Lower Delaware
National Wild & Scenic River

The First Fifteen Years

Accomplishments of the Lower Delaware National Wild & Scenic River Program

2000 to 2014

This report was prepared by the U.S. Department of the Interior, National Park Service, Northeast Region in cooperation with the Delaware River Basin Commission and Lower Delaware Wild & Scenic River Management Committee to assess the status of implementation of the Lower Delaware River Management Plan 15 years after the designation of the Lower Delaware as a National Wild & Scenic River. Further, this report serves to:

Recognize and celebrate the accomplishments of all entities that supported the Wild & Scenic designation, and helped develop and implement the River Management Plan.

Serve as a history and record of the Lower Delaware Wild & Scenic River to inform those who were not present at the "birthing" of the national designation and River Management Plan.

Remind signatories to the River Management Plan and the public that there is still work to do to implement the actions identified in the Plan.

Demonstrate the potential benefits of participating in the Lower Delaware Wild & Scenic River as a "friend," supporter, and implementer.

June, 2015

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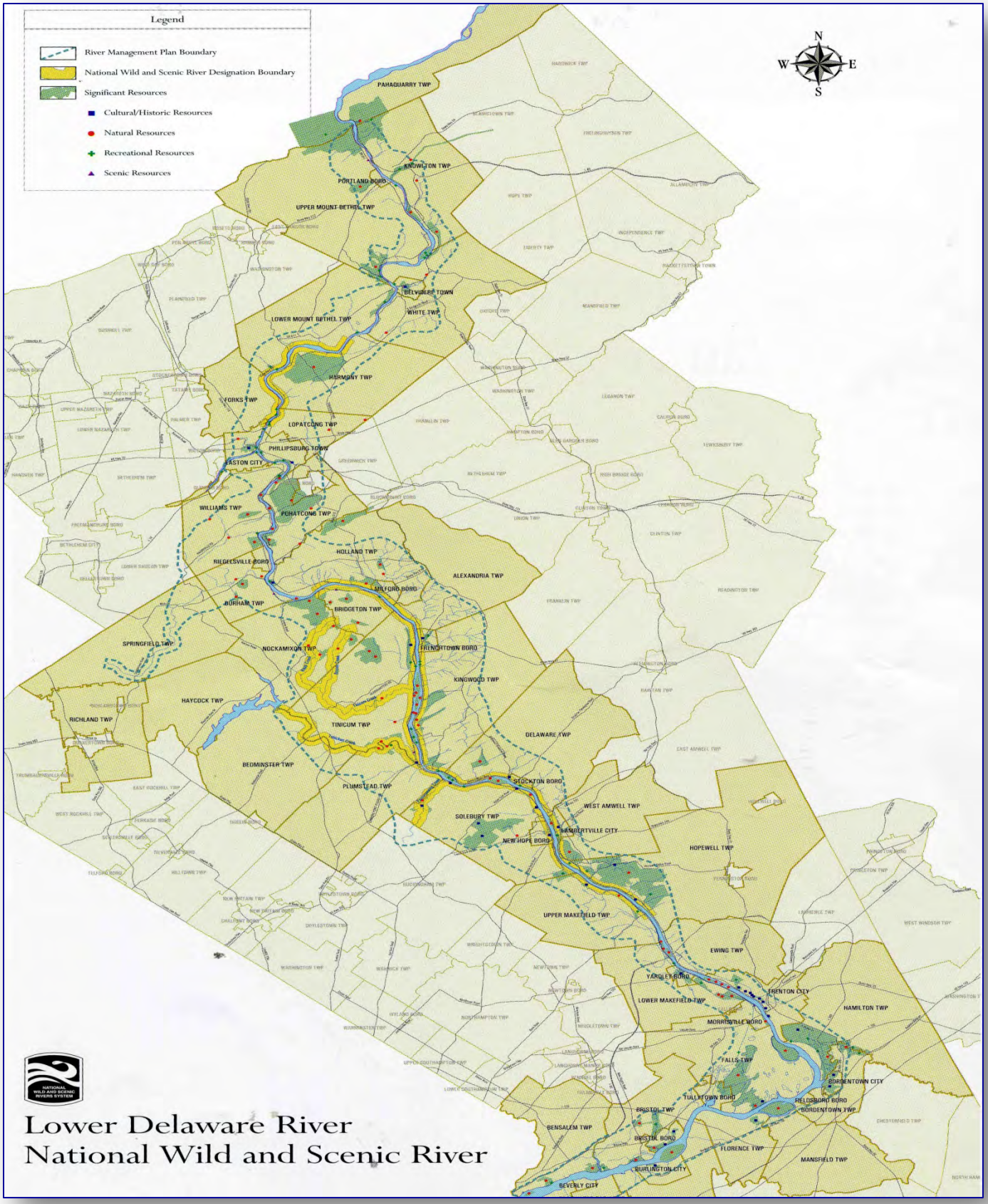
http://www.nps.gov/lode (NPS web site)
http://www.lowerdelawarewildandscenic.org
(Lower Delaware River Management Committee)

ACKNOWLEDGEMENTS

The National Park Service thanks the following organizations, municipalities and agencies for their contributions to this report and their editing assistance:

Bucks County Planning Commission
Delaware River Basin Commission
Delaware River Experience, Inc.
Delaware River Greenway Partnership
Delaware River Mill Society
Delaware Riverkeeper Network
Heritage Conservancy
Hunterdon Land Trust
Lower Mount Bethel Township
Martins-Jacoby Watershed Association
Natural Lands Trust
New Jersey Department of Environmental Protection, Division of Parks & Forestry –
Delaware & Raritan Canal State Park
Pennsylvania Department of Conservation and Natural Resources, Bureau of State Parks –
Delaware Canal State Park
Upper Mount Bethel Township


Legend
River Management Plan Boundary
National Wild and Scenic River Designation Boundary
Significant Resources
Cultural/Historic Resources
Natural Resources
Recreational Resources
Scenic Resources
N
W
E
S
PAHAQUARRY TWP
KNOWLTON TWP
PORTLAND BORO
UPPER MOUNT BETHEL TWP
BELVIDERE TOWN
WHITE TWP
LOWER MOUNT BETHEL TWP
HARMONY TWP
FORKS TWP
LOPATCONG TWP
PHILLIPSBURG TOWN
EASTON CITY
WILLIAMS TWP
POHATCONG TWP
HOLLAND TWP
RIEGELSVILLE BORO
ALEXANDRIA TWP
MILFORD BORO
DURHAM TWP
BRIDGETON TWP
SPRINGFIELD TWP
NOCKAMIXON TWP
FRENCHTOWN BORO
KINGWOOD TWP
HAYCOCK TWP
RICHLAND TWP
TINICUM TWP
DELAWARE TWP
BEDMINSTER TWP
PLUMSTEAD TWP
STOCKTON BORO
WEST AMWELL TWP
SOLEBURY TWP
LAMBERTVILLE CITY
NEW HOPE BORO
HOPEWELL TWP
UPPER MAKEFIELD TWP
EWING TWP
YARDLEY BORO
TRENTON CITY
LOWER MAKEFIELD TWP
HAMILTON TWP
MORRISVILLE BORO
FALLS TWP
BORDENTOWN CITY
TULLYTOWN BORO
FIELDSBORO BORO
BORDENTOWN TWP
BRISTOL TWP
BENSALEM TWP
BRISTOL BORO
FLORENCE TWP
MANSFIELD TWP
BURLINGTON CITY
BEVERLY CITY
NATIONAL WILD AND SCENIC RIVERS SYSTEM
Lower Delaware River
National Wild and Scenic River

Communities of the Designated Reaches of Lower Delaware National Wild & Scenic River

PENNSYLVANIA	NEW JERSEY
Northampton County	**Warren County**
Lower Mount Bethel Township	Harmony Township
Forks Township	Lopatcong Township
Bucks County	**Hunterdon County**
Riegelsville Borough	Holland Township
Nockamixon Township	Milford Borough
Bridgeton Township	Alexandria Township
Tinicum Township	Frenchtown Borough
Plumstead Township	Kingwood Township
Solebury Township	Delaware Township
New Hope Borough	Stockton Borough
Upper Makefield Township	City of Lambertville
Bedminster Township	West Amwell Township
	Mercer County
	Hopewell Township
A total of 23 municipalities are designated	

Communities Supporting Designation but Not Included in the Designated Reaches

PENNSYLVANIA	NEW JERSEY
Northampton County	**Warren County**
Portland Borough	Knowlton Township
Upper Mount Bethel Township	
City of Easton	
A total of 4 municipalities not included in the designated reaches supported designation	

Communities Not Supporting Designation in 2000

Northampton County, PA: Williams Township

Bucks County, PA: Springfield and Durham townships

Warren County, NJ: Towns of Belvidere and Phillipsburg, and White and Pohatcong townships

TABLE OF CONTENTS

EXECUTIVE SUMMARY 10

PARTNERSHIP WILD & SCENIC RIVERS 12

BACKGROUND: HISTORY OF THE LOWER DELAWARE 13

The Early Years: Study Process & Designation 13

The 1997 River Management Plan 14

Lower Delaware River Management Committee 15

TRANSITION AND RENEWAL 2006-2008 17

Enhancing the Bi-State Structure 17

The River Administrator 18

REFOCUSING THE MISSION 2008-2014 20

Recapturing the River Management Plan Vision 20

National Park Service on the Delaware River 21

PROGRAM HIGHLIGHTS & RIVER MANAGEMENT PLAN GOALS 22

Goal #1: Water Quality 22

Highlights 23

Special Protection Waters 23

Point Discharge Monitoring for Lower Delaware River 23

Re-Analysis of Archived Water Quality Samples for Hydraulic Fracturing Parameters 24

Stewardship Handbook for the Lower Delaware 25

Highlights 27

Landowner Forums and Outreach 27

Heaney's Run Restoration and Flood Control Project 27

Bridgeton-Nockamixon-Tinicum Groundwater Management Committee 28

Lower Delaware Regional Watershed Coordinating Council 28

Baseline Water Quality Monitoring for Nockamixon Township Area, PA 30

Upper Mount Bethel Township (PA) Water Resources Study 31

River Cleanups & Local Involvement in Water Quality Monitoring 32

Goal #2: Natural Resources ... 33
Highlights ... 34
Invasive Plant Removal and Ecological Restoration at Bull's Island Natural Area and Firemen's Eddy (NJ) ... 34
Stewardship at Thomas F. Breden Preserve, Milford Bluffs (NJ) ... 36
Restoring the Zega-Lockatong Preserve ... 37
Restoring the Wickecheoke Meadows ... 38
Highlights ... 39
Wickecheoke Creek Watershed Management Plan ... 39
Municipal Ordinance Review ... 40
Goal #3: Historic & Cultural Resources ... 40
Highlights ... 41
Phillipsburg (NJ) Historic Sites Inventory ... 41
Nockamixon Township Historic Resources Survey ... 42
Goal #4: Recreational Resources ... 43
Highlights ... 45
Delaware River Water Trail ... 45
Ramsaysburg (NJ) Boat Launch & Shoreline Restoration ... 48
Trail Access Improvements in New Jersey ... 49
Goal #5: Economic Development ... 51
Highlights for Tourism-related Implementation Strategies ... 55
Delaware River Scenic Byway ... 55
Goal #6: Open Space Preservation ... 57
Highlights of Implementation Strategy for Land Protection ... 59
Pennsylvania and New Jersey Protected Lands Database ... 59
Delaware River Watershed Protection Initiative (NJ) ... 60
Goal #7: Education & Outreach ... 62
Highlights ... 63
Celebrating Important Milestones ... 63
Youth Summit ... 64
Delaware River Experience (DRE) ... 64
Junior River Rangers for Lower Delaware ... 66

Bangor (PA) Area School District Interpretive Trail 66
Educational Forums & Public Events 67
IMPLEMENTATION CHECKLIST FOR RIVER MANAGEMENT PLAN 68
SOURCES 78

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EXECUTIVE SUMMARY

2015 marks the 15th anniversary of the federal designation and local support of the Lower Delaware River as a National Wild & Scenic River. It is a special time to celebrate the hard work, perseverance and dedication of those organizations, agencies and individuals which supported the designation and have worked diligently to promote and protect the river and its outstanding resources. The Lower Delaware was federally designated as a National Wild & Scenic River in November of 2000, following the development of a River Management Plan to identify partners and goals in river protection.

From 2002 through 2014, $1,125,277 in federal funds was awarded to the Delaware River Greenway Partnership and other partners of the National Park Service (NPS) to carry out projects that implement the Lower Delaware Wild & Scenic River Management Plan. More impressive than the federal funding are the more than 60 projects and more than 50 partners (individual businesses, state and local governments, federal agencies, and non-profits) who leveraged more than double the additional resources for the successful completion of those projects—resulting in interpretation and preservation of cultural and historic resources once underutilized or neglected; enhanced access to the Delaware River for inspiration, recreation and relaxation; improvements to water quality in the Lower Delaware River and its tributaries; open green space acquisition for habitat protection and trail access; and promotion of stewardship and land management to more effectively protect the river's natural resources. More recent projects such as the Youth Summit in 2008 and the ongoing Delaware River Experience have recognized the need for nurturing younger generations in the interest, appreciation and caring for the Delaware River and its unique natural and cultural environment.

The Lower Delaware is not without its challenges, from the difficulty of coordinating conservation efforts among five counties within two states, to the potential environmental threats from energy extraction and installation of large-scale utilities, to smaller-scale local land use decisions that can impact the river for good or ill. Not all of today's challenges were foreseen or addressed in the River Management Plan and subsequent Action Plan (2007-2011). Many Lower Delaware advocates and partners have suggested the need for a new vision and plan for the Wild & Scenic River that addresses current and potential future river management and protection issues.

This report is a first step in answering the question: Do we need an updated plan of action for the Lower Delaware National Wild & Scenic River? The 15-year program accomplishments report rightfully celebrates the achievements of NPS partners in implementing the River Management Plan from 2000-2014. It provides a summary historical record of how the Wild & Scenic designation came about, the roles of the Lower Delaware partners and how they organized, specific projects that were federally funded and their results in terms of meeting the River Management Plan goals. It also identifies strategies and actions that have not been implemented, or where there is not sufficient information to evaluate whether a specific strategy or action was successfully implemented. The report provides a baseline of information that can help Lower Delaware partners in deciding which additional information may be needed to inform future planning efforts and guidance on prioritizing those efforts.

The National Park Service reviewed agency Cooperative Agreement files and numerous reports and documents that resulted from the study of the Lower Delaware for eligibility and suitability as a potential National Wild & Scenic River. The goals and actions in the original River Management Plan from 1997 and the later Action Plan were reviewed. NPS found that a number of strategies and actions—eight out of seventy-one (about 11%)—identified in the Action Plan had been fully implemented; a noteworthy thirty-seven (about 52%) had been partially implemented; and sixteen (about 23%) were apparently not taken up. No data was readily available to evaluate whether the remaining ten strategies and actions had been addressed.

The next steps, which are beyond the scope of this report, would be to determine: 1) which partially implemented or unimplemented strategies and actions identified in the RMP should remain priorities, given changing political, economic, and

environmental conditions; 2) whether the identification of new strategies is warranted; and 3) if the collection and assessment of additional information is warranted to inform the setting of future priorities and actions.

To assist in the process of prioritizing river protection actions for the next 15 years, NPS began an update to the municipal ordinance matrix originally created by Delaware River Greenway Partnership in 2006. This companion piece to the 15-year program accomplishments report identifies each of the municipalities (designated and undesignated) of the Lower Delaware corridor and the specific zoning ordinances and other mechanisms that are in place in each municipality to protect sensitive resources such as steep slopes, woodlands, wetlands, riparian buffers and floodplains. There are notable gaps in our information with the exception of Bucks County municipalities; however, the municipal ordinance matrix is meant to serve as a working document that would be updated over time as ordinances are revised or new regulations enacted.

Protection of the Lower Delaware River and its outstanding resources requires an ongoing commitment and funding from many sources. The National Park Service does not own or manage land along this "Partnership" Wild and Scenic River and is dependent on different levels of government, organizations, and citizens to care for the river. Nurturing such a partnership requires willing participants, patience, leadership and trust. It also requires an ability to adapt to the challenges of changing circumstances.

The National Park Service hopes to see revived enthusiasm around the Lower Delaware as an engine of economic development based on the outstandingly remarkable values of the scenic corridor. The river corridor communities share both a view of the river and an economic interest in protecting and promoting the scenic vistas and outstanding recreational value of its waterways. While the goals of the Management Plan remain relevant, the Action Plan that evolved from it needs a new vision and momentum that should be informed by the residents and businesses of the Lower Delaware corridor. The NPS hopes that 2015 will see a renaissance of interest in the Lower Delaware River as a shared amenity and the central focus for corridor businesses, residents and visitors. Significant opportunities exist for river-compatible economic development, community revitalization, flood protection, educational and interpretive programs, and enhanced river access and recreation. These pursuits will help achieve the goals of the Management Plan, but they need all Lower Delaware communities, state and local governments, federal agencies, businesses and non-profits working together to succeed.

What YOU Can Do . . .

The National Park Service and it Partners welcome you to discover how you can make a difference by contacting:

- Nancy Janyszeski, PA Chair, and Carol Hoffmann, NJ Chair of the Lower Delaware Management Committee at lowerdelaware@lowerdelawarewildandscenic.org.

For more information about the Lower Delaware Wild & Scenic River

- Visit www.lowerdelawarewildandscenic.org and www.nps.gov/lode/index.htm, or
- Contact: Julie Bell, River Manager, National Park Service, 215.597.6473

PHOTO: JOHN MAUSER

PARTNERSHIP WILD & SCENIC RIVERS

"It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values, shall be preserved in free- flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations." (Wild and Scenic Rivers Act, P.L. 90-542; 16 U.S.C. 1271 et seq., October 2, 1968)

A National Wild and Scenic River is one designated by Congress or the Secretary of the Interior, which with its environment, is to be preserved in its free-flowing state for the enjoyment of present and future generations. The values for which the river was designated are to be preserved and enhanced.

A "Partnership River" is one in which little, if any, of the adjacent land is federally or state owned, but instead is mostly in private or local municipal hands. These rivers, more typical of the Northeast, are managed by a collaboration or partnership of adjacent communities, state governments and the National Park Service. The Lower Delaware is a Partnership River, managed under a broad and carefully constructed partner-approved management plan. Its geography includes some 65 miles of the New Jersey and Pennsylvania sides of the river from just south of the White / Harmony Township border in New Jersey to Washington Crossing Historic Park in Pennsylvania.

Background: History of the Lower Delaware National Wild & Scenic River

The Lower Delaware was designated as a National Wild & Scenic River on November 1, 2000.

The Lower Delaware's authorizing legislation (P.L. 106-418) designated 33.5 miles in two segments along the mainstem Delaware River and a total of 28.4 miles along select Pennsylvania tributaries. The two mainstem segments stretch from New Hope, Pennsylvania north to the Durham/Nockamixon Township border, and from just north of the City of Easton, PA to River Mile 193.8 (approximate location of Foul Rift, New Jersey). The tributaries include much of the mainstems of the Tohickon, Tinicum, and Paunacussing creeks. Thus, 65+ miles of the Lower Delaware joined 37 miles of the Middle Delaware River and 73 miles of the Upper Delaware River, adding a total 150 miles of the Delaware River into the National Wild and Scenic Rivers System.

The Early Years: Study Process & Designation

The National Wild & Scenic River designation recognizes the Delaware as the longest free-flowing river East of the Mississippi and its "outstandingly remarkable values" of regional and national significance. The designation also means protection from federally licensed or assisted dams, diversions, channelizations, and other water resources projects that would have a direct and adverse effect on the river's free flowing condition and on outstanding resources.

The study process to determine the eligibility of the river for the National Wild & Scenic Rivers System resulted in part from a proposal to pump 100 million gallons per day out of the Delaware River at Point Pleasant, Pennsylvania. It was feared that river flows would diminish as a result.

The middle and upper portions of the Delaware were declared Wild and Scenic in 1978, in a bill that had been guided through Congress by then-U.S. Representative Peter H. Kostmayer of Bucks County.

Representative Kostmayer encountered opposition when he turned his attention to the lower Delaware. The electric utility lobby in Washington blocked the legislation because of plans to build the Point Pleasant water project, which supplies cooling water to the Limerick nuclear power plant in Montgomery County, PA. When the Point Pleasant project was completed in the late 1980s, the opposition eased and Representative Kostmayer renewed his efforts.

The U.S. Congress was finally able to pass a bill in 1992 authorizing the National Park Service (NPS) to study the Lower Delaware mainstem from the southern end of the Delaware Water Gap National Recreation Area south to Washington Crossing State Park, New Jersey. The NPS was also to study Cooks, Tinicum and Tohickon creeks, tributaries to the Delaware in Bucks County, Pennsylvania.

What's in the plan?

The River Management Plan established goals and actions to ensure long-term protection of the river's outstanding values and compatible management of land and water resources associated with the river.

The plan and authorizing legislation also listed specific partners who would assist in completing the actions that are identified in the plan, created a management structure, and named the Delaware River Greenway Partnership (DRGP) as the non-profit that would coordinate the partners through a Lower Delaware Wild & Scenic River Management Committee.

The Plan was important in spelling out how federal, state and local governments could take action to protect the Lower Delaware, and more importantly what individual property owners and organizations could do to protect the outstanding river resources and water quality, while providing for economic growth and recreational uses.

The 1997 River Management Plan

Along with identifying the specific river segments for national designation, the authorizing legislation established a management structure.

The National Park Service and the Lower Delaware Wild & Scenic River Study Task Force formed a federal, state and local partnership to implement the Lower Delaware River Management Plan developed in 1997, while the Lower Delaware was under study for potential national designation. The Task Force consisted of New Jersey and Pennsylvania state agencies, riverside municipalities, and private non-profits supporting the river's designation and the River Management Plan.

Delaware River Greenway Partnership led the effort to develop the River Management Plan. DRGP's stated mission was to establish a greenway corridor along the Delaware River between the northern boundary of Philadelphia and the Delaware Water Gap National Recreation Area. DRGP had assisted NPS in shepherding the study process that led to the designation of the Lower Delaware as a National Wild & Scenic River and had played a major role in the development of the River Management Plan.

The Plan was important in spelling out how federal, state and local governments could take action to protect the *entire* Lower Delaware, not just the designated river segments, and more importantly what individual property owners and organizations could do to protect the outstanding river resources and water quality, while providing for economic growth and recreational uses. The Plan outlined the principles under which the Lower Delaware River partners would operate and established a blueprint for the later development of more detailed actions. One important principle, supported in the authorizing legislation, was that the federal government would not own or directly manage any lands within the boundary of the Lower Delaware National Wild & Scenic River.

During 1999 and 2000, $42,000 in federal Wild & Scenic Rivers funding enabled DRGP to focus on technical assistance to riverside municipalities and education regarding their role in implementing the Plan.

The primary purpose of the Management Committee was to support, coordinate and facilitate implementation of the River Management Plan and thereby to promote long-term protection of the Lower Delaware River.

DRGP held river-oriented events that helped raise local awareness and understanding of the River Management Plan. DRGP also provided direct technical assistance to municipalities based on a comparison of the recommendations in the River Management Plan against existing local programs identified in the Municipalities Survey Report prepared for the Lower Delaware Wild & Scenic River Study.

Lower Delaware River Management Committee

The establishment of the Lower Delaware Wild & Scenic River Management Committee took center stage throughout 2001.

Fifty representatives of state, county and local governments and concerned non-profits participated in four meetings, to assist DRGP in implementing the River Management Plan.

Rules and procedures for a newly formed River Management Committee, which would meet on a quarterly basis, were adopted in December of 2002; however, the Committee was only activated in 2004, once a Memorandum of Understanding was signed to implement the River Management Plan.

The 2002 bylaws laid out the purpose and functions of the Committee.

Important functions of the Committee included:

1) Providing a forum for river related issues;
2) Monitoring watershed activities and proposals that could impact water quality of important resources, and providing input to the National Park Service during the latter's review of water resources projects;
3) Promote enhancement and restoration of the Delaware River watershed;
4) Carry out watershed stewardship education and outreach;
5) Work with DRGP to review and select "municipal incentive grants" that DRGP would administer, based on the availability of federal funding through the NPS Wild & Scenic Rivers Program.
6) Advise the NPS on its budget allocations for management of the Lower Delaware Wild & Scenic River corridor;
7) Prepare an annual report on the status of River Management Plan implementation and overall protection of the stream corridor segments designated into the National Wild & Scenic Rivers System, and review the Plan for any needed changes every five years.

Membership of the River Management Committee consisted of the signatories—state, county and local governments— to the River Management Plan as well as individual citizens, non-profit conservation groups and land trusts, and various private interests. Specific entities were not formally identified as members nor required to participate. Those with technical expertise in fields such as historical resources, archeology, geology, agriculture, water resources, fisheries biology, and recreation management were encouraged to participate.

The National Park Service served (and continues to serve) as the key federal representative in implementing the River Management Plan. NPS represents the US Secretary of the Interior in reviewing federal projects as required by Section 7(a) of the Wild & Scenic Rivers Act.

The NPS provided federal funding for River Management Plan implementation through a Cooperative Agreement with DRGP. The funding enabled DRGP to coordinate the Management Committee's day-to-day operations and establish and administer a "mini-grants" program in 2002 to fund projects that would support the Plan. Municipalities and non-profits which passed resolutions of support for the Lower Delaware National Wild & Scenic River could be applicants, and were invited to submit applications to the Management Committee, which reviewed and approved projects subject to available federal funding. This program continued without modification until 2009, when decreases in federal appropriations and challenges in administering the program forced the NPS to reconsider how the limited Lower Delaware Wild & Scenic budget would be allocated for maximum effect.

NPS found that several factors affected performance of grantees, causing a proposal to not be funded and funds re-programmed, and the project subsequently abandoned, or resulting in partial completion of a funded project. Poor municipal commitment and changing personnel were factors. During the years 2004 to 2006 major floods along the Delaware River significantly impacted municipalities, necessitating a focus on more immediate priorities of cleanup and restoration rather than on the Wild & Scenic grants.

The DRGP and Management Committee began coordinating with the Partnership Rivers Coalition in 2005, recognizing that the coalition of Partnership Wild & Scenic Rivers of the Northeast could more effectively advocate for the Wild & Scenic River Program and keep US Congressional representatives informed regarding activities and needs of Wild & Scenic River partners.

In less than seven years, from 1999 through the end of 2005, DRGP and its Lower Delaware partners had successfully completed the Lower Delaware Wild & Scenic River Management Plan (RMP) and amazingly more than 45 RMP implementation projects utilizing less than $280,000 in federal funding.

TRANSITION AND RENEWAL 2006-2008

Enhancing the Bi-State Structure

While the primary purpose of the River Management Committee did not change, in 2006 the management structure was revised and formalized through the adoption of new rules and procedures.

> The Committee recognized that the health of the river was dependent on the economic, cultural and environmental policies of the riverside municipalities as well as the state governments of Pennsylvania and New Jersey.

Specific state governmental agencies and municipalities were identified and encouraged as members, to recognize their interest in and concern for the Lower Delaware.

The Committee sought to promote greater cooperation between the two states on matters concerning the Delaware River. The Committee also reached out to riverside municipalities along designated and non-designated sections of the river, to assist them with technical guidance and information on local ordinances and land use approaches that would improve the health of the river and protect its significant resources. There was greater emphasis on promoting a sense of place and unified community for the Lower Delaware corridor.

In order to promote greater regional and interstate cooperation for enhanced river corridor management, it was felt that the Committee should be led by two co-chairs, one from New Jersey and one from Pennsylvania, with 2-year terms. An Executive Committee consisting of the two co-chairs, chairs of active subcommittees, and DRGP, with NPS as the liaison, was formed to assist with day –to-day operations and organizational issues.

Committee membership was formalized with one officially designated member from each participating municipality, plus one alternate, and specific state agencies, counties, and non-profits were identified. These members included the New Jersey Department of Environmental Protection; the Pennsylvania Department of Conservation and Natural Resources; the Delaware & Lehigh Canal National Heritage Corridor; the Delaware River Basin Commission; DRGP; the counties of Mercer, Hunterdon, Warren, Bucks, and Northampton; and the municipalities that endorsed designation of the Lower Delaware as part of the National Wild & Scenic Rivers System.

The Pennsylvania and New Jersey Co-chairs facilitated the quarterly meetings, set the agenda with DRGP staff, coordinated with DRGP any subcommittees needed to implement recommended actions in the River Management Plan, and identified issues of concern in their states. The Co-chairs and DRGP reached out to decision makers, US Congressional and state delegates, and the general public regarding the work of the Management Committee. The DRGP continued to handle financial operations for the Committee, with the continued management of the municipal incentives grants, and serving as recording secretary of each meeting.

The other significant change to the Lower Delaware's management was that the scope of the Committee's activities expanded to include:

1) **Presenting and promoting the River Management Plan to municipal officials and the public;**
2) **Providing a stronger communications link between the river partners, to ensure that river related planning activities are performed on a corridor-wide basis;**
3) **Providing technical assistance to partners on water quality, water quantity, and watershed management issues, and enhance public understanding of watershed issues and resources;**
4) **Performing, coordinating, and/or overseeing scientific research projects on the river;**
5) **Seeking or coordinating funding for projects (beyond federal Wild & Scenic funds) in partnerships with other entities, to be managed through DRGP.**

The River Administrator

In June of 2007, the NPS was able to provide funding for a part-time River Administrator who worked under DRGP. The River Administrator put a public face to the Lower Delaware and established a presence over policy issues. This position was considered an important step in developing capacity and critical support for the activities of the Lower Delaware Wild & Scenic River Management Committee.

Completing the Lower Delaware Action Plan was the major effort of the DRGP and Lower Delaware Wild & Scenic River Management Committee in 2007.

The River Administrator assisted municipalities, counties and non-profits in PA and NJ in finalizing and implementing an update to the River Management Plan, the 2007-2011 Action Plan.

The Action Plan identified specific recommendations for achieving the successful implementation of the six primary goals of both plans: 1) Improve water quality, 2 & 3) Protect natural and historic resources, 4) Enhance recreation, 5) Promote economic development, and 6) Preserve open space.

The River Administrator was seen as assisting sustainable land management practices and a stewardship ethic in municipalities that border the Lower Delaware River. In addition, the River Administrator was responsible for keeping US Congressional offices and state officials in the loop regarding Wild & Scenic River activities and concerns.

The Plan anticipated tremendous population growth in the river corridor by the year 2020 (although there was actually only a 1.6% growth in population from 1997 through 2010), and the stresses this growth would place on the environment, particularly existing water supplies. Planning for this growth required that residential and commercial development reduce the potential for soil erosion, sedimentation, and stormwater runoff, which degrade water quality. Water quality would be further protected by preserving native plant species, stream banks, and wetlands to help prevent excessive erosion, promote infiltration, and filter impurities entering waterways. The Plan identified riverside municipalities and riverfront landowners as the keys to successful implementation of water quality protection measures and stewardship of river resources. The future stewards of the river—schools and students—were also recognized in the plan's emphasis on education and outreach.

The Action Plan importantly proposed that local communities work in unison across political boundaries to foster the sense of the Lower Delaware River as a "community" and to instill watershed pride in residents and local officials.

In 2007, DRGP and the River Management Committee recognized the need to supplement traditional paper-based communications with the use of email and a dynamic web site that would offer timely information to the Committee membership and the public. DRGP developed a pilot design for a basic Lower Delaware Wild & Scenic web site that provided contact information, events, and a brief introduction to the Lower Delaware as a National Wild & Scenic River.

NPS Wild & Scenic funding support for the part-time River Administrator continued from 2007 through 2008. This support enabled the River Administrator to serve as liaison among NPS, DRGP and the Lower Delaware Wild & Scenic Management Committee; provide administrative assistance to the Management Committee; maintain and expand the membership roster for the Committee; handle public relations relating to Wild & Scenic events and products; manage Wild & Scenic grants and projects; and conduct outreach to municipalities.

From 2006 through 2009, DRGP, DRBC and its Lower Delaware partners expended approximately $470,000, successfully completing the 2007-2011 Action Plan for the Lower Delaware National Wild & Scenic River, funding 13 Municipal Incentive Grants, and undertaking numerous special projects such as the Delaware River Scenic Byway and Delaware River Water Trail.

It was during this time that communities in the northern end of the Lower Delaware became active participants in the Lower Delaware National Wild & Scenic River, and established an informal regional body that included Northampton County, PA and Warren County, NJ, and their respective municipalities, and the Delaware & Lehigh National Heritage Corridor. The non-profit Martins-Jacoby Watershed Association (based in Bangor, PA) coordinated this regional representation and helped organize a conference in July of 2008 of 12-15 riverside communities and non-profits. Outreach and technical support to municipalities expanded in general up and down the Lower Delaware.

REFOCUSING THE MISSION 2008-2014

Recapturing the River Management Plan Vision

By the end of 2008, the Lower Delaware Wild & Scenic River Management Committee recognized that a new organizational structure was needed in response to changing relationships among its members and its primary coordinating organization, DRGP.

In 2008, the DRGP reorganized and refocused its mission. DRGP worked with the Management Committee to clarify the responsibilities of the Lower Delaware River Administrator; however, the River Administrator position was eliminated early in 2009.

With limited capacity, DRGP was challenged to continue the administration of the Wild & Scenic Incentive Grants, to maintain the Lower Delaware Wild & Scenic web site, and to continue its active participation on the Lower Delaware Wild & Scenic River Management Committee. DRGP redesigned its web site in 2008, but decided that a separate Lower Delaware web site linking to the DRGP web site would be appropriately managed by the Lower Delaware Wild & Scenic River Management Committee.

Meanwhile, the Management Committee added Upper Mount Bethel Township in PA and Lopatcong Township in NJ due to the previous outreach efforts of the Management Committee, the Lower Delaware River Administrator, and the Martins-Jacoby Watershed Association. The support of Upper Mount Bethel and Lopatcong for the Lower Delaware Wild & Scenic River was an astonishing turnaround after many contentious debates. The local communities were concerned that an endorsement for the program could result in private property takings like those tied to the 1960s Tocks Island dam project. Local government officials were swayed by the benefits of the Wild & Scenic partnership, including the availability of grants funding and technical assistance with flooding issues.

The Management Committee, after losing the assistance of the River Administrator, also lost its original focus on River Management Plan implementation and a unified vision for the Lower Delaware. The critical outreach to municipalities to increase awareness of and participation in the Management Committee, and to make Committee meetings serve as a resource for local governments, continued but in a limited fashion.

In 2009, NPS eliminated the Incentive Grants program managed through an NPS Cooperative Agreement with DRGP and replaced the program with several Cooperative Agreements between conservation non-profits and the National Park Service. This move consolidated the decreasing federal funding into fewer projects and streamlined administration, while placing funding in the hands of non-profits with the capacity and resources to directly manage the projects successfully to completion.

The Committee felt it was time to re-examine the Lower Delaware management structure and functions. A bylaws subcommittee established in 2007 developed recommendations for new Committee procedures that were, however, never formally adopted.

The Committee agreed to try a new organizational structure in 2011. The Lower Delaware Executive Committee would now consist of one Committee chair from PA and one from NJ. The primary NGOs working with NPS would support the Executive Committee in planning the now annual Management Committee meeting that focused on topics of corridor-wide concern. The NGOs also agreed to informally set up

Regional River Councils as a means to facilitate local participation in the Lower Delaware Wild & Scenic program and sharing of information on Wild & Scenic project activities.

National Park Service on the Delaware River

Meanwhile, the National Park Service (NPS) was working to improve coordinated resource management among the three NPS Wild & Scenic River segments that make up the Delaware River to address corridor-wide concerns. NPS also focused on reinvigorating the Lower Delaware Wild & Scenic partners' critical roles in managing and conserving river resources.

In April of 2012, NPS organized and facilitated a workshop at Matamoras, PA, bringing together NPS Wild & Scenic Rivers staff; national park resource managers; federal and state government; and non-profits with long-term interest in conserving and managing the Delaware and Musconetcong rivers and with extensive knowledge of river resources. The workshop took a critical look at how the National Park Service has defined the outstanding resources (ORVs) for which the three different segments of the Delaware, and Musconetcong, were originally designated as National Wild & Scenic Rivers. The resulting Delaware River Basin Values report captured broad statements for the ORV resource categories that enhance the rivers' management by NPS and its partners.

The Delaware River Values workshop was followed in April of 2013 by a series of "Partnership Wild & Scenic Rivers 101" presentations organized by NPS and key non-profit partners on the Lower Delaware, White Clay Creek, Musconetcong, Maurice and Great Egg Harbor National Wild & Scenic Rivers. The series of three four-hour workshops in different locations in the region was designed to provide NPS Wild & Scenic River partners with a basic understanding of the Wild & Scenic Rivers Act, the study and designation process, and the River Management Plans. The workshops also provided an overview of Sections 7 and 10 of the Act which relate to the NPS and other agency roles in a regulatory setting.

Each workshop session was tailored to some extent to the concerns of individual rivers, including river resource protection and management issues, but also gave a general orientation to Wild & Scenic Rivers. Workshops were specially designed to attract greater municipal participation; however, the level of local government participation from the Lower Delaware River corridor was not as anticipated. Only seven of the 23 Wild & Scenic designated municipalities attended the two Lower Delaware workshops. The workshops were well attended by non-profit watershed and conservation groups and state and federal agencies, with a total of 57 participants for the two Lower Delaware sessions.

PHOTO: JOHN MAUSER

PROGRAM HIGHLIGHTS & RIVER MANAGEMENT PLAN GOALS 2000-2014

Maintain existing water quality in the Delaware River and its tributaries from measurably degrading and improve it where practical.

Goal #1: Water Quality

Six high priority actions were identified for water quality in the Lower Delaware River Management Committee Action Plan (2007-2011). To date, 2 high priority actions, and a portion of 2 other actions, have been successfully undertaken.

Status	High Priority Action	Notes
●	The Delaware River Basin Commission should adopt permanent Special Protection Waters designation for the lower Delaware River.	See highlights below.
●	The Delaware River Basin Commission should continue the water quality monitoring program initiated to measure baseline water quality for the Special Protection Waters Program.	See highlights below.
◉	The three designated tributaries, the Paunacussing, Tinicum, and Tohickon creeks, should receive Exceptional Value status by the Commonwealth of Pennsylvania.	To date, only Tinicum Creek has received this special designation. Tinicum Conservancy petitioned the PA Department of Environmental Protection more than 15 years ago to change the status of Tohickon Creek from High Quality to Exceptional Value status, but there is no movement on the designation.
◉	The Management Committee, building upon existing sources, should develop and distribute a landowner education package.	Natural Lands Trust has developed a Stewardship Handbook for Wild & Scenic riverfront landowners, distributed in 2015.
◉	The Delaware River Basin Commission should include the three designated tributaries, the Paunacussing, Tinicum, and Tohickon creeks, in the Special Protection Waters designation.	Although the tributaries were not designated as Significant Resource Waters, they are assessed at Boundary Control Points defined to protect existing water quality in the mainstem Delaware River at each tributary's confluence with the river.
○	The Commonwealth of Pennsylvania should grant Exceptional Value status to the Delaware River mainstem.	It is unclear if the Commonwealth has a legal mechanism to extend EV status to the bi-state PA/NJ Delaware River mainstem.

Highlights

Special Protection Waters

A focus on water quality during the early years following the Lower Delaware's Wild & Scenic designation led to support for its designation as a "Special Protection Waters" (SPW).

The Upper and Middle Delaware Wild & Scenic River segments had already been included in the SPW program in 1992. The SPW designation was a response to a petition from the Delaware Riverkeeper Network seeking to have the Delaware River designated Outstanding Natural Resource Waters (ONRW) under the Clean Water Act. The SPW regulatory program and Upper and Middle Delaware designations were a response to that petition request.

The Delaware Riverkeeper Network petitioned DRBC for the designation and the DRBC collected water quality data for the Lower Delaware mainstem and its confluence with tributaries for a period of five years. The data showed that the Lower Delaware mainstem has, in general, higher water quality than the existing minimum standards. This information provided DRBC with the basis to adopt Special Protection Waters designation for the Lower Delaware mainstem and to define existing water quality at mainstem and boundary control points to protect the water quality and exceptional resources that merited the Lower Delaware's Wild & Scenic River status.

The Lower Delaware Wild & Scenic River Management Committee supported the Delaware Riverkeeper Network's petition by testifying in favor of the permanent designation of the Lower Delaware as SPW. On January 19, 2005 the DRBC adopted a resolution "temporarily" classifying the Lower Delaware River (River Mile 209.5 just downstream of the Delaware Water Gap to River Mile 134.3 at Trenton, NJ/Morrisville, PA) as SPW.

DRBC held a public hearing in 2007 in consideration of moving forward with a permanent designation. The Lower Delaware Wild & Scenic River Management Committee actively engaged its membership in the support of this designation, including communications with the Pennsylvania Governor and state and federal legislators, and Op Ed pieces in local newspapers. The DRBC Commissioners voted unanimously at their July 16, 2008 meeting to permanently designate the Lower Delaware River from the Delaware Water Gap to Trenton, NJ as SPW. The SPW designation for the Lower Delaware represented a new era of advanced measures for maintaining and improving water quality for the entire length of the non-tidal Delaware River.

Point Discharge Monitoring for Lower Delaware River

In December 2007, the Delaware River Basin Commission (DRBC) completed the development of a preliminary water quality model of the non-tidal Lower Delaware River from the Delaware Water Gap National Recreation Area to Trenton, NJ using the QUAL2K model platform. This model was developed using funds from the USEPA Section 106 Grant, and is a necessary component for implementing DRBC's Special Protection Waters Regulations in the Lower Delaware.

A critical obstacle to completing model calibration at that time was the lack of sufficient point discharge water quality data. According to DRBC records, there are approximately 90 point sources discharging to mainstem or segmented tributaries in the model domain. Of these, fewer than half were listed in EPA's Permit Compliance System (PCS), and only 16 included either measured or permitted flow data. State NPDES permitting authorities in the basin did not require

monitoring for all of the specific nutrient parameters needed by the model.

Funding of $48,690 from the Wild & Scenic program enabled DRBC to re-inventory the number of point discharges (115 in all) in the Lower Delaware model domain, use existing information to estimate the relative discharge of each facility, and prioritize sample collection from each facility. Since high volume discharges have a much greater influence on the model results, more detailed characterization of these facilities was necessary. Prioritization was based on the relative discharge of each facility, with higher volume discharges targeted for multiple sampling. From 2010 through 2012, DRBC collected samples from the identified discharges and submitted them to the laboratory of the Academy of Natural Sciences for the analysis of select parameters such as chloride, phosphorus, biological dissolved oxygen, and ammonia.

Data collection was successful and served a critical role in the transition to Docket/permit required monitoring and reporting of effluent nutrients. The model is essentially re-calibrated at each use, incorporating new data from both the Wild & Scenic funded project and from Docket required monitoring.

Water Quality Sampling for Hydraulic Fracturing Parameters

A key feature of the Special Protection Waters regulations is the protection of Existing Water Quality (EWQ), as defined through extensive sampling and analysis. The original EWQ definitions were developed considering the likeliest impacts to water quality at the time, which consisted mainly of traditional municipal waste water effluents from treatment plants and non-point source pollution.

The introduction of natural gas development—especially the technique of hydraulic fracturing—and its associated impacts on water use and quality were not among the list of concerns for SPW in 2000. However, by 2010, the pressure for development of natural gas reserves and the need for regulations to protect water resources in the Delaware River Basin were obvious.

The Marcellus shale formation underlies portions of the Delaware River Basin and it was anticipated that natural gas drilling would occur within the Basin following the DRBC's adoption of new natural gas development regulations. This left a narrow window of opportunity for collecting, analyzing and characterizing water quality in regards to specific constituents associated with natural gas development in Special Protection Waters.

In review of data sets from spent hydraulic fracturing fluid or flowback water, it became apparent that gas development indicator parameters were substantially different than the EWQ parameters protected under SPW. In particular, spent hydraulic fracturing water contains high concentrations of certain inorganic constituents such as barium and strontium. These constituents are generally found in low concentrations naturally in surface waters, and are not associated with road salts and de-icing compounds. As such, they provide good indicator parameters for spent "frac water" and detection of surface water impacts as well as for management of water quality from waste water disposal.

Concerns over the potential for gas drilling in the Delaware River Watershed led DRBC to initiate in 2011 a re-analysis of water samples held in archive at the Academy of Natural Sciences in Philadelphia. The Academy completed in 2012 the analysis of more than 200 archived samples from the Lower Delaware River and major tributaries collected in 2009 and 2010 and held frozen at the Academy since their original processing.

The archived samples represent the pre-natural gas development period, and provide a baseline against which to compare future water quality samples after natural gas development has begun. DRBC, in cooperation with the Academy, identified analytical parameters which would be indicative of wastewater from hydraulic fracturing and which could be quantified from a previously frozen sample. These data will greatly aid DRBC's effort to define the pre-natural gas development water quality baseline for key parameters associated with hydraulic fracturing, allowing more comprehensive protection.

Stewardship Handbook for the Lower Delaware

In 2014, Natural Lands Trust (NLT) finalized a stewardship handbook applicable to property owners along the Lower Delaware National Wild & Scenic River. The goal of the handbook is to improve stewardship on public and private lands within the Lower Delaware River corridor. Topics from NLT's *Land for Life: A Handbook on Caring for Natural Lands* (formerly called the *Stewardship Handbook for Natural Lands in Southeastern Pennsylvania*) were selected and edited as the most appropriate to stewardship of river corridor natural lands. The booklet also outlines a deer management program based on the NLT system of "Select, Protect and Inspect" to familiarize landowners with land management activities they can implement to protect natural resources along the river corridor.

The booklet is easy to read and extensively illustrated, highlighting major natural resources along the river, current conservation priorities, and stewardship issues of immediate concern (invasive plants, deer browsing, stormwater management), and provides recommendations for addressing these issues. The booklet also contains reference material (native plant lists) and potential sources of financial and technical assistance.

Deer management aspects were included to address how to live with the significant populations in the region. The handbook identifies plant species resistant to deer and what type of conditions will deter deer (e.g., fencing, tubing, repellant). Seven to eight copies are to be distributed to each riverfront township. $9,200 in NPS W&S funding supported the project in 2011 and 2012.

Several other "implementation strategies" were identified as contributing to Water Quality. Strategy #1 has been successfully completed, and Strategy #2 is part of ongoing programs. Strategy #3 has been accomplished in part through the whole basin planning of DRBC, and Strategy #4 with the 2008 endorsement of the Lower Delaware River Management Plan and Wild & Scenic River designation by Upper Mount Bethel Township, PA. Strategy #5 may need revision as suggested below, and the current status of Strategy #7 is unknown. Strategy #6 has been accomplished in part, through the updates to municipal ordinances that protect steep slopes, woodlands, floodplains, wetlands and riparian buffers. More research and outreach are needed to understand whether municipalities are effectively managing their stormwater runoff individually or on a regional basis, and whether they are working together successfully on groundwater and watershed protection. A successful example of the latter, the Bridgeton-Nockamixon-Tinicum Groundwater Committee, is described below.

The vast majority of municipalities protect slopes greater than 15% to varying degrees; however, not many protect steep slopes from 8-15%. Most municipalities protect woodlands to some extent through their subdivision ordinances and other means. Almost all municipalities prohibit development within the

100-year floodplain, although some permit development with certain restrictions. Municipalities follow federal and state wetlands regulations, prohibiting development within wetlands; however, few Pennsylvania communities restrict development in wetland margins. New Jersey communities apply the NJ Wetlands Act that requires buffers around wetlands. Protection of riparian buffers varies dramatically from no protection to 100% protection as part of NJ Special Protection regulations that apply a 300-foot buffer to Category 1 waterways and their tributaries. Protection of open space bordering waterways (lakes, ponds, rivers, wetlands) also varies significantly. All PA and NJ communities require erosion and sediment controls which can help protect water quality. Few communities have implemented requirements for on-lot disposal system management or education.

Status	Implementation Strategy	Notes
●	The Lower Delaware Wild and Scenic River 2007 incentive grant round should target landowner forums and outreach.	See highlights below.
●	DRBC , the State of New Jersey, and Commonwealth of Pennsylvania should issue water quality advisories and hazard alerts when necessary and institute a reporting mechanism and alerts to municipalities and the Lower Delaware River Management Committee.	
◉	Pennsylvania and New Jersey departments of environmental protection, and Delaware River Basin Commission, should jointly develop a river corridor water quality management plan describing the highest level of water quality protection consistent with the Management Plan goal, and monitoring, research, modeling and regulations needed to ensure protection of that level of water quality.	DRBC's Delaware River Basin Plan is a joint effort of the four compact states. The PA Fish and Boat Commission has developed a Delaware River Management Plan to manage and protect aquatic resources.
◉	The Management Committee should work with the four municipalities (Durham and Upper Mount Bethel townships in PA and White and Pohatcong townships in NJ) that have not yet endorsed Wild & Scenic River designation to pass resolutions of support.	Upper Mount Bethel passed a resolution of support in 2008.
?	TMDLS should be established for all major Lower Delaware tributaries, including streams in good condition.	TMDLs are only established for impaired streams, i.e. those that do not meet water quality criteria. Have TMDLs been established for all Lower Delaware tributaries that are listed as impaired?
?	The Natural Resource Conservation Service and appropriate state agencies should encourage farmers to develop farm management plans in accordance with best management practices.	What is the original intent (What are the bmps?) and how do we measure success?
◉	Corridor municipalities should: 1) Preserve riparian buffers, steep slopes, wetlands, floodplains, and woodlands; 2) Provide protection against non-point source pollution and provide for stormwater management; 3) Develop regional stormwater management facilities and other regional best management strategies, and work cooperatively on groundwater and watershed protection.	1) Accomplished to certain extent by vast majority of municipalities in PA and NJ. 2) Needs more research. 3) Needs more research; however, the Bridgeton-Nockamixon-Tinicum Groundwater Committee is a good example for regional cooperation on groundwater protection.

Highlights

Landowner Forums and Outreach

The Lower Delaware was challenged in 2004, 2005, and 2006 with major flooding along the riverbanks that devastated local communities for the first time in 50 years. The Pennsylvania side of the river was particularly hard hit, with significant physical impacts to the Delaware Canal and Route 32, a State Scenic Byway. Numerous road closures along the corridor created economic hardships for local businesses, while homes and businesses alike suffered serious flood damage. Cleanup and repairs from these floods were going on for years afterward.

In late December of 2006, the Delaware River Basin Commission (DRBC) announced proposed rule changes to create a Flexible Flow Management Plan for the Delaware River. The Plan intended to address flood risk reduction strategies, while balancing the need for adequate river flows downstream and adequate water supplies when facing the threat of drought, a significant issue earlier in the 21st century.

> *The Lower Delaware Wild & Scenic River Management Committee stepped in to work with flood affected communities, with the goal of assisting them to be as prepared as possible in the event of the next flood.*

DRGP's Fall Forum for 2007 focused on flood preparations and was attended by 67 local leaders. FEMA and Princeton Hydro explained the DRBC's assistance, supported by significant federal funding, to local communities in creating both flood and all-hazard mitigation plans. Other Forum topics included NJ and PA land preservation efforts, endangered species, and River Town community building.

Also in 2007, DRGP held a one-day municipal forum on protecting the Wild & Scenic River corridor, focused on methods of creating compatible shoreline development. The forum brought in planning, law and economics experts familiar with the social, environmental and economic values of river and shoreline protection.

The Management Committee continued to serve as a forum for discussion of river related issues common to the Lower Delaware communities. While Special Protection Waters designation was the focus for the November 2007 and June 2008 meetings, the Committee's September 2008 quarterly meeting centered on the implications of natural gas drilling in Pennsylvania, with information presented by Princeton Hydro and the National Park Service's Upper Delaware Scenic & Recreational River.

Heaney's Run Restoration and Flood Control Project

In 2005, Tinicum Conservancy undertook a bank restoration and flood control project on Heaney's Run, a tributary to Tinicum Creek, which is a Wild & Scenic designated tributary to the Lower Delaware and has Pennsylvania Exceptional Value designation for its water quality. The primary purpose was to restore normal channel flow and re-establish riverside vegetation to reduce erosion and prevent habitat destruction and downstream damage.

The restoration process included removal of large woody debris from the streambed, and stabilization of two stream sections—one with a 16" coir log, the other with a network of rocks and wooden logs from the site. Sections of the bank were planted with a variety of

native ferns and sedges, unpalatable to deer, and a shade-tolerant wetland mixture of wildflower seeds.

Deer exclosure fencing eight feet in height, with metal stakes, were placed in two areas within the wet meadow/floodplain adjacent to the stream. Overlaps were left in each as "doors" for access to the enclosed areas for planting and continued care, if necessary. These exclosures ensured that shrubs, trees, and perennials installed would survive to maturity without deer browse, in hopes that the protected plants would provide a seed source for additional wetland meadow areas.

Bridgeton-Nockamixon-Tinicum Groundwater Management Committee

The Committee was formed in 1999 by the three northern Bucks County townships of Bridgeton, Nockamixon, and Tinicum to address groundwater issues. The townships include portions of several Delaware River tributary watersheds, including Tinicum Creek and Gallows Run.

The United States Geological Survey published a report in 1994—"Hydrogeology and Ground-water Quality of Northern Bucks County, PA"--that found groundwater resources in the region are sensitive to both pollution and depletion, and are interconnected by complex geological formations (Triassic shale and diabase) that transcend municipal boundaries.

The Bridgeton-Nockamixon-Tinicum Groundwater Management Committee adopted bylaws that state: "With groundwater as the primary local source of water, member municipalities recognize the need to protect and preserve both the quantity and quality of the groundwater resources. As groundwater resources know no municipal boundaries, member municipalities recognize the importance and need for cooperative municipal water resources planning and management. Member municipalities with interrelated watersheds, recharge areas, aquifers and other contributing natural resources will participate in the groundwater committee for the purpose of protecting their common watersheds through regional planning, conservation, and management of groundwater resources."

With this purpose in mind, the Committee has undertaken a variety of public education programs and regulatory reviews of local ordinances, and initiated a series of scientific research projects so that township officials and the public can better understand their water resources and how to protect them.

From 2000-2005, the Committee reviewed and recommended revisions to wetlands, groundwater, and stormwater management ordinances, and also reviewed the Petroleum Well Ordinance exchange and well installation and testing procedures. Several research studies were completed, including US EPA's "Wetland Study Results for Bridgeton, Nockamixon & Tinicum Township, Bucks County, Pennsylvania" (January 23, 2003), PA DCNR's headwater mapping project, and a watershed study for Gallow's Run. The Committee has been aided in its surface and ground water quality monitoring efforts significantly through the Lower Delaware Wild & Scenic River Incentive Grants, which contributed $26,500 in 2003 and 2005 towards these efforts.

Public education programs at township meetings have included presentations on wetlands, headwaters, and land use in relation to water resources management, and water cycle interactions; wetlands identification training and field assessments; and a natural resources and land development site map workshop.

Lower Delaware Regional Watershed Coordinating Council

One of the Wild & Scenic Incentive Grants for 2006 involved the organization of a Lower Delaware Regional Watershed Coordinating Council to coordinate six

riverfront communities in New Jersey and enhance community-based stewardship of the Delaware River. The six communities included the townships of Delaware, Kingwood, and Alexandria; and Stockton, Frenchtown and Milford boroughs. This pilot project was initiated in October of 2006 through a $30,000 National Fish and Wildlife Foundation grant and continued throughout 2009.

The intent of the pilot program was to bring the communities toward a consensus around priorities and direction for better managing land use to protect the Lower Delaware. The concerns and opportunities identified varied widely, with the boroughs having different needs than the rural municipalities. To help focus the project and build community participation, the project started out by developing and circulating a community survey. Through this survey participating municipalities were asked to share local needs, identify priorities and local issues. The survey was distributed to all elected and volunteer board and commission members and staff in each community to help understand the community's vision of its future. Although initial return rates were low, additional outreach efforts were made via the Project Steering Committee as well as directly through phone calls and outreach to municipal clerks. In total, 16 responses were received and tallied to characterize the priorities and values of the communities.

Concurrently, the local governments were asked to provide copies of their municipal master plans, land development regulations, natural resource inventories, stormwater management plans, and any other pertinent planning documents to the project staff. The initial intent was to produce a municipal report card, similar to the Municipal Assessment Report completed by NJ Water Supply Authority for each municipality. As the program continued, the community partners wanted to focus on actions as opposed to planning reports. To reflect the information contained in the municipal planning documents and ordinances a composite list of actions and policies was developed and presented to the Committee in January 2008 and each community was asked to identify their top 5 priorities.

Two areas of consensus that came out of the January 2008 meeting were strong interest among the communities around septic management as well as community forestry management planning.

Program staff facilitated the late submission of three NJDEP grant requests for the three partnership communities that did not currently have a Community Forestry Planning Grants from NJDEP. Under the New Jersey Shade Tree & Community Forestry Assistance Act of 1996, the New Jersey Community Forestry Program awards Green Community Grants of $3,000 to communities for the development of comprehensive community forestry management plans. The funding allows a county or municipality to hire an outside firm to assist in the production of a community forestry management plan.

Three of the partnership communities (Alexandria, Kingwood, and Milford) submitted grant applications to NJ DEP's Community Forestry Planning Grants and were successful in obtaining the grants.

Additionally, the adoption of the new Wastewater Planning rules by NJ DEP reinforced the need and opportunity to address the management of on-site wastewater/septic systems as urgent given the new regulatory direction. The partners also agreed that addressing stormwater management and nonpoint source pollution through effective collaboration, education and possibly shared services was of interest to explore further.

The project began a process for six municipalities along the Delaware River to begin to work together to share and understand water resource information, the connection between land use and water resource management, and the importance of supporting and participating directly in regional planning initiatives to

promote enhanced, watershed-based planning. The project succeeded in supporting initial steps to identify municipal master plan consistencies and inconsistencies among the six project partners, as well as with regional, state, and federal plans as they relate to watershed protection goals. Establishing a dialogue between the municipalities was a first step in identifying critical, consistent policy actions that must be taken to advance long-term watershed-based protection.

Baseline Water Quality Monitoring for Nockamixon Township Area, PA

$25,000 in Wild & Scenic funding was applied in 2008 to a project that characterized existing surface water quality in streams distributed throughout a 300-square mile area in Bucks, Lehigh and Northampton counties, PA. The project also obtained 10 groundwater samples from existing wells situated within roughly one-half mile of either of two sites in Nockamixon Township, Bucks County, PA for which gas well permits had been prepared (but not drilled).

The study, completed in 2009 by Princeton Hydro, was a response to local communities' concerns regarding the potential impacts of gas drilling / hydraulic fracturing on drinking water supplies and stream ecologies.

The initial findings demonstrated that most drinking wells and streams that were sampled shared the same basic chemical water structure--a composition dominated by interactions with limestone. The initial findings also reinforced the expectation that a mishap involving gas drilling should leave tell-tale chemical traces that are discernible from the region's "background" water chemistry signature in ways that would determine responsibility and liability for water quality impairment.

The preliminary results also revealed existing issues with water quality that municipalities need to address. Several wells had trichloroethylene (TCE--an organic chemical once commonly used in industrial applications, degreasing solvents, and dry cleaning applications) or arsenic (associated with some human uses but also a naturally-occurring element) at concentrations higher than federal drinking water standard levels.

The Pennsylvania Department of Environmental Protection (PADEP) was notified in the case of wells in which TCE was detected, while information about arsenic was shared with a United States Geological Survey (USGS) team that is mapping arsenic occurrence in Pennsylvania's groundwater.

Phase II of the project was funded with an additional $25,000 from Wild & Scenic Rivers and completed in 2011. The project consisted of the collection and analysis of 20 ground water samples from domestic wells (including 4 previously tested during Phase I), 20 surface water samples (20% of which had been sampled during Phase I), and 12 macro invertebrate samples in an expanded geographical area of upper Bucks County, Pennsylvania. The Phase II Baseline Water Quality Monitoring Report summarized water characterization and macro invertebrate sampling/IBI (indices of biotic integrity) methods, results of water sample analyses, IBI results, updates to a proposed overall baseline water

> **The baseline characterization of water quality in this area established an understanding of a few water chemistry traits in aquifers and streams so that, if future gas drilling does occur, a framework will be in place to determine whether drilling activities impact drinking water or aquatic resources.**

quality monitoring program, and specific recommended actions based on the water sample results. Sample analysis parameters included: VOCs/volatile organic compounds (groundwater only), metallic and non-metallic elements, select inorganic ions (sulfate, bicarbonate), detergents, alkalinity, and total dissolved solids. The resultant data set was furnished in an electronic format that is compatible with the existing Delaware River Basin Commission (DRBC) database.

Developing a thorough understanding of the aquifer and stream resources of the region can be a useful land management tool whether or not gas drilling occurs. For example, the baseline characterization sampling identified impacts in excess of drinking water standards in several drinking supplies. Moreover, baseline water characterization facilitates monitoring and management for stewardship purposes and compliance issues, and serves as a foundation for seeking special protection status for select high-quality watersheds.

Upper Mount Bethel Township (PA) Water Resources Study

Upper Mount Bethel Township in Northampton County developed a two-part ordinance to protect its water resources, primarily groundwater. These ordinances protect existing wells, requires hydrological study of the groundwater before major developments are approved, and sets standards for well testing, registration, and construction. The original draft of the ordinance was based on similar regulations that are already in place in several municipalities adjacent to the Delaware River in Bucks County, PA. As the ordinance was being prepared, the township engaged a geological services firm to review and evaluate the new regulations. To help with this evaluation, the firm (GeoServices, Ltd. of Camp Hill, PA) undertook a study of the township's hydrological resources, which resulted in a detailed water budget, identification of critical areas, and generation of data tables for sub-basins and stream segments.

Completed in 2011, the study initially involved assembling pumping data from existing municipal production wells and others where available; collecting withdrawal data for wells; delineating watershed and geologic boundaries; and identifying habitats and species of concern. Field work reviewed geologic setting, surface water sources and flows, wetlands, municipal supply sources, and existing monitoring points.

Worked completed by September of 2010 included calculation and compilation of recharge values for each aquifer and basin, identifying and tabulating existing withdrawals from public records, and calculation of water budget for sub-basins based on published or interpolated recharge values for each aquifer or on baseflow separation. Potentially stressed areas were identified, where additional groundwater withdrawals may not be sustainable in the future.

The first ordinance was approved and protects existing single family wells, while passage of the second which covers subdivisions, is pending.

DRGP organized two cleanups in 2005 to address the blight of trash and debris left behind from the floods of 2004 and 2005. These cleanups covered 18 contiguous miles of the river within portions of eleven municipalities in Northampton and Bucks counties in PA, and Warren and Hunterdon counties in NJ.

Nearly four tons of trash was collected from the Lower Delaware River and its islands, banks and shorelines, accomplished through the use of canoes, kayaks and 1 motorboat. A total of 111 volunteers participated, including local residents and members of the NJ Youth Corps, American Canoe Association, Delaware River Experience, Mohawk Canoe Club, Hunterdon County Department of Parks and Recreation, National Canoe Safety Patrol, and DRGP. Local businesses, including Shop-Rite of Flemington, NJ; Wegmans of Nazareth, PA; and Milford Market(NJ) contributed. Lazy River Adventures of Phillipsburg, NJ donated canoes and equipment for the cleanup.

River Cleanups & Local Involvement in Water Quality Monitoring

Operation River Bright

Starting in 2005, DRGP organized and sponsored a yearly river cleanup known as "Project River Bright." Funding and in-kind contributions came from NPS, local businesses, county and municipal governments, private foundations and non-profits.

DRGP continued their sponsorship of "Operation River Bright" during the 2006-2008 period, engaging volunteers from the American Canoe Association, local canoe clubs, and youth groups in cleaning sections of the Lower Delaware mainstem. $500 in supplies was donated by ShopRite of Flemington, NJ in 2008 alone.

Other organizations and businesses that helped over the years included: New Jersey Youth Corps of Phillipsburg, LL Bean, Mohawk Canoe Club, NPS, Lower Delaware Wild & Scenic Management Committee, Delaware River Experience, Hunterdon County Parks and Recreation Department, Lazy River Adventures, and PA DCNR Delaware Canal State Park.

In October of 2006, 32 volunteers from several organizations came together to clean up the Delaware River between Bulls Island and Hendricks Island. Piles of trash and debris that had accumulated during the recent record floods were removed from Hendricks Island. The National Canoe Safety Patrol's Lower Delaware Chapter set up an ingenious rope and pulley system to pull loads of trash from the island to the shoreline for transport up the canal towpath trail to a trash dumpster. Some of the larger loads were transported by a "barge" of canoes. Some two tons of trash were removed from a 2-mile stretch of river in one day.

The River Bright operation continued on the Lower Delaware River, and in May of 2010 focused on the

PHOTO: JOHN BRUNNER

section from Raubsville to Giving Pond Recreation Area, Pennsylvania. About 50 high school students from PA and NJ and their parents participated, with PA Fish and Boat Commission providing safety guidance. The volunteers collected approximately 8,000 pounds of trash. Point Pleasant's Bucks County River Country lent canoes for the occasion, and Bucks County donated its assistance in picking up the debris from the dumpsters. Wild & Scenic funding provided $399.39 for the rental of one dumpster.

Stockton School Water Quality Monitoring

The Lower Delaware Wild & Scenic River Management Committee partnered with the Stockton Parent Teacher Organization and New Jersey's Delaware & Raritan Canal State Park in creating the Stockton School Water Quality Monitoring Pilot Program. School teachers at the Stockton School (Grades 1-6) brought their students outside to initiate a program to monitor water quality in two Delaware River tributaries—the Wickecheoke and Brookville-Hollow creeks. The Parent Teacher Organization provided $299 for the water quality testing kit. The project was documented for potential Microsoft Powerpoint and podcast packaging in the future.

The NJ DEP Volunteer Water Quality Monitoring Group listed the Stockton School pilot the #1 grassroots pilot program in the state at its 2007 Water Quality Monitoring Summit and considered 2008 funding to expand the program to other Lower Delaware communities. The students presented their findings to the Stockton Environmental Commission, Planning Board and Governing Body at the end of the school year, and took home their message of why having clean water is important.

Preserve and protect the river's outstanding natural resources, including rare and endangered plant and animal species, river islands, steep slopes and buffer areas in the river corridor and along tributaries.

Goal #2: Natural Resources

Three high priority actions related to natural resource protection were identified in the Action Plan. Priority actions #1 and #2 have been partially accomplished, while the status of Priority Action #3 is unknown.

Status	High Priority Action	Notes
◉	Remove invasive plant species from the river corridor and develop invasive species management program, including identification of priority sites.	See highlights below. While individual invasive species management projects have been effective to varying degrees, an invasive species management program has not been developed for the Lower Delaware River corridor as a whole.
◉	The nine municipalities without riparian buffer ordinances (as of 2006) in Pennsylvania should adopt them—New Hope, Solebury, Nockamixon, Durham, Lower Mount Bethel and Upper Mount Bethel townships; Riegelsville; Easton; and Portland.	Solebury Township, New Hope, and the City of Easton now have a riparian buffer ordinance in place. Nockamixon, Lower and Upper Mount Bethel do not, nor does Riegelsville or Portland, PA. Durham's is suggested in its Comp Plan. Stockton, NJ was not named as one of the municipalities lacking a riparian buffer ordinance in 2006, but it does not have one currently.
?	FEMA and USACE should update floodplain mapping in light of significant flooding in 2004, 2005, and 2006.	The Letter of Final Determination has been mailed to Bucks County municipalities. The new Firms/Maps will be effective March 16, 2015. Municipalities must have their floodplain ordinances updated and adopted prior to the new map date in order to participate in FEMA's National Floodplain Insurance Program.

Highlights

Invasive Plant Removal and Ecological Restoration at Bull's Island Natural Area and Firemen's Eddy (NJ)

A more recent area of focus for Delaware River Greenway Partnership (DRGP) and the Lower Delaware Wild & Scenic River has been management of and reductions in invasive plant species, and restoration of native species along the Lower Delaware River.

Three projects were funded by grants from National Park Service and U.S. Fish and Wildlife Service. The projects included shoreline restoration along the northern half of Bull's Island, invasive species removal and restoration of the Bulls Island Natural Area located in Hunterdon County, NJ and the creation of native

PHOTO: DELAWARE & RARITAN CANAL STATE PARK

grasslands at Firemans Eddy fields located in Hopewell Township, NJ.

DRGP worked with the Delaware & Raritan Canal State Park staff to restore the natural riparian area along the northern half of Bull's Island, partnering in October of 2010 with students from Tinicum Art and Science and volunteers from the Canal Watch. U.S. Fish and Wildlife Service (USFWS) provided the native plants such as persimmon, sycamore, and native flowers to stabilize the restored areas, while the students pulled invasive plants and installed native ones.

The USFWS worked closely with the DRCSP in creating a plan that would address the threats invasive plants posed to two sites along the Delaware River - Bull's Island Natural Area (34 acres) and a 70-acre field at Firemen's Eddy. The plan involved removing invasive species and then replanting with native vegetation that would improve wildlife habitat. In the case of Bulls Island, the project would stabilize the land against subsequent flooding events. D & R Canal Watch/ Fireman's Eddy conducted intensive surveys and added the information to its Plant Stewardship Index (PSI) before invasives were removed, to ensure no rare plants were disturbed.

Work to remove dense stands of Japanese knotweed began in the summer of 2011 at Bull's Island Natural Area. In late July, the D&R Canal State Park (DRCSP) staff and a volunteer Rutgers University student cut the knotweed by hand. The knotweed was left to grow in a weakened condition, as per the USFWS plan, but two separate flooding events occurred late in 2011 that removed all of the new growth of the Japanese knotweed, unfortunately leaving nothing for herbicide application. In the summer months of 2012 and 2013, DRCSP staff tried again. The rigorous stands of knotweed were cut and treated with herbicide by the naturalist at DRCSP, a licensed applicator.

While the staff were working hard on eradicating the knotweed, a local plant nursery (Wild Ridge LLC) was contracted to collect seeds from native plants found on Bulls Island and other nearby locations. These seeds were used to propagate plant stock that would be re-planted in the area. In October of 2013 and 2014 more than 800 native plants, including spicebush, Virginia waterleaf, persimmon, and Jack- in-the-Pulpit, were successfully planted in the Natural Area by volunteers from DRGP, Boy Scouts, local citizens and staff of the DRCSP.

The project goal for Firemans Eddy field was to reclaim the 70 acres for a native grassland habitat . To do so involved removing invasive woody stands of black locust, autumn olive, and the abundant mugwort. In 2009, DRGP and DRCSP had snapshot inventoried the 70-acre field at Firemen's Eddy for both native and invasive plant species, with the assistance of New Jersey Invasive Species Strike Team.

The inventories were used as a benchmark against which to measure project results. Photographs of the field before invasive plant removal were taken by DRGP board members. Nonetheless, a diversity of native plant species was observed, along with a variety of native bird and insect species. The New Jersey Natural Heritage database and pre-2010 plant surveys were also reviewed to identify changes in species composition over time.

Due to extremely wet conditions in the field, the clearing of woody invasives was postponed until Spring of 2013. The woody materials (Autumn olive and black locust) were cleared from the field below Fireman's Eddy Bridge over a two-week period in early Spring. Brush-hogging the Autumn Olive and cutting the Black Locust with chain saws to just below ground level allowed herbicide application. Mowing and seeding equipment were able to run over the area. The cut material was put into a chipper and the chips spread around the perimeter of the field to discourage spread of invasives.

DRGP and Delaware & Raritan Canal State Park (DRCSP) were awarded grants to complete two habitat restoration projects along the Delaware River: a grassland restoration project in Hopewell Township, Mercer County (NJ), and an invasive species removal project in the state-designated Bulls Island Natural Area, Hunterdon County (NJ).

$14,400 was provided by National Park Service, Wild and Scenic Rivers Program. U.S. Fish and Wildlife Service awarded a National Coastal Wetlands grant to New Jersey Division of Parks and Forestry / DRCSP (the site's owner and lead cooperator) in the amount of $14,375. USFWS supervised site preparation and restoration, and supplied herbicide, grass drill, native grass seeds. NPS provided technical guidance and coordination with Delaware Water Gap NRA staff with expertise in the control of invasive species. An additional $12,040 in in-kind, non-federal contributions brought the total commitments towards the project to $40,815.

The first week of May, 2013 the entire field was treated with herbicide under the direction of Delaware & Raritan Canal park staff. This step was extremely successful in getting rid of the autumn olive and other plants that sprouted at that time.

The entire field was seeded with a warm season native grass mix in June of 2013, and native grasses were growing the following spring. Park maintenance mowed sections of the field with an 18" high mower in late summer to reduce any volunteer growth and allow sun to better reach the native grasses. The existing perimeter path around the field is maintained to allow public access to the area and to the river.

$14,400 in NPS Wild & Scenic funds covered equipment, herbicide, and labor for field preparation at Firemen's Eddy. The restoration of the field to create native grasslands was intended to improve habitat for ground-nesting grassland birds such as meadowlarks, grasshopper sparrows, killdeer and bobolinks. Suitable habitat for these species has become scarce due to urbanization and replacement of native with invasive plant species. The site will be maintained by regularly scheduled mowing and hand removal of invasive species if needed. Interpretive signage explaining the restoration project was designed by DRGP and installed on site. Plant and bird populations will be monitored and compared to earlier censuses.

Stewardship at Thomas F. Breden Preserve, Milford Bluffs (NJ)

NPS Wild & Scenic funding has helped Hunterdon Land Trust (HLT) to implement a 5-year Management Plan, the Delaware River Watershed Protection Initiative. The plan is designed to bring municipal and volunteer resources to help improve public access to and management of public parklands along the Delaware River.

HLT's first project under their Agreement with NPS was a partnership with the NJ Natural Lands Trust to develop a warm season grass meadow at the Thomas F. Breden Preserve, just north of Milford Borough along the Delaware River bluffs. NJ Natural Lands Trust began an environmental conditions assessment in 2010, which helped to identify a suitable location for the meadow. A restoration and management plan was developed.

The meadow provides habitat for ground nesting birds, including the vesper sparrow and bobolink, both on the NJ Endangered and Threatened Species list.

The Hunterdon Land Trust provided grant funding to NJ Natural Lands Trust to cover invasive species removal, field preparation and warm season grass seed purchasing, and planting of a 50-acre meadow area at the Preserve.

Clearing of invasives and meadow planting occurred in two growing seasons: 25 acres was restored and planted in the summer of 2010, and an additional 25 acres of the native warm season grass meadow was planted in June, 2011.

The project supports local and sustainable agriculture by using an area farmer to mow and maintain the grassland habitat annually between July 15 and September 15. Through late season mowing, the farmer will obtain a hay crop and allow adequate time for birds to successfully nest.

Restoring the Zega-Lockatong Preserve

Hunterdon Land Trust's Zega-Lockatong Preserve includes woods and a former farm field that is slowly returning to its natural state. Hunterdon Land Trust (HLT) reviewed the management plan for the Preserve and updated it in 2011 to more aggressively address deer management impacts on habitat.

HLT focused on the use of two types of fencing to create areas within the preserve that are inaccessible to deer and is also exploring opportunities for more effective hunting to manage deer populations. In 2011, HLT installed six deer exclosures, each containing three newly planted hardwood trees**.** This effort marked the beginning of a re-foresting initiative on the preserve which will contribute to improving ground water re-charge in the area of the Lockatong Creek, a direct tributary of the Delaware River.

The land trust, with support from the Wild and Scenic Rivers Program and numerous volunteers, such as the Farmers' Sportsman Club, planted young trees and shrubs and protected them from deer browse. These young native trees and plants now provide early successional (e.g., grasses and some shrubs) habitat for birds and wildlife that is increasingly rare in New Jersey.

HLT hosted its annual Day on the Land event in 2011 at the Zega-Lockatong property to include local communities, state and local governments, and conservation non-profits. The event featured HLT's stewardship initiatives within the Delaware River corridor. In addition to a naturalist led hike which introduced participants to the management of the preserve, an additional hike focused on nature photography.

Restoring the Wickecheoke Meadows

The New Jersey Conservation Foundation (NJCF) prepared a management plan for their 4000-acre Wickecheoke Creek Preserve in 2011. The plan identified the unique plant communities and invasive species as well as the recommendations for how to manage select lands as native meadows. The plan identified eight properties totaling about 150 acres in the Preserve with goals to create, restore and maintain these lands as native grass meadows.

HLT supported NJCF's hiring of a meadow consultant to further assess the plant species on these properties, and recommend management practices to create and improve the native meadows. The consultant supervised staff in implementing proper meadow stewardship practices including mowing, temporary fencing of sensitive plant communities during critical growth periods, and eradication of invasive plants.

Hunterdon Land Trust supported NJCF in further implementing the plan to remove an emerging invasive plant known as Winter Creeper, classified by the NJ Invasive Strike Team as a high priority for removal. Winter Creeper was destroying native plant communities that stabilize the banks of Wickecheoke Creek. In 2012, Winter Creeper was eliminated from the preserved land and volunteers were organized to manually remove the remaining plants from adjacent private property. Five meadows were mowed towards the end of winter, 2013, to control additional invasive plants at the Preserve.

Additional efforts to control Winter Creeper took place in spring of 2013. NJCF coordinated student volunteers from Delaware Township School's Environmental Congress to weed out Winter Creeper on NJCF's Cosman Preserve located along the Wickecheoke Creek in Sergeantsville. The volunteers worked for 2 hours pulling the invasive weed off tree trunks and from the stream banks. Later in the year, the Cosman and Johnson properties were sprayed with an herbicide to completely eliminate winter creeper. NJCF staff have secured pro bono mowing from local farmers to continue the invasive plant control.

Several implementation strategies were also identified for the goal of natural resource protection. Since the Wild & Scenic study process has long since been completed and the Lower Delaware designated, Strategy #1 is no longer relevant and may need revision in future years. Strategy #2 should be part of an ongoing and consistent corridorwide program of landowner outreach related to Wild & Scenic River protection. The status of Strategy #3 is unknown.

Strategy #4 has been partially accomplished (See table below).

Status	Implementation Strategy	Notes
⦿?	Watershed plans should be developed for each tributary in the study area under consideration for designation into the Wild & Scenic system.	
⦿	Native plant materials should be used in landscaping, and landowner education materials should provide information on the use of native plants and conservation design to encourage water retention.	Natural Lands Trust recently completed a Stewardship Handbook for Lower Delaware River landowners that addresses this topic. The four federal agencies managing Wild & Scenic Rivers published a riverfront landowners' guide to protection of Wild & Scenic Rivers. See highlights below.

?	**Use the Bowman's Hill Plant Stewardship Index throughout the river corridor.**	**According to Bowman's Hill web site, DRBC; state and county park managers; educators (Delaware Valley College and Rutgers University) and several non-profits working on the Lower Delaware (HLT, Delaware & Raritan Trust) are using this system to survey and assess the status of native plant populations.**
⦿?	**Municipalities should: 1) Establish guidelines for natural resource preservation techniques, including cluster development; 2) Establish environmental advisory councils or environmental commissions; 3) Review and enhance floodplain ordinances.**	**1) Status is unknown.** **2) 22 out of 32 Lower Delaware municipalities have established EACs.** **3) Almost all municipalities prohibit structures and activities within the 100-year floodplain, with some limited exceptions. FEMA re-mapping of Lower Delaware floodplains may cause review and revisions to existing floodplain ordinances.**

Highlights

Wickecheoke Creek Watershed Management Plan

New Jersey Conservation Foundation documented the natural resources associated with Wickecheoke Creek and developed a Management Plan for the creek, which the Foundation is working to protect and improve. The plan, completed in 2010, was intended to be used as documentation for designation of the Wickcheoke Creek as a Wild and Scenic Waterway. The Wickecheoke Creek's natural resources were documented and mapped, including geology, soils, forest cover, and rare, threatened and endangered species. Along with land use data, this information was used to evaluate potential restoration sites. Field mapping of ecological communities and invasive species was completed. Watershed issues (including deer management) and potential partner projects were identified with key stakeholders. Merck & Co., Inc. donated $3,000 towards the planning effort.

In addition, an inventory of native and invasive plant species was completed as part of the Plant Stewardship Index for NJCF's Wickechoeke Creek Meadow and HLT's Barberton-Idell (Clark) preserve in Kingwood Township, NJ. The Plant Stewardship Index establishes the baseline for an evaluation of the efficacy of stewardship activities over time. HLT improved access at the Clark Preserve and created and installed an interpretive kiosk.

Municipal Ordinance Review

An area of concern identified by the Lower Delaware Wild & Scenic River Management Committee related to impacts to the river from increasing growth pressure, including flooding and sewage discharges into the river and tributary streams. The Committee recognized that individual land use decisions by the municipalities had cumulative impacts that could lead to natural and cultural resource degradation beyond their borders.

The Management Committee asked the question: "What are the local governments doing to protect the Lower Delaware River, its tributaries, wetlands, floodplains, scenic vistas, and historic places?"

The DRGP partnered with the Heritage Conservancy, a non-profit conservation organization based in Bucks County, PA, to try to answer this question. A one-year collaborative effort assessed ways in which the 35 local governments between Trenton and the Delaware Water Gap approached natural resource protection. This Municipal Ordinance Review project was funded through the NPS ($15,000) and William Penn Foundation with the principal objective to identify and

promote the most effective natural resource protection tools used by riverside municipalities.

Information was presented in a report that was distributed to each of the 35 municipalities as well as the public. The report was distributed in conjunction with a Lower Delaware River Forum for local government officials and interested citizens held in Stockton, NJ on January 21, 2006. The forum provided the opportunity for community leaders from both sides of the river to meet and share ideas and success stories, and to promote a common vision for the Lower Delaware River.

Preserve and protect the character of historic structures, districts and sites, including landscapes, in the river corridor.

Goal #3: Historic & Cultural Resources

No priority actions were identified for historic and cultural resource protection in the 2007 Action Plan; however, several implementation strategies were described.

Status	Implementation Strategy	Notes
◉	Educate residents/users about the history of the region and the benefits of historic preservation including the potential for an increase in property values that ensues from such preservation.	Several programs and events routinely incorporate interpretation of historic and cultural resources, including the annual Delaware River Sojourn, the floating classroom curriculum of the Delaware River Experience, and the Delaware River Scenic Byway. The potential increase in property values has not been an element of any of these programs. See highlights below.

◉?	**Corridor municipalities should conduct inventories in order to identify the structures, districts or sites that are eligible for inclusion on the State or Federal Registers of Historic Places.**	**See highlights below. All of the Bucks County, PA municipalities have identified historic sites and districts within their jurisdictions—in many cases the inventories were conducted through PA Historical and Museum Commission. Status of inventories in other counties in PA and NJ is unknown.**
◉?	**Corridor municipalities should preserve significant historic places by nominating them to state or national registers and by establishing local historic districts.**	**Bucks County: 2 NHLs, 19 National Register Historic Districts, 27 individual sites listed on National Register. Information needed for Northampton County, PA; and Warren, Hunterdon and Mercer counties, NJ.**

Highlights

Phillipsburg (NJ) Historic Sites Inventory

A group of volunteers from the Phillipsburg community worked with the Phillipsburg Area Historical Society and a local historian to undertake a historic sites survey for the Town of Phillipsburg in 2011. The survey focused on the town's historic structures, with an emphasis on river related features such as bridges, the Morris Canal and scenic vistas of the Forks of the Delaware.

The volunteers needed coaching and help in the field. A training package was prepared for the volunteers, including survey forms and guidance manual based on New Jersey Office of Historic Preservation guidance.

TechSoup.org permitted the Phillipsburg Area Historical Society, a 501(c)3 organization, to buy software at a considerable discount.

Thousands of pictures were taken, with many of the pictures matched with architectural descriptions in a book. The book summarized the results of the historic sites survey, identifying major historic areas of the town, structures that are particularly noteworthy or in some manner threatened, and sites or areas that the Phillipsburg Area Historical Society believes worthy of special attention, for purposes of preservation and as tourist attractions. More than 400 locations were catalogued, dating from the colonial era to the 1920s. The document condensed the historic sites data in an engaging, narrative format suitable for scholars, general readers, Phillipsburg visitors, students and teachers.

100 copies of the book were printed and distributed to area schools and libraries.

Public interest in the project resulted in numerous requests from school, civic and governmental groups for PAHS to present the historic sites survey process and results. The survey assisted PAHS in its preservation efforts by identifying priority historic properties, and is being used to educate the public about the town's historic assets.

History Programs & Interpretation

November of 2013 saw the first in a series of three lectures on the cultural and environmental history of the Delaware River, co-sponsored by the Delaware River Greenway Partnership and the David Library of the American Revolution. Naval historian Tim McGrath, author of *John Barry: An American Hero in the Age of Sail*, focused on the importance of the Delaware River during the American Revolution. Archaeologist Richard Michael Stewart delivered a presentation on American Indian life during colonial times on March 4, 2014, and environmental journalist and author Bruce Stutz was the featured lecturer on Earth Day, April 22, 2014.

Trail projects such as the Bangor (PA) Area School District's interpretive trail and the Marble Hill Trail (near Phillipsburg, NJ) include interpretive signage highlighting key historic attractions.

Restoration of the Delaware River bank and shoreline at the Ramsaysburg historic site in Knowlton Township, NJ assisted historical and interpretive communication of this area to the public, telling the story of the Delaware River and Knowlton's history of early river commerce.

The National Scenic Byways program is interested in historic preservation as a means to develop low-impact tourism, and therefore Delaware River Greenway Partnership, Delaware River Mill Society, and other partners have participated in various events to raise the visibility of historic sites along byways.

Nockamixon Township Historic Resources Survey

In 2013, Heritage Conservancy assisted Nockamixon Township, PA with a review and evaluation of the existing historic resources survey for the township. Heritage Conservancy conducted background research and a field survey of historic resources to identify resources that are at least 75 years old. The organization updated the priority ranking for preservation and physical descriptions of historic resources. The historic resources were documented through color digital photography, an inventory list and GIS mapping data.

A report on the historic resources survey will be used as the official list of historic resources that should be protected, according to Nockamixon Township. NPS Wild & Scenic Rivers contributed $4,331 towards the updating of the historic resources survey.

Survey work to date has uncovered a number of potentially historically significant resources including the village of Kintnersville, several Delaware Canal related resources and several rural agricultural resources. The latter group includes three highly distinctive style stone barns. Heritage Conservancy intends to nominate these farmsteads to the National Register of Historic Places as a multiple resource nomination.

Encourage recreational use of the river corridor that has a low environmental and social impact and is compatible with public safety, the protection of private property and with the preservation of natural and cultural qualities of the river corridor.

Goal #4: Recreational Resources

Only one high priority action was identified for river recreation, along with several policies and implementation strategies described as important to address Goal #4. The same high priority action was identified for Goal #7, Education and Outreach.

The priority action for recreation and education / outreach is to develop a comprehensive interpretation plan for the entire Lower Delaware River corridor, compatible with the plan prepared for the Delaware and Lehigh Canal National Heritage Corridor. The plan would encourage protection of resources, promote safe and courteous river use, and raise awareness of the value of the Delaware's resources.

Such an ambitious plan has never been initiated for the Lower Delaware and may not be realistic, given the multiplicity of actors and differences in authorities.

Policies for recreational resource protection and use are worth noting as they are quite specific and read more like actions. They include the following:

Status	Policy	Notes
◉	Establish publicly owned land to provide appropriate river access and support facilities for people pursuing recreational opportunities.	Public parklands & access points on both sides of river Easton, PA and south. Need for additional public access north of Easton?
◉	Promote public access points with maps, guides, signs, etc. to reduce recreational trespass on private property.	Delaware River Water Trail map/guide and web site, limited sign installation. Map/guide needs to be updated and reprinted, and web site updated.
◉	Protect land within the river corridor with significant recreational value.	Relates to first policy above. How to identify and prioritize these properties?
◉?	Establish and enforce guidelines for the use of public access sites by commercial operators for access, parking and operations.	NJ DEP and PA DCNR have concession regulations and agreements for their parklands. Specific issues regarding the use of public access sites would need to be identified, and the state regulations reviewed.
○?	Establish strict rules on noisy or intrusive activities or vehicles in the river corridor; promote enforcement by both states.	PA Fish and Boat Commission and NJ Marine Police have motorboat noise regulations—Are they adequate, consistent and enforceable? Do personal watercraft remain an issue on the Lower Delaware?
○?	Enforce no wake zones.	Pennsylvania and New Jersey joint regulations require slow, no wake speeds at the bridges along Lower Delaware. PA requires no wake speeds at the confluence with Paunacussing Creek. Individual communities do not have the authority to require or enforce no wake zones along their riverfronts.

Policies #1, #2, and #3 have largely been implemented through planning and development of the Delaware River Water Trail and select land preservation projects; however, it is not clear to what extent policies #5 and #6 relating to regulations and enforcement have been addressed and whether they remain relevant to current river recreational issues. Policy #4, similar to policies #5 and #6, would be largely addressed at the state level.

Implementation strategies include the following:

Status	Implementation Strategy	Notes
●	The Lower Delaware River Management Committee should participate in the annual Delaware River Sojourn.	See highlights below.
◉?	State, county, municipal and private entities should implement access recommendations of the Delaware River Water Trail Plan.	A review of the Delaware River Water Trail Plan is needed and followup with public access managers.
◉?	Commercial operators should comply with health and safety regulations in the use of watercraft and food and beverage sales.	What current evidence is there to suggest that commercial operators are not in compliance with state health and safety regulations on the river? Does this remain an issue?
○	Conduct a recreational use study assessing environmental impacts.	
○?	State and local government in PA and NJ should adopt compatible rules governing recreational use of the river corridor and conforming to the River Management Plan.	
○?	NJ Marine Police and PA Fish and Boat Commission should: 1) provide personnel to enforce rules pertaining to river recreation activity; and 2) work in partnership with personal watercraft retailers and manufacturers to encourage safe and courteous use of such craft. Effective enforcement policy should minimize excessive noise and speed, eliminate potential collisions between river users, discourage negative interactions between power craft and non-powered craft users, and consider establishing designated areas for personal watercraft.	

It is unclear to what extent implementation strategies #3, #5, and #6 relating primarily to health, safety and environmental regulations have been addressed. A recreational use study has not been initiated for the Lower Delaware. Only implementation strategy #1 has clearly been adopted, incorporated on a consistent basis as part of an ongoing program. There is evidence that Strategy #2 has been partially implemented, but there are ongoing challenges in securing the funding and organizational leadership and coordination to continue development of the Delaware River Water Trail. The Water Trail Plan would require review and follow-up with river access managers and state agencies to determine which recommendations have been implemented and which may need additional attention.

Highlights

Delaware River Water Trail

In 2003, with a $75,000 matching grant from Pennsylvania Department of Conservation and Natural Resources (PA DCNR), Delaware River Greenway Partnership (DRGP) began leading a multi-year effort to develop the Delaware River Water Trail. The intent was to provide residents and visitors with tools that promote safe, responsible and enjoyable experiences on and along 220 miles of the Delaware River, from Hancock, NY south to Trenton, NJ.

The DRGP, Delaware River Basin Commission (DRBC), American Canoe Association (ACA), and National Park Service formed a project Steering Committee consisting Committee; Delaware & Raritan Canal Commission; National Canoe Safety Patrol; New Jersey Department of Environmental Protection; PA DCNR – Delaware Canal State Park; PA Fish and Boat Commission; Pennsylvania Organization for Watersheds and Rivers ; Upper Delaware Council; and Wildlands Conservancy. These project partners held a kickoff meeting on March 27, 2003 to establish project goals, activities and an organizational structure for the more than 50 participating agencies and organizations.

Several subcommittees, including Data Collection Oversight, Water Access and Land Trail Linkage, Signage, Ecotourism & Heritage, and Website subcommittees, guided the development of project components. These components initially consisted of updated River Recreation Maps, a Water Trail Map/Guide, and a concept plan with recommendations for ways to rehabilitate existing riverfront accesses and identification of potential new access points.

A dedicated team of several volunteers worked throughout 2003 and 2004 gathering and field checking data on existing river accesses, their ownership and condition, and their facilities along 200+ miles of the Delaware River mainstem. This information was used to update the DRBC River Recreation maps, finalized in 2007, create a Water Trail Guide, and conduct related public outreach.

The River Recreation maps show public river accesses, islands, depth of channel, flow classification and other information that can be used for fishing and boating. PA DCNR provided $7,500 towards this effort alone. Members of the public participating in the Delaware River Sojourn in June, 2004 helped test the accuracy and usefulness of the draft River Recreation maps.

25,000 copies of the Delaware River Water Trail Guide were printed, and the demand is such that all of those copies were distributed. The colorful, two-sided Guide includes maps of the Upper, Middle and Lower Delaware with public river access locations and a description of their facilities; describes natural and cultural resources and ecology; provides river safety tips; and encourages low-impact recreational use to complement the more detailed River Recreation Maps. The River Recreation Maps and Water Trail Guide together provide newcomers and river recreation "pros" alike with the information required for a safe and memorable river experience on the Delaware River, from Hancock, NY to Trenton, NJ.

The Water Trail Concept Plan, initiated in 2004 and finalized in 2006, represented the first ever attempt to characterize several river recreation topics in the non-tidal Delaware River. The Steering Committee developed a river access database, collecting information on the state of river access along 230 miles of the Delaware, camping, safety, and signage, and used this information to develop specific recommendations for each topic.

The Steering Committee reached out to the paddling community, as the people who have firsthand experience with the opportunities and limitations facing

paddlers on the river. DRGP hosted two public meetings to solicit input on issues important to the paddlers and recreational users in general, and advertised and circulated a survey through canoe club websites.

The Delaware River Water Trail was the theme for the 2005 Delaware River Sojourn, an annual paddling event that begins at Hancock, NY and ends some 200 miles downstream in the Philadelphia/Camden area. The DRGP invited Sojourners to share their reactions to the Water Trail Plan findings and recommendations. The Sojourners also had the opportunity to review and discuss some of the Delaware River Water Trail products such as the updated DRBC River Recreation Maps and the Water Trail Guide.

A 2nd phase of the Delaware River Water Trail implemented some of the recommendations of the 2006 Water Trail Concept Plan. Funding from PA DCNR in 2007 amounted to $45,000, with matching funds provided by PPL, NJ DEP and NPS. DRGP led the effort to develop a marketing strategy, interactive web site, and sign plan for the Water Trail. The Delaware & Lehigh National Heritage Corridor re-emerged as a key partner in the completion of these products, since the Delaware Canal is not only an important cultural and recreational component of the Heritage Corridor but also of the Water Trail and Wild & Scenic River corridor. The Delaware River Water Trail planning effort was further expanded with the Pennsylvania Environmental Council's initiation of a water trail in the tidal portion of the river.

Completion of the Water Trail Guide and initiation of Phase II of the project was recognized with a Delaware River Water Trail Day, April 20, appropriately held at Washington Crossing Historic Park. The event emphasized compatible recreational uses on the Lower Delaware. PA DCNR, Upper Delaware Scenic & Recreational River, Delaware Water Gap National Recreation Area, PA Fish and Boat Commission, NJ DEP,

and Delaware & Lehigh National Heritage Corridor helped organize the event and joined the celebration.

A 2008 NPS Challenge Cost Share grant to DRGP provided $26,270 towards the development of a sign plan for the Delaware River Water Trail. The Water Trail project leveraged an additional $52,500 from PA DCNR to produce the revised DRBC River Recreation Maps, Water Trail Guide, and Water Trail Concept Plan, which were completed in 2008. In April of that year, the Delaware River Water Trail Steering Committee rolled out information to the public regarding management and access along the three National Wild & Scenic River units of the Delaware.

Delaware & Lehigh National Heritage Corridor developed a sign inventory format and process, and completed an inventory of signage at river access points along the 220 miles of the Water Trail. Delaware & Lehigh NHC was a key partner because of the experience and expertise of their staff in planning and designing both a land- and water-based signage program known as "Visually Speaking." The Delaware River Water Trail sign plan was modeled after the Delaware & Lehigh's sign program.

Implementation of the Delaware River Water Trail continued in 2010. A blueprint for interagency and intermunicipal coordination across NY, NJ and PA state borders was created in the development of a consistent, comprehensive directional and interpretive signage program for the entire Delaware River corridor.

In 2010, the consultant Simone Collins assisted the Delaware River Water Trail Steering Committee in identifying key stakeholders and their contact information and locating sources for water trail access mapping. The consultant reviewed and evaluated existing water and land trail signage programs and identified existing sign standards and requirements, to identify a potential sign plan for the Delaware River Water Trail that would incorporate existing signage. Owners of approximately 23 access sites were contacted about their current concerns and future needs and opportunities relating to signage. Open houses in each section of the Delaware River – Upper, Middle and Lower – were conducted during the Summer of 2010 to solicit public feedback on the draft sign plan.

The sign plan, completed in 2011, assessed signage needs for public access sites, including a range of options for use and placement of various sign types and considering the role of technology and electronics in providing orientation and direction.

Two alternative scenarios were developed for each water trail sign type: One for the use of the existing water trail logo and incorporating the logo into existing agency signs, as well as one for a new sign system. Sign types included safety, orientation, and directional. The sign plan included guidance on sign installation, management and maintenance; recommendations for phasing and prioritizing of different sign types; and cost estimates for production, installation, management and maintenance.

100 hard copies of the final sign plan and 50 CDs were created for tri-state distribution, and an electronic version was made available for the internet. The guidance is valuable to access site owners and managers in integrating the water trail sign program with their existing signs. The sign plan benefits river recreation users by providing critical safety information, promoting awareness about recreational opportunities, helping establish a regional identity for the Delaware River Valley, and promoting a watershed conservation ethic, as well as interesting new partners and potential funding opportunities.

By the end of 2011, the Delaware River Water Trail web site was live:

delawareriverwatertrail.org

The web site includes an interactive map for the entire water trail system, showing public access points and

facilities and areas of interest such as hiking trails and museums. A downloadable version of the Water Trail Guide is available, as well as a trip planner, photo gallery, recreational activity guide, and other resources to help make the river user's trip safer and more enriching.

At this time, a marketing assessment for the water trail was completed by Group M Designers & Consultants (Philadelphia, PA). The marketing assessment was a first step in defining the water trail as a "product," identifying assets and potential partnerships, and positioning the water trail within the larger arena of Americans' recreational use habits and trends. Potential marketing segments and ways to reach them were identified. Strategies and goals for marketing the trail were described, along with cost estimates for different types of public outreach.

Both the Delaware River Water Trail web site and marketing assessment were funded with $23,000 secured in 2009 from NJ DEP Recreational Trails and PA DCNR.

The Water Trail is intended to promote environmental stewardship and a "Leave No Trace" ethic that will reduce the potential for negative impacts to water quality, wildlife habitat, private property, and public facilities. In addition, the tools developed for the Water Trail have provided information to thousands of river visitors, raising awareness about the river's incredible resources and enhancing the river experience.

Ramsaysburg (NJ) Boat Launch & Shoreline Restoration

The Ramsaysburg Homestead, listed on both the state and national registers of historic places, includes nearly 12 acres along the banks of the Delaware River in Knowlton Township, NJ. It contains the remains of buildings—tavern, barn, cottage, shed and smokehouse—that represent commercial activity occurring in the area between 1795 and 1874.

The Knowlton Township Historic Commission (KTHC) has obtained nearly $250,000 in grant funding for stabilization and rehabilitation of the historic structures at the site, including a $5,000 grant in 2003 from the National Park Service's Wild & Scenic Rivers Program.

In 2010, the Knowlton Township Historic Commission, Knowlton Township Environmental Advisory Committee, and Martins-Jacoby Watershed Association began to develop a public access site along the shoreline of the Delaware River at the Ramsaysburg site.

Ramsaysburg project:

$7,500 Wild & Scenic funds

$7,500 in in-kind and financial assistance from Knowlton Township, New Jersey

Additional in-kind services were estimated at greater than $3,500 and represent more than 64 hours of volunteer service from Knowlton Township and community groups.

The NJ Division of Fish and Wildlife contributed their technical support to the design and production of the river access site signage. The Division also donated plants from Pinelands Nursery for upland planting on the hillside of the river access path to stabilize the slope.

The low-impact access site now serves canoes and kayaks and other small boats along a stretch of the river with very limited public access. The development of the canoe/kayak launch site was coupled with restoration of the riparian buffer zone with native vegetation and the removal of invasive plants, as well as design and installation of interpretive signage and a double-sided orientation sign. The latter includes river mileage and site identification on the riverside and an explanation about riparian buffers on the reverse land side. The signs include the Delaware River Water Trail, and Wild & Scenic River, logos. Bench seating was provided for visitors to enjoy this scenic stretch of the Delaware River. The two benches were specially designed to allow for removal in anticipation of a flood event.

Despite some setbacks such as flooding in 2011, which eradicated much of the original native plantings along the riverbank, the project was completed successfully in 2013. North Jersey Resource Conservation and Development worked with Knowlton Township on the riparian buffer design to help address significant riverbank erosion. The design plan provided for planting native ground cover, the riparian area, and the understory. Knowlton Township Boy Scout Troop # 1053 took on the project and learned about the value of riparian areas and the unique situation at the Ramsaysburg site. After helping to install 171 native plants, they agreed to return in future years to work on eliminating any invasive plants that try to re-assert themselves.

Restoration of the Delaware River bank and shoreline at the Ramsaysburg site helps achieve the Wild and Scenic goals of the Lower Delaware River Management Plan by preserving the historic resources, encouraging recreational use of the river corridor, and stimulating sustainable economic development within the region. Information about the newly developed river access site was incorporated into the interactive Delaware River Water Trail web site in 2011. Visitation at the historic site has increased significantly with the installation of the public river access, enabling an expansion of interpretive programs and annual events such as the Riverside Fall Festival and Christmas in the Country.

Another benefit of the project was that Knowlton Township became part of the "Watershed Ambassadors" network, and Ramsaysburg was identified as a site of value for collecting data on water quality. The Township now collects and submits water quality data to the State of New Jersey twice a year.

Trail Access Improvements in New Jersey

Marble Hill Trails

Marble Hill Natural Resource Area is located just north of Phillipsburg, New Jersey in Lopatcong and Harmony townships, Warren County, along the banks of the Delaware River.

The 272 acres of conserved land includes unimproved hiking trails and scenic overlooks, including a view of "St. Anthony's Nose," an unusual geological feature located across the river in Easton, PA. There are also unique cultural and natural features such as the "Ice Cave," a mine that was excavated in the late 1800s for its iron ore and now houses stalagmites of ice.

NPS Wild & Scenic funding enabled Warren County to improve and expand the 4.95 miles of existing trails. The project enhanced public access to the Marble Hill Natural Area, including development of 1,600 feet of new trail in the northern section of the property and a

new 2,250-foot connection to Lopatcong Township Park. The County created new orientation and directional blazes and signage for the trails. The project advanced the goal to ultimately connect the Marble Hill trail system with the Highlands Trail in Sussex County, NJ, for a total 150 miles of trails from the Delaware to the Hudson River at Storm King Mountain in New York.

Warren County and its partners designed and developed a trail guide and map, and printed 2,500 copies. Several individual trail signs and interpretive signage for four kiosks were created that help the trail user understand the significance of the site's natural resources and role in water quality protection.

The project was a partnership among Martins-Jacoby Watershed Association; Warren County Board of Recreation, and Department of Land Preservation; NY-NJ Trail Conference; Lopatcong Public Works and numerous volunteers. In-kind contributions of the partners amounted to some $11,824, nearly twice the NPS Wild & Scenic funding, for a total project cost of $24,024.

Thomas F. Breden Preserve

Hunterdon Land Trust (HLT) developed trail maps and guides for several preserved properties identified in their five year management plan for the Delaware River corridor and refined the existing trail map, using it to create a map guide for the Thomas F. Breden Preserve. This preserve, located at the Milford Bluffs, is made up of 264 acres of forests and grassland on top of the red shale cliffs overlooking the Delaware River. Managed by the New Jersey Natural Lands Trust, this preserve has hiking trails that wind through the woods and offer peaceful places to sit and appreciate the beauty of the river valley. In addition to the creation of the map guide, Wild & Scenic River funds allowed the NJ Natural Lands Trust to improve the parking area and entrance road into the Preserve in 2011.

Kugler Woods Preserve

The Kugler Woods Preserve is located on the Lower Delaware River roughly halfway between Stockton and Frenchtown, NJ. The Kugler Woods Preserve includes a three-season 10-foot waterfall with many large flat rocks at its foot, offering a scenic place to sit and absorb the beauty of the surrounding area.

HLT worked with Kingwood Township to post the property and establish a trail to the waterfall, and plotted a trail through an easement that connects this property to Bull's Island State Park.

HLT previously participated in the establishment of a new trail built by Delaware Township on Bull's Island Preserve by creating a "regional" map guide. The guide shows connections to a series of preserved properties which include Zega-Lockatong and the Wescott Preserve. This trail through the easement could further extend this series of connecting trails by creating access to the Kugler Woods.

HLT and the New Jersey Division of Parks and Forestry, which manages the Kugler property, created a map guide to the property showing the trail to the waterfall using NPS Wild & Scenic funds. One thousand 2-color copies of the trail maps for both Kugler Woods and Milford Bluffs were printed and distributed in 2011.

In 2013, HLT and Kingwood Township installed a kiosk at the trailhead of Kugler woods, and cleared the trail of trees blown down by Hurricane Sandy.

Copper Creek Preserve

HLT's project on its Copper Creek Preserve improved access to the property and trail system located in the Lower Delaware River corridor.

Also in 2011, the boundaries of the Preserve were marked and gates were installed to block unauthorized ATV access to the property. The ATV use was causing erosion of the Frenchtown Run's stream banks.

Frenchtown Preserve

Hunterdon Land Trust used Wild and Scenic funds to create a trailhead access on the 150-acre Frenchtown Preserve, including a kiosk and map guide. Additional funding secured by the Land Trust from the National Recreational Trails Grant Program and Frenchtown Borough covered the construction of a parking area, making the preserve more easily accessible to the public including for horseback riding.

Thomas A. Saeger Land Preserve Stewardship

HLT preserved the Saeger property in Holland Township, New Jersey in 2010. This land adjoins 110 acres of preserved parkland as part of the Holland Highland Preserve.

NPS Wild & Scenic funding for the 2012-2013 season was used towards developing a forest management plan for the 55-acre Saeger/Holland Highlands Preserve and adjacent Kolonia property. The plan includes a soils analysis, and inventory and assessment of tree stands, wildlife, streams, wetlands, along with stewardship objectives and a proposed activity schedule. Phase I implementation of that plan on the Saeger Preserve included the removal of invasive species (Autumn Olive and Mile-a-minute Weed) and initial replacement plantings with native plants.

NPS funded Phase II of this restoration, which involved more extensive plantings (and appropriate deer protection) as well as laying the foundation for trail building through GPS documentation and trail marking. Deer exclosures were installed in preparation for planting of native trees in 2014.

Removal of the invasive Autumn Olive allowed for greater access and more trails on the property. Additionally, Princeton Hydro secured $100,000 from the Wetlands Mitigation Council to investigate the potential for re-establishing wetlands on the Saeger Property. Implementation of the forest management plan has helped protect habitat for several threatened species, including the bobcat, the Cooper hawk and the wood turtle.

Identify principles for minimizing the adverse impact of development within the river corridor.

Goal #5: Economic Development

No high priority actions were identified for economic development; however, several implementation strategies related to tourism, scenic resource protection, and compatible land uses were described as important.

Status	Implementation Strategy	Notes
◉	Encourage economic development activities related to historic and cultural sites and support non-profits that run historic sites and state-owned historic sites.	Delaware River Scenic Byway, Delaware & Lehigh National Heritage Corridor Landmark Towns and Delaware & Lehigh Trail Alliance support these activities from Easton south. See highlights below.
◉	Use existing activities to attract outside tourists (e.g., railroad excursions, canal rides, tours, outfitters' trips, campground activities).	Delaware River Scenic Byway, Delaware & Lehigh National Heritage Corridor Landmark Towns and Delaware & Lehigh Trail Alliance market these activities from Easton south. See highlights below.
◉	Identify opportunities for appropriate privately owned tourism destinations (wineries, bed and breakfasts, etc.	Delaware River Scenic Byway, Delaware & Lehigh National Heritage Corridor Landmark Towns and Delaware & Lehigh Trail Alliance have investigated these opportunities from Easton south. See highlights below.
◉	Seek federal byway designation and develop management plans for roads next to the river.	NJ Route 29 is the only National Scenic Byway along the Lower Delaware River.
◉	Conduct a viewshed study to identify significant views, areas in need of protection, and protection measures—Maintain existing character and views of/from roadways where possible.	Only the Delaware River Scenic Byway has included a viewshed assessment, as part of its Management Plan.
◉	Investigate the use of visual themes (signs, construction techniques, road patterns) to develop a solid identity within the Lower Delaware valley.	There is no overarching identity for the Lower Delaware, but there are opportunities for implementation of the Delaware River Water Trail (and Delaware & Lehigh NHC) signage corridorwide.
◉	Develop a system of evaluation for proposed projects throughout the river corridor that identifies impacts on significant resources and compares the environmental impacts with the economic benefits, particularly in relation to water quality.	DRBC's Special Protection Waters regulations address some of these impacts—e.g., wastewater discharge and water intakes. NPS Section 7a project reviews assess impacts to the Delaware River's outstanding resources, water quality, and free flow but does not look at economic aspects.
○	Establish an Economic Development Coordinating Committee responsible for coordinating river festivals and events, educational programs and economic development opportunities.	
◉	Improve coordination between chambers of commerce and economic development interests to attract tourists to the area.	Delaware River Scenic Byway is coordinating for the NJ side of the river below Milford.
○	Encourage economic development through the Main Street program.	
○	Require Best Management Practices for all industrial areas to protect the river corridor's scenic value and natural and cultural resources.	
○	Concentrate public and private utility uses and rights-of-way to minimize impact.	
○	Conduct reviews to anticipate expansion needs for utilities and develop a plan that allows those needs to be met in a manner that is compatible with the river corridor's resources and that is cost-effective.	

? ◉	Discourage construction of wireless communications towers in viewshed of designated sections of the Lower Delaware mainstem and three designated creeks.	Plumstead and Solebury townships have enacted ordinances that limit or prohibit communications towers in certain areas—e.g., Delaware River Management Overlay District (Plumstead)
?	Review expansion needs with appropriate governmental entities regarding existing sewerage authorities and anticipated new sewage treatment facilities to ensure compatibility with the River Management Plan.	

None of the tourism strategies identified above has been undertaken on a comprehensive corridorwide basis. Tourism strategies (#1 through #4 and #6 above) have been implemented along a portion of the New Jersey side of the river through the state and federal designation of the Delaware River Scenic Byway/NJ Route 29. The designation of State Scenic Byways (Routes 32 and 611) on the Pennsylvania side of the river has not been accompanied by any management plan effort or economic development strategy, nor has federal designation been pursued.

On the Pennsylvania side, the Delaware & Lehigh National Heritage Corridor has been the main driver for tourism related economic development within the lower portion of the river corridor, through its Landmark Towns projects and Delaware and Lehigh Trail Alliance. The Landmark Towns is a regional economic development initiative of the Boroughs of Bristol, Morrisville, New Hope and Yardley in Bucks County, PA—Only New Hope is located within the Lower Delaware National Wild & Scenic River corridor. The Delaware and Lehigh Trail Alliance coordinates stewardship and promotion of the 165-mile D&L Trail and its side trails, including the Delaware Canal towpath trail from Easton to Morrisville, PA. These efforts are mainly focused on trail improvements, interpretation, and economic development and do not address scenic viewshed protection.

Strategies for protection of scenic and historic viewsheds have largely not been implemented. Strategy #7 has been implemented by and large through the National Park Service's project reviews under Section 7(a) of the Wild & Scenic Rivers Act, and by the DRBC's review of wastewater discharge and water intake proposals for new and expanded facilities.

Strategy #14 has been addressed by two communities in Pennsylvania; however, the status of scenic viewshed protection from communications infrastructure in other communities is unknown.

Some implementation strategies were identified as specific to the role of municipalities and include the following:

Status	Implementation Strategy	Notes
◉	Review and update comprehensive plans, zoning, and subdivision and land development ordinances to ensure preservation of the environmental and historic character of their management areas.	This is an ongoing process for all the Lower Delaware municipalities.
◉	Publicize development proposals within and adjacent to affected communities for input and review.	No systematic approach currently; however, Lower Delaware Wild & Scenic web site posts some development proposals. Aren't there municipal requirements for public notice?
○?	Departments of transportation should assure that new or improved roads in the river corridor will be environmentally and visually compatible with river corridor resources and that construction techniques will reduce the impact of stormwater runoff on water quality.	It is unclear whether the reference is to state or county/township departments.
?	Encourage new industrial development to locate outside the immediate river corridor or be concentrated where such uses already exist or on sites of former industrial facilities.	Industrial development potential is limited but does exist within the Bucks County portion of the Lower Delaware corridor (See Bucks County information below.)
?	Identify appropriate types of development and direct development to locations that are compatible with protection of the river corridor resources.	

The implementation status of municipal strategies for protection of river resources would require a comprehensive review of local ordinances and zoning, which is beyond the scope of this document. The last comprehensive look at municipal ordinances within the Lower Delaware River corridor was conducted by Delaware River Greenway Partnership (DRGP) in 2006. However, National Park Service was able to conduct a limited survey of the status of select natural and cultural resource and river protection ordinances to further the development of the 15-year program accomplishments document, (This municipal ordinance matrix is available as an addendum and is intended as a working document.) It is not clear how municipal implementation strategies identified above, in addition to protection of historic character, were addressed.

According to the DRGP municipal ordinance review and NPS update, most of the municipalities on the Pennsylvania side of the river prohibit any development in the 100-year floodplain, and all municipalities provide some degree of protection for the 100-year floodplain. The majority of Pennsylvania municipalities protect the open space surrounding wetlands, with some exceptions. The requirement of a streamside/lake/pond riparian buffer varied considerably, from no requirement to different buffer widths around specific waterways. Wellhead protection and water conservation ordinances also varied considerably, from no protection requirements to specific types of development limits. Steep slopes over 15% were generally protected, but steep slopes under 15% were often not subjected to any specific requirement for conservation. The vast majority of PA municipalities had tree protection ordinances in place.

On the NJ side of the river, the majority of municipalities were covered by the NJ Flood Hazard Control Act, although a couple of municipalities permitted encroachments into the 100-year floodplain. NJ Wetlands Act regulations applied to the vast majority of municipalities, thereby protecting open space around wetlands. NJ Special Protection regulations require a 300-foot minimum buffer along all Category 1 watercourse and tributaries that drain to these watercourses. This riparian buffer requirement applies to the vast majority of the Lower Delaware municipalities. The overwhelming majority of NJ municipalities do not have water conservation ordinances, and many do not have wellhead protection ordinances. Unlike Pennsylvania, NJ's municipalities generally do not protect steep slopes, even those greater than 15%. Tree protection ordinances varied considerably, from none to restrictions on the removal of trees in certain areas, or of a certain dbh.

Only Bucks County provided information on industrial zoned parcels and their potential for redevelopment (See implementation strategy #4 above). There are 6 existing industrial areas—a total of at least 21 parcels—along the Lower Delaware within 5 of 9 Bucks County municipalities. 4 municipalities did not have any industrial areas along or near their riverfronts. At least 3 municipalities—Nockamixon, Plumstead, and Upper Makefield—do not allow for industrial zoning along the Delaware riverfront. The possibility for redevelopment and / or expansion of existing industrial uses exists within downtown New Hope, in 2 areas within Solebury Township, along a 1-mile stretch of the Delaware River in Tinicum Township, an area near Upper Black Eddy in Bridgeton Township, and just south of Riegelsville in Durham Township.

Highlights for Tourism-related Implementation Strategies

Delaware River Scenic Byway

One way to create a sense of common heritage and pride, and generate economic benefits, is to engage the riverside communities in river resource recognition programs. Delaware River Greenway Partnership (DRGP) was therefore asked to lead the New Jersey Delaware River Scenic Byway Steering Committee. This Committee was looking into the feasibility of designating Route 29, along the Delaware River in NJ, as a National Scenic Byway.

By the end of 2006, a Corridor Management Plan had been developed for the Delaware River Scenic Byway under the sponsorship of the New Jersey Department of Transportation (NJ DOT). The Management Plan set the vision for the Delaware River Scenic Byway, established its boundaries, identified the contributing resources and stakeholders, and proposed strategies to manage the Byway's scenic character and market and interpret its significant cultural, natural and recreational assets. The Byway Management Committee that assisted with plan development and public outreach consisted of nine riverfront municipalities within Hunterdon and Mercer counties, NJ DOT, NJ DEP, Delaware & Raritan Canal Commission, DRBC, New Jersey Water Supply Authority, and various non-profits and institutions.

An application for national designation went forward in 2008 to the Federal Highway Administration, bolstered

by resolutions of support from riverside communities from Frenchtown south to Trenton and support from

Delaware & Raritan Canal State Park and Washington Crossing State Park.

By the end of 2008, the New Jersey Department of Transportation had worked out an agreement with Delaware River Mill Society (DRMS), a preservation and interpretation oriented 501c3 based in Stockton, NJ, to serve as the financial administrator for a 3-year National Scenic Byways grant that would fund the implementation of the Delaware River Scenic Byway Management Plan. DRGP would assist DRMS to re-convene the former Delaware River Scenic Byway Management Committee for this purpose, and expand the partnership, which included several members of the Lower Delaware Wild & Scenic River Management Committee.

In October of 2009, Route 29 achieved its official National Scenic Byway designation. Shortly thereafter, the Delaware River Scenic Byway web site went live with visitor support, announcements, the Delaware River Scenic Byway newsletter, maps, event sites, links with participating organizations, and a downloadable copy of the management plan at:

www.**delawareriverscenicbyway**.org

A Scenic Byway map brochure was added in 2011, courtesy of a $2,000 grant from the NPS Wild & Scenic Rivers Program. This funding helped support printing of the initial 1,000 copies.

The Lower Delaware Wild & Scenic River Management Committee (including DRGP and DRMS) and NPS have continued as partners in the implementation of the Delaware River Scenic Byway Management Plan. Together with the Scenic Byway Committee, they have provided recommendations for the integration of Scenic Byway and Water Trail signage, support for special events, and helping to launch the Delaware River Scenic Byway Guide in local media. The 2012-2013 Byway Guide included the Delaware River Scenic Byway map and the Delaware River Water Trail map, and listed Byways historic and cultural attractions, a calendar of community events by season, and information on Byway businesses by category.

Outreach to the river communities included a monthly radio show of the Scenic Byway Committee and a grant from NJ Tourism to promote the Byway Guide containing the Water Trail Map and the Byway Map. Several members of the Byway Management Committee also authored a History of the Delaware River Scenic Byway published by Arcadia Press for the American Images series.

The culture of the Delaware River communities excels in the arts, inspired by the natural beauty of the river region. Community involvement was achieved through annual art exhibits of regional artists. The third year the exhibit had evolved into the formation of the Delaware River Region Artists and a show catalog has been published.

The Delaware River Scenic Byway and Lower Delaware National Wild & Scenic River share many of the same goals, as reflected in both the Delaware River Scenic Byway Management Plan and Lower Delaware Wild & Scenic River Management Plan. Both plans encourage the protection of "outstandingly remarkable" (River Management Plan) or "intrinsic" (Scenic Byway) archeological, cultural, historic, natural, recreational and scenic qualities along the river corridor while supporting compatible development.

Funding for both programs support a variety of projects that include historic preservation, interpretation, low-impact recreation, and land preservation. The Byway Management Committee received three National Scenic Byways grants to help the common goals of the Wild & Scenic and the Byway Committees. One was for the construction design of an historic swing bridge on the Delaware & Raritan Canal just south of Lambertville, NJ. The second was for a public restroom for the Byway and river users located at the historic Prallsville Mills complex, a centerpoint of the Byway with ample parking

and access to the river and canal. The third was a grant for preservation of the Delaware River bluffs ("Devils Tea Table" area) between Frenchtown and Stockton, NJ. National Wild & Scenic Rivers funding was also applied towards protection of this iconic geological feature.

The Scenic Byway Management Committee's charter outlines its duties to continue the goals to "protect, promote and improve" the Byway beyond the initial three-year management grant.

DRGP is the host 501c3 for committee's work as it has also been for the Wild & Scenic Committee.

PHOTO: E.S. Sharp

Preserve open space as a means of maximizing the health of the ecosystem, preserving scenic values, and minimizing the impact of new development in the river corridor.

Goal #6: Open Space Preservation

While no priority actions were noted, several implementation strategies were identified to conserve lands within the river corridor that have special environmental, scenic or agricultural value.

Status	Implementation Strategy	Notes
●	Private land trusts should identify and protect lands in the corridor with significant resource value, working with the Lower Delaware Wild & Scenic River Management Committee.	Part of ongoing programs funded by federal, state and local governments as well as private sources.
●	Renew the Garden State Preservation Trust (NJ) funding, which was set to expire in 2008, and include forest stewardship plans as an option for allowing landowners to qualify for special tax assessments.	
●	Encourage acquisition or donation of easements for development rights on agricultural lands by land trusts and government agencies.	Part of ongoing programs.

◉	Prioritize land acquisition on the PA side of the river corridor and provide appropriate funding for land protection.	Natural Lands Trust developed a priority model for land conservation in PA and NJ. This model provides an additional resource when applying for land protection funding. Some funding is available—but is it "appropriate"/adequate and consistently available? Are there estimates for funding that would be needed to protect the priority parcels?
◉	Survey the NJ side of the river to determinate which parcels of land should be in public ownership and which public or private entity would most likely work with the Green Acres program.	NJ lands have been surveyed for conservation priority, but not specifically to address public ownership or which entity would work with Green Acres.
◉	Protect undeveloped lands permanently with priority given to highly visible and developable tracts, and particularly to the cliff areas that contain rare plant species.	What is the status of protection for the cliff areas and other iconic features (e.g., Milford Bluffs, Devil's Tea Table, and Nockamixon Cliffs)? *Delaware River Scenic Byway was awarded a grant and is working on preservation of the Delaware River bluffs ("Devils Tea Table" area) between Frenchtown and Stockton, NJ.*
◉	Educational programs should be offered to landowners and professionals such as tax attorneys and real estate brokers regarding land and resource protection, and opportunities for conservation easements and land preservation.	Private property owners have been targeted, but not professionals.
○	State farmland protection programs should give priority to the protection of agricultural lands in the river corridor.	
○	Encourage farmland preservation programs to address eligibility for farms with a focus on resource conservation rather than strict cultivation.	
?	Farmland should be taxed on the basis of its production value and not on its fair market value for development.	
?	Agricultural Security Areas or Agricultural Development Areas should be established.	6 out of 9 Bucks County communities of the Lower Delaware have a total 5,093.6 acres enrolled in the county's Agricultural Preservation Program.
?	Islands should be protected and acquired.	

Of these twelve implementation strategies, #1, #2, and #3 have been successfully pursued by several non-profits working in partnership with state, county and municipal governments, and #4-#7 have largely been implemented.

The conservation status of Delaware River Islands (#12) was not investigated for this report. There was also no follow-up regarding the success or failure of certain implementation strategies to protect farmlands (#8-#11) within the Lower Delaware River corridor, although it appears that state farmland protection programs do not give priority to protecting agricultural lands within the corridor. The Garden State Preservation Trust (#2) was renewed to provide funding for farmland preservation; however, this and similar programs appear to encourage harvest and production rather than conservation. Bucks County Planning Commission provided information on their Lower Delaware municipalities' enrollment

within the county's Agricultural Preservation Program; however, the acreage enrolled in other farmland preservation programs (through land trusts or state) is unknown. Educational programs concerning land and resource protection (#7) have been directed to river corridor landowners over the years, but not on a consistent and widely available basis (See Priority Action #4 under Water Quality, page 6).

Highlights of Implementation Strategy for Land Protection

Pennsylvania and New Jersey Protected Lands Database

The Heritage Conservancy worked with Pennsylvania municipalities in 2008 to compile spatial data of the permanently protected lands within the 15 Pennsylvania municipalities bordering the Lower Delaware Wild and Scenic River in Bucks and Northampton counties. Areas defined as permanently protected include federal and state-owned parkland and open space; county protected parkland and open space; municipal-owned parkland and open space; agricultural lands protected through Pennsylvania's and/or county agricultural preservation programs; and privately protected lands (lands donated to or purchased by conservation organizations and lands within conservation easements).

The resulting database and GIS-based map shows major roads, municipal boundaries, and the locations of the protected lands. Privately protected lands are shown generally without revealing the precise location of the property in order to protect the privacy of landowners.

Compiling the spatial data from two counties into one accessible and consistent format enables the database to be used as a tool to help guide land protection within the riverfront municipalities. Depending on user needs, users can access parcel information in different file types - Google Earth, ArcGIS, and Microsoft Excel. The Heritage Conservancy worked with NPS to expand the protected lands database in 2010 to include New Jersey.

In 2011, Natural Lands Trust updated GIS mapping for the Lower Delaware and added spatial data for the Musconetcong National Wild & Scenic River. NLT undertook a GIS-based analysis of land protection priorities within the Lower Delaware and Musconetcong National Wild & Scenic River corridors. NLT collected and summarized existing GIS information on priority land parcels (protected and unprotected) to support implementation of the Lower Delaware Wild & Scenic River Management Plan. NLT defined the river corridor boundaries, acquired 2010 parcel information on protected lands in Pennsylvania from Heritage Conservancy, and investigated the availability of parcel data for the New Jersey side of the Delaware River. Key watershed organizations, land trusts, and other conservation groups were contacted to understand their land protection priorities and stewardship issues.

NLT organized data on protected lands from existing sources and identified overlap and gaps in coverage. NLT was able to prioritize land protection on the PA side using the organization's *Smart Conservation®* process, in which parcels can be evaluated based on size, proximity, and connectivity to protected lands and the presence of aquatic, terrestrial, and rare species.

Completing a Smart Conservation Assessment of the New Jersey communities within the Delaware River corridor was not possible. GIS layers of data corresponding to PA data layers do not exist in New Jersey. Instead NLT used NJ Department of Environmental Protection priority data for wetlands, forest, and grasslands and combined this data with

information on protected lands, parcel size, connectivity, and proximity to other protected lands and other available data layers to create community prioritization mapping with a focus on water quality.

The process of mapping and identification of priorities and stewardship issues yielded a more coherent and less opportunistic land protection strategy. NLT was also able to identify sources of funding and technical resources to protect priority parcels. Results were summarized in an addendum to the land protection priorities report, and the report was made available to the public through NLT's web site. $7,535 in NPS Wild & Scenic Rivers funding supported the two-year project.

Delaware River Watershed Protection Initiative (NJ)

The Delaware River watershed in Hunterdon County has been a focus of Hunterdon Land Trust's preservation work since the inception of the organization. This focus was formalized in the Hunterdon Land Trust Comprehensive Land Preservation Plan developed during 2011 and adopted by the board in December 2011. Both the Delaware River Scenic Corridor and Delaware River tributaries are major Project Regions as set out in the plan.

In 2008, Hunterdon Land Trust (HLT) embarked on the Delaware River Watershed Protection Initiative. The initial five-year planning effort has continued into the present as a collaborative effort to create and manage interconnected greenways of preserved farmland, forests, and natural areas. The intent is to safeguard critical watershed resources and provide passive recreational opportunities for the public within the Delaware River watershed.

HLT works with a variety of partners, including state, county, and municipal agencies and non-profit organizations, to meet comprehensive land preservation and stewardship goals within the Lower Delaware River Watershed of Hunterdon County. The geographic focus area includes the river mainstem and select high quality tributaries: the Alexauken, Nishisakwick, Copper, and Lockatong creeks and the Musconetcong River. The initiative includes stewardship and land acquisition elements such as identification of critical properties, securing funding land preservation projects, and working with landowners to close on the properties.

The first year of the initiative included GIS mapping of preserved public open space in the river corridor of Hunterdon County and improved public access to the recently acquired 150-acre Frenchtown greenbelt property.

HLT's preservation efforts along the Delaware mainstem have resulted in the preservation of over 1,750 acres along the bluffs and the scenic vistas of State Route 29, and more than 3,000 acres within the Delaware River corridor within a five-year period.

By the end of 2009, HLT had closed on the Clark and Kolonia properties. Funds for these projects were secured from the Hunterdon County Nonprofit Grant Program, from the State Green Acres program, and from the townships of Kingwood and Holland, as open space funds generated through local taxes.
The Clark property is comprised of 55 acres in the Lockatong Creek watershed. It is an undisturbed

wooded wetland. The Kolonia property represents 10 acres, adjoining 110 acres owned and managed by HLT and the Township of Holland. An additional property (Trstensky) in Kingwood Township consists of 3 lots, one of which was purchased by HLT by the end of 2013. This lot is 33 acres and in the Lockatong watershed. It consists primarily of wooded wetlands, with one field along the Kingwood-Lockatong Road frontage. A portion of the Lockatong Creek runs across the properties. HLT has a contract to purchase the adjoining 26 acres. The Lockatong is a New Jersey Category One waterway and a focus area of HLT's. These properties combined include over 400 acres and preserve portions of Milford, Copper, and Lockatong creeks.

Technical report expenses totaled $20,511 for the four properties, of which Wild & Scenic funding provided $6,185, leveraging $14,326 in other grants funding. $9,000 of Wild & Scenic funding was contributed towards staff time and legal support for land acquisition.

HLT's land preservation activities specifically target properties within the Delaware River watershed in an effort to preserve and protect water resources, contiguous forests, and species habitat. In addition, efforts to initiate stewardship activities to improve public access and protect natural resources within the river watershed support Lower Delaware River Management Plan goals of improving public visibility and access for recreation.
HLT has had significant success in Holland and Kingwood townships as well as Frenchtown Borough. In 2011, 452 acres in Kingwood Township that HLT and its partners have been pursing for preservation for 10 years was permanently preserved as Horseshoe Bend Park and is managed jointly by Kingwood Township and NJ DEP Division of Parks and Forestry.

Horseshoe Bend Park is close to Frenchtown Borough and the 150-acre Frenchtown Preserve. Its preservation created over 800 acres of contiguous preserved land. It is a key accomplishment in the preservation project area that surrounds Frenchtown and connects the Borough, Kingwood Township and Delaware & Raritan State Park. The Copper Creek and other small streams run through the property on their way to the Delaware River. HLT partnered with Kingwood Township and New Jersey Division of Parks and Forestry to produce a Natural Resources Inventory and management plan for the Horseshoe Bend Preserve. The Natural Resources Inventory was supported through NPS Wild & Scenic funding.

The 60-acre Fisher property in Lebanon Township is a joint project with the Township and the New Jersey Water Supply Authority (NJWSA). The preservation of this property helps protect a high-quality stretch of the Spruce Run Creek in the Highlands Preservation area. It is a priority protection area for the NJWSA.

In 2012 and 2013, HLT transferred three properties in the river corridor totaling 271 acres to partners for closing, two to Green Acres and one to the State Agricultural Development Committee.

In May of 2012, HLT closed on a farm, a cooperative project with Kingwood Township. In July, HLT accepted a donation of a conservation easement on a property in Delaware Township. This donation provides the Land Trust with Green Acres credits to be used towards another acquisition in the same watershed. In 2013, HLT purchased a 2-acre addition to their 55-acre Idell Preserve. The small lot enabled better public access to the Preserve and helped protect vernal pools and their aquatic life.

An eight-year effort to preserve the 43-acre Wooden farm with the goal of establishing a park was achieved at the end of 2013, thanks to the efforts of the D&R Greenway Land Trust, West Amwell Township and HLT.

D&R Greenway will manage the preserve in West Amwell Township with assistance from the Township. The preservation effort, spearheaded by West Amwell Township and the D&R Greenway Land Trust, protects land farmed by the Wooden family for more than a century. HLT assisted by acquiring nonprofit grant money from Hunterdon County to apply toward the purchase price of the land. The Land Trust's efforts were supported by funding from the National Park Service's Wild & Scenic Program.

Preserving the property offers numerous benefits, including creating an ideal location for a future park, protecting water quality in the area and helping maintain the county's rural character. The land includes a tributary to Moore's Creek and is a water recharge area that drains into the Delaware River. The red cedars of a 12-acre coniferous forest within the property provides roosting habitat for three owls, including the Long-eared owl, which is on the NJ list of threatened species.

Residents are able to enjoy picnicking, cross-country skiing, birding and hiking. The property offers hikers stunning views of Baldpate Mountain to the south and provides a missing link to existing green-way corridors. The area contains many historic farms and ties into Mercer County's Baldpate Mountain Preserve, Howell Farm and Pleasant Valley Historic District. It is also a linchpin in the Crossroads of the American Revolution Heritage Area.

Goal #7: Education & Outreach

No specific goal was developed for education & outreach; however, one priority action and several implementation strategies were identified.

The high priority action associated with education and outreach is the development of a comprehensive interpretation plan for the entire Lower Delaware River corridor, compatible with the existing plan prepared for

the Delaware and Lehigh Navigation Canal. This action was also identified for Goal #4, but was never undertaken (See Goal #4: Recreational Resources).

Additional implementation strategies were identified, with the Delaware River Greenway Partnership noted as the lead partner to develop and implement an education and outreach program. Local schools, municipalities, park systems, and cultural institutions would all have a role in bringing river-related resource information and issues to the attention of the public.

Status	Implementation Strategy	Notes
◉	Increase general awareness of the river and its tributaries.	Difficult to measure results, part of ongoing programs. Natural Lands Trust developed a Junior River Ranger booklet for the Lower Delaware Wild and Scenic River.
◉	Encourage residents' familiarity with best land management practices to protect and enhance the resources of the Delaware River and its tributaries.	Federal land management agencies have produced and distributed a Wild & Scenic riverfront landowners' guide; Natural Lands Trust has developed a stewardship handbook for riverfront landowners.

◉	**Instill in school children as sense of stewardship and pride in the Delaware Watershed through development of school curricula.**	**Ongoing programs: Delaware River Experience, Lambertville Steamboat Floating Classroom, Jr. River Ranger program**
○	**Foster a sense of the Delaware Watershed as a "community" and watershed pride by residents and local officials.**	**Difficult to measure, but anecdotally the results of this implementation strategy are not as anticipated.**

Programs and projects have been undertaken in all four key areas; however, it has been difficult to sustain education and outreach efforts throughout the 67 miles of Lower Delaware River communities over a 15-year period. Local residents more often identify with their local political jurisdiction rather than relating to other Delaware River watershed communities. It has often been noted that the Lower Delaware River is the dividing line between two states that generally do not see themselves as having common interests or the political means to cross jurisdictional boundaries. In addition, political turnover requires consistent contact with municipal officials and re-educating them on their role in implementing the River Management Plan.

PHOTO: DEE KELLER, DELAWARE RIVER EXPERIENCE

Highlights

Celebrating Important Milestones

The 10th Anniversary in November of 2008 of the Lower Delaware's designation as a National Wild & Scenic River was celebrated with fanfare. Delaware River Greenway Partnership (DRGP) published a Summer/Fall newsletter in 2008 that included articles on the 10th Anniversary, along with Special Protection Waters designation and the new DRGP web site. Awards for contributions to establishing the Lower Delaware National Wild & Scenic River went to Rush Holt, US Congressman from NJ; Peter Kostmayer, former US Congressman from PA; DRGP; and NPS Wild & Scenic Rivers. The DRGP newsletter included a 10-year retrospective on accomplishments starting with the formation of the DRGP as a non-profit in 1998, designation of the Lower Delaware in 2000, and articles on the municipal incentives grants.

The previous year saw the Delaware River Sojourn, a week-long paddling event, celebrate the 40th anniversary of the passage of the federal Wild & Scenic Rivers Act, another milestone.

The Delaware River Sojourn started in 1995, and since that time has been integrally intertwined with the Lower Delaware National Wild & Scenic River, Upper Delaware Scenic & Recreational River, and Middle Delaware National Scenic River (Water Gap area). Members of the Lower Delaware Wild & Scenic River Management Committee and the NPS have strongly supported the event with funding and in-kind as well as staff resources to help organize it. The Wild & Scenic River is a repeat theme for the event that provides visibility and promotes respect for the Delaware River's outstanding resources.

In addition to the Delaware River Sojourn, the 40th Anniversary of the Wild & Scenic Rivers Act was highlighted through DRGP's 2008 newsletter.

Youth Summit

The NPS Challenge Cost Share Grant program provided $5,000 to DRGP for the planning of a Youth Summit on environmental stewardship that took place in 2008. The Delaware River Watershed Education Youth Eco-Leadership Summit, a conference for middle and high school students and their teachers, was held annually for 15 years including 2008. Additional funding, including $5,000 from the NJ DEP Coastal Zone Management Program and in-kind contributions from DRBC, allowed the two-day Summit to include New Jersey in an event held annually in Pennsylvania by PA DCNR, Bureau of State Parks (Delaware Canal State Park).

Valley Forge National Historical Park and the NPS Rivers, Trails & Conservation Assistance Program teamed up with the PA DCNR / Delaware Canal State Park, NJ DEP, US EPA, DRGP, Americorps/Vista, and DRBC to offer the Youth Summit program from April 20 through April 22. Valley Forge National Historical Park, Fairmount Water Works, Schuylkill River National & State Heritage Area, and John Heinz National Wildlife Refuge at Tinicum were venues for a three-day event that brought together forty middle and high school students from four Delaware Valley Schools, twenty educators from Pennsylvania and New Jersey, and twenty resource management and environmental educational professionals in a celebration of environmental leadership among youth.

The 15th annual Delaware River Watershed Youth Eco-Leadership Summit intentionally coincided with Earth Day. The event focused on the students' community watershed projects, networking with peers and resource management professionals, and participation in conservation projects at some of the premier attractions of the Delaware Valley. For the first time ever, the Earth Day portion of the Youth Summit was hosted by Valley Forge NHP, in support of the National Park Service's Children in Nature Initiative and RTCA strategic initiatives focused on engaging youth and connecting them with parks.

The Youth Summit featured the award-winning watershed education curriculum (PA Land Choices) developed through PA DCNR, canoeing and fossil hunting near historic Lock 60 of the Schuylkill Canal, an evening ranger program focused on Valley Forge history, and water quality monitoring and land use planning workshops at Fairmount Water Works Interpretive Center and John Heinz National Wildlife Refuge at Tinicum.

The Youth Summit not only addressed goals related to education and outreach in the Lower Delaware River Management Plan, but also Goal #3: Historic Preservation (Page 40: "Residents and river users should be educated about the history of the region and the benefits of historic preservation.").

Delaware River Experience (DRE)

The Delaware River Experience (DRE) Environmental Education Program was broadened in 2009 as a collaborative effort between Delaware River Experience, Inc.; Bucks County Conservation District; and Hunterdon County Soil Conservation District to further develop and

implement a hands-on learning program to foster a sense of community and ecological appreciation of the Delaware River. The program is intended to help students in sixth through eighth grades from both New Jersey and Pennsylvania develop an understanding of the vast richness of the Delaware River and its tributaries, and the importance and complexity of managing such a vibrant natural resource.

The program uses the Delaware River Experience's riverboat, the River Otter—a Coast Guard certified motorized tri pontoon craft 53 feet long—as a classroom. The program teaches the next generation diverse topics such as water quality, river flora and fauna, and the preservation of natural and historic resources. The primary goal is to foster environmental awareness and action through knowledge about the Delaware River conservation issues or, as the DRE's mission statement reads: "To inspire people of all ages to conserve and respect the Delaware River and its tributaries through unique, hands-on educational experiences."

PHOTOS COURTESY OF DEE KELLER, DELAWARE RIVER EXPERIENCE

The River Otter serves as a floating classroom and laboratory for up to 35 students and teachers. The initial phase of the project included development of a curriculum for science and social studies with specific application to the Delaware River. Participating school districts were from Hunterdon and Mercer counties in NJ and Bucks County in PA. The River Otter, based in Bridgeton Township, Bucks County, covers the Upper Black Eddy area, including Nockamixon Township in Bucks County and Holland Township and Milford Borough in Hunterdon County.

The DRE developed an innovative river-based education program that correlates with each state's core curriculum standards and consists of a variety of modules from which teachers can choose. The program can be tailored to fit within several broad disciplines. Lessons are inquiry-based and centered on hands-on exploration and problem solving activities which are conducted both in the classroom and on the boat. Included in the curriculum is the option for pre- and post-trip activities and extensions that aid teachers in providing their students with a comprehensive learning experience.

Elementary and middle school students along with some high schools are immersed in the river environment. The following are highlights of the curriculum and experiences covered:

1) Macroinvertebrate collection & analysis using state-of-the-art equipment and the ability to project specimens onto a 46" LED screen;
2) High definition underwater video of the Delaware River illustrating the biodiversity filmed both during the day and at night;
3) Participation in a natural and cultural history lesson on board the River Otter that incorporates a custom tailored game, keeping the students interested and engaged;
4) Conducting water quality testing; and
5) Conversing on other topics such as: water temperature and the importance of shade, turbidity and erosion control & historic floods.

Studies are designed specifically to help fulfill the Pennsylvania and New Jersey scientific education initiatives and meet curriculum requirements. The Bucks County Conservation District provides an educator for both the classroom sessions and boat trips.

A total of sixteen trips were conducted from September of 2009 through the Fall of 2010, with area schools and camps in NJ and PA. NPS Wild & Scenic funding amounted to $22,600 for the initial trips and curriculum development and $13,599.25 for the 2010 trips, including supplies and equipment.

For the period 2011 through 2013, $47,965 in NPS Wild & Scenic funding supported the DRE environmental education program. From June of 2011 through 2013, 26 trips were conducted with area schools, summer camps, and Scout and Brownie Troops, representing more than 500 students and 100 teachers.

A complimentary land-based program was explored in 2012, using Natural Land Trust's Mariton Wildlife Sanctuary in Northampton County, PA. Mariton Wildlife Sanctuary hosted the River Valley Waldorf School from Upper Black Eddy, PA in 2013. Twenty-one children from the third grade hiked the Sanctuary and listened to a presentation by the Sanctuary manager. On Martin Luther King, Jr.'s Day, 2014, the River Valley Waldorf School once again visited Mariton and for this day of service cut invasive vines in the Sanctuary. The presentation provided a general overview of the Sanctuary's resources and focused on land stewardship.

Junior River Rangers for Lower Delaware

Natural Lands Trust assisted the National Park Service in the development of a Junior River Ranger booklet specifically for the Lower Delaware National Wild & Scenic River. $4,800 in NPS Wild & Scenic funding supported the development, design, and printing of the booklet.

The Junior River Ranger booklet for the Lower Delaware was modeled, in part, after the National Park Service's Junior Ranger River Safety Booklet produced by the Upper Delaware Scenic & Recreational River and Delaware Water Gap National Recreation Area. The booklet provides age-appropriate information on river activities for younger children, using themes such as river history, safety, and ecology. A series of puzzles, games and exercises make learning about river resources more engaging. Upon successfully completing the booklet, the readers return it to one of several locations for review by state park or National Park Service staff, who reward them with a Jr. River Ranger safety badge.

Distribution points include Washington Crossing State Park Nature Center (NJ), Washington Crossing Historic Park Visitor Center (PA), and Bull's Island Recreation Area at Delaware & Raritan Canal State Park (NJ), in addition to Upper Delaware Scenic & Recreational River and Delaware Water Gap National Recreation Area.

Bangor (PA) Area School District Interpretive Trail

NPS Wild & Scenic funding contributed $20,500 toward the $29,584 cost of the project, which consisted of development of interpretive signage for a trail and construction of an outdoor classroom adjacent to the Bangor Area Middle School. Other funding in the amount of $9,084 was provided by the PA Department of Conservation and Natural Resources and the Martins-Jacoby Watershed Association.

The outdoor classroom and trail is part of a 112-acre site developed as a multi-faceted educational project. Martins-Jacoby Watershed Association (MJWA) worked with two elementary schools, a middle school, and a high school operated by the Bangor Area School District (BASD) to develop signage on property under easement by MJWA that is part conservation and recreation area and part model active agriculture site. The BASD and the Martins-Jacoby Watershed Association have created a 68-acre rotational grazing project with the help of a local farmer. Several grazing sites are fenced and managed as pastures, providing limited access to animals in a rotational manner that is a positive benefit for the farmer, animals, and the environment. Water distribution is solar powered. The

remaining 44 acres is managed to protect woodland and wetland areas.

Upper Mount Bethel Township helped develop a two-mile trail system which is open to the public. The trail features numerous blue bird nest boxes installed by Bangor Area students and a teacher. Bollards were installed to help control four wheeler ATVs on the site.

MJWA and its partners developed a total of 7 educational signs along the trail, to explain the site's history, the innovative approach to agriculture and effects on the watershed, and key wetland and woodland features. Students, teachers, and other volunteers from the Bangor Area School District took pictures and developed rough outlines of the information for each sign. Along with community members, they contributed drawings, maps, photos and other materials for the signs. Students and staff at the Bangor Area High School worked on the draft design and text for the signs, and the Delaware & Lehigh National Heritage Corridor provided additional design guidance and production support. PA DCNR foresters reviewed information that would be most appropriate for the signage. The signs were modeled after the Delaware & Lehigh Canal NHC's "Visually Speaking" sign program.

The second portion of the project is the construction of a 20' X 30' deck with integrated rail/fence, three 20-foot permanently fastened benches, and a specimen table. The deck, which accommodates approximately 30 elementary students, is located in a woodlands and wetlands area close to four of the five schools making up the school district. The BASD used its maintenance staff to construct the outdoor classroom and install the signage.

The structure was designed to give students, teachers, and other visitors the opportunity to participate in programs based on the local environmental features while protecting sensitive areas from human impacts. The outdoor classroom is also used for programs open to the public on weekends or during the summer. The raised deck is handicap accessible. The project was completed in 2013.

In 2011, PA DCNR and Pennsylvania Organization for Watersheds and Rivers named the Delaware as the Pennsylvania River of the Year, the result of an on-line popular vote that cast 2,520 votes for the Delaware out of a total 10,000 votes.

Educational Forums & Public Events

DRGP continued its annual series of Delaware River-focused educational forums in May of 2010, highlighting current threats to the Delaware River and its ecosystems through flooding, drilling, and pollution. Carol Collier, Delaware River Basin Commission Director, was the keynote speaker at the forum, held at the historic Prallsville Mill in Stockton, New Jersey. Additional speakers included Betsy Lyman, Director of the Northeast Exotic Plant Management Team for the National Park Service, who emphasized the critical threats posed by invasive non-native plants; and Andrew Piltz, Vice President of Natural Lands Trust, addressing strategy and planning for climate change in the region.

The participating organizations of the Lower Delaware Wild & Scenic Management Committee continued to support the annual Delaware River Sojourn and advocate for public awareness and protection of the river.

The Delaware River Sojourn theme for 2013 was "*Our Remarkable River,*" based upon the 2012 National Park Service publication *Delaware River Basin Wild and Scenic River Values*, which highlights the noteworthy characteristics and values that make the Delaware River worthy of special protection. The Lower Delaware Wild & Scenic River was recognized and its NPS liaison presented an educational program about the process that NPS goes through in identifying the "Outstandingly Remarkable Values" of a National Wild & Scenic River.

IMPLEMENTATION CHECKLIST FOR RIVER MANAGEMENT PLAN

2002-2003

In 2002 and 2003, $61,600 in Municipal Incentive Grants was awarded to 14 municipalities from the $90,000 total Wild & Scenic funding for those two years. These projects included stream corridor restoration, environmental resource inventories, acquisition of public parklands, historic resource preservation and restoration, trail development, water quality monitoring, and revisions to local ordinances.

2002 Incentive Grant Awards

Grant Recipient	Amount	Project	River Management Plan Goal
Kingwood Township, NJ	$4,500	Environmental Resource Inventory	Goal #2
Tinicum Township, PA	$4,100	Tinicum Creek Tributary Restoration/Education Project – Phase I	Goal #1, #2, #7
Bridgeton Township, PA	$4,100	Mapping of existing natural and man-made features in the Township	Goal #2
West Amwell Township, NJ	$5,000	Examine existing zoning in Connaught Hill section of the Township and its impact on water quality	Goal #1, #2
Portland Borough, PA	$3,900	Restoration of roof on historic building known as the Pokey	Goal #3
TOTAL	$21,600		

2003 Incentive Grant Awards

Grant Recipient	Amount	Project	River Management Plan Goal
Harmony Township, NJ	$4,000	Natural Resources Inventory	Goal #2
Tinicum Township, PA	$4,000	Tinicum Creek Tributary Restoration/Education Project – Phase II	Goal #1, #2, #7
Riegelsville Borough	$4,000	Open space acquisition to construct trail and park	Goal #4, #6
Solebury Township, PA	$4,000	Ordinance revisions for sustainable development	Goal #5
Knowlton Township, NJ	$5,000	Ramsaysburg Historic Homestead Stabilization	Goal #3
Stockton Borough, NJ	$5,000	Restoration of Salt & Pork House in Prallsville Mill Complex	Goal #3
Tinicum-Bridgeton-Nockamixon Townships, PA	$9,000	Multi-municipal groundwater monitoring project	Goal #1
TOTAL	$35,000		

2004-2005

From 2004 through 2005, a total of $65,558 in Municipal Incentive Grants were allocated to 3 municipalities and seven non-profits for 12 projects, including natural resource inventories, interpretive programs, and surface water and groundwater studies and monitoring.

2004 Incentive Grant Awards

Grant Recipient	Amount	Project	River Management Plan Goal
Kingwood Township, NJ	$4,100	Evaluation of groundwater aquifer in the vicinity of MEI, Inc.	Goal #1
Tinicum Township, PA	$6,666	The Giving Pond Baseline Natural Resource Inventory – Phase I (joint application with Tinicum Conservancy), to complete a baseline natural resources inventory for the entire 150-acre site. The information was used to assist with future site design and to support education curricula.	Goal #2, #7
Tinicum Conservancy	$5,000	The Giving Pond Baseline Natural Resource Inventory – Phase I (joint application with Tinicum Township), to complete a baseline natural resources inventory for the entire 150-acre site.	Goal #2, #7
Plumstead Township, PA	$5,000	Township-wide environmental resource inventory in conjunction with Natural Lands Trust and other township committees	Goal #2
Stockton Borough, NJ	$5,000	Natural resource inventory and master plan revisions	Goal #2, #5
Heritage Conservancy	$5,000	Shaping the Delaware & Lehigh Drive – Phase II, to create recreational and interpretive connections between Wilkes-Barre and Bristol, PA	Goal #4, #5
TOTAL	$30,766		

2005 Incentive Grant Awards

Grant Recipient	Amount	Project	River Management Plan Goal
Bowman's Hill Wildflower Preserve, PA	$9,000	History Meets Nature: An Exploration along the Delaware	Goal #4
Tinicum Conservancy	$4,070	Heaney's Run restoration & flood control	Goal #1, #2
Delaware River Mill Society	$5,000	Stockton, NJ Visitors Center at Prallsville Mill	Goal #5, #7
Delaware Riverkeeper Network	$5,370	Tinicum Creek restoration: Site Assessment	Goal #1, #2
Stockton Borough, NJ	$5,000	Master plan and ordinance update	Goal #5
Hunterdon Land Trust Alliance	$8,018	Delaware River Watershed protection, education and outreach initiative	Goal #1, #2, #6, #7
TOTAL	$36,458		

In 2004, in addition to funding for the Incentive Grants, $60,000 in Wild & Scenic funding was allocated to DRGP for grants and other administration ($35,000), a municipal ordinance review project and associated outreach ($15,000), and public events, including Project River Bright, press releases and a newsletter highlighting activities of the Lower Delaware Wild & Scenic River Management Committee ($10,000). An additional $10,850 from an NPS Challenge Cost Share grant was applied to the development of the Delaware River Water Trail Guide.

Wild & Scenic funding allocated to DRGP in 2005, in addition to funding for Incentive Grants, consisted of $25,000 applied to coordination with the Lower Delaware Wild & Scenic Management Committee and administration; $1,000 for a landowner forum (Tinicum Creek watershed conservation easement forum) and Delaware River Heritage Trail planning; $7,000 in support of Project River Bright; $2,000 to support a municipal forum to provide guidance on local river management activities; and $6,000 for public outreach, including press releases, articles, and two newsletters highlighting river conservation activities of Lower Delaware partners.

2006

In 2006, a total of $16,997.52 in Municipal Incentive Grants was allocated to 1 municipality, 3 non-profits, and Delaware River Basin Commission for 2 projects, including development of an inter-municipal body to coordinate watershed based resource management, and surface water and groundwater monitoring.

Grant Recipient	Amount	Project	River Management Plan Goal
The College of New Jersey Foundation; Municipal Land Use Center; National Fish & Wildlife Foundation; DRBC	$7,767.52	Lower Delaware Regional Watershed Coordinating Council for Hunterdon County-Pilot project to develop inter-municipal cooperation and community based stewardship, and to enhance local watershed based resource management. Six municipalities in NJ involved.	Goal #2, #5, #7
Hopewell Township	$9,230	Project enhanced groundwater and stream flow monitoring program. Data provided to support decision making regarding water resources.	Goal #1
TOTAL	$16,997.52		

In addition to the funding for Incentive Grants, DRGP received $97,000 in Wild & Scenic funding in 2006. This funding included $44,000 to support the River Administrator's and DRGP staff coordination with the Lower Delaware Wild & Scenic Management Committee and grants administration. The funding support included planning for a 1-day municipal forum on compatible shoreline development. $30,000 was applied to DRGP special projects such as Special Protection Waters, and $17,000 included funding for Project River Bright, the DRGP winter/spring newsletter, signage and other public outreach, including printing of a landowner stewardship brochure. Planning and implementation associated with the Lower Delaware River Action Plan amounted to $6,000.

2007*

***In 2007, $20,000 in Wild & Scenic funding was awarded to municipalities and non-profits supporting the Lower Delaware National Wild & Scenic River. However, a complete record of the individual Incentive Grant awards is not available for 2007.**

Grant Recipient	Amount	Project	River Management Plan Goal
Tom McBride	$122.00	Operation River Bright river cleanup	Goal #1, #7
Kingwood & Delaware townships & Delaware & Raritan Canal State Park	$188.83	"Getting to Know Your H2O," a school-based water quality monitoring program successfully piloted in Stockton, NJ-Grant allowed expansion of program to Kingwood and Delaware township schools in 2008/9; involved Lambertville Sewage Authority and Floating Steamboat Classroom	Goal #1, #7
TOTAL	$310.83		

An additional $50,000 was provided to DRGP in 2007 to support the River Administrator position and $15,500 for other administrative activities (such as the DRGP newsletter for Spring of 2007). DRGP projects included planning the DRGP Fall Forum on Compatible Waterfront Development for Small Communities, technical support for Special Protection Waters designation for the Lower Delaware, development of a landowners' guide, sign planning project, development of a Lower Delaware web site page and initiating a marketing plan, and outreach to municipalities to garner their participation in the Lower Delaware Wild & Scenic Management Committee. DRGP leadership of the New Jersey Route 29 Scenic Byway effort was also funded.

In addition to Wild & Scenic funds, an NPS Challenge Cost Share Grant program provided $5,000 for the planning of the Youth Summit on environmental stewardship that took place in 2008.

2008

In 2008, $139,507.64 of Wild & Scenic funding was awarded to six non-profits for eight projects that included river cleanup, educational and interpretive programs and products, land protection, water quality monitoring, watershed management planning, and enhancements to public access.

Grant Recipient	Amount	Project	River Management Plan Goal
DRGP	$1,000.00	Recycling 160 tires pulled from the Lower Delaware during an American Rivers sponsored cleanup in May, 2008	Goal #1
DRGP	$399.39	*River Bright* cleanup along Lower Delaware in May, 2010	Goal #1
Delaware River Experience	$36,199.25	Partnership with Delaware River Experience/ Hunterdon Soil Conservation Education Foundation/Bucks County Conservation District to teach middle school students about water quality, natural & cultural resources on the river	Goal #1, #7

New Jersey Conservation Foundation	$10,000.00	Management Plan for Wickecheoke Creek	Goal #2
Hunterdon Land Trust	$29,344.00	Delaware River Watershed Protection Initiative-Phase I land protection and improvements to public access	Goal #2, #4, #6
Heritage Conservancy	$10,640.00	Compile spatial data of the permanently protected lands within the 16 Pennsylvania municipalities bordering the Lower Delaware Wild and Scenic River	Goal #6
DRGP/Princeton Hydro	$25,000.00 Phase I+additional $25,000.00 Phase II	Baseline water quality monitoring for Bucks, Northampton and Lehigh counties, PA; well testing and well access agreements	Goal #1
Delaware River Mill Society	$1,925.00	Printing of the Delaware River Scenic Byway map/brochure	Goal #4, #5
TOTAL	$139,507.64		

In 2008, $26,270 in NPS Challenge Cost Share funds was awarded to DRGP for the development of a sign plan for the Delaware River Water Trail.

$139,000 for Incentive Grants was awarded to DRGP through a Cooperative Agreement with NPS. An additional $1,584 was allocated from previous years' carryover funds to create a combined total of $140,584 in incentive grants and for general grants administration. An additional $36,000 was available to the River Administrator in 2008 from previous years' funding, for the purpose of municipal outreach, managing the NJ DEP Stream School Program, shepherding the NJ and PA Scenic Byways efforts, monitoring Special Protection Waters status at DRBC, assisting the Lower Delaware W&S Management Committee, assisting the planning for the Delaware River Sojourn, and managing the Municipal Incentive grants. The Stockton School Water Quality Monitoring Pilot Program was successfully completed, with agreement of Kingwood and Delaware townships to implement the "Getting to Know Your H2O" program for the 2008/9 school year. An additional $2,638 from previous years' funding supported DRGP's 10th Anniversary program. A total $179,222.00 was available in 2008 for the Lower Delaware National Wild & Scenic River.

2009 Cooperative Agreement with Delaware River Basin Commission

2009 marked the end of the National Park Service's (NPS) Cooperative Agreement with DRGP as a fiduciary agent and the end of the Incentive Grants program. In 2009, all pass-through funding ($130,000) for the Lower Delaware was directed to the NPS Cooperative Agreement with Delaware River Basin Commission for a series of water quality monitoring projects, a freshwater mussel survey of the entire Lower Delaware corridor, and assistance in developing the 15-year accomplishments report for the Lower Delaware National Wild & Scenic River.

Subsequent years 2010 through 2014 saw the development of additional Cooperative Agreements with the following non-profits: Hunterdon Land Trust, Martins-Jacoby Watershed Association, and Natural Lands Trust. The NPS Cooperative Agreement with DRGP was extended through 2014 to allow for the completion of a project to eliminate invasive plants at Bull's Island Natural Area and Firemen's Eddy in New Jersey.

Award Recipient	Amount	Project	Status	River Management Plan Goal
DRBC	$48,690.28	Calibration of Water Quality Model - Point Discharge Sampling and Analysis		Goal #1
DRBC	$16,146.00	Re-Analysis of Archived Water Samples for Hydraulic Fracturing Parameters		Goal #1
DRBC	$39,770.66	Freshwater Mussels Surveys of Lower Delaware		Goal #1, #2
DRBC	$25,393.04	15-year Program Accomplishments for Lower Delaware National Wild & Scenic River	In progress	Goal #7 and indirectly Goals #1-#6
TOTAL	$129,999.98			

2010 Cooperative Agreement Awards

In 2010, a total $53,000 in Wild & Scenic funding was awarded to Martins-Jacoby Watershed Association (MJWA) through a Cooperative Agreement with NPS in cooperation with three municipalities for four projects: an historic resources inventory, a water resources study, development of an outdoor classroom, and improvements to public access. $50,000 in Wild & Scenic funding was awarded to Hunterdon Land Trust (HLT) through a Cooperative Agreement with NPS for land protection and stewardship initiatives along the Lower Delaware River corridor in New Jersey. Ten projects of MJWA and HLT were funded in 2010.

Award Recipient	Amount	Project	River Management Plan Goal
Martins-Jacoby Watershed Association	$20,500.00	Bangor Area School District Interpretive Trails	Goal #1, #4, #7
Martins-Jacoby Watershed Association	$7,500.00	Ramsaysburg Boat Launch & Shoreline Restoration	Goal #1, #2, #3, #4
Martins-Jacoby Watershed Association	$17,500.00	Upper Mount Bethel Township Water Resources Study	Goal #1
Martins-Jacoby Watershed Association	$7,500.00	Phillipsburg Historic Sites Inventory	Goal #3
Hunterdon Land Trust	$50,000	Delaware River Watershed Protection Initiative Phase I – land acquisition & stewardship, Hunterdon County, NJ	Goal #1, #2, #4, #6, #7
TOTAL	$103,000		

2011 Cooperative Agreement Awards

In 2011, a total of $85,000 in Wild & Scenic funding was awarded to four non-profits through Cooperative Agreements with NPS. These non-profits partnered with municipalities, the State of New Jersey, and US Fish and Wildlife Service on nine projects, including public access improvements, invasive plants control, environmental education, landowner outreach, land protection and stewardship.

Award Recipient	Amount	Project	River Management Plan Goal
Martin-Jacoby Watershed Association	$12,200	Marble Hill Trail Improvements (Lopatcong Township, NJ)	Goal #4, #7
Delaware River Greenway Partnership	$14,400	Invasive Species Control at Bull's Island Natural Area and Firemen's Eddy, NJ	Goal #2
Natural Lands Trust	$36,200	Delaware River Experience Environmental Education, priority land conservation mapping, river landowners' stewardship handbook	Goal #1, #2, #7
Hunterdon Land Trust	$22,200	Delaware River Watershed Protection Initiative Phase II– land acquisition & stewardship, Hunterdon County, NJ	Goal #1, #2, #4, #6, #7
TOTAL	$85,000		

2012 Cooperative Agreement Awards

In 2012, $65,000 in Wild & Scenic funding was awarded to two non-profits for nine projects, including land protection and stewardship, environmental education, landowner outreach, and municipal open space assessments. These non-profits partnered with other non-profits, counties, more than 20 municipalities, and state parks.

Award Recipient	Amount	Project	Status	River Management Plan Goal
Hunterdon Land Trust	$29,340	Delaware River Watershed Protection Initiative Phase III– land acquisition & stewardship, Hunterdon County, NJ		Goal #1, #2, #4, #6, #7
Natural Lands Trust	$35,660	Delaware River Experience Environmental Education Program, priority land conservation mapping, river landowners' stewardship handbook, Junior River Ranger booklet (funding for stewardship assessments for municipal open space re-allocated)		Goal #1, #2, #7
TOTAL	$65,000			

2013 Cooperative Agreement Awards

In 2013, $49,000 in Wild & Scenic funding was awarded to two non-profits for six projects, including land protection and stewardship, environmental education, landowner outreach, and an historic resources survey.

Award Recipient	Amount	Project	Status	River Management Plan Goal
Hunterdon Land Trust	$17,602	Delaware River Watershed Protection Initiative Phase IV– land acquisition & stewardship, Hunterdon County, NJ	👍	Goal #1, #2, #4, #6, #7
Natural Lands Trust	$31,398	Delaware River Experience Environmental Education Program, landowner outreach, land protection, Nockamixon Township Historic Resources Survey	In progress	Goal #1, #2, #3, #7
TOTAL	$49,000			

2014 Cooperative Agreement Awards

In 2013, $60,000 in Wild & Scenic funding was awarded to three non-profits for 10 projects, including land protection and stewardship, environmental education, landowner and general public outreach, and an historic resources survey. These non-profits partnered with other non-profits, counties, municipalities, and state parks.

Award Recipient	Amount	Project	Status	River Management Plan Goal
Hunterdon Land Trust	$32,070.30	Delaware River Watershed Protection Initiative Phase V– land acquisition & stewardship, Hunterdon County, NJ	👍	Goal #1, #2, #4, #6, #7
Natural Lands Trust	$24,429.70	Delaware River Experience Environmental Education Program, landowner outreach, land protection, Nockamixon Township Historic Resources Survey	In progress	Goal #1, #2, #3, #7
Martins-Jacoby Watershed Assocation	$3,500.00	Delaware River Sojourn	To be completed in 2015	Goal #7
TOTAL	$60,000			

Projects Proposed but Dropped*

***The following projects did not use the anticipated funding and were not carried forward, or were not completed as anticipated:**

2002 **Hopewell Township, NJ: Study of properties to be preserved for stream corridor preservation program**
Knowlton Township, NJ: Purchasing riverfront property (Masten Lot) to convert to parkland

2004

- **Bridgeton Township, PA: Comprehensive Plan Update: Resource Protection Element**
- **Delaware Township, NJ: Wickecheoke Water Study: Educational implementation using biological monitoring to assess quality of Wickecheoke Creek with the participation of middle school students**
- **Knowlton Township, NJ: Ecotourism and low-impact recreational activities study**
- **Solebury Township, PA: Cuttalossa Creek watershed environmental resource inventory**
- **Hunterdon Land Trust: Study and acquire islands in the Delaware River from Washington Crossing to Riegelsville, in cooperation with Tinicum Conservancy; Skyhawk Island acquisition: For costs related to the acquisition of donated 6-acre island in Kingwood Township**

2005

- **Bridgeton-Nockamixon-Tinicum Groundwater Management Committee, PA: Water quality monitoring in Bridgeton, Nockamixon and Tinicum townships**
- **Knowlton Township, NJ: Columbia and Delaware beaches repair and rehabilitation**
- **New Hope Borough, PA : Ferry Street Landing improvements and enhancements – interpretive signage**
- **Solebury Township, PA: Scenic road embankment stabilization**
- **Heritage Conservancy & Upper Makefield Township, PA (joint application): "Planning for the Future – Upper Upper Makefield Township Farmland & Open Space Preservation"**

2006 **Bridgeton Township, PA: Delaware Riverbank assessment-Erosion mitigation and bank stabilization assessment and recommendations for Delaware Riverbank**

PHOTO: JOHN MAUSER

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- Martins-Jacoby Watershed Association, CA H4531100520/P10AC00390, 6-25-2010 to 6-24-2015.
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