parks, Bushkill Stream Conservancy, Martins Jacoby Watershed Association, and DCNR to provide URDC guidance and comment to fulfill the objectives and scope of work.

The study process involved various components. Meetings were held with the steering committee throughout the process. The committee reviewed and commented on each section of the study. Seventeen key person interviews were conducted with individuals with diverse backgrounds and specific knowledge of the study area. The study utilized information gathered and evaluated from field work, existing and new GIS mapping, related plans and studies, and background research and information on such items as population growth, trail user demand, site amenities, and implementation costs. Public workshop meetings were held in May 2008, at two separate locations,

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Two Rivers Area Greenway Trail Implementation Study

to review the study purposes and work maps, and to obtain input about possible trails and trail connections.

An implementation strategy was developed outlining the various tasks that needed to be completed in order to connect the gaps and establish feasible connections to link the two watersheds. The implementation strategy also outlined high priority projects and possible funding sources for implementation. The draft study was presented for final public review and comment at two separate locations in November 2008.



The four public meetings provided opportunities to review maps and offer comments

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GAP ANALYSIS

EXISTING CONDITIONS

Demographics

Trail users will largely consist of people already residing within the study area. An analysis of total population, population density, and population projections provides a good concept of the human landscape of the Two Rivers area. Although some municipalities do not lie entirely within the study area, they are included in full, as some trail users will come from outside the area. Totals for all 17 municipalities are given, as well as figures for Northampton County. Where appropriate, county and regional figures have been added for comparison. Except where indicated, all data originates from the U.S. Census Bureau. The U.S. Census 2006 population estimates and the most recent Lehigh Valley Planning Commission (LVPC) population projections were used to update the population figures contained in the *Two Rivers Area Greenway Plan* (2005).

Total Population

The total population of the Two Rivers area municipalities was 127,793 in the year 2000 (Table 2.1). Estimates for 2006 exceed 143,000, nearly half the population of Northampton County. Estimates for 2006 show that the City of Easton is the most populated municipality, followed by Bethlehem Township the most populated township. Palmer Township, which lies entirely within the study area, is the third most populated municipality. Forks Township saw the greatest increase in population between 1990 and 2000, at 42%. Forks, due to its flat topography and location near New Jersey, has recently become a haven for people moving from that state, many still keeping jobs there. Glendon Borough has the least number of residents, and also saw the greatest percentage loss of residents from 1990 to 2000. The total population growth rate for all municipalities in the Two Rivers area between 1990 and 2000 was about 12%, which is several percentage points higher than the county as a whole, and nearly four times as much as the growth of Pennsylvania.

Population Projections

The Lehigh Valley Planning Commission has projected population figures for 2010, 2020 and 2030, shown in Table 2.2. It is noteworthy that between years 2000 and 2030, the Two Rivers Municipalities are projected to increase at a significantly higher rate (52.5%) than Northampton County (37.8%). The largest forecasted increases are to be in Upper Nazareth, Forks and Palmer Townships, which still have significant amounts of vacant, residentially-zoned land. While the population in most boroughs is expected to remain constant, Tatamy is projected to see a 12.3% increase in population by 2030. Also by this time, Bethlehem Township and Palmer Township are expected to exceed Easton as the most populous municipality in the Two Rivers area.

Two Rivers Area Greenway Trail Implementation Study

Gap Analysis

		1990 - 2006			
MUNICIPALITY		POPULATION			NGE 2000)
	1990 Census	2000 Census	2006 Estimate	Number	Percent
Bethlehem Township	16,425	21,171	23,603	4,746	28.9
Bushkill Township	5,512	6,982	7,987	1,470	26.7
Forks Township	5,923	8,419	13,551	2,496	42.1
Lower Nazareth Township	4,483	5,259	5,834	776	17.3
Moore Township	8,418	8,673	9,395	255	3.0
Palmer Township	14,965	16,809	19,289	1,844	12.3
Plainfield Township	5,444	5,668	6,083	224	4.1
Upper Nazareth Township	3,413	4,426	5,500	1,013	29.7
Williams Township	3,982	4,470	5,992	488	12.3
Glendon Borough	391	367	362	(24)	-6.1
Nazareth Borough	5,713	6,023	6,055	310	5.4
Stockertown Borough	641	687	762	46	7.2
Tatamy Borough	873	930	1,082	57	6.5
West Easton Borough	1,163	1,152	1,165	(11)	-0.9
Wilson Borough	7,830	7,682	7,718	(148)	-1.9
Wind Gap Borough	2,741	2,812	2,814	71	2.6
City of Easton	26,276	26,263	26,209	(13)	0.0
Two Rivers Municipalities	114,193	127,793	143,401	13,600	11.9
NORTHAMPTON COUNTY	247,105	267,066	291,306	- 19,961	8.1
LEHIGH VALLEY	538,235	579,156	626,850	40,921	7.6

Table 2.1Total Population - Two Rivers Area1990 - 2006

Source: U.S. Census

Poj	pulation Proj	S.V	wo Rivers	Area			
		2000-2030	8				
MUNICIPALITY	2000 CENSUS	PROJECTIONS				CHANGE 2000- 2030	
		2010	2020	2030	NUMBE R	%	
Bethlehem Township	21,171	25,193	28,979	33,566	12,395	58.5	
Bushkill Township	6,982	8,562	9,997	11,109	4,127	59.1	
Forks Township	8,419	13,973	16,522	19,962	11,543	137.1	
Lower Nazareth Township	5,259	7,085	10,222	12,380	7,121	135.4	
Moore Township	8,673	10,132	11,888	13,698	5,025	57.9	
Palmer Township	16,809	19,554	22,289	26,899	10,090	60.0	
Plainfield Township	5,668	6,855	8,694	10,752	5,084	89.7	
Upper Nazareth Township	4,426	6,309	8,921	11,197	6,771	153.0	
Williams Township	4,470	6,178	7,322	8,262	3,792	84.8	
Glendon Borough	367	368	368	369	2	0.5	
Nazareth Borough	6,023	6,103	6,304	6,697	674	11.2	
Stockertown Borough	687	756	756	756	69	10.0	
Tatamy Borough	930	1,044	1,044	1,044	114	12.3	
West Easton Borough	1,152	1,170	1,170	1,170	18	1.6	
Wilson Borough	7,682	7,753	7,753	7,753	71	0.9	
Wind Gap Borough	2,812	2,827	2,827	2,827	15	0.5	
City of Easton	26,263	26,279	26,323	26,405	142	0.5	
Two Rivers Municipalities	127,793	150,141	171,379	194,846	67,053	52.5	
NORTHAMPTON COUNTY	267,066	301,416	333,382	368,135	101,069	37.8	

Table 2.2Population Projections - Two Rivers Area2000-2030

Source: U.S. Census, Lehigh Valley Planning Commission, April 12, 2007

Population Density

The City of Easton has the most people per square mile (Table 2.3). Wilson is the most denselypopulated borough, and Palmer the most densely-populated township. The lowest density is found in Moore Township, followed closely by Plainfield, Williams and Bushkill Townships. While Moore Township is the largest municipality in the study area, Bushkill Township is the largest municipality found entirely within the study area. West Easton Borough, the smallest municipality, barely encompasses 200 acres.

	1))	0-2000				
	LAND AREA (Square miles)	POPULATION		DEN (Persons	POPULATION DENSITY (Persons per square mile)	
		1990	2000	1990	2000	
Bethlehem Township	14.85	16,425	21,171	1,106	1,426	
Bushkill Township	25.71	5,512	6,982	214	272	
Forks Township	12.28	5,923	8,419	482	686	
Lower Nazareth Township	13.54	4,483	5,259	331	388	
Moore Township	38.25	8,418	8,673	220	227	
Palmer Township	11.03	14,965	16,809	1,357	1,524	
Plainfield Township	24.38	5,444	5,668	223	232	
Upper Nazareth Township	7.35	3,413	4,426	464	602	
Williams Township	18.85	3,982	4,470	211	237	
Glendon Borough	0.79	391	367	495	465	
Nazareth Borough	1.72	5,713	6,023	3,322	3,502	
Stockertown Borough	0.89	641	687	720	772	
Tatamy Borough	0.52	873	930	1,679	1,788	
West Easton Borough	0.31	1,163	1,152	3,752	3,716	
Wilson Borough	1.18	7,830	7,682	6,636	6,510	
Wind Gap Borough	1.43	2,741	2,812	1,917	1,966	
City of Easton	3.81	26,276	26,263	6,897	6,893	
Two Rivers Municipalities	176.89	114,193	127,793	646	722	
NORTHAMPTON COUNTY	379.75	247,105	267,066	651	703	

Table 2.3
Population Density – Two Rivers Area
1990-2000

Source: U. S. Census

Community Character

The Two Rivers Area is rich in history and exhibits a variety of human landscapes. It is situated in a growth area within the Lehigh Valley, where significant future growth is expected. The Two Rivers Area displays a wide variety of land uses, due in part to its north-south cross-section of the diverse County of Northampton. Potential exists to establish a greenway network that would weave through nearly every type of land use, augmenting and linking existing recreation and open space uses, and providing contrast and relief to the more built-up, intensive land uses.

Agricultural and vacant land comprise the largest percentage of total land in the Two Rivers area, over 60%. Non-agricultural vacant land is found largely in the northern fringes of the Two Rivers area, and in Williams Township. Residential land comprises approximately 25% of all land in the Two Rivers area. Outward from the Easton-Wilson urban complex lie suburban residential neighborhoods that are progressively more recent as one drives away from Easton. Shopping centers tend to be near major highways, as demonstrated by the Palmer Park Mall on Route 248 near Route 22, the Northampton Crossings shopping center at Routes 248 and 33, and Wind Gap's K-Mart Plaza at Routes 512 and 33. Major linear commercial corridors in the Two Rivers area include William Penn Highway in Palmer Township, Route 248 between Routes 22 and 33 in Palmer, 25th Street and Northampton Street in Wilson, and Sullivan Trail in Forks Township. Traditional commercial areas can still be found in the Two Rivers Area, especially in Easton. The boroughs and villages also feature commercial clusters, including Broad Street in Nazareth, Main Street in Stockertown, Broadway in Wind Gap, and Route 611 in Raubsville. Industry has always played an important role in the economic development of the Two Rivers Area. Industrial land uses range from heavy operations such as quarrying and chemical manufacturing, to lighter uses including machine shops and warehousing facilities.

Profile of Potential Users

Trail users are a very diverse group. The most common trail users include: bikers, hikers, anglers, leisure walkers, community residents, and nature watchers. Other users include: children going to school, animals, runners, hunters, horseback riders, skateboarders, motorized vehicles, and a various other users. Future greenway use will continue to be diverse with potential increases anticipated in certain users such as horseback riders, tourists, fitness walkers, and local and regional residents. This diversity points to the demand for multi-use greenway options.

Demand for Trails

There are several indicators which suggest the demand for trail in the Two Rivers Area will increase in the future. Significant population growth, the increased use and growing appreciation of greenways documented in PA DCNR's draft *Blueprint for Action*, survey data from the *Pennsylvania Outdoor Recreation Plan 2004-2008*, and the input received from the Steering Committee, the public and others during this study, all indicate that the demand for trails undoubtedly increase in the future. The following excerpt taken from PA DCNR's *Pennsylvania Outdoor Recreation Plan 2004-2008*, documents the continued demand for greenways and greenway-related activities:

"In the research for the current update of Pennsylvania's Recreation Plan, new survey data continues to confirm the public's interest in greenways. Specifically, survey data revealed that trail-oriented greenways including bicycle paths (63 percent of respondents, hiking and backpacking trails (57 percent of respondents) and walking paths (53 percent of respondents) were most often identified as needing to be improved or increased in the Commonwealth. There was also strong agreement that greenways should link neighborhoods, parks and communities throughout the state. Survey results also indicated that there is a growing recognition by our citizens (66 percent of respondents) that greenways can have a positive affect on property values."

In regard to facility needs to be addressed in the plan, 56 percent of the survey respondents indicated that *greenways* should be improved or increased in the Commonwealth.

Other survey data in the plan show that significant percentages of people in PA DCNR's Planning Region 2 (Northampton, Lehigh and Berks counties) participate in greenway-related recreation activities:

Activity	Participation Rate
1. Walking for pleasure or fitness	65.2 %
2. Nature walks	36.4 %
3. Hiking	31.8 %
4. Bicycling	24.4 %
5. Horseback riding	6.1 %

Also, most persons interviewed during the preparation of the Two Rivers Area Greenway Plan and as part of this study indicated that the demand for trails over the next 10 years will increase at a moderate to high rate. Many reasons were given for this increase in demand, such as: area population growth, more fitness-minded people, costs of motorized transportation, costs of vacations/out-of-town recreation, increased tourism, and more opportunities for trail users.

Economic Development

As an area becomes more developed, losing land to housing developments, shopping centers and office parks, the value of open space and greenways increases. Overall, trends have indicated that trails have positive impacts on local economies, both directly and indirectly.

There have been a number of studies conducted bring to light the positive effect greenways and trails have on property values. These studies indicate home buyers are willing to pay higher prices for areas where the quality of life is greater because of the presence of greenways and trails. In April of 2000, the National Association of Home Builders (NAHB) found in a survey that trails with opportunities for walking or jogging ranked 2nd highest out of 18 community amenities desired by home buyers. The NAHB also reports that trails consistently rank in the top 5 of home buyer desired amenities. Three quarters of consumers ranked sufficient natural open space 2nd on a list of desired amenities, followed by walking and biking paths. Consumers also indicated a willingness to pay extra for natural areas that existed prior to the development.¹

As a result of this demand, property values for properties near greenways and trails has increased and consumers are showing a willingness to pay extra for these amenities. An example here in Pennsylvania can be found in Confluence, where the creation of the Greater Allegheny Passage has helped to spur an increase in property values as properties adjacent to the trail are purchased as primary or secondary homes by people attracted to the area as a result of the trail.² As greenways and trails grow in popularity as amenities for consumers, developers may start using them as marketing tools. In a new development in North Carolina, a developer added \$5,000 to the selling price of properties adjacent to a greenway and they were still the first properties to sell.³ Other surveys have shown similar trends.

Another economic benefit of trails is increased local spending by trail users. According to the Pine Creek Rail Trail 2006 User Survey and Economic Impact Analysis conducted by Rails-to-Trails Conservancy, the average user spends \$30 per visit on Soft Goods and \$355 on Hard Goods, generating annual revenue between \$3-5 million per year to the economy of the Pine Creek Valley. Business leaders believed that the Pine Creek Rail Trail was a real asset to the valley and to their business, some accounting for 35-49% of their business. URDC's Western Maryland Rail Trail Economic Impact Study⁴ found that trail users spend an average of \$16 per trip in the Hancock, MD area.

Trails can also generate economic savings through the form of lower health care costs. As our nation heads towards an epidemic in obesity, increased opportunities for recreation activities such as walking, jogging and cycling can help people lead more healthy and active lives.

²*Transportation: Paving the Way for Walking and Biking.* http://downloads.transportation.org/highroad/HighRoad-07.pdf

¹Benefits of Trails and Greenways. http://www.americantrails.org/resources/benefits/10reasons.html

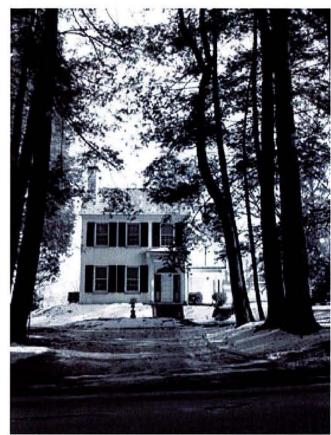
³Hopey, Don. "Prime Location on the Trail." Rails-to-Trails, Fall/Winter 1999.

⁴URDC, Western Maryland Rail Trail Economic Impact Study and Marketing Plan. December 2005.

Significant Recreation, Historical, and Cultural Resources

One of the most important functions of a greenway is to provides linkages between sites with recreational, historic, or cultural value. This is especially true in recreation-based greenways, where trails can provide alternative transportation options between locations, or "nodes." Existing greenway nodes are described in the following section and displayed on Map 2.1. These include recreation and open space sites, trails, schools, municipal government properties, cemeteries, preserved farms, and historic resources of national, state and local significance.

Recreation and Open Space Sites



The Boulton House at Jacobsburg Environmental Education Center is a significant example of the rich history to be discovered in the Two Rivers area.

An inventory of land holdings in the Two Rivers area reveals 137 parcels or groups of parcels that can be classified as parks, recreation facilities, or open space (Table 2.4). Of these sites, 101 are publicly-owned, either by a municipality, Northampton County, the Commonwealth of Pennsylvania, or in one case, the federal government. The remaining sites are owned privately, by park associations, conservancies, sportsman clubs, universities and other entities. While some privately-owned recreation sites require membership or school enrollment for use, many others are open to the public, such as nature preserves and various ball fields.

In Table 2.4, recreation sites are divided into six different classes, modeled after National Recreation and Park Association classifications. These include neighborhood parks (such as tot lots and small community parks), regional parks (such as Jacobsburg Environmental Education Center), special use parks (such as hunting clubs, golf courses, and horse riding areas), linear parks (including the area's rail trails and canal trails), conservancies (public and private open space holdings and nature preserves), and

game lands. Park types are further described in the "type" column. Park ownership is listed as either federal, state, county, municipal or other. "Access" indicates whether the site is open to the public, regardless of whether the site is publicly or privately owned. Site area, in acres, is listed in the last column. Acreage figures are derived from GIS calculation. The Two Rivers area is calculated to contain 7,636 acres, or 12 square miles, of recreation land. This is 11% of total land area of the Two Rivers area.

The accompanying map shows existing recreation sites in the Two Rivers area, classified by ownership, and labeled with numbers corresponding to listings in Table 2.4. Some properties, such as undeveloped municipal land holdings, are assigned the same number due to their small size and frequency (e.g. #131, miscellaneous open space owned by Palmer Township). Other sites are currently undeveloped, but may serve as future neighborhood parks and/or athletic facilities (e.g. #127 in Forks Township). The four largest contiguous park sites in the Two Rivers area are State Game Land 168 on Blue Mountain, the Jacobsburg Environmental Education Center, Easton's Hugh Moore Park, and the Mariton Wildlife Sanctuary in Williams Township.

#	Site Name	Municipality	Class	Туре	Owner	Access	Acres
1	Chetwin Terrace Playground	Bethlehem Twp.	Neighborhood	Mini-Park	Municipality	Public	2.64
2	Country Club of Northampton	Bethlehem Twp.	Special Use	Golf Course - Regular	Other	Private	174.34
3	Green Pond Country Club	Bethlehem Twp.	Special Use	Golf Course - Regular	Other	Public	128.33
4	Hope Lock Farm	Bethlehem Twp.	Special Use	Riding Stables	Other	Public	18.35
5	Louise W. Moore Park	Bethlehem Twp.	Regional	Regional Park	County	Public	109.70
6	4-H Center of Northampton	Bushkill Twp.	Special Use	Miscellaneous	Other	Public	4.99
7	Bady's Grove	Bushkill Twp.	Special Use	Picnic Grove	Other	Public	12.11
8	Bushkill Township Recreation Center	Bushkill Twp.	Neighborhood	Community Park	Municipality	Public	78.16
9	Cortez Picnic Grove	Bushkill Twp.	Special Use	Picnic Grove	Other	Public	34.63
10	Graver Arboretum	Bushkill Twp.	Special Use	Educational Area	Other	Public	53.20
11	Jacobsburg Environ- mental Education Center	Bushkill Twp.	Regional	State Park	State	Public	1130.69
12	Mountainview Drive Inn and Miniature Golf	Bushkill Twp.	Special Use	Miniature Golf or Driving Range	Other	Public	2.04
13	Sport's Spot	Bushkill Twp.	Special Use	Miniature Golf or Driving Range	Municipality	Public	0.79
14	State Game Lands No. 168 (Bushkill Twp.)	Bushkill Twp.	Game Land	State Game Lands	State	Public	1204.07
15	Bushkill Street Park	Easton City	Neighborhood	Mini-Park	Municipality	Public	0.08
16	Butz Park	Easton City	Neighborhood	Open Space	Municipality	Public	1.62

Table 2.4Two Rivers Area Recreation and Open Space Sites

Two Rivers Area Greenway Trail Implementation Study

Gap Analysis

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#	Site Name	Municipality	Class	Туре	Owner	Access	Acres
17	Centennial Park	Easton City	Neighborhood	Mini-Park	Municipality	Public	0.31
18	Cheston / Pioneer Park	Easton City	Neighborhood	Mini-Park	Municipality	Public	0.66
19	Circle Park	Easton City	Neighborhood	Mini-Park	Municipality	Public	0.55
20	Condran Playlot	Easton City	Neighborhood	Mini-Park	Municipality	Public	0.14
21	Cooper Street Park	Easton City	Neighborhood	Mini-Park	Municipality	Public	0.64
22	Cottingham Stadium	Easton City	Neighborhood	School Recrea- tion Area	Other	Public	5.43
23	Easton Area Neighborhood Center	Easton City	Neighborhood	Mini-Park	Municipality	Public	2.52
24	Eddyside Park	Easton City	Neighborhood	Park / Playground	Municipality	Public	3.74
25	Hackett Park	Easton City	Neighborhood	Community Park	Municipality	Public	99.20
26	Heil Park	Easton City	Neighborhood	Park / Playground	Municipality	Public	15.03
27	Hugh Moore Historical Park	Easton City	Linear	National Register Historic Site	Municipality	Public	232.86
28	Jackson Street Park	Easton City	Neighborhood	Mini-Park	Municipality	Public	0.15
29	Lachenour Park	Easton City	Neighborhood	Park / Playground	Municipality	Public	8.55
30	Mauch Chunk Park	Easton City	Neighborhood	Mini-Park	Municipality	Public	1.15
31	Milton Street Park	Easton City	Neighborhood	Mini-Park	Municipality	Public	1.27
32	Municipal Beach	Easton City	Neighborhood	Fishing - Public	Municipality	Public	0.72
33	Nesquehoning Street Park	Easton City	Neighborhood	Mini-Park	Municipality	Public	0.28
34	Nevin Park	Easton City	Neighborhood	Park / Playground	Municipality	Public	5.34
35	Open Space - Wildlands Conservancy	Easton City	Conservancy	Private Con- servancy Land	Other	Public	11.32
36	Raspberry - Spruce Streets Park	Easton City	Neighborhood	Mini-Park	Other	Public	0.34
37	Riverside Park	Easton City	Neighborhood	Open Space	Municipality	Public	1.87
38	Scott Park	Easton City	Neighborhood	Open Space	Municipality	Public	3.31
39	Shull Field	Easton City	Neighborhood	Ball Field	Other	Public	1.47
40	St. Joseph Street Park	Easton City	Neighborhood	Mini-Park	Municipality	Public	0.36
41	Stonehouse Park	Easton City	Neighborhood	Open Space	Municipality	Public	0.04
42	Sullivan Park	Easton City	Neighborhood	Park / Playground	Municipality	Public	3.98
43	Baseball Field (Winchester Street)	Forks Twp.	Neighborhood	Ball Field	Municipality	Public	2.73

#	Site Name	Municipality	Class	Туре	Owner	Access	Acres
44	Braden Park	Forks Twp.	Neighborhood	Park / Playground	Municipality	Public	8.27
45	Bushkill Park	Forks Twp.	Special Use	Miscellaneous	Other	Public	13.95
46	Community Park (Forks Township)	Forks Twp.	Neighborhood	Community Park	Municipality	Public	45.42
47	Frost Hollow Overlook	Forks Twp.	Special Use	County Natural Area	County	Public	3.28
48	Future Park Site (South of Airport)	Forks Twp.	Conservancy	Open Space	Municipality	Public	25.13
49	Gollub Park	Forks Twp.	Neighborhood	Open Space	Municipality	Public	20.22
50	Lafayette University Athletic Fields	Forks Twp.	Special Use	College Rec- reation Area	Other	Private	58.30
50A	Lafayette University Property	Forks Twp.	Special Use	College Recreation Area	Other	Private	154.67
51	Park (along Bushkill Creek)	Forks Twp.	Neighborhood	Fishing - Public	Municipality	Public	5.07
52	Ramblewood Recreation Swale	Forks Twp.	Neighborhood	Mini-Park	Municipality	Public	2.69
53	Recreation Trail	Forks Twp.	Linear	Recreation Trail	Municipality	Public	21.52
54	Two T's Mini Golf and Driving Range	Forks Twp.	Special Use	Miniature Golf or Driving Range	Other	Public	15.22
55	Poswistilo Pavilion	Glendon Bor.	Neighborhood	Mini-Park	Municipality	Public	0.19
56	Pennsylvania International Raceway	Lower Naza- reth Twp.	Special Use	Miscellaneous	Other	Public	97.94
57	Appalachian Trail Lands (Moore Twp.)	Moore Twp.	Linear	National Natural Area	Federal	Public	188.32
58	Evergreen Lake Campground	Moore Twp.	Special Use	Miscellaneous	Other	Public	58.18
59	Moore Township Appalachian Park	Moore Twp.	Conservancy	Open Space	Municipality	Public	173.36
60	State Game Lands No. 168 (Moore Twp.)	Moore Twp.	Game Land	State Game Lands	State	Public	1529.65
61	Coplay Park	Nazareth Bor.	Neighborhood	Mini-Park	Municipality	Public	1.52
62	Fairview Playlot	Nazareth Bor.	Neighborhood	Mini-Park	Municipality	Public	0.34
63	Kraemer Park	Nazareth Bor.	Neighborhood	Ball Field	Other	Public	3.76
64	Nazareth Community Park	Nazareth Bor.	Neighborhood	Community Park	Municipality	Public	39.11
65	Nazareth Hall Park	Nazareth Bor.	Neighborhood	Ball Field	Municipality	Public	2.24
66	Sauerzopf Park	Nazareth Bor.	Neighborhood	Mini-Park	Other	Public	1.65

Gap Analysis

#	Site Name	Municipality	Class	Туре	Owner	Access	Acres
67	Square (Center and Main Streets)	Nazareth Bor.	Special Use	Open Space	Municipality	Public	0.50
68	Washington Park	Nazareth Bor.	Neighborhood	Mini-Park	Municipality	Public	0.68
69	Briarcliffe Park	Palmer Twp.	Neighborhood	Park / Playground	Municipality	Public	17.58
70	Fairview Park (Palmer Township)	Palmer Twp.	Neighborhood	Park / Playground	Municipality	Public	13.16
71	Keystone Park (Palmer Township)	Palmer Twp.	Neighborhood	Park / Playground	Municipality	Public	10.14
72	LaBarre Park	Palmer Twp.	Neighborhood	Park / Playground	Municipality	Public	5.71
73	Newburg Park	Palmer Twp.	Neighborhood	Mini-Park	Municipality	Public	0.62
74	Old Orchard Park	Palmer Twp.	Neighborhood	Park / Playground	Municipality	Public	5.29
75	Charles Chrin	Palmer Twp.	Neighborhood	Community	Municipality	Public	33.92
76	Community Center Palmer-Bethlehem Township Bikeway	Palmer Twp.	Linear	Park Recreation Trail	Municipality	Public	109.52
77	Penn Pump Park	Palmer Twp.	Neighborhood	Park / Playground	Municipality	Public	8.33
78	Penn's Grant Open Space	Palmer Twp.	Conservancy	Open Space	Municipality	Public	33.50
79	Riverview Park	Palmer Twp.	Neighborhood	Community Park	Municipality	Public	58.36
80	Stephens Street Park	Palmer Twp.	Neighborhood	Mini-Park	Municipality	Public	0.63
81	Stone's Crossing Swim	Palmer Twp.	Neighborhood	Outdoor Swimming Pool	Other	Private	4.82
82	Wolf's Run Open Space	Palmer Twp.	Conservancy	Open Space	Municipality	Public	17.54
83	Belfast-Edelman Sportsmen Association	Plainfield Twp.	Special Use	Sportsmen Club	Other	Private	19.23
84	Belfast-Edelman Youth Club	Plainfield Twp.	Neighborhood	Park / Playground	Other	Private	13.56
85	Bit-By-Bit	Plainfield Twp.	Special Use	Riding Stables	Other	Public	24.18
86	Meixsell Tract	Plainfield Twp.	Conservancy	Open Space	Municipality	Public	29.89
87	Plainfield Riding Club	Plainfield Twp.	Special Use	Riding Stables	Other.	Private	4,33
88	Plainfield Township Farmers' Grove	Plainfield Twp.	Special Use	Miscellaneous	Municipality	Public	37.34
89	Plainfield Township Recreation Trail	Plainfield Twp.	Linear	Recreation Trail	Municipality	Public	59.00

#	Site Name	Municipality	Class	Туре	Owner	Access	Acres
90	Recreation Area (at Township Building)	Plainfield Twp.	Neighborhood	Mini-Park	Municipality	Public	1.67
91	Sawmill Golf Course	Plainfield Twp.	Special Use	Golf Course - Regular	Other	Public	74,39
92	St. Peter's Church Playground and Ballfield	Plainfield Twp.	Neighborhood	Mini-Park	Other	Private	4.34
93	State Game Lands No. 168 (Plainfield Twp.)	Plainfield Twp.	Game Land	State Game Lands	State	Public	217.82
94	The Brocknell Farm	Plainfield Twp.	Special Use	Riding Stables	Other	Public	22.12
95	Newhart Park	Stockertown Borough	Neighborhood	Park / Playground	Municipality	Public	2.83
96	Open Space (along Bushkill Creek)	Stockertown Borough	Conservancy	Open Space	Municipality	Public	12.10
97	Schoolground (Stockertown Borough)	Stockertown Borough	Neighborhood	Mini-Park	Municipality	Public	1.77
98	Stockertown Rod and Gun Club	Stockertown Borough	Special Use	Sportsmen Club	Other	Private	24.12
99	Mark A. Metz Memorial Park	Tatamy Bor.	Neighborhood	Mini-Park	Municipality	Public	1.12
100	Ballfield (Upper Nazareth Township)	Upper Naza- reth Twp.	Neighborhood	Ball Field	Other	Public	5.68
101	Liebert School Play Area	Upper Naza- reth Twp.	Neighborhood	Mini-Park	Municipality	Public	3.19
102	Mini Park	Upper Naza- reth Twp.	Neighborhood	Mini-Park	Municipality	Public	0.94
103	Upper Nazareth Athletic Association	Upper Naza- reth Twp.	Neighborhood	Park / Playground	Municipality	Public	5.59
104	Borough Park	West Easton Borough	Neighborhood	Mini-Park	Municipality	Public	1.76
105	Park (Center and 7 th Streets)	West Easton Borough	Neighborhood	Open Space	Municipality	Public	0.71
106	Delaware Canal State Park	Williams Twp.	Linear	State Park	State	Public	75.37
107	Fry's Run Park	Williams Twp.	Neighborhood	County Natural Area	County	Public	4.82
108	Mariton Wildlife Sanctuary	Williams Twp.	Conservancy	Private Conservancy Land	Other	Public	197.69
109	Williams Township Recreational Facility	Williams Twp.	Neighborhood	Community Park	Municipality	Public	39.99
110	Raubsville Park	Williams Twp.	Neighborhood	Park / Playground	Municipality	Public	3.66

Two Rivers Area Greenway Trail Implementation Study

Gap Analysis

#	Site Name	Municipality	Class	Туре	Owner	Access	Acres
111	Williams Township Park	Williams Twp,	Neighborhood	Community Park	Municipality	Public	26.83
112	Williams Township Sportsman's Association	Williams Twp.	Special Use	Sportsmen Club	Other	Private	14.77
113	Wy-Hit-Tuk Park	Williams Twp.	Neighborhood	Community Park	County	Public	22.24
114	Ballfield (Elementis Pigments, Incorporate)	Wilson Bor.	Neighborhood	Ball Field	Other	Public	10.20
115	James H. Jeffery Athletic Field	Wilson Bor.	Neighborhood	Ball Field	Municipality	Public	1.25
116	Liberty Playground	Wilson Bor.	Neighborhood	Mini-Park	Municipality	Public	0.40
117	Meuser Park	Wilson Bor.	Neighborhood	Park / Playground	Municipality	Public	13.02
118	Totlot (23rd Street)	Wilson Bor.	Neighborhood	Mini-Park	Municipality	Public	0.06
119	Wilson Midget Football	Wilson Bor.	Neighborhood	Multi-purpose Field	Municipality	Public	1.13
120	Puttorama	Wind Gap Borough	Special Use	Miniature Golf or Driving Range	Other	Public	0.78
121	Wind Gap Park	Wind Gap Borough	Neighborhood	Community Park	Municipality	Public	34.68
122	Future County Park at the Gall Farm	Plainfield Township	Special Use	Regional Park	County	Public	181.43
123	Forks Township Park Land	Forks Twp.	Neighborhood	Ball Field	Municipality	Public	19.87
124	Frost Hollow Open Space	Forks Twp.	Neighborhood	Open Space	Municipality	Public	11.14
125	Subdivision Exercise Path	Forks Twp.	Linear	Recreation Trail	Other	Private	3.53
126	Wind Gap Borough Park Land	Wind Gap Borough	Neighborhood	Open Space	Municipality	Public	2.29
127	Lafayette Park	Forks Twp.	Special use	Ball Field	Municipality	Public	52.37
128	Miscellaneous Open Space (Forks Twp.)	Forks Twp.	Neighborhood	Open Space	Municipality	Public	11.00
129	Palmer-Tatamy Trail	Palmer Twp.	Linear	Recreation Trail	Municipality	Public	36.39
130	Mill Race Park	Palmer Twp.	Neighborhood	Community Park	Municipality	Public	28.05
131	Miscellaneous Open Space (Palmer Twp.)	Palmer Twp.	Neighborhood	Open Space	Municipality	Public	22.21
132	Palmer Municipal Complex Land	Palmer Twp.	Neighborhood	Open Space	Municipality	Public	15.04

Two Rivers Area Greenway Trail Implementation Study

#	Site Name	Municipality	Class	Туре	Owner	Access	Acres
133	Future Rail-Trail Land	West Easton Borough	Linear	Recreation Trail	Municipality	Public	34.88
134	Bushkill Township Property	Bushkill Twp.	Special Use	Open Space	Municipality	Public	3.57
135	Williams Township Property	Williams Twp.	Special Use	Open Space	Municipality	Public	5.61
136	Miscellaneous Open Space (U. Naz. Twp.)	Upper Nazareth Twp.	Neighborhood	Open Space	Municipality	Public	4.52
137	City of Easton Property	Easton City	Special Use	Open Space	Municipality	Mix	39.64
	TOTAL						7636.11

Source: Lehigh Valley Planning Commission, 2003

Schools

Map 2.1 and Table 2.4B show public and private schools. Schools are important nodes as they typically contain expanses of recreation land, and occasionally include small patches of undeveloped land in a natural or semi-natural state. Trails can provide an alternate means of travel to and from school, for both students and employees.

#	Property	Acreage
200	Avonia Elementary School	1.30
201	Bushkill Elementary School	19.00
202	Career Institute of Technology	31.00
203	Cheston Elementary School	8.60
204	Easton Area High School	45.50
205	Easton Area Middle School	6.50
206	Easton Catholic High School and St. Joseph Elementary School	0.80
207	Easton Children's Home	18.10
208	Edward Tracy Elementary School	22.10
209	Forks Elementary School	16.00
210	Holy Family School	4.60
211	Lafayette College	81.60
212	March Elementary School	1.00
213	Moravin Academy	53.50
214	Nazareth Area Junior and Senior High Schools	41.90
215	Nazareth Area Middle School	42.10

Table 2.4BPublic and Private Schools

#	Property	Acreage
216	Palmer Elementary School	20.30
217	Paxinosa Elementary School and Shawnee Intermediate School	58.10
218	Philip F. Lauer Middle School	35.40
219	Plainfield Elementary School	17.70
220	Shafer Elementary School	8.50
221	Williams Township Elementary School	17.30
222	Wilson Area High School	9.00
223	Wilson Elementary School	5.20
224	Wind Gap Middle School	22.50
	TOTAL	587.50

Source: Lehigh Valley Planning Commission, 2003

Major Government Properties

The municipal buildings of 14 of the 17 constituent municipalities are found within the Two Rivers area boundary, and are shown on Map 2.1. Like schools, many municipal buildings have adjacent or included recreation facilities, such as the Plainfield Township Municipal Complex. Other municipally owned parcels that cannot be classified as parks are shown on the map. These include municipal utility land, fire company land, and equipment garages. Many of these facilities are situated on land with high natural resource value, such as the Bushkill Township Garage on Bushkill Creek (#315), and the Plainfield Township Volunteer Fire Company land along the west fork of the Little Bushkill Creek (#322). It should be noted that not all public land holdings are appropriate for human access. The City of Easton, for example, owns properties that house water, sewer and garage facilities (#'s 316-320), but also have significant natural resource value. All of the above properties are listed in Table 2.5 below.

#	Property	Acreage
300	Bushkill Township Building	1.13
301	Easton City Hall	0.21
302	Forks Township Building and Police Headquarters	2.35
303	Glendon Borough Hall	0,50
304	Nazareth Borough Hall	0.13
305	Northampton County Government Center	10.03
306	Palmer Township Municipal Centre	27.20
307	Plainfield Township Building	11.01
308	Stockertown Borough Hall	0.68

I able 2.5	
Major Government Properties	

#	Property	Acreage
309	Tatamy Borough Hall	0.77
310	Upper Nazareth Township Building	3.19
311	West Easton Borough Hall	0.71
312	Williams Township Building	26.83
313	Wilson Borough Hall	1.16
314	Wind Gap Borough Hall	0.30
315	Bushkill Township Garage	3.60
316	Easton City Water Reservoirs	12.52
317	Easton City Garage	8.35
318	Easton City Water Treatment Plant	8.93
319	Easton City Water Standpipes	1.10
320	Easton City Sewage Treatment Plant	11.99
321	Nazareth Borough Municipal Authority	24.49
322	Plainfield Volunteer Fire Company Land	26.35
	TOTAL	183.51

Source: Lehigh Valley Planning Commission, 2003

Cemeteries

Cemeteries, by nature, are green gardens of peace. While cemeteries are not intended for frequent public visitation, they serve as patches of greenspace, exempt from development. In some cases, cemeteries contain unused land that is not suitable for burial grounds. In Easton Cemetery (#408), potions found within the Bushkill Creek floodplain would fit this description, and could instead be considered for greenway designation and trail routing. In other areas where cemetery access is not permitted, these sanctuaries serve as green backdrops that preserve local viewsheds. Cemeteries shown on Map 11 were derived from tax map information, and are listed in Table 2.6 This inventory excludes numerous small cemeteries associated with churches.

Table 2.6
Cemeteries

#	Property	Acreage
400	Arndt's Cemetery Company	4.17
401	Black Rock Grove Moravian Congregation	7.48
402	Bushkill Interdenominational Church	0.86
403	Bushkill United Methodist Church	1.04
404	Congregation of United Brethren Schoeneck Cemetery	2.46
405	Congregation of Abraham Cemetery	0.35
406	Congregational Children of Israel Cemetery	0.58

Acreage Property 10.86 407 Dougherty, Cardinal Dennis, Cemetery 408 Easton Cemetery 65.47 409 24.19 Easton Heights Cemetery 410 Grace Evangelical Lutheran Church Cemetery 5.86 0.70 411 Great Shepherd Christian Fellowship Cemetery 412 14.87 Greenwood Cemetery 413 Holy Cross Evangelical Lutheran Church 2.20 Cemetery Holy Family Catholic Church Cemetery 414 10.11 415 Northampton Memorial Shrine 52.53 416 5.48 Pen Argyl Evergreen Cemetery 417 Plainfield Church Cemetery 9.81 418 4.18 Raubsville Cemetery 419 South Easton Cemetery 12.01 420 St. Bernards Cemetery 1.96 421 St. John Union Cemetery 5.07 422 St. Johns Evangelical Lutheran Church Cemetery 2.91 423 St. Joseph Cemetery 6.01 424 St. Michaels Cemetery 2.55 425 St. Peters Lutheran and Reformed Cemetery 5.28 426 Trinity Evangelical Lutheran Church Cemetery 12.45 427 Union Church and Cemetery 13.83 428 Forks Church Cemetery 36.18 TOTAL 321.45

Source: Lehigh Valley Planning Commission, 2003

Preserved Farms

Under the Northampton County Agricultural Preservation Program, farmers may relinquish their right to sell their land to a developer or to subdivide the land themselves, in exchange for a monetary sum. The farmer is then legally bound to keep the farm in an agricultural or open space use. While farms are not exactly natural landscapes in the true sense, they do functionally preserve open space and provide a serene landscape that echoes the farming heritage that once predominated in this area of Pennsylvania. In addition, many farmland tracts contain important natural resources along streams, and in woodlands.

Gap Analysis

Historic Resources

The Two Rivers area contains a seemingly unlimited collection of structures dating from the past three centuries. Some of these houses, buildings, mills, bridges, and other structures remain, while others may be in ruin or completely gone. Nevertheless, these structures and sites serve as important, fascinating reminders of how the area appeared and functioned during those times, and how we have arrived at the present condition. While some sites are protected at the government level, many others are recognized only as items in historic inventories. Historic resources are described below and shown on Map 2.1.

National Register of Historic Places

The National Register of Historic Places (NRHP) is an inventory of buildings, sites, structures, objects and districts that are significant to American history, architecture, archeology, engineering, and culture. The NRHP coordinates public and private efforts to identify and protect these sites. The NRHP was authorized by the National Historic Preservation Act of 1966, and is administered by the National Park Service. Properties are either "listed," that is, officially included in the NRHP, or are "eligible," in which the application process is underway. In the Two Rivers area, most NRHP sites are buildings. Some, however, are linear, such as the Delaware and Lehigh Canals, and the Lehigh and New England Railroad. Yet other sites have areal extent, such as the Easton Cemetery, several farms, and the historic districts. NRHP sites are listed in Tables 2.7 and 2.8, with numbers corresponding to features on Map 2.1.

Number	Site	Municipality
1	Bridge in Williams Township	Williams Township
2	Chain Bridge (ruins)	Palmer / Williams Townships
3	Coffeetown Grist Mill	Williams Township
4	Delaware Division of the Pennsylvania Canal	Williams Township
5	Easton Cemetery	Easton City
6	Easton House	Easton City
7	Heller, William Jacob, House	Easton City
8	Lehigh Navigation Canal	Easton / Glendon / Palmer
9	Mixsell, Jacob, House	Easton City
10	Nazareth Hall Tract	Nazareth Borough
11	Nicholas, Jacob, House	Easton City
12	Parsons-Taylor House	Easton City
13	Seipsville Hotel	Palmer Township
14	Simon, Herman, House	Easton City
15	State Theater	Easton City
16	Whitefield House & Gray Cottage	Nazareth Borough
17	Zeta Psi Fraternity House	Easton City

Table 2.7

National Register Listed Historic Sites

Source: Pennsylvania Historic and Museum Commission

National Register Listed Historic Districts

District	Municipality
College Hill Neighborhood	Easton City
Easton	Easton City
Jacobsburg	Bushkill Township
Nazareth	Nazareth Borough

Source: Pennsylvania Historic and Museum Commission

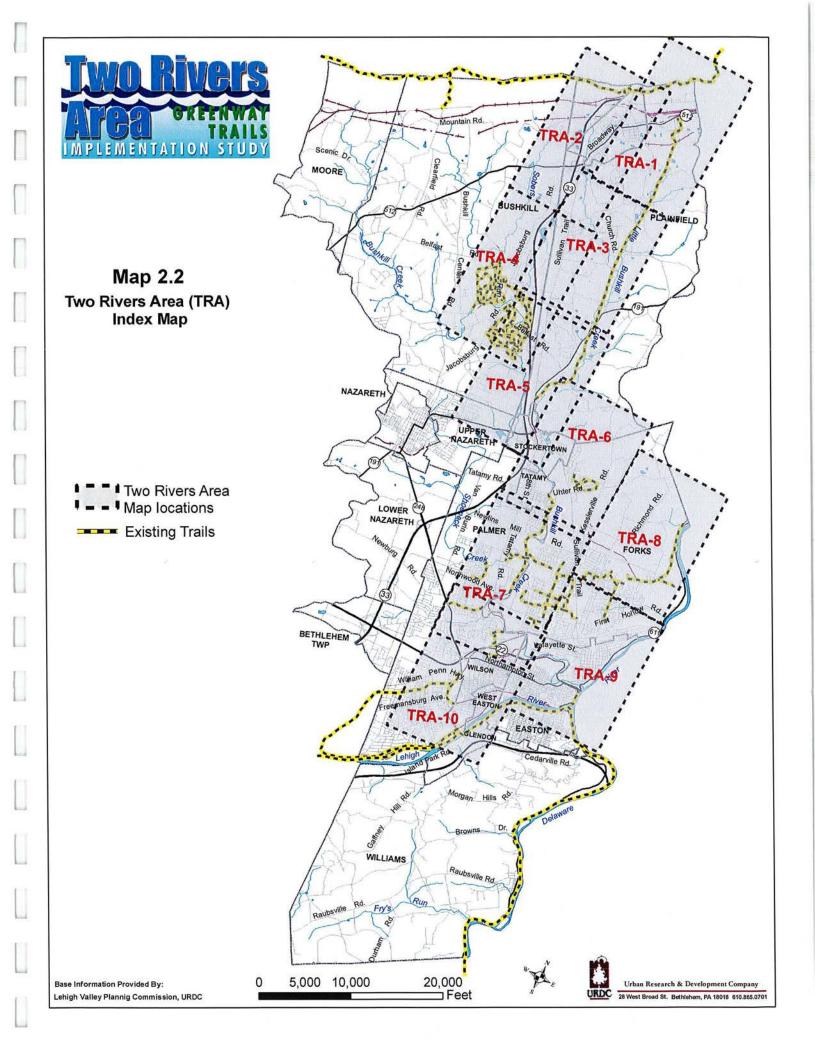
PPL Corridor Landowner Outreach

Heritage Conservancy has been implementing a recommendation of the Two Rivers Area Greenway Plan (2005) to connect Jacobsburg Environmental Education Center to the Blue Mountain as a recreation and conservation greenway corridor (see map in Appendix I). Landowner outreach was conducted. A PPL electric transmission line right-of-way, which includes a former railroad right-of-way, makes this connection north. Heritage Conservancy and D&L NHC worked with Bushkill Township and PPL Corporation to successfully transfer ownership of the right-of-way from PPL to the Township as a land donation. The Township was also awarded a \$200,000 DCNR Community Conservation Partnerships Program grant to build the first 3 mile section of trail from Jacobsburg north to Route 512. Future phases and trail alternatives to continue north are being addressed in this plan.

Existing Trails

Existing trails in the Two Rivers area vary in size and type, from 8-foot paved bike paths through residential developments, to narrow footpaths on ridgetops. Trails are often the central feature of recreation greenways, and the Two Rivers area contains many existing trails. Existing trails are shown as Yellow dashed lines on Map 2.2B and on the accompanying aerial photos maps. The trails shown on the aerial photo maps are listed in Table 2.9. Table 2.9 also includes information relating to each trail segment, with Two Rivers Area (TRA) Section reference number, the trail's owner, surface material, trail width, trail length, trail type and comments.

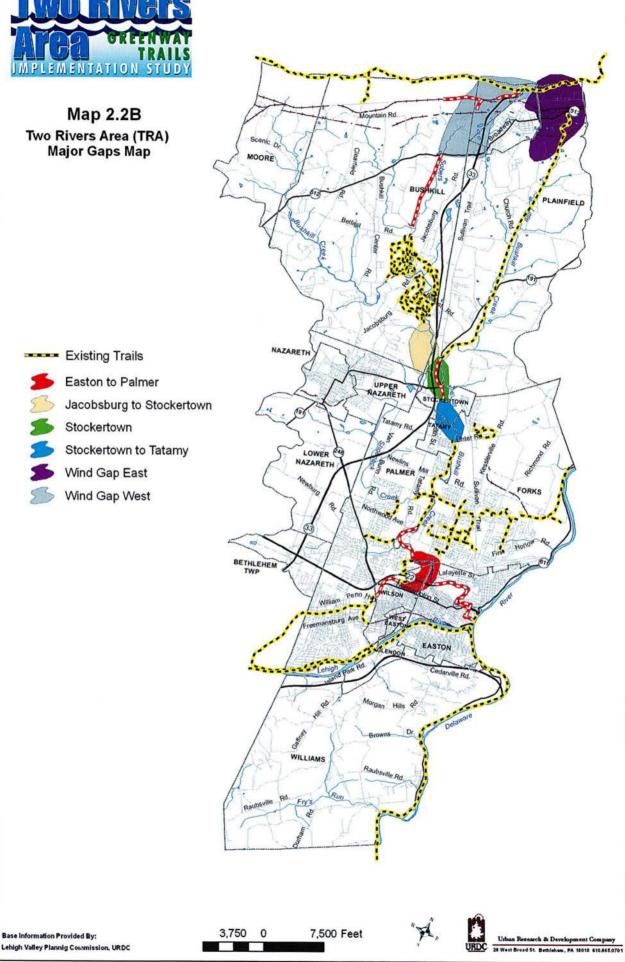
Along the crest of Blue Mountain is the Appalachian National Scenic Trail, a 2,200 mile footpath stretching from Georgia to Maine. The trail can be accessed at Wind Gap, and by a State Game Land trail in Bushkill Township. The Appalachian Trail and Blue Mountain together are part of an already-established greenway extending nearly 200 miles through Southeastern Pennsylvania. Additional connections to the Appalachian Trail are desired, including an extension of the Plainfield Trail, and a connection to Jacobsburg Environmental Education Center in Bushkill Township.





Two Rivers Area (TRA) Major Gaps Map

5



Two Rivers Area Greenway Trail Implementation Study

In Plainfield Township, the Plainfield Township Trail occupies an abandoned railroad right-of-way from near Wind Gap to Stockertown. The surrounding tree canopy and nearby Little Bushkill Creek make this trail a strong candidate for further greenway protection. In nearby Jacobsburg Environmental Education Center, numerous trails through mature woodlands offer loop options for hikers and mountain bikers alike. A possible connection to the Plainfield Township Trail would create a multi-township network of trails.

Trail Name	Trail No.	Seg- ment	TRA No.	Ownership Maint.	Surface Material	Trail Width	TRAIL Length	Trail Type	Comments
Church Lane	F1	1	6	Forks Township	Bituminous	8'	2500'	Property Line	Private trail
Conroy Place	F2	1	6	Community	Bituminous	12'	4400'	Property Line	Park on street
Conroy Place	F2	2	6	Industrial Park	Bituminous	8'	1200'	Sidewalk	
Delaware Trail	F3	1	8	Forks Township	Grass	10/12'	7000'	Rail Trail	Parking Frutchey Rd.; rough surface at spots
	F4	1	8	Forks Township	Bituminous	8'	2200'	Rail Trail	Park on street
	F4	2	8	Forks Township	Bituminous	9'	1600'	Property Line	
Winchester Trail	F5	1	8	Forks Township	Bituminous	8'	2000'	Sidewalk	Park on street
Kresslersville Road	F6	2	7		Bituminous	8'	800'	Sidewalk	
<pre></pre>	F6	3	7		Bituminous	8'	2500'	Property Line	Some bumpy pavement
Nagonwheel Drive	F7	1	7	Forks Township	Bituminous	8'	3000'	Sidewalk	
Wagonwheel Drive	F7	2	7	Forks Township	Bituminous	8'	900'	Sidewalk	Not constructed
Wagonwheel Drive	F7	3	7	Forks Township	Bituminous	8'	2600'	Sidewalk	
Meco Road	F8	1	7/8	Forks Township	Bituminous	8'	1800'	Property Line	
Park Ridge	F9	1	8	Forks Township	Bituminous	8'	2900'	Overland	Parking in park at Appian Way

Table 2.9Two Rivers Area Existing Trails

Two Rivers Area Greenway Trail Implementation Study

Gap Analysis

Trail Name	Trail No.	Seg- ment	TRA No.	Ownership Maint.	Surface Material	Trail Width	TRAIL Length	Trail Type	Comments
Park Ridge	F9	2	8	Forks Township	Bituminous	8'	500'	Overland	
Park Ridge	F9	3	8	Forks Township	Bituminous	8'	2600'	Overland	
Park Ridge	F9	4	8	Forks Township	Bituminous	8'	400'	Overland	Dead end spur
Sheffield Drive	F10	1	8	Forks Township	Bituminous	8'	5600'	Property Line	Some steep portions
Biddle Lane	F11	1	8	Forks Township	Bituminous	8'	2200'	Property Line	Parking; Municipal park
Sycamore Avenue	F12	1	7	Forks Township	Bituminous	8'	400'	Sidewalk	Concrete barrier between path and street
Sycamore Avenue	F12	2	7/8	Forks Township	Bituminous	8'	2400'	Sidewalk	
Municipal Park	F13	. 1	8	Forks Township	Bituminous	8'	4800'	Overland	Parking at park; 2 locations
Willow Street	F14	1	7	Forks Township	Bituminous	8'	1200'	Sidewalk	
Heather Lane	F15	1	.7	Forks Township	Bituminous	8'	1100'	Sidewalk	
Heather Lane	F15	2	7	Forks Township	Bituminous	8'	800'	Sidewalk	
Heather Lane	F15	3	7	Forks Township	Bituminous	8'	2000'	Property Line	
Shopping Center	F16	1	8	Forks Township	Bituminous	8'	1600'	Sidewalk	Parking at shopping center
School	F17	1	7	School District	Bituminous	6'	1600'	Property Line	Closed during school day
School	F17	2	7	School District	Bituminous	6'	800'	Overland	Closed during school day
Bushkill Trail RT1	PA1	1	6/7	Palmer Township	Bituminous	12'	2.1 mi.	Rail Trail	Parking at 2 parks
Penn's Grant Trail RT8	PA2	1	7	Palmer Township	Bituminous	8'	3000'	Overland	Steep portion
Howard / Bonnie Lane	PA3	1	7	Palmer Township	Bituminous	8'	600'	Overland	Bridge over stream
Howard / Bonnie Lane	PA3	2	7	Palmer Township	Concrete	5'	1100'	Sidewalk	Normal sidewalk

I, Trail	Trail	Seg-	TRA	Ownership	Surface	Trail	TRAIL	Trail	
Name	No.	ment	No.	Maint.	Material	Width	Length	Туре	Comments
Howard / Bonnie Lane	PA3	3	7	Palmer Township	Gravel	4'	1600'	Rear PL / Overland	Overgrown with grass; hard to tell this is a trail
Crest Blvd. RT6	PA4	1	7	Palmer Township	Concrete	8'	3100'	Sidewalk	
Crest Bivd. RT6	PA4	2	7	Palmer Township	Bituminous	8'	1100'	Overland	
, dackett Ave. RT3	PA5	1	7	Palmer Township	Bituminous	12'	900'	Overland	Parking in park
Hackett Ave. RT3	PA5	2	7	Palmer Township	Bituminous	20'	500'	Park Driveway	Parking in park
Hackett Ave. RT3	PA5	3	7	Palmer Township	Bituminous	12'	1000'	Overland	
Lower Hackett Park RT3	PA5	4	7	Palmer Township	Bituminous	20'	800'	Park Driveway	Parking in park; bridge over US 22
Wood Avenue RT3	PA5	5	6	Palmer Township	Bituminous	12'	900'	Sidewalk	Parking in park
Plainfield Trail	PL1			Plainfield Township	Rough Gravel	5-7'	3500'	Overland	Poor surface condition; steep slopes
Plainfield Trail	PL1	2	1	Plainfield Township	Rough Gravel	6'	7000'	Rail Trail	Fair; rough surface, condition; parking Grand Central Rd.
Plainfield Trail	PL1	3	3	Plainfield Township	Tar / Chip	8'	12300'	Rail Trail	Parking at Knitters Hill Rd.
Plainfield Trail	PL1	4	3/5	Plainfield Township	Bituminous	10'	6100'	Rail Trail	Underpass of PA 191
Plainfield Trail	PL1	5	5	Plainfield Township	Tar / Chip	8'	7500'	Rail Trail	Parking off PA 191
Tatamy Trail	T1	1	6	Tatamy Borough	Gravel/Pave d	12'	1000'	Rail Trail	Parking off Main St.
Tatamy Trail	T1	2	6	Tatamy Borough	Gravel/Pave d	12'	900'	Overland	
Tatamy Trail	T1	3	6	Tatamy Borough	Gravel	12'	500'	Rail Trail	

Note: TRA No. refers to the TRA Section Number (see index map).

Forks Township features a network of paved exercise paths connecting various residential developments and parks. Forks also contains a one-mile gravel rail trail in the northeastern part of the Township, which is slated for extension. Palmer Township, a local pioneer of rail trails, contains

the Palmer Bikeway, a popular system of paved trails. The Township recently acquired additional railroads rights-of-way in and outside the township, transferring those segments outside Township borders to the containing municipalities. The Township plans to improve these trails, resulting in a continuous trail along Bushkill Creek from Tatamy Borough to the City of Easton, connecting to the Palmer-Bethlehem Bikeway, and extending eastward again to the Lehigh River in Easton. The City of Easton plans to improve their section of the Bushkill Creek into a pair of trails, one paved, and one natural. To the north, Tatamy Borough's trail extends along Bushkill Creek. Future plans are to extend the trail north to Stockertown, and then to connect the trail to the southern terminus of the Plainfield Township Trail.

The Delaware and Lehigh Towpath Trail follows the historic canal of the same name from White Haven in Luzerne County to Bristol in Bucks County, near Philadelphia. The Two Rivers area contains an important portion of this gravel and cinder trail, heading east along the Lehigh River to Easton, then turning south along the Delaware River.

Several inactive or abandoned railroads still exist in the Two Rivers area, presenting opportunities for trail construction. The aforementioned railroad bed along the Bushkill Creek from Easton to Stockertown is a key link that could eventually connect the Delaware and Lehigh Towpath to the Appalachian Trail. In Forks Township, a former rail right-of-way could eventually connect the gravel rail trail near Route 611 to existing exercise trails in the southern part of the Township. Along the base of Blue Mountain, two parallel railroad beds traverse private property in an east-west fashion. Public access to one or both of these would provide further access to Blue Mountain, and create loop options.

Other possible trail schemes exist in the Two Rivers area, along roads, through new developments, and elsewhere. The desired end result is a system of trails of varying surfaces and uses, all interconnected, creating a web of recreational and scenic opportunities throughout the entire Two Rivers area and beyond.

Proposed and Future Trails

Various trails are in the acquisition, design, or construction phase. These "proposed" trails include:

- the Wilson Trail (bike path) from 25th Street to Wood Avenue (approximately 3/4 mile); funding in place; Spring 2009 bidding and Fall 2009 construction;
- the Palmer Township trail segment from Penn Pump Park (Northwood Avenue) to Edgewood Avenue to connect existing bike path to Hackett's Park (approximately 1 mile); funding in place (awarded a \$200,000 DCNR Community Conservation Partnerships Program grant, and \$120,000 as matching funds from a Northampton County Open Space Municipal Park Acquisition & Development Program Grant, part of Northampton County's 21st Century Open Space Initiative); preparing for Summer 2009 bidding and Fall 2009 construction;

- the City of Easton's Bushkill Creek Trail which is a 2.5 mile trail connecting the Simon Silk Mill at 13th Street to Riverside Park at the Delaware River; funding in place; working on design; \$3 million secured for acquisition, design, and construction; and
- the Bushkill Township PPL Trail which is 2.5 miles in Bushkill Township from Jacobsburg to Route 512; \$200,000 DCNR grant in Place; design in Spring-Summer 2009; construction Fall 2009; implementors include Bushkill Township, D&L and DCNR.

Future Trails

Future Trails are shown as Blue dashed lines on the accompanying aerial photos. These are "future" trails that have been suggested during the study process as a result of discussions at Steering Committee Meetings, Key Person Interviews, public workshop meetings, and as a result URDC research and field visits during the study.

Trail Connections and Gaps

Various trail segments and alternative trail connections are listed in Tables 2.10 to 2.16. Suggested priorities and other comments are included in the tables. The accompanying aerial photo maps show the location of each segment and the various alternatives (shown as dashed colored Dots) for completing the gaps in the trail system. Ownership information is also provided for key alternative segments.

Gap Analysis

Table 2.10

JACOBSBURG TO BLUE MOUNTAIN

Trail Connections and Alternatives

Trail	Trail	Seg-	TRA	Ownership		Trail	Trail	
Name	No.	ment	No.	Maint.	Priority	Length	Туре	Comments
PPL ROW	B1	2	3948 1	Bushkill	Proposed 2008	9700'	Power Line ROW	Construction Township crews
PPL ROW	B1	1	2	Bushkill	Future	8400'	Power Line ROW	Ownership of R.O.W. issues
Gamelands RR	SG1	1	2	Game Comm.	Proposed		Railroad bed	
Gamelands RR	SG1	2	2	Game Comm.		2000'		Alternate to go around private land needed
Gamelands RR	SG1	3	2	Game Comm.	Proposed	2400'	Railroad bed	
Gamelands RR	SG1	4	2	Game Comm.	Proposed	800'	Old road	Steep slope to overcome
Gamelands Connector	SG2	1	2	Game Comm.	Proposed	1400'	Over land	
	SG2	2	2	Not Determined			On road	Alternate connection
PPL ROW	B1	3	2	Bushkill	Proposed	1000'	Power Line ROW	Alternate to provide creek crossing
West Wind Gap	PL2	1	2	Not Determined	Long Term	2900'	Over land	Several private properties
West Wind Gap	PL2	2	2	Not Determined	Long Term		Over land	Beers property
West Wind Gap	PL2	3	2	Not Determined	Long Term		Over land	Future residential development

Trail Name	Trail No.	Seg- ment	TRA No.	Ownership Maint.	Priority	Trail Length	Trail Type	Comments
Wind Gap	WG1	1	1	Not Determined	Future	4000'	Railroad bed	
Wind Gap	WG1	2	1	Wind Gap	Future	3600'	Over land	Several alternates exist for this segment
Wind Gap	WG1	3	1	Wind Gap	Future	1500'	Over land	Wind Gap Park
Wind Gap	WG1	4	1	Wind Gap	Future	600'	Sidewalk	
Wind Gap	WG1	5	1	Wind Gap	Future	1200'	Over land	
Wind Gap	WG1	6	1	Wind Gap	Future	1100'	Over land	School property
Wind Gap	WG1	7	1	Wind Gap	Long Term	1600'	Over land	Future school property
Pen Argyl	PL3	1	1	Not Determined	Future	4500'	Railroad bed	After landfill closes this trail could be considered

Table 2.11 WIND GAP TO PLAINFIELD - Trail Connections and Alternatives

Note: TRA No. refers to the TRA Section Number (see index map)

2-27

	PLAI	NFIEL	D TO I	BLUE MOUN	TAIN -Tra	il Conne	ctions and A	lternatives
Trail	Trail	Seg-	TRA	Ownership		Trail	Trail	
Name	No.	ment	No.	Maint.	Priority	Length	Туре	Comments
	PL4	1	1	Plainfield Twp.	Future	4300'	Railroad bed	Trail along future road
-	PL4	2	1	Plainfield Twp.	Future	2300'	Railroad bed	Connect Plainfield Trail to
-	PL4	3	1	Pen Argyl	Future	900'	Over land	
E .	PL4	4	1	Pen Argyl	Future	800'	Over land	School property
_	PL4	5	1	Pen Argyl	Future	1300'	Over land	Steep slope to Appalachian Trail
1	WG2	Ţ	1	Wind Gap	Future	1500'	Sidewalk	Connect to Appalachian Trail
-	WG2	2	1	Wind Gap	Future	2000'	Railroad bed	Trail along future road
-	PL5	1	1		Future	800'	Over land	
1	PL5	2	1		Future	700'	Railroad bed	
1	PL5	3	1		Future	1000'	Over land	

Table 2.12

Note: TRA No. refers to the TRA Section Number (see index map)

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Trail Name	Trail No.	Seg- ment	TRA No.	Ownership Maint.	Priority	Trail Length	Trail Type	Comments
Bushkill RT	S1	1	5	Stockertown	Proposed	3800'	Railroad bed	
Bushkill RT	S1	2	6	Stockertown	Proposed	500'	Sidewalk	Crossing of PA Rt. 191
Bushkill RT	S1	3	6	Stockertown	Proposed	1600'	Railroad bed	
Bushkill RT	S1	4	6	Stockertown	Future	1000'	Sidewalk / on road	Bushkill Dr., a dead end street with low volume traffic
Bushkill RT	S1	5 Alt. 1.1	6	Palmer / Tatamy	Not Determined	1800'	Sidewalk / street	Bushkill Dr., a dead end street with low traffic volume
Bushkill RT	S1	5 Alt. 1.2	6	Tatamy	Not Determined	1000'	Sidewalk / street	Low traffic volume, residential street
Bushkill RT	S1	5 Alt. 1.3	6	Tatamy	Not Determined	1500'	Sidewalk / street	Proposed / future development
Bushkill RT	S1	5 Alt. 2.1	6	Palmer	Not Determined	1400'	Over land	Crosses 4 private properties
Bushkill RT	S1	5 Alt. 2.2	6	Tatamy	Not Determined	1800'	Railroad bed	Owned by railroad company, not in use
Bushkill RT	S1	5 Alt. 3.1	6	Stockertown	Not Determined	1500'	Over land	Crosses 1 private property
Bushkill RT	S1	5 Alt. 3.2	6	Stockertown	Not Determined	300'	Railroad bed and railroad bridge	Both owned and used by railroad company
Bushkill RT	S1	6	6	Tatamy	Not Determined	1300'	Over land	Tatamy will trade railroad bed for land along Bushkill Creek

Table 2.13

STOCKERTOWN TO TATAMY - Trail Connections and Alternatives

Gap Analysis

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1 401	0 4.14	6

STOCKERTOWN	TO JACOBSBURG -Trail	Connections and Alternatives
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Trail	Trail	Seg-	TRA	Ownership		Trail	Trail		
Name	No.	ment	No.	Maint.	Priority	Length	Туре	Comments	
West Side Trail	B2	1	5	Bushkill	Future	1900'	Over land	Property could be acquired by Bushkill Twp., an alternate along Filetown Road exists	
West Side Trail	B2	2	5	Bushkill	Future	700'	On road	Old Filetown Road, low volume, dead end road	
West Side Trail	B2	3	5	Bushkill	Future	500'	Over land	Private property acquisition needed	
West Side Trail	B2	4	5	Not Determined	Future	4200'	Over land	Land owner by Hercules Corp., easement needed	
West Side Trail	B2	5	5	Not Determined	Future	2000'	Rail with trail	Alone active railroad siding	
West Side Trail	B2	1 Alt.	5	Bushkill	Future	2000'	On road	This alternate would replace Seg. 1. It would become existing low volume road	

Trail	Trail	Seg-	TRA	Ownership		Trail	Trail	
Name	No.	ment	No.	Maint.	Priority	Length	Туре	Comments
Kressler Road	F6	1	7	Forks Township	Proposed	400'	Road side and crossing	Along and crossing Bushkill Drive
Kressler Road	F6	4	7	Forks Township	Future	1100'	Old road over land	Probably occur with future development
	F18	1	7	Forks Township	Not Determined	1800'	Sidewalk	Use sidewalk or over land along this corrido
	F18	2	7	Forks Township	Not Determined	700'	Sidewalk	Use sidewalk or over land along this corrido
	F18	3	7	Forks Township	Not Determined	3200'	Sidewalk	Use sidewalk or over land along this corrido

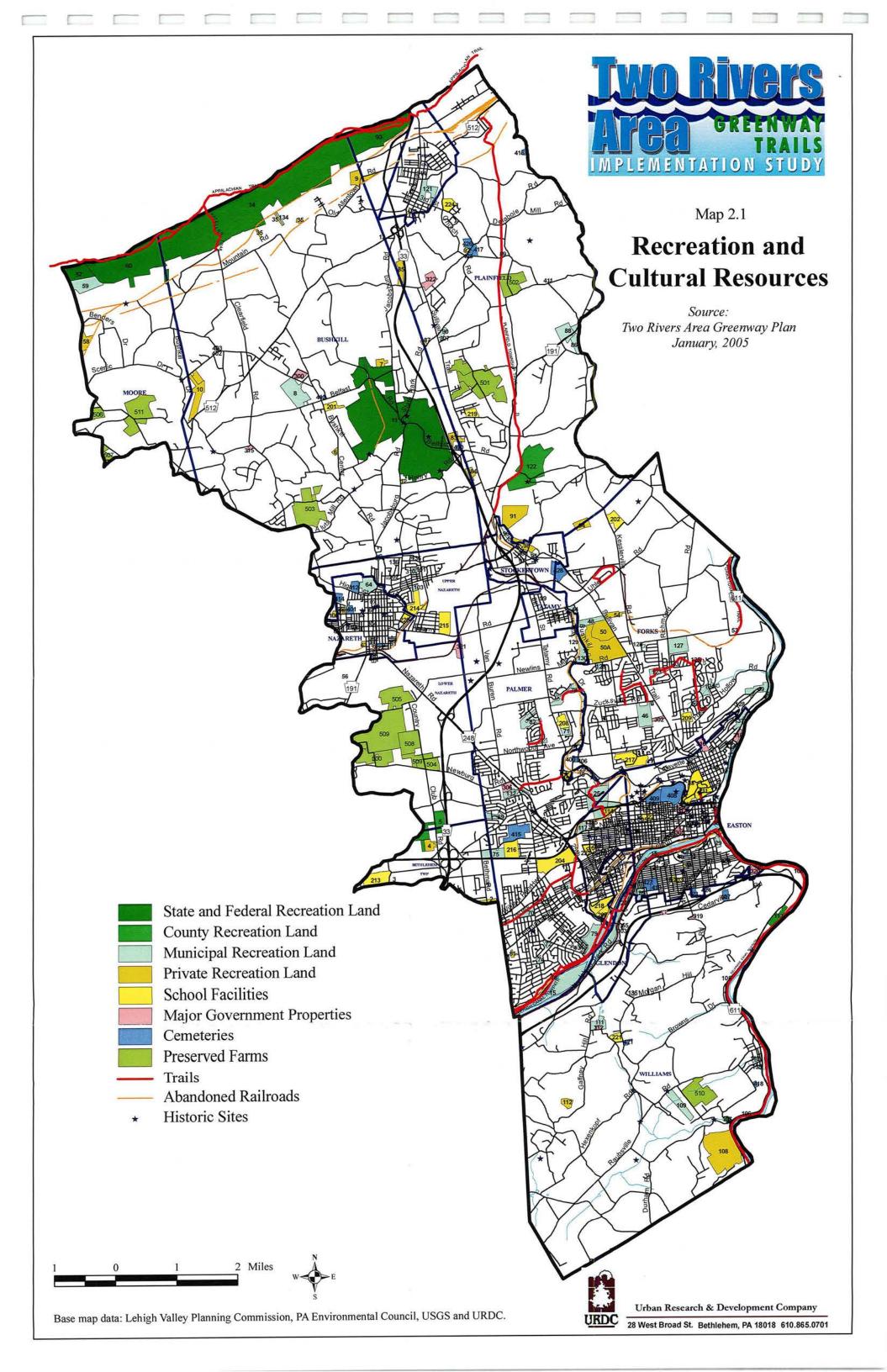
Table 2.15 LMER TO FORKS - Trail Connections and Alternative

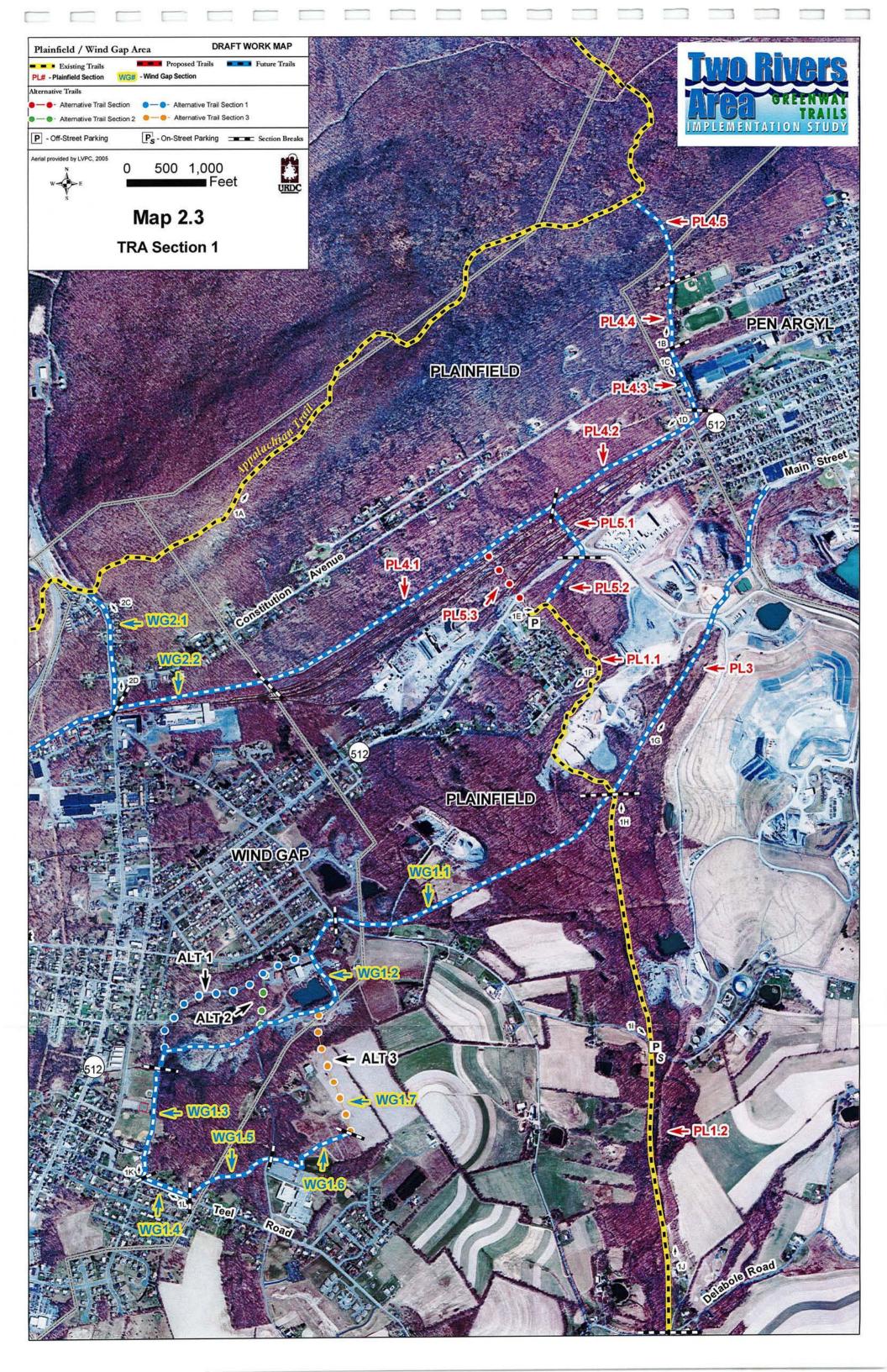
Gap Analysis

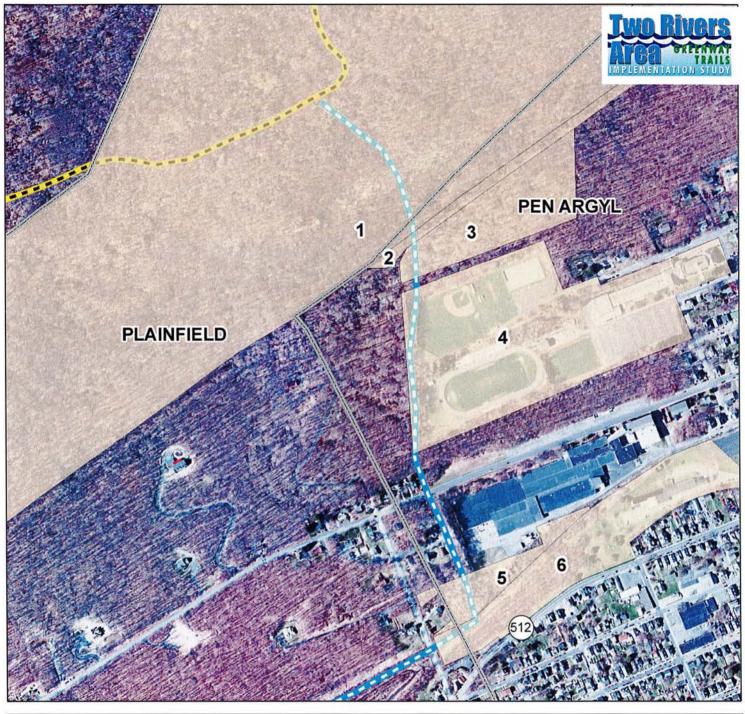
Trail Name	Trail No.	Seg- ment	TRA No.	Ownership Maint.	Priority	Trail Length	Trail Type	Comments
Bushkill Trail	PA1	2	3963 8	Palmer	Proposed	6200'	Railroad bed	Seeking grant funding
Bushkill Trail	PA1	3	3963 8	Palmer	Future	2500'	Railroad bed	
-	W1	1	10	Wilson	Proposed	4000'	Railroad bed	Construction summer 2008
Bushkill Trail	E1	1 Alt. 1.1	10	Easton	Not Determined	1100'	Railroad bed	Will require bridge to cross Bushkill Creek
Bushkill Trail	E1	1 Alt. 1.2	10	Easton	Not Determined	600'	Over land	On land owned by Physer
Bushkill Trail	E1	1 Alt. 2	10	Easton	Not Determined	1800'	Road side	Along Bushkill Trail
Bushkill Trail	E1	2 Alt. 1	10	Easton	Not Determined	1000'	Sidewalk	Along 13 th Street
Bushkill Trail	E1	3	9	Easton	Proposed	12000'	Multi- type	In design / build phase
-	E2	1 Alt. 3.1	10	Easton	Not Determined	3300'	Sidewalk	Along 13 th and Bushkill streets
-	E2	1 Alt. 4.1	10	Easton	Not Determined	2200'	Road side	Along Wood Avenue
-	E2	1 Alt. 4.2	10	Easton	Not Determined	600'	Over land	Lower Hackett Park
	E2	2	10	Easton	Not Determined	1000'	Over land	Lower Hackett Park

Table 2.16

PALMER TO EASTON - Trail Connections and Alternatives

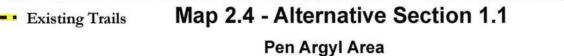






Map Key	Owner Name	Owner Location	Estimated Acreage	Deed Number	Assessed Value
1	PEN ARGYL WATER CO	WIND GAP PA 18091	38.200	20021-016039	72,600
2	PENNA POWER & LIGHT CO	ALLENTOWN PA 18101	6.890		1,800
3	RUTT RICHARD T	WIND GAP PA 18091 0233	8.359	19946-061738	400
4	PEN ARGYL AREA SCHOOL DISTRICT DISTRICT OFFICE	PEN ARGYL PA 18072	33.110	G43-000002	3,235,100
5	217 WEBSTER LTD	PEN ARGYL PA 18072	1.900	20031-326902	5,400
6	SCOTT TIGHE J & NEIL A	PEN ARGYL PA 18072	11.000	533-000221	272,100

Source: Lehigh Valley Planning Commission, 2008



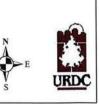
Future Trails

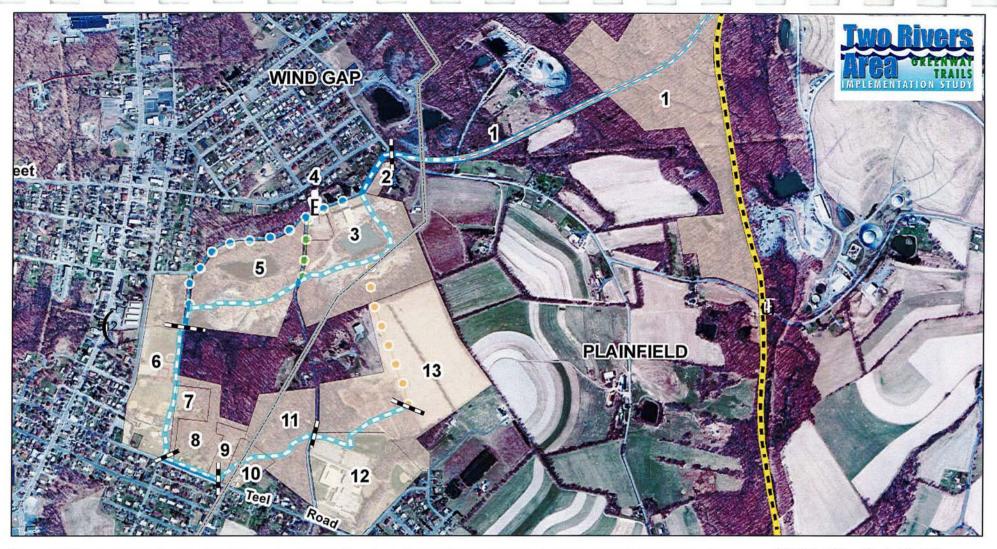
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Aerial provided by LVPC, 2005

250 500 Feet

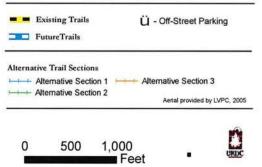
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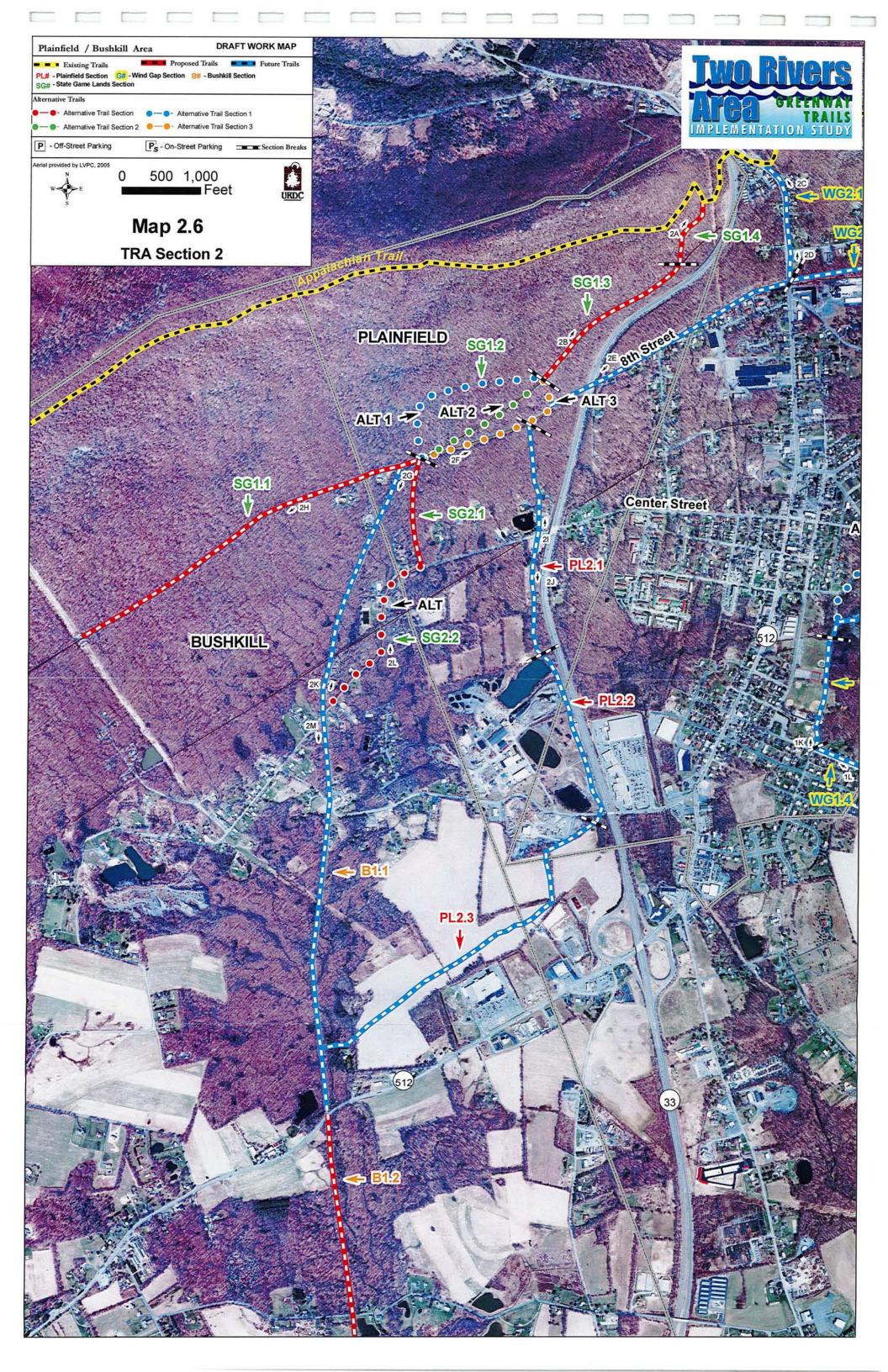


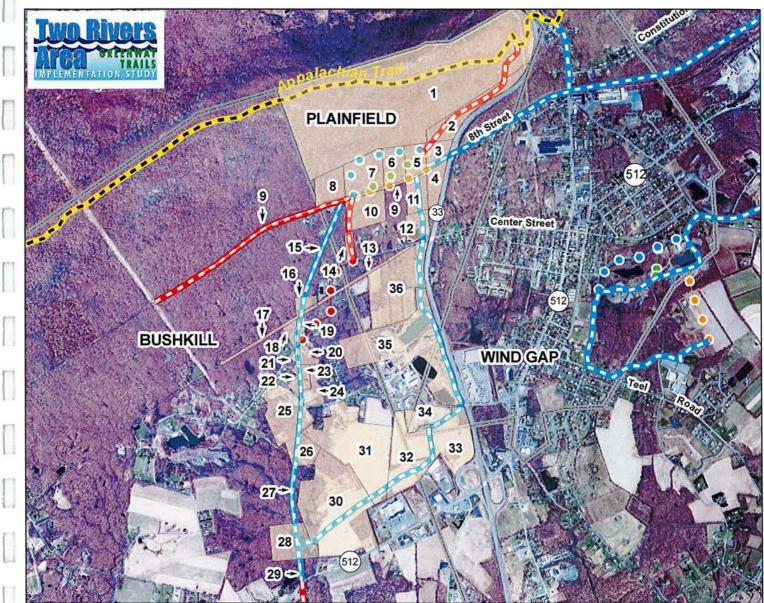
Map Key	Owner Name	Owner Location	Estimated Acreage	Deed Number	Assessed Value
1	GRAND CENTRAL REAL EST CO INC	CHICAGO IL 60690 1450	188.450	19946-070023	1,271,000
2	HOLLAND ROBERT J & SUZANNE K	WIND GAP PA 18091	1.100	666-000787	15,400
3	EMERALD PROPERTY GROUP	ROSETO PA 18013 0398	31.020	19961-098285	274,200
4	EMERALD PROPERTY GROUP II	WIND GAP PA 18091 0545	1.740	19981-127516	183,900
5	MUSCHLITZ JACK E	BATH PA 18014 9293	23.480	20051-156808	63,500
6	WIND GAP BOROUGH	WIND GAP PA 18091	20.680	C77-000087	73,900
7	DENTITH RICHARD & TANYA J REVOCABLE LIVING TRUST	WIND GAP PA 18091 1615	3.250	20001-122673	115,800
8	ALFRED JOSEPH C	WIND GAP PA 18091 1615	10,680	19961-121381	64,800
9	WIND GAP BOROUGH	WIND GAP PA 18091	3.850	841-000177	5,600
10	STRAUT SIDNEY G	SANTA ANA CA 92704	4.180	695-000452	46,400
11	TURTZO JOHN A & JOHN PETER	PEN ARGYL PA 18072 1250	13,780	724-000266	36,000
12	PEN ARGYL AREA SCHOOL DISTRICT	PEN ARGYL PA 18072	22.450	345-000413	1,707,500
13	WASTE MANAGEMENT OF PENNSYLVANIA INC	LOMBARD IL 60148 5661	43.430	20061-188709	123,700

Map 2.5 - Alternative Section 1.2 Wind Gap / Plainfield Area DRAFT WORK MAP



Source: Lehigh Valley Planning Commission, 2008





Map Key	Owner Name	Owner Location	Estimated Acreage	Deed Number	Assessed Value
1	PENNSYLVANIA COMMONWEALTH	HARRISBURG PA 17101	217.150	T-001964	434,300
2	CHARRON CARMEL C	WIND GAP PA 18091	15.860	785-000531	700
3	CHARRON CARMEL C	WIND GAP PA 18091	5.410	785-000531	300
4	CURCIO ANTHONY P ET AL	PEN ARGYL PA 18072	6.720	19991-099323	300
5	HARPER WEBSTER H & CARL L	WIND GAP PA 18091	7.000	716-000717	35,100
6	CURCIO ANTHONY P ET AL	PEN ARGYL PA 18072	8.500	19991-099323	200
7	CHARRON CARMEL C	WIND GAP PA 18091	15.690	785-000531	700
8	CHARRON CARMEL C	WIND GAP PA 18091	10.000	785-000531	500
9	CHARRON CARMEL C	WIND GAP PA 18091	7.000	785-000531	300
10	CHARRON CARMEL C	WIND GAP PA 18091	13.260	785-000531	1,300
11	HARPER WEBSTER H & CARL L	WIND GAP PA 18091	8.000	716-000717	28,700
12	PORTZ DANIEL B & MARY L	WIND GAP PA 18091 9703	6.600	19961-114998	81,500
13	CORTEZZO ALEXANDER F & LISA J	WIND GAP PA 18091 9704	4.000	19991-033783	6,300
14	OERTNER ROBERT W & KAREN E	WIND GAP PA 18091 9500	3.040	20061-473545	24,100
15	PENNA POWER & LIGHT CO	ALLENTOWN PA 18101	2.870	B72-000192	700
16	MCMAHON JOSEPH F JR	EASTON PA 18040	3.130	20031-148577	200
17	MCMAHON JOSEPH F JR	EASTON PA 18040	4.000	20031-148577	3,000
18	MCMAHON JOSEPH F JR	EASTON PA 18040	2,300	20031-148577	20,100
19	COVEY JILL D	WIND GAP PA 18091 9704	2.430	19991-080014	72,900
20	KATAKIS MATTHEW & STAVOURLA	WIND GAP PA 18091	3.620	857-000323	78,500
21	PENDLETON MARILYN A	WIND GAP PA 18091 9704	1.160	19991-003596	60,500
22	MINGARI SALVATORE & LUCIA	NAZARETH PA 18064	1.380	607-000742	7,400
23	EHARTH REBECCA L	WIND GAP PA 18091 9709	3.570	20031-012731	55,700
24	DEFRANCO PHILIP & NIKOL	BANGOR PA 18013 1654	6.580	20031-074870	81,200
25	LUCKEY BRIAN RUSSELL & KELLY L	WIND GAP PA 18091	19,760	19946-095484	87,600
26	LIPYANIC JOHN J III & MICHELLE	WIND GAP PA 18091 9709	10.020	20061-300839	54,200
27	PENNA POWER & LIGHT CO	ALLENTOWN PA 18101	1.750	D73-000456	500
28	RADER CYNTHIA E	WIND GAP PA 18091	15.230	874-000266	47,000
29	PENNA POWER & LIGHT CO	ALLENTOWN PA 18101	1.750	D73-000456	500
30	BLUE RIDGE REALTY ASSOC L P	WATCHUNG NJ 07060	57.600	756-001047	178,100
31	WENTZELL STANLEY P & ELEANOR M	WIND GAP PA 18091 9709	48.400	19971-004706	34,100
32	GRAND CENTRAL INVESTMENT COMPANY LTD	PEN ARGYL PA 18072	14.500	19961-046512	27,500
33	WIND GAP 1990 REALTY CORP	CARLE PLACE NY 11514	20.940	851-000385	148,300
34	GIROUX LAND LLP	WIND GAP PA 18091	2.810	20031-503927	169,500
35	NATRL WIND GAP INC	WIND GAP PA 18091	8.590	896-000124	37,800
36	CORTEZZO ALEXANDER F & LISA J	WIND GAP PA 18091 9704	35,410	19991-033783	4,900

Map 2.7 - Alternative Section 2.1 Bushkill / Plainfield Area

DRAFT WORK MAP

Existing Trails

Proposed Trails

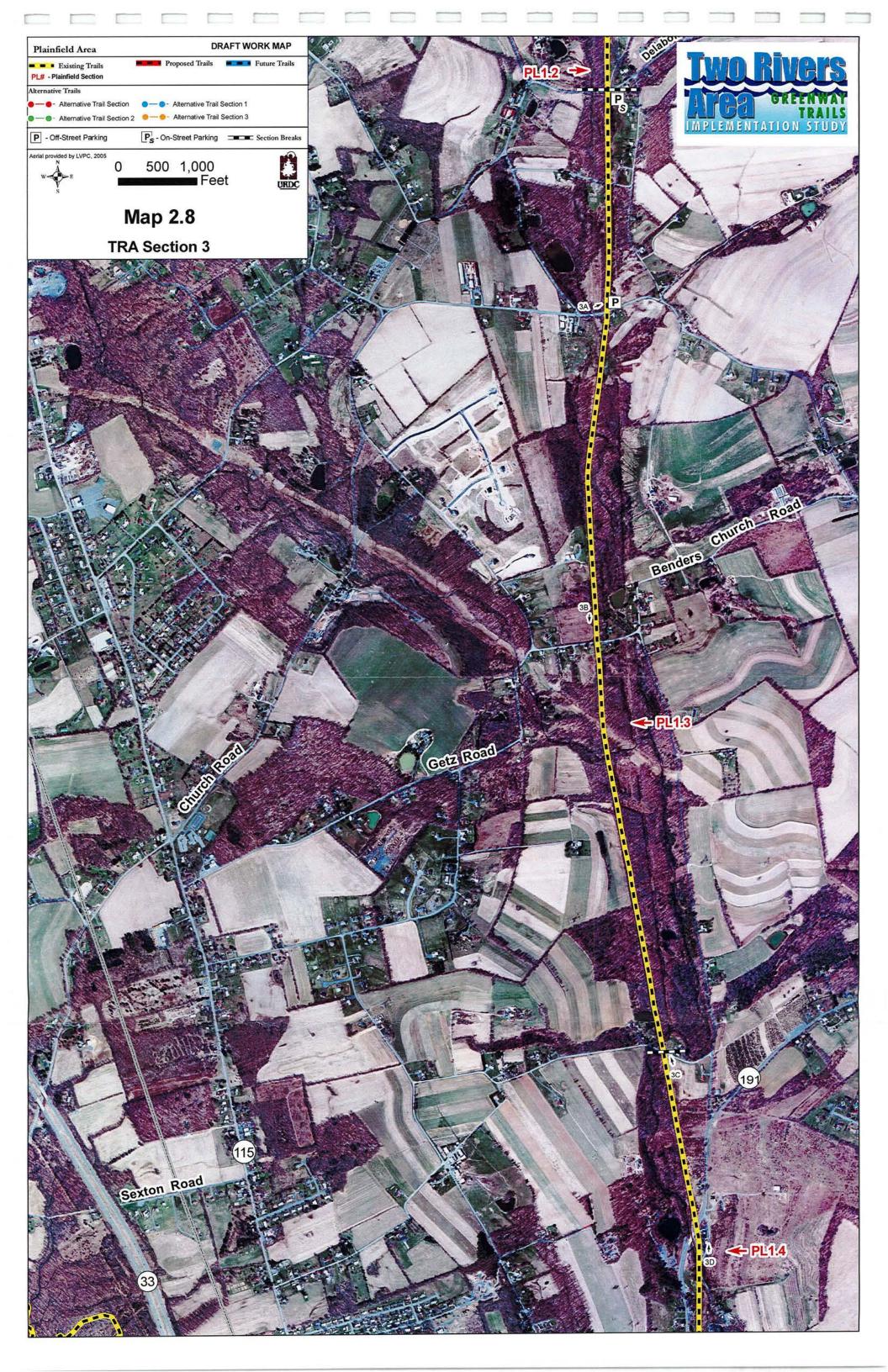
FutureTrails

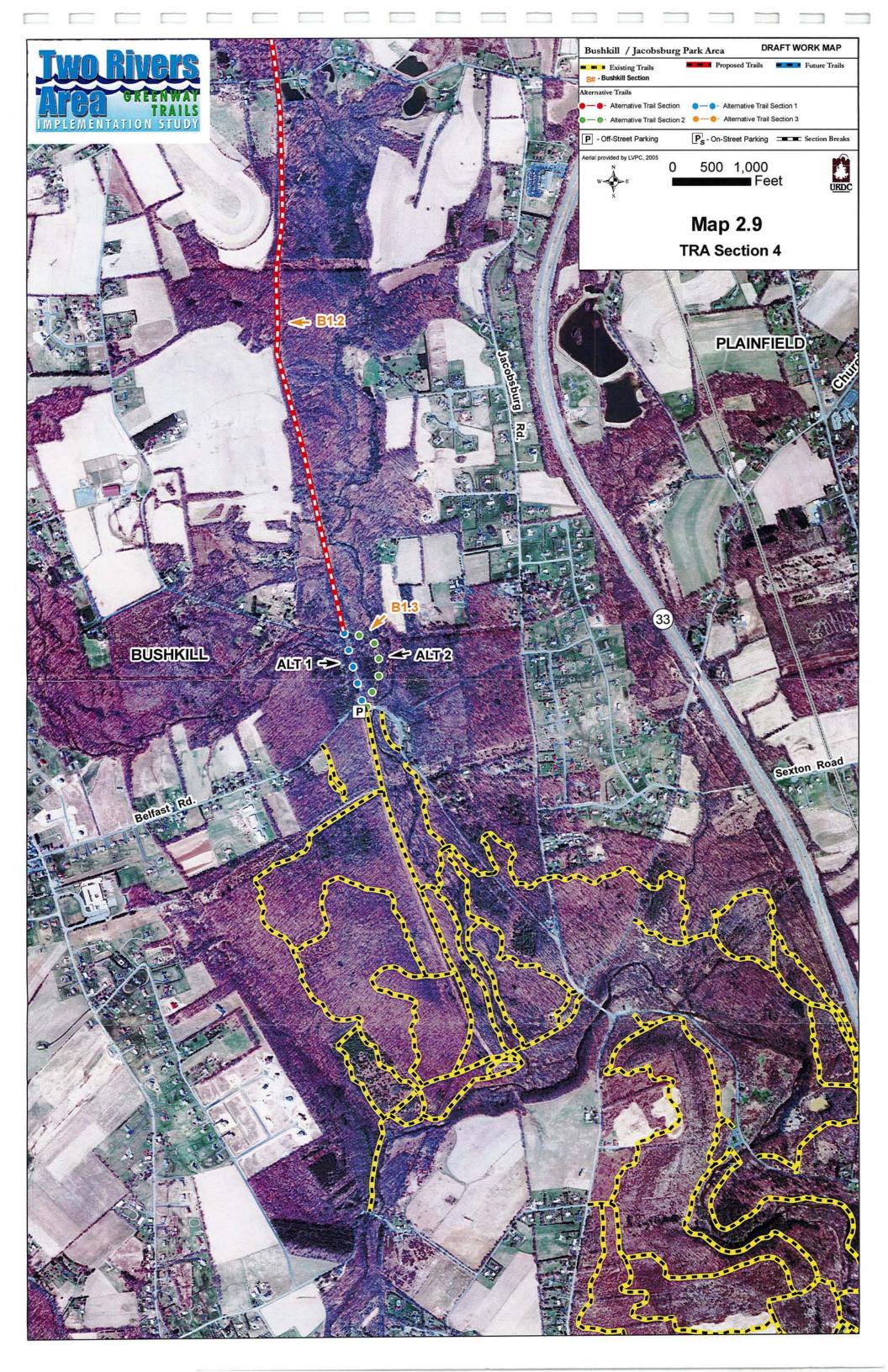
Alternative Trail Sections

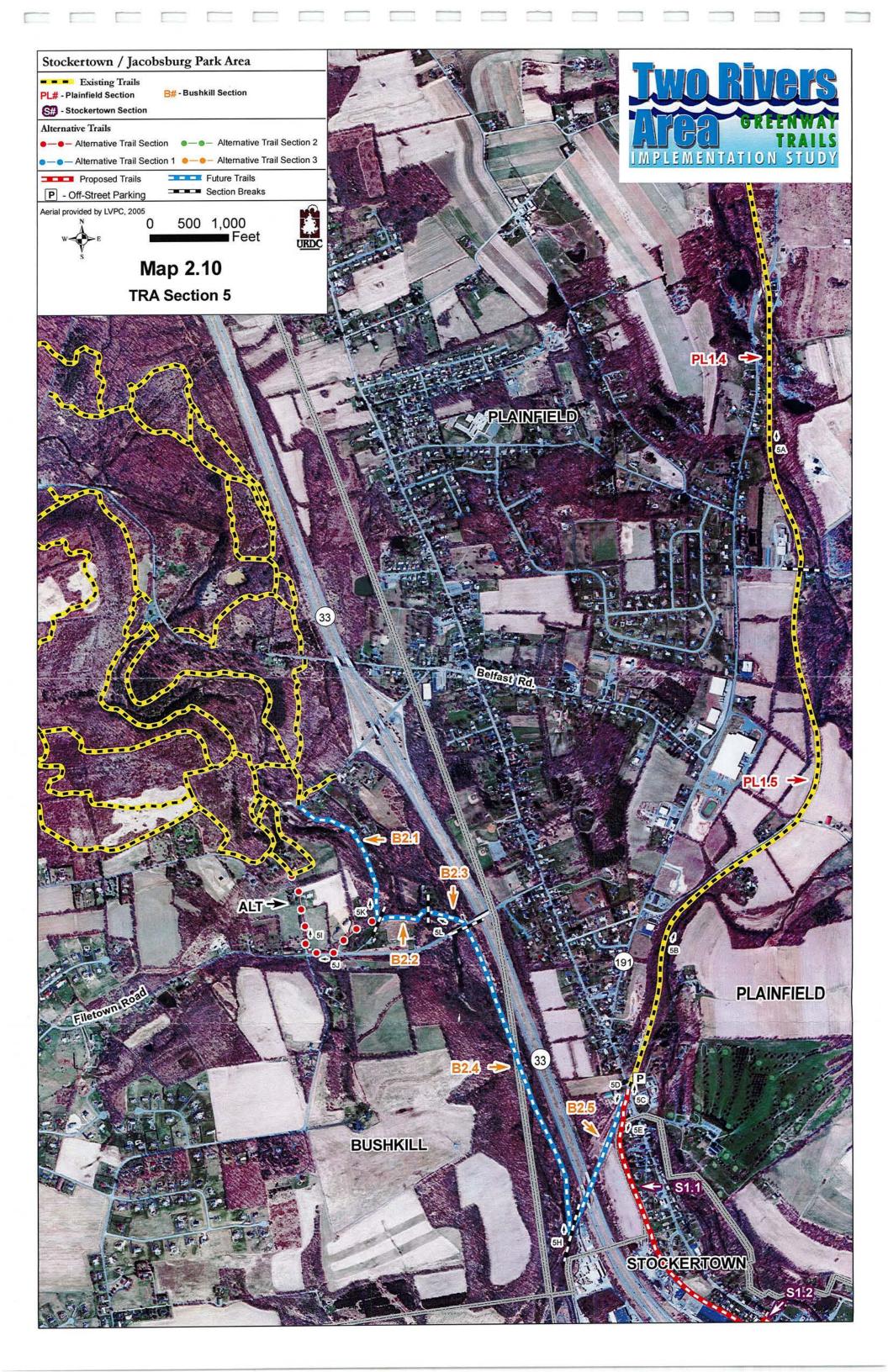
- •••• Alternative Section 1
- Alternative Section 2
- Alternative Section 3

Aerial provided by LVPC, 2005











Map Key	Owner Name	Owner Location	Estimated Acreage	Deed Number	Assessed Value
1	JACOBSBURG HISTORICAL SOCIETY	NAZARETH PA 18064	18.000	797-000411	162,500
2	JACOBSBURG HISTORICAL SOCIETY	NAZARETH PA 18064	4.000	797-000411	9,000
3	SERFASS RICHARD A & RITA G	STOCKERTOWN PA 18083	15.197	605-000257	1,200
4	SIGAFOOS KENNETH JR & JANET L	NAZARETH PA 18064 9244	7.310	551-000464	34,200
5	STONER MICHAEL D & M JUDITH	NAZARETH PA 18064	1.840	744-000912	18,200
6	HERCULES CEMENT CO	STOCKERTOWN PA 18083	2.320	622-000405	20,000
7	HERCULES CEMENT CO	STOCKERTOWN PA 18083	82.700	622-000405	41,700
8	PENNSYLVANIA LINES LLC	ROANOKE VA 24042 0028	6.690	20031-434659	16,800
Source: Lehi	igh Valley Planning Commission, 2008		in the second	8 11.11 - 11.11 - 11.1 - 11.1 - 11.1 - 11.1 - 11.1 - 11.1 - 11.1 - 11.1 - 11.1 - 11.1 - 11.1 - 11.1 - 11.1 - 11.1	

Existing Trails

Proposed Trails

Future Trails

•-• Alternative Trail Section 1

P Parking

Map 2.11 - Alternative Section 5.1

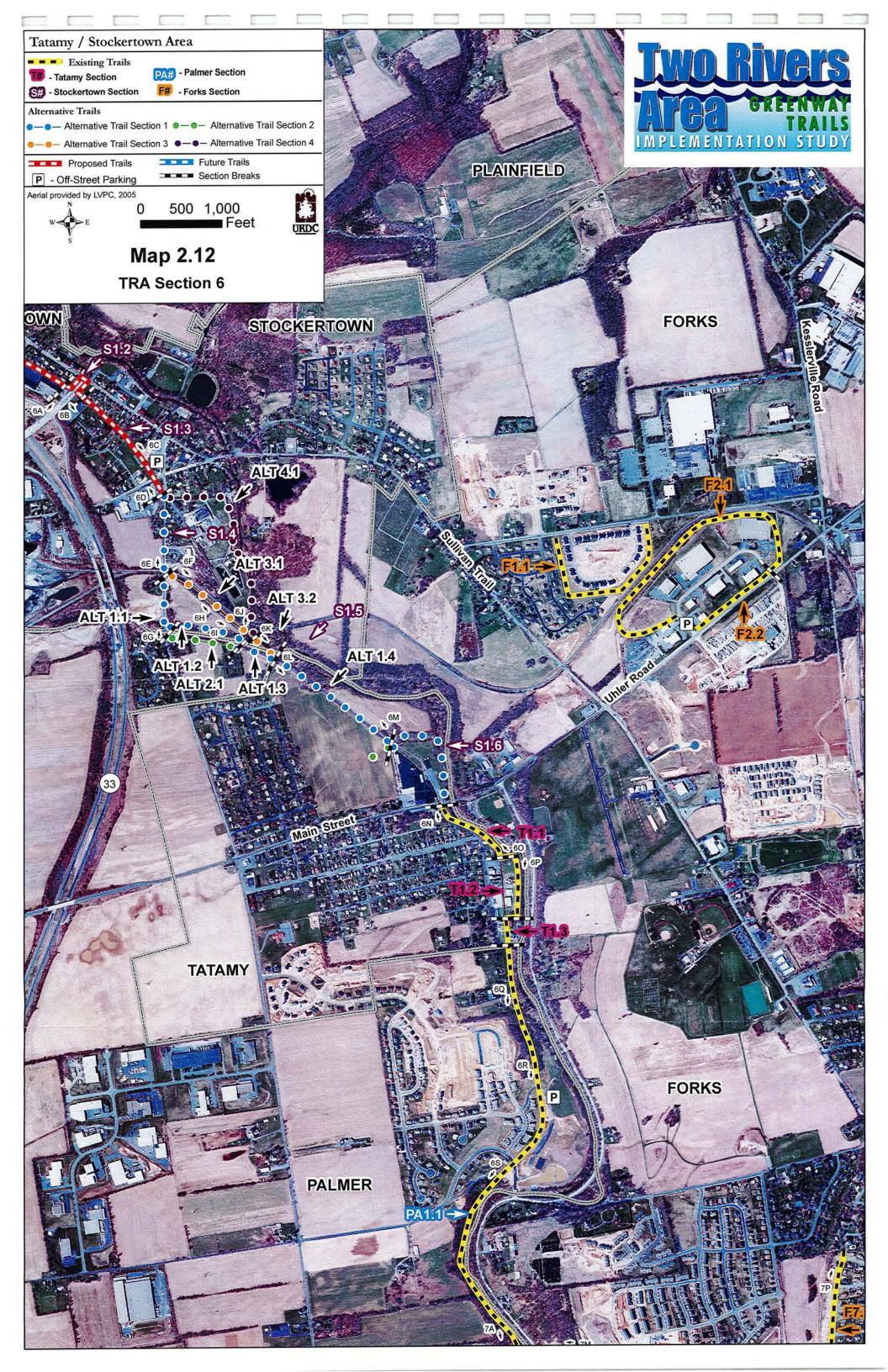
Bushkill / Stockertown Area

Aerial provided by LVPC, 2005

500 1,000 Feet

0







Map Key	Owner Name	Owner Location	Estimated Acreage	Deed Number	Assessed Value
1	POLYMER PRODUCTS COMPANY INC	STOCKERTOWN PA 18083 0098	11.290	20011-41531	\$701,400
2	STOCKERTOWN BOROUGH	STOCKERTOWN PA 18083	6.090	831-000454	\$11,600
3	PENNSYLVANIA LINES LLC	ROANOKE VA 24042 0028	5.730	20031-434659	\$10,900
4	PENNSYLVANIA LINES LLC	ROANOKE VA 24042 0028	0.250	20031-434659	\$6,700
5	HOMOKI ESTHER H & SYLVIA E	STOCKERTOWN PA 18083 0217	8.370	19946-016329	\$17,700
6	RAMUNNI ANTHONY & ELEANOR	EASTON PA 18045	6.470	822-000621	\$49,600
7	RAMUNNI TRISHA A & WERKHEISER, TRISHA A	EASTON PA 18045 7830	1.730	19971-120166	\$72,600
8	BACHO MARK ROBERT & RENNAE LY	EASTON PA 18045	2.000	824-000550	\$69,900
9	RAMUNNI ANTHONY JR	EASTON PA 18045	4.800	822-000627	\$83,700
10	KANE KEVIN M & BONNIE K	EASTON PA 18045	3.790	20041-032708	\$126,100
11	TATAMY 225 MAIN STREET LIMITED PARTNERSHIP	TEANECK NJ 07666	18.050	20061-126169	\$37,700
12	TATAMY 225 MAIN STREET LIMITED PARTNERSHIP	TEANECK NJ 07666	7.020	20061-126169	\$25,200
13	TATAMY 225 MAIN STREET LIMITED PARTNERSHIP	TEANECK NJ 07666	6.240	20061-126169	\$11,900

Source: Lehigh Valley Planning Commission, 2008

Existing Trails

Map 2.13 - Alternative Section 6.1

- Tatamy / Stockertown Area
- •-•- Alternative Trail Section 1
- •-•- Alternative Trail Section 2
 - Alternative Trail Section 3
 - P Parking

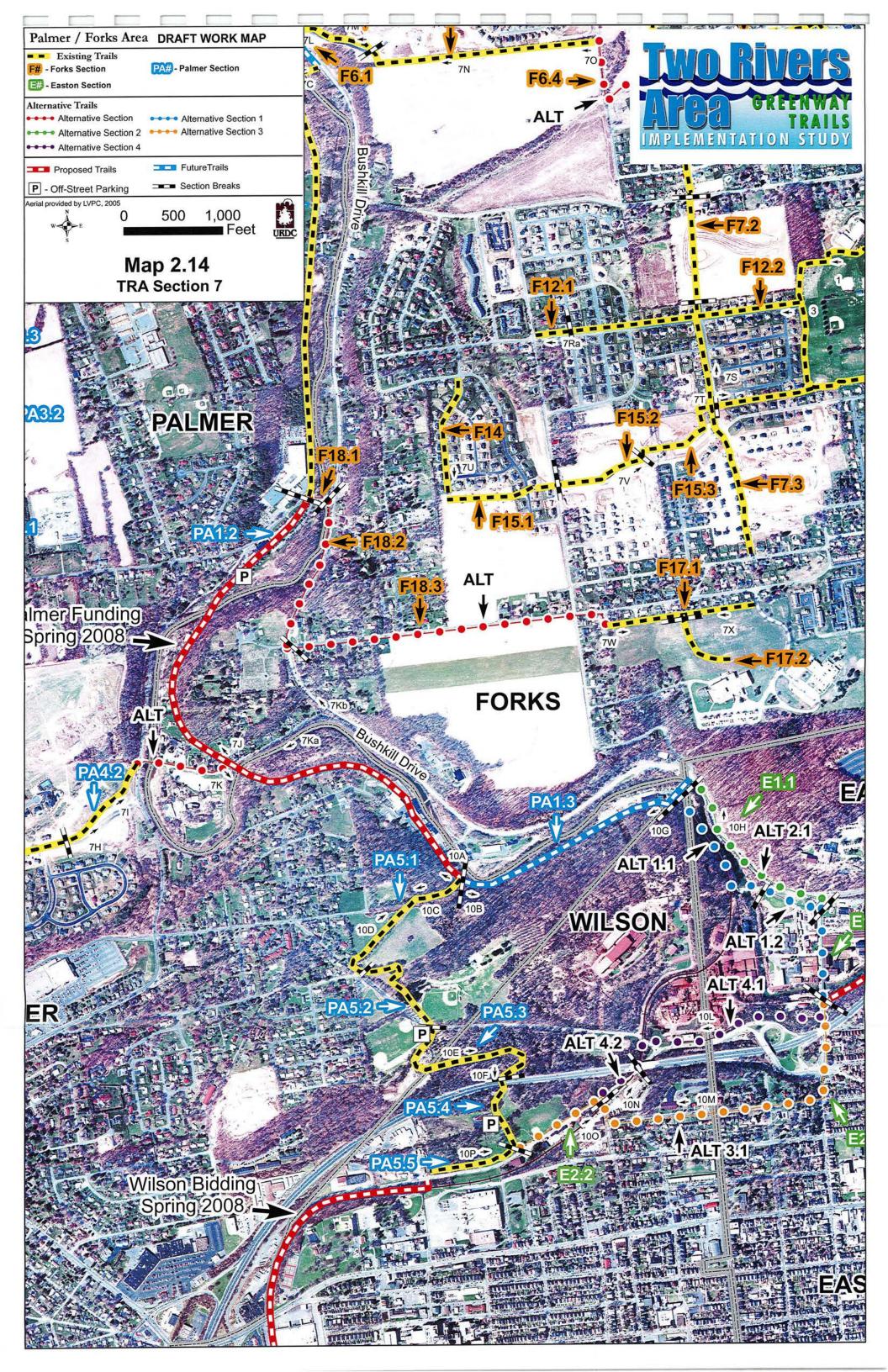
Aerial provided by LVPC, 2005

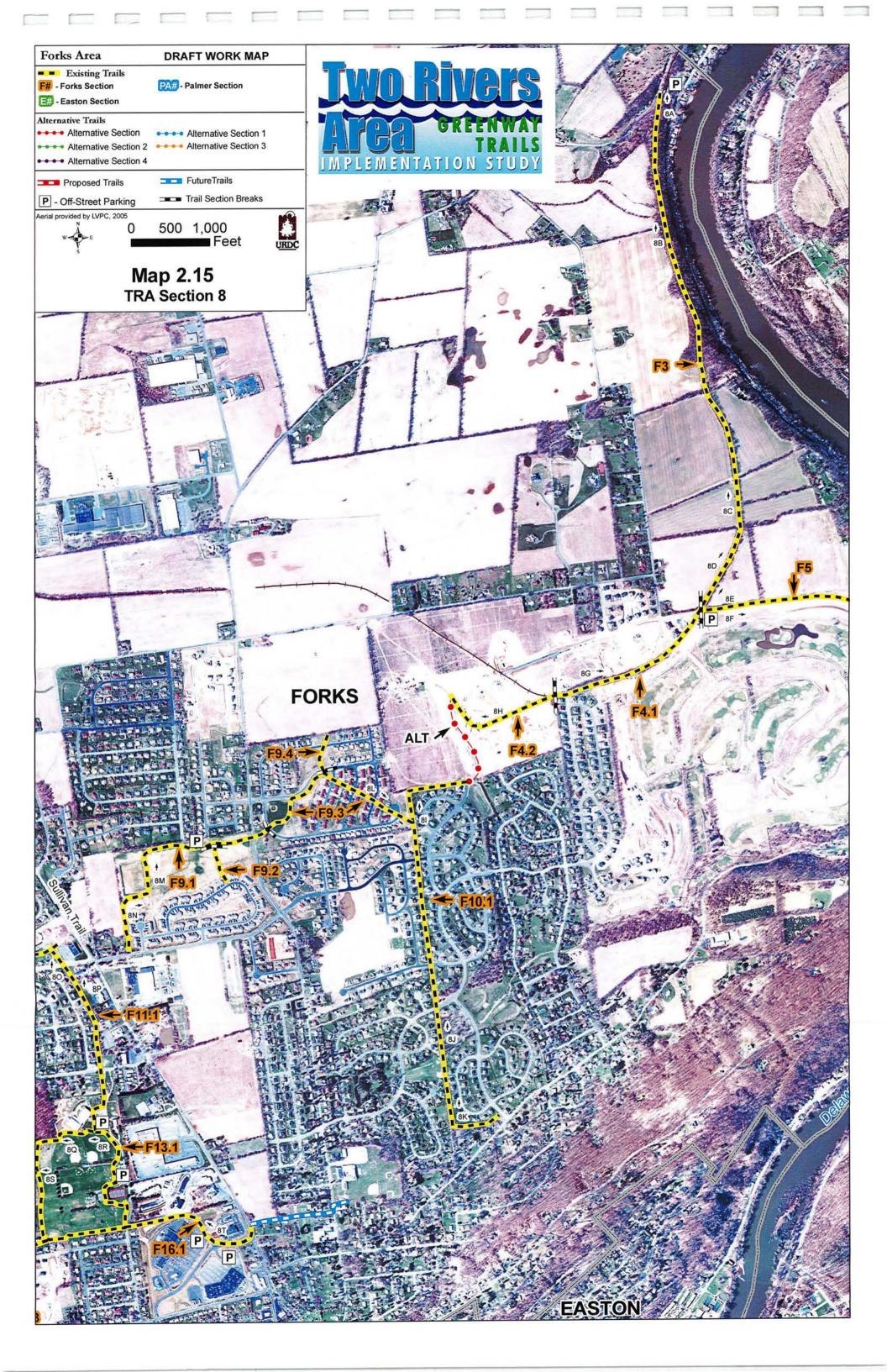
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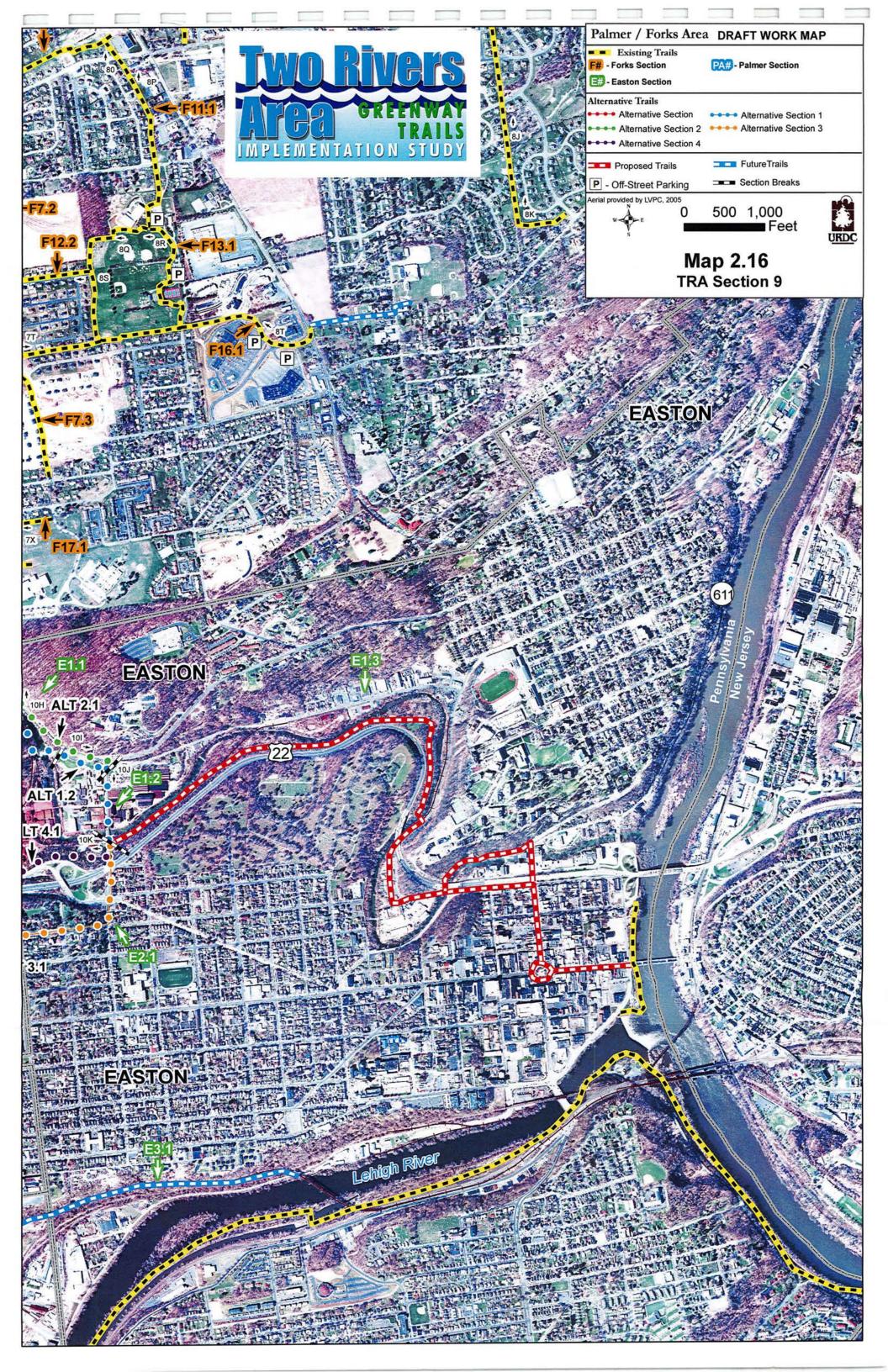
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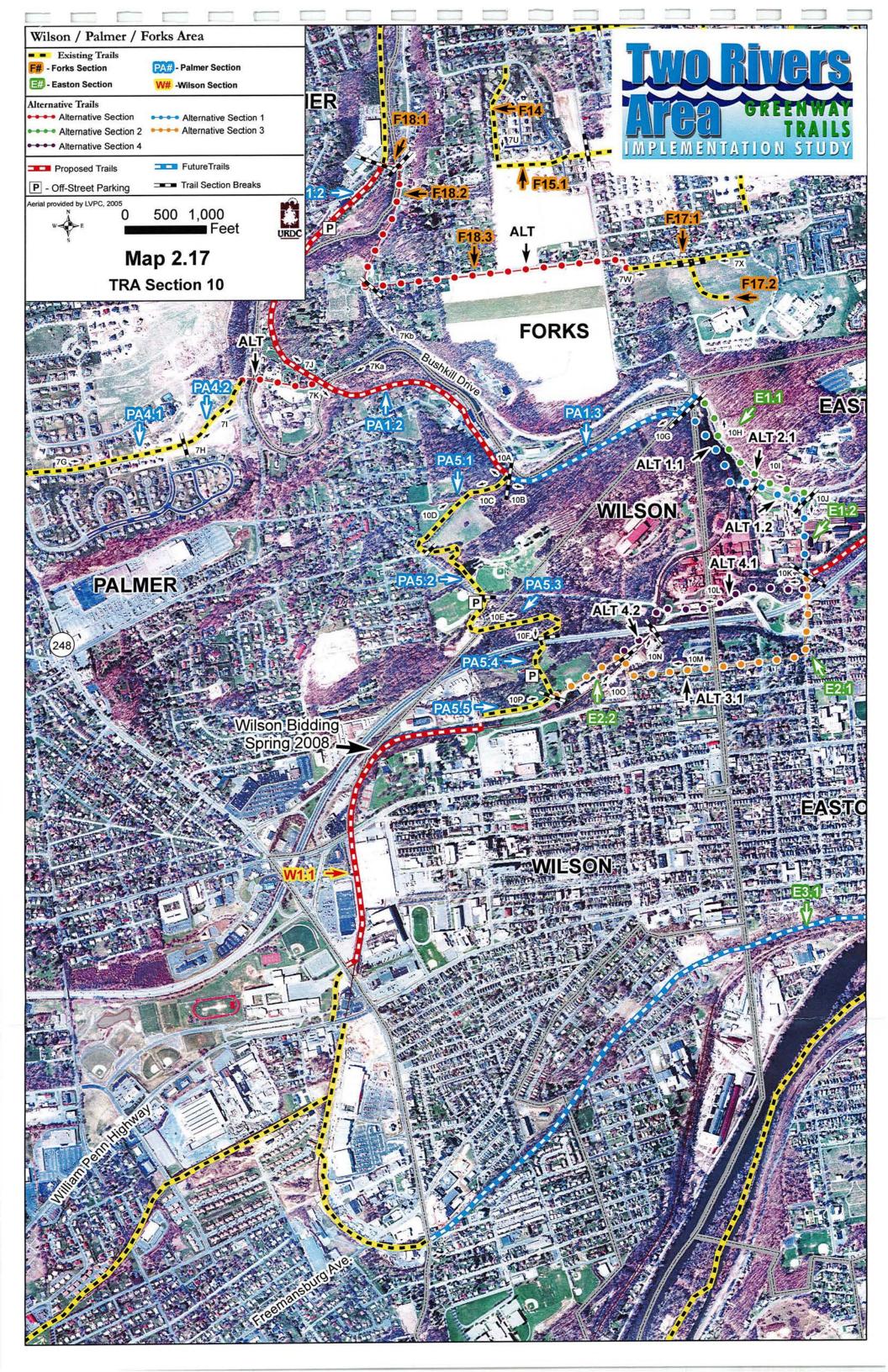


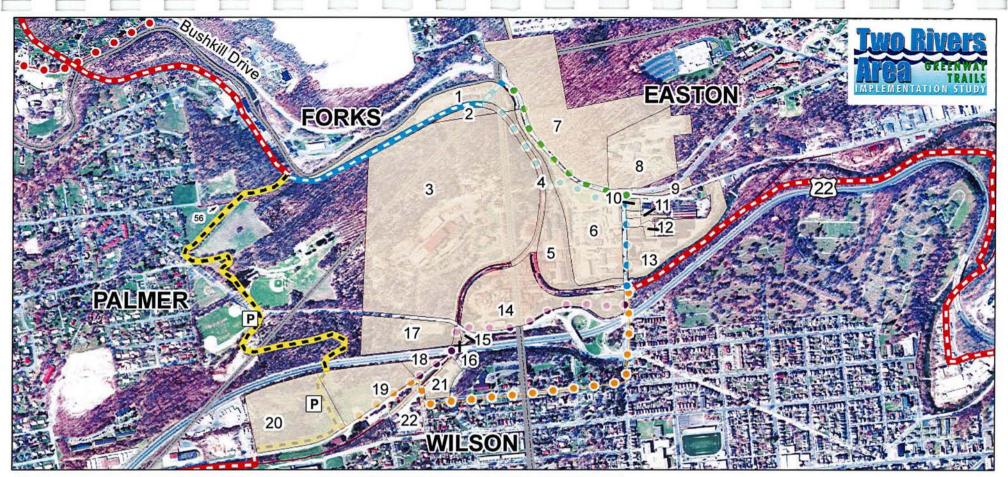












Map Key	Owner Name	OWNER Location	Estimated Acreage	Deed Number	Assessed Value
1	STRAUSSER ENTERPRISES INC	EASTON PA 18045 2050	6.708	19961-109523	112,300
2	STRAUSSER ENTERPRISES INC	EASTON PA 18045 5080	1.091	19961-109523	1,500
3	HARCROS PIGMENTS INC	EAST ST LOUIS IL 62204	74.382	799-000371	834,100
4	HARCROS PIGMENTS INC	EAST ST LOUIS IL 62204	8.954	799-000371	293,800
5	ELEMENTIS PIGMENTS INC	HIGHTSTOWN NJ 08520 0700	3.082	20041-046643	3,000
6	SPECIALTY MINERALS INC	EASTON PA 18042	15.836	886-000107	972,400
7	STRAUSSER ENTERPRISES INC	EASTON PA 18045 5080	28.101	19971-053087	1,900
8	YMCA	EASTON PA 18042	12.516	641-000929	1,095,300
9	DAVIS KAREN M	EASTON PA 18042	0.696	20031-158398	2,700
10	METROPOLITAN EDISON COMPANY	MORRISTOWN NJ 07962 1911	0.454	A78-000086	2,500
11	ZIEGENFUSS ROBERT	ALLENTOWN PA 18103 9623	0.637	20041-154901	1,500
12	ZIEGENFUSS ROBERT	EASTON PA 18042 1430	0.790	20021-283090	14,000
13	REDEVELOPMENT AUTHORITY OF EASTON	EASTON PA 18042 4543	8.988	20051-490176	76,100
14	HARCROS PIGMENTS INC	EAST ST LOUIS IL 62204	15.764	799-000371	511,300
15	HARCROS PIGMENTS INC	EAST ST LOUIS IL 62204	0.136	799-000371	400
16	ELEMENTIS PIGMENTS INC	HIGHTSTOWN NJ 08520 0700	0.332	20041-046643	1,000
17	HARCROS PIGMENTS INC	EAST ST LOUIS IL 62204	7.770	799-000371	132,100
18	EASTON SUBURBAN WATER AUTHORITY	EASTON PA 18043 3819	1.062	20051-447569	2,200
19	WILSON BOROUGH	EASTON PA 18042	9,137	799-000371	18,100
20	EASTON CITY	EASTON PA 18042 5401	14.500		200,500
21	WOOD AVENUE REALTY LLC	EASTON PA 18042	2.247	19951-069895	186,100
22	WILSON BOROUGH	EASTON PA 18042 4683	0.629	20041-025905	1,900

Map 2.18 - Alternative Section 10.1 Easton / Wilson Area DRAFT WORK MAP

Existing Trails
 Proposed Trails

FutureTrails

P - Off-Street Parking

Alternative Trail Sections

Alternative Section 1
 Alternative Section 3
 Alternative Section 2
 Alternative Section 4

Last Updated: Aug 14, 2008 Aerial provided by LVPC, 2005 0 500 1,000 2,000 V E URDC

Source: Lehigh Valley Planning Commission, 2008

SUMMARY OF TRAIL STATUS

Bushkill Creek Corridor

The major trail spine is along the Bushkill Creek Corridor from the Delaware River (at Easton) to the Appalachian Trail. It includes over 9 miles of existing trails. All the existing trails are in public ownership and open to the public. When completed the trail will be nearly 18 miles long. The table below shows the trail status in miles along this trail corridor.

Table 2.17

Trail Status in Miles for

Delaware River (at Easton) to Appalachian Trail via Bushkill Creek Corridor

				ALTERNATIVE	
	EXISTING	PROPOSED	FUTURE	TRAIL	TOTAL
MUNICIPALITY	TRAILS	TRAILS	TRAILS	SEGMENTS	MILES
Easton		2.27		0.53	2.80
Palmer	2.10	1.17	0.47		3.74
Tatamy	0.45			0.86	1.31
Stockertown		1.11		0.19	1.30
Plainfield	6.90		1.14		8.04
Wind Gap			0.66		066
Total Miles	9.45	4.55	2.27	1.58	17.85

Additional Trail Section from Stockertown to Appalachian Trail via Jacobsburg and PPL Right-of Way

In addition to the above major trail along the Bushkill Creek Corridor, there will be approximately 9 additional miles of trail extending from Stockertown to the Appalachian Trail (AT) via Jacobsburg Park and the PPL Right-of-Way. Ultimately, this section would serve to provide a "loop" trail connection to the Bushkill Corridor Trail system. The following table shows the trail status in miles along this additional "loop" trail section.

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Table	2.18
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Trail Status in Miles for the <u>Additional Stockertown to Appalachian Trail Section</u> via Jacobsburg Park and PPL Right-of-Way

		8	8	<i>v</i>	
MUNICIPALITY	EXISTING TRAILS	PROPOSED TRAILS	FUTURE TRAILS	ALTERNATIVE TRAIL SEGMENTS	TOTAL MILES
Plainfield			0.38		0.38
Plainfield Game Lands		0.98			0.98
Bushkill		1.84	2.98		4.82
Bushkill Jacobsburg	2.65				2.65
Total Miles	2.65	2.82	3.36		8.83

Additional Trails in the Study Area

In addition to the 18-mile Bushkill Creek Corridor, and the nearly 9 miles of trail extending from Stockertown to the Appalachian Trail (via Jacobsburg Park and the PPL Right-of-Way), there are more than 24 miles of other additional existing, proposed, future, and alternative trail segments in the study area. The table below shows the trail status in miles for these additional trails.

Table	2.19
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Trail Status in Miles for Other Additional Trails in the Study Area

MUNICIPALITY	EXISTING TRAILS	PROPOSED TRAILS	FUTURE TRAILS	ALTERNATIVE TRAIL SEGMENTS	TOTAL MILES
Bushkill		1.27	1.35		2.62
Forks	12.0	0.08	0.21	0.77	13.06
Palmer	2.0				2.00
Pen Argyl			0.57		0.57
Plainfield		0.81	1.67		2.48
Tatamy					0.00
Stockertown					0.00
Wind Gap				2.58	2.58
Wilson		0.75			0.75
Total Miles	14.0	2.91	6.38	0.77	24.06

FEASIBILITY STUDY

BACKGROUND INFORMATION

Regional Population and Demographic Patterns

This section reviews the regional population and demographics of the Martins-Jacoby Watershed area. The information examines the number of people living within the area, the future outlook and the density of each municipality. Northampton County and the Lehigh Valley as a whole are be included for regional comparisons. Although there are a few municipalities that are not fully incorporated into the area, the entire municipal data will be used. Demographic data is from the U.S. Census Bureau and the Lehigh Valley Planning Commission (LVPC).

Total Population

In 2000, the total population of the Martins-Jacoby Watershed area municipalities was 31, 256 (Table 3.1). There was a 4.8% increase from 1990 to 2000 and an 8% increase from 2000 to 2006, within the study area. Roseto Borough had the most growth (12.2%) from 1990 to 2000, while both Bangor and East Bangor Borough's experienced a decrease in population within the same time period. The most populated municipality is Upper Mt. Bethel Township and the least populated is Portland Borough, according to 2006 U.S. Census estimates.

		POPULATION	CHANGE (1990-2000)		
MUNICIPALITY	1990 Census	2000 Census	2006 Estimate	Number	Percent
Lower Mt. Bethel Township	3,187	3,228	3,229	41	1.3%
Plainfield Township	5,444	5,668	6,083	224	4.1%
Upper Mt. Bethel Township	5,476	6,063	7,425	587	10.7%
Washington Township	3,759	4,152	4,799	393	10.5%
Bangor Borough	5,383	5,319	5,286	-64	-1.2%
East Bangor Borough	1,006	979	1,033	-27	-2.7%
Pen Argyl Borough	3,492	3,615	3,660	123	3.5%
Portland Borough	516	579	571	63	12.2%
Roseto Borough	1,555	1,653	1,655	98	6.3%
Martins-Jacoby Watershed Municipalities	29,818	31,256	33,741	1,438	4.8%
NORTHAMPTON COUNTY	247,105	267,066	291,306	19,961	8.1%
LEHIGH VALLEY	538,235	579.156	626,850	40,921	7.6%

Table 3.1 Total Population - Martins - Jacoby Watershed 1990-2006

Source: U.S. Census; Lehigh Valley Planning Commission, April 12, 2007

Population Projections

The LVPC has projected population figures for 2010, 2020 and 2030 (Table 3.2). Washington Township (93.3%), Plainfield Township (89.7%) and Upper Mt. Bethel Township (78.9%) all are above the regional watershed municipalities forecasted increase by the year 2030. The Borough's of Bangor, Pen Argyl and Roseto all fall well below the county and regional projected percentage increase.

	2000	PF	ROJECTION	S	CHANGE	(2000-2030)
MUNICIPALITY	Census	2010	2020	2030	Number	Percent
Lower Mt. Bethel Township	3,228	3,426	3,683	3,988	760	23.5%
Plainfield Township	5,668	6,855	8,694	10,752	5,084	89.7%
Upper Mt. Bethel Township	6,063	7,763	9,180	10,845	4,782	78.9%
Washington Township	4,152	5,347	6,755	8,027	3,875	93.3%
Bangor Borough	5,319	5,350	5,458	5,655	336	6.3%
East Bangor Borough	979	1,034	1,105	1,114	135	13.8%
Pen Argyl Borough	3,615	3,681	3,738	3,857	242	6.7%
Portland Borough	579	633	747	772	193	33.3%
Roseto Borough	1,653	1,662	1,662	1,662	9	0.5%
Martins-Jacoby Watershed Municipalities	31,256	35,751	41,022	46,672	15,416	49.3%
NORTHAMPTON COUNTY	267,066	301,416	333,382	368,135	101,069	37.8%
LEHIGH VALLEY	579 156	644 348	704.026	767.856	188 700	32.6%

Table 3.2Population Projections - Martins-Jacoby Watershed2000-2030

Source: U.S. Census; Lehigh Valley Planning Commission, April 12, 2007

Population Density

The Borough of Bangor has the largest land area of the other four boroughs and the highest population density at 3,522.5, within the study area (Table 3.3). Both Plainfield and Washington Townships have nearly the same population density at 231.1 (Washington Twp.) and 231.3 (Plainfield Twp), while Plainfield has more square miles of land area. Portland Borough is the smallest Borough in land area (0.58) and population density (998.3). Lower Mt. Bethel Township has the lowest population density (131.1) but the second most square miles of land.

MUNICIPALITY	LAND AREA (Square Miles)		ATION	POPULATION DENSITY (Persons per square mile	
		1990	2000	1990	2000
Lower Mt. Bethel Township	24.62	3,187	3,228	129.4	131.1
Plainfield Township	24.51	5,444	5,668	222.1	231.3
Upper Mt. Bethel Township	44.01	5,476	6,063	124.4	137.8
Washington Township	17.97	3,759	4,152	209.2	231.1
Bangor Borough	1.51	5,383	5,319	3,564.9	3,522.5
East Bangor Borough	0.85	1,006	979	1,183.5	1,151.8
Pen Argyl Borough	1.41	3,492	3,615	2,476.6	2,563.8
Portland Borough	0.58	516	579	889.7	998.3
Roseto Borough	0.64	1,555	1,653	2,429.7	2,582.8
Martins-Jacoby Watershed Municipalities	116.10	29,818	31,256	256.8	269.2
NORTHAMPTON COUNTY	377.20	247,105	267,066	655.0	708.0
LEHIGH VALLEY	725.45	538,235	579,156	741.7	798.3

Table 3.3Population Density - Martins-Jacoby Watershed1990-2006

Source: U.S. Census; Lehigh Valley Planning Commission, April 12, 2007

Community Character

Most of the Martins-Jacoby area is rural with rolling hills, and several small villages and Boroughs (Map 3.1). Much of the development is along the major roadways of Route's 191, 512 and 611 and located in the Pen Argyl -Bangor area. Subdivisions are starting to infiltrate the more rural areas of Washington Township.

The Delaware Water Gap National Recreation Area encompasses a large swath of land in the northeastern section of Upper Mount Bethel Township. The Minsi Lake area also designates a large area of preserved land for



recreational opportunities in Upper Mount Bethel. Various portions of the Delaware River have parkland and/or preserved lands throughout the corridor. Pennsylvania Power & Light (PPL) owns a power facility in Lower Mount Bethel Township along the Delaware River.

Two Rivers Area Greenway Trails Implementation Study

Feasibility Study

Natural Features

The Martins-Jacoby area spans from Blue Mountain in the north. The Delaware River creates a natural border with New Jersey, while the western portion of the area is bordered by the Two Rivers area in Plainfield Township and Lower Mount Bethel Township. This rural area allows for large swaths of natural areas, woodlands, steep slopes, streams and lakes. As a goal for the Martins-Jacoby area, the preservation of natural features will be examined in this section of the report (Map 3.2).



Physiography

Physiographic provinces are large regions, typically including multiple states, that exhibit similar topography and geology. The Martins-Jacoby area is completely within the physiographic province of the Ridge and Valley Province. The Ridge and Valley Province is further broken into "sections", which locally are the Blue Mountain Section and the Great Valley Section.

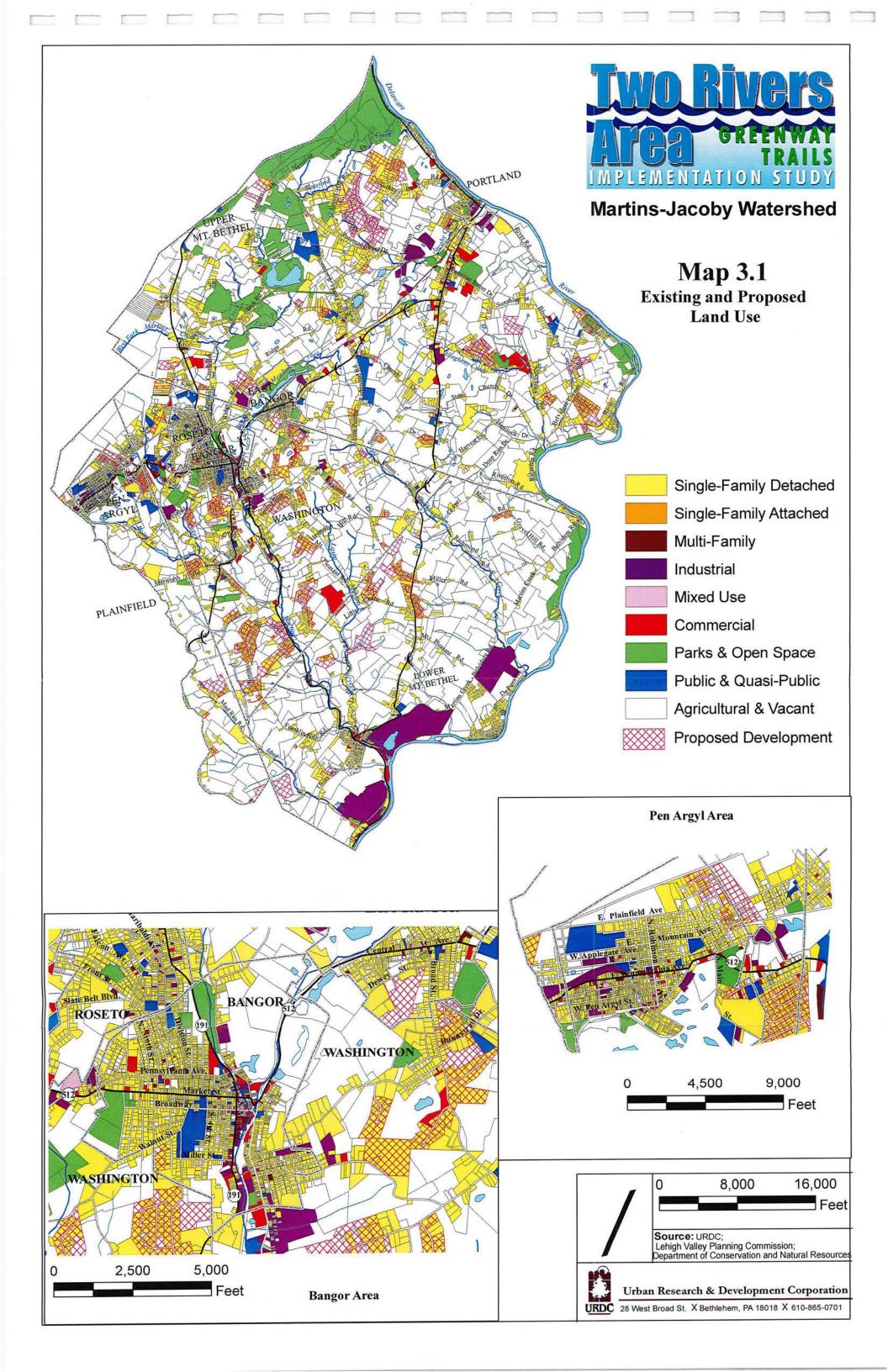
The Blue Mountain Section is located only in the northern most area of this Martins Creek watershed, within Upper Mount Bethel and Plainfield Townships. Southward from Blue Mountain lies the Great Valley, a broad lowland with gently rolling hills eroded into shale bedrock on the north side of the valley and a lower, more level landscape developed on limestones and dolomite bedrock on the south side (Map 3.3).

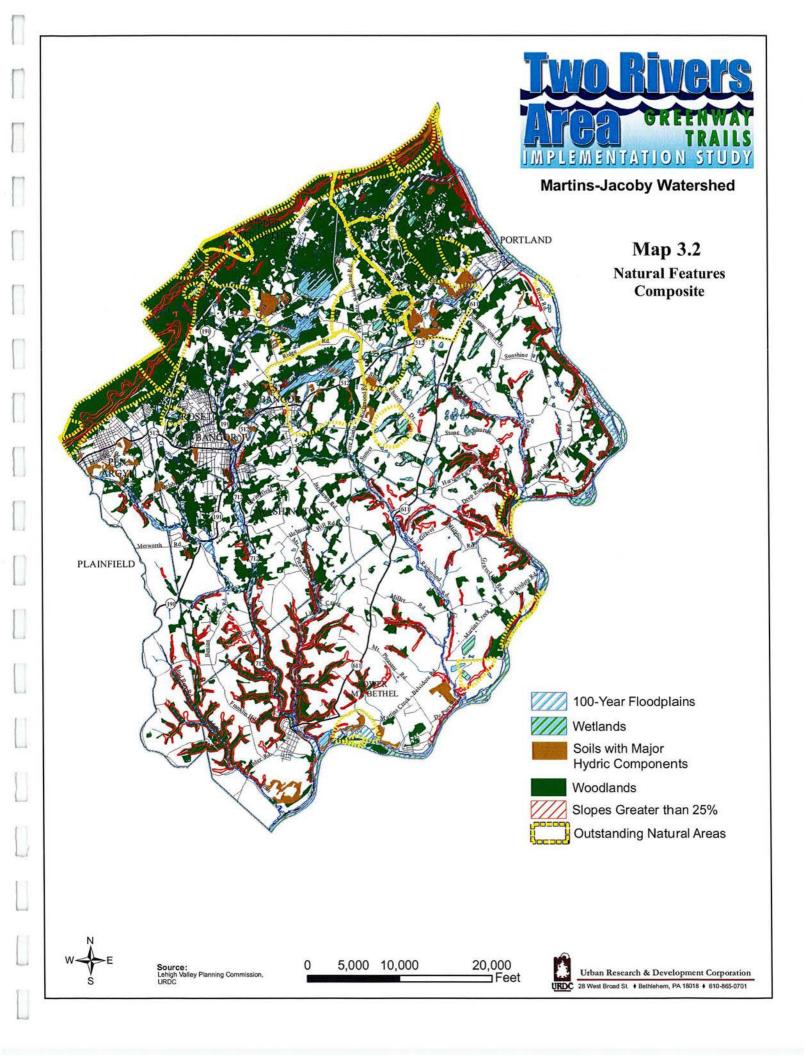
Soils

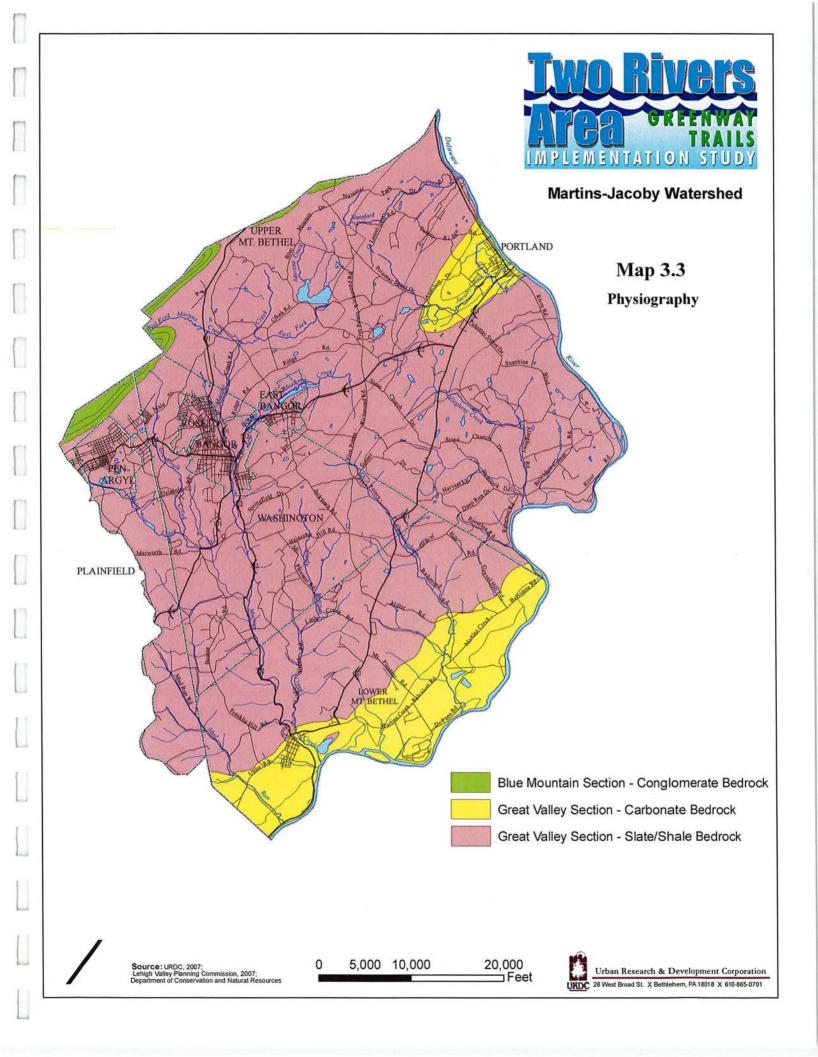
The U.S. Soil Conservation Service (SCS) has established soil capability classes based on each soil type's agricultural productivity. Capability classes range from Class I (soils with few limitations for farming) to Class VIII (soils generally unsuitable for farming). Class I, II, and III soils are considered "prime agricultural soils." The largest concentrations of prime agricultural soils are Class II soils, which are located throughout the Martins-Jacoby watershed area. Class I soils tend to me more distributed along sections of the Delaware River while the majority of Class III soils are found scattered throughout the area bordering the Class II soils (Map 3.4).

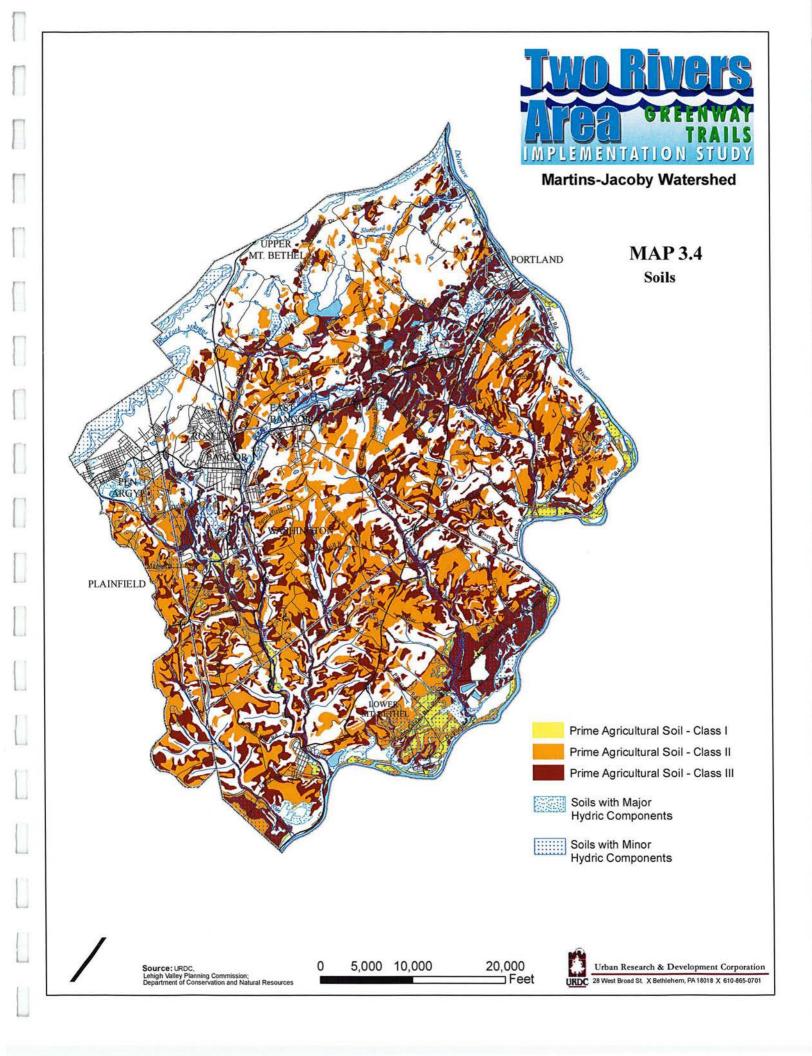
Hydric Soils

According to the U.S. Natural Resources Conservation Service, hydric soils are those soils that have formed "under the conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part." Indications of hydric soils include poor drainage, high water tables, frequent ponding and frequent flooding. The most important implication of hydric soils is that they may contain wetlands. Major hydric component soils are very likely to be wetlands, while minor components are likely to contain wetlands. Most hydric soils occur in or near stream valleys, floodplains, and other low-lying areas (Map 3.4).









Steep Slopes

Vegetation of steep slopes is crucial in controlling erosion, slowing storm water runoff, and preserving viewsheds. In many cases, steep slopes have remained wooded due to their lack of suitability for agriculture. However, some steep slopes contain homes, roads, and other developments that are not well-suited to the terrain. Some municipalities restrict building in steeply-sloped areas. Typically, steep slopes are classified into 15-25% slopes and slopes greater than 25%. The latter category is generally recommended for permanent open space. Steep slopes, due to their soil conservation and visual resource values, are often targeted for greenway



designation, especially in stream corridor areas (Map 3.5).

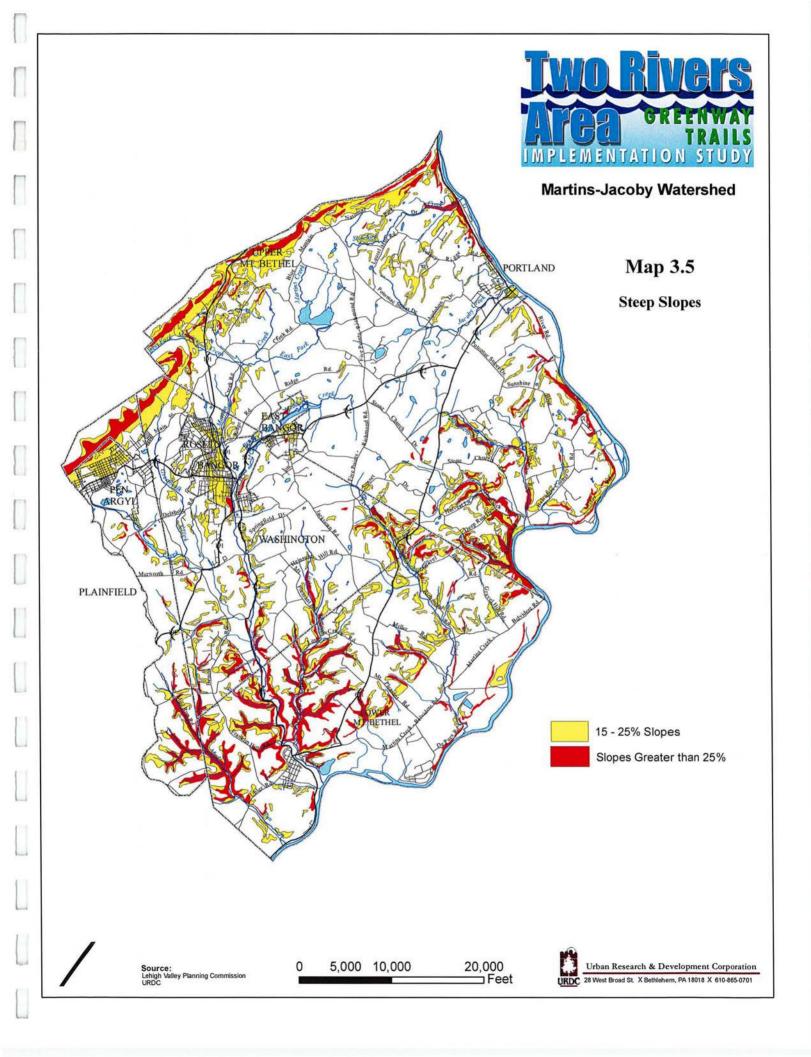
Streams

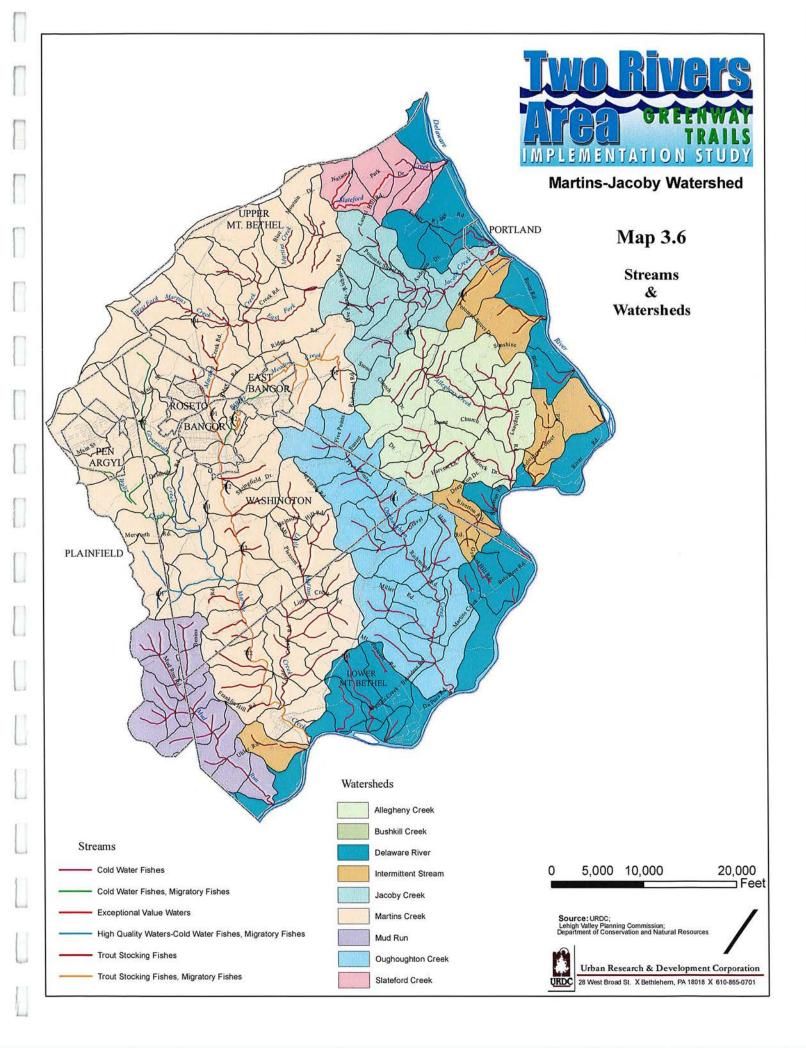
Streams are in many ways the central feature of the greenway plan. The surrounding flooodplains, hydric soils and woodlands create continuous natural corridors ideal for greenway designation. The PA Department of Environmental Protection (DEP) classify Pennsylvania's water quality standards to designate protection categories for streams and establish water quality criteria for each category that are used in regulating the discharge of effluent into streams (Map 3.6). Cold Water Fisheries are streams that should be protected as habitat for cold water fish and other fauna and flora indigenous to cold water. High Quality-Cold Water Fisheries are Cold Water Fisheries with excellent water quality and other environmental attributes. Trout Stock Fisheries are streams that qualify for trout stocking by the state. Table 3.4 shows the designated streams and their corresponding water quality designations.

Stream	Segment	Designation
Allegheny Creek	Basin	Cold Water Fishery
Brushy Meadow Creek	Basin, Source of East Bangor Dam	Trout Stock Fishery, Migratory Fishery
Brushy Meadow Creek	Main Stem, East Bangor Dam to Mouth	Cold Water Fishery, Migratory Fishery
Delaware River	Main Stem, Tocks Island to Lehigh River	Warm Water Fishery, Migratory Fishery
East Fork Martins Creek	Basin, Source to Confluence with West Fork	Cold Water Fishery
Greenwalk Creek	Basin	Cold Water Fishery, Migratory Fishery
Jacoby Creek	Basin	Cold Water Fishery
Little Martins Creek	Basin	Cold Water Fishery
Martins Creek	Main Stem, Confluence of East and West Forks to Mouth	Trout Stock Fishery, Migratory Fishery
Mud Run	Basin	Cold Water Fishery
Oughoughton Creek	Basin	Cold Water Fishery
Slateford Creek	Basin, Source to T 734 Bridge	Exceptional Value Waters
Slateford Creek	Basin, T 734 Bridge to Mouth	Cold Water Fishery
Unnamed Tributaries to Brushy Meadow Creek	Basins, East Bangor Dam to Mouth	Trout Stock Fishery, Migratory Fishery
Unnamed Tributaries to Delaware River	Basins, Brodhead Creek to Lehigh River	Cold Water Fishery
Unnamed Tributaries to Martins Creek	Basins, Confluence of East and West Forks to Mouth	Trout Stock Fishery
Waltz Creek	Basin, Source to Greenwalk Creek	Cold Water Fishery, Migratory Fishery
Waltz Creek	Basin, Greenwalk Creek to Mouth	High-Quality Cold Water Fishery, Migratory Fishery
West Fork Martins Creek	Basin, Source to Confluence with East Fork	Cold Water Fishery

Table 3.4 State Stream Water Quality Designations

Source: Commonwealth of Pennsylvania, 2008





Watersheds

A watershed is an area where all runoff is naturally directed into a particular creek or river. Watersheds are defined by topographic ridge lines, which may be prominent ridges or less notable areas of high ground. Since the activities occurring within a watershed affect the quality of the collecting stream, environmental protection measures are often performed on a watershed basis.

Each watershed in the Martins-Jacoby area flow into Delaware River watershed. This 13,539 square mile area encompasses portions of New York, Pennsylvania, New Jersey, and Delaware. Locally, drainage is organized into seven sub-watersheds and three intermittent stream areas. These include the Allegheny Creek, Bushkill Creek, Jacoby Creek, Martins Creek, Mud Run, Oughoughton Creek, and the Slateford Creek (Map 3.6). The Martins Creek is the largest within the study area.

Floodplains

Floodplains usually surround streams and rivers and vary in width, depending on the topography of the surrounding natural land. 100-year floodplains are areas that would theoretically be inundated in a storm event of such magnitude that it would only occur once in a hundred years, according to the Federal Emergency Management Agency (FEMA). Floodplains, while controlling flooding, also produce environmental benefactors. The benefits are seen as erosion control, sustaining water quality by filtration and shading of streams and habitats for many flora and fauna. Floodplains are often included in greenways.

100-year floodplains are found all along the Delaware River, Martins Creek, Waltz Creek, Oughoughton Creek, Allegheny Creek, Jacoby Creek, and Slateford Creek (Map 3.7).

Wetlands

Wetlands are areas that have vegetation and soils characteristics of a permanently or a frequently saturated environment. Marshes, swamps, bogs, high water table soils, and vernal pools are all examples of wetlands. Wetlands are important groundwater recharge areas that support wildlife, fish and other aquatic life. Wetlands also reduce flooding by detaining stormwater discharge and thereby help filter impurities that contribute to surface water and groundwater pollution.

Map 3.7 shows wetland areas identified in the National Wetland Inventory (NWI) performed by the U.S. Fish and Wildlife Service. These areas are identified based on reflectivity from aerial remote sensing images. As a result, only the most prominent wetlands are shown. Hydric soil types can also indicate the approximate locations of areas that may include wetlands. There are many other wetlands which would need to be identified by a qualified professional at the time any individual tract is considered for preservation or development.

Large concentrations of wetlands are located in Upper Mount Bethel Township, near the headwaters of the Brushy Meadow Creek, Allegheny Creek, Jacoby Creek, Slateford Creek and Martins Creek. Other wetland areas can be found within floodplains of other streams.

Two Rivers Area Greenway Trails Implementation Study

Woodlands

Woodlands are a significant natural resource, acting as erosion control, natural stormwater control and creating vast areas of natural habitats. The root systems of trees and other woodland vegetation stabilize the soil and absorb and reduce surface runoff. With these natural controls in place, the nearby streams and rivers benefit immensely from the enhancement of the water quality.

Blue Mountain serves as a linear band of habitat stretching 200 miles from the Delaware Water Gap to the Potomac River in Western Maryland. Within the Martins-Jacoby area, woodlands are abundant along Blue Mountains slopes and base. Woodlands are also found along the banks of streams within the area (Map 3.8).

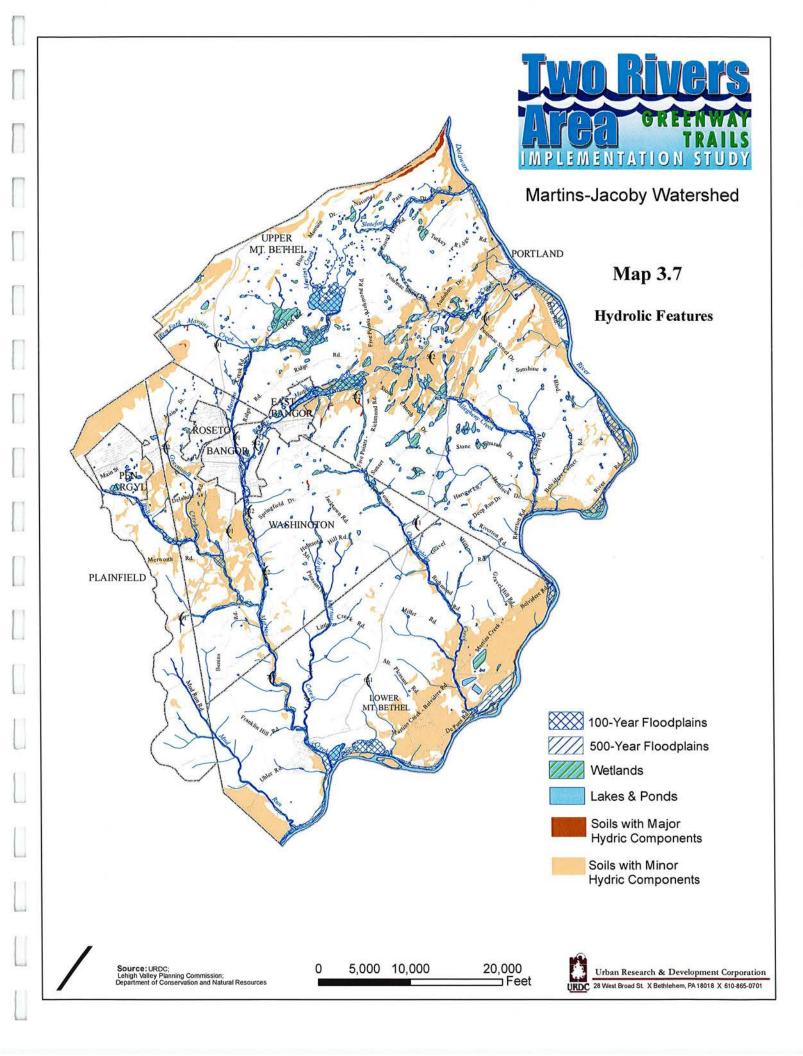
Outstanding Natural Areas

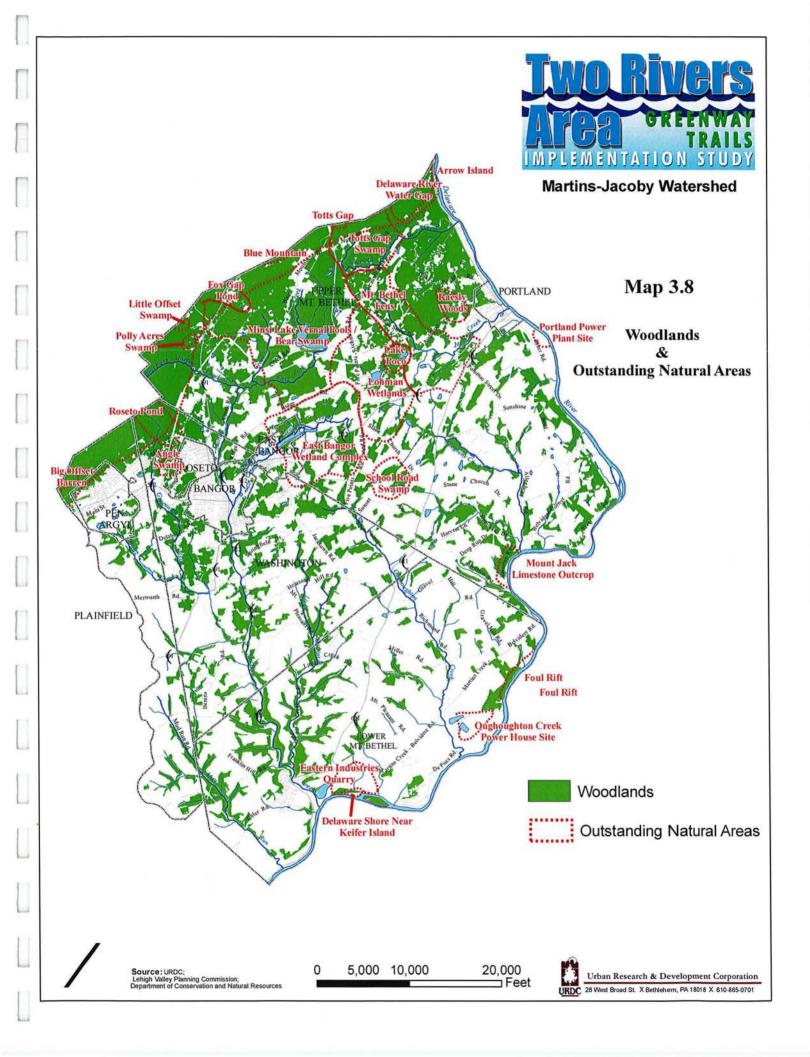
Critical plant and animal habitat areas and outstanding geologic features in the Martins-Jacoby area also help define the area. The following natural areas (Map 3.8) were identified in the Natural Areas Inventory report (April 1999) prepared by the Lehigh Valley Planning Commission (Table 3.5). The Natural Areas Inventory (NAI) was conducted by the Pennsylvania Science Office (PSO) and the Nature Conservancy to identify critical areas of plant and animal habitat and unique natural features. Natural areas are grouped into the two categories by the PSO; *Statewide Importance* these sites contain exemplary natural



communities and documented habitats for species of special concern. Those state-significant sites that are most critical to biodiversity in the future have been labeled "*top priority*". *Local Significance* - sites that are unique areas chose because of size, diversity of wildlife and plant life, water quality protection, and recreational potential. There are currently no outstanding natural areas in the Martins-Jacoby area on the local significance level, all are of statewide importance or have been labeled "top priority".

In addition, the NAI lists the Delaware River and Blue Mountain as exceptional natural features, larger scale systems that are important in the movement and diversity of living things. Both features are major, continuous corridors of natural habitat, among the most important ones in Eastern Pennsylvania.





Natural Area	Location	Priority	
Angle Swamp	Washington Township; Roseto Borough	Statewide	
Arrow Island	w Island Upper Mount Bethel Township		
Big Offset Barren	Offset Barren Plainfield Township		
Delaware River Water Gap	Upper Mount Bethel Township	Top priority	
Delaware Shore Near Keifer Island	Lower Mount Bethel Township	Statewide	
East Bangor Wetland Complex	East Bangor Borough; Washington Township; Upper Mount Bethel Township	Statewide	
Eastern Industries Quarry	Lower Mount Bethel Township	Statewide	
Foul Rift	Lower Mount Bethel Township	Statewide	
Fox Gap Pond	Upper Mount Bethel Township	Statewide	
Lake Poco	Upper Mount Bethel Township	Statewide	
Lohman Wetlands	Upper Mount Bethel Township	Statewide	
Little Offset Swamp	Lower Mount Bethel Township	Statewide	
Minsi Lake Vernal Pools / Bear Swamp	Lower Mount Bethel Township	Top priority	
Mount Jack Limestone Outcrop	Upper Mount Bethel Township	Top priority	
Mt. Bethel Fens	Upper Mount Bethel Township	Top priority	
Oughoughton Creek Power House Site	Lower Mount Bethel Township	Statewide	
Polly Acres Swamp	Upper Mount Bethel Township	Statewide	
Portland Power Plant Site	Upper Mount Bethel Township	Statewide	
Raesly Woods	Upper Mount Bethel Township	Statewide	
Roseto Pond	Washington Township	Statewide	
School Road Swamp	Upper Mount Bethel Township	Statewide	
Totts Gap	Upper Mount Bethel Township	Statewide	
Totts Gap Swamp	Upper Mount Bethel Township	Statewide	

Table 3.5 Outstanding Natural Areas

Significant Recreation, Historic, and Cultural Resources

One of the most important functions of a greenway is to provide linkages between sites with recreational, historic, or cultural value. This is especially true in recreation-based greenways, where trails can provide alternative transportation options between locations, or "nodes." Existing greenway nodes are described in the following section and displayed on Map 2.10. These include recreation and open space sites, trails, schools, municipal government properties, cemeteries, preserved farms, and historic resources of national, state and local significance.

Recreation and Open Space Sites

An inventory of land holdings in the Martins-Jacoby area reveals 54 parcels or groups of parcels that can be classified as parks, recreation facilities, or open space (Table 3.6). Of these sites, 54 are publicly-owned, either by a municipality, Northampton County, the Commonwealth of Pennsylvania, or the federal government. The remaining sites are owned privately, by conservancies, sportsman clubs, and other entities. While some privately-owned recreation sites require membership or school enrollment for use, many others are open to the public, such as nature preserves and various ball fields.

In Table 3.6, recreation sites are divided into six different classes, modeled after National Recreation and Park Association classifications. These include neighborhood parks (such as tot lots and small community parks), regional parks (such as Delaware Water Gap National Recreational Area), special use parks (such as hunting clubs, golf courses, and horse riding areas), linear parks (including the area's rail trails and Delaware River trail), and conservancies (public and private open space holdings and nature preserves). Park types are further described in the "type" column. Park ownership is listed as either federal, state, county, municipal or other. "Access" indicates whether the site is open to the public, regardless of whether the site is publicly or privately owned. Site area, in acres, is listed in the last column. Acreage figures are derived from GIS calculation. The Martins-Jacoby area is calculated to contain 3,779.3 acres, or 8.6 square miles, of recreation land. This is approximately 6% of total land area of the Martins-Jacoby area.

Map 3.9 shows existing recreation sites in the Martins-Jacoby area, classified by ownership, and labeled with numbers corresponding to listings in Table 3.6.

Та	ble 3.6
Recreation and	Open Space Sites

#	Site Name	Municipality	Class	Туре	Owner	Access	Acreage
1	Appalachian Trail Lands	Upper Mnt. Bethel Twp.	Conservancy	National Natural Area	Federal	Public	148.3
2	Apple Blossom Village	Upper Mnt. Bethel Twp.	Special Use	Minature Golf or Driving Range	Other	Public	33
3	Ballfield (at Echo Lake)	Upper Mnt. Bethel Twp.	Neighborhood	Ballfied	Other	Private	4.5
4	Ballfield	Bangor Borough	Neighborhood	Ballfied	Other	Public	3.9
5	Bear Swamp Archery Complex	Upper Mnt. Bethel Twp.	Regional	Regional Park	Northampton County	Public	261.8
6	Blane Reimel Memorial Park	East Bangor Borough	Neighborhood	Park / Playground	Municipality	Public	25
7	Blue Mountain Rod & Gun Club	Washington Township	Special Use	Sportsmen Club	Other	Private	9.3
8	Blue Valley Farm Show	Washington Township	Special Use	Miscellaneous	Other	Private	9.7
9	Blue Valley Riding Center	Plainfield Township	Special Use	Riding Stables	Other	Public	15.35
10	Camp Charles	Upper Mnt. Bethel Twp.	Special Use	Campground	Other	Public	10.6
11	Columcille Megalithic Park	Upper Mnt. Bethel Twp.	Special Use	Regional Park	Other	Public	17.62
12	Delaware Water Gap National Recreation Area	Upper Mnt. Bethel Twp.	Regional	National Park	Federal	Public	1221
13	Driftstone On The Delaware Campground	Upper Mnt. Bethel Twp.	Special Use	Campground	Other	Public	98.4
14	East Bangor Dam	Upper Mnt. Bethel Twp.	Special Use	Fishing - Public	State	Public	120.5
15	East Bangor Sportsment's Association	Upper Mnt. Bethel Twp.	Special Use	Sportsmen Club	Other	Private	59.09
16	Flory's Dam Park	Bangor Borough	Conservancy	Open Space	Municipality	Public	36.8
17	Future Township Park	Lower Mnt. Bethel Twp.	Conservancy	Open Space	Municipality	Public	0
18	Greater Minsi Lake Corridor	Upper Mnt. Bethel Twp.	Conservancy	County Natural Area	Northampton County	Public	249.5
19	Green and White Little League	Pen Argyl Borough	Neighborhood	Ballfied	Other	Public	9.5
20	Green-Walk Trout Hatchery	Washington Township	Special Use	Miscellaneous	Other	Public	64
21	Hickory Lake Campground	Upper Mnt. Bethel Twp.	Special Use	Campground	Other	Public	55.1
22	Hillside Rod and Gun Club	Plainfield Township	Special Use	Sportsmen Club	Other	Private	25.5
23	Jacktown Grove	Washington Township	Special Use	Miscellaneous	Other	Public	4.8
24	Lower Mount Bethel Township Municipal Center	Lower Mnt. Bethel Twp.	Neighborhood	Mini-Park	Municipality	Public	3.9
25	Lower Mount Bethel Township Recreation Complex	Lower Mnt. Bethel Twp.	Neighborhood	Open Space	Municipality	Public	25
26	Martins Creek Ballfield	Lower Mnt. Bethel Twp.	Neighborhood	Ballfied	Other	Public	4
27	Meixsell Tract	Plainfield Township	Conservancy	Open Space	Municipality	Public	29.89
28	Memorial Park	Bangor Borough	Neighborhood	Community Park	Municipality	Public	33.8

Feasibility Study

#	Site Name	Municipality	Class	Туре	Owner	Access	Acreage
29	Minsi Lake	Upper Mnt. Bethel Twp.	Regional	Fishing - Public	State	Public	311.3
30	Minsi Lake Vernal Pools	Upper Mnt. Bethel Twp.	Conservancy	Land Preserve	Other	Private	101.83
31	Mount Bethel Fens	Upper Mnt. Bethel Twp.	Conservancy	Land Preserve	Other	Public	41.1
32	Mount Jack	Upper Mnt. Bethel Twp.	Conservancy	County Natural Area	Northampton County	Public	68
33	Mud Run	Lower Mnt. Bethel Twp.	Conservancy	Open Space	Northampton County	Public	11.9
34	Northampton County Land Adjacent to Minsi Lake	Upper Mnt. Bethel Twp.	Conservancy	County Natural Area	Lehigh County	Public	9.46
35	PPL Martins Creek Environmental Preserve	Lower Mnt. Bethel Twp.	Conservancy	Open Space	Other	Public	197.7
36	PPL Martins Creek Public Boat Access Area	Lower Mnt. Bethel Twp.	Special Use	Fishing - Public	Other	Public	5
37	Pennico Park	Bangor Borough	Neighborhood	Mini-Park	Municipality	Public	2.7
38	Plainfield Township Farmer's Grove	Plainfield Township	Special Use	Miscellaneous	Municipality	Public	10.4
39	Pocket Park	Bangor Borough	Special Use	Open Space	Municipality	Public	0.1
40	Pocono-Slate Belt Shooting Association	Upper Mnt. Bethel Twp.	Special Use	Sportsmen Club	Other	Private	138.1
41	Portland Recreation Area	Portland Borough	Neighborhood	Park / Playground	Municipality	Public	6.4
42	Portland Waterfront Park	Portland Borough	Conservancy	County Natural Area	Northampton County	Public	23
43	Richmond Lions Ballfield	Washington Township	Neighborhood	Ballfied	Other	Public	5.4
44	Roseto Borough Park	Roseto Borough	Neighborhood	Park / Playground	Municipality	Public	6.8
45	Sandt's Eddy Boat Access	Lower Mnt. Bethel Twp.	Special Use	Fishing - Public	State	Public	3
46	Shady Acres Campground	Upper Mnt. Bethel Twp.	Special Use	Campground	Other	Public	25.6
47	Slate Belt Little League Ballfields	Upper Mnt. Bethel Twp.	Neighborhood	Ballfied	Other	Public	11.4
48	The Bryan Kiefer Memorial Park	Lower Mnt. Bethel Twp.	Neighborhood	Ballfied	Municipality	Public	2.8
49	Tuscarora Inn Lutheran Brothem Conference Center	Upper Mnt. Bethel Twp.	Special Use	Church Camp	Other	Private	41.4
50	Upper Mount Bethel Community Park	Upper Mnt. Bethel Twp.	Conservancy	Open Space	Municipality	Public	90
51	Upper Mount Bethel Trail	Upper Mnt. Bethel Twp.	Linear	Recreation Trails	Municipality	Public	15.7
52	VFW Picnic Area	Washington Township	Special Use	Picnic Grove	Other	Public	16.31
53	Washington Township Recreational Complex	Washington Township	Neighborhood	Open Space	Municipality	Public	36
54	Weonna Park	Pen Argyl Borough	Neighborhood	Community Park	Municipality	Public	18

Martins Creek Environmental Preserve

Martins Creek Environmental Preserve consists of 215 acres of woodland and fields along the shores of the middle Delaware River. The preserve has five miles of hiking trail, including scenic views of the river. The environmental preserve is managed as a natural and recreational resource and provided to the community by PPL's Martin Creek and Lower Mount Bethel power plants. It is situated off Depues Ferry/Foul Rift Road in Lower Mount Bethel Township.



Public and Private Schools

Table 3.7 lists public and private schools, shown in purple on Map 3.9. Schools are important greenway nodes as they typically contain expanses of recreation land, and occasionally include small patches of undeveloped land in a natural or semi-natural state.

Table 3.7 Public and Private Schools

#	Property	Acreage
200	Bangor Senior/Junior/ Five Points/ Domenick DeFranco Schools	100.00
201	Faith Christian School	0.50
202	Immaculate Conception School	0.50
203	Our Lady of Mount Carmel School	3.20
204	Pen Argyl Middle-Senior High School	33.10
205	Pius X High School	2.60
206	Washington Elementary School (Washington Township)	6.00
	TOTAL ACREAGE	145.90

Government Buildings

Government buildings are located in each of the represented municipalities within the Martins-Jacoby watershed, with the exception of Plainfield Township (Map 3.9). As with schools, the property that government buildings reside on allow for adjacent recreational opportunities (Table 3.8).

#	Property	Acreage
300	Bangor Borough	0.98
301	East Bangor Borough	1.50
302	Lower Mount Bethel Township	4.09
303	Pen Argyl Borough	0.46
304	Portland Borough	1.86
305	Roseto Borough	0.09
306	Upper Mount Bethel Township	3.38
307	Washington Township	2.62
	TOTAL ACREAGE	14.98

Table 3.8Major Government Buildings

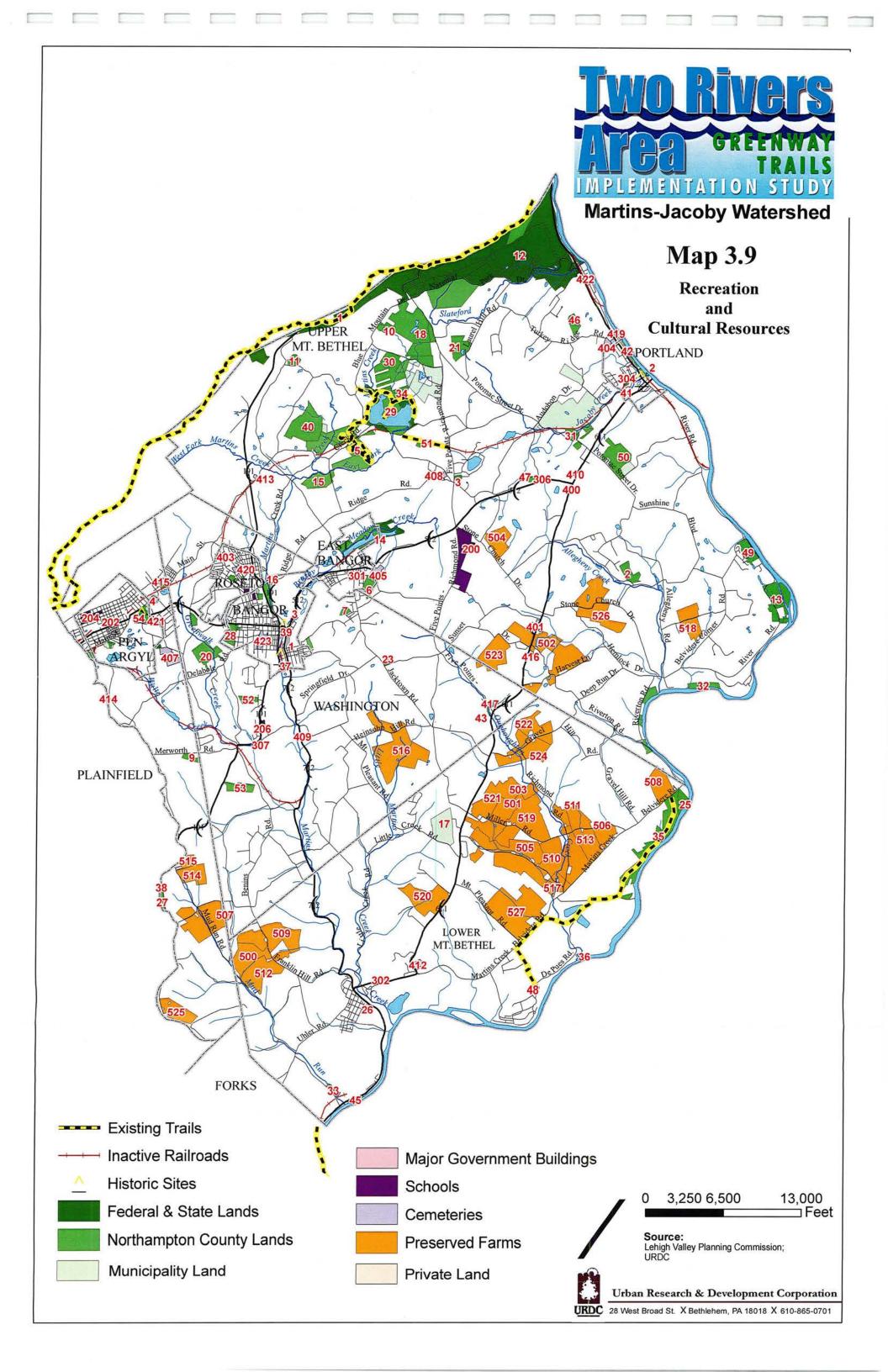
Cemeteries

Cemeteries are not intended for frequent public visitation but most are open to the public and naturally serve as patches of greenspace, exempt from development. In other areas where cemetery access is not permitted, they serve as green backdrops that preserve local viewsheds. Cemeteries within the Martins-Jacoby watershed vary is size (Table 3.9) from small patches in urban areas to large open areas in rural areas (Map 3.9)

#	Property	Acreage
400	Athens Cemetery	0.08
401	Christ Evangelical Lutheran Church	6.80
402	Church Hill Cemetery Incorporation	2.02
403	Diocese of Allentown Cemetery	8.41
404	Dougherty Dennis Cardinal	7.91
405	East Bangor Cemetery Association	9.25
406	Evangelical Cemetery	0.50
407	Grace United Methodist Church	30.42
408	Johnsonville Cemetery Association Inc.	3.14
409	Lutheran & Reformed Church	2.55
410	Mount Bethel Cemetery Association	2.03
411	Mount Carmel Catholic Church	1.02
412	Mount Zion Evangelical Lutheran	10.93
413	North Bangor Cemetery Inc.	1.86

Table 3.9 Cemeteries

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#	Property	Acreage
414	Pen Argyl Evergreen Cemetery	5.48
415	Plainfield Township Churches Saint Rocco	0.87
416	Reformed Cemetery Association	3.26
417	Richmond Methodist Cemetery Association Inc.	2.64
418	Richmond Methodist Episcopal Church	0.25
419	Riverview Cemetery	5.83
420	Roseto Presbyterian Church	3.29
421	Saint Elizabeth Cemetery	1.70
422	Slateford Union	0.15
423	St. Johns Cemetery of Bangor	20.31
424	St. Paul's Cemetery Association	1.76
425	Union Cemetery (Upper Mount Bethel Township	5.19
	TOTAL ACREAGE	137.65

Preserved Farms

Greenway systems are not composed solely of public land. A strong greenway system incorporates private land through easements. Easements can be used to provide access for trail development to allow the public to enjoy the beauty and natural resources of an area. Easements are also often used to help preserve agricultural land from development. The easement is held by a governmental or nonprofit entity, such as a land trust or conservancy.

A total of 4,036.60 acres have been preserved through agricultural easements throughout the Martins-Jacoby watershed (Map 3.9). Lower Mount Bethel Township alone has over 2,500 acres of farmland preserved. The largest tract, the Ott (Budd & Thelma) Farm in Upper Mount Bethel Township preserves 359.95 farmland acres (Table 3.10).

#	Property	Acreage
500	Brewer (Floyd & Doris) Farm	122.52
501	Bush (William) Farm	132.52
502	Cole (Charles) Farm	112.81
503	DalMaso (Donald & June) Farm	23.15
504	Deen (Todd & Linda) Farm	71.05
505	Fox (Elwood & Pauline) Farm	310.00
506	Gulick (James & Pat) Farm	94.66
507	Hahn (Ralph W.) Farm	183.36
508	Horne (Linda, Chew B. & Miller R.) Farm	90.96
509	Kachline (Karl & Rosella) Farm	177.76
510	Keifer (Arling & Francis) Farm	256.75
511	Keifer (Joseph & Cheryl) Farm	29.22
512	Kluska (Frank) Farm	118.50
513	Koeher (Paul & Ruth) Farm	147.64
514	Kroboth (Robert & Melanie) Farm	64.06
515	Kroboth (Robert & Melanie) Farm	33.84

Table 3.10 Preserved Farms

#	Property	Acreage
516	Lauer (Lorraine) Farm	309.23
517	Mehas (Steven & Marilyn) Farm	54.31
518	Miller (Albert & Richard) Farm	88.04
519	Miller (Frank & Arlene) Farm	223.14
		129.14
521	Miller (William) Farm	151.34
522	Ott (Barry & Louise) Farm	130.97
523	Ott (Budd & Thelma) Farm	359.95
524	Ott (Floyd A., Jr.) Farm	88.33
525	Rothrock (Larry & Linda) Farm	75.42
526	Smith (Paul & Agnes) Farm	170.20
527	Yetter (Merlin & Nancy) Farm	287.73
	TOTAL ACREAGE	4,036.60

Historic Resources

The Martins-Jacoby area contains a collection of structures dating from the past. Some of these houses, buildings, mills, bridges and other structures remain while others may be in ruin or completely gone. While some sites are protected at the government level, many others are recognized only as items in historic inventories. Historic resources are described below and shown on Map 3.10.

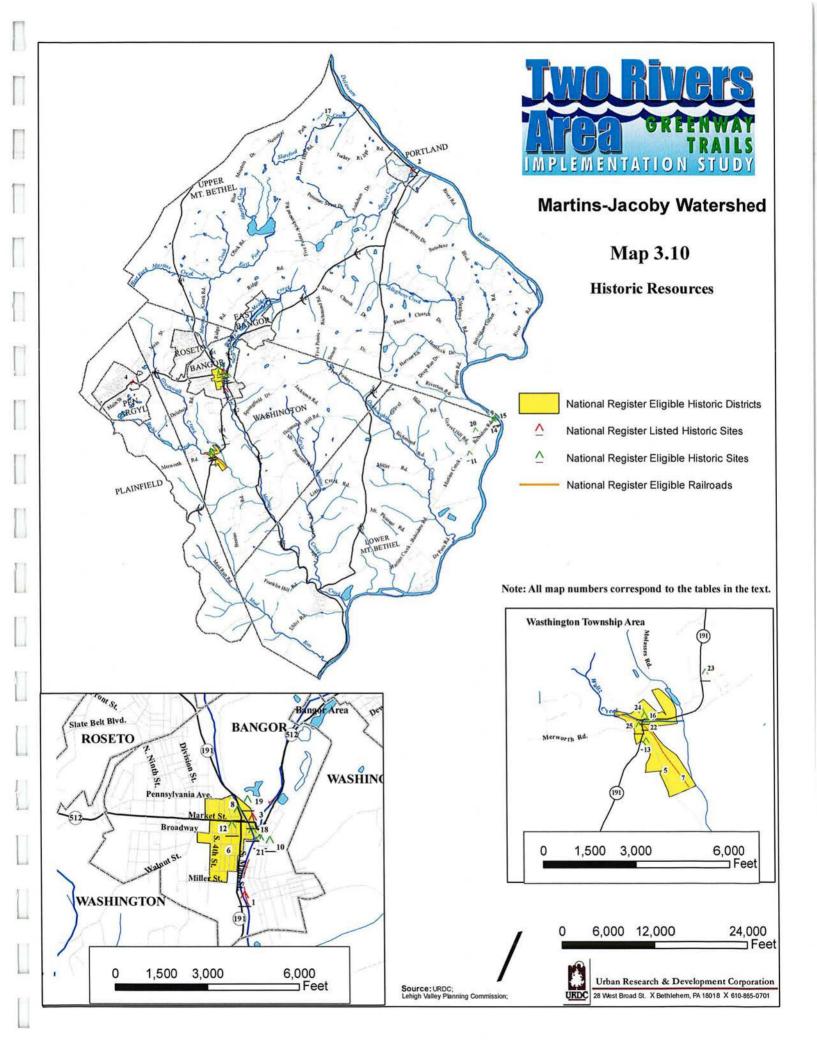
National Register of Historic Places

The National Register of Historic Places (NRHP) is an inventory of buildings, sites, structures, objects and districts that are significant to American history. The NRHP coordinates public and private efforts to identify and protect these sites. Properties are either "listed," that is, officially included in the NRHP or are "eligible," in which the application process is underway.

In the Martins-Jacoby area, the majority of sites are located in and/or around the Bangor and Ackerman Historic Districts. Many of the sites are buildings, but also include a carousel, elementary schools and property (Table 3.11 & 3.12).

	National Register Listed Historic Sites			
#	Property	Municipality		
1	Bridge in Bangor Borough	Bangor Borough		
2	County Bridge #36	Portland Borough		
3	Real Estate Building	Bangor Borough		
4	Weona Park Carousel	Pen Argyl Borough		

Table 3.11 National Register Listed Historic Sites



#	Property	Municipality
5	Ackermanville Historic District	Washington Township
6	Bangor & Portland Railroad	Washington Township
7	Bangor Historic District	Bangor Borough
8	Bangor Municipal Building	Bangor Borough
9	Beck Property	Lower Mount Bethel Twp.
10	Building	Bangor Borough
11	Butz Property	Lower Mount Bethel Twp.
12	Colonial Hotel	Bangor Borough
13	Eagle Hotel	Washington Township
14	Fries Property	Lower Mount Bethel Twp.
15	Garrison Property	Lower Mount Bethel Twp.
16	Hiiliard Property	Washington Township
17	Laurel Hill School	Upper Mount Bethel Twp.
18	Market St,; West of PA 191, Bridge	Bangor Borough
19	Merchants National Bank	Bangor Borough
20	Shumaker Property	Lower Mount Bethel Twp.
21	South Main Street, Bridge	Bangor Borough
22	Summit, Truman & Edythe, Property	Washington Township
23	Washington Elementary School	Washington Township
24	Wasser Property	Washington Township
25	Wetzel Property	Washington Township

Table 3.12 National Register Listed Historic Sites

Delaware River Valley Byway

The Delaware River Valley Byway, a designated Pennsylvania Byway, comprises three roads in Lower Mount Bethel Township: Route 611, Little Creek Road and Martins Creek Belvidere Road (see Map 3.11). The Byway passes by preserved farms, historic landmarks, countryside views and some of the oldest villages in the region.

PennDOT designates Pennsylvania Byways at the request of the local communities seeking to highlight cultural, historical, recreational, archaeological, scenic and natural qualities. Pennsylvania Byways parallel Federal Highway Administration's National Scenic Byways Program and titles its byways program as "Pennsylvania Byways" because many roadways exemplify more than purely scenic qualities. Some benefits of becoming a byway include:

- Support local planning efforts to achieve byway designations;
- Protect and enhance the visual quality of designated routes;
- · Maintain byway resource qualities along designated routes;
- · Educate residents and visitors about the history and culture of the Commonwealth; and
- Promote tourism and enhance economic development potential on designated Pennsylvania Byways.

More information about Pennsylvania Byways and the application process for designation is available at the following website: <u>www.dot.pa.us</u>.

Delaware River Scenic Drive

The segment of Route 611 in the Martins-Jacoby area is part of the Delaware River Scenic Drive that begins in Morrisville, PA and extends to Delaware Water Gap at the south end of the Delaware Water Gap National Recreation Area.

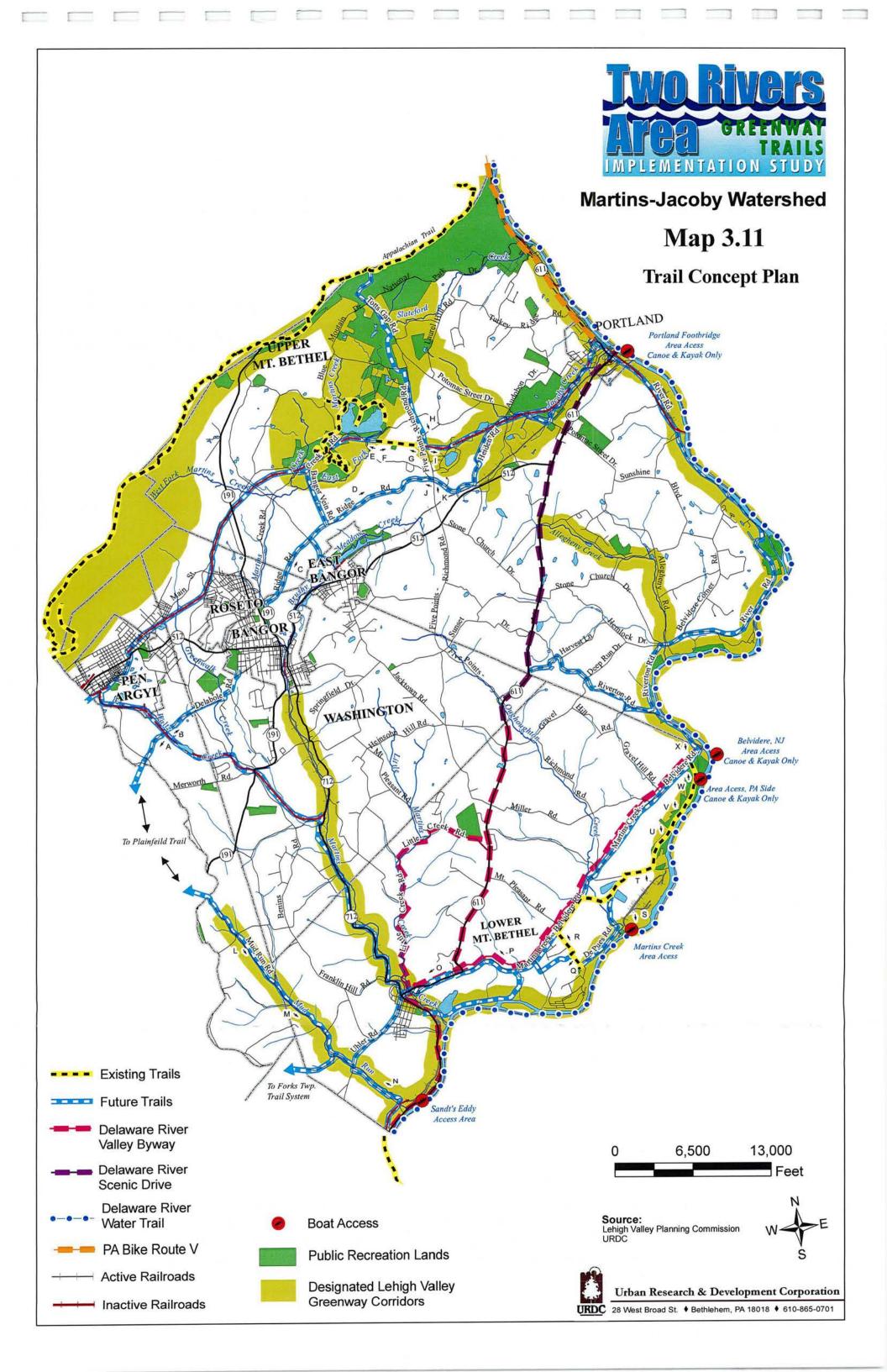
Pennsylvania Bike Route V

Bike Route V is a designated Pennsylvania Department of Transportation bike route. A segment of this bike route is along PA Route 611, within and north of Portland Borough (see Map in Appendix F). The route provides access over the Delaware River via the pedestrian / bike bridge at Portland. Bike Route V also provides a direct connection into the Delaware Water Gap National Recreation Area. Bike Route V offers the most direct route across Pennsylvania. More information about Bike Route V and other Pennsylvania Bike Routes (Bicycle PA routes) can be found on the PennDOT internet site at: <u>www.dot.state.pa.us</u> under the Bicycle Safety Menu.

Profile of Potential Users and Demand

As mentioned in the Gap Analysis portion of this report, trail users are a very diverse group. The most common trail users include: bikers, hikers, anglers, leisure walkers, community residents, and nature watchers. Other users include: children going to school, animals, runners, hunters, horseback riders, skateboarders, motorized vehicles, and a various other users. The Delaware River Water Trail also offers unique opportunities for boating activities such as canoeing, kayating, and rafting, and for fishing. Future trail use will continue to be diverse with potential increases anticipated in certain users such as horseback riders, tourists, fitness walkers, and local and regional residents. And, with additional enhancements and promotion of the Delaware River Water Trail, more boating activity can be expected.

There are several indicators which suggest the demand for trails in the Martins-Jacoby Watershed will increase in the future. Significant population growth, the increased use and growing appreciation of greenways documented in PA DCNR's draft *Blueprint for Action*, survey data from the *Pennsylvania Outdoor Recreation Plan 2004-2008*, and the input received from the Steering Committee, the public and others during this study, all indicate that the demand for trails undoubtedly increase in the future.



Lehigh Valley Greenway Plan

The Lehigh Valley Greenways Plan: A Regional Greenways Plan for Lehigh and Northampton Counties¹ was adopted in 2007. The plan, prepared by the Lehigh Valley Planning Commission, incorporates the statewide vision for Pennsylvania's greenways into a regionally specific and valuable network of corridors, hubs and nodes. It was reviewed and used during the preparation of this study. The plan identifies the following greenways within the Martins-Jacoby Watershed:

- *Blue Mountain/Kittatinny Ridge* (Priority, Multi-Use, Scenic Greenway) The Pennsylvania Department of Conservation and Natural Resources (DCNR) has identified the Kittatinny Ridge and the Appalachian National Scenic Trail (AT) as one of the 34 major greenways in Pennsylvania. It is recogized as one of the major East Coast flyways for migrating raptors.
- **Delaware River** (Priority, Multi-Use Greenway) This greenway extends the length of Northampton County, from the Delaware Water Gap National Recreation Area in Park in the north to the Mariton Wildlife Sanctuary in the south. The Pennsylvania Department of Conservation and Natural Resources (DCNR) has identified the Delaware River as one of the 34 major greenways in Pennsylvania. In 2000, the Lower Delaware Rivers was designated a National Wild and Scenic River.
- *Greater Minsi Lake Corridor* (Priority, Multi-Use Greenway) This greeway corridor is situated entirely in Upper Mt. Bethel Township and extends from the base of the Blue Mountain southwest to Fox Gap Road. It includes many natural areas, including Bear Swamp and the Mini Lake Vernal Pools. Northampton County has focused acquisition efforts over the years on the corridor between Minis Lake and the Delaware Water Gap National recreation Area (over 500 acres). The Nature Conservancy (TNC) has also acquired land and easements in this area.
- *Jacoby Creek* (Conservation Greenway) This greenway, located entirely within Upper Mt. Bethel Township, begins near the Hickory Creek Campground northeast of Minsi Lake and enters the Delaware River at Portland. It contains the Mt. Bethel Fens a complex 10 rare wetland communities.
- *Martins Creek* (Conservation Greenway) This greenway extends from the Delaware Rivers, through Washington Township, to the Village of Flicksville. Much of the landscape adjacent to the creek is woodland flanked by farmland.
- *Mud Run* (Conservation Greenway) This greenway extends from the Delaware River at the Village of Sandt's Eddy in Lower Mt. Bethel to just south of Route 191 in Plainfield Township. Much of the stream valley is wooded, and the adjacent landscape is is almost entirely in agricultural production.

¹Lehigh Valley Planning Commission. Lehigh Valley Greenways Plan: A Regional Greenways Plan for Lehigh and Northampton Counties. 2007.

Feasibility Study

TRAIL CONCEPT PLAN

Alternative Trail Routes

Various existing and potential "future" trails are shown on the Trail Concept Plan Map (Map 3.11). All together they represent over 104 miles of trails:

- 47.3 miles of existing trails
- 56.9 miles of potential future trails (43.8 mile along roads and 13.1 miles on inactive railroads).

These trails provide alternative connections for a regional trail system. The overall objective of the Concept Plan is to provide a loop trail system that links the Blue Mountain with the Delaware River Corridor, connects the Two Rivers Area with the Martins-Jacoby Area, and ties other locations such as the Boroughs, Minsi Lake and others areas together. In order to accomplish these objectives, the proposed trail systems uses existing trails and roads, ultimately recommends pursuing the use of abandoned railroads as opportunities arises.

Existing components of the trail system include approximately 47.3 miles of trails:

- 11.1 miles of the Appalachian Trail;
- 3.2 miles of PennDOT's Bike Route V;
- 23 miles of the Delaware River Water Trail;
- 2.5 miles of trails at the PPL's Martins Creek Environmental Preserve;
- 2.8 miles of Lower Mount Bethel Tails; and
- 4.7 miles of Minsi Lake Trails.

New potential trails, consisting of approximately 43.8 miles, could utilize several rural, low-volume roads such as:

- Totts Gap Road (2 miles);
- Five Points Richmond Road (1.3 miles);
- Ridge Road (4.3 miles);
- Heiden Road (1.3 miles);
- Jacoby Creek Road (2.1 miles);
- Bangor Vein Road (0.8 miles);
- River Road (8.3 miles);
- Riverton Road (3.4 miles);
- Uhler Road (1.4 miles);





- Martins Creek Belvidere Road (6.6 miles);
- De Pues Road (1.3 miles);
- Mud Run Road (4.6 miles);
- Richard Garr Road (0.5 miles);
- Delabole Road (2.3 miles); and
- Route 712 (3.6 miles)

These roads could be designated and marked as trails within the road right-of-way such as was recently done in the City of Bethlehem using Share-the-Road signs and markings on the street). Segments of Little Creek Road, Route 611 and Route 712 could also be used to complete smaller loops and make connections within the trail system.

When existing roads are being reconstructed or repaved, municipalities and PennDOT should consider ways of making them bike friendly through the widening of shoulders, signage, pavement markings and other enhancements. Where possible, it would be desirable to develop off-road trails along the roads such as the trails recently constructed as part of the Lower Mount Bethel Township trail system.





Future acquisitions of abandoned railroad (or portions of) could also be used to develop trails similar those in Palmer and Plainfield Townships, and Tatamy Borough. Approximately 13 miles of inactive railroad corridors could have potential as future trails. A former railroad corridor extends from Bangor Borough to Portland Borough, north of Ridge Road. Upper Mount Bethel Township has already acquired a few short portions of this former railroad. Additional sections should be acquired as opportunities arise in order to provide additional off-road trail opportunities. Where ownership issues arise, roads can be used to "fill in" gaps. Another abandoned railroad exists between the Villages of Factoryville and Delabole. It crosses Delabole Road which in turn could provide a direct link to the Plainfield trail a short distance to the west.

Another key part of the overall Concept Plan is to make connections into Boroughs and villages. The historic features and built-up character in these areas provide contrast to rural environment. And, trail users make expenditures and local provide economic opportunities for local retails businesses and services. The Boroughs and Townships should identify those streets and roads that would best serve as key spokes of the overall regional trail system. It is noteworthy that Forks Township has already prepared a Trail Plan, and is using provisions in its municipal ordinances to help build its trails. Other municipalities should prepare Trail Plans and incorporate them into their local parks, recreation, open space and greenway plans.

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Preferred Trails

URDC and the Steering Committee believe is important to pursue all the "future trails" identified on the Concept Plan map. In the short range, the existing trails and roads identified on the Concept Plan Map can serve to provide basic connections from the Martins-Jacoby Area to the Two Rivers Area. Roads identified on the Concept Plan can be designated as bike routes with "Share- the-Road" signs and pavement markings. The railroads shown on the Concept Plan also have trail potential (in the longer range), if they become available and can be acquired. As the Martins-Jacoby Trail Development Strategy is implemented (see Table 4.2 in the Implementation Strategy section), additional trails will built resulting in a more complete network of trails.

Feasibility and Costs

URDC and the Steering Committee believe that implementation of the Concept Plan is feasible. The basic, initial framework consists of existing trails and roads. Costs for the existing trail segments including the Appalachian Trail, the Minsi Lake Trails, Tekening Hiking Trails, the existing Lower Mount Bethel Township Trails, Bike Route V and the other existing trail segments relate mostly to continued maintenance costs.

Costs for road signs and markings along segments including Totts Gap Road, Ridge Road, Heiden Road, Jacoby Creek Road, Bangor Vein Road, River Road, Riverton Road, Uhler Road, Martins Creek Belvidere Road, De Pues Road, Mud Run Road, Richard Garr Road, Delabole Road and other roads segments will cost \$1,600 per mile, assuming \$200 for each sign and each pavement marking (4 signs and 4 pavement markings per mile).

Land acquisition cost are best determined by appraisal when specific situations and locations are known. General cost guidelines are provided in the Implementation Strategy section of this report for land acquisition and other trail development items.

Areas of Emphasis

Lower Mount Bethel Township (LMBT) should place emphasis on exploring the key 4-mile trail route between the existing trail at Del Haven Road and Martins Creek to connect the entire Township with a trail. LMBT should work with DCNR and the PA Fish and Boat Commission (FBC) to build a boat launch on FBC property at Riverton. Riverton could serve as a trailhead for both land and water trails. Potential opportunities for water trail and land trail access (trailheads) should also be explored in Upper Mount Bethel Township. All the municipalities in the Martins-Jacoby Watershed should meet to review the Concept Plan and discuss implementation. Municipalities are also encouraged to prepare Official Maps and update Subdivision and Land Development Ordinances (SALDO) to address trails.

IMPLEMENTATION STRATEGY

DEVELOPMENT STRATEGY

Two Rivers Area Gaps

This section identifies major goals and recommends specific actions to "fill in" the major gaps in the trails system of the Two Rivers Area. Goals and actions, time frames, and prime responsibilities for implementation are listed in Table 4.1 for the various Gap Areas.

The items in the Development Strategy tables should be periodically reviewed and revised, as needed to update and reflect changes relating to other actions for trail building and priorities based upon changing circumstances such as active railroads becoming abandoned, changes in ownership, funding availability, and other changes that make one alternative better than another or allow for additional alternatives.

Implementation Strategy

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Table 4.1
Two Rivers Area Trail Development Implementation Strategy

GAP AREA / SEGMENT (See Accompanying Maps showing trails and alternative trail connections)	GOALS / Actions (Capital projects in <i>Bold Italics</i> type)	Timing (H, S, M, L, C)*	Prime Responsibilities (Lead entity in Bold type)
JACOBSBURG TO BLUE MOUNTAIN Trail Segment B.1 (TRA Section 2 & 4)	 PROVIDE CONNECTION BETWEEN JACOBSBURG AND BLUE MOUNTAIN Complete and Implement Heritage Conservancy's PPL Right of Way Landowner Outreach Recommendations. 	H to S	 Bushkill Township Heritage Conservancy D & L PA Game Commission
Trail Segment B1.3 (TRA Section 4)	• Consider Alt 2 in light of bridge situation.	н	• Bushkill Township
Trail Segment B1.1 (TRA Section 2)	 Continue discussions and meetings with property owners regarding obtaining easements. 	Н	• Heritage Conservancy
	Construct Trail Segment B1.2	Н	• Bushkill Township
Trail Segment PL2 (TRA Section 2)	 Prepare trail landowner outreach for Trail Alternative PL2. 	S	 Wind Gap Bushkill Township Plainfield Township D & L
Trail Segment SG2.2 (TRA Section 2)	• Examine the feasibility of using Albert Road/Center Street as an alternative to PPL right-of-way.	S	 Bushkill Township Game Commission D & L

Implementation Strategy

GAP AREA / SEGMENT (See Accompanying Maps showing trails and alternative trail connections)	GOALS / Actions (Capital projects in <i>Bold Italics</i> type)	Timing (H, S, M, L, C)*	Prime Responsibilities (Lead entity in Bold type)
Trail Segment SG1 (TRA Section 2)	• Make improvements to former LNE railroad bed at base of Blue Mountain.	S	• Game Commission
	 Consult with AT Conservancy (ATC) about connection to AT (Segment SG1.4). 		 Game Commission AT C
Trail Segment SG1.2 (TRA Section 2)	• Use Alternatives 1, 2, or 3 to achieve trail connection around private property (and keep abreast of the possible acquisitions of the two parcels in private ownership).	S	• Game Commission
WIND GAP TO PLAINFIELD TOWNSHIP	CONNECT WIND GAP TO PLAINFIELD TOWNSHIP		
	CONNECT PLAINFIELD TOWNSHIP TO APPALACHIAN TRAIL (AT)		
Trail Segment WG1 (TRA Section 1)	 TIE PLAINFIELD TO PEN ARGYL Conduct trail landowner outreach / prepare master plan for Trail Segment WG1. 	М	 Wind Gap Pen Argyl Area School District Plainfield Township
Trail Segment WG2 (TRA Section 1)	• Consult with the Appalachian Trail Conservancy (ATC) and make connection to AT.	н	• Wind Gap • AT C
Trail Segment WG2.1 (TRA Section 1)	• Build sidewalk between 8 th Street and AT.	S	• Wind Gap
	• Upgrade parking lot at AT crossing of North Broadway.	н	• ATC
Trail segment WG2.2 (TRA Section 1)	• Build trail or sidewalk along old railroad bed to connect to Trails Segments WG2.1 and .PL4.1	S	• Wind Gap
PLAINFIELD TO BLUE MOUNTAIN	CONNECT PLAINFIELD TRAIL TO APPALACHIAN TRAIL AND PEN ARGYL		

Implementation Strategy

GAP AREA / SEGMENT (See Accompanying Maps showing trails and alternative trail connections)	GOALS / Actions (Capital projects in <i>Bold Italics</i> type)	Timing (H, S, M, L, C)*	Prime Responsibilities (Lead entity in Bold type)
Trail Segment PL3 (TRA Section 1)	 Make connection from Plainfield Trail to Pen Argyl along former railroad bed (pending Waste Management's vacating of that corridor). 	L	 Plainfield Township Waste Management Pen Argyl
Trail Segment PL4 (TRA Section 1)	 Connect Wind Gap to Pen Argyl using the former railroad corridor adjacent to proposed new road (Trail Segments PL4.1 & PL4.2). 	L	 Plainfield Township Developers Pen Argyl
Trail Segments PL4.3, PL4.4 and PL4.5 (TRA Section 1)	 Conduct landowner outreach to enhance connection to AT. 	L	 Pen Argyl Borough Pen Argyl Area School District Landowners AT Conservancy
Trail Segments PL5 and PL4.1 (TRA Section 1)	• Connect Plainfield Trail to Trail Segment PL4 and PL4.1 to WG2.2 .	S	 Plainfield Township Developers
STOCKERTOWN TO JACOBSBURG	CONNECT STOCKERTOWN TO JACOBSBURG		
Trail Segment B2.5 (TRA Section 5)	 Meet with railroad, other land owners and PennDOT to discuss importance of trail connections and acquiring easements. 	н	 Stockertown Plainfield D & L
	• Build Trail Segment B2.5 (as a rail with trail) along existing railroad bed siding.	M-L	 Stockertown Plainfield Township PennDOT Railroad
Trail Segment B2.4 (TRA Section 5)	 Continue meetings with Hercules to discuss the future trail paralleling the west side of Route 33. 	H - C	 Bushkill Township Plainfield Township Heritage Conservancy Bushkill Stream Conservancy
	• Build Trail Segment B2.4.	L	 Bushkill Township Plainfield Township

Implementation Strategy

GAP AREA / SEGMENT (See Accompanying Maps showing trails and alternative trail connections)	GOALS / Actions (Capital projects in <i>Bold Italics</i> type)	Timing (H, S, M, L, C)*	Prime Responsibilities (Lead entity in Bold type)
Trail Segments B2.1. B2.2 and B2.3 (TRA Section 5)	• Meet with landowners to discuss the acquisition of easements or fee simple acquisitions.	Н	 Bushkill Township D & L Jacobsburg
	• Designate and mark existing township roads for trail use (as an alternative to easements / land acquisitions).	S	• Bushkill Township
STOCKERTOWN TO TATAMY	CONNECT STOCKERTOWN AND TATAMY TO POINT NORTH AND SOUTH		
Trail Segment S1.1 and S1.3 (TRA Section 5 & 6)	• Build trail.	Н	 Stockertown D & L
Trail Segment S1.2 (TRA Section 6)	• Improve pedestrian crossing of Route 191.	Н	 PennDOT Stockertown D & L
Trail Segments S1.4 and S1.5 (Trail Section 6)	• Conduct trail landowner outreach for these Trail Segments the various alterative segments.	Н	 D & L Tatamy Stockertown Palmer Township
Trail Segments S1.4 and S1.5 (TRA Section 6)	 Construct bridge across Bushkill Creek or use railroad bridge if becomes available (the "Black Bridge"). 	S	 PennDOT Palmer Township Tatamy Stockertown D & L
Trail Segment S1.4 (TRA Section 6)	• Designate and mark Belvidere Street as a trail.	S	 Stockertown D & L PennDOT
Trail Alternatives 3.1, 3.2 and 1.4 of Trail Segment S1.5 (TRA Section 6)	 Meet with railroad to discuss future plans and trail possibilities. 	Н	 Tatamy Stockertown D & L
Tail Alternative 1.3 of Trail Segment S1.5 (TRA Section 6)	 Prepare Official Map to include Trail Segment 1.3 and require developers to build trail (also update SALDO as needed). 	н	 Tatamy Developers
Trail Segment S1.6 (TRA Section 6)	• Make land swap with industry to align trail along Bushkill Creek.	Н	• Tatamy • Landowner
	• Build trail.	S	TatamyD & L

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GAP AREA / SEGMENT (See Accompanying Maps showing trails and alternative trail connections)	GOALS / Actions (Capital projects in <i>Bold Italics</i> type)	Timing (H, S, M, L, C)*	Prime Responsibilities (Lead entity in Bold type)
	• Improve Main Street trail crossing.	S	 Tatamy PennDOT D & L
PALMER TO FORKS	CONNECT TRAILS IN PALMER AND FORKS TOWNSHIP		
Palmer Trail (Trail Segment PA1.2) (TRA Section 7)	• Build Trail	Н	• Palmer Township
Trail Segment F6.1 (TRA Section 7)	 Build trail from existing bridge across Bushkill Creek along Bushkill Drive north to Kesslerville Road. 	H-S	• Forks Township
Trail Segment F18.1 (TRA Section 7)	• Designate and mark Bushkill Park Drive, Bushkill Drive and Arndt Drive as trail routes.	S	• Forks Township
<u>EASTON / FORKS / WILSON</u>	CONNECT TRAILS IN EASTON, FORKS AND WILSON		
13 th Street to Bushkill Drive / Trail Segment E1.2 (TRA Section 10)	 Meet with City of Easton and property owners to discuss easement. 	Н	 City of Easton D & L
Trail Alternative 1.1 of Trail Segment E1.1 (TRA Section 10)	 Install bridge crossing of Bushkill Creek and upgrade railroad bed. 	L	 Landowners Easton Conservancies
Trail Alternative 1.2 of Trail Segment E1.1 (TRA Section 10)	 Meet with City of Easton and property owners to discuss possibility of moving fence and obtaining easement. 	Н	 City of Easton D & L
Trail Alternative 2.1 of Trail Segment E1.1 (TRA Section 10)	• Designate and mark west side of Bushkill Drive for trail use.	S	 City of Easton PennDOT
Trail Alternative 3.1 of Trail Segment E2.1 (TRA Section 10)	 Designate and mark Bushkill Street and 13th Street for trail use. 	М	 City of Easton Wilson
Trail Alternative 4 of Trail Segments E2.1 and E2.2 (TRA Section 10)	Conduct landowner outreach.	S	 City of Easton Wilson
	 Make trail connection from 13th Street to Hackett Park along Wood Avenue (designate and mark for trail use). 	М	 City of Easton Wilson

Implementation Strategy

GAP AREA / SEGMENT (See Accompanying Maps showing trails and alternative trail connections)		GOALS / Actions (Capital projects in <i>Bold Italics</i> type)	Timing (H, S, M, L, C)*	Prime Responsibilities (Lead entity in Bold type)
Trail Segment E1.2 - 13 th Street to Bushkill Drive (TRA Section 10)	•	Enhance 13 th street connection to Bushkill Drive (crosswalks, sidewalk enhancements, etc.).	S	• City of Easton
Trail Segment W1.1 (Wilson Trail) (TRA Section 10)		Complete Wilson Trail to connect Palmer Trail (25 th Street to Trail Segment PA5.5).	н	Wilson PA DCNR
Easton's Bushkill Creek Trail (TRA Section 10)	•	Complete Bushkill Creek Trail and make connection from 13 th Street to Riverside Park.	н	City of Easton
Trail Segment E3.1 (TRA Section 10)	•	Pursue transfer of railroad ROW owned by Palmer Township to Easton.	н	 Easton Palmer Township.
	•	Build trail		• Easton
OTHER ITEMS				
Two Rivers Area Trail Website and Trail Map / Brochure		Develop Two Rivers Area Trail Website and Trail Map / Brochure.	М	D & L PA DCNR
Trail Funding	•	Keep abreast of trail funding programs / techniques, seek grants for trail projects, and establish and manage a Strategic Trail Development Fund.	С	 D & L Municipalities Northampton County PA DCNR PennDOT Others
Railroads	•	Monitor Railroad Situations (e.g., use the Rails-to-Trails Conservancy's Early Warning System regarding possible abandonments, etc.).	С	 D & L Municipalities PA DCNR Rails-to-Trails Conservancy
Official Maps	·	Prepare and adopt Official Maps that include the proposed and alternative trail segments identified in this study and other plans.	H - S	 Municipalities
Subdivision and Land Development Ordinances (SALDO)	•	Prepare and adopt SALDO provisions to address trails.	H - S	• Municipalities

Notes: * H = High Priority (1st Year), S = Short Range (Years 2-3), M = Medium Range (Years 4-5), L = Longer Range (Years 6+ Years), C = Continuous

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GAP AREA / SEGMENT (See Accompanying Maps showing trails and alternative trail connections)	GOALS / Actions (Capital projects in <i>Bold Italics</i> type)	Timing (H, S, M, L, C)*	Prime Responsibilities (Lead entity in Bold type)
Education / Information	• Inform and educate landowners and other about the benefits of trails, and the potential for land and financial donations, easements, and other trail items.	С	 D & L Municipalities Conservancies Northampton County

Martins Jacoby Area Trail Development Implementation Strategy			
AREA / SEGMENT See Trail Concept Map for the Martins Jacoby Area (Map 3.11)	GOALS / ACTIONS	TIMING (H, S, M, L, C)*	Prime Responsibilities
Minsi Lake to AT Trail Segment	 PROVIDE TRAIL CONNECTIONS TO THE TWO RIVERS AREAS IDENTIFY TRAIL CONNECTIONS WITHIN THE MARTINS-JACOBY WATERSHED Meet with public land holders to review Trail Concept Plan and discuss connections within public land areas. Consult with AT Council regarding trail connection. 	н	 D & L Municipalities Martins-Jacoby Watershed association Northampton County D & L
	• Build trails.	S-L	 Municipalities Public landowners
4-mile Trail Route Between Existing Trail at De Haven Road and Martins Creek	• Explore this route in detail to link entire township.	Н	 Lower Mount Bethel Township
Riverton Boat Launch	• Work with DCNR and FBC to build boat launch on FBC property at Riverton, with the possibility to connect trails (Riverton would serve as trailhead for both land and water trail).	Н	 Lower Mount Bethel Township FBC DCNR

Table 4.2Martins Jacoby Area Trail Development Implementation Strategy

AREA / SEGMENT See Trail Concept Map for the Martins Jacoby Area (Map 3.11)	GOALS / ACTIONS	TIMING (H, S, M, L, C)*	Prime Responsibilities
Inactive Railroads (Pen Argyl to Portland, and Factoryville to Delabole)	 Meet with property owners to discuss possible future acquisitions. 	Н	 D & L Municipalities
	 Prepare Landowner outreach and detailed feasibility studies as needed. 	S-L	 D & L Municipalities
Trailheads in Upper Mount Bethel Township	• Identify potential water trail and land trail access (trailheads) in Upper Mount Bethel Township.	S	• Upper Mount Bethel Township
Active Railroads	• Keep abreast of possible abandonments (as part of the Rails-to-Trails Conservancy's Early Warning System).	С	 D & L Municipalities PA DCNR Rails-to-Trails Conservancy
Totts Gap Road, Ridge Road, Bangor View Road, Heiden Road, Jacoby Creek Road	Designate and mark roads for trails.	S	 Municipalities PennDOT
River Road, Riverton Road, Martins Creek Belvidere Road, DePues Road, Uhler Road, Mud Run Road, Route 712, Delabole Road	 Designate and mark roads for trails. 	S	 Municipalities PennDOT
OTHER ITEMS Official Maps	• Prepare and adopt Official Maps that include the proposed and alternative trail segments identified in this study or other plans.	H - S	• Municipalities
Subdivision and Land Development Ordinances (SALDO)	 Prepare and adopt SALDO provisions to address trails. 	H - S	• Municipalities
Martins-Jacoby Area Trail Website and Trail Map / Brochure	 Develop Martins-Jacoby Area Trail Website and Trail Map / Brochure. 	М	• D & L • PA DCNR
Trail Funding	 Keep abreast of trail funding programs / techniques, seek grants for trail projects, and establish and manage a Strategic Trail Development. 	C	 D & L Municipalities Northampton County PA DCNR PennDOT Others

AREA / SEGMENT See Trail Concept Map for the Martins Jacoby Area (Map 3.11)	GOALS / ACTIONS	TIMING (H, S, M, L, C)*	Prime Responsibilities
Railroads	 Monitor Railroad Situations (e.g., use the Rails-to-Trails Conservancy's Early Warning System regarding possible abandonments, etc.). 	С	 D & L Municipalities PA DCNR Rails-to-Trails Conservancy
Education / Information	• Inform and educate landowners and others about the benefits of trails, and the potential for land and financial donations, ease- ments, and other trail items.	С	 D & L Municipalities Northampton County Conservancies

Notes: * H = High Priority (1st Year), S = Short Range (Years 2-3), M = Medium Range (Years 4-5), L = Longer Range (Years 6+ Years), C = Continuous

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COST GUIDELINES

Land Acquisition

Land acquisition costs are best determined by appraisal, when specific "subject" sites are known and comparable recent sales are used. Many variables will determine actual costs. These variables include such items as type of acquisition used (fee simple vs conservation easement), the site's development limitations (e.g., flood plains, wetlands, steep slopes, woodland), the site's specific location and situation (e.g., rural vs. urban, farm/rural vs. commercial/industrial zoning, site accessibility/road frontage), and various other items.

It will be important to create and maintain a data base on acquisition costs. This information can be given to appraisers for comparable sales analysis. The cost information will also be helpful in developing "ballpark" cost estimates for similar situations. For example, the costs below show some ranges based on information contained in the Two Rivers Area Green Plan:

Item	Estimated Costs/Acre
Farmland (fee simple)	\$10,000 - \$20,000
Farmland (conservation easement)	\$ 3,000 - \$ 6,000
Flood plain (fee simple)	\$ 3,000 - \$10,000 (w/ no building)
Flood plain (conservation easement)	Less than fee simple

Once the trail corridor has been acquired, there are also costs associated with how it is developed and maintained. Installing trails, signage, trailheads and various other facilities all carry a number of different costs. The cost for developing a trail depends on a number of factors, including the existing conditions, the type of trail surface chosen and, in some cases, the source of the funds. The following are generalized cost estimates for trail development. Items such as restroom facilities are not included due to the complex nature of their design, which impacts their cost basis. The costs are given in 2008 dollars and are considered to be bid prices at Prevailing Wage rates.

Greenway Development Cost Estimates		
Item	Unit	Unit Cost
Clear and Grub for Trail Installation	Acre	\$5,500.00
Wooden Mile Markers	Each	\$150.00
Signage (stop, warning, etc.)	Each	\$150.00
Informal Entrance Sign	Each	\$400.00
Formal Entrance Sign	Each	\$1,500.00 - \$3,000.00
Kiosk	Each	\$1,500.00
Benches	Each	\$500.00
Picnic Table	Each	\$800.00

Table 4.3
Greenway Development Cost Estimates

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Item	Unit	Unit Cost
Trash and Recycling Receptacles	Each	\$500.00
Bicycle Rack	Each	\$500.00
Gravel Parking Space	Each	\$600.00
Bituminous Parking Space	Each	\$1,000.00
Landscaping Shrub	Each	\$100.00
Landscaping Tree	Each	\$400.00
10 ' Wide Compacted Crushed Stone Trail	Linear Foot	\$20.00
10' Wide Bituminous Paving for Multiple Use Trail	Linear Foot	\$35.00
Pedestrian Bridge	Each	\$100,000 - \$250,000
Road Crossing	Each	\$5,000.00
Post and Rail Fence	Linear Foot	\$20.00
Earthwork for Trail Installation	Cubic Yard	\$6.00
Fine Grade and Seed	Square Yard	\$2.50
Design & Engineering Fees	Lump Sum	15% Total Estimated Project Cost
Total	Per Mile	\$200,000.00 - \$400,000.00

Source: Urban Research & Development Corporation

In addition to trail development, there are also costs associated with trail maintenance. Numerous factors that play into the maintenance costs associated with trails. For that reason, there have been some studies conducted regarding the costs of maintaining trails, especially using Rails to Trail projects. These studies have lead to the conclusion that the average yearly maintenance costs should be budgeted at about \$1.00 per linear foot. This number assumes the need for repairs, mowing and seasonal maintenance.

TRAIL DESIGN GUIDELINES

The Americans with Disabilities Act (ADA) establishes accessibility guidelines for people with disabilities. The design of any new greenway trail should meet the current standards set forth by ADA guidelines. Certain trails or portions of trails may be exempt. At this time, accessible trails must meet the following technical provisions:

- Surface the trail surface shall be firm, stable and slip resistant
- Clear Tread Width 36" minimum
- Tread Obstacles 2" high maximum (up to 3" high where running and cross slopes are 5% or less)

- Cross Slope 5% maximum
- Passing Space provided at least every 1,000' where the trail width is less than 60" (5'-0")
- Signs shall be provided indicating the length of accessible trail segment
- Running Slope (trail grade) shall meet one or more of the following:
 - 5% or less for any distance
 - Up to 8.33% for 200' maximum with resting intervals no more than 200' apart
 - Up to 10% for 30' maximum with resting intervals no more than 30' apart
 - Up to 12.5% for 10' maximum with resting intervals no more than 10' apart.
 - No more than 30% of the total trail length may exceed a running slope of 8.33%

Trail tread width recommendations have been developed for bicycle trails and urban, suburban and rural settings. The American Association of State Highway Transportation Officials (AASHTO) recommendations for trail widths are shown in Table 4.4.

AASHTO Standard Tread Width for Bicycle-only Trails			
AASHTO Standards	Recommended Minimum Width		
One way, single lane	5'		
Two way, dual lanes	10'		
Three lanes of bicycle travel	12.5' minimum		
Recommended Trail Tread Widths for User-Specific Trails			
Trail User Type	Recommended Tread Width		
Bicyclist	10' (2-way travel)		
Hiker/walker/jogger/runner	4' rural; 5' urban		
Cross-country skier	8-10' for 2-track trail		
Equestrian	4' tread; 8' cleared width		
Minimum Recommended Tread Widths for Multiple Use Trails			
Tread Type	Urban	Suburban	Rural
Pedestrian, non-motorized	12'	10'	10'
Pedestrian, equestrian	16'	12'	10'

 Table 4.4

 Standard Trail Width Recommendations¹

In certain environments, it may be necessary to restrict certain user groups, such as cyclists and equestrians, and to implement trails that have less of an impact on the environment or attempt to

¹Flink, Charles A. and Robert M. Searns. *Greenways, A Guide to Planning, Design and Development*. Island Press, Washington, D.C. 1993. P 200-201.

preserve environmentally sensitive areas. Boardwalks near wetlands are an example of a restrictive trail option that attempts to minimize environmental impacts.

Trail Surface Options

A well built trail is made of three components, the sub-grade, the sub-base and the trail surface. The sub-grade is the trail's foundation, which is made up of the native soils that bears the load generated by the trail users. The sub-base distributes the weight of the trail surface and users to the sub-grade. The surface is the point of contact between the trail and the users. The surface can be either soft or hard, depending on its ability to absorb or repel water.

The Sub-grade

The sub-grade provides the foundation for the trail to be developed. Any imperfections in the subgrade will eventually become apparent in the final trail surface. The ability of the sub-grade to provide a good foundation for a trail depends on it's susceptibility to freezing, it's permeability, it's bearing strength and it's shrink and swell characteristics. To maintain a sound sub-grade, it is necessary to provide adequate drainage. This can be accomplished with surface or sub-surface drainage systems, or a combination of the two.²

The Sub-base

The sub-base distributes the load of the trail and trail users to the sub-grade. It also provides drainage. The design load of the trail, or the maximum weight able to be carried by the trail, along with the type of material used for the sub-base and the use of geotextiles, will determine the depth of the sub-base necessary. In the case of rails to trails projects, the sub-base is the former railroad bed. Like the sub-grade, any imperfections in this layer will become apparent in the trail surface.³

The Trail Surface

The surface of the trail can be constructed of either soft or hard materials. Soft materials are defined as those that are able to absorb moisture, such as earth and wood chips. Hard materials repel moisture and include crushed stone, bituminous concrete, soil cement, resin-based stabilized material and concrete. The type of trail surface installed can encourage or discourage different types of use. Trails surfaced with soft materials are preferred by equestrians because horses are less susceptible to injury on these materials. Hard materials with a smooth finished surface such as bituminous concrete are preferred by inline skaters because a surface is provided that is more conducive to the sport. The surface of the trail should be chosen conservatively when first installed because it can always be upgraded as use and demand increase. Trail surface options are summarized in Table 4.5.⁴

²Flink, Charles A., Kristine Olka and Robert M. Searns. *Trails for the Twenty-First Century*. Island Press, Washington, D.C. 2001. P 62-65.

³Flink, Charles A., Kristine Olka and Robert M. Searns. *Trails for the Twenty-First Century*. Island Press, Washington, D.C. 2001. P 65-68.

⁴Flink, Charles A., Kristine Olka and Robert M. Searns. *Trails for the Twenty-First Century*. Island Press, Washington, D.C. 2001. P 66-74.

Surface Material (longevity)	Advantages	Disadvantages
	Hard Materials	
Soil Cement, medium	Uses natural materials, more durable than native soils, smoother surface, low cost, accommodates multiple use	Surface wears unevenly, not a stable all- weather surface, erodes, difficult to achieve the correct mix
Granular Stone, medium-long (7-10 years)	Soft but firm surface, natural material, moderate cost, smooth surface, accommodates multiple use	Surface can rut or erode with heavy rainfall, regular maintenance needed to keep consistent surface, replenishing stones may be a long-term expense, not for areas prone to flooding or steep slopes
Bituminous Concrete, medium- long (7-15 years)	Hard surface, supports most types of use, all-weather, accommodates most users simultaneously, smooth surface to comply with ADA guidelines, low maintenance	High installation cost, costly to repair, not a natural surface, freeze/thaw an crack surface, heavy construction vehicles need access
Concrete, long (20 years plus)	Hardest surface, easy to form to site conditions, supports multiple use, lowest maintenance, resists freeze/thaw, best cold weather surface, most resistant to flooding	High installation cost, costly to repair, not a natural-looking surface, construction vehicles will need access to the trail corridor
Boardwalk, medium- long	Necessary in wet or ecologically sensitive areas, natural-looking surface, low maintenance, supports multiple use	High installation cost, costly to repair, can be slippery when wet
Resin-stabilized, medium-long depending on type of application	Aesthetics, less environmental impact, possible cost savings if soil can be used, can be applied by volunteers	Need to determine site suitability and durability, may be more costly in some cases
	Soft Materials	
Native Soil, short to long depending on local use and conditions	Natural material, lowest cost, low maintenance, can be altered for future improvements, easiest for volunteers to build and maintain	Dusty, ruts when wet, not an all-weather surface, can be uneven and bumpy, limited use, possibly not accessible
Wood Chips, short (1-3 years)	Soft, spongy surface good for walking, moderate cost, natural material	Decomposes under high temperature and moisture, requires constant replenishment, not typically accessible, limited availability, not appropriate for flood prone areas
	Other	

Table 4.5 Trail Surface Synopsis⁵

⁵Flink, Charles A., Kristine Olka and Robert M. Searns. *Trails for the Twenty-First Century*. Island Press, Washington, D.C. 2001. P 74-75.

Surface Material (longevity)	Advantages	Disadvantages
Recycled Materials, varies	Good use of recyclable materials, surface can vary depending on materials	Design appropriateness and availability vary.

Crossings⁶

Trails cross roads or rail lines at-grade, above-grade or below-grade. At-grade crossings are the most common although certain situations may call for or present the opportunity to provide a bridge or tunnel. Crossings are site specific and require careful evaluation and planning.

The most ideal at-grade road crossing will experience very light traffic or provide a traffic signal that can be actuated by trail users to allow for safe passage. A professional should be employed to evaluate the intersection and establish a safe method of crossing. Ideally, the crossing should take place as close to an intersection as possible, preferably in the location of the crosswalk. "Trail Crossing" signs should be put up along the road and, if necessary, a painted crosswalk should be installed. If the crossing involves curb cuts, these should be as wide as the trail itself. Access to the trail can be controlled if the need arises. The most common method is the installation of bollards, which can be removable or hinged to allow access for authorized vehicles, such as emergency and maintenance vehicles, while preventing unauthorized vehicle access to the trail. Bollards should be placed 10' from the intersection. One bollard should be placed in the center of the trail, with two additional bollards placed 5' from the center if desired. Two bollards should not be used because they tend to direct users to the center of the trail, increasing the potential for a collision. Another effective vehicle barrier are gates, which extend completely across the trail. If barriers are desired to prevent unauthorized vehicle access, it is necessary to mark them well so they are visible and do not become a hazard by conflicting with trail use. They should be placed on straightaways instead of curves in order to maintain satisfactory sight distances. Barriers should allow for ease of use by trail users with disabilities and meet current ADA guidelines.

Alternative methods can be used to alert users of the intersection such as warning signs, a change in surface pavement for a short distance or a centerline along paved trails. Stop signs should be placed 4-5' from the road to allow time for users, especially cyclists, to stop. Site stopping distances should be evaluated by a professional and adequate warning should be given to allow cyclists to stop. AASHTO guidelines, which incorporate curves, slopes and other factors, have been developed to help determine the necessary warning distances needed for cyclists to stop.

⁶Flink, Charles A., Kristine Olka and Robert M. Searns. *Trails for the Twenty-First Century*. Island Press, Washington, D.C. 2001. P 85-88.

Trail Infrastructure

Trail infrastructure are the support facilities the trail should have in order for users to have a pleasurable experience. The location and amount of support facilities provided will be dependent on the trail's popularity, the resources of the managing agency and the infrastructure that is already in place. Although the trail may not warrant the creation of restrooms or large trailhead parking areas when it is first constructed, there may be a desire to develop these facilities as popularity increases.

Access Points, Trailheads and Parking Facilities

Access to the trail system can occur from a variety of locations, the most common of these being road crossings and trailheads. Access points may contain trail maps and other signs. Road crossings, especially in urban and suburban environments, can provide an easily accessible means for local residents to reach trails. Trailheads can be located near public parks, shopping centers or other prominent sites near the trail system. Access points, trailheads and parking areas are often the first and last impression of the trail so it is important to put time and energy into their design, appearance and function. These facilities should be located in areas that make it convenient for people to use the trail system for commuting to and from work or school by providing an opportunity for an alternative transportation route. This helps to reduce congestion on the roads and may promote a healthier lifestyle. Whenever a private landowner is involved in the process of establishing access points, it is important to make contact early on in the project in order to establish a positive working relationship.⁷

Prior to undertaking the construction of additional parking areas, an evaluation of existing facilities should be completed. Wherever it is possible, existing parking areas should be taken advantage of, although agreements may need to be reached to allow trail users access. This helps to reduce the need for developing new parking areas. If new parking facilities are required, they should be located at the edge of the trail, in a location that will require minimum disturbance and away from environmentally sensitive areas. Existing brownfields should be locations to consider for developing parking facilities. Providing a minimum amount of parking spaces at first will reduce development impacts and costs. Allowing for expansion in the future, if demand increases, is recommended but parking areas should be no larger than ten to twenty spaces. If additional spaces are needed, these should be located in other areas along the trail, first taking advantage of existing facilities. The parking area can be constructed using natural materials such as stone or from surfaces such as porous asphalt or concrete and grid pavers. Handicap accessible spaces will be required to have firm, stable and slip resistant surfacing. The parking area should have an obvious connection to the trail. Convenient pedestrian access should be maintained to the trails, which can be in the form of an accessible route from the handicap spaces and drop-off area. This will help to minimize the desire to create shortcuts to the trail, which can result in negative environmental impacts or trespassing on private property. In areas where equestrian use is allowed, larger stalls should be provided for horse trailers.8

⁷Flink, Charles A. and Robert M. Searns. *Greenways, A Guide to Planning, Design and Development*. Island Press, Washington, D.C. 1993. P 268.

⁸Flink, Charles A. and Robert M. Searns. *Greenways, A Guide to Planning, Design and Development*. Island Press, Washington, D.C. 1993. P 242-244.

Restrooms

Restrooms are a facility that requires careful consideration prior to installation. Expensive to install and maintain, they can be the target of acts of vandalism. Access to public water and sewer can also play a role in the decision to install restroom facilities. If one or both of these utilities are not available, alternatives may include wells, septic systems, portable toilets or composting toilets. The use of these options is dependant on local codes. Restroom facilities can be an opportunity to exercise green architecture practices when designing, locating and constructing the building. As with parking, it may be possible to institute agreements with adjacent establishments to use existing facilities. This may reduce or alleviate the need to create new restrooms. Signs should be installed indicating the location of the restroom facilities.⁹

Benches, Rest Areas and Receptacles

Benches and rest areas along the greenway trail system provide a place for users to rest, gather, picnic or partake in nature viewing. Benches come in numerous designs and, along with rest areas, should be located at regular intervals along the trail as well as at trailheads. Benches, like signs, should be located three feet from the trail's edge. Receptacles for trash and recyclable material trail users generate should be located at rest areas and trailheads and should be easily accessible to users as well as maintenance personnel. By placing these at regular convenient intervals along the trail, users should be more inclined to take advantage of them in place of littering. The need for additional receptacles may arise depending on use trends, the location of establishments selling beverages, food or other trash generating wares and other unforeseen factors that may generate a litter problem. Table 4.6 illustrates the frequency and size of rest areas in different trail settings.¹⁰

Location	Interval	Persons Accommodated
Wilderness	5 mile	38020
Rural	2 mile	38082
Suburban	½ mile	38082
Urban	As often as necessary	-

Table 4.6 Bench and Rest Areas

⁹Flink, Charles A., Kristine Olka and Robert M. Searns. *Trails for the Twenty-First Century*. Island Press, Washington, D.C. 2001. P 96-97.

¹⁰Flink, Charles A. and Robert M. Searns. *Greenways, A Guide to Planning, Design and Development*. Island Press, Washington, D.C. 1993. P 270.

Landscaping¹¹

Landscaping helps to beautify the trail and provide buffers or screening. It also should enhance the ecological value of the trail corridor. The use of native vegetation can help to strengthen the environment and restore areas that have been degraded, such as riparian buffers. The type of landscaping implemented along the trail is contingent upon the desired goals to be achieved and the conditions of the area. An inventory of the environmental features of the area will help to determine if remediation measures will be necessary. Site conditions will help to determine the types of plants most suitable, such as those that are wetland or drought tolerant species. Although there will always be a need to provide some upkeep along the trail, the use of native plants in "natural" designs can help to minimize maintenance costs.

Large trees and shrubs can be used for creating shade, defining spaces, providing a visual screen for adjacent properties, blocking wind and framing views. Smaller shrubs and plants help to reduce maintenance by crowding out weeds and provide additional visual interest for the trail users. Ground cover, in the form of native grasses, vines and other perennial plants, provides food and cover for wildlife. A maintenance schedule will need to be established in urban, suburban and rural settings for mowing and trimming to keep the trail corridor free of encroaching plant material. Safety is an important element along any trail and visibility is an important factor regarding safety. A safe sight distance should be maintained along urban and suburban trails.

Fencing

In some instances, a vegetative buffer may not suffice to provide the desired separation or barrier between the trail and adjacent land use. If no satisfactory alternative solution can be reached, it may be necessary to install a fence. Fences come in different styles depending on their desired function and can be constructed from various materials, including wood, metal and stone. Fences should be constructed so as to not detract from the trail corridor by creating barriers to wildlife or being visually unattractive. Agreements may be reached at the beginning of a project to forego constructing a fence for a period of time if a landowner perceives a need to have a fence installed because of a fear related to trail use near their property. After the allotted time, if it is still desired to construct the fence, this can be done.¹²

Compatibility with Adjacent Land Uses

When planning trails, it is necessary to study the compatibility of that land use with surrounding ones. Fortunately, trails are compatible with nearly all other land uses. It is important to tactfully explain this compatibility when approaching existing landowners to request easements. The following describes the potential impacts of developing or maintaining a trail adjacent to other land uses.

¹¹Flink, Charles A., Kristine Olka and Robert M. Searns. *Trails for the Twenty-First Century*. Island Press, Washington, D.C. 2001. P 105-109.

¹²Flink, Charles A. and Robert M. Searns. *Greenways, A Guide to Planning, Design and Development*. Island Press, Washington, D.C. 1993. P 267-268.

Agricultural and Vacant Land

Trails next to agricultural or vacant land area creates a mutually beneficial relationship. The possibility for farms to be preserved in an agricultural easement is greater when they are next to greenways, rather than next to developed areas. Likewise, greenways become more attractive when they connect large areas of open space. The adjacent farms, fields, and woods then become an unofficial component of the greenway, resulting in larger, more contiguous areas of open space. This is a benefit to both wildlife and scenery. Greenways among tracts of unprotected vacant land can help in securing *green infrastructure* inside future developments before they are built. In areas that will remain agricultural, greenways help filter runoff, which may contain fertilizer, herbicides, and animal waste.

Residential Land

Trails have been shown to improve the quality of life for those live near it. In residential areas, trails can provide the scenic benefit of protected woodlands in contrast to the developed landscape. In the case of trails, nearby residents can enjoy exercise opportunities and alternative transportation options. In addition, property values of homes and lots adjacent to trails can be slightly higher than comparable homes and lots away from a trail greenway. Perceived negative aspects of trails adjacent to residential areas include criminal access and wildlife nuisances. The positive benefits of a trail often improve neighborhoods and reduce crime in the long run.

Commercial and Industrial Land

Commercial and industrial properties tend to include the most intense land uses, and experience heavy traffic, large impervious areas, and sometimes pollution. Adjacent trails can help in several regards. Just like in residential areas, trails in commercial and industrial areas can provide scenic relief in an otherwise built-up environment. Trail corridors containing riparian buffers can help filter runoff that may contain automotive fluids, industrial by-products, and warm water. This keeps streams clean and at the correct temperature for aquatic life. Trails offer an alternative means for both customers and employees to arrive at commercial and industrial destinations. When trails are located near town centers, they may become part of the destination (e.g. dinner, shopping, and a stroll along the nearby creek.)

Institutional Land

Schools, colleges, municipal offices, churches, post offices, and other institutional facilities are used on a regular basis by the public, sometimes heavily. Many area schools are at capacity, and school traffic accounts for a significant percentage of total trips in any community. Trails offer an alternative means for arriving at these places. Schools and colleges can use the trail for educational purposes, as a research ground and showcase for environmental science and planning. Volunteer clean-up and maintenance efforts of trails could be performed by institutions that are located adjacent to the trail.

Recreation and Open Space Land

Parks and open spaces provide the destinations or *nodes* around which trails are designed. Together, parks, open spaces and trails create a healthy network of green infrastructure that benefits scenic, recreational, and wildlife resources. Recreation trails offer alternate ways of arriving at parks. This becomes an attractive option for organized sports practices and games, as well as informal use.





































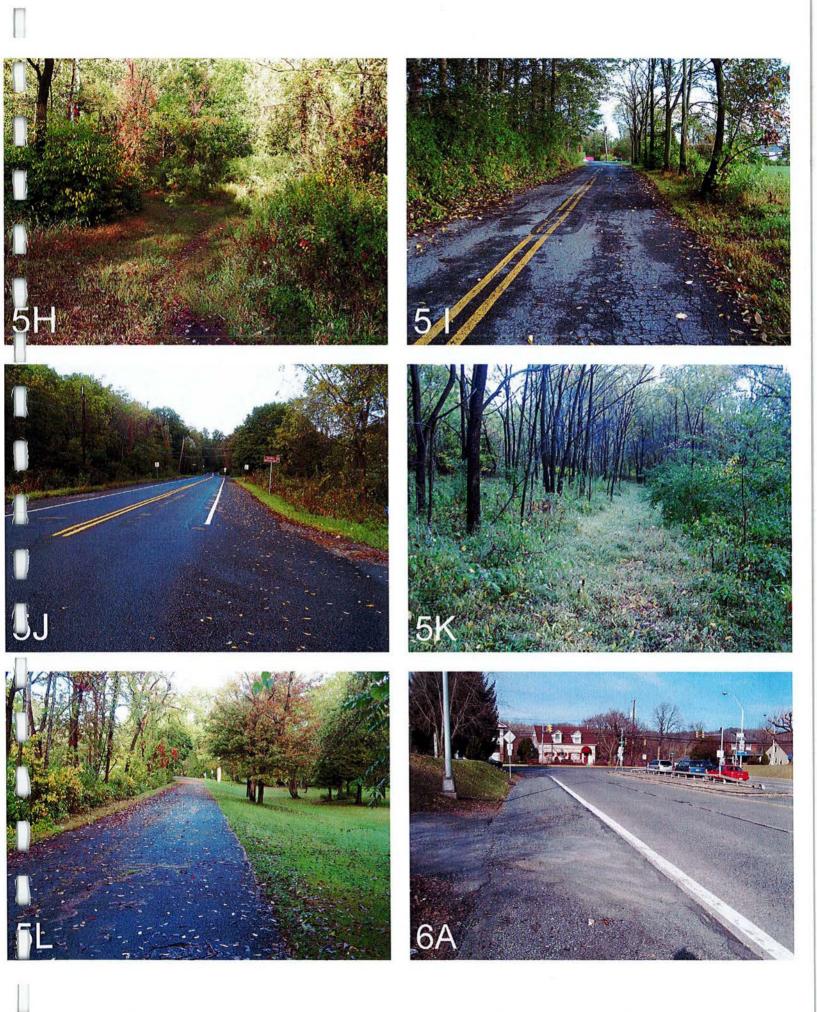








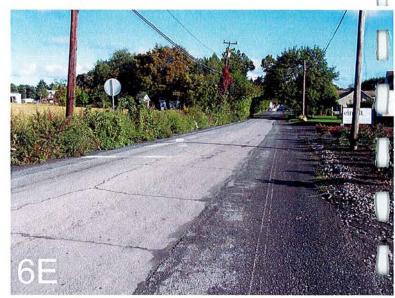


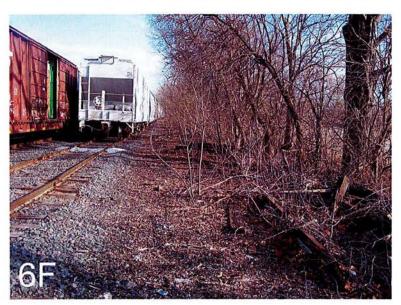












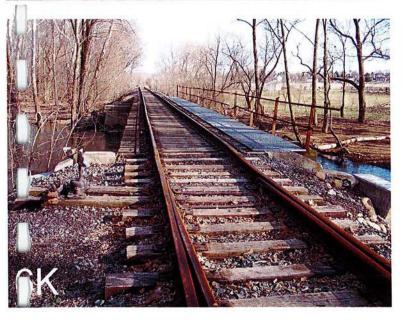






































































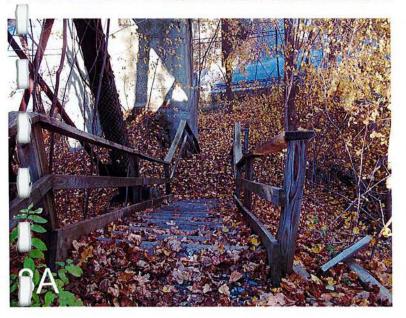












































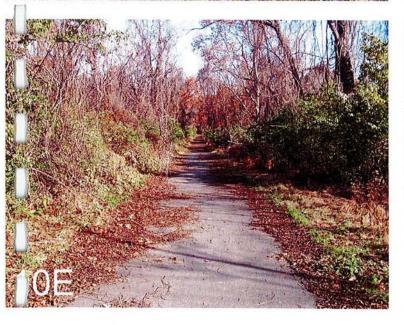














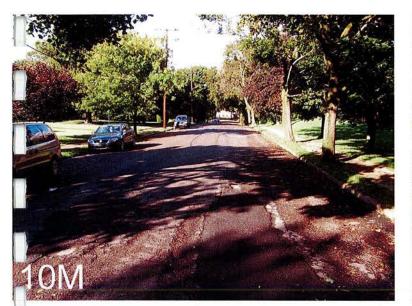


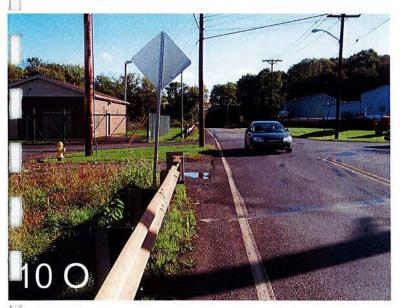


















APPENDIX B Martins Jacoby Area Photos

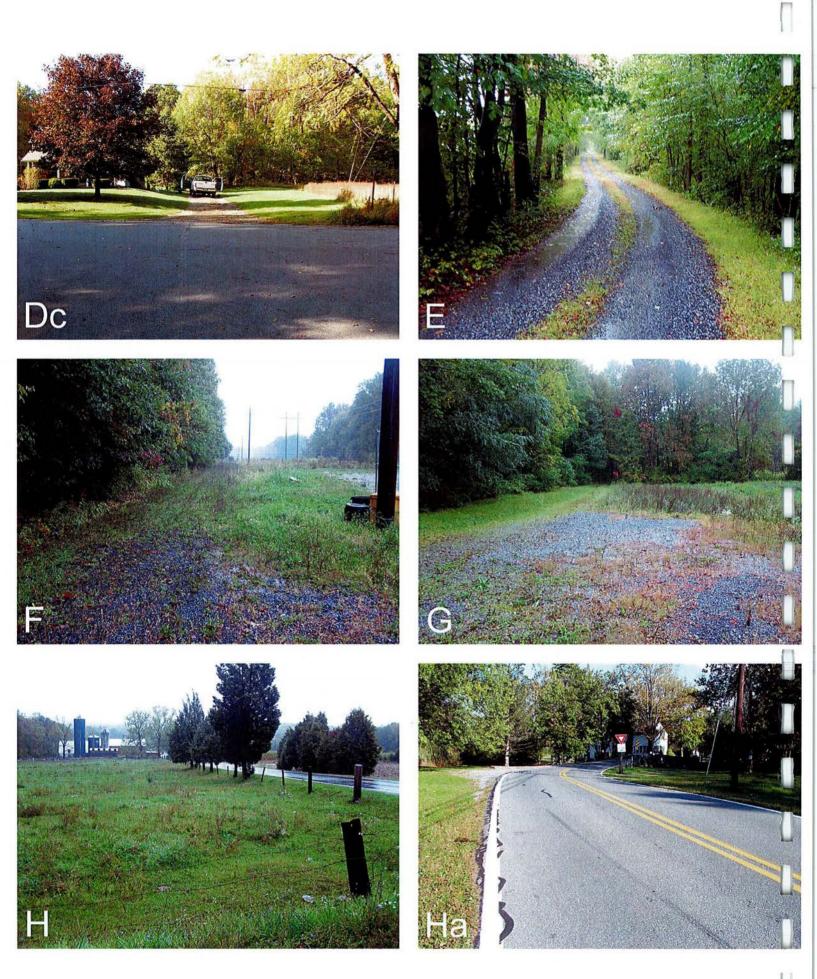


















































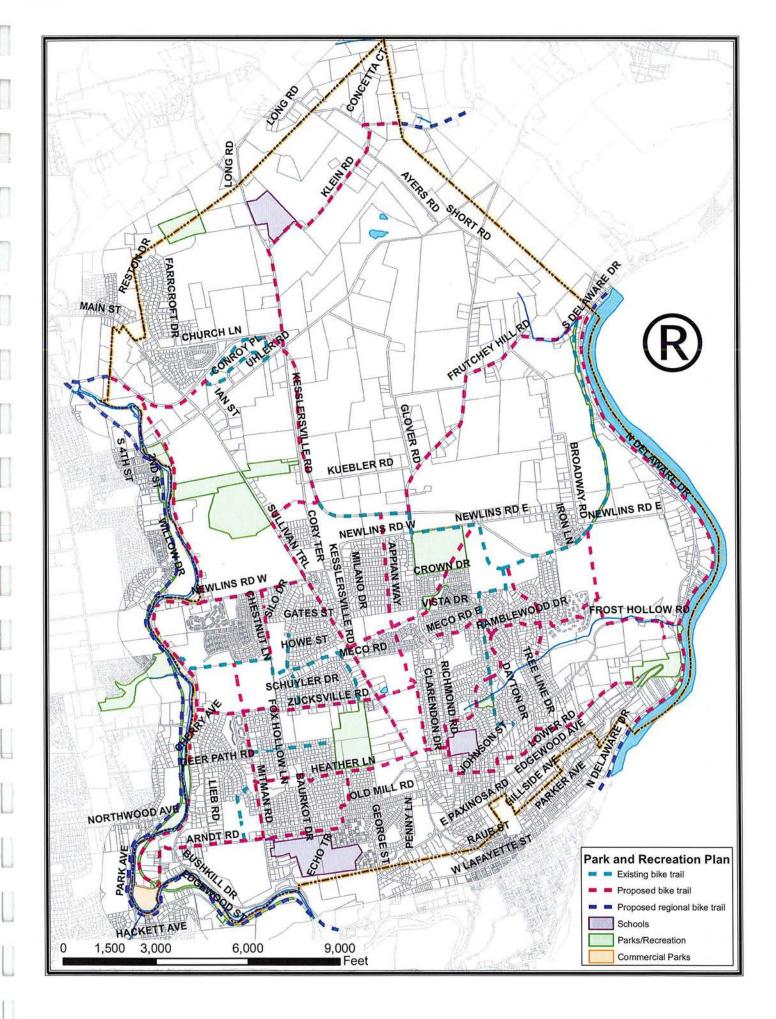


APPENDIX C Forks Township Trail Plan and SALDO Provisions

FORKS TOWNSHIP'S SUBDIVISION AND LAND DEVELOPMENT ORDINANCE (SALDO) PROVISIONS FOR RECREATION PATHS

§175-59. Recreation Paths

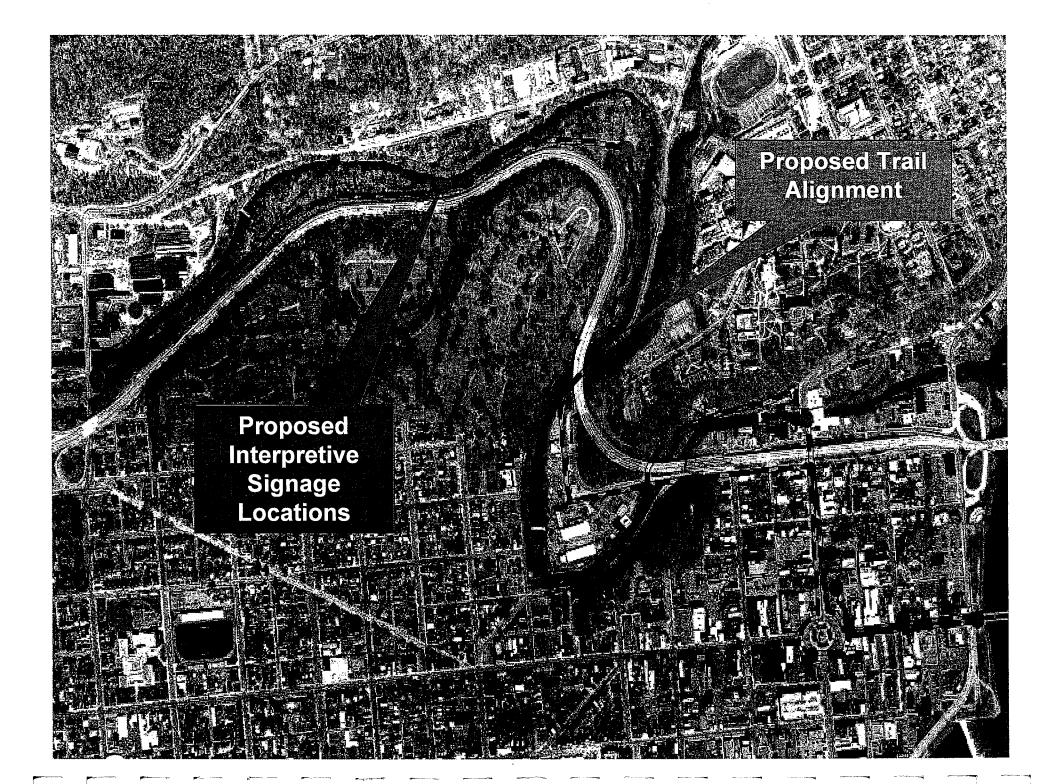
- A. **Location.** The proposed development shall comply with the township's conceptual recreation path plan as adopted by resolution of the Board of supervisors.
- B. **Width**. Recreation paths shall have an eight-foot paved width centered within a twenty-five-foot right-of-way.
- C. **Required Construction.** Recreation pathways shall be constructed according to the Township construction standards.
- D. **Existing Paths.** The developer is encouraged to incorporate and improve upon any existing paths within the project site. If existing off-site paths abut the project site, the developer shall consider connecting his path system to the existing paths.



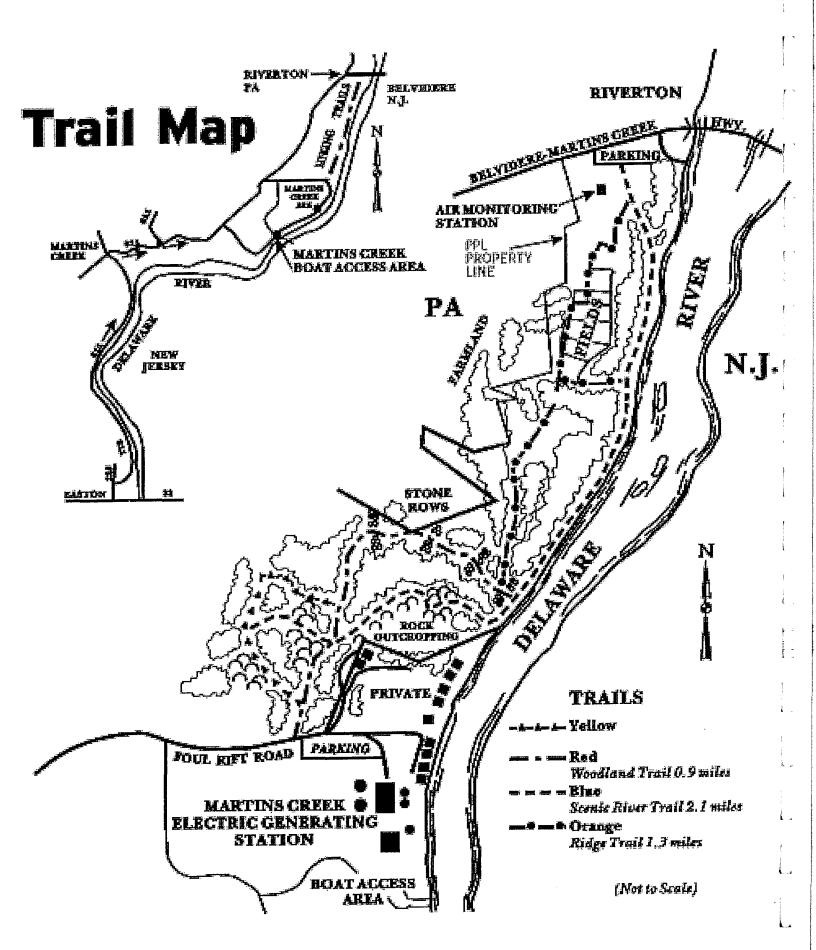
APPENDIX D Easton's Bushkill Creek Trail

Bushkill Creek Trail

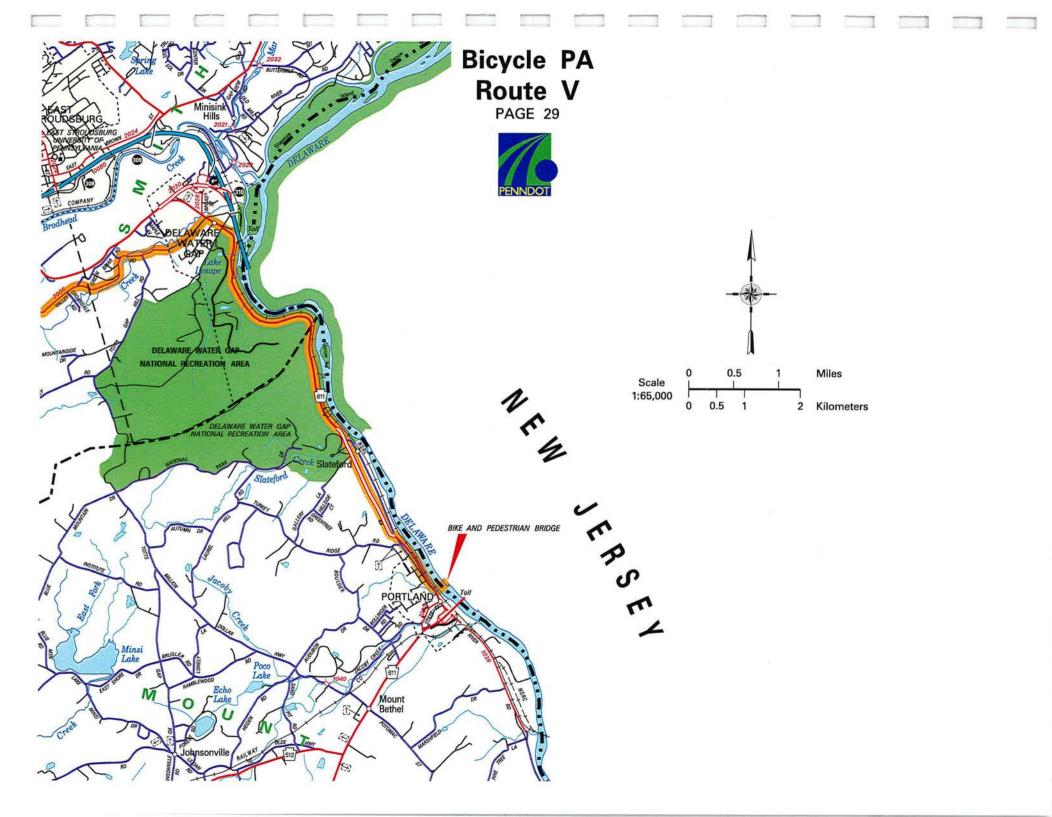
- Approximately 2.5 mile trail connecting the D&L Trail at Riverside Park to the Simon Silk Mill
- Signage to interpret significant historical sites along the trail
- Portions will become a City park, with passive recreational opportunities
 - ROW acquisitions, surveys, environmental studies, and design work ongoing
 - Construction slated to begin in the first half of 2009



APPENDIX E PPL's Environmental Center Trails Map



APPENDIX F PennDOT's Bike Route V



APPENDIX G Guidelines for Trail Connections to the Appalachian Trail



ATC Policy on Side and Connecting Trails

Adopted by the ATC Board of Managers in 1988, amended by the ATC Board of Managers in 1995, and amended by the ATC Board of Directors in 2008.

- A. Procedure for Recommending Approval of New Hiking Trails Entering The Appalachian Trail Corridor—All new hiking trails entering the Appalachian Trail corridor should be approved by the local Trail club, the landowning agency, the appropriate ATC regional partnership committee and ATC in accordance with the ATC Policy for Review and Approval of Management Plans and Project Proposals Approval by the regional partnership committee and ATC will be based on the criteria set forth below in part C and any additional criteria provided in the local management plan(s) for the area.
- B. Procedure for Recommending Action by the Secretary of the Interior or Agriculture for Formal Federal Designation of a Side or Connecting Trail—Formal designation of side or connecting and coaligned trails requires action by the secretaries of the interior or agriculture or their designee(s). Any proposal for formal designation shall be reviewed by the regional partnership committee, which will forward its recommendation to the Stewardship Council. The Council will review the recommendation and, with input from the ATC regional director, develop a final recommendation for the appropriate secretary. In addition, review and recommendation processes may occur within the National Park Service, the U.S. Forest Service, and/or state agencies as appropriate. ATC review and recommendations shall be based on the criteria set forth below in part C and any additional criteria identified in the local management plan(s) for the area.
- C. Criteria for (1) Recommending Approval of New Hiking Trails Entering The Appalachian Trail Corridor, or (2) Recommending Action by the Secretary of the Interior or Agriculture for Formal Designation of A Side or Connecting Trail—
 - 1. The trail will only enhance or improve the Appalachian Trail.
 - 2. The Appalachian Trail is preeminent over the new or designated trail.
 - 3. The trail will allow only foot traffic.
 - 4. The trail will provide significant access to the Appalachian Trail or between the Trail and significant scenic, natural, or cultural resources and/or Trail facilities.
 - 5. The Appalachian Trail will take precedence on trail signing and marking.
 - 6. Dual marking will be avoided on any new coaligned trail; however, other trails may be identified on A.T. signs. ATC also will work to establish this standard for existing coaligned trails.
 - 7. A.T. managers will cooperate in developing standards for construction, design, and maintenance of trails that intersect the Appalachian Trail. ATC will encourage adoption of standards that protect resource values and prevent environmental damage in a manner consistent with resource protection on the Appalachian Trail.

APPENDIX H Public Meetings

<u>NEWS</u>

From the Delaware and Lehigh National Heritage Corridor

Public Input Needed to Plan for Recreation Trails in the Two Rivers Area

EASTON, PA (May 8) – Public meetings will be held this month to solicit input on a proposed plan to create a regional system of trails that will connect the City of Easton and the Blue Mountain.

The plan, called "The Two Rivers Area Greenway Trails Implementation Study," is being developed by Urban Research & Development Corporation (URDC) and the Delaware & Lehigh National Heritage Corridor (D&L). It is part of the Lehigh Valley Greenways, an initiative funded in part by the Pennsylvania Department of Conservation and Natural Resources (DCNR) that creates greenway and trail connections in the Lehigh Valley.

The first public meeting is May 22 at 7 p.m. at the Stockertown Borough Hall, 202 Main Street, Stockertown. The second meeting is May 29 at 7 p.m. at Wind Gap Fire Hall, 111 North Broadway, Wind Gap. The agencies developing the study hope to acquire input on potential connections that will create a regional trail network from Easton to the Appalachian Trail, a distance of 32 miles. Trail gaps to be addressed include: Easton to Palmer Township; Palmer to Forks Township; Tatamy to Stockertown; Stockertown to Jacobsburg Environmental Education Center (JEEC); JEEC to the former Lehigh & New England Railroad right-of-way on the Blue Mountain; Wind Gap to the Appalachian Trail; and Wind Gap to Plainfield Township.

For more information on the meetings, contact Sherry Acevedo at 610-923-3548, ext. 226, or visit <u>www.delawareandlehigh.org</u>.

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For more information, contact: Sherry Acevedo Delaware & Lehigh National Heritage Corridor 2750 Hugh Moore Park Easton, PA 18042 (610) 923-3548, ext. 226 sherry@delawareandlehigh.org



Public Workshop Meetings

Plan for Recreation Trails in the Two Rivers Area

The Delaware and Lehigh National Heritage Corridor and Urban Research & Development Corporation, in conjunction with the Two Rivers Area Trails Implementation Steering Committee, are working on a study to create a regional trail system that will connect the City of Easton and the Blue Mountain. Trail gaps to be addressed include:

- Easton to Palmer Township
- Palmer Township to Forks Township
- Tatamy Borough to Stockertown Borough
- Stockertown Borough to Jacobsburg Environmental Education Center (DCNR State Park)
- Jacobsburg to the former Lehigh & New England Railroad (Blue Mountain)
- Former Lehigh & New England Railroad to Wind Gap Borough and the Appalachian Trail
- Wind Gap Borough to Plainfield Township
- Connection to Martins- Jacoby Watershed

*Review and Provide Input on Existing and Future Trails

Please attend <u>one</u> of the two following public meetings:

Where: When: Stockertown Borough Hall 209 Main Street, Stockertown

May 22, 2008 7:00 p.m.

OR

Wind Gap Fire Hall Where: 111 North Broadway, Wind Gap

When:

May 29, 2008 7:00 p.m.



Project funding through DCNR Lehigh Valley Greenways Implementation Block Grant, administered by Delaware & Lehigh NHC, and PPL



FOR FURTHER INFORMATION CONTACT: Sherry Acevedo, Delaware & Lehigh Heritage Corridor at 610-923-3548 ext. 226 sherry@delawareandlehigh.org



Public Workshop Meeting Summary

Two Rivers Area Trails Implementation Study May 22, 2008 7:00 p.m.

A public meeting was held at the Stockertown Building on May 22, 2008 to solicit input on a proposed plan to create a regional system of trails that will connect the City of Easton and the Blue Mountain. The major purposes of the workshop were to explain the study; review gaps in the trail system and to "mark up" work maps to identify potential trails and trail connections in the Two Rivers Area (i.e., the Bushkill Watershed) and the Martins-Jacoby Watershed. Approximately 45 people attended the meeting.

The following is a summary of the major items discussed at the meeting:

- Sherry Acevedo, Delaware and Lehigh Heritage Corridor, thanked everyone for coming to the meeting. She described the background for the study, reviewed the study process and introduced Urban Research and Development Corporation (the consultant) -- Tom Palmer and Phill Hunsberger from URDC.
- URDC used a powerpoint presentation to review the findings of the study.
 - Tom Palmer discussed the study purposes and reviewed the major gap areas being studies.
 - Phill Hunsberger reviewed each gap area in the Two Rivers Study Area, and discussed existing trails, planned trails, and possible alternative trail segments for filling the gaps. Numerous aerial map and photo slides were used to present this information.
 - Tom Palmer reviewed a map of the Martins-Jacoby Area and explained that a Concept Plan will be prepared for this area . A major objective to identify potential trail connections to link the two watersheds.
- URDC reviewed the next steps and pointed out that two additional public meetings will be held later in the study process to review the final study findings.
- Comments / Questions
 - Overall comments were very positive about the study.
 - URDC (Phill and Tom) and Sherry answered questions about the study.
 - Are there maps of the trails in Northampton County? No. But, the may be potential to add a trail map to the D & L website.
 - Potential also exists for using GPS and Google Earth. Also, the Rails-To-Trails

Conservancy has maps showing some trails.

- No trespassing signs along the Bushkill should be taken down.
- There should be better signs along the Plainfield Trail (like the Perkiomen Trail).
- The Bushkill Stream Conservancy is looking for projects. Also, there is potential for Eagle Scouts to be involved in projects.
- People should be informed about the benefits of trails (and donating land and tax deductions).
- Consideration should be given to trails on lightly used roads.
- More parking is needed along trails (e.g. the Plainfield Trail).
- There should be a trail along the Lehigh River connecting to the Delaware River.
- Workshop meeting participants were then asked to come up to review the working draft maps, and identify and provide input on possible trail linkages and connections. Participants were encouraged to mark potential trails and connections directly on the maps. Phill Hunsberger facilitated the Two Rivers Area input and Tom Palmer facilitated the Martins-Jacoby Area input.
- As a result of the workshop various possible trails and trail segments were identified on the maps for consideration.

Sherry Acevedo and URDC thanked everyone for coming out to the meeting.

Public Workshop Meeting Summary

Two Rivers Area Trails Implementation Study May 29, 2008 7:00 p.m.

A public meeting was held at the Wind Gap Fire Hall on May 29, 2008 to solicit input on a proposed plan to create a regional system of trails that will connect the City of Easton and the Blue Mountain. The major purposes of the workshop were to explain the study; review gaps in the trail system and to "mark up" work maps to identify potential trails and trail connections in the Two Rivers Area (i.e., the Bushkill Watershed) and the Martins-Jacoby Watershed. Approximately 15 people attended the meeting.

The following is a summary of the major items discussed at the meeting:

- Sherry Acevedo, Delaware and Lehigh Heritage Corridor, thanked everyone for coming to the meeting. She described the background for the study, reviewed the study process and introduced Urban Research and Development Corporation (the consultant) -- Tom Palmer and Phill Hunsberger from URDC.
- URDC used a powerpoint presentation to review the findings of the study.
 - Tom Palmer discussed the study purposes and reviewed the major gap areas being studies.
 - Phill Hunsberger reviewed each gap area in the Two Rivers Study Area, and discussed existing trails, planned trails, and possible alternative trail segments for filling the gaps. Numerous aerial map and photo slides were used to present this information.
 - Tom Palmer reviewed a map of the Martins-Jacoby Area and explained that a Concept Plan will be prepared for this area . A major objective to identify potential trail connections to link the two watersheds.
- URDC reviewed the next steps and pointed out that two additional public meetings will be held later in the study process to review the final study findings.
- Comments / Questions
 - Comments were very positive about the study. Suggestions about possible trail connections were noted for consideration. One person representing the "horse community" explained that her group has a strong volunteer base and knows how to build trails. She said her group can be involved trail building and maintenance; she also noted that municipalities should provide parking places near trails for the horse rigs. A representative from Plainfield Township mentioned that there has been one complaint about horses on the Plainfield Trail and it was about manure.

- URDC (Phill and Tom) and Sherry answered several questions about the study.
- Workshop meeting participants were then asked to review the working draft maps, and identify and provided input on possible trail linkages and connections. Participants were encouraged to mark potential trails and connections directly on the maps.
- As a result of the workshop various possible trails and trail segments were identified on the maps for consideration.

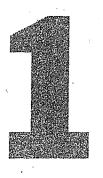
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Sherry Acevedo and URDC thanked everyone for coming out to the meeting.

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SO YOU KNON

THREE THINGS TO WATCH FOR



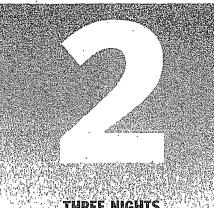
TWO MEETINGS ON TRAILS PLAN

The Urban Research & Development Corp. and the Delaware & Lehigh National Heritage Corridor want to know what you think of the final plan for trails connecting Easton and the Blue Mountain.

 What: Public meetings on the Two Rivers Area Greenway Trails Implementation Study.

When/Where: 6:30 p.m. Tuesday at the Washington Township Municipal Building, 1021 Washington Blvd., in Northampton County; also, 7 p.m. Wednesday at Stockertown Borough Hall, 209 Main St.

Questions: Contact Sherry Acevedo at 610-923-3548 ext. 226 or visit www.delawareandlehigh.org.



THREE NIGHTS OF FAITH MESSAGES

Spiritual speaker and best-selling author Matthew Kelly, who over the past 10 years has spoken to more than 3 million people in 50 countries — and at Catholic venues in the Lehigh Valley — will return to the area this weekend with his messages of faith.

What: Three-night mission at St. Thomas More Church.

B When: 7:30-8:30 p.m. today, Monday and Tuesday.

Where: St. Thomas More, 1040 Flexer
Ave., Salisbury Township.

Talking about: The first night, Kelly's topic will be "Perfectly Yourself: Nine Lessons for Enduring Happiness." The second night, he'll talk about relationships, "The Seven Levels of Intimacy." The third night, his topic will be "Is Catholicism Still Relevant?"

國 Questions: Call St. Thomas More at 610-433-7413 or visit www.stmchurchallentown. org. or matthewkelly.org.



A TALE OF THE UNDERGROUND RAILROAD

Richard Moore tutored children in Quakertown from 1813 to 1829 and owned a pottery. He also took on a secret mission.

B8 What: "Richard Moore and the Underground Railroad at Quakertown," a talk by Robert Leight, emeritus professor of education at Lehigh University, Bethlehem, and the title of his 2006 book.

When: 3 p.m. today.

Where: St. John's Church of Morgan Hill, 2720 Morgan Hill Road, Williams Township; 610-253-8951.

What to expect: Leight will talk about how Moore set up safe havens for escaping slaves as they headed north.

🔞 If you want to go: It's free.



Public Workshop Meetings

Plan for Recreation Trails in the Two Rivers Area

The Delaware and Lehigh National Heritage Corridor and Urban Research & Development Corporation, in conjunction with the Two Rivers Area Trails Implementation Steering Committee, are presenting the final recommendations to create a regional trail system that will connect the City of Easton and the Blue Mountain. Trail gaps to be addressed include:

- Easton to Palmer Township
- Palmer Township to Forks Township
- Tatamy Borough to Stockertown Borough
- Stockertown Borough to Jacobsburg Environmental Education Center (DCNR State Park)
- Jacobsburg to the former Lehigh & New England Railroad (Blue Mountain)
- Former Lehigh & New England Railroad to Wind Gap Borough and the Appalachian Trail
- Wind Gap Borough to Plainfield Township
- Connection to Martins- Jacoby Watershed and the Delaware River

*Provide Final Input on Recommendations for Future Trails

Please attend one of the two following public meetings:

Where: Washington Township Municipal Bldg.When: Nov. 11, 20081021 Washington Blvd., Bangor6:30 p.m.

OR

Where: Stockertown Borough Hall 209 Main St., Stockertown

When: Nov. 12, 2008 7:00 p.m.



Project funding through DCNR Lehigh Valley Greenways Implementation Block Grant, administered by Delaware & Lehigh NHC, and PPL Services Corporation



FOR FURTHER INFORMATION CONTACT: Sherry Acevedo, Delaware & Lehigh Heritage Corridor at 610-923-3548 ext. 226 <u>sherry@delawareandlehigh.org</u>



Public Meeting Summary

Two Rivers Area Trails Implementation Study November 11, 2008 6:30 p.m.

A public meeting was held at the Washington Township Municipal Building on Tuesday, November 11, 2008 to present the final recommendations to create a regional trail system that will connect the City of Easton and the Blue Mountain. Thirteen people attended the meeting.

The following is a summary of the major items discussed at the meeting:

- Sherry Acevedo, Delaware and Lehigh Heritage Corridor, thanked everyone for coming to the meeting. She described the background for the study, reviewed the study process and introduced Urban Research and Development Corporation (the consultant) -- Tom Palmer, Phill Hunsberger and Bryan Cope attended the meeting from URDC.
- URDC used a powerpoint presentation to review the findings of the study.
 - Tom Palmer discussed the study purposes, study areas, and the "hubs and spokes" approach.
 - Phill Hunsberger reviewed each gap area, and discussed existing trails, planned trails, future trails, and possible alternative trail segments for filling the gaps. Numerous aerial map and photo slides were used to present this information. Tom Palmer reviewed the list of high priority trail development projects which included the following:
 - Stockertown Trail
 - Tatamy Trail North extension
 - Palmer Trail
 - Bushkill Township / PPL R-O-W Trail
 - Improvements to the Former LNE R-O-W Trail
 - A.T. Connection & Trailhead at Wind Gap
 - Rt. 191 Crossing at Stockertown
 - Trail Feasibility Studies
 - Municipal Official Maps
 - Municipal Trail Plans
 - Municipal Ordinances (SALDO, etc.)
 - Tom Palmer and John Mauser (Martins-Jacoby Watershed Association) discussed the Trail Concept Plan for the Martins-Jacoby Watershed.
- Questions and Comments:
 - Are trails in the gap areas were not yet planned? URDC responded by saying yes, many future trails and alternative trail connections are not yet planned that is why we are now

identifying them and why more planning by the municipalities and others is needed.

- Why doesn't the former railroad along the base of Blue Mountain have a trail connection to Lehigh Gap (to the West). URDC responded that some potential does exist extending the former Lehigh-New England Railroad west of our study area, but property ownership issues would need to be looked at as part of separate study.
- Comments were very favorable (no objections mentioned to the findings and recommendations)

Sherry Acevedo and URDC thanked everyone for coming out to the meeting. Some meeting participants stayed to review and discuss the maps.

Public Meeting Summary

Two Rivers Area Trails Implementation Study November 12, 2008 7:00 p.m.

A public meeting was held at the Stockertown Township Municipal Building on Wednesday, November 12, 2008 to present the final recommendations to create a regional trail system that will connect the City of Easton and the Blue Mountain. Twenty-five people attended the meeting.

The following is a summary of the major items discussed at the meeting:

- Sherman Metzgar, Mayor of Stockertown, welcomed everyone and thanked them for coming out to the meeting.
- Sherry Acevedo, Delaware and Lehigh National Heritage Corridor, described the background for the study, reviewed the study process and introduced Urban Research and Development Corporation (the consultant) -- Tom Palmer, Phill Hunsberger and Bryan Cope attended the meeting from URDC.
- URDC used a powerpoint presentation to review the findings of the study.
 - Tom Palmer discussed the study purposes, study areas, and the "hubs and spokes" approach.
 - Phill Hunsberger reviewed each gap area, and discussed existing trails, planned trails, future trails, and possible alternative trail segments for filling the gaps. Numerous aerial map and photo slides were used to present this information. Tom Palmer reviewed the list of high priority trail development projects which included the following:
 - Stockertown Trail
 - Tatamy Trail North extension
 - Palmer Trail
 - Bushkill Township / PPL R-O-W Trail
 - Improvements to the Former LNE R-O-W Trail
 - A.T. Connection & Trailhead at Wind Gap
 - Rt. 191 Crossing at Stockertown
 - Trail Feasibility Studies
 - Municipal Official Maps
 - Municipal Trail Plans
 - Municipal Ordinances (SALDO, etc.)
 - Tom Palmer discussed the Trail Concept Plan for the Martins-Jacoby Watershed.
- Questions and Comments:

- I am very excited about the trail plans and the potential for connecting the Blue Mountain to Easton. The crossing of 13th Street at Easton may be difficult because of traffic on the street. Phill said people should be encouraged to use the intersection and upgrades will be needed. Sherry mentioned that the 13th Street corridor will need enhancements.
- How steep can trails be? Phill answered that trails should not exceed 5% maximum slope, but short sections can be steeper (e.g., 8% for a 200').
- The plan really looks good. In regard to Trail Section B1.3 in Bushkill Township, what is happening along Keller Road and the bridge?. Sherry explained what is being planned for a bridge and the trail in this area.
- Are there design standards for trails? Sherry said each trail is unique and is designed according to factors such as site situation, trail purposes, etc. PA DCNR does have a trail design team.
- Is there a trail map for the area? There should be trail maps for trail users this would be great. URDC responded that currently maps are available only for some areas such as Palmer Township and Forks Township. Meeting participants agreed that trail maps of the area would be a good project.
- Trails signs would also be a good idea, such the signs used on the Perkiomen Trail.
- What is the status of the Wilson Trail. Phill said the trail is in the process of DCNR review and approval prior to construction.
- Who does the grant application for the Stockertown Trail? Sherry said the D & L will be assisting the borough in the preparation of its grant application.
- The comments received were very favorable (no objections mentioned to the findings and recommendations)

Sherry Acevedo and URDC thanked everyone for coming out to the meeting. Some meeting participants stayed to review and discuss the maps.

APPENDIX I PPL Right-of-way Landowner Outreach Map

