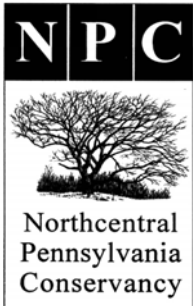
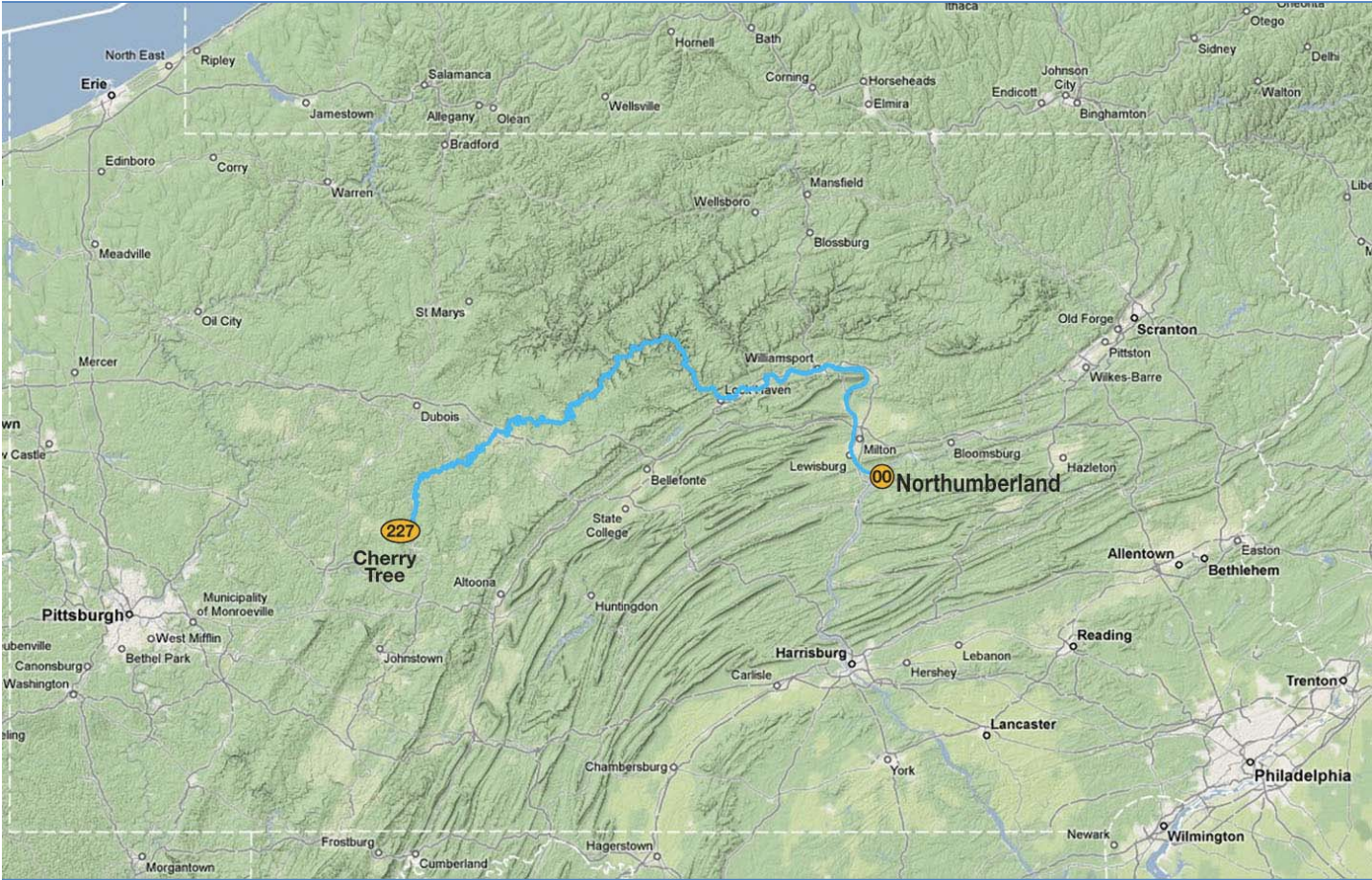


# Susquehanna River Water Trail, West Branch Stewardship and Conservation Plan Executive Summary

August 2009



*This project was financed by the Chesapeake Bay Gateways and Watertrails Network and a grant from the Community Conservation Partnerships Program, Environmental Stewardship Fund under the administration of the Pennsylvania Department of Conservation and Natural Resources, Bureau of Recreation and Conservation.*

# Project Purpose

*This project was to further the development and sustainability of the Susquehanna River Water Trail-West Branch by creating a facility maintenance plan, identifying needs at existing access sites, and determining if additional access points are needed. A benchmark of existing conditions was created to serve as guidance for identifying trail and facility needs.*



*People enjoy the West Branch Water Trail for its serenity, beauty, and recreational attributes.*

# Plan Development Process

The Northcentral Pennsylvania Conservancy (NPC) gathered information and researched the Water Trail in a variety of ways. Staff visited every access site listed on the Water Trail Maps and Guide to evaluate its condition and document the amenities available. To engage the public and identify interest and concerns a Steering Committee of individuals from throughout the corridor with knowledge of the river and an active interest in the Water Trail was formed. A questionnaire and key person interviews were used to help further identify perceived interests and concerns as related to stewardship and conservation of the Water Trail.

Face to face meetings were held with governmental agencies that own or manage land along the River to discuss their Water Trail needs, issues, and opportunities. This also allowed for their experiences on the West Branch and in other parts of the state to be discussed and used in developing this Plan.

NPC worked together with the Pennsylvania Environmental Council (PEC), to hold a Water Trail working session to gather information, ideas and concerns about water trails in general. Again, learning from other water trails what is working for them and what could be improved.

Existing models for trail management (land based and water trails) were reviewed to help develop a management structure to assist with maintaining and improving the Susquehanna River Water Trail-West Branch. The following organizations were reviewed:

- Lower Susquehanna Riverkeeper/Waterkeeper Alliance
- Northern Forest Canoe Trail
- The Yough River Trail/Regional Trail Corporation
- Susquehanna River Water Trail Association – Middle Section
- Hiawatha Water Trail/Noquemanon Network
- The Allegheny Valley Trails Association
- Pennsylvania Parks and Forest Foundation (Friends of Milton State Park and Friends of Shikellamy State Park)



*While the Stewardship and Conservation Plan focuses on paddlers, it's important to remember that other user groups are invested in the River and can provide assistance in maintaining and improving the Water Trail.*

## ***Some specific action items that have resulted from the Working Session...***

### **PA WATER TRAILS PARTNERSHIP AGREEMENT**

The Pennsylvania Environmental Council (PEC) developed both a vision for the future of Water Trails in Pennsylvania and a Statement of Purpose for the Pennsylvania Water Trails Partnership. The Statement was approved by all partners (PEC, National Park Service, PFBC, and DCNR) and signed at the Fourth Annual Greenway and Trails Summit at Pocono Manor on September 2008.

### **PA WATER TRAILS HANDBOOK**

The Pennsylvania Water Trails Partnership published the PA Water Trails Handbook that includes a definition of Water Trails in Pennsylvania and technical assistance materials. This information is available to project managers and will be updated on a regular basis as new resources are available. To download a copy of this handbook visit: <http://www.pecpa.org/watertrails>

### **SUSQUEHANNA RIVER WATER TRAIL SYSTEM**

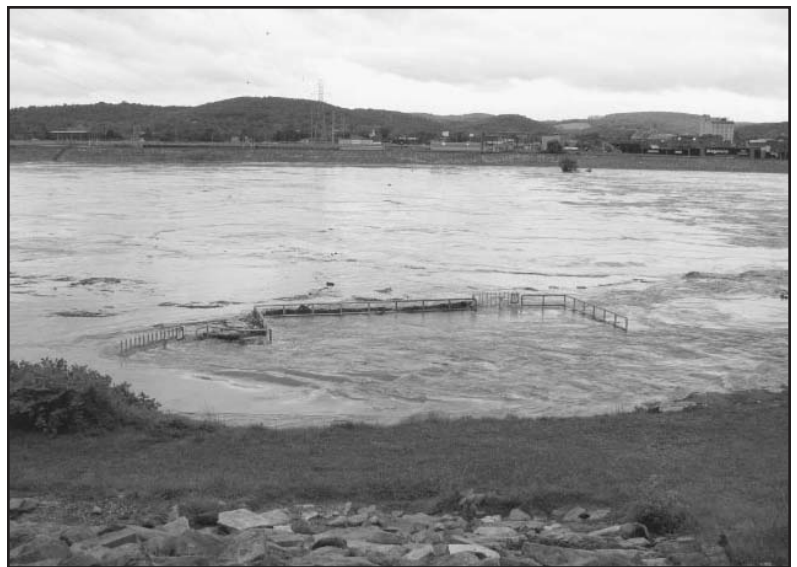
Susquehanna River Water Trail project managers have continued to work together including a face-to-face meeting held in the Harrisburg area in March 2009. PEC has surveyed all of the Water Trails in the Chesapeake Bay Watershed in Pennsylvania using a survey tool to understand the current state of Water Trails. A report is available with a summary of the findings; this information is being used for the development of technical assistance components of the Pennsylvania Water Trails Program including workshops.

## **Issues & Opportunities**

Using the information, ideas, and observations gathered during the plan development process needed improvements and challenges were identified.

### **THE FOLLOWING WERE IDENTIFIED AS NEEDED IMPROVEMENTS:**

- **River Access** – new accesses near population centers to provide shorter trip options as well as in areas where there are long distances between access points.
- **Restrooms** – many existing access points lack restrooms, it was noted that where appropriate (based on use, ability to monitor for vandalism and maintain, and river reach characteristics) and where the landowner was interested, restrooms should be added.
- **Camping** – when considering adding campsites, the increased maintenance needs to be discussed and evaluated. Designated campsites are lacking along the river, and the private campgrounds are few and far between.
- **Portages** – There are four dam portages along the Water Trail. Improvements are needed to make these more user friendly for paddlers.



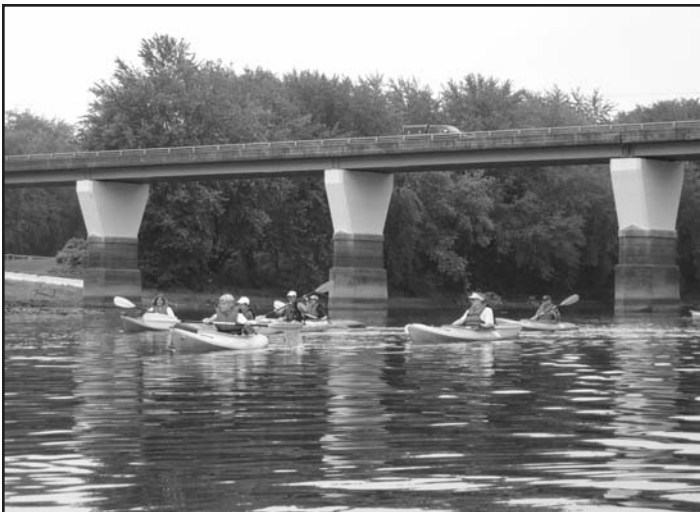
*The Hepburn Street Dam is one location on the West Branch where a safe, designated portage trail is needed.*

**THE FOLLOWING WERE IDENTIFIED AS CHALLENGES:**

- **Water Quality** – One of the region’s mining legacies is Abandoned Mine Drainage (AMD). Additionally, there are agricultural impacts and sedimentation from various activities in the Watershed. There are already numerous efforts underway to address these problems.
- **Aquatic Habitat** – Because of the water quality issues and man made river channel changes, some sections of the River are lacking aquatic habitat.
- **Water Quantity** – Concern was expressed that the consumptive water withdrawals allowed may reduce flow to a point that recreational paddling becomes difficult.
- **Unified Management and Maintenance** – The length of the corridor (227 miles) makes it difficult to share information on how to best maintain facilities and work cooperatively to save money on equipment and material purchases.
- **Litter** – while improving, floods continue to bring new debris and litter to the River every year.
- **Signage** – The various landowners all have their own signage standards and have not updated all their signs as they change their individual standards. This can be very confusing for people unfamiliar with a launch area.
- **Securing Public Access** – several traditional access points are not permanent public access points. The landowner could terminate the public’s use of these sites at any time.
- **Riparian Buffer Preservation & Restoration** - Many landowners along the River perceive a riparian buffer as “messy” and prefer to mow to the banks edge. This de-stabilizes the river bank, and allows the water to be warmed by the sun.
- **Diversity of Experiences** – A balance will need to be struck between the need for additional access points and the need to maintain remote river experiences.



*Safe locations for paddlers to stop for breaks and to re-adjust equipment are important.*



*Some stakeholders feel that bridges could be signed to help river users orientate themselves.*

# Existing Regional Capacity for Management



*Some river islands in public ownership may provide opportunities for primitive campsites.*

The first priority for stewardship should be working with volunteers, landowners and managers, partners and stakeholders to identify stewards who are willing to accept responsibility for maintenance and recorded observations at specific sites and/or segments of the Water Trail.

The second priority should be to develop and strengthen relationships with access site landowners, working toward a goal of securing some form of long-term public access. This may take time, but having local stewards to help them with site maintenance will demonstrate to landowners how their generosity and good will is valued by others.

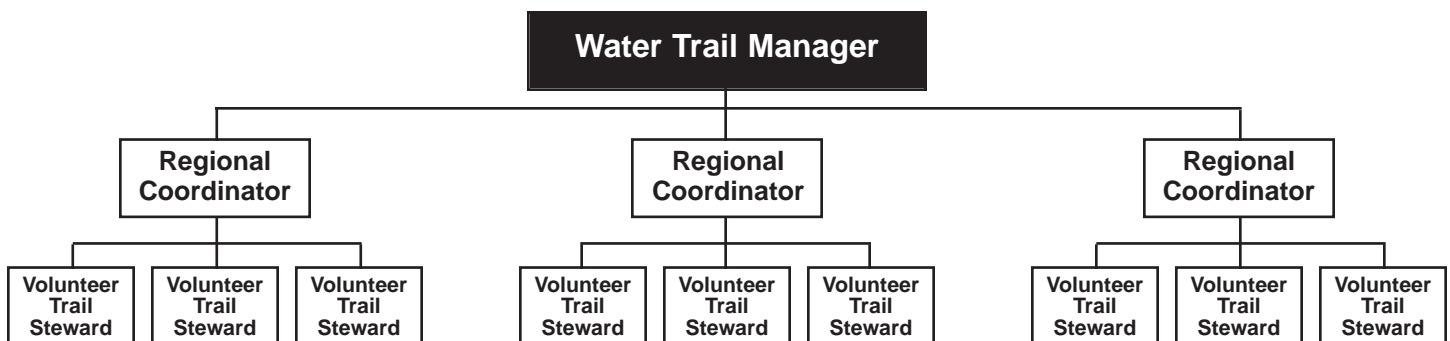
This Plan provides characteristics and work tasks the Water Trail Manager will need to undertake for the Susquehanna River Water Trail–West Branch to be successful. The Plan

intentionally does not recommend one organization over another for this role because of the time lag which may occur between Plan development and Plan implementation. Organizational summaries for the following provide an overview of where to begin the Water Trail Manager search process.

- The Susquehanna Greenway Partnership
- Pennsylvania Environmental Council
- Lumber Heritage Region
- North Central Pennsylvania Regional Planning and Development Commission
- SEDA-Council of Governments

# Recommendation for Management Structure

The recommendation of an effective management structure for this Water Trail would be a tiered approach, built on the strong foundation of local volunteers.



## **VOLUNTEER WATER TRAIL STEWARDS – LOCAL LEVEL**

Trail Stewards are the eyes and ears of the Water Trail; the worker bees that perform the tasks that maintain and improve the Water Trail. These are individuals and groups that know the local segments of the river and Water Trail and care enough to make a commitment to sustain and improve it. Ideally, Trail Stewards should possess some of the following characteristics:

- Personal dedication and commitment to the sustainability of the Water Trail.
- Willingness to invest time and effort to maintain trail and access sites.
- Physical ability to perform maintenance tasks
- Commitment to recording observations and reporting to the Regional Coordinator
- Good ‘people skills’ to interface with the general public during site visits.



*The Water Trail Manager and volunteers will have various constituents and landowners to work with to implement the Plan.*

### ***Responsibilities of the Volunteer Trail Stewards:***

- Conduct a minimum of three site visits annually, however, ideally this would be done monthly during the April – September paddling season, or relative to key events
- In conjunction with each site visit, fill out the standardized report of observations and submit to the Regional Trail Coordinator.
- Maintain access sites at a level approved by the landowner and appropriate for the volunteer.
- Contact Regional Trail Coordinator on a quarterly basis to share needs for local improvement projects and to help plan for implementation (annually at a minimum).
- Serve as the local contact person for improvement projects.
- Attend annual meeting of Trail Stewards and coordinators (corridor-wide) with the Water Trail Manager.
- Attend volunteer/stewardship training as provided by the Water Trail Manager.
- If working on a DCNR or PFBC site, volunteers will need to additionally register and follow the terms and conditions of those programs.



There are many paid staff members working for municipalities, counties, the Pennsylvania Fish and Boat Commission, DCNR Bureau of Forestry and Bureau of State Parks that provide maintenance and make improvements to access sites along the Trail. The value of these services has been a major contribution to the Trail. The goal of this plan is to provide assistance to them as appropriate. For the purposes of this Plan, the paid staff members are included in the Volunteer Stewardship Network.

*It will be important to remember that some work items will need a team effort to implement.*

## **REGIONAL TRAIL COORDINATORS – REGIONAL LEVEL**

Trail Coordinators are the regional point persons for collecting the local information from the volunteers and paddlers regarding the Water Trail, coordinating the local efforts by the Volunteer Trail Stewards, and reporting information to the Water Trail Manager.

For the purposes of manageability, the Water Trail can be divided into the following six regions:

- Region 1: Cherry Tree to Curwensville (RM 227 to RM 186)
- Region 2: Curwensville to Deer Creek (RM 186 to RM 149)
- Region 3: Deer Creek to Keating (RM 149 to RM 110)
- Region 4: Keating to Jersey Shore (RM 100 to RM 55)
- Region 5: Jersey Shore to Muncy (RM 55 to RM 28)
- Region 6: Muncy to Northumberland (RM 28 to RM 0)



*Access points will need evaluated frequently to ensure they are safe entry points for river users.*

***To be effective, the Regional Coordinators will need to have the following skill set:***

- Personal dedication and commitment to the sustainability of the Water Trail.
- Willingness to invest time and effort to advance the Water Trail.
- Regional presence as well as a local presence with paddlers and volunteer Trail Stewards.
- Good ‘people skills’ to build working relationships with the general public.
- Organizational skills to manage local feedback in a useful format.
- Capacity to help coordinate local needs with local resources.
- Leadership skills to help organize Volunteer Trail Steward efforts.
- Communication skills for interacting with public, other volunteers, and the Water Trail Manager.

***Responsibilities of the Regional Coordinator:***

- Ensure the region is paddled twice annually to assess overall changes to the Water Trail.
- Make annual contact with Trail Stewards, requesting local reports of observations.
- Work with Water Trail Manager to develop an annual work plan.
- Keep a file/record of comments from Trail Stewards and paddlers.
- Develop a yearly work plan for the region.
- Relay local needs and interests to the Water Trail Manager on an annual basis.
- Provide standardized reporting forms to Volunteer Trail Stewards.

## **WATER TRAIL MANAGER – CORRIDOR LEVEL**

The Water Trail Manager is the umbrella for the entire West Branch Water Trail. The Manager facilitates cohesiveness throughout the trail corridor, with a committed dedication to enhancing the Water Trail and user experiences. The Manager acts as a repository for local information; then organizes, analyzes, prioritizes and takes the necessary steps to implement what needs to be done to enhance and sustain the West Branch Water Trail. The Manager should have the following:

- Dedication to the successful future of the West Branch Water Trail
- Capacity to support the Regional Water Trail Coordinators and Trail Stewards
- Eligibility to apply for funding to implement projects
- Good working relationships with federal and state agencies that support the development and promotion of Water Trails
- Skills to coordinate the publication of Water Trail information in a variety of formats
- Sensitivity to work effectively with private property owners as Water Trail partners

### ***Responsibilities of the Water Trail Manager:***

- Sign a Memorandum of Understanding (MOU) with the National Park Service, Chesapeake Bay Gateways and Watertrails Network
- Provide support for Regional Trail Coordinators and Stewards.
- Develop and organize volunteer training workshops annually, or more frequently as needed.
- Develop and/or make available information for general public education on Stewardship and Conservation topics.
- Provide volunteer and coordinator recognition
- Maintain and document annual contact with private landowners of access sites.
- Serve as liaison between federal and state agencies, county and local governments, businesses, and volunteers to identify partners and potential funding sources for project implementation.
- Keep an inventory of the information that is provided to users.
- Engage with the other segments of the Susquehanna River Water Trail to help provide consistency throughout the Susquehanna River system.



## **PARTNERSHIPS FOR IMPLEMENTING TRAIL MANAGEMENT**

There is not a single organization, entity, or individual that can successfully implement this Plan by acting alone. It will take partnerships, cooperation, communication, and multiple partners working toward a common goal. Nearly all of the recommendations in this plan will require some level of collaboration. The key will be keeping these collaborations focused on the common goal while acknowledging the individual efforts that make each collaboration a success.

*One example of the various signage styles found along the West Branch.*

# Stewardship & Conservation Plan Recommendations

The following recommendations

**Priority:** High (1-3 Years) • Medium (3-5 Years) • Low (5-10 Years)

## Develop a Volunteer Stewardship Network

|   |               |
|---|---------------|
| 1. Create a network of volunteer Water Trail Stewards to “adopt” access sites and/or sections of the Water Trail. ( <i>Steering Committee, County Conservation Districts, Water Trail Manager</i> ) .....                       | <b>High</b>   |
| 2. Perform seasonal and routine access site checks (see form in Appendix C) and submit to regional coordinator. ( <i>Trail Stewards</i> ).....  | <b>High</b>   |
| 3. Conduct access site maintenance as needed, and permitted by the landowner. ( <i>Trail Stewards</i> ) ...   | <b>High</b>   |
| 4. Install and monitor log books at access sites to collect anecdotal information and develop a baseline of data related to trail use. ( <i>Water Trail Manager, Steering Committee, Trail Stewards</i> ) .....                 | <b>Medium</b> |
| 5. Participate in, and/or organize, cleanup events as needed for problem litter areas. ( <i>Water Trail Manager, County Conservation Districts, Clinton County CleanScapes, Solid Waste Authorities, Municipalities</i> ) ..... | <b>High</b>   |

## Secure, Reasonable and Safe Access

|   |             |
|---|-------------|
| 1. Research ownership of land at portages; contact and work with landowners to develop safe, convenient means for portage around obstacles, dams and potentially hazardous areas. Work with PFBC for buoy placement that is safe and best serves Water Trail users. ( <i>Water Trail Manager, PFBC, Landowners/Managers</i> ).....  | <b>High</b> |
| a. River Mile 174.5 - public river access for re-entering the river after portaging around Dudley Tonkin Raftsmen’s Memorial Dam is needed. Presently there is no clear indication of where to re-launch, and hydraulic currents below the dam make this a safety concern. ( <i>4A-Corridor Recommendation Maps</i> ).....  | <b>High</b> |
| b. River Mile 165 to River Mile 164 – there is a need to secure and develop public river access for exiting above the Reliant Power Plant dam. This dam has dangerous hydraulic currents and elevated water temperatures making it a hazard area. The area of common use for exiting is on private land, where the landowner has given verbal consent for public use. Securing long-term public access that meets the current safety standards above this dam is critical to long-term sustainability of the Water Trail. ( <i>4B-Corridor Recommendation Maps</i> )..... | <b>High</b> |
| c. River Mile 163 to River Mile 160 - secure public access for re-entering the river after portaging around the Reliant power plant dam. The landowner at River Mile 163 has given verbal consent for public use of their property, but parking is limited and the power plant has recently posted signs reading “Warning - water temperatures may be significantly elevated - proceed with caution.” An alternate site should be secured downstream, where more parking is available and water temperatures are lowered. ( <i>4C-Corridor Recommendation Maps</i> )..... | <b>High</b> |

- d. River Mile 69.8 – the current portage around the Hepburn Street Dam requires you to exit the river and carry your boat while walking along the face of the steep, rock-lined embankment of the levee. This is physically challenging and considered a safety concern. Extension of the portage to the top of the levee would provide paddlers connection to the Susquehanna Riverwalk, with access to downtown Williamsport for food and overnight stay. Ideally, the portage would be integrated into the proposed re-design of the fish passage structure at this location. (*13A-Corridor Recommendation Maps*) ..... **High**
2. Establish designated takeout areas in case of medical, flash flooding, or other emergencies. (*Water Trail Manager, Steering Committee, County and Local Emergency Management*) ..... **Medium**
3. Work with landowners to develop river access sites as needed where there is presently public ownership or control of land. (*Water Trail Manager, Local Conservancy/Land Trust, Landowners, PFBC, DCNR, SGP*) .....(see the following)
- a. River Mile 207 - at Scout Park in Mahaffey Borough. (*2B-Corridor Recommendation Maps*) **High**
- b. River Mile 176 – at the Lawrence Township proposed river access located just upstream of the Hyde Bridge. This would provide deep water access and day-trip opportunities to local population centers. (*3D-Corridor Recommendation Maps*)..... **High**
- c. River Mile 69.8 – this would allow for extension of the portage at the Hepburn Street. For more information see Recommendation 1d above. (*13A-Corridor Recommendation Maps*) .... **High**
4. Develop working relationships with landowners and secure public ownership or long-term agreements for continued public use of river access areas where verbal consent has been given: River Mile (RM) 204, RM143, RM53, RM22, RM13. (*Water Trail Manager, Local Conservancy/Land Trust, Landowners, PFBC, DCNR, SGP*) ..... **High**
5. Develop working relationships with landowners and managers at campgrounds within the corridor. Secure, develop, and improve the following camping opportunities: (*Water Trail Manager, Local Conservancy/Land Trust, Landowners, PFBC, DCNR, SGP*).....(see the following)
- a. River Mile (RM) 187, RM152 - 147, RM143 – 132, RM126 - RM118, RM113 – 110, RM 89 – 81. For detailed information on these sites refer to the trail gap analysis, section 2e, and the Corridor Recommendation Maps. .... **High**
- b. River Mile (RM) RM97 – 94, RM 67 – 58, RM12. For detailed information on these sites refer to the trail gap analysis, section 2e, and the Corridor Recommendation Maps. .... **Medium**
6. Seek additional river camping opportunities including conducting an inventory of public lands and research of island ownership. Contact landowners to secure consent for designating camping on these lands. (*Water Trail Manager, DCNR, PGC, Landowners, Local Conservancy/Land Trust*).. **Low**
7. Secure and develop potential additional / alternative public access: (*Water Trail Manager, Local Conservancy/Land Trust, Landowners, PFBC, DCNR, SGP*) .....(see the following)
- a. River Mile (RM) 144 – 134, RM114 – 110, RM56 – 55. For more detailed information refer to the trail gap analysis, section 2e ..... **High**
- b. River Mile (RM) 222 – 214, RM195 – 192, RM183-176, RM104, RM69.5 – 68, RM66 – 64, RM20 – 18, RM4 –1. For more detailed information refer to the trail gap analysis, section 2e ..... **Medium**
- c. River Mile (RM) 78-73, RM52 – 49. For more detailed information refer to the trail gap analysis, section 2e. .... **Low**

## Sustain and Enhance Environmental Integrity

1. Maintain contact with key agencies and organizations including the DEP, PFBC, West Branch Restoration Coalition, Clean Water Institute at Lycoming College, Susquehanna River Heartland Coalition for Environmental Studies, and the County Conservation Districts to keep abreast of current water quality conditions and initiatives. (*Water Trail Manager*) ..... **Medium**
  - a. Share relevant field observations with key agencies and organizations.
    - i. Support the efforts of the West Branch Restoration Coalition to remediate AMD and County Conservation Districts to improve water quality.
    - ii. Keep informed of the Susquehanna River Basin Commission’s approval of withdrawals that could affect navigable river levels..... **Low**
  - b. Collaborate with water quality partners; provide letters of support, offer opportunities at Water Trail training to provide education about water quality projects, improvements and needs. .... **Low**
2. Develop and implement a strategy to work with municipalities to raise their awareness of landscape character as a valuable resource. (*DEP, DCNR, County Conservation Districts, SGP, local conservancy or land trust, County Planners*)..... **Low**
  - a. Recognize and conserve viewsheds ..... **Low**
  - b. Maintain and enhance the integrity of floodplain and riparian corridor functions ..... **Medium**
  - c. Minimize impacts to water quality as related to the draw down from consumptive industrial processes, thermal discharges, habitat fragmentation from land development for transmission pipelines, etc. .... **Low**
3. Work with county and local governments to identify potential areas for riparian buffer restoration on publicly held lands, starting with Water Trail access sites. (*Access Site Owners/Managers, County Conservation Districts, PFBC, DEP, USFWS*)..... **Medium**
4. Promote the use of conservation easements for protecting riparian areas. (*Water Trail Manager, SGP, County Planners, County Conservation Districts, Local Conservancy or Land Trust*) ..... **Medium**
5. Protect threatened and endangered species by maintaining, restoring, and /or enhancing native riparian habitats. (DCNR, USFWS, PFBC, SGP, County Conservation District, local conservancy or land trust, Water Trail Manager) ..... **Medium**
  - a. Preserve ecologically diverse riparian areas; plant with native species that provide diversity in the plant strata and support the local food chain..... **Medium**
  - b. Limit the removal of natural vegetation to the greatest extent possible ..... **Medium**
  - c. Provide buffer areas and filtering/infiltration areas between parking areas and waterways..... **Medium**
  - d. Encourage landowners along the river to maintain vegetative buffers ..... **Medium**
  - e. Create conditions that allow for natural re-colonization of native plants ..... **Low**
  - f. Re-establish an ecologically functional shoreline/riverbank with locally native plants..... **Medium**
  - g. Educate Water Trail users as to responsible action and/or protocols when encountering species of concern (threatened or endangered) within the corridor ..... **High**
  - h. Develop and improve access sites using low impact methods that demonstrate habitat value and work with natural systems.
    - i. Promote the adherence to the “Sustainable Sites Initiative - Guiding Principles of a Sustainable Site.”
    - ii. Grade sites to minimize earth disturbance, and promote runoff as sheet flow across undisturbed land..... **High**

- i. Angle river access ramps upstream to reduce impacts from hydraulic scouring during high water conditions. .... **Medium**
- 6. Develop an action plan for invasive species control.....(see the following)
  - a. Provide training opportunities for landowners, managers, Water Trail users and stewards to recognize invasive species (*Penn State Cooperative Extension, USFWS, DCNR BOF, DEP, County Conservation Districts, SGP, Water Trail Manager*)..... **Medium**
  - b. Engage USFWS, DCNR BOF, Biodiversity, and local universities to provide guidance for invasive species control. (*Water Trail Manager*)..... **Medium**
  - c. Assist with monitoring pilot restoration projects (*Trail Stewards in Collaboration with Local Universities*) ..... **Low**
  - d. Provide educational information to volunteers and access site landowners regarding best management practices, including land development practices, invasive species and vegetation management, the use of native plants, the function of riparian areas and the use of vegetation as river bank stabilization. (*Penn State Cooperative Extension, USFWS, DCNR BOF, DEP, County Conservation Districts, SGP, Water Trail Manager*)..... **Medium**
- 7. Support the construction, upgrade, and maintenance of fish passage structures at three dams that currently create impediments for migratory fish and aquatic species. The construction of these facilities will help to restore viable habitat for migratory species on the West Branch, which would enhance the overall Water Trail experience. (*PFBC, USFWS, ACOE, DCNR, SGP, Water Trail Manager*) ..... **Medium**
- 8. Promote sustainable development of trail facilities by promoting the principles of the “Sustainable Sites Initiative”, Best Management Practices (BMP’s), and the Chesapeake Conservation Landscaping Council’s “Conservation Guidelines” for developing site improvements such as access sites, parking, and camping. (*Water Trail Manager, PFBC, PennDOT, DCNR, Site Owners/Managers, County Planners*) ..... **Low**
  - a. Provide signage to increase public awareness of site sensitive design for improving water quality and relating their experience to the Chesapeake Bay..... **Medium**
- 9. Request DEP and other appropriate state and federal agencies research and evaluate concerns over thermal discharges with excessive temperatures. (*Water Trail Manager*) ..... **High**

### **Provide Safe, Pleasurable and Diverse Experiences**

- 1. Work with PFBC, Trail Stewards, and landowners/managers to continue identifying safety concerns on the trail; post safety warnings at known points of concern including dams and other structures, rapids and other areas that are challenging to navigate, degraded or unsafe water conditions. (*Water Trail Manager, PFBC, Owners/Managers*)..... **High**
- 2. Convene state and federal agencies to develop and implement plan to address river degradation caused by bank erosion, deposition, and river obstructions (example: the upper region of the River from Cherry Tree to Patchinville). Identify and remove areas of debris and sediment that pose a threat to the Water Trail navigability. (*USFWS, DEP, PFBC, SGP, County Conservation Districts, County Planners, Water Trail Manager*) ..... **Medium**
  - a. Work to restore a healthy river channel, stabilized stream banks and navigable waterway..... **Low**
  - b. Maintain contact with SRBC regarding observed changes in water levels. .... **Medium**

- |  |               |
|--|---------------|
| 3. Convene stakeholders to explore the possibility of controlled releases from the Curwensville Dam to mitigate the impacts of thermal discharges during low flow periods and to provide river flow for special river-paddling events. ( <i>Clearfield County Recreation Authority, ACOE, DEP, PFBC, SRBC, Water Trail Manager</i> ) ..... | <b>Medium</b> |
| 4. Adopt signage design standards for consistency along the Water Trail. Coordinate with the other Susquehanna Water Trails to ensure signage consistency. ( <i>Water Trail Manager, Steering Committee</i> ) .....  | <b>Medium</b> |
| a. Provide signage at portages to clarify use areas and promote public safety. ( <i>Water Trail Manager, Landowners/Managers and PFBC</i> ) .....  | <b>High</b>   |
| b. Provide discreet signage for: orientation on the trail (on bridges), roadway and directional information to sites, site identification, local land-based resources, and education/interpretation .....  | <b>Low</b>    |
| 5. Explore opportunities, including livery services, to provide connectivity to local food, lodging and local businesses and for attracting diversified user groups to the Water Trail. ( <i>Water Trail Manager, Local Business Owners</i> ) .....  | <b>Low</b>    |
| 6. Develop a Water Trail website to serve as a clearinghouse for centralized information and keeping information current. ( <i>Water Trail Manager, Local Universities</i> ).....  | <b>Medium</b> |
| a. Provide link to river gauge readings. Develop and post information regarding what river levels mean in terms of local Water Trail viability. ....   | <b>Medium</b> |
| b. Post information about local and regional history, points of interest, and local businesses to promote and support local economies. ....  | <b>Low</b>    |
| 7. Work with landowners and managers to implement recommendations of the access site inventory and analysis (section 2d) to address issues of ADA compliance for Universal Accessibility, adequate parking, signage and way-finding. ( <i>Water Trail Manager, Site Owners and Managers</i> ) .....  | <b>Medium</b> |
| 8. Identify or develop additional sites along the trail for obtaining potable water. ( <i>Volunteer Trail Stewards, Water Trail Manager</i> ).....   | <b>High</b>   |
| 9. Communicate information about existing facilities -or lack thereof- at access sites and on the trail website, to manage trail user expectations. ( <i>Water Trail Manager, Site Owners/Managers</i> ) .....   | <b>Medium</b> |
| a. Post ‘distance to next port-a-pot’, educational information about ‘leave no trace’ principles, primitive camping ethics, proper disposal of human wastes, and litter control.....   | <b>High</b>   |
| b. Provide signage at access point parking areas directing people to use the next access site if the parking lot has reached capacity. ....  | <b>High</b>   |
| c. Identify ‘respite areas’ along the trail – public parks and spaces for stopping, resting or stretching. ....  | <b>Low</b>    |
| d. Identify and communicate cell phone reception areas to trail users. ....  | <b>Low</b>    |
| 10. Update maps and guides on a regular basis to keep information current about existing accesses and to add new access and camping areas as they become available. ( <i>Water Trail Manager</i> ).....  | <b>Medium</b> |
| 11. Evaluate the Trail corridor to determine if any special regulation areas are appropriate. ( <i>Water Trail Manager, PFBC</i> ) .....   | <b>Medium</b> |

## Adopt a Functional Organizational Structure for Trail Management

- |   |               |
|---|---------------|
| 1. Create a functioning management organization to provide leadership, raise funds for Water Trail improvements, and actively support and unify local groups of Water Trail volunteers. ( <i>Volunteer Trail Stewards, Water Trail Manager</i> ).....   | <b>High</b>   |
| 2. Develop and implement membership campaign to build a network of constituents and raise funds for the Water Trail. ( <i>Water Trail Manager, Volunteer Trail Stewards</i> ).....  | <b>Medium</b> |
| 3. Provide report forms for recording site observations and work accomplished. ( <i>Volunteer Trail Stewards, Water Trail Manager</i> ) .....   | <b>High</b>   |
| 4. Research liability issue(s) related to volunteers performing maintenance, and create a risk management plan (may include waivers, insurance, etc.). ( <i>Water Trail Manager</i> ) .....   | <b>High</b>   |
| 5. Monitor levels of use on the trail at access points and camping areas using trail steward reports, trail registries, and web-based data input. ( <i>Volunteer Trail Stewards, and Regional Coordinators</i> ).....   | <b>High</b>   |
| 6. Analyze trail use levels as related to site impacts to determine if there is a need to control overuse and over-crowding. ( <i>Landowners/Managers, Water Trail Manager</i> ).....   | <b>Medium</b> |
| 7. Work with public access site managers to evaluate maintenance protocols that can also be applied to private sites. Provide local volunteers with training and a checklist to be used as guidance for providing consistent standards of care for access sites throughout the river trail. ( <i>Public Site Managers, Water Trail Manager</i> )..... | <b>High</b>   |
| 8. Develop a landowner agreement to document the level of maintenance and tasks that the landowner will allow, and the duties that the Volunteer Trail Steward will undertake. ( <i>Landowners/Managers, Water Trail Manager</i> ) .....  | <b>High</b>   |
| 9. Re-evaluate the MOU for the Water Trail Manager a year prior to renewal/signing. ( <i>Water Trail Manger, DCNR, PFBC and CBGN</i> ) .....  | <b>Medium</b> |

## List of Acronyms Used in the Plan

|          |  |
|----------|--|
| ACOE     | Army Corps of Engineers  |
| AMD      | Abandoned Mine Drainage  |
| BOF      | Bureau of Forestry, Department of Conservation and Natural Resources   |
| CBGN     | Chesapeake Bay Gateways and Watertrails Network                        |
| DCNR     | Pennsylvania Department of Conservation and Natural Resources          |
| DEP      | Pennsylvania Department of Environmental Protection                    |
| NPC      | Northcentral Pennsylvania Conservancy                                  |
| NPS-RTCA | National Park Service Rivers, Trails & Conservation Assistance Program |
| PennDOT  | Pennsylvania Department of Transportation                              |
| PEC      | Pennsylvania Environmental Council                                     |
| PFBC     | Pennsylvania Fish and Boat Commission                                  |
| PGC      | Pennsylvania Game Commission   |
| SEDA-COG | Seda Council of Government   |
| SGP      | Susquehanna Greenway Partnership                                       |
| SRBC     | Susquehanna River Basin Commission                                     |
| USGS     | United States Geological Survey  |
| USFWS    | United States Fish and Wildlife Service                                |

# Case Studies

*Each Water Trail access site provides an opportunity to demonstrate low-impact and site-sensitive design for land development. As part of this Stewardship and Conservation Plan, four case studies were developed to serve as examples of how to incorporate principles of environmentally sustainable site design at river access sites along the Water Trail. If implemented, these plans can serve as examples of using green design concepts, utilizing Best Management Practices for storm water management and the Chesapeake Conservation Landscaping Council's "Conservation Guidelines".*



*Loyalsock Creek entering the West Branch during high water.*

## CASE STUDY 1

### RM(227) - Cherry Tree Municipal Access

#### **Site Analysis:**

This small community park has a stabilized stone parking area, and a walkway constructed of pervious pavers that leads to the river for hand launching canoes and kayaks. Vegetation growing in the pavers needs to be controlled to maintain an accessible pathway. Depositional material has formed a gravel bar in the river at the launch location, which makes this site unusable in any low flow conditions. Upstream riverbank erosion needs to be addressed to control this transport of sediment. There is a small tree grove and a gently sloped lawn area with picnic tables and benches for day use. (Several shade trees on site are dead and should be removed.) The remaining site has very steep riverbank slopes that are well-vegetated in maintained lawn; the surrounding riverbanks are covered entirely with Japanese knotweed. There are a few canopy trees near the parking area to provide some shade.

#### **Recommendations:**

- Reduce regular on-site riverbank mowing operations. Maintain lawn in picnic and use areas.
- Remove dead trees and plant canopy trees to provide shade.
- Manage vegetation to maintain a clear surface on ADA accessible paths.
- Discourage geese from taking up permanent residence.

This site is in a region that contains some of the highest concentrations of abandoned mine lands in the Commonwealth. Messaging could be incorporated into signage on this site to convey the importance of stewardship. Mineral resource extraction (coal and clay mining) of the 19th Century left a legacy of impaired water resources throughout this region. While much is being done to address point source discharges of abandoned mine drainage (AMD), there is much more remaining to be done. By being thoughtful stewards of our land and water today, we help to create a positive legacy for generations in the future.

## CASE STUDY 2

### RM(83) – Baker Run DCNR Access

#### **Site Analysis:**

This site consists mostly of moderately sloped uplands with well-drained soils having a very rocky surface, and a canopy of mature hardwood trees (oak forest) on a bench above the river.

There is also a 30' high, riverbank that descends steeply down to the river, consisting of alluvial deposits of sandy soils, with a vegetative cover including some trees, Japanese knotweed and low lying areas of herbaceous cover. This steep bank presents challenges to accessing the river. There are two small drainage channels on this site that carry flow discharged from the upslope roadway cross pipes.

***Recommendations:***

- Develop a hand-launch river access to serve local population centers, and provide areas for water trail camping for through-paddlers. Develop a site plan for parking, roadway, access to the river, restroom, and areas for camping that respect the natural systems and features of the site.
- Construct parking and circulation paths on the more gently sloped areas of the site.
- Minimize impacts to steep riverbank slopes.
- Avoid and/or work with existing drainage channels and flow patterns.
- Cross over the existing drainage channel with a footbridge to minimize impacts.
- Minimize area of site disturbance to conserve mature canopy trees and protect river bank from erosion. Grade site to retain existing large specimen trees and majority of existing trees.
- Avoid disturbance of river bank down slope of natural drainage discharge areas.
- Protect quality of water resources by implementing measures to filter storm water and promote infiltration to ground water. Grade disturbed areas so that runoff flows onto either undisturbed or well-stabilized land.
- Reduce runoff by using pervious, stabilized stone surfacing for roadway, parking and trail; provide limestone screenings in areas providing universal accessibility.
- Grade lower edge of parking area level so surface runoff sheet flows (is not concentrated) to minimize erosion.
- Install French mattresses as needed to provide drainage under roadway. This will allow water to ‘flow through’ instead of being ‘piped under’ roadway, to minimize concentration of flow and promote infiltration.
- Retain existing native vegetation to the extent possible, and maintain plant regime appropriate to a mature hardwood forest.
- Remove invasive species.

This site is in a region where trees were harvested as part of the 19th Century lumbering era. Mountainsides were literally denuded of woodland vegetation, and rains that followed washed soil into the waterways. In the early 20th Century the Civilian Conservation Corps (CCC) re-planted many acres of those forests along with the efforts of the Bureau of Forestry, who is responsible for the conservation and management of much of the forest resources that surround us. By being thoughtful stewards of our land and water today, we help to create a positive legacy for generations in the future.

### **CASE STUDY 3** **RM(45) – Linden PFBC Access**

***Site Analysis:***

This site lies within a gently sloped floodplain elevated above the river with well drained soils. Site improvements consist of a large bituminous parking area surrounded by expansive lawn. The lawn slopes down from Antlers Lane to the swale area, dotted with a mix of black cherry and locust trees with areas of bare soil that appears to be hard to mow. There is a steep access drive down to the river with a concrete ramp for launching boats on trailers; there is also a removable dock for fishing and boating access. Paved parking lot is sloped so runoff sheet flows onto vegetated lawn surface, without concentrated flows. The water then moves through site in grass-lined swales that provide filtering and promote infiltration into groundwater system; these are storm water features using good design. It was observed that during wet periods, grass-lined swales were not mowed regularly on site. At these times a naturalized meadow emerged with native herbaceous plants.

***Recommendations:***

- Enhance design of this site by incorporating environmentally sensitive design and maintenance techniques.
- Reduce the area of maintained lawn for multiple benefits. Diversifying the plantings on site will provide shade for runoff in the filter areas, helping to lower runoff temperatures.
- Protect the quality of water resources by implementing measures to filter storm water and promote infiltration to ground water.
- When existing paved surfaces are in need of repair, replace paved surface with a pervious stabilized surfacing to promote storm water infiltration, filtering, and cooling.

This site is located in an impoundment area of the river, upstream of the Hepburn Street Dam. Over the years, dams have been built along the river for power generation and recreational purposes. While these dams have served their intended purposes, they have also served to stop the migration of fish species - including eels and American Shad. Efforts are underway to provide a means for aiding these species to overcome the dams, so that they can return to headwater areas for completing their natural life cycles. By being thoughtful stewards of our land and water today, we help to create a positive legacy for generations in the future.

#### **CASE STUDY 4** **RM(15) – Watsontown Municipal Access**

##### ***Site Analysis:***

This property consists of a sandbar at the river, a small overflow channel, a steep rocky riverbank, and a gently to moderately sloped lawn area adjacent to the municipal parking lot and park. This municipal parking lot provides adequate parking to serve this river access. Along the abutment of the bridge there is large rip-rap (stone) for stabilization of the steep slopes; this rock is not desirable to look at, and it reflects solar heat onto this site. Currently, people wishing to access the river use a well-worn path that traverses down a steep, rocky embankment to get to the river's edge. This path has a surface that is not stable, and shows signs of erosion. There is a very large sycamore tree at the top of the bank, with Japanese knotweed (invasive species) covering the majority of the river bank. There is also a grassed lane that leads down to the river's edge; this lane descends in a downstream direction and reaches the river in a backwater eddy that accumulates sediment, making it too 'mucky' for practical use.

##### ***Recommendations:***

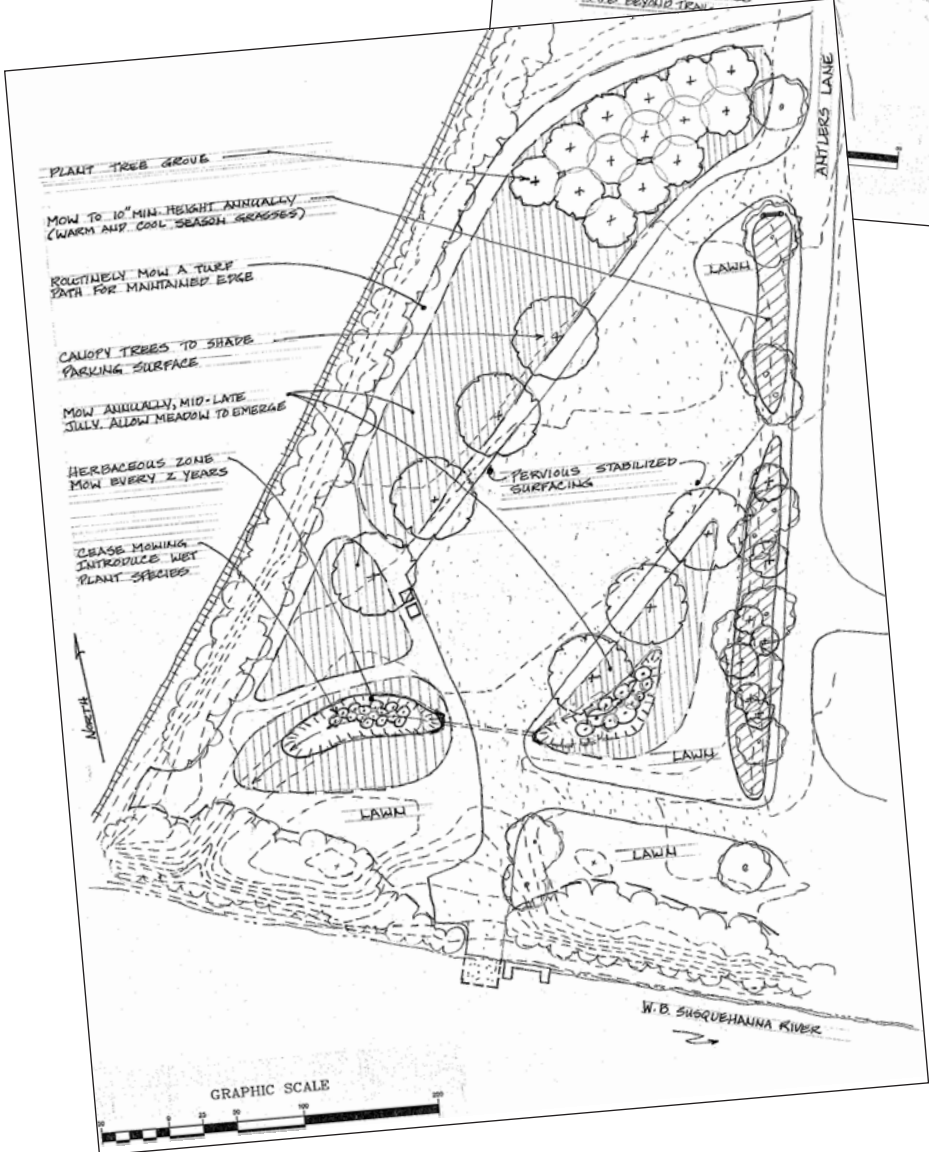
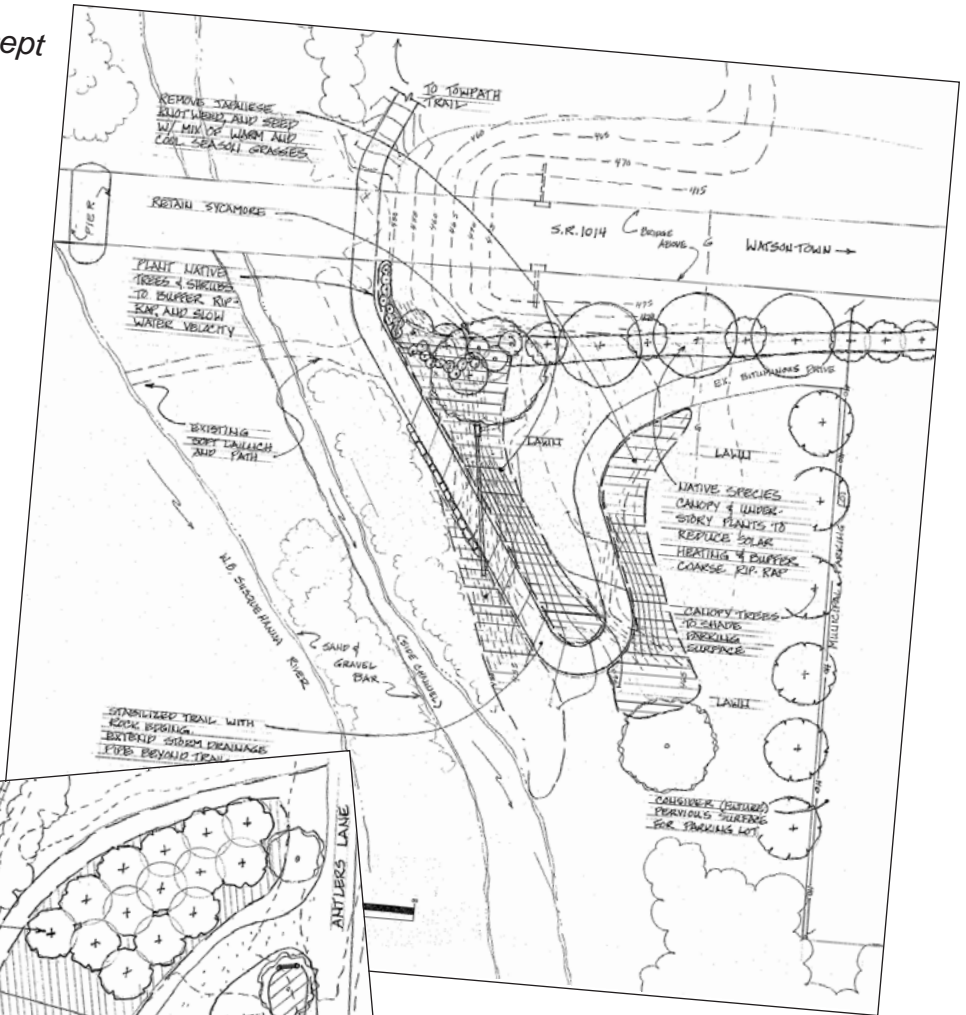
- Develop a hand-launch river access to serve local population centers, and provide access to local amenities for water trail paddlers.
- Minimize area of site disturbance to conserve mature canopy trees and protect river bank from erosion.
- Protect the quality of water resources by implementing measures to filter storm water and promote infiltration to ground water.
- Retain existing canopy trees. Remove invasive species and establish a plant regime appropriate to a riverine floodplain and riverbank eco-system that will require less long-term maintenance.

This site is located in a developing area within an agricultural region of the watershed. Historically we think of mineral extraction as impacting our waters; but soil erosion, herbicides, pesticides and excess nutrient runoff are also sources of pollution – from both agricultural land and land developments. Fortunately, the impact on water quality from farms and developed lands can be improved by following Best Management Practices and conservation guidelines. By being thoughtful stewards of our land and water today, we help to create a positive legacy for generations in the future.



*Bridge piers, such as these below Williamsport, provide an opportunity for interpretation, but also provide a stewardship challenge. During high water events, debris becomes caught up on the piers.*

# Watson town Concept



# Linden Concept



