Wood-Pawcatuck Wild and Scenic River Study

Study Report
June 2019

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For more information on the Wood-Pawcatuck Wild and Scenic Rivers, or to see the companion document, *Wood-Pawcatuck Wild and Scenic Rivers Stewardship Plan*, please visit *www.wpwildrivers.org* or contact:

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The National Park Service wishes to thank the commitment of many individuals and organizations (especially the Wood-Pawcatuck Wild and Scenic River Study Committee appointees who volunteered their time). Please see the *Wood-Pawcatuck Wild and Scenic Rivers Stewardship Plan* for a full list of acknowledgements and thanks to all who contributed to the Study.

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Wood-Pawcatuck Wild and Scenic River Study

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Shunock Brook Preserve, North Stonington, CT (Photo credit: Peter Marteka)

Summary - Principal Findings

Eligibility

The Wild and Scenic River Study of the Wood-Pawcatuck Watershed concludes that seven rivers, covering 110 miles, within the Wood-Pawcatuck Watershed as they run through the towns of Charlestown, Coventry, East Greenwich, Exeter, Hopkinton, North Kingstown, Richmond, South Kingstown, Westerly, West Greenwich in Rhode Island, and North Stonington, Sterling, Stonington, Voluntown in Connecticut, are eligible for designation into the National Wild and Scenic Rivers System based on their free-flowing condition, their high water-quality, and the presence of one or more Outstandingly Remarkable Values in each segment. The Outstandingly Remarkable Values (ORVs) described in this report fall within four broader categories, **Geology and Hydrology, Watershed Ecosystem, Cultural, and Scenery and Recreation.**

Classification

The Wild and Scenic Rivers Act provides for three possible classifications of eligible river segments: wild, scenic, and recreational. The criteria distinguishing these classifications are based on the degree of human modification of the river and its adjacent shorelines. Based upon the applicable criteria, the National Park Service (NPS) has assigned "wild", "scenic," and "recreational" classifications to the study segments as show in the table below.

Table 1: Wood-Pawcatuck Study River Segment Classifications

River	County	Reach	Length (miles)	Classification
Beaver River	Washington, RI	From: Its headwaters, Exeter/West Greenwich, RI To: Pawcatuck River, Richmond, RI	11	Scenic – primarily forested with some light development, three small dams. 91% undeveloped
Chipuxet River	Washington, RI	From: Rt. 138, Kingstown Road Bridge, South Kingstown, RI To: Worden Pond, South Kingstown, RI	3	Wild – Segment runs through the Great Swamp Management Area with no roads throughout
Green Fall River-Ashaway River	New London, CT	From: Green Fall River headwaters in Voluntown, CT To: its confluence with Ashaway River, Hopkinton, RI	9	Scenic – primarily forested with some light development and agricultural lands; 3 small dams; 90% undeveloped
Green Fall River-Ashaway River	Washington, RI	From the confluence with the Green Fall River To: the confluence of the Pawcatuck River, Hopkinton, RI	3	Recreation – several small dams and a more developed landscape
Pawcatuck River	Washington, RI	From: Worden Pond, South Kingstown, RI To: Rt. 2, South County Trail Bridge, Charlestown and South Kingstown, RI	3	Wild – Segment runs through the Great Swamp Management Area with no roads throughout
Pawcatuck River	Washington, RI; New London, CT	From: Rt. 2, South County Trail Bridge, Charlestown and South Kingstown, RI To: Rt. 112, Carolina Back Road Bridge, , Richmond/ Charlestown, RI	4	Recreation – Segment runs through sections altered by mill industry, with roads at times parallel to the river.
Pawcatuck River	Washington, RI; New London, CT	From: Rt. 112, Carolina Back Road Bridge, , Richmond/Charlestown, RI To: Confluence with the Shunock River, Stonington, CT/Westerly, RI	21	Scenic – Segment runs through a mixture of forests and light development with some road crossings

River	County	Reach	Length (miles)	Classification
Pawcatuck River	Washington, RI; New London, CT	From: Confluence with the Shunock River, Stonington, CT/Westerly, RI and To: Mouth of the Pawcatuck River, between Pawcatuck Point in Stonington, CT and Rhodes Point in Westerly, RI Stonington, CT	8	Recreation – Segment runs through an increasingly urbanized landscape; the last three miles contain marinas and two sewage treatment plants
Queen-Usquepaugh River	Washington, Kent, RI	From: Queen River headwaters, Exeter/ West Greenwich, RI To: Rt. 138, Kingstown Road Bridge, South Kingstown, RI	11	Scenic – primarily forested with some road access, five small dams and an historic mill dam; some sections on the lower reach contain agriculture and a golf course. 90% undeveloped
Queen-Usquepaugh River	Washington, RI	From: Rt. 138, Kingstown Road Bridge, South Kingstown, RI To: Confluence with the Pawcatuck River	5	Wild – primarily through undeveloped landscape forming the western boundary of the Great Swamp Management Area – 94% undeveloped
Shunock River	New London, CT	From: Its headwaters, North Stonington To: Pawcatuck River, North Stonington, CT	8	Recreation – mostly forested with some light development and one village center; three small dams. 80% undeveloped
Wood River	New London, Windham, CT; Washington, Kent, RI	From: Its headwaters, Sterling/ Voluntown, CT/ Exeter/ West Greenwich, RI To: Arcadia Road Bridge Hopkinton/ Richmond, RI	13	Wild – despite two small dams and small road crossings the segment is 94% undeveloped
Wood River	Washington, RI	From: Arcadia Road Bridge Hopkinton/ Richmond, RI To: Pawcatuck River, Charlestown/ Hopkinton/ Richmond, RI	11	Recreation –5 low-head historic dams; small town centers and rural housing

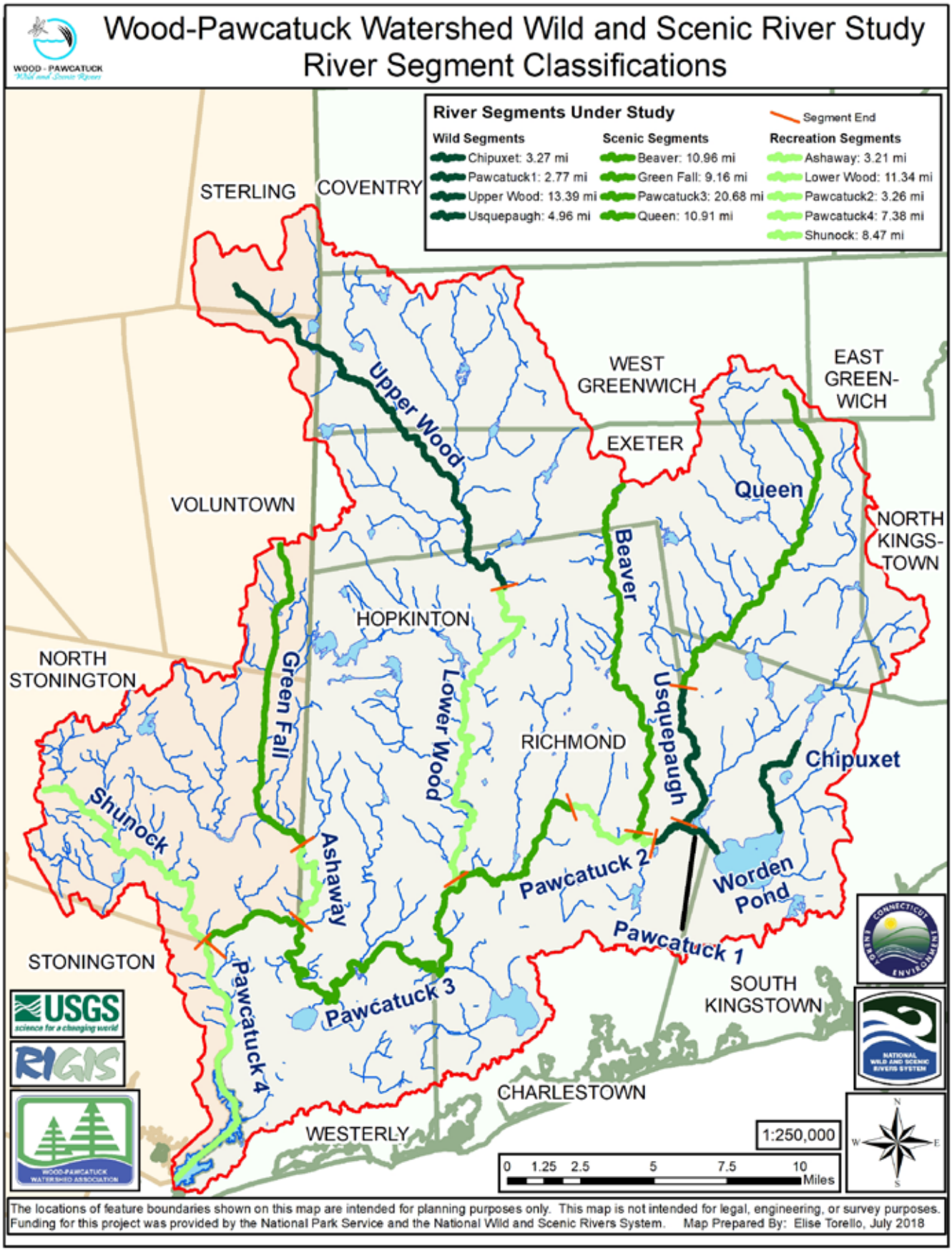


Figure 1. River Segment Classifications

Water Quality

The rivers of the Wood-Pawcatuck Watershed have high water quality. The extensive wetlands in the region offer protection of water quality both in the tributaries and in the main-stems of the Wood and Pawcatuck rivers. An analysis done for the Wood-Pawcatuck Watershed Association's 2015 Water Quality Report[1] revealed exceptionally low total phosphorus results for the entire watershed. Many rivers and streams in the Wood, Shunock, Green Fall, Beaver, Chipuxet, and Queen segments are found to be the highest water quality, Class A. This classification has among its designated uses potential drinking water supply and fish and wildlife habitat. Overall, water quality is supportive of identified "outstandingly remarkable resource values", with management in place to maintain and enhance these values into the future.

Suitability

The Study concludes that 110 miles of River within the Wood-Pawcatuck Watershed are suitable for designation as Wild and Scenic based on the following:

- Analysis of existing local, state, federal, and non-regulatory protections applicable to Wood-Pawcatuck Watershed are found to adequately protect the rivers consistent with the purposes of the Wild and Scenic Rivers Act. The Wood-Pawcatuck Wild and Scenic River Stewardship Plan developed as a part of the Study provides an appropriate and effective management framework for the long-term management and protection of the watercourses.
- Based upon the official record of endorsement from local governing bodies, citizens, local, and regional non-governmental organizations, it is concluded that there is substantial support for designation under the Wild and Scenic Rivers Act based on the Partnership Wild and Scenic Rivers model.

Wood-Pawcatuck Watershed Stewardship Plan

Development of the Wood-Pawcatuck Stewardship Plan (Stewardship Plan) has been one of the primary tasks of the Wild and Scenic Study Committee (Study Committee). The Stewardship Plan is the product of an extensive collaborative effort between the Study Committee, local citizens, local boards and commissions, nonprofits and State agencies. The Stewardship Plan contains the vision and strategy for protecting and enhancing the watercourses and the associated outstanding resources.

If the candidate rivers are designated, the Stewardship Plan would serve as the comprehensive river management plan required under Section 3(d)(1) of the Wild and Scenic Rivers Act (WSRA). It functions as a companion document to this Study Report. If the rivers are not added to the National Wild and Scenic Rivers System, the Stewardship Plan could still serve to provide state and local protection to these waterways if local stakeholders carry out the recommendations.

[1] Assessing the Wood-Pawcatuck Watershed Associations's Water Quality Monitoring Program, November 2015

Support for Designation

Between May and August 2018, the governing bodies of all 12 communities abutting the study area voted to endorse the Wood-Pawcatuck Wild and Scenic River designation and support the implementation of the Stewardship Plan if Wild and Scenic designation takes place. In addition, many of the land use commissions and boards from these communities voted to endorse and support as a part of the community review process. Local and regional organizations have provided support letters as well. The Connecticut Department of Energy and Environmental Protection and Rhode Island Department of Environmental Management have participated in the process and are ready to participate as a partner in the implementation of the Stewardship Plan.

Partnership Wild and Scenic River Designation

Consistent with the Congressional and local government intent established prior to its authorization, the Wood-Pawcatuck Watershed Wild and Scenic Rivers Study was conducted based on the established model of the Partnership Wild and Scenic Rivers, that includes both the upper Farmington River and Eightmile River in Connecticut. The conduct and findings of this Study, including the record of public support for designation, and the content and provisions of the Wood-Pawcatuck Watershed Stewardship Plan, are all based on this premise.

Beaver River at Shannock Hill Rd., Richmond, RI (Photo credit: Elise Torello)

Beaver lodge in the Great Swamp, South Kingstown, RI (Photo credit: Elise Torello)

Chapter 1: Background

This chapter provides an introduction to the Wild and Scenic Rivers Act and the Wood-Pawcatuck Watershed Study. It includes a review of the project's history, the study strategy and process, the principal participants, and the major study products and accomplishments.

Wild and Scenic Rivers Program

The National Wild and Scenic River System was established by Congress in 1968 to protect certain outstanding rivers from the harmful effects of new federal projects such as dams and hydroelectric facilities. Since then 209 rivers or river segments totaling over 11,000 miles have been protected nationwide. To be considered "Wild and Scenic" a river must be free-flowing and have at least one river-related outstanding natural, cultural, or recreational resource value. Section 1(b) of the Act states:

> 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.

There are nine Wild and Scenic River segments located in New England: the upper Farmington and Eightmile in Connecticut; the Allagash in

Maine; the Missisquoi in Vermont; the Wildcat and Lamprey in New Hampshire; and the Westfield, Sudbury-Assabet-Concord, and Taunton in Massachusetts.

Each river designated into the national system receives permanent protection from federally licensed or assisted dams, diversions, channelization or other water projects that would have a direct and adverse effect on its free-flowing condition, water quality, and unique cultural and natural resources, or, for projects outside the designated segments, that would invade the segments or unreasonably diminish the segment's fish, wildlife, scenic, or recreational resources. The Wild and Scenic Rivers Act explicitly prohibits any new hydropower dam and related facilities licensed by the Federal Energy Regulatory Commission (FERC) on or directly affecting a designated river segment. The determination of a proposed federally assisted water resource project's or FERC-licensed hydropower project's potential impacts on the river's "outstandingly remarkable" values, water quality, and free-flowing condition is made by the federal river administering agency, in this case the National Park Service.

Studies under the Wild and Scenic Rivers Act can bring additional local benefits such as the preparation of an advisory management plan, research studies, and cooperation among numerous river stakeholders. River designation may bring prestige and recognition to the region and can boost the local economy through tourism, possible funding through the National Park Service, matching grants, in-kind support, and volunteer assistance.

Before a river can be added to the National Wild and Scenic Rivers System, it must be found both eligible and suitable. To be eligible, the river must be 1) free-flowing and 2) possess at least one river-related Outstandingly Remarkable Value (ORV) such as exceptional scenery, fisheries, and wildlife, water quality, or cultural resources. The suitability determination is based on factors such as public support for designation versus conflicting river uses (e.g., hydropower development), evidence of adequate existing resource protection, and lasting protection measures such as are documented in a management plan. Local residents, leaders, and organizations must show strong support of their intent to participate in the long-term protection of the river. The eligibility and suitability analyses are presented in the chapters that follow.

Wood-Pawcatuck Watershed Study History and Methods

History

Beginning in 2010, the locally-based Wood-Pawcatuck Watershed Association, along with residents, town leaders, and others interested in river conservation, led an exploratory effort to determine whether the Wild and Scenic River designation might be an appropriate way to recognize and protect the rivers of the Wood-Pawcatuck Watershed and its associated resources. The group developed local, regional and state partnerships, and gathered letters of support and gained votes of approval from all of the towns that would be involved in a Wild and Scenic Study. Specifically, there was interest expressed in pursuing a "Partnership Wild and Scenic River Study", based on river management models such as the Lamprey River in New Hampshire and Farmington River in Connecticut.

Reconnaissance Report

In 2013, a reconnaissance survey of the Wood-Pawcatuck Watershed was conducted by the Northeast Region of the National Park Service (NPS) at the request of Representative Jim Langevin (RI-2). The reconnaissance survey provided a preliminary assessment of the eligibility and suitability of segments of the rivers in the watershed as being a candidate for Wild and Scenic designation according to criteria established under the Wild and Scenic Rivers Act (WSRA). Included in the preliminary eligibility assessment was the identification of potentially significant natural, cultural and recreational resources to be evaluated as Outstandingly Remarkable Values (ORVs) as defined by the WSRA. Key factors of suitability were also explored including potential local support and existing protection mechanisms. The outcome of the survey was a report that determined that Congressional authorization for a Wild and Scenic River Study was warranted, and a determination that Wild and Scenic designation could be an appropriate technique for river protection for these rivers.

Study Bill

The Wood-Pawcatuck Watershed Protection Act (Study Bill) was introduced in the House of Representatives during the 112th Congress. The Study Bill passed the House but failed to make its way through the complete legislative process. The Study Bill (H.R. 723) was re-filed in February, 2013 by Representative James Langevin. It passed the House again in July 2013 and the Senate in December 2014 as part of the Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015, Public Law 113-291, H.R. 3979, and was then signed into law by President Obama in December 2014. This amended the Wild and Scenic Rivers Act to designate for study for potential addition to the national wild and scenic rivers system specified segments of the Beaver, Chipuxet, Queen-Usquepaugh, Wood, and Pawcatuck Rivers in Rhode Island and Connecticut. (See Study Bill, Appendix A)

Study Committee

The Wild and Scenic Rivers Act states that congressionally authorized studies "shall be pursued in as close cooperation with appropriate agencies of the affected State and its political subdivisions as possible, shall be carried on jointly with such agencies if request for such joint study is made by the State, and shall include a determination of the degree to which the State or its political subdivisions might participate in the preservation and administration of the river should it be proposed for inclusion in the national wild and scenic rivers system." For more than 20 years, the NPS has taken advantage of this direction when conducting studies bordered by predominantly private and non-federal lands by encouraging formation of informal study committees based around state and local government representation. Such study committees become an integral part of the study approach, and the regular participation of local and state governments ensures full buy-in to the study process and eventual products. Local and state knowledge is often critical to effective and efficient research regarding potential ORVs of the study area, and is absolutely essential to the development of local and state-based management strategies for protection of such values. Since it is a central tenet of such non-federal land river studies that land-based resource protection must be primarily accomplished through local, state, and non-governmental action, it is therefore a central task of the study committee to develop a locally-based stewardship plan to protect the important river

values being researched and documented throughout the study.

As a part of the discussions that took place prior to congressional authorization of the Wood-Pawcatuck Study, local community support for the study was preconditioned on the understanding that such a study committee would be formed as the first step of the study process. Congress passed the Study bill. Outreach to communities to obtain appointments to the study committee occurred, and the locally-based Wood-Pawcatuck Wild and Scenic Study Committee was established. The Committee began meeting in December 2015.

Committee members brought a wealth of knowledge and experience in governmental, ecological, and organizational processes to the study team. The appointed members included representatives from all the river towns in the study area, and the Wood-Pawcatuck Watershed Association. Other organizations that joined the Study Committee through regular participation included the CT Department of Energy and Environmental Protection (CT DEEP), RI Department of Environmental Management (RIDEM), and area nonprofits: Save The Bay, The Nature Conservancy, and Audubon Society of RI. Additional input from independent researchers, local supporting agencies, professional contractors, and the general public ensured the study's progress and comprehensiveness. The NPS provided staff support, coordination, and technical assistance on the study and development of the Stewardship Plan document. Sub-committees on Outstandingly Remarkable Resource Values and Outreach and Education helped guide and implement the study process.

Study Approach - Partnership Rivers

The Partnership Wild and Scenic Rivers make up a subset of rivers in the National Wild and Scenic Rivers System. The Partnership Wild and Scenic River approach was developed in response to the need for a Wild and Scenic River Study and designation program tailored to rivers characterized by extensive private land ownership along the river, and well-established traditions of local control of river management in a community-based setting. This type of study and designation model has a proven track record of effectively creating river protection strategies that bring communities together in protecting, enhancing, and managing high value river resources. Coordinated private sector, local, state, and federal government commitments are leveraged through the partnership approach to achieve efficient and effective Plan implementation.

The National Park Service recognizes 12 Partnership Wild and Scenic Rivers in eastern states that have gone through similar partnership-based study processes (coordinated through a locally-based study committee, as discussed above) and which share some common post-designation management approaches including:

- No reliance on federal ownership of land in order to achieve the WSRA's goals of protecting and enhancing river values.
- Land use management is regulated through existing local and state authorities, the same as before a designation.
- Administration and implementation of a locally led Management Plan is accomplished through a broadly participatory

management committee, convened for each river specifically for this purpose.

- Responsibility for managing and protecting river resources is shared between the local, state, federal, and non-governmental partners on the committee.
- Reliance on volunteerism as a key to success.
- No National Park Service Superintendent, law enforcement, or similar elements of traditional federally managed units of the National Park System.

The land ownership patterns and local involvement scheme in the Wood-Pawcatuck region closely matches conditions that prompted development of the partnership approach. Therefore, both the study process implemented for this study, and the potential Wild and Scenic River designation model evaluated as a part of the study closely track the precedents established by the existing Partnership Wild and Scenic Rivers. For more information about the National Park Service Partnership Wild and Scenic Rivers please visit the website: http://www.nps.gov/pwsr/

Study Goals and Methods

The Study Committee with locally appointed representatives from the twelve towns of the study area and representatives from other river stakeholder entities was tasked with:

1. Providing local knowledge and expertise to help guide and interpret research on the natural, cultural, and recreational resource values associated with the rivers. This information forms the basis for both Outstandingly Remarkable Value determinations and a comprehensive plan for management.
2. Developing a comprehensive local advisory management plan to serve as a blueprint for improved management and conservation of the identified natural, cultural, and recreational values, with technical assistance from the National Park Service.
3. To serve as the focal point for local community, citizen, and stakeholder involvement throughout the study process.

To meet these goals, the Study Committee conducted extensive research, established resource protection priorities, and worked intensively within the communities to educate and gain input for the Stewardship Plan.

Watershed Approach

A key decision made in the Wild & Scenic Study process was to pursue a watershed-based Wild and Scenic designation rather than concentrate on discrete segments of the river. This approach was motivated by the exemplary quality of the watershed itself. Recognized as ecologically the most important watershed in the region, the Wood-Pawcatuck River system is remarkably intact throughout the watershed. With 87% of the land undeveloped and approximately 65% forest cover, the watershed is a haven for diverse and abundant wildlife, and has remarkable water quality. The watershed has been recognized by The Nature Conservancy as an essential part of the Borderlands landscape, the largest forested areas between the Boston, MA and Washington, DC. They have described the area as a "dark sky" region. As described in detail below, the Study identified four distinct outstandingly remarkable values (ORV) categories which make the full river system within the watershed eligible for Wild & Scenic designation.

It is very uncommon for a river ecosystem of this size to be virtually intact throughout its watershed range, particularly in the near-coastal region of Southern New England. In recognition of these facts, the Committee concluded that a watershed-wide management framework should be established. Taking a watershed approach to management here means that at least a baseline of protection is identified for the 300 square miles around the proposed Wild and Scenic River segments. The watershed approach means recognizing that protection and management strategies cannot just consider a single river segment, plant or animal species, or wetland system in isolation from all that is around it. Each of these components is related and if one is disturbed or altered, there is typically an effect on the others as well.

Research

Early in the study process, the Study Committee formed Sub-committees, divided up by sections of the rivers and location in the watershed, to look closely at ORV's, which established that a multitude of special resources define the Wood-Pawcatuck Watershed.

Research was performed by staff at the Wood-Pawcatuck Watershed Association, consultants, academic institutions, Study Committee members, the State of Connecticut, the State of Rhode Island, and local supporting agencies such as the Rhode Island Natural History Survey . The results of the research helped to produce a clear picture of the ORVs, as well as identify existing protections for the ORVs and the management outcomes resulting from these protections. Major research undertaken during the Wild and Scenic Study to identify ORVs, develop management schemes, and determine eligibility and suitability included several studies and authoritative reports:

Municipal Plan and Regulation Review: This effort was in consultation with Mason and Associates, who assessed existing municipal regulations, plans and programs in order to help identify the sufficiency of such regulations, plans and programs for protecting the watershed.

Management Issues and Threats, and Gap Analysis: Threats to the ORV's were identified through study committee research and subsequent state-level stewardship plan summits. Gaps between threats to the ORV's and existing protections were also identified.

Resource Assessments: Much research was done by staff at the Wood-Pawcatuck Watershed Association to collect existing information about dams and hydrology, geology and ecological resources.

Geographic Information Systems (GIS) Analysis (Conducted by WPWA)

Many of these studies are available in the Wood-Pawcatuck Wild and Scenic Rivers Stewardship Plan and Appendices and on the Wild and Scenic Study website http://www.WPWildRivers.org

Outreach and Education

A major outreach and education effort was conducted throughout the twelve-town study region. The Outreach and Education Sub-committee led the effort to reach the leaders and residents of the communities through a series of meetings, presentations, recreational events, social medias, posters, and news articles. A website was developed to provide information regarding the study process

and the rivers under study. Committee representatives regularly reached a broad assortment of media outlets to engage and educate community residents and leaders and gather citizen input for the study, as well as inform the public about the Wild and Scenic Study process and milestones. Major outreach efforts included:

- Monthly Study Committee meetings advertised and open to the public
- Information pieces written and designed and made available at all public gatherings
- Newspaper articles and media events were planned
- Paddles held on sections of the rivers
- Expert presentations at meetings from experts on resources in the area
- Town representative presentations to Boards and Committees of the towns
- Several short videos highlighting the uniqueness of the river system were produced and made available

Details of the outreach and education program conducted during the Wild and Scenic Study are included in **Appendix E**.

Stewardship Plan

The partners in the Wood-Pawcatuck Wild and Scenic Rivers Study Committee determined that the plan best suited for this region would be a Stewardship Plan. Because the Wood-Pawcatuck Watershed covers twelve towns in two states, there already exists several management plans at both the state and local levels. These include State Wildlife Action Plans, Watershed Management Plans, town comprehensive plans, and many others. The conservation of the resources of the Wood-Pawcatuck Watershed will be a partnership endeavor, requiring careful and responsible management with input from all affected towns and agencies. The Study Committee felt that a Stewardship Plan would use the pertinent details from already existing plans that best protect the values of the rivers and combine this with the perspective of a watershed approach to resource protection.

The Study Committee accomplished its major goal by preparing the Stewardship Plan that will function as a blueprint for conservation actions and management practices. It is intended to provide a guidance framework for local commissions and governments as well as for the Wild and Scenic Committee, non-profit organizations, towns, and citizens (if the river receives the federal designation). The Stewardship Plan is intended to serve as the comprehensive plan required for all designated Wild and Scenic Rivers, as well as to stand alone regardless of whether the river gains designation status. Technical assistance and involvement of the National Park Service throughout Plan development made preparation of the Plan feasible, and ensured that Wild and Scenic Rivers Act objectives would be met.

The Study Committee developed the following guiding principles for the Stewardship Plan:

1. Resource conservation and protection should be fully integrated with traditional patterns of use, ownership, and jurisdiction, relying on existing authorities.
2. Management of the Wood-Pawcatuck Watershed should be based on a cooperatively developed plan that establishes resource protection standards and identifies key

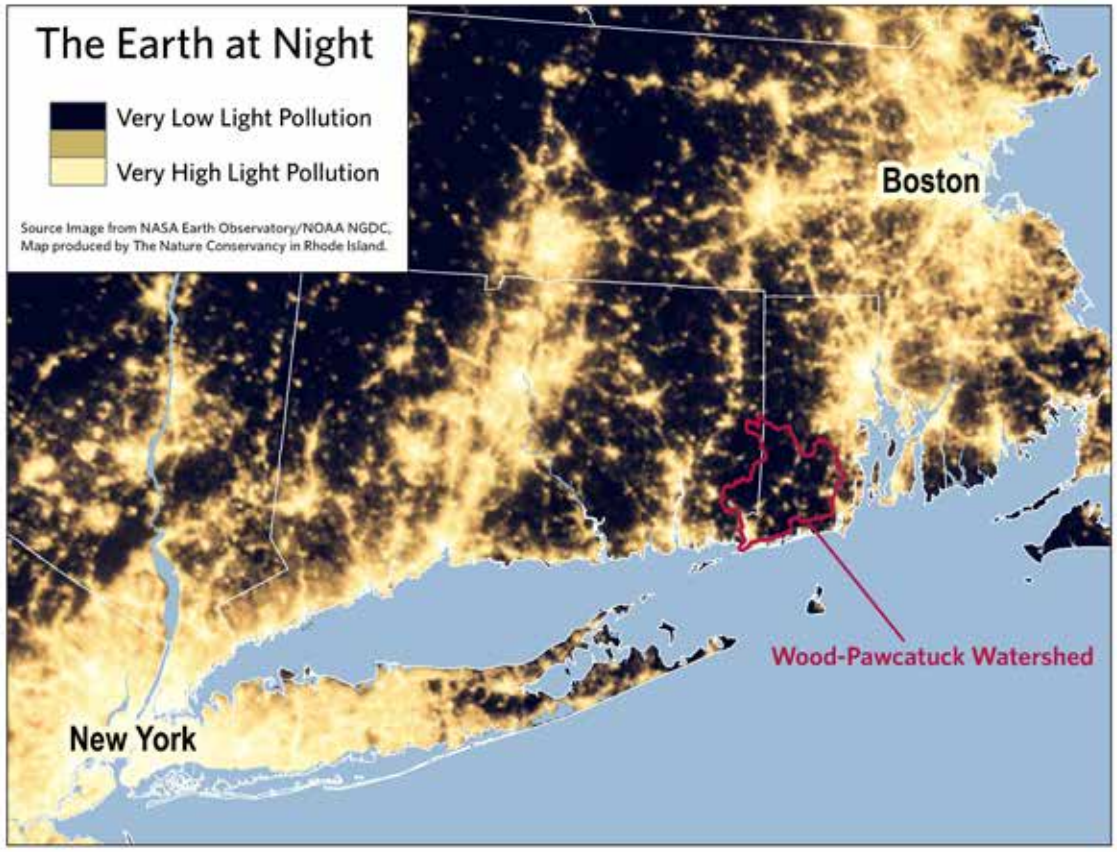
actions accomplished through cooperation among all public and private organizations with an interest in the river.

3. If the rivers are added to the National Wild and Scenic Rivers System, any land conservation initiatives related to this designation should be based solely on voluntary willing seller arrangements.

To facilitate preparation of the Stewardship Plan, the Committee convened representatives from appropriate state agencies and local governments for two summits, where land use and conservation recommendations were identified to facilitate meeting the goals of the Plan. These efforts fit into an overall integrated process for developing the plan - the key steps of which included:

1. *Determining existing resource protections* by engaging consultants to determine the adequacy of those protections through a comprehensive review of town regulations, plans, and policies as well as current federal and state regulations.
2. *Setting protection goals* for each resource value at local, state, and federal levels that (a) meet the Wild and Scenic River Act requirements of Section 6(c) and 10(a), which requires protection and enhancement of the Outstandingly Remarkable Values, water quality, and free-flowing characteristics that make the river eligible for designation under the Wild and Scenic Rivers Act, and (b) meet any additional protection goals deemed appropriate by the Study Committee.
3. *Identifying threats* that currently impact or are likely to impact the potential ORVs and assigning them priorities based on the significance and likelihood of their potential impact.
4. *Comparing protection goals with known and potential threats* in order to assess the effectiveness of existing resource protection and to identify potential gaps in protection.
5. *Establishing recommended management priorities and strategies* based on gaps in protection: Where gaps were identified between existing protection measures and desired levels of protection, strategies to fill such gaps are recommended in the Management Plan.

The end product of these steps was a series of recommendations in the Stewardship Plan that the Study Committee intends to begin implementing immediately. There also are examples included in the Stewardship Plan of how the Committee and some towns have already taken steps to implement Plan recommendations.



The regional significance of the relatively undeveloped Wood-Pawcatuck Watershed is apparent when viewed in context of this "Nighttime Lights" map.

Chapter 2: Description of the Study Area

Retional Setting and Watershed Characteristics

The Wood and Pawcatuck Rivers system runs through southeastern Connecticut and the southwestern region of Rhode Island. The source of the Pawcatuck River is in the Town of South Kingston, RI and its terminus is in the Town of Westerly RI and Stonington, CT, where it drains to the Little Narragansett Bay (Long Island Sound). The watershed study area is approximately 300 square miles, with 110 river miles, encompassing many high quality tributaries within seven major drainage areas including the Queen-Usquepaugh, Wood, Beaver, Chipuxet, Shunock, Green Fall-Ashaway, and Pawcatuck Rivers. It is one of the few remaining relatively pristine natural areas along the northeast corridor between New York and Boston. Six segments of the Wood-Pawcatuck are included in the Nationwide Rivers Inventory (NRI), a registry, compiled by the NPS, of river segments that potentially qualify as national wild, scenic or recreational river areas by having free-flowing conditions and at least one ORV. The Pawcatuck River is 36 miles long and the Wood River, its major tributary, is 24 miles long. The watershed is the most rural, least developed in Rhode Island with approximately 87 percent of the land undeveloped or in agriculture and approximately 75 percent forested.

Wild and Scenic River Study Area

This study focuses on the river segments identified in the Wood-Pawcatuck River Study Act (Public Law 113-291, Sec. 3074) as follows: (Sec. 3074)

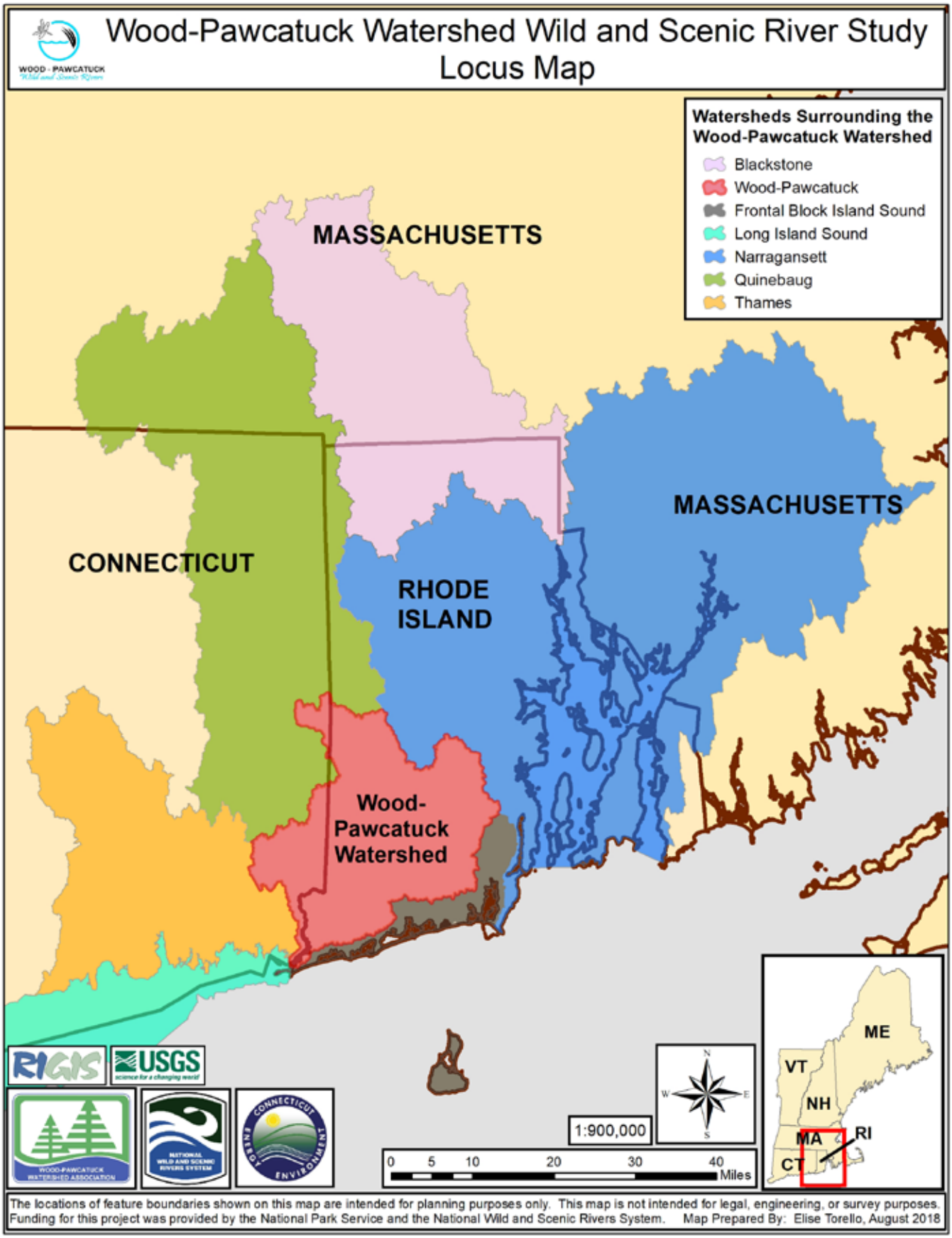


Figure 2. Locus Map

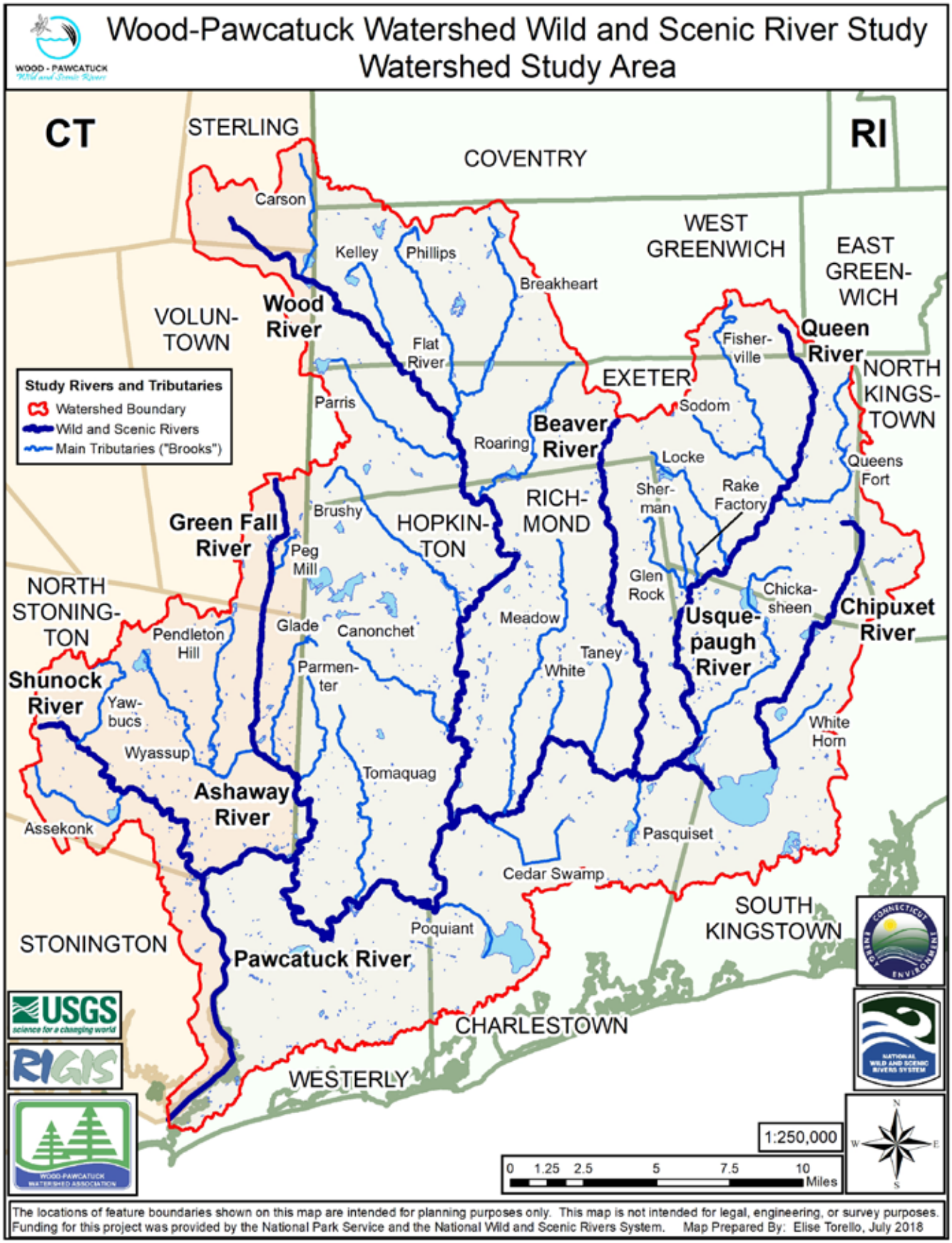


Figure 3. Study Area

Amends the Wild and Scenic Rivers Act to designate for study for potential addition to the National Wild and Scenic Rivers System specified segments of the Beaver, Chipuxet, Queen, Wood, and Pawcatuck Rivers in Rhode Island and Connecticut.

> *"(H.R.723) BEAVER, CHIPUXET, QUEEN, WOOD, AND PAWCATUCK RIVERS, RHODE ISLAND AND CONNECTICUT.—The approximately 10-mile segment of the Beaver River from its headwaters in Exeter, Rhode Island, to its confluence with the Pawcatuck River; the approximately 5-mile segment of the Chipuxet River from Hundred Acre Pond to its outlet into Worden Pond; the approximately 10-mile segment of the upper Queen River from its headwaters to the Usquepaugh Dam in South Kingstown, Rhode Island, and including all its tributaries; the approximately 5-mile segment of the lower Queen (Usquepaugh) River from the Usquepaugh Dam to its confluence with the Pawcatuck River; the approximately 11-mile segment of the upper Wood River from its headwaters to Skunk Hill Road in Richmond and Hopkinton, Rhode Island, and including all its tributaries; the approximately 10-mile segment of the lower Wood River from Skunk Hill Road to its confluence with the Pawcatuck River; the approximately 28-mile segment of the Pawcatuck River from Worden Pond to Nooseneck Hill Road (RI Rte 3) in Hopkinton and Westerly, Rhode Island; and the approximately 7-mile segment of the lower Pawcatuck River from Nooseneck Hill Road to Pawcatuck Rock, Stonington, Connecticut, and Westerly, Rhode Island."*

In the first year of the study, committee members from North Stonington, Voluntown, and Sterling CT asked that the Shunock and Green Fall-Ashaway rivers be added. These members brought fresh perspective on the potential ORV's of the two rivers, particularly from an historic and cultural perspective. The Study Committee voted unanimously to include the Shunock and Green Fall to the Study miles in the watershed. This did not expand the original study boundaries, since these rivers are tributaries in the study watershed.

Overview of the Study Area Communities

Rhode Island

Charlestown is located in the southern part of RI. Often considered a coastal community, about half of Charlestown is in the Wood-Pawcatuck Watershed. This includes sections of the Charlestown Moraine which forms the southern border of the watershed. The Pawcatuck River provides the northern border of the town. Charlestown contains large areas of wetlands found primarily in Cedar Swamp and areas around two natural ponds – Watchaug and Pasquisset. It also has a number of kettle ponds. Development is primarily low density housing. Otherwise the main land use is forested. The only industry in the town is on the Richmond/South Kingstown borders and is one of the few permitted discharges into the Pawcatuck River.

Exeter contains the headwaters for the Beaver, Queen-Usquepaugh, and Wood Rivers. Almost the entire town lies within the watershed. Land use is a mix of forests, low density residential, and agriculture. There is also some light industry and a few larger facilities, such as the RI Veterans Cemetery.

Hopkinton is bordered by the Wood River to the east; the Pawcatuck River to the south; and the Green Fall-Ashaway to the southwest. It is primarily forested with some low density residential, agriculture, and light industry land uses. Besides the main village center in Hope Valley, it has a few old mill villages near the rivers. Arcadia Manage-

ment Area protects much of the forested areas near the Wood River.

North Kingstown has only about 5% of its land in the Wood-Pawcatuck Watershed. This section of the town contains mostly agriculture and low density residential land uses. The headwaters for the Chipuxet are found here.

Richmond is located in the center of the watershed. It is bordered by the Queen-Usquepaugh River to the east, the Pawcatuck River to the south, and the Wood River to the West. Most of the Beaver River runs through the eastern section of the town. Richmond is also primarily forested, with low to medium density housing, agriculture, and light industry land use. There is a somewhat larger village center at the intersection of I95 and RI Route 138. The town has a well field adjacent to the Wood River, which provides water for less than 10% of the Richmond residents.

South Kingstown has about one third of its land in the Wood-Pawcatuck Watershed. It contains the Great Swamp Management Area and Worden's Pond. This section of the town is primarily forests and low density residential. The University of Rhode Island occupies the northwest corner of the watershed and has a well field that supplies all the water to University. The town has a well field near Worden Pond that supplies most of South Kingstown and Narragansett residents with water.

West Greenwich, located in the northern part of the watershed, contains headwaters for both the Wood and Queen-Usquepaugh Rivers. This section of the town is almost completely forested, with only a small amount of low density residential land use. It has been part of the Borderlands project with The Nature Conservancy.

Westerly is located at the mouth of the Pawcatuck River. It contains the largest population center in the watershed, with high to medium density residential and some industry land uses. It also contains extensive wetlands in Chapman Swamp. Westerly is bordered to the north and west by the Pawcatuck River. The town has a well field near the Pawcatuck River that supplies water for most of the Westerly residents and some Stonington residents. There is also one of one of two wastewater treatment plants that discharge into the Pawcatuck River.

Connecticut

North Stonington is on the western edge of the watershed in CT. It contains the entire Shunock River subwatershed and parts of the Green Fall-Ashaway River. Over half the town is found in the watershed. Similar to many of the RI towns, North Stonington is primarily forested with a mix of agriculture, low to moderate density residential and some light industry. The town contains excellent examples of early industry based on water power.

Sterling is found in the northwest corner of the watershed. Only about 10% of the town is contained in the watershed, but the Wood River does originate in there. This section of the town is almost entirely made up of forests, wetlands, and agriculture.

Stonington, in the southwest corner of the watershed is bordered on the east by the Pawcatuck River. It also only has a small percentage of the town within the watershed. In this section of the town there is primarily high to moderate density residential with some light industry. The second wastewater treatment plant that discharges into the river is located on the Pawcatuck River banks.

Voluntown has 20% of the town in the watershed. It contains the headwaters to the Green Fall-Ash-

away River and the Green Fall Pond. Most of the town in this section is protected by the CT Pachuag State Forest.

Overview of the Study Area Rivers

Overview of Land Use and Ownership Patterns

The Wood-Pawcatuck Watershed encompasses all or parts of fourteen towns in two states. The towns are primarily rural in character with a total population of less than 80,000. The only major population center occurs at the outlet of watershed in Westerly, RI and Stonington, CT. These towns also contain the largest amount of impervious surface, over 20%. A minor population center occurs at the University of Rhode Island in South Kingstown with a higher concentration of impervious surface occurring there. The remainders of the watershed towns are predominately forested and agricultural, with the average percentage of impervious surface at 2.6 %. These include small town centers and residential areas that are scattered throughout the watershed.

The land use patterns of the watershed have changed over the centuries since European settlement. Prior to that, the watershed was almost entirely forested, with some sections cleared by indigenous people to attract game or plant small subsistence crops. All of the current towns in the watershed developed around mill villages. Many of the village names still exist and are known locally. Between 1840 and 1950, farms were abandoned, the forests began to regenerate, and some land was acquired for several state management areas and became permanently protected. Slowly over the last half century urban development has started to reclaim some of the forests.

There have been considerable land conservation efforts in the Wood-Pawcatuck watershed over the last 75 years, resulting in almost one third of the watershed land being held in protected properties. This also means that 37% of land within a quarter mile of the seven rivers under study is permanently protected from development pressures. Protection has primarily been done at the local, state, and regional level. Only 0.01% is managed by Federal agencies, the US Fish and Wildlife Service.

Chipuxet River winding through the Great Swamp, South Kingstown, RI (Photo credit: Elise Torello)

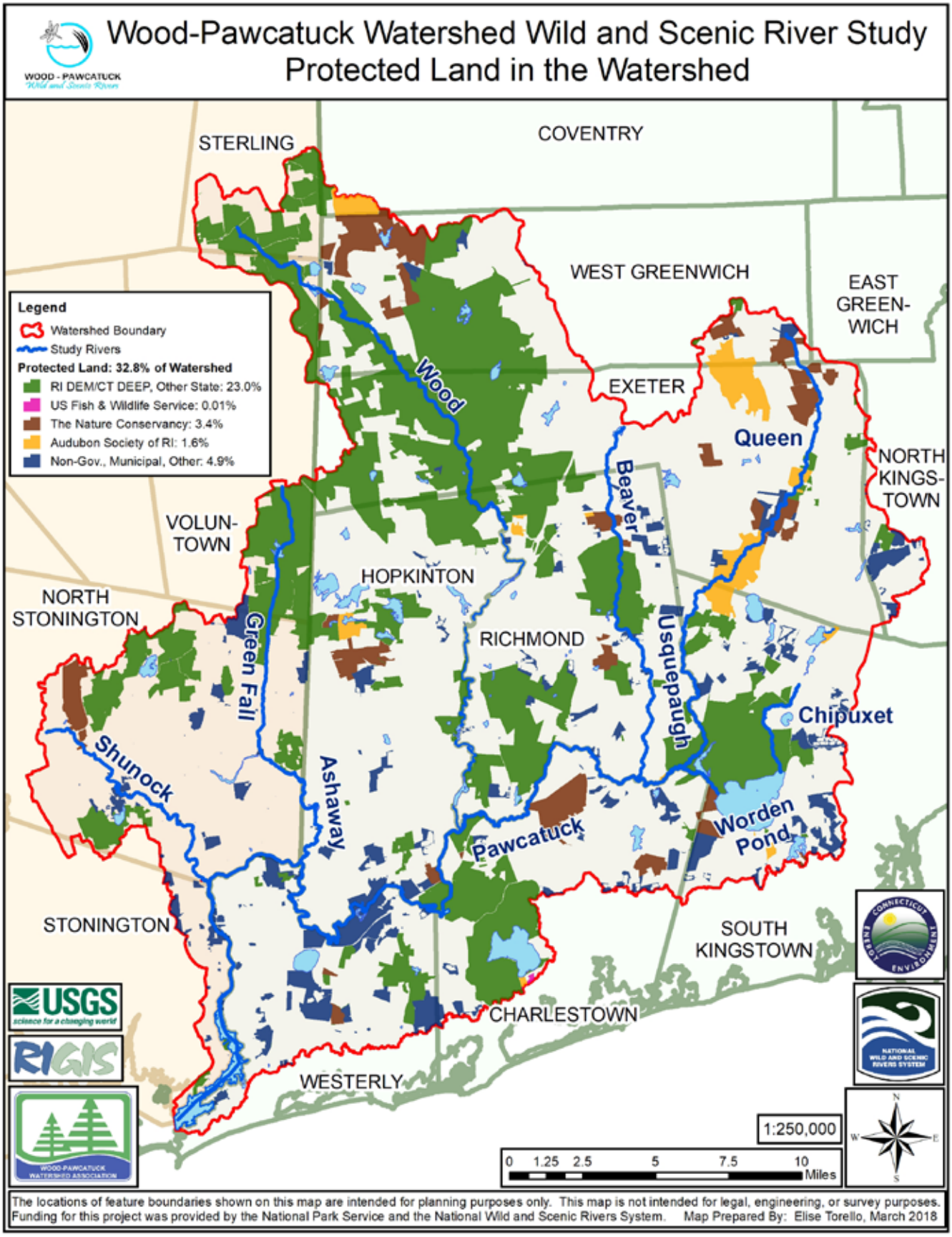


Figure 4. Protected Land

Stand up paddleboarders on the Wood River (Photo credit: Elise Torello)

Chapter 3: Eligibility and Classification

The purpose of this chapter is to document National Park Service findings relative to: 1.) the "outstandingly remarkable" natural, recreational, and cultural resource values associated with the Wood-Pawcatuck Study Area; 2.) the "free-flowing character" of the study segments; and 3.) the preliminary "classifications" which would be appropriate if the segments are included in the National Wild and Scenic Rivers System.

Eligibility and Classification Criteria

The subsections below describe the relevant eligibility and classification criteria as set forth in the Wild and Scenic Rivers Act, in the USDA/USDI Interagency Guidelines for Eligibility, Classification, and Management of River Areas as published in the Federal Register on September 7, 1982, and in the Technical Report of the Interagency Wild and Scenic Rivers Coordinating Council on the Wild & Scenic Rivers Study Process. IWSRCC, December 1999.

Outstandingly Remarkable Values

To be considered eligible for inclusion in the National Wild and Scenic Rivers System a river segment, together with its adjacent lands, must support one or more "outstandingly remarkable" natural, cultural, or recreational resource values. Such resource values must be directly related to, or dependent upon, the river and its adjacent lands (generally ¼ mile or another geographic area as defined by the study team). The "outstandingly remarkable" threshold within the Act is designed to be interpreted through the professional judgment

of the study team during the Wild and Scenic Study.

The descriptions below provide examples to help interpret this "outstandingly remarkable" eligibility requirement.

Nationally Significant Values

Resource values which are nationally significant clearly meet the "outstandingly remarkable" threshold. A nationally significant resource would be rare, unique, or exemplary at a national scale. For example, a recreational boating experience that draws visitors from all over the nation would qualify as a nationally significant outstandingly remarkable resource.

Regionally Significant Values

Based upon the desirability of protecting a regional diversity of rivers through the national system, a river segment may qualify based on regionally rare, unique or exemplary resource values. The area, region, or scale of comparison is not fixed, and should be defined as that which serves as a basis for meaningful comparative analysis; it may vary depending on the value being considered. For example, physiographic regions are appropriate for geologic and biologic resources, while the region occupied by a particular culture is appropriate for archaeological resources. For the purpose of this Study, regionally significant refers to the New England region (referring to the States of VT, NH, ME, RI and CT) or, in particular, the Southern New England region (which covers MA, RI and CT). Southern New England is of particular note in that it has become a highly developed corridor in the Northeast, serving as a conduit between New York City and Boston.

Values Significant in Aggregate

A river may qualify for a given resource value based upon an aggregate of important values, no one of which would confer eligibility standing alone. For example, a series of unusual and distinctive river-related geologic features may together qualify a segment as exhibiting an "outstandingly remarkable geologic value" even though no one element meets the criteria alone. In these cases, for the purposes of this Study, the term “exemplary” is used to describe the aggregate resource, and the region of significance is noted.

Defining “River-Related” Values

The Interagency Wild and Scenic Rivers Coordinating Council (IWSRCC) has characterized the determination as to whether a given resource value is river-related as based on three criteria. To be river-related a resource value should:

1. Be located in the river or in its immediate shorelands (generally within ¼ miles on either side of the river); and either or both of the following:
2. Contribute substantially to the functioning of the river ecosystem; and/or
3. Owe its location or existence to the presence of the river.

For the purposes of the Wood-Pawcatuck watershed study, the geographic area of consideration for the majority of land-based values was established as those resources located within ¼ mile of the river.

Free-flowing

The National Wild and Scenic Rivers System is designed to protect eligible "free-flowing" rivers and sections of rivers that support signifi-

cant resource values from the adverse impacts of federally-assisted water resource projects, such as construction of new dams. The Act's definition of "free-flowing" is outlined in Section 16:

> (b) "Free-flowing", as applied to any river or section of a river, means existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway. The existence, however, of low dams, diversion works, and other minor structures at the time any river is proposed for inclusion in the national wild and scenic rivers system shall not automatically bar its consideration for such inclusion: Provided, That this shall not be construed to authorize, intend, or encourage future construction of such structures within components of the national wild and scenic rivers system.

A river or river segment can be considered for designation if it is above or below a dam or is dependent on releases from a dam. Rivers that have dams above, downstream, or on a tributary to the study segment, including those that regulate flow through the segment, along with the existence of minor dams, rip-rap, and other diversions within the segment, may still be eligible as long as the river is otherwise free-flowing and supports at least one ORV.

Classification Criteria

The Wild and Scenic Rivers Act requires that all eligible or designated river segments be classified as Wild, Scenic, or Recreational. These classifications are based solely on the amount of human impact present at the time of classification. The Act defines them as follows.

Wild river areas: Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

Scenic river areas: Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

Recreational river areas: Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Free Flowing Determination

This subsection describes the free-flowing character of the study segments and presents an inventory of the study area's existing and historic dams.

Due to the nature of land use and early settlement in southern New England, all but the Chipuxet River segment contain small historic dams or remnant dams. The majority of these small dams were developed to power small industry mills of the 17th and 18th centuries, and in most cases are no longer in any sort of active use. Many of these small remnant structures are associated with important historic and archaeological sites. In general, they create little to no impoundment and do not appreciably alter the free-flowing character.

A more detailed examination has been undertaken regarding larger dams affecting the segments. Dams over 15 feet are specifically listed in the table below with additional comments.

Wood River: Of the seven dams present, six are small remnant historic structures meeting the characterization above. These are Porter Pond Dam (Sterling, CT,), Hazard Pond Dam (West Greenwich RI), and in Hopkinton/Richmond RI: the Barberville Dam, Wyoming Pond Upper Dam, Hope Valley Mill Pond Dam, and Woodville Pond Dam. These are primarily owned by RI DEM and CT DEEP and are not actively managed. The Switch Road USGS Gauging Weir is low and free-flowing.

The Alton Pond Dam at 19 feet high is the largest dam in the watershed. It is owned by the RI Department of Transportation and is passively managed for recreation. It has a minor impact to the free-flowing character of the Wood River, and is determined to be compatible with the proposed "recreation" classification of this segment.

Pawcatuck River: The mainstem Pawcatuck River has been the focus of substantial attention to dam removal and fish passage with the goal of re-establishing 100% fish passage/aquatic connectivity (See Stewardship Plan, p99). Of the nine dams once present on the mainstem Pawcatuck, two have been removed (Lower Shannock Dam, White Rock Dam), two have been breached (Burdickville Dam, Stillmanville Dam), two were replaced by Naturelike Fishways (Kenyon Mill Pond Dam, Bradford Mill Dam), one is free-flowing through its historic raceway (Carolina Pond Dam, 10 ft., Charlestown/Richmond RI). The sole "intact" dam is the historic remnant Potter Hill Dam (Hopkinton/Westerly RI) which fits the minor structure discussion above. The Carolina USGS Gauging Weir is low and free flowing. The largest of the dams, Horseshoe Falls Dam in Charlestown/Richmond RI, is 18-feet high. This dam has been preserved and fitted with a Denil fish passage structure due to its high historic significance. It creates a minor impact to free-flowing condition, with upstream and downstream conditions riverine in appearance.

The only two dams that are in their original configuration (Horseshoe Falls Dam and Potter Hill Mill Dam) have functioning fish passage structures. The Potter Hill Mill Dam is under consideration for restoration work in the next few years, possibly resulting in removal and replacement with nature-like rock weirs for fish passage.

Queen River: There are 5 small, historic/remnant structures fitting the general description above, and having little to no impact of free-flowing condition (New Road Pond, Rodman Sawmill Pond, Edwards Pond, Exeter Country Club Dam, and Williams Reynolds Road Pond Dam in Exeter, RI). The Glen Rock Reservoir Dam (9ft) in South Kingstown, RI, is the most significant intact structure, though, still small and minimally impacting free-flowing conditions.

Beaver River: The James Pond Dam and the Tug Hollow Pond Dam are small remnant structures meeting the general description above. The De-Coppett Estate Pond, now called the Hillsdale Pond, is another minor structure in disrepair and allowing water to flow around slightly breached areas.

Green Fall River: The Green Fall River has three small dams (Bethel Pond Dam, Ashaway Line Pond Dam, Ashaway Mill Pond Dam) meeting the general description of minor structures above The Green Fall Pond Dam (25ft) in Voluntown, CT, is managed by CT DEEP and creates a small pond. It is managed by the State for recreation and is a popular destination. It creates a minor impound-

ment, but not significant enough to exclude from eligibility.

Shunock River: Three of the four former mill dams are small and consistent with the general description of minimal impact dams above (one unnamed, Park Pond Dam, and Hewitt Pond Dam in North Stonington CT). The Gallup Pond Dam in North Stonington, CT is the largest at 15 ft., and is passively managed for recreation by CT DEEP.

Conclusions

All of the dams within the studied river segment fit somewhere into the general characterization of small, historic structures minimally affecting free-flowing river conditions. There are no FERC licensed hydropower dams, nor any significant diversions for other industrial uses. The goal of restoring aquatic passage to the mainstem of the Pawcatuck River is nearly complete. It is possible that further dam removals or fish passage projects will be warranted on a case-by-case basis, balancing historic resource considerations, the ecological conditions, and aquatic connectivity goals. Overall, it is the conclusion of the Study that none of the dams are significant enough to warrant exclusion from eligibility based on lack of free-flowing condition.

Outstandingly Remarkable Values

This subsection describes the natural, recreational, and cultural resource values deemed by the Wood-Pawcatuck Watershed to meet the "Outstandingly Remarkable" threshold. More detailed information on these resource values can be found on the Study website at www.wpwildrivers.org. All of the resources cited contribute to the overall eligibility of the Wood-Pawcatuck Watershed for designation. Not all river reaches in the study area support all noted outstanding values, but there is no stretch of river which does not contribute to the viability of the whole.

The Wild and Scenic Study Committee was tasked with identifying and researching potential Outstandingly Remarkable Values (ORVs) associated with the watercourses as required by the Wild and Scenic Rivers Act. Not just one, but four categories of ORVs were identified, that met the qualifications of being 'rare', 'unique' or 'exemplary' in their region of comparison. The examination of these resources (as described in detail in the Stewardship Plan and briefly below) was accomplished through substantial research that was conducted prior to and during the Study, and included evaluation of the significance of the resources within

Table 2: Impoundment Inventory of Dams Over 15 Feet High

River Segment	Dam Name	Town	Height in feet	Owner	Comments
Wood River	Alton Pond Dam	Hopkinton/ Richmond, RI	19.0	RIDOT	Passive management for recreation (fishing, paddling). Water is still free-flowing.
Pawcatuck River	Horseshoe Falls Dam	Charles-town/ Rich-mond, RI	18.0	Flynn, Francis	Denil fish ladder and eel way installed 2012
Green Fall-Ashaway River	Green Fall Dam	Voluntown, CT	25.0	CT DEEP	Reservoir is managed for recreation (fishing, paddling)

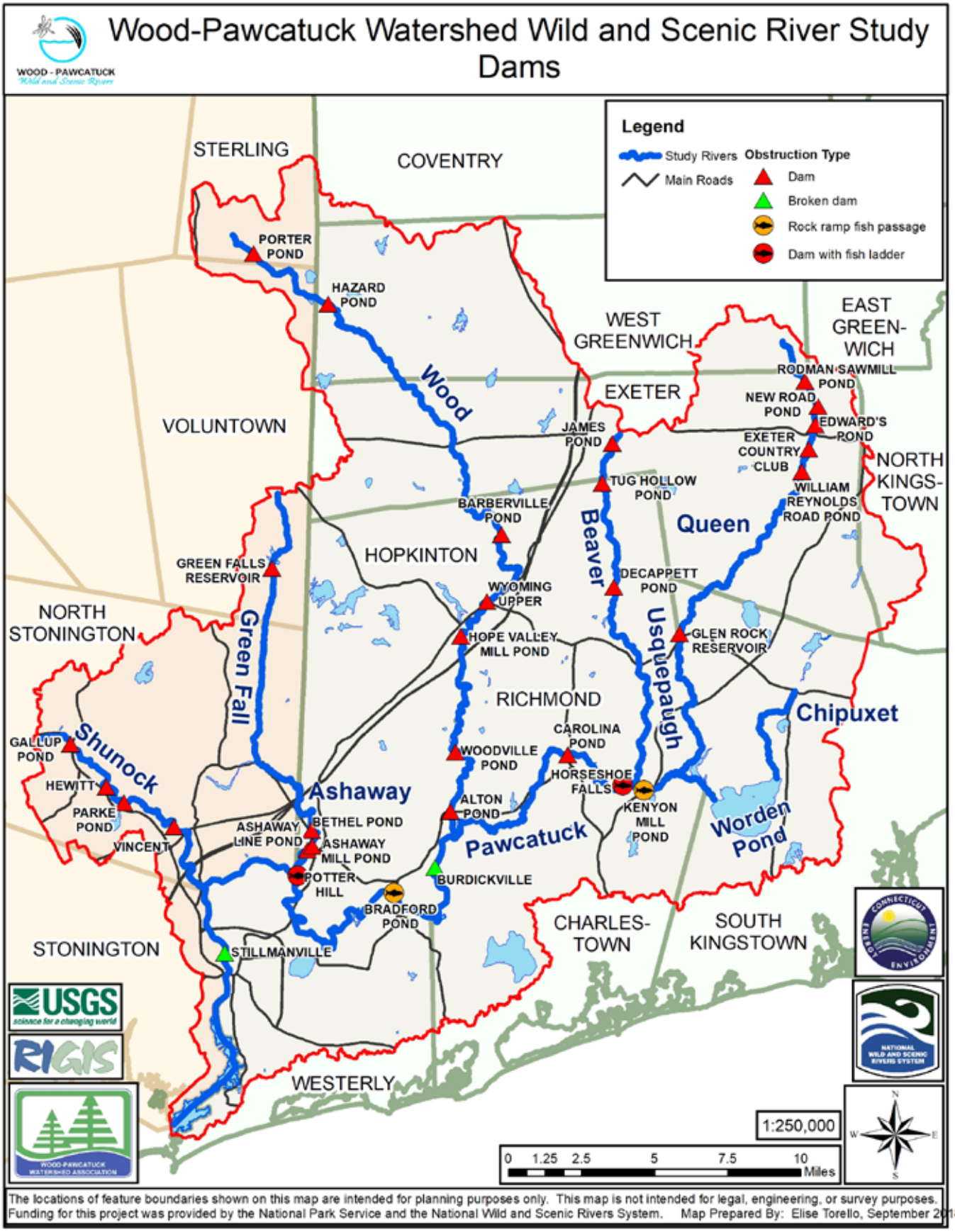


Figure 5. Dams

a state-wide and regional context by means of consultations with experts and professionals (see Appendix C for a list of the expert advisors consulted in the documentation of the ORVs).

The resources fall within the following categories: **Geology and Hydrology, Watershed Ecosystem, Cultural Resources, and Scenery and Recreation.**

NOTE: Maps and in-depth analysis relating to each ORV listed here, as well as additional resource values, can be found in the accompanying Stewardship Plan.

General Description

This watershed displays a high level of habitat and species diversity as well as a large percentage of rare and endangered species relative to the state and region, including species considered globally rare. The Nature Conservancy, a local partner of the Wood-Pawcatuck Watershed Association, has dubbed the Wood River a "Unique and Special Place," and the associated "Borderlands" along the Connecticut/Rhode Island border valuable due to the thousands of acres of intact woodland. In addition, the North Atlantic and lower New England ecoregions intersect within the watershed, providing for plant and animal communities that reflect a mixture of coastal and inland, and northern and southern influences[1]. The Species of Concern and Federally listed species appear in Appendix D.

The Pawcatuck River and its associated tributaries run through a rural wooded landscape amongst a series of towns that grew up on the banks of the watercourses, historically as mill villages. Four segments under study – Beaver River, Chipuxet River, first segment of the Pawcatuck River, and second segment of the Wood River – are 92% undeveloped. The estuary of the Pawcatuck River winds its way through the more highly developed communities of Pawcatuck, Connecticut and Westerly, Rhode Island.

Watershed species diversity relates to the water and land's unspoiled character and large variety of high quality habitat types including pitch pine barrens, rhododendron swamps, laurel thickets, flood plain forests, marshes, bogs, fens, hundreds of vernal pools, crystal clear ponds, an estuary and some of the regions' largest Atlantic white cedar evergreen swamps[2].

> *Occupying a narrow band from southern Maine to Florida, some of the largest stands of Atlantic White Cedar are found in the Pawcatuck River watershed at such places as the Great Swamp [found on the Chipuxet River, a Pawcatuck tributary, this swamp is the largest in New England and is a National Natural Landmark], Indian Cedar Swamp, and Chapman's Swamp in Westerly. Forests of white Cedar provide a specialized habitat for many organisms, including the Hessel's Hairstreak butterfly...species feed exclusively on cedar foliage[3]……...*

Also of particular note is the existence of one of the largest deciduous floodplain forests in Rhode Island, of more than 300 acres. Located near the headwaters of the Pawcatuck, it is potentially the highest quality swamp site in Rhode Island and is a prime example of pre-European settlement vegetation due to the complete lack of development.

[1] The Pawcatuck Watershed Report, 1999, Pawcatuck Watershed Partnership, printed by EPA. Region 1, New England

[2] The Pawcatuck Watershed Report, 1999, Pawcatuck Watershed Partnership, printed by EPA. Region 1, New England

[3] The Pawcatuck Watershed Report, 1999, Pawcatuck Watershed Partnership, printed by EPA. Region 1, New England

The "Great Swamp" is a RI State Management Area and is the only New England nesting site of the Prothonotary Warbler.

According to the 1999 Pawcatuck Watershed Report, 75 percent of all animal species found in Rhode Island are found within the watershed - this includes 36 mammals, 16 amphibians, 18 reptiles, 123 nesting birds, 33 freshwater fish and thousands of insects. Some of the species found here such as nesting neotropical migrant birds, freshwater mussels, river invertebrates, reptiles and amphibians rely on a landscape of large undisturbed areas for survival.

About "…70 percent of Rhode Island's globally rare (generally found at fewer than 100 sites, worldwide) and 63 percent of its rare species and natural community occurrences are found within the Pawcatuck watershed."[4] The species that are considered rare within a state-wide context represent about 70 percent of the total number of rare species present. Some species of note are the Sandplain Gerardia, Northern Parula Warbler, Etuberlated Rush, Eastern Spadefoot Toad, Spatterdock Darner, Eastern Pearlshell and Pale Green Pinion Moth. They are not found elsewhere in the state.

The region is also popular for recreation. The forested scenery is the backdrop that creates an enjoyable environment for recreating on and beside the Wood and Pawcatuck Rivers and their tributaries, and the unspoiled quality of the landscape contributes to the recreational experience. Some of the most popular recreational activities of the Wood-Pawcatuck Watershed include paddling, fishing and hiking. Other popular recreational pursuits include camping, wildlife viewing, and photography. The rivers' high water quality supports recreational use.

The watershed has about 52-miles of primarily flat paddling water with some limited Class II opportunities. There are a large number of access points to the river, along with 11 ponds with public access, two state parks, and eight state management areas. The removal of the Lower Shannock Dam has resulted in a new fast-water recreational feature for kayakers.

The Wood-Pawcatuck Watershed Association (WPWA) has a fleet of canoes and kayaks, stored on their campus on the banks of the Wood River for their educational and recreational programs. The WPWA produces the Wood-Pawcatuck River Guide and water trail maps for the Wood River. Paddling provides exceptional wildlife viewing opportunities as well as the ability to view some of the historical mill sites. Fairly narrow watercourses with heavily vegetated banks provide a unique backwoods paddling experience. A sense of solitude can be achieved in the midst of a densely populated region of southern New England.

Paddling opportunities are promoted locally and regionally, and paddling on Rhode Island's many water trails has been identified by National Geographic Society's (NGS) as a "Best Adventure Destination" of 2012. NGS refers to the Rhode Island Blueways Alliance as they have mapped the paddling links between the many miles of coastline with the rivers of Rhode Island.

There is an outstanding New England sports fishery here due to the significant cold water trout fishery that includes a native brook trout population. The Wood River and tributaries of both the Wood and Pawcatuck Rivers are the most heavily Rhode Island DEM trout-stocked rivers in the

[4] The Pawcatuck Watershed Report, 1999, Pawcatuck Watershed Partnership, printed by EPA. Region 1, New England

state. Multiple efforts to remove dams and provide fish passage have resulted in some fish restoration successes (see free-flowing analysis section for details). The Pawcatuck had early success restoring a self-sustaining shad population to the river that dropped off around 2005. Since then a stocking program has been re-introduced[5].

Geology and Hydrology

The geology of the watershed – in particular the moraine and associated extensive wetlands of the river system - is regionally unique in southern New England. About 20,000 years ago retreating glaciers left a recessional moraine, now known as the Charlestown Moraine. Running approximately east to west along US Rte. 1 in RI, this 150 foot high land mass effectively blocked the southerly flow of historic rivers. Instead the rivers collected into the Pawcatuck River which flowed to the west and even north at times before forming an outlet into Little Narragansett Bay between current day Westerly, RI and Stonington, CT. In addition, the moraine created extensive wetlands to the north, including the Great Swamp, Cedar Swamp, and Chapman Swamp, and the river system we know today.

The EPA has recognized the Wood-Pawcatuck Watershed as a sole source aquifer, which is rare for New England. All of the drinking water for residents of the watershed is supplied by private or public wells that tap into one of the seven significant subsurface aquifers, which were also created by the glacial retreat. These are found primarily along the river corridors. The Kingston Water District has wells just east of Worden Pond and supplies water for URI and parts of South Kingstown. Most all of the watershed contains high quality water. Protection of this important resource is vital since no alternative viable surface water supplies are readily available. The importance of protecting hydrologic resources is recognized by both Connecticut and Rhode Island.

The high water quality of the rivers in the Wood-Pawcatuck Watershed is regionally unique for southern New England. The wetlands offer protection of water quality both in the tributaries and in the mainstem Wood and Pawcatuck. An analysis done for WPWA's 2015 Water Quality Report,[6] reveal exceptionally low total phosphorus results for the entire watershed.

Many rivers and streams in the Wood, Shunock, Green Fall, Beaver, Chipuxet, and Queen segments are found to be the highest water quality, Class A. This classification has among its designated uses potential drinking water supply and fish and wildlife habitat. Segment water quality classifications are noted below. Such extensive miles of river all being classified as Class A also qualifies the hydrology as regionally unique in such a heavily populated region as southern New England. Indicators of high water quality include the large diversity of habitat, including cold-water river habitat that supports freshwater mussels and native brook trout. Also indicative of high water quality is the existence of river invertebrates, reptiles and amphibians.

Connecticut segments 18, 19, 20: Pawcatuck River: Classification B, B*, SB; Category 5
Wood River: Classification A; Category 1
Shunock River: Classification A; Category 1
Green Fall River: Classification A; Category 1

[5] http://www.dem.ri.gov/programs/bnatres/fishwild/pdf/wrisum12.pdf

[6] Assessing the Wood-Pawcatuck Watershed Associations's Water Quality Monitoring Program, November 2015

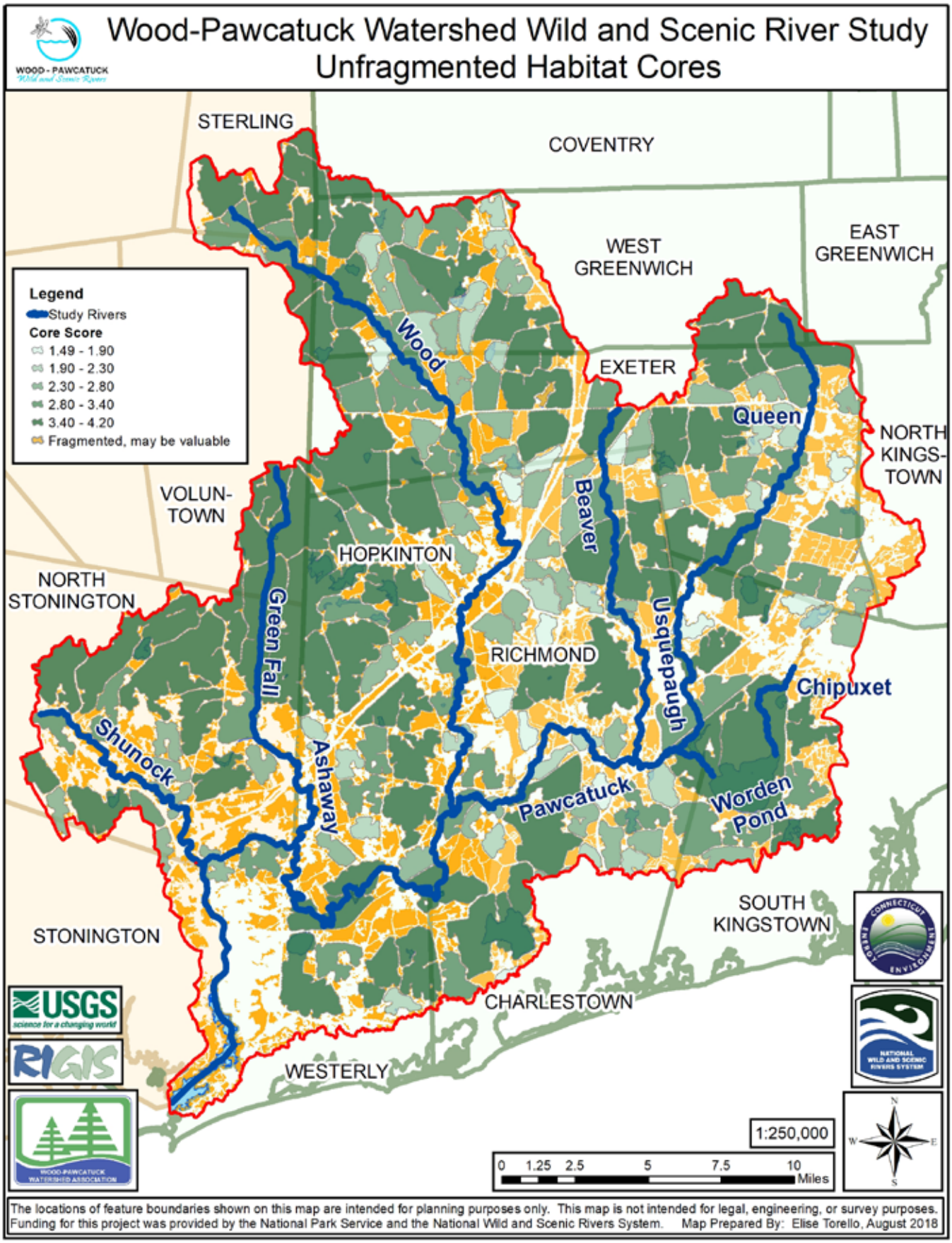


Figure 6. Unfragmented Habitat Cores

Rhode Island segments 21, 22: Fresh Water Segments:
Beaver River: Classification A; Category 2
Chipuxet River: Classification A; Category 2
Pawcatuck River: Classification B; Category 2
Queen River: Classification A; Category 2
Wood River: Classification A; Category 4A
Salt Water Segments: Tidal Pawcatuck River: Classification SA; Category 4A

Overall, water quality is considered to be excellent and greatly improved from the days of textile mill waste and sewage direct discharge to the waterways. The Wood-Pawcatuck Watershed Association (WPWA) and the University of Rhode Island Cooperative Extension Watershed Watch (WW) in conjunction with other local partners and volunteers, employs a comprehensive water quality monitoring program. In addition, Rhode Island Department of Environmental Management conducts extensive water quality monitoring under their rotating basins schedule. The Wood-Pawcatuck Watershed was most recently monitored for this program in 2012. A more detailed documentation of the baseline conditions can be found in the Stewardship Plan.

Some Key Findings on Unique Status of Geology and Hydrology in the Wood-Pawcatuck Watershed

- The Green Fall River, flowing through the Green Fall Rift Valley, is one of the more notable geologic features in the watershed. This regionally unique feature is more of a shear than a rift, its tectonic history is one of an extensional falling apart, snapping apart, of weakened bedrock in a linear fault pattern, a lineament. During the assemblage and subsequent breakup of the Pangea supercontinent, the southern RI and CT borderlands region was geologically traumatized. Western North Stonington presently hosts the tectonic plate margin left behind from that era. The landscape is profoundly contorted in areas where it is not buried under glacial sediments.
- The deposition of the Charlestown Moraine by the retreating glaciers 20,000 years ago created the current path of the Pawcatuck River and Worden Pond, the largest natural freshwater lake in RI. It also caused vast acres of swamps to develop along the rivers path, creating a regionally unique assemblage of wetlands, which have never been developed These include the regionally unique Great Swamp, the largest wetland in the region, Cedar Swamp, Phantom Bog, and Chapman Swamp.
- Another regionally unique geologic feature is the headwaters of the Queen River, Dead Swamp in West Greenwich. It is the only place in the southern New England which has surface water which flows into two separate watersheds – the Wood-Pawcatuck Watershed and the Pawtuxet River Watershed.

Watershed Ecosystem

The Wood-Pawcatuck watershed is the largest undeveloped watershed ecosystem in the New York to Boston corridor, which makes the ecology exemplary in the southern New England region. 70% of the region's rare, endangered, or species of concern rely directly on the rivers for some part of their life-cycles. The watershed was also found by the EPA Resource Protection Study to contain the highest incidence of large, contiguous, forested areas in southern New England, which makes it one of the darkest areas in this highly developed corridor region, supporting a diversity of life. The

amount of aquatic habitat supports diadromous fish and other native fishes. It is the site of several on-going fish passage restoration programs. Most of the rivers and streams in the watershed are cold-water fisheries, supporting native brook trout and freshwater mussels.

Key Findings on the Exemplary, Rare, and Unique Status of Ecology in the Wood-Pawcatuck Watershed

- The Beaver River is 91% undeveloped and heavily forested. Nearly half the river runs through protected properties held by RIDEM, The Nature Conservancy and local land trusts. Due to these large areas of unbroken forested blocks, the Beaver River provides clean, cold water habitat that supports a large number of invertebrate species, a regionally rare resource in Southern New England. The river contains healthy populations of wild brook trout and mussels. Many vernal pools are located near the river, supporting amphibian species such as wood frogs and spotted salamanders. A large variety of birds nest in the deep forest areas.
- The entire three miles of the Chipuxet River, from Taylor's Landing to Worden Pond is undeveloped. This stream is an intricate component of the Great Swamp, the largest swamp in the Southern New England. Filled with a large variety of wetland plants, the habitat supports many aquatic dependent species of invertebrates, birds, mammals, amphibians and reptiles. The area is a National Natural Landmark, a nationally exemplary resource.
- The Green Fall River is a forested green river corridor. From its top, a long section of the river runs through the Pachaug State Forest, the state's largest forest, 27,000 acres that extends through 5 towns and is enclosed by The Pawcatuck Borderland lands as part of New England's coastal forest eco-region, dark skies project. The Green Fall River is part of the Great Thicket National Wildlife Refuge. Three-quarters of Green Fall River flows within the Pachaug-Ledyard block of 6-state refuge system to help recreate and manage shrubland acreage for over 40 species of wildlife. Several surrogate species including Connecticut's American Cottontail Rabbit (ACR), whose presence is of special importance to this area, prairie warbler, blue-winged warbler, field sparrow, American woodcock, and brown thrasher represent the entire suite of shrubland wildlife needing young forest. In addition, the newly created North Stonington Wyassup Road Refuge further enhances its regionally exemplary status.
- The upper Wood River supports the highest biodiversity of any river in New England, and beyond. From the headwaters in Sterling CT to Frying Pan Pond in Richmond and Hopkinton RI, over 94% of the immediate land use surrounding the river is undeveloped and primarily forested, with much of it is protected. It is part of the TNC Pawcatuck Borderland Project to protect large forested blocks and preserve the "dark sky" nature of the region. Having little to no light pollution is a regionally rare characteristic in Southern New England, which is an incredibly developed and populated coastal area.
- The Nature Conservancy and Audubon Society of RI have protected several large

tracts in the Queen River because of its high biodiversity, especially of dragonflies, which is unique to southern New England. According to the RI Odonata Atlas this river has the highest number of species of any river in the region. Several first and second order streams provide clean, cold water throughout the year, making this great habitat for freshwater mussels, brook trout, and amphibians. There is a large pitch pine forest on TNC property with several rare species endemic to that habitat. The lower section of the river is called the Usquepaugh River. The last two miles of the Usquepaugh are part of the western border of the Great Swamp. Both sections are 90% undeveloped, and regionally rare in Southern New England.

Cultural Resources

The abundant wildlife and fish in the region attracted Native American tribes to the Wood-Pawcatuck watershed, such as the Narragansetts and Pequots. Prior to the arrival of colonists, there were about 7,000 Native Americans living in southern RI. Many current names in the watershed are Native American in origin.

The colonization of southern Rhode Island began with the arrival of Roger Williams in Wickford in 1637 followed by a multitude of other freethinking settlers and enterprising businessmen. By the mid-18th century these large plantations extended across southern Rhode Island and resulted in an aristocratic plantation culture. Rhode Island was an important part of commerce within the entire Atlantic community. Shipbuilding began in 1681 in Westerly and continued for 200 years. Over 240 vessels were constructed in this area.

At the end of the 18th century political power shifted to the more mercantilist cities such as Newport, Bristol and Providence. In the 18th and 19th centuries, European communities developed as mill villages along the watershed's rivers to harness water power for saw, grist and carding mills. The many rivers and streams in the watershed were dammed and used to power over 30 mills. The presence of mills attracted workers from throughout the region. Villages sprang up around the mills. Buildings, dams, and other remnants of these historical sites are present on every river in the watershed.

The *Wood, Pawcatuck, Beaver, Shunock* and *Green Fall Rivers* contain many fine examples of these chapters in history, including Native American historical sites and early to late industrial mill buildings and structures. This assembly of historical mill villages was identified by the NPS for a potential "Thematic Group" designation on the National Register of Historic Places (Stewardship Plan 2019), proving it to be a nationally exemplary cultural feature. Important agricultural resources are found on outwash plains near the *Queen, Chipuxet, Beaver, Pawcatuck,* and *Green Fall Rivers*.

Key Findings on the Exemplary and Unique Status of Cultural Resources in the Wood-Pawcatuck Watershed:

- The Hillsdale Historic and Archeological District is an exemplary colonial village center in Southern New England that used the Beaver River for water power for mills. Hillsdale produced textiles, primarily Negro cloth, in the western part-of Richmond during the period 1830 to 1870. Presently the mill village exists as a series of archeological sites: industrial, commercial, and domestic, strung out along Hillsdale Road and set in 68 acres of second growth,

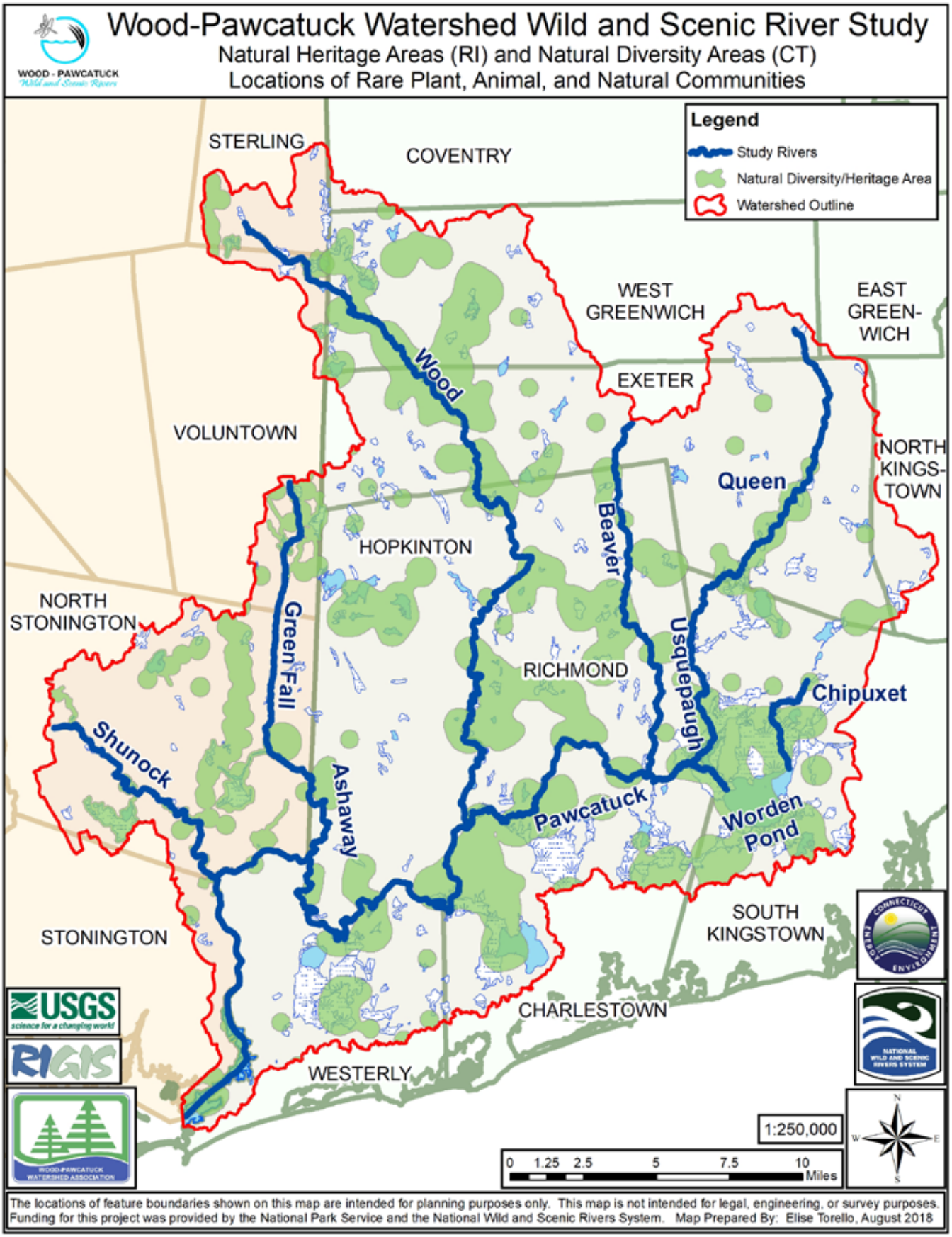


Figure 7. Natural Heritage or Diversity Areas

hardwood forest. The Historic District is a small portion of a large, 2,000 acre, state-owned wooded tract, the Hillsdale Management Area. The various components of the mill village have been preserved from subsequent reuse or development and feature a high degree of archeological integrity.

- Along the Step Stone Falls are remnants of an old quarry were bedrock was easily accessible. The foundation for timber mill using these quarried rocks can be found slightly further downstream. There are seven dams along the Wood River with additional dams on the river's tributaries. The numerous waterfalls and small ponds were well adapted for mill wheels. Hope Valley and Wyoming dams supported thriving communities which have been well documented and the Hope Valley and Wyoming Village Historic Districts are listed in the National Register of Historic Places, a nationally exemplary resource.
- This watershed contains several exemplary pre-history sites within New England, one of which marks an important event. A battle was won by the Narragansett Indians against the Pequot Indians at the lower falls of the Pawcatuck River in Shannock for fishing rights. Archeological sites include a shell heap at Pawcatuck Point, burials on the Whit Davis arm, stone tools Rock Site, and a fourth site on Mastuxet Cove, unique features in New England. There are three state documented tribal camping/fishing/settlements of the Pequots and Eastern Pequot Tribes along the Shunock River.

Scenic and Recreational

River resources in the watershed are highly prized for recreational activities, particularly paddling, fishing, and birding; these opportunities are regionally exemplary resources for Southern New England. Thirty-four miles of the *Pawcatuck River* and twenty-four miles of the *Wood River* are known to be exceptionally scenic canoeing and kayaking. The *Wood River* and its tributaries are nationally known as outstanding trout fishing streams. The lower *Pawcatuck* provides safe harbor for several marinas, with access out to Long Island Sound and the Atlantic Ocean. The many conservation areas along the rivers offer hundreds of miles of trails for hiking, biking, and birding. State management areas supply ample hunting and fishing for local residents.

Key Findings on the Unique, Rare, and Exemplary Status of Scenic and Recreation resources in the Wood-Pawcatuck Watershed:

- The Chipuxet's slow meander through three miles of wetlands provides beautiful scenery for paddlers, opportunities to fish and hunt, and observation of wildlife. The South County Bike Path crosses the Chipuxet, giving bikers and walkers a glimpse into a wild system. These features are regionally exemplary in Southern New England for the sense of wild they provide in a highly populated corridor.
- Green Fall Pond, remote within Pachaug Forest in Voluntown and regionally unique in Southern New England, is deeply a part of local use and pride. It has a long history of use as a campground, with swimming, canoeing, fishing, and hiking of several surrounding renown trail systems, a public boat launch, places for hunting, horseback

riding and mountain biking. Locals call it their childhood "swimming hole near the ravine."

- The Pawcatuck River is a recreation destination, a regionally exemplary area in Southern New England. Starting at the mouth of the river, there are fourteen marinas, a public boat launch, parks and nature preserves. Motorized boats are found primarily in the estuary and in two short upstream stretches which are deep enough to allow them. Otherwise the Pawcatuck Rivers are primarily enjoyed by canoeists, kayakers, and stand up paddlers. There are two river front campsites on the Pawcatuck River. They are in the Burlingame and Carolina Management Areas. Nine fishing and boating access points dot the river from Biscuit City Landing to the Westerly Town Dock.
- The Pawcatuck River's scenic beauty is encountered along the entire waterway. The river flows through a rural wooded landscape. This watershed region is one of the few remaining pristine areas between New York and Boston, a regionally rare resource in Southern New England. The water is clean and clear with many transparent views of the riverbed. Alluring marshes and swamps are viewed along the river course. Seasonal changes bring a variety of auditory and visual attractions to the river along with captivating sunrises and sunsets for the river tourist. A mature canopy of trees line the river's forested banks.
- The Wood River is a unique regional destination river for southern New England for recreation. It is within an hour drive of anywhere in RI and eastern CT. Because of its forested banks and clean, cold water, trout can find pools of refuge even in the heat of summer, making this a regionally unique destination for fly fisherman. RI-DEM stocks brown, rainbow, and hatchery raised brook trout throughout its length. There are wild brook trout in all the tributaries and upper reaches of the river. A section of the river, from West Greenwich to Exeter, is reserved for catch and release fishing. Paddlers come to the Wood River to experience a wild, natural river, with its many twists and turns and small class II rapids. The RI North South Trail system runs beside the Wood River and many of the tributary streams. People use the river to hunt for small game, deer, and water fowl.

Conclusions on Eligibility

110 river miles of the Wood-Pawcatuck Watershed are eligible for Wild and Scenic River designation based on free-flowing conditions, excellent water quality, and the presence of Outstandingly Remarkable Values that include **Geology and Hydrology, Watershed Ecosystem, Cultural, and Scenery and Recreation.**

Classification

Based upon the applicable criteria, the National Park Service (NPS) has assigned a classification of "Wild" to segments of the Chipuxet River, Pawcatuck River and Wood River; a classification of "Recreational" to the entire Shunock River, the lower section of the Wood River, and two sections of the Pawcatuck River, one at the mouth of the River and one about three miles from the outlet of

Worden Pond, and a classification of "Scenic" to the remaining segments of river (Table 1).

While tributaries are not included in these river segments, the Study Committee determined that the following perennial streams were integral to the rivers segments identified in this Study, and would be named as such in the designation under the Wild and Scenic Act: Assekonk Brook, Breakheart Brook, Brushy Brook, Canochet Brook, Chickasheen Brook, Cedar Swamp Brook, Fisherville Brook, Glade Brook, Glen Rock Brook, Kelly Brook, Locke Brook, Meadow Brook, Pendleton Brook, Parris Brook, Passquisett Brook, Phillips Brook, Poquiant Brook, Queens Fort Brook, Roaring Brook, Sherman Brook, Taney Brook, Tomaquag Brook, White Brook, Wyassup Brook, and all other perennial streams within the Wood-Pawcatuck Watershed.

Queen River at Dugway Bridge Rd., South Kingstown, RI (Photo credit: Elise Torello)

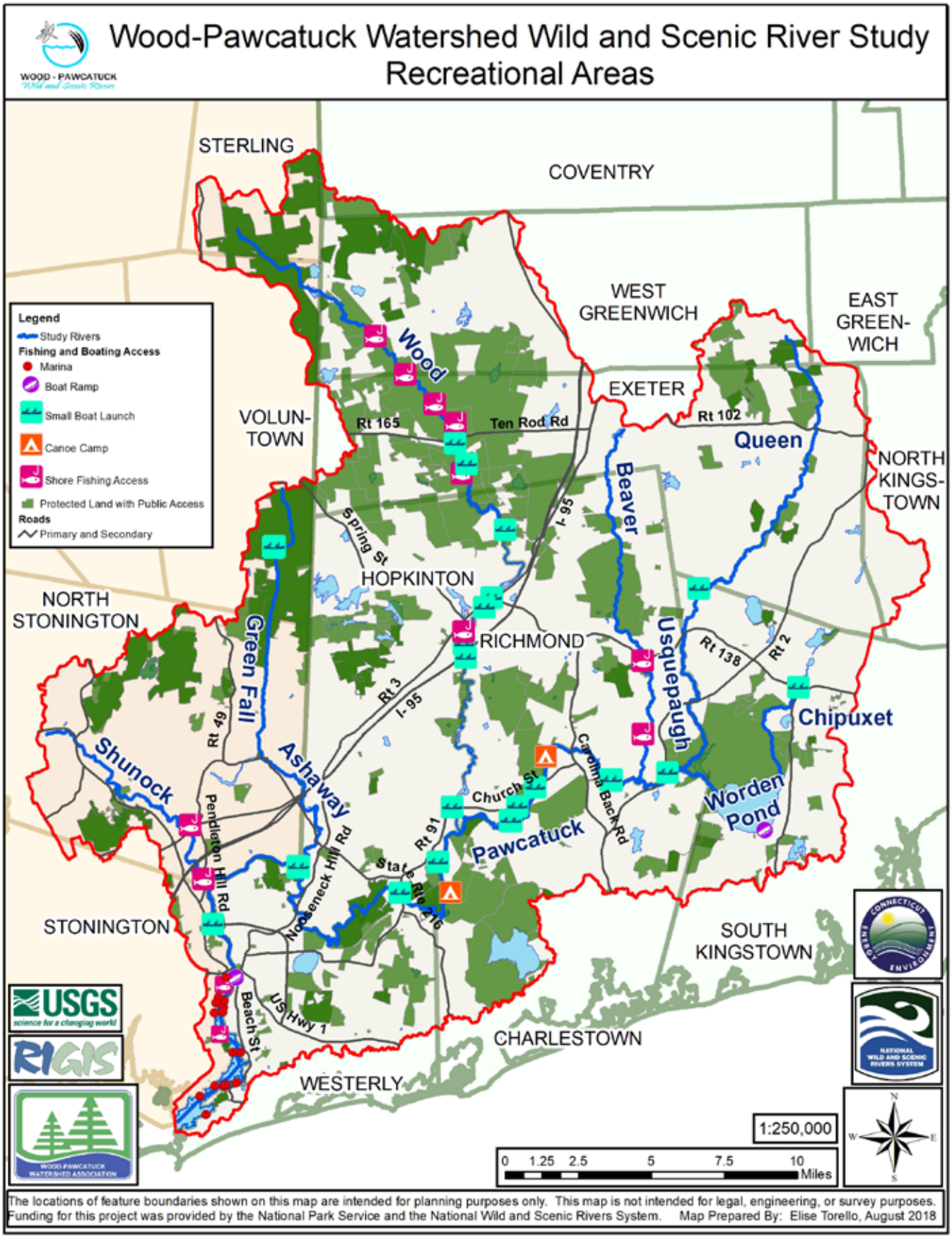


Figure 8. Recreational Areas

Table 3. Outstandingly Remarkable Values (ORVs)

River Segment	ORV Category	Landscape Feature	Area of Comparison	Unique/Rare/ Exemplary
Watershed	Geology and Hydrology	Recessional moraine formed the Great Swamp, Cedar Swamp, and Chapman Swamp; sole source aquifer. High water quality for most of the surface water	Southern New England	Unique
	Watershed Ecosystem	Critical habitat contains large forested blocks and multiple wetlands; 50% of the region's rare and endangered species; part of the New England dark sky region	Southern New England	Rare, Unique and Exemplary
	Cultural	Native American archeological sites; assemblage of historic mill villages	New England	Unique and Exemplary
	Scenery and Recreation	Over 56 miles for boat passage; river corridors provide fishing, hunting, birding, hiking, and camping	Southern New England	Rare, Unique and Exemplary
Beaver River	Ecology	91% undeveloped, large areas of unbroken forested blocks; cold/ clean water habitat supporting invertebrates, wild brook trout	Southern New England	Rare
	Cultural	Hillsdale Historic and Archaeological District	New England	Exemplary
Chipuxet River	Ecology	Undeveloped 3 miles of the River form a key part of the Great Swamp; National Natural Landmark	National	Exemplary
	Recreation	Slow meander allows for scenic paddling, hunting, fishing, birding opportunities	Southern New England	Exemplary
Green Fall River	Geology and Hydrology	Green Fall Rift Valley	Southern New England	Unique
	Cultural	Clark's Falls and Shady Glen mill villages	Southern New England	Exemplary
	Ecology	Contiguous forest corridors	Southern New England	Exemplary
	Recreation	Recreation destination	Southern New England	Unique

River Segment	ORV Category	Landscape Feature	Area of Comparison	Unique/Rare/ Exemplary
Pawcatuck River	Geology	Worden Pond – largest freshwater lake in RI; Charlestown Moraine creates east-west passage and many large swamps	New England	Unique
	Cultural	Narragansett Indian archaeological sites at Pawcatuck	New England	Exemplary
	Cultural	Nine historic mill sites; ship building	New England	Exemplary
	Scenery and Recreation	boating; fishing; hunting; camping; Marshes and swamps along the waterway, rural wooded landscape	Southern New England	Exemplary and Rare
Queen-Usgeupaugh River	Ecology	Highest number river Odonata count in the region; high number of freshwater mussel species; Western border of the Great Swamp; National Natural Landmark	New England	Rare
Shunock River	Ecology	Cold water fisheries, CT DEEP Class 3 Wild Trout Management Area; Sea-run trout	Southern New England	Exemplary
	Cultural	Three state-documented tribal settlements of the Pequot and Eastern Pequot Tribes; early mill villages established the town of North Stonington	New England	Exemplary
Wood River	Ecology	Upper Wood River supports the highest biodiversity of any river in New England; Large tracts of undeveloped forests; contains over 50% of the region's rare and endangered species	New England	Rare
	Scenery and Recreation	Fly fishing; popular for kayaking due to scenic resources; Forests, wetlands, wildlife viewing	Southern New England	Unique
	Cultural	Native American quarry site and winter camps; seven historic mill villages	Nationally	Exemplary

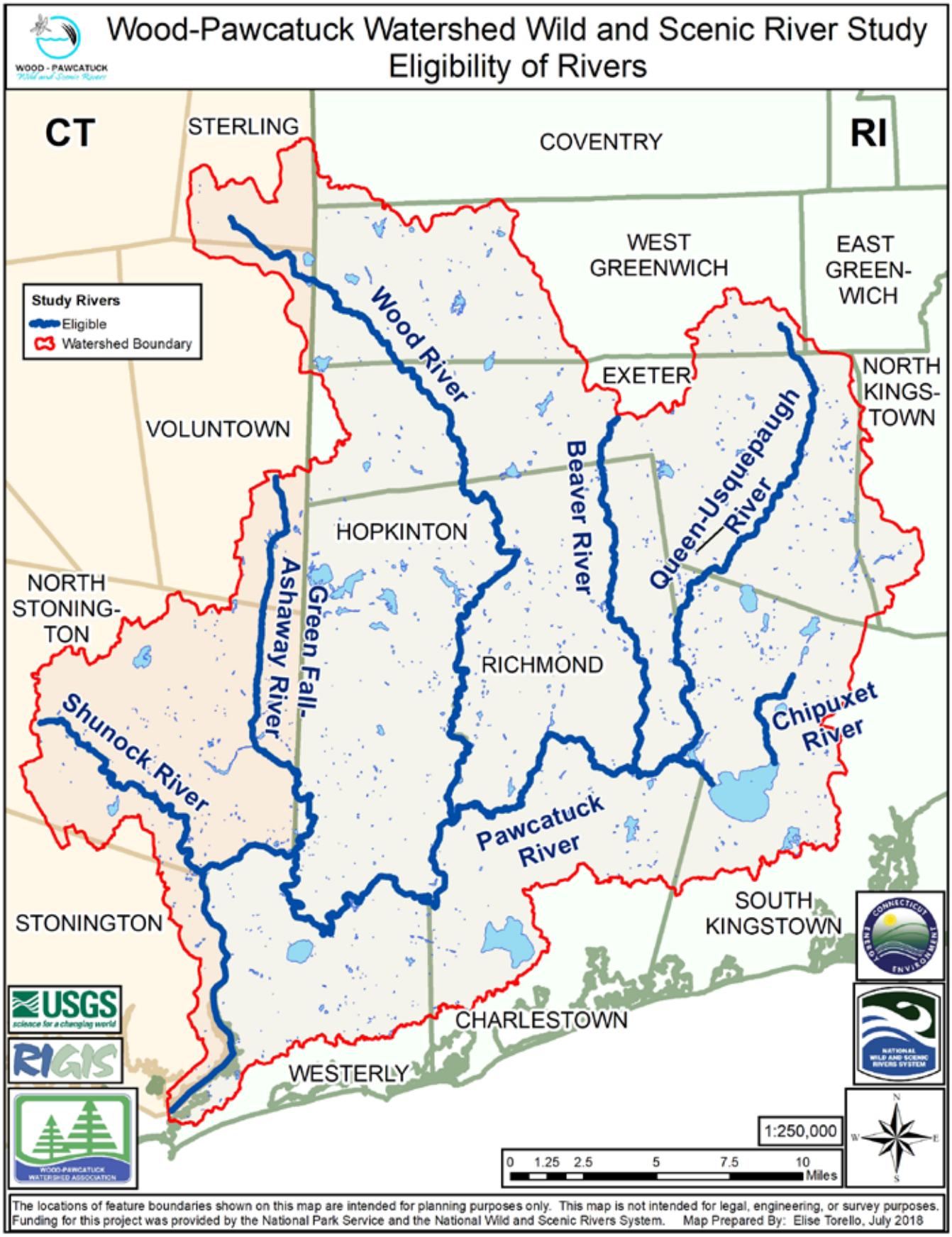


Figure 9. Eligibility of Rivers

Green Fall Pond, North Stonington, CT (Photo credit: Auntie Beak)

Chapter 4: Suitability Findings and Management Context

This chapter presents the study findings relative to Section 4(a) of the WSRA "…. On the suitability or non-suitability for addition to the national wild and scenic rivers system." The suitability of the Wood-Pawcatuck River for designation is directly related to existing and future river management which will also be discussed in this chapter.

Principal Factors of Suitability

In 1995, members of the Bureau of Land Management, National Park Service, U.S. Fish and Wildlife Service and U.S. Forest Service established an interagency council to address administration of National Wild and Scenic Rivers. The Interagency Wild and Scenic Rivers Coordinating Council (IWSRCC) developed criteria for suitability of rivers considered for inclusion in the Wild and Scenic Rivers system. These criteria are similar to, but distinct from the eligibility requirements for inclusion in the National WSR System.

The IWSRCC developed the following criteria as a general guide to exploring the suitability or non-suitability of river segments for inclusion in the Wild and Scenic Rivers System. A suitability analysis is designed to answer the following questions:

1. Should the river's free-flowing character, water quality, and ORVs be protected, or are one or more other uses [e.g., issuance of

a hydro license] important enough to warrant doing otherwise?

2. Will the river's free-flowing character, water quality, and ORVs be protected through designation? Is it the best method for protecting the river corridor?
3. Is there a demonstrated commitment to protect the river by any nonfederal entities that may be partially responsible for implementing protective management?"

In answering these questions, the benefits and impacts of Wild and Scenic River designation must be evaluated and alternative protection methods considered.

Additionally, the rivers of the Wood-Pawcatuck watershed flow through predominantly private lands and best fit the Partnership Wild and Scenic Rivers study model. For these rivers, the National Park Service created additional questions to ascertain the suitability of these Partnership Rivers:

1. Are existing protection measures adequate to conserve the river's outstanding resources without the need for federal land acquisition or federal land management?
2. Is there an existing or proposed management framework that will bring the key river interests together to work toward the ongoing protection of the river?
3. What local support exists for river protection and national designation?
4. What would the effects of designation be on the land use, water base, and resources associated with the river, the neighboring communities, etc.?

Existing Protections

Protections for free-flowing character, water quality and each of the identified ORVs were assessed by the NPS in conjunction with the Study Committee and the complete findings are available in the Stewardship Plan and its appendices. In order to identify the regulations, policies, and plans that favor protection and enhancement of the natural and cultural resources in the Wood-Pawcatuck watershed, Mason and Associates inventoried and assessed such regulations and policies enacted to date in the twelve river corridor towns. The summary table and the full report is available as an appendix to the Stewardship Plan. The Study Committee's website (www.wpwildrivers.org.org) also specifically provides this report, and lists the protections provided through federal, regional, state, and local mechanisms that already protect the ORVs.

The existing protections include strong local, state, and federal programs, statutes, regulations and ordinances that directly protect the watercourses and adjacent lands. Federal legislation such as the Clean Water Act, and Federal agencies such as the Army Corps of Engineers is to provide substantial protection for water quality. The free-flowing condition of the Wood-Pawcatuck River is protected through local and state stringent review and permitting for any projects that propose limiting the free-flowing nature of both Rhode Island and Connecticut's waterways. In addition, there is an established local watershed association, and there are local conservation commissions, land trusts, and other non-governmental supporting organizations that have strong interests in protecting the outstanding resources identified by the local communities during the Study process. There is also strong local and regional citizen recognition of the importance of these rivers and the resources they support, as evident in town and regional plans. Ad-

ditionally, the Stewardship Plan development and local endorsement process demonstrates that all of the communities are interested in acting proactively in relation to the rivers and their protection as appropriate. In total, the current combination of local, state and federal regulations meet the suitability criteria for the segments that are recommended for Wild and Scenic Rivers designation, and these are outlined as follows.

Existing Local and State Level Protections

Municipalities in the Study area have existing protections for the river corridor in a range of planning tools, including town-wide master plans, which include regulations at times above and beyond State regulations and requirements, support for projects in the watershed that demonstrate best practices, zoning regulations that mirror WSR values, and partnerships with local organizations, such as the Wood-Pawcatuck Watershed Association, that work for healthy rivers.

The following are some general programs and regulations found at the local level, as documented by the report compiled by Mason and Associates in the spring of 2018.

Community Plans: All of the towns in the study area have a master plan to guide growth and development. Both Rhode Island and Connecticut have state laws that govern the preparation and content of such plans. In Rhode Island, these plans are called Comprehensive Community Plans. In both states, towns may have supplemental or associated plans that focus on an important community planning element such as open space or economic development. All of the towns include goals promoting the preservation of natural resources, open space, and the rural/historic character of the town. In most cases these preservation goals are tied to water supply protection, protection of development from flood damage, and for some towns the protection and promotion of the tourism industry. Towns also recognize the importance of resource protection for financial sustainability, understanding the loss or diminishment of certain resources may pose adverse financial consequences to the town. All towns protect the study river corridors to a large extent, and provide meaningful development regulations that protect water resources in the river's watersheds. Many towns promote greenways and interconnected conservation lands; some towns specifically support the Wood-Pawcatuck Wild and Scenic River Study effort in their updated community plans.

Zoning: All of the towns in the study area also have enacted zoning ordinances that place controls on land uses to protect public health safety and general welfare. In addition, many communities include "overlay" districts that provide a higher level of resource protection than the underlying district. Typical overlay districts within the study area include aquifer and groundwater protection zones, wellhead protection areas, flood hazard zones, historic village districts and occasionally wetland and riverfront protection zones. Town zoning provides very good protection of study river corridors for the most part, especially in combination with large areas of protected conservation lands.

Land Development Regulations: All of the study area towns also have adopted a set of land development regulations. Unlike the Zoning Ordinance, the land development regulations often provide specific requirements for evaluation and protection of natural and cultural resources during the subdivision and land development process.

Wetlands and Watercourses: Wetlands and Watercourses are protected by state law in both Rhode Island and Connecticut. In Rhode Island, development projects with a potential impact on wetlands are reviewed primarily by the Rhode Island Department of Environmental Management (RIDEM) and wetlands in the vicinity of the coast are regulated by the Coastal Resources Management Council (CRMC). Rhode Island communities are allowed (at least at present) to administer their own wetlands regulations in existence prior to the new wetland statute (12/2015), but their jurisdiction is limited by the state.

In Connecticut, the cities and towns implement wetlands protection through local Inland Wetlands and Watercourses Commissions (IWWCs or Wetland Commissions) pursuant to the state law. The Wetlands Commissions review development projects at the town level. Jurisdictional areas include the inland wetlands, all watercourses (intermittent and perennial), and a minimum 100-foot "upland review area" surrounding the wetlands and watercourses. The town of Stonington also includes coastal zone wetlands that are regulated pursuant to state law and the town's Coastal Area Management regulations.

All of the towns in the study area have adopted flood hazard ordinances. These local ordinances are required by the Federal Emergency Management Agency (FEMA) as a condition of participation in the National Flood Insurance Program (NFIP) and most of them are based on the FEMA minimum requirements.

Groundwater: Most of Rhode Island's groundwater reservoirs and recharge areas lie within the Wood-Pawcatuck watershed. These represent high yield aquifers suitable for public water supply. They were created by glacio-fluvial deposits during the ice age. Areas outside these groundwater reservoirs are also used for individual water supplies and small community and non-community wells. Most of the RI communities in the Wood-Pawcatuck Watershed have groundwater protection overlay districts with additional resource protections including land use restrictions and performance standards for new development. Such groundwater protections are important to the protection of streamflow, temperature and water quality in the segments evaluated for Wild and Scenic status.

In Connecticut, significant aquifers are associated with the Shunock, Green Fall-Ashaway and Pawcatuck Rivers. A number of public water supply wells use these groundwater resources. CT DEEP identifies "Level A" (~wellhead) and "Level B" (recharge) aquifer areas and requires municipalities enact regulations to protect these resources. North Stonington has a mapped Level A area on the Shunock west of the North Stonington Village. Both Stonington and North Stonington show large aquifer protection areas associated with the Study Rivers in their towns.

Soil Erosion & Sedimentation: All of the communities in the study area have their own soil erosion and sedimentation control ordinances. These ordinances tend to be oriented toward fulfilling certain requirements of the federal Clean Water Act as implemented through each state's environmental agency; they require minimum controls on soil disturbance during construction to reduce soil erosion and pollutant discharges from stormwater runoff. Some of the study area communities, particularly those with a history of quarrying and/or sand and gravel excavation, have adopted local ordinances that regulate mining and resource extraction. These are typically adopted to work in conjunction with erosion and sedimentation control regulations, to reduce noise, protect air and

water quality, and regulate truck traffic associated with extractive industries.

Special Habitats: Hunting, fishing, and logging are regulated at the state level supplemented by local ordinances. Open space set-asides and in-lieu fee contributions to public open space are often targeted towards habitat protection. Each state's environmental agency provides mapping of rare species and critical habitats that towns use in conservation planning. The CT DEEP Natural Diversity Data Base program maps have regulatory importance with regard to certain CT DEEP permit programs pursuant to the CT Endangered Species Act and other state laws. In contrast, the RI Natural Heritage Program provides no specific protection for state listed rare species or critical habitats; rather, the RIDEM partners with the private non-profit RI Natural History Survey to track rare species occurrences, update mapping and provide information through RIGIS and direct consultation.

Historic/Cultural/Native Resources: A number of municipalities have enacted regulations to protect these resources, including provisions for resource identification and preservation as part of land development regulations, and historic village overlay districts in the zoning ordinance. Where enacted, such village overlay districts typically attempt to preserve the historic village character with design guidelines/standards.

Town-level land protection: All the study area communities have some local ordinances or regulations for protection of open space. Some require dedication of public open space (or equivalent in lieu fee payment) as a condition of approval for larger developments. Most require that open space at least be identified as part of all major land development projects.

Towns also typically include other types of open space, conservation, and recreation lands in their open space planning and conservation efforts. These include federal and state protected areas, lands preserved as open space temporarily through easement or tax mechanisms (farm, forest and open space programs for example), undeveloped municipal lands, and private recreation lands.

A summary of local and state level protections and by-laws is available in the Stewardship Plan. The full report by Mason and Associates is available as an appendix to the Stewardship Plan.

Federal Level Protections

There are several federal protections already in place to protect the Wood-Pawcatuck River. These include:

National Environmental Policy Act (NEPA) requires that all federal agencies consider the environmental impacts of their actions. Each federal agency has implementing regulations that are followed to ensure NEPA compliance.

Historic Preservation Act – Section 106 of the federal Historic Preservation Act requires that federal agencies consider the impacts of their actions on historical and archaeological resources. Whether officially designated or not, properties that are eligible for listing on the National Register of Historic Places are protected.

The National Flood Insurance Program provides federally subsidized flood insurance to homeowners and businesses. To be eligible to participate in the program, a local government (municipality) must enact laws that restrict development in flood hazard areas.

The federal Clean Water Act (CWA) regulates many activities affecting the Study Rivers. It sets goals that waters of the United States should fishable and swimmable and generally suitable for public water supply. The most important CWA protections involve regulation of point source discharges of wastewater (municipal sewage, industrial pollutants, stormwater outfalls), non-point sources of pollution such as stormwater runoff from farms and urban areas, and the destruction of wetlands by filling.

The federal Safe Drinking Water Act (42 U.S.C. 300f, 300h-3(e), Pub. L. 93- 523) is intended to ensure safe potable water is available to the public. It sets specific water quality criteria and standards, and empowers EPA to administer implementing regulations. In 1988 the EPA designated the groundwater of the entire Pawcatuck Basin Aquifer System (entire Wood-Pawcatuck Watershed) as a "Sole Source Aquifer" because of its importance as the only source of drinking water available to the public (53 FR 17108).

CERCLA, RCRA, FIFRA, and TSCA - Environmental pollution from toxic chemicals lead to a number of federal laws in the 1970s and 1980s that regulate the use and disposal of toxic or otherwise hazardous chemicals. While the CWA focused largely on wastewater discharges to waterways, these other regulations focused on a) the use of chemicals in the workplace, home and environment, and b) the ultimate disposal of waste chemicals in the environment.

The Endangered Species Act authorizes USFWS and NMFS to identify endangered and threatened species, and species of concern, and implement regulations to protect those species.

Narragansett Indian Tribe

The Narragansett Indian Tribe (NIT) is a sovereign nation with federally recognized tribal lands adjacent to the Pawcatuck River and extending southward to Route 1. These tribal lands include important water resources such as Indian Cedar Swamp and Schoolhouse Pond, and are known to support a number of different rare species and habitats. The NIT tribal land overlies one of the largest groundwater reservoirs (high yield aquifers) in the region. While the designated tribal lands are certainly rich in cultural resources associated with the Narragansett Indian Tribe and their ancestors, such resources are extensive throughout the Wood-Pawcatuck Watershed. Resource protection is provided by the NIT's Department of Community Planning and Natural Resources, and the Narragansett Indian Tribal Historic Preservation Office (NITHPO).

Open Space and Land Conservation Organizations

There have been considerable land conservation efforts in the Wood-Pawcatuck watershed over the last 75 years, resulting in almost one third of the watershed land being held in protected properties. Relatedly, 37% of land within a quarter mile of the seven rivers under study is permanently protected from development pressures. Protection has primarily been done at the local, state, and regional level.

Both RI and CT used programs such as the federal Wildlife Restoration Act to purchase abandoned farmland to create State Wildlife Management Areas, starting in the early 1940's. In CT the Pachaug State Forest has about 2,000 acres in the watershed and includes Green Falls Recreation Area, the headwaters to the Green Fall-Ashaway River. In RI there are nine Management Areas.

At over 14,000 acres the Arcadia Management Area is the largest and includes most of the headwater streams for the Wood River, helping to give this segment its "Wild" classification. The total properties held by state agencies in both states protect about 23% of the watershed.

All the study area towns have some form of Land Trust, Conservancy or other conservation organization that functions to acquire and protect open space locally. These organizations own land outright, hold conservation easements, and serve as rights holders for acquisition of property development rights. Most of the Land Trusts and Conservancy groups active in the study area have established criteria by which they assess properties under consideration for acquisition and protection. Where those criteria are publicly available, they almost universally include proximity to major rivers, streams, and surface water bodies as important criteria. The Nature Conservancy and Audubon Society of Rhode Island are two other major land owners in the watershed, protecting about 5% of the watershed lands. In addition there are eleven municipal and private land trusts with property holdings that protect another 5%. Most notable are the efforts by the Westerly and Hopkinton Land Trusts to protect about 800 acres of river front property on the Pawcatuck River. All of these entities continue to add to their land holdings as properties become available and all of them have identified the protection of the river corridors as a priority in selection criteria.

Land Trusts:
Charlestown Land Trust
Exeter Land Trust
Hopkinton Land Trust
Land Conservancy of North Kingstown
Richmond Rural Preservation Land Trust
South Kingstown Land Trust
West Greenwich Land Trust
Westerly Land Trust
Westerly Municipal Land Trust
Stonington Land Trust
North Stonington Citizens Land Alliance

Non-profit land owners:
Audubon Society of Rhode Island
The Nature Conservancy
Wood-Pawcatuck Watershed Association

State Holdings:
RI DEM Management Areas
Arcadia Management Area – 14,000 acres
Black Farm Management Area - 245
Burlingame Management Area – 1,390 acres
Carolina Management Area – 2,359 acres
Great Swamp Management Area – 3,349 acres
Newton Swamp Management Area – 111 acres
Rockville Wildlife Management Area – 1005 acres
Wickaboxet Management Area – 678 acres
Woody Hill Wildlife Management Area – 819 acres

CT DEEP Management Areas
Pauchaug State Forest, including Green Falls Area – 27,000 acres

Many of the conservation groups in and around the twelve study towns have been supporters of the Wild and Scenic Study effort through participation of their members on the Study Committee as representatives or experts adding valuable information to the study. In addition to actively seeking out and protecting important land or resources in the towns, these organizations play a significant role in community outreach, education and land stewardship activities. The following groups play a vital role in resource protection in the study area: Rhode Island Department of Environmental Management; Connecticut Department of Energy and Environmental Protection; Save the Bay; Audu-

bon Society of Rhode Island; Wood-Pawcatuck Watershed Association; Appalachian Mountain Club, Narragansett Chapter; the Avalonia Land Conservancy; The Nature Conservancy; Eightmile River Watershed Association, Connecticut; Rhode Island Blue Ways Alliance; Rhode Island Canoe and Kayak Association; Rhode Island Natural History Survey.

Management Framework

The Wood-Pawcatuck Stewardship Plan (June 2018) has been specifically developed to ensure that an adequate and successful management framework exists to meet the purposes of the Wild and Scenic River designation. This type of management framework has proven to be a successful approach in providing management coordination and implementation on the 12 other Partnership Wild and Scenic Rivers.

Development of the Wood-Pawcatuck Watershed Wild and Scenic River Stewardship Plan (Stewardship Plan) was one of the main goals of the Study Committee, and the final, completed Stewardship Plan is available as a companion document to this Study Report. The Stewardship Plan is a guidance document for protection and enhancement of the Wood-Pawcatuck Wild and Scenic Rivers study area. It details the management framework and protection strategies and standards for identified Outstandingly Remarkable Values, free-flowing conditions, and water quality.

Each of the twelve towns included in the Study Area formally endorsed the Stewardship Plan in summer 2018 through endorsement by their governing body (town council in RI; board of selectmen in CT). Local conservation commissions and organizations have endorsed the Stewardship Plan as well. The States of Rhode Island and Connecticut support designation and the relevant state agencies intend to participate in the implementation of the Stewardship Plan. Endorsement of the Stewardship Plan by the partners substantiates suitability for designation by demonstrating local commitment to river conservation if the designation occurs.

Though existing protections are deemed adequate, it is important to ensure optimal protection of Outstandingly Remarkable Values (ORVs), water quality, and free-flowing character over time due to threats and a changing environment. To do so, the Study Committee identified a protection goal for each ORV, identified threats and management issues that could degrade ORV quality, noted potential gaps between these threats and existing protections, and recommended tools or techniques for improving protection and enhancement of the ORVs at the local level. This analysis and the protection strategies developed for the Stewardship Plan could potentially serve as a tool to protect and enhance the values of the Wood-Pawcatuck River whether or not Wild and Scenic designation is achieved.

The Stewardship Plan calls for the creation of the Stewardship Council charged with coordinating and overseeing its implementation. As with the Sudbury-Assabet-Concord Rivers, the Lamprey River, and the other designated Partnership Wild and Scenic Rivers, it is envisioned that the Stewardship Council would lead the Stewardship Plan implementation process in the event of a Wild and Scenic designation. Each of the key entities that would be the core membership of the Stewardship Council has endorsed its creation through the Stewardship Plan. These entities include: the twelve towns bordering the river segments, the Wood-Pawcatuck Watershed Association, Rhode

Island DEM, Connecticut DEEP, Save the Bay, Audubon Society of RI, The Nature Conservancy, and the National Park Service. It will be vital for the Stewardship Council to develop and maintain local and regional partnerships with towns and with other conservation organizations to achieve short and long-range Stewardship Plan goals. It will also be the Stewardship Council's responsibility to monitor the Outstandingly Remarkable Values, free-flowing character and water quality with respect to the degree they are protected, degraded or enhanced during implementation of the Stewardship Plan.

The purpose of the Stewardship Council is to lead and coordinate implementation of the Stewardship Plan by:

- Bringing together on a regular basis various parties responsible for river management.
- Facilitating agreements, cooperation, and coordination among parties.
- Providing a focus and a forum for all river interests to discuss and make recommendations regarding issues of concern.
- Assisting the National Park Service in implementation of the Wild and Scenic River designation and expenditure of potential federal funding for Stewardship Plan implementation (subject to Wild and Scenic River Designation).
- Assisting the National Park Service in the review of potentially adverse federal water resource development projects (subject to Wild and Scenic River Designation).

It would also be the responsibility of the Stewardship Council to:

- Address river-related issues through cooperative resolution.
- Review and update the Stewardship Plan.
- Promote public involvement and education.
- Promote river enhancement initiatives.
- Report to the member towns and organizations on the activities of the Council.
- Prepare periodic status reports for the river communities.

Support for River Protection and National Wild and Scenic Designation

There was a high level of interest in the Wild and Scenic Study from the Study Committee, the study area towns, and the public throughout the study process. This interest developed into widespread support for the designation of Wood-Pawcatuck River as the Study progressed.

The broad range of support from governing bodies, land use commissions, non-profit organizations, and local citizens is described below and in Appendix B.

Study Committee

The Wood-Pawcatuck Wild and Scenic Rivers Study Committee began meeting regularly at the end of 2015 to fulfill its mission of supporting the Study process through facilitating public involvement, guiding research on potential ORVs, developing the Stewardship Plan and assessing local support for the designation. Each of the twelve towns in the watershed had at least one representa-

tive serving on the Committee. The Committee also included representatives from Rhode Island Department of Environmental Management and Connecticut Department of Energy and Environmental Protection, Wood-Pawcatuck Watershed Association, Save The Bay, and The Nature Conservancy. The Study Committee stated its intention to continue meeting until the rivers gain designation, at which time a transition to the post-designation Wild and Scenic Stewardship Council would occur. The Study Committee indicated substantial interest and commitment to initiating implementation of actions outlined in the Stewardship Plan during the time prior to potential designation.

Local and State Support

Many local, state, regional and federal organizations and agencies work for the preservation and improvement of the rivers of the Wood-Pawcatuck Watershed. Town Councils (in RI) and Board of Selectmen (in CT) were consulted and kept abreast of Study Committee's progress through written reports by the town representatives. Members of the Study Committee met with town committee and commissions during the winter of 2017 and spring of 2018 to explain the process and ask for their support. Once the Stewardship Plan was developed a draft was sent to all the towns, including the town planners and planning commissions, conservation commissions, land trusts, inland wetland commissions, and other town committees. Many of these supplied letters of support for the Wild and Scenic designation. Letters of support were also obtained from local and regional organizations involved in preservation and recreation in the watershed, including all of the watershed land trusts.

In June and July of 2018, all twelve towns voted to support designation of the seven rivers in the Wood-Pawcatuck Watershed – Beaver, Chipuxet, Green Fall-Ashaway, Pawcatuck, Queen-Usquepaug, Shunock, and Wood Rivers – as Partnership Wild and Scenic Rivers through an act of the United States Congress, with the understanding that designation would not involve National Park Service ownership or management of lands. Letters of support and town resolutions are listed in Appendix B. At the same time all twelve towns endorsed the Wood-Pawcatuck Wild and Scenic Rivers Stewardship Plan developed by the Wood-Pawcatuck Wild and Scenic Rivers Study Committee. The towns are: Charlestown, Exeter, Hopkinton, North Kingstown, Richmond, South Kingstown, Westerly and West Greenwich in RI; North Stonington, Sterling, Stonington and Voluntown in CT.

List of Key Endorsement Letters (in addition to the twelve watershed towns):

Appalachian Mountain Club, Narragansett Chapter
Audubon Society of Rhode Island
Avalonia Land Conservancy
Charlestown Agricultural Preservation Committee
Charlestown Conservation Commission
Charlestown Land Trust
Connecticut Land Conservation Council
Dennison Pequotsepos Nature Center
Gina M. Raimondo, Governor, State of Rhode Island and Providence Plantations
Hopkinton Conservation Commission
Hopkinton Land Trust
Hopkinton Planning Board
Narragansett Chapter of Trout Unlimited
North Stonington Conservation Commission
North Stonington Historical Society
North Stonington Inland Wetland Commission
North Stonington Planning and Zoning Commission

North Stonington Citizen Land Alliance
Rhode Island Rivers Council
Richmond Planning Board
Richmond Conservation Commission
Richmond Rural Preservation Land Trust
Rhode Island Canoe and Kayak Association
Rhode Island Dept of Environmental Management
Save The Bay
South Kingstown Conservation Commission
South Kingstown Planning Board
South Kingstown Land Trust
Stonington Conservation Commission
Stonington Land Trust
The Nature Conservancy, Rhode Island Office
Tomaquag Museum
West Greenwich Conservation Commission
West Greenwich Land Trust
West Greenwich Planning Board
Westerly Conservation Commission
Westerly Land Trust
Westerly Municipal Land Trust
Westerly Recreation Department

Partnership Wild and Scenic Model

With development of the Study Committee and protections afforded to Study Rivers by the Wild and Scenic Act, the study period is in essence a trial run for stakeholders and communities, and many of the structures and relationships would remain the same or similar after designation. NPS encouraged broad participation of local stakeholders in the study process and spent substantial time and effort considering and explaining the effects of the designation. Other Massachusetts rivers such as the Taunton as well as the Sudbury, Assabet, and Concord, and the other Partnership Wild and Scenic Rivers, have established a model for designation and management which constitute a substantial track record for the practical and expected effects of a Wild and Scenic River designations in settings very similar to the Wood-Pawcatuck area. These case studies and examples were explored thoroughly with the affected communities and other stakeholders as a part of the study process. Common features of all of the existing Partnership Wild and Scenic Rivers (as noted in Chapter 1) include the following:

- No reliance on federal ownership of land in order to achieve the Wild and Scenic River Act's goals of protecting and enhancing river values.
- Land use management is regulated through existing local and state authorities, the same as before a designation.
- Administration and implementation of a locally led Stewardship Plan is accomplished through a broadly participatory management committee, convened for each river specifically for this purpose.
- Responsibility for managing and protecting river resources is shared between the local, state, federal, and non-governmental partners on the committee.
- Reliance on volunteerism as a key to success.
- No National Park Service Superintendent, law enforcement, or similar elements of traditional federally managed units of the National Park System.

As a factor of suitability for Wild and Scenic River designation, the Partnership Wild and Scenic River model was used as the baseline for consideration of the likely impacts of designation. These are further refined in the Stewardship Plan, and discussed in Chapter 5 of this Report.

Dams in the Study Area

Because of the moratorium on new hydroelectric projects or dams if designated a Wild and Scenic River, the Study process included an in-depth examination of the effects of designation on the dams in the Wood-Pawcatuck Watershed. None of the dams currently operating are a FERC licensed hydro facility, and there are no applications for such a hydro facility. All of the dams present were deemed to be relatively small with little to no impact on flow and segment ORV's, and passively managed for recreation. Therefore, designation would cause no impact.

Summary of General Findings of Suitability

Analysis of existing local, state, federal, and non-regulatory protections applicable to the Wood-Pawcatuck River are found to adequately protect the rivers consistent with the purposes of the Wild and Scenic Rivers Act. These protections, combined with local support through town policies for river protection provide substantial protection to the river and its adjacent lands. When combined with the statutory protections that would be provided through the Wild and Scenic River designation, the River's Outstandingly Remarkable Values, free-flowing character, and water quality would be adequately protected without the need for federal land acquisition or federal land ownership and management. This finding is consistent with similar findings that have been made for each of the existing Partnership Wild and Scenic Rivers, whereby the designating legislation for each of those rivers has prohibited the federal condemnation of lands, as provided for by Section 6(c) of the Wild and Scenic Rivers Act. It is anticipated that any designating legislation for the Wood-Pawcatuck River will likewise include such a provision.

The Stewardship Plan has been developed with input from and to meet the needs of local, state, and federal stakeholders and programs. It has been endorsed as the Stewardship Plan for the Wood-Pawcatuck River by the riverfront towns. It would be utilized as the "Comprehensive Management Plan" called for by Section 3(d) of the Wild and Scenic Rivers Act, if the Wood-Pawcatuck River were to be designated as components of the national system. The Wood-Pawcatuck River Stewardship Plan as implemented by the future Wood-Pawcatuck River Wild and Scenic Stewardship Council provides an appropriate and effective management framework for the long-term management and protection of the watercourses.

Based upon the official record of endorsement from local governing bodies, citizens, local and regional non-governmental organizations as well as an endorsement from the States of Rhode Island and Connecticut, it is concluded that there is sufficient support to make the river suitable for designation under the Wild and Scenic Rivers Act based on the Partnership Wild and Scenic Rivers model.

In summary, the Study concludes that 110 miles of the Wood-Pawcatuck River are eligible and suitable for Wild and Scenic River designation, with preliminary classifications of 'scenic', 'wild' and 'recreational' as noted in Table 1.

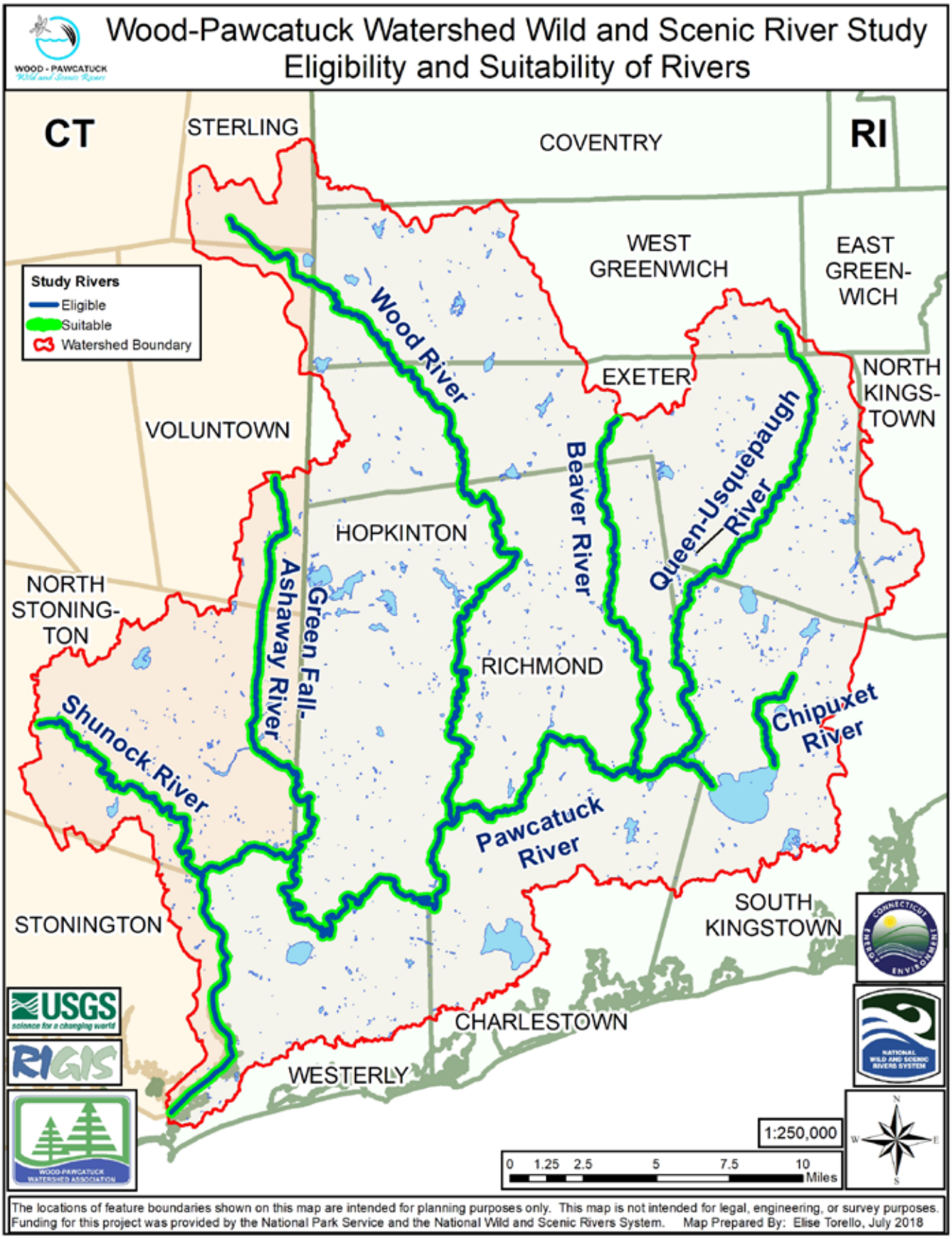


Figure 10. Eligibility and Suitability of Rivers

Pawcatuck River at Avondale (Photo credit: Rebecca Woodward)

Chapter 5: Consideration of Alternatives and Impacts

This chapter discusses alternatives considered as a part of the study process, as well as the reasonably foreseeable impacts associated with designation, as required by the Wild and Scenic Rivers Act. For NEPA purposes, the NPS has concluded that such foreseeable impacts of designation are consistent with utilization of Categorical Exclusion 3.2 and no Environmental Assessment is required. The pertinent impacts of designation are fully discussed in this Report, and its companion document the Stewardship Plan, as required by the Wild and Scenic Rivers Act. Substantial public engagement and involvement has also occurred throughout the study process, and an additional 90 day public and agency review period is also a part of the WSRA specified process.

Alternatives

The purpose of designation under the Wild and Scenic Rivers Act is to protect and enhance the Wood-Pawcatuck River and their values, including their free-flowing character, water quality and Outstandingly Remarkable Values.

The purpose of this Study Report is to enable the National Park Service and its partners to determine if the Wood-Pawcatuck River should be proposed for addition to the Wild and Scenic Rivers System, and determine the best long-term conservation strategies for protecting and enhancing the Rivers and associated resources.

The scope of alternatives considered was limited prior to study authorization, in coordination between the NPS and local and congressional study sponsors, as reflected in the "Reconnaissance Report" (see Chapter 1, Study Background); it was established at that time that only consideration of designation based on the "Partnership Wild and Scenic River model" would be evaluated. Alternatives such as creation of a federally managed park area were not appropriate and would not be investigated. This understanding was confirmed at the outset of the Study through consideration by the Study Committee.

Additionally, in the course of the Study review of eligibility and suitability, there were no findings or results that warranted consideration of any alternative other than designation or non-designation of the entire nominated river area under the principles of the Partnership WSR model. There was no impetus to consider partial designation scenarios or alternatives, as favorable suitability findings exist for all eligible segments.

Impacts of Designation

Overview

Designation of the segments of the Wood-Pawcatuck Watershed as a component of the National Wild and Scenic River System would have modest impacts to the administration and management of the designated river segment.

The proposed Partnership Wild and Scenic River approach to designation and the management plan (locally developed during the Study) is tailored to rivers like the Wood-Pawcatuck that are characterized by extensive private land ownership along the river, and well-established local management in a community based setting. This designation scenario is designed to support the development of river protection strategies that bring communities together in protecting, enhancing and managing river resources.

Administrative Impacts

Designation of the Wood-Pawcatuck River as a component of the National Wild and Scenic River System would have modest impacts to the administration and management of the designated river segment. The designation as proposed would be based on 25 years of experience with the "Partnership Wild and Scenic Rivers" management model. This administrative and management model effectively limits federal involvement to a role centered around technical and financial assistance to the locally-based Management Council, implementation of Section 7 of the WSRA, and coordination and communication functions.

Administration of the rivers under the Wild and Scenic Rivers Act is detailed in the Stewardship Plan and summarized in Chapter 4. The centerpiece of administration would be creation of the Wood-Pawcatuck Wild and Scenic River Stewardship Council to partner with the NPS and oversee Stewardship Plan implementation. The Council would be non-regulatory. It would serve as a vital communication and coordination body charged with overall implementation of the Stewardship Plan through voluntary actions, public education, and technical and financial support to local communities and partners. Its operations would be funded, subject to congressional appropriations, through cooperative agreements authorized under the Wild and Scenic Rivers Act. This new entity would serve to increase attention and focus of all partners on the preservation of natural, cultural, and recreational values as described in the Stewardship Plan.

Impacts on Federally Assisted Water Resource Development Projects

New protection for the designated segment would be provided through application of Section 7a of the Wild and Scenic Rivers Act against new federally-licensed hydroelectric development projects or potentially adverse impacts of "federally assisted water resource development projects."

> *The Federal Power Commission [FERC] shall not license the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other project works under the Federal Power Act, as amended, on or directly affecting any river which is designated in section 3 of this Act as a component of the national wild and scenic rivers system or which is hereafter designated for inclusion in that system, and no department or agency of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river was established, as determined by the Secretary charged with its administration. Nothing contained in the foregoing sentence, however, shall preclude licensing of, or assistance to, developments below or above a wild, scenic or recreational river area or on any stream tributary thereto which will not invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area on the date of designation of a river as a component of the national wild and scenic rivers system.*

Based upon application of Section 7a, no new hydroelectric developments could be licensed by FERC on the designated river segment. The prohibition against new hydroelectric project licensing is not likely to have any significant impact over the status quo, as there are no known, pending or likely proposals within the subject segments of the Wood-Pawcatuck Watershed.

Other potential projects that could trigger review under Section 7 of the Act would include streambank stabilization projects or similar in-stream work requiring permits under Section 404 of the Clean Water Act (US Army Corps of Engineers). Such projects/permits would be reviewed for consistency with the designation, and NPS would generally promote natural stream channel design principles and techniques in their review/consideration (soil bioengineering techniques, incorporation of vegetation, etc.).

Bridge replacement projects often require Section 404 permits and may have federal funding associated with them, thereby triggering Wild and Scenic River review. Such replacements have been a frequent and routine occurrence on the Partnership Wild and Scenic Rivers throughout New England and the Northeast. Often there may be opportunities to improve free-flowing condition through removal on instream piers or other design changes. Opportunities also sometimes exist to improve recreational access associated with bridges. Scenic and historic qualities may also be involved in reviews. NPS and the Stewardship Council can be expected to advocate for the protection and enhancement of wild and scenic river values (free-flow, natural, cultural and recreational values) in association with bridge replacement projects. This has the potential to impact how such projects get completed.

Impacts on other Federally Funded or Assisted Projects

The overall context and purpose of a wild and scenic river designation is to establish a federal policy to "protect and enhance" wild and scenic river values for the enjoyment of present and future

generations, as articulated in Sections 1 and 10 of the Wild and Scenic Rivers Act:

Section 1:
(b) 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. The Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes.

Section 10:
(a) Each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values.

In this context, any federal agency undertaking projects that could impact the designated segment of the Wood-Pawcatuck would consult with the National Park Service as an aspect of their normal project review procedures under the National Environmental Policy Act (NEPA). The NPS would have the opportunity to comment on those projects to ensure that wild and scenic river values are recognized and protected. Such consultations would not carry the definitive weight of Section 7 of the Act (which only applies to federally assisted water resource development projects), but nonetheless could impact the implementation of other sorts of federally funded or assisted projects. The effect of such consultations would be to provide greater weight to the recognition and protection of values such as scenery, recreation, historic and cultural values associated with the designated river segment.

Other Potential Indirect Impacts of Designation

Wild and Scenic River designation can be anticipated to raise the overall awareness and visibility of the Wood-Pawcatuck River as a resource of national recognition and significance. This may improve the ability of local partners to raise grant funds and otherwise compete for resources directed toward conservation and recreation efforts. Similarly, the added recognition and awareness could impact decision makers at all levels (individuals, local boards, state, federal, non-governmental) to consider stewardship of river values in their decision making.

Recreational visitation could also increase, although the area already exists as a destination, and any future increase will likely be based on local marketing of the area as such, which is not likely to be driven by the designation. There is no data from the existing Partnership Wild and Scenic Rivers in New England that designation itself has led to significant recreational visitation.

Effects of Designation: Addressing Legislative Report Requirements

PL113-291 contained several special reporting requirements whereby Congress has directed the NPS to report on certain particular matters in the Wild and Scenic River Study Report. Language from PL113-291 states:

Determine the Effect of Designation on:

(I) Existing commercial and recreational activities (such as hunting, fishing, trapping, recreational shooting, motor boat use, and bridge construction).

(II) Energy Related Infrastructure (authorization, construction, operation, maintenance, or improvement)

(III) State and Local authorities related to I and II.

Existing commercial and recreational activities were explored as a part of the study process. Detailed information regarding the wide variety of recreational uses is found in the eligibility chapter of this report and in the Stewardship Plan. The wide variety of recreational uses, including motorized boating and hunting, have been embraced within the Recreational "Outstandingly Remarkable" value. Partnership Wild and Scenic River designation would create no authority for the National Park Service to manage or regulate recreational activities. NPS does not issue recreational use permits or otherwise manage recreational usage in the Partnership Wild and Scenic Rivers.

Bridge construction or other construction activities which trigger federal permits subject to Section 7 of the Wild and Scenic Rivers Act (construction of federally assisted water resource development projects) would be subject to NPS review. These impacts are discussed in other sections of Chapters 4 and 5 of this Report. Numerous bridges have been replaced on New England Partnership Wild and Scenic Rivers over the last 25 years. No outstanding issues were identified regarding bridges or planned bridge construction projects during the course of the study.

Identify Any WSR-Related Authorities by which DOI could or would:

(I) Influence Local Land Use Decisions (zoning, etc.)

(II) Restrict use of non-federal lands

(III) Condemn Property

The potential authority of the NPS to influence or compel disposition of private or non-federal lands relates back to the potential condemnation authority of the Wild and Scenic Rivers Act. Without such authority, no direct or indirect means to compel or regulate non-federal lands exists in the Act. It is an essential provision of the Partnership Wild and Scenic Rivers model that designating legislation include a prohibition against such use of condemnation authority. All of the existing Partnership WSRs contain such a legislative prohibition, and it is essential to the model as discussed in this Report and as incorporated into the provisions of the Stewardship Plan.

The potential of the Wood-Pawcatuck Wild and Scenic River designation, as discussed in this Report and in the Stewardship Plan, to influence local land use decisions or local land use regulation relates solely to the voluntary measures that communities may undertake in response to the Stewardship Plan. The Stewardship Plan contains many strategies and opportunities for communities

to pursue through their normal local procedures to work together to continue the very strong progress that has been made to manage and protect the three rivers. It is entirely possible that communities will utilize the impetus of joining into the Wild and Scenic River designation, through local governance support for the Stewardship Plan and Wild and Scenic designation, as an opportunity to strengthen local river protections through zoning, subdivision regulations, and similar related means. It is important to note, however, that neither the Stewardship Plan nor designation require any changes. All of the communities have existing, robust schemes in place that form an adequate basis for the designation (Mason and Associates Report as part of the Stewardship Plan).

Identify Private Lands Associated with the WSR Study Areas

Private lands within the study area have been identified and are portrayed on the Protected Lands Map above. No direct impacts to the management or regulation of these lands would accompany designation. Indirect impacts through local community initiatives to implement the Stewardship Plan would need to be proposed, developed, reviewed and adopted through standard community procedures. The Stewardship Plan contains a full discussion of land management and the local community associated with the Partnership Wild and Scenic River model.

Anticipated Costs of Designation

The anticipated direct annual cost of designation is expected to be similar to the established Partnership Wild and Scenic Rivers funded through congressional appropriations. In FY17 and 18, the total costs of administration funded through federal appropriations averaged approximately $170,000 per river. The NPS considers this level of funding adequate to implement the designations consistent with approved Plans, and has become an established "baseline" funding level for the Partnership Rivers.

History with the established Partnership Rivers indicates that this level of federal investment is leveraged many times over through local, state, federal, and non-governmental partners working voluntarily to implement the management plans. In 2017, the NPS published a "20 Years of Success" report for the Partnership Rivers, documenting many highlights of leveraged success associated with the designation model. These leveraged contributions from partner organizations could be considered indirect costs associated with the designation, as could the time that volunteers serving on the Stewardship Council will commit. For estimation purposes, the indirect costs associated with voluntary partners contributions associated with the Stewardship Council and Wild and Scenic River protection and enhancement initiatives under the Stewardship Plan will likely equal or exceed the direct federal costs.

Summary of Expected Impacts

Under the Wild and Scenic River designation, the National Park Service would become a federal partner and advocate for the preservation of identified wild and scenic river values in the context of federally funded or assisted projects that could impact river values. The Stewardship Council would be created as a non-regulatory communication and coordination body focused on spurring implementation of the Stewardship Plan. New hydroelectric developments would be prohibited. Designation would elevate the status and perception of the river and its values at the local, state, and federal lev-

els. Consistent with past experience on 13 similar "Partnership Wild and Scenic Rivers," it is anticipated that these impacts will have a steady, modest, long-term effect of helping ensure that identified river values are protected and enhanced.

Upper Wood River in Autumn (Photo Credit: Elise Torello)

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Expert Advisors and Contributors

A full list of expert advisors is listed in Appendix C

List of Recipients

Hard copies will be sent to the following agencies:

Federal Agency Heads:

Secretary of the Interior
Secretary of Agriculture
Chief of Army Corps of Engineers
Administrator Environmental Protection Agency
Chairman of Federal Energy Regulatory Commission (FERC)
Administrator of Federal Emergency Management Agency
Administrator of Department of Transportation Federal Highways Department
Head of any other affected federal department or agency

Regional and State Federal Agency Heads:

Regional Forester of Eastern Region of USDA Forest Service

State Conservationist of USDA Natural Resource Conservation Service

Commander and District Engineer of New England District of Army Corps of Engineers

Northeast Regional Director of US Fish & Wildlife Service

Regional Administrator Region 1 of Federal Emergency Management Agency

Regional Administrator Region 1 of Environmental Protection Agency

Rhode Island and Connecticut Administrators of US Department of Transportation Federal Highways Department

State of Rhode Island

Governor Gina Raimondo

State of Connecticut

Governor Ned Lamont

Appendices

Appendix 1: Wood-Pawcatuck Wild and Scenic River Study Act

A portion of the Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for fiscal year 2015

Public Law 113-291 H.R. 3979 (Excerpt)

SEC. 3074. STUDIES OF WILD AND SCENIC RIVERS.(a) DESIGNATION FOR STUDY.—Section 5(a) of the Wild and Scenic Rivers Act (16 U.S.C. 1276(a)) is amended by inserting after paragraph (141), as added by section 3041(e), the following: "(142) BEAVER, CHIPUXET, QUEEN, WOOD, AND PAWCATUCK RIVERS, RHODE ISLAND AND CONNECTICUT.—The following segments: "(A) The approximately 10-mile segment of the Beaver River from the headwaters in Exeter, Rhode Island, to the confluence with the Pawcatuck River. "(B) The approximately 5-mile segment of the Chipuxet River from Hundred Acre Pond to the outlet into Worden Pond. "(C) The approximately 10-mile segment of the upper Queen River from the headwaters to the Usquepaugh Dam in South Kingstown, Rhode Island, including all tributaries of the upper Queen River. "(D) The approximately 5-mile segment of the lower Queen (Usquepaugh) River from the Usquepaugh Dam to the confluence with the Pawcatuck River. "(E) The approximately 11-mile segment of the upper Wood River from the headwaters to Skunk Hill Road in Richmond and Hopkinton, Rhode Island, including all tributaries of the upper Wood River. "(F) The approximately 10-mile segment of the lower Wood River from Skunk Hill Road to the confluence with the Pawcatuck River. "(G) The approximately 28-mile segment of the Pawcatuck River from Worden Pond to Nooseneck Hill Road (Rhode Island Rte 3) in Hopkinton and Westerly, Rhode Island. "(H) The approximately 7-mile segment of the lower Pawcatuck River from Nooseneck Hill Road to Pawcatuck Rock, Stonington, Connecticut, and Westerly, Rhode Island. "(143) NASHUA RIVER, MASSACHUSETTS.—The following segments: "(A) The approximately 19-mile segment of the mainstem of the Nashua River from the confluence with the North and South Nashua Rivers in Lancaster, Massachusetts, north to the Massachusetts-New Hampshire State line, excluding the approximately 4.8-mile segment of the mainstem of the Nashua River from the Route 119 bridge in Groton, Massachusetts, downstream to the confluence with the Nissitissit River in Pepperell, Massachusetts. "(B) The 10-mile segment of the Squannacook River from the headwaters at Ash Swamp downstream to the confluence with the Nashua River in the towns of Shirley and Ayer, Massachusetts. "(C) The 3.5-mile segment of the Nissitissit River from the Massachusetts-New Hampshire State line downstream to the confluence with the Nashua River in Pepperell, Massachusetts. "(144) YORK RIVER, MAINE.—The segment of the York River that flows 11.25 miles from the headwaters of the York River at York Pond to the mouth of the river at York Harbor, and any associated tributaries.". (b) STUDY AND REPORT.—Section 5(b) of the Wild and Scenic Rivers Act (16 U.S.C. 1276(b)) is amended by inserting after paragraph (20), as added by section 3041(e), the following: "(21) BEAVER, CHIPUXET, QUEEN, WOOD, AND PAWCATUCK RIVERS, RHODE ISLAND AND CONNECTICUT; NASHUA RIVER, MASSACHUSETTS; YORK RIVER, MAINE.— "(A) IN

GENERAL.—Not later than 3 years after the date on which funds are made available to carry out this paragraph, the Secretary of the Interior shall— "(i) complete each of the studies described in paragraphs (142), (143), and (144) of subsection (a); and "(ii) submit to the Committee on Natural Resources of the House of Representatives and the Committee on Energy and Natural Resources of the Senate a report that describes the results of each of the studies. "(B) REPORT REQUIREMENTS.—In assessing the potential additions to the wild and scenic river system, the report submitted under subparagraph (A) (ii) shall— "(i) determine the effect of the designation on— "(I) existing commercial and recreational activities, such as hunting, fishing, trapping, recreational shooting, motor boat use, and bridge construction; "(II) the authorization, construction, operation, maintenance, or improvement of energy production, transmission, or other infrastructure; and "(III) the authority of State and local governments to manage the activities described in sub clauses (I) and (II); "(ii) identify any authorities that, in a case in which an area studied under paragraph (142), (143), or (144) of subsection (a) is designated under this Act— "(I) would authorize or require the Secretary of the Interior— "(aa) to influence local land use decisions, such as zoning; or "(bb) to place restrictions on non-Federal land if designated under this Act; and "(II) the Secretary of the Interior may use to condemn property; and "(iii) identify any private property located in an area studied under paragraph (142), (143), or (144) of subsection (a).".

Appendix 2: References, Resources and Experts Consulted

FEDERAL, STATE, AND TOWN ORDINANCES

Mason and Associates, Inc., 771 Plainfield Pike, North Scituate, RI 02857

FISHERIES

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Personal communication with Rhode Island Department of Environmental Management, Fish and Wildlife staff 2010 to 2018

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U.S. Environmental Protection Agency Sole Source Aquifer Program www.epa.gov/dwssa

U.S. Environmental Protection Agency Region 1 Source Water Drinking Water Quality and Protection Unit OEP-2 Contacts: Kira Jacobs, 617-918-1683

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Charlestown Land Trust www.charlestownlandtrust.org

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Connecticut Land Conservation Council www.clcc.org

Connecticut Department of Energy and Environmental Protection Land Acquisition and Management www.ct.gov/deep/openspace

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West Greenwich Land Trust www.wglandtrust.org

Westerly Land Trust westerlylandtrust.org

Westerly Municipal Land Trust westerlymunicipallandtrust.org

RECREATION

Connecticut State Boat Launches www.ct.gov/deep/boatlaunches

Connecticut Clean Marinas Program www.ct.gov/deep/cleanmarinas

Connecticut Coastal Access Guide www.ct.gov/deep/coastalaccessguide

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web.uri.edu/watershedwatch

Water Quality 2035, Rhode Island Water Quality Management Plan, State Guide Plan Element Report #121, October 13, 2016

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Appendix 3: State Endangered, Threatened, and Species of Concern, and Federally Listed Species in the Wood-Pawcatuck Watershed

Common Name	Genus	Species	RI/CT State Status
Vertebrates			
Northern Saw-whet Owl	*Aegolius*	*acadicus*	RI-SC
Grasshopper Sparrow	*Ammodramus*	*savannarum*	RI-ST
Whip-poor-will	*Caprimulgus*	*vociferous*	CT-SC
Northern Harrier	*Circus*	*Hudsonius*	CT-E
Cerulean Warbler	*Dendroica*	*cerulea*	SE
Pileated Woodpecker	*Dryocopus*	*pileatus*	RI-SC
Acadian Flycatcher	*Empidonax*	*virescens*	RI-SC
Northern Parula	*Parula*	*americana*	RI-ST
Prothonotary Warbler	*Protonotaria*	*citrea*	RI-SC
Eastern Spadefoot	*Scaphiopus*	*holbrookii*	CT-E/RI-SE
Wood Turtle	*Clemmys*	*insculpta*	RI-SC
Black Rat Snake	*Elaphe*	*obsoleta*	RI-SC
Eastern Hognose Snake	*Heterodon*	*platirhinos*	RI-SC
Bobcat	*Lynx*	*rufus*	RI-ST
Smoky Shrew	*Sorex*	*fumeus*	RI-SC
Red Bat	*Lasiurus*	*borealis*	CT-SC
Banded Sunfish	*Enneacanthus*	*Obesus*	CT-SC
Brindle Shiner	*Notropis*	*bifrenatus*	CT-SC
Invertebrates			
Spatterdock Darner	*Aeshna*	*mutata*	RI-SC
Comet Darner	*Anax*	*longipes*	RI-SC
Blueberry Sallow	*Apharetra*	*dentata*	RI-SC
A Noctuid Moth	*Aplectoides*	*condita*	RI-SC
Dusted Skipper	*Atrytonopsis*	*hianna*	RI-SC
Bombardier Beetle	*Brachinus*	*patruelis*	CT-SC
Sparkling Jewelwing	*Calopteryx*	*dimidiata*	CT-T
Hessel's Hairstreak	*Callophrys*	*hesseli*	CT-E/RI-SC
Hoary Elfin	*Callophrys*	*polios*	RI-SC
Frosted Elfin	*Callophrys*	*irus*	RI-ST
Henry's Elfin	*Callophrys*	*henrici*	CT/RI-SC
Pine Barrens Tiger Beetle	*Cicindela*	*formosa*	RI-ST

Common Name	Genus	Species	RI/CT State Status
Arrowhead Spiketail	*Cordulegaster*	*obliqua*	RI-SC
Atlantic bluet	*Enallagma*	*doubledayi*	CT-T
Pine Barrens Bluet	*Enallagma*	*recurvatum*	RI-SC
Scarlet Bluet	*Enallagma*	*pictum*	CT/RI-SC
Northern Pearly Eye	*Enodia*	*anthedon*	RI-SC
Sleepy Duskywing	*Erynnis*	*brizo*	RI-SC
Northern Oak Hairstreak	*Fixsenia*	*favonius*	RI-SC
Bog Tiger Moth	*Grammia*	*speciosa*	RI-SC
Coastal Barrens Buckmoth	*Hemileuca*	*maia*	RI-SC
Woolly Beach-heather	*Hudsonia*	*tomentosa*	CT-T
Golden-winged Skimmer	*Libellula*	*auripennis*	RI-SC
Pale Green Pinion Moth	*Lithophane*	*viridipallens*	RI-SC
Lilaeopsis	*Lilaeopsis*	*chinensis*	CT-SC
Black Lordithon Rove Beetle	*Lordithon*	*niger*	RI-SC
Bog Copper	*Lycaena*	*epixanthe*	CT/RI-SC
Eastern pearlshell	*Margaritifera*	*margaritifera*	CT-SC
Coastal Swamp Metarranthis	*Metarranthis*	*pilosaria*	RI-SC
Brook Snaketail	*Ophiogomphus*	*aspersus*	RI-ST
Pitcher Plant Borer Moth	*Papaipema*	*appassionata*	RI-SC
White M Hairstreak	*Parrhasius*	*m-album*	RI-SC
Common Sanddragon	*Progomphus*	*obscurus*	RI-SC
Coppery Emerald	*Somatochlora*	*georgiana*	RI-SC
Zebra Clubtail	*Stylurus*	*scudderi*	RI-ST
Coastal Swamp Amphipod	*Synurella*	*chamberlaini*	RI-SC
Ringed Boghaunter	*Williamsonia*	*lintneri*	RI-SE
A Noctuid Moth	*Zale*	*submediana*	RI-SC
Pine Barrens Zale	*Zale*		RI-SC
Plants			
Sandplain Gerardia, Agalinis	*Agalinis*	*acuta*	RI-SE
Colic-root, Stargrass	*Aletris*	*farinosa*	RI-SC
Wild Leek, Ramp	*Allium*	*tricoccum var. tricoccum*	RI-SC
Wild Spikenard, Life-of-man	*Aralia*	*racemosa*	RI-SC
Arethusa, Swamp-pink, Dragon's Mouth	*Arethusa*	*bulbosa*	RI-SE

Common Name	Genus	Species	State Status
Slimspike Three-awn, Northern Poverty-grass	*Aristida*	*longespica var. geniculata*	RI-SC
Wild Ginger	*Asarum*	*canadense*	RI-SC
Blunt-leaved or Clasping Milkweed	*Asclepias*	*amplexicaulis*	RI-SC
Poke or Tall Milkweed	*Asclepias*	*exaltata*	RI-SC
Butterfly-weed, Pleurisy-root	*Asclepias*	*tuberosa*	RI-SC
Maidenhair Spleenwort	*Asplenium*	*trichomanes*	RI-SC
Purple Screwstem	*Bartonia*	*iodandra*	RI-SC
Purplestem or Swamp Beggar-ticks, Stick-tight	*Bidens*	*connata*	RI-SC
Northern Tickseed-sunflower	*Bidens*	*coronata*	RI-SC
Daisy-leaved Moonwort	*Botrychium*	*matricariifolium*	RI-SC
Grass-pink, Swamp-pink	*Calopogon*	*tuberosus var. tuberosus*	RI-SC
Pale or Tall Corydalis, Rock-harlequin	*Capnoides*	*sempervirens*	RI-SC
Collin's Sedge	*Carex*	*collinsii*	RI-SE
Bog-sedge	*Carex*	*exilis*	RI-SC
(Variable) Sedge	*Carex*	*polymorpha*	RI-SE
Bent Sedge	*Carex*	*styloflexa*	RI-SC
(Walter's) Sedge	*Carex*	*striata*	RI-SE
Tuckerman's sedge	*Carex*	*tuckermanii*	CT-SC
Yellow Blue-bead Lily	*Clintonia*	*borealis*	RI-SC
Squaw-root, Cancer-root	*Conopholis*	*americana*	RI-SC
Spotted Coral-root	*Corallorhiza*	*maculata var. maculata*	RI-SC
Late or Autumn Coral-root	*Corallorhiza*	*odontorhiza var. odontorhiza*	RI-SE
Early, Pale, or Northern Coral-root	*Corallorhiza*	*trifida*	RI-SC
Rose Coreopsis, Pink Tickseed	*Coreopsis*	*rosea*	RI-SC
Low Rockrose	*Crocanthemum*	*propinquum*	RI-SC
Little-leaf or Hairy Small-leaved Tick-trefoil, Beggar's-ticks, or Tick-clover	*Desmodium*	*ciliare*	RI-ST
Sessile-leaved Tick-trefoil, Beggar's-ticks, or Tick-clover	*Desmodium*	*sessilifolium*	RI-ST
Tall swamp rosette panicgrass	*Dichanthelium*	*scabriusculum*	CT-E
Wild Yam	*Dioscorea*	*villosa*	RI-SC

Common Name	Genus	Species	RI/CT State Status
(Horsetail) Spike-rush	*Eleocharis*	*equisetoides*	RI-SC
(Black-fruited) Spike-rush	*Eleocharis*	*melanocarpa*	RI-SE
Long-tubercled Spikesedge	*Eleocharis*	*tuberculosa*	RI-SC
Blunt Spike-rush	*Eleocharis*	*ovata*	RI-SC
Marsh Willow-herb	*Epilobium*	*palustre*	RI-ST
River Horsetail	*Equisetum*	*fluviatile*	RI-SC
Bog Cotton-grass, Dark-scale Cotton-grass	*Eriophorum*	*viridicarinatum*	RI-SC
Large-leaved or Big-leaved Aster	*Eurybia*	*macrophylla*	RI-SC
Showy Aster	*Eurybia*	*spectabilis*	CT-T
Black Ash	*Fraxinus*	*nigra*	RI-SC
Creeping Snowberry, Moxie, Moxieplum, Maidenhair-berry	*Gaultheria*	*hispidula*	RI-ST
Dwarf Huckleberry	*Gaylussacia*	*bigeloviana*	RI-SC
Fringed-gentian	*Gentianopsis*	*crinita*	RI-ST
Herb-robert	*Geranium*	*robertianum*	RI-SC
Woodland-sunflower	*Helianthus*	*divaricatus*	RI-SC
Featherfoil, Water-violet	*Hottonia*	*inflata*	CT/RI-SC
Water Pennywort	*Hydrocotyle*	*umbellate*	CT-E
Golden Heather	*Hudsonia*	*ericoides*	RI-ST
Creeping St. John's-wort	*Hypericum*	*adpressum*	RI-ST
Hairy Pine-sap	*Hypopitys*	*lanuginosa*	RI-SC
Small Whorled Pogonia, Little Five-leaves	*Isotria*	*medeoloides*	RI-SE
Inkberry	*Ilex*	*glabra*	CT-T
Carolina Redroot	*Lachnanthes*	*caroliniana*	RI-ST
Eastern Grasswort	*Lilaeopsis*	*chinensis*	RI-SE
Canada Lily, Wild Yellow Lily	*Lilium*	*canadense*	RI-ST
Sandplain or Bicknell's Yellow Flax	*Linum*	*intercursum*	RI-SE
Common Yellow Flax	*Linum*	*medium ssp. texanum*	RI-SC
Lily-leaved or Large Twayblade	*Liparis*	*liliifolia*	RI-SE
Yellow, Bog-, or Loesel's Twayblade, Fen-orchid	*Liparis*	*loeselii*	RI-SE
Water-lobelia, Water-gladiole	*Lobelia*	*dortmanna*	RI-SC

Common Name	Genus	Species	RI/CT State Status
Wild, Mountain-, Glaucous, or Limber Honeysuckle	*Lonicera*	*dioica*	RI-SC
Mountain Fly-honeysuckle, Waterberry	*Lonicera*	*villosa*	RI-SC
Round-fruited or Round-pod Water-primrose or False Loosestrife	*Ludwigia*	*sphaerocarpa*	RI-SE
Wild Lupine, Sundial-lupine	*Lupinus*	*perennis ssp. perennis*	RI-SC
Foxtail-clubmoss	*Lycopodiella*	*alopecuroides*	RI-ST
Climbing or Hartford Fern	*Lygodium*	*palmatum*	RI-SC
Green Adder's Mouth	*Malaxis*	*unifolia*	RI-SE
Ostrich Fern	*Matteuccia*	*struthiopteris ssp. pensylvanica*	RI-SC
Early Saxifrage	*Micranthes*	*virginiensis*	RI-SC
Mountain- or Smooth Sandwort, "mountain-daisy"	*Minuartia*	*glabra*	RI-ST
Wild Bergamot	*Monarda*	*fistulosa var. mollis*	RI-SE
One-flowered Pyrola or Shinleaf	*Moneses*	*uniflora*	RI-ST
Lion's-foot Rattlesnake-root	*Nabalus*	*serpentarius*	RI-SE
Bog Aster	*Oclemena*	*nemoralis*	CT-E
Northern Adder's-tongue	*Ophioglossum*	*pusillum*	RI-SE
Golden-club	*Orontium*	*aquaticum*	RI-SE
One-sided Pyrola or Shinleaf	*Orthilia*	*secunda*	RI-ST
Anise-root, Long-styled Sweet Cicely	*Osmorhiza*	*longistylis*	RI-ST
Violet Wood-sorrel	*Oxalis*	*violacea*	RI-SE
Ditch-stonecrop	*Penthorum*	*sedoides*	RI-SC
Long or Northern Beech-fern	*Phegopteris*	*connectilis*	RI-ST
Black Spruce, Bog-spruce	*Picea*	*mariana*	RI-SC
Slender Mountain-rice, Ricegrass	*Piptatherum*	*pungens*	RI-SC
Sickle-leaved or Falcate Golden Aster	*Pityopsis*	*falcata*	RI-ST
Hoary Plantain	*Plantago*	*virginica*	CT-SC
White-fringed Bog-orchid	*Platanthera*	*blephariglottis*	RI-ST
Orange Fringed Bog-orchid	*Platanthera*	*ciliaris*	RI-SE
Northern Tubercled Bog-orchid	*Platanthera*	*flava var. herbiola*	RI-SE
Small Purple Fringed Orchid	*Platanthera*	*psycodes*	RI-SC
Drum-heads, Cross-leaved Milkwort, Marsh-milkwort	*Polygala*	*cruciata ssp. aquilonia*	RI-SC

Common Name	Genus	Species	RI/CT State Status
Nuttall's Milkwort	*Polygala*	*nuttallii*	CT-T
Whorled Milkwort	*Polygala*	*verticillata*	RI-SC
Swamp-cottonwood, Black Cottonwood	*Populus*	*heterophylla*	RI-ST
Tuckerman's pondweed	*Potamogeton*	*confervoides*	CT-E
Comb-leaved Mermaid-weed	*Proserpinaca*	*pectinata*	RI-SC
Sand-cherry	*Prunus*	*susquehanae*	RI-SC
Dwarf Chestnut- or Chinquapin-oak	*Quercus*	*prinoides*	RI-SC
Small-flowered Crowfoot	*Ranunculus*	*micranthus*	RI-ST
White Water-crowfoot or Buttercup	*Ranunculus*	*trichophyllus*	RI-ST
Pinxter (or Pinkster)-flower, Election-pink, Purple Honeysuckle	*Rhododendron*	*periclymenoides*	RI-SC
(Innundated) Beak-rush, Horned-rush	*Rhynchospora*	*inundata*	RI-SE
(Large-spiked) Beak-rush, Horned-rush	*Rhynchospora*	*macrostachya*	RI-ST
Torrey's Beak-rush	*Rhynchospora*	*torreyana*	RI-SE
Plymouth Gentian, Marsh-pink	*Sabatia*	*kennedyana*	RI-SE
Grass-leaved or Grassy Arrowhead	*Sagittaria*	*graminea var. graminea*	RI-SC
Slender or Quill-leaved Arrowhead	*Sagittaria*	*teres*	RI-SE
Bloodroot, Red Puccoon	*Sanguinaria*	*canadensis*	RI-SC
Podgrass	*Scheuchzeria*	*palustris*	RI-SE
Swamp-bulrush	*Schoenoplectus*	*etuberculatus*	RI-SE
Bluntscale-bulrush, Smith's Clubrush	*Schoenoplectus*	*smithii var. smithii*	RI-ST
Swaying Rush, Water-bulrush, Water-clubrush	*Schoenoplectus*	*subterminalis*	RI-SC
Torrey-threesquare, Torrey's Bulrush	*Schoenoplectus*	*torreyi*	RI-SC
Long's Bulrush	*Scirpus*	*longii*	RI-SE
(Few-flowered) Nut Rush, Carolina-whipgrass	*Scleria*	*pauciflora var. caroliniana*	RI-ST
(Three-clustered) Tall Nut-rush, Whipgrass	*Scleria*	*triglomerata*	*RI-ST*
Indian Grass, Wood-grass	Sorghastrum	nutans	RI-SC

Common Name	Genus	Species	RI/CT State Status
Little Ladies'-tresses	*Spiranthes*	*tuberosa*	RI-SE
Spring Ladies'-tresses	*Spiranthes*	*vernalis*	RI-SC
Hyssop or Hyssop-leaved Hedge-nettle	*Stachys*	*hyssopifolia*	RI-ST
Smooth Blue or Smooth Aster	*Symphyotrichum*	*laeve*	RI-SC
Goat's-rue, Catgut, Rabbit's-pea	*Tephrosia*	*virginiana*	RI-SC
Purple, Waxy, or Skunk Meadow-rue	*Thalictrum*	*revolutum*	RI-SE
Rue-anemone	*Thalictrum*	*thalictroides*	RI-SC
Gama-grass, Sesame-grass	*Tripsacum*	*dactyloides*	RI-SC
(Two-flowered) Bladderwort	*Utricularia*	*biflora*	RI-ST
Paired or Mixed Bladderwort	*Utricularia*	*geminiscapa*	RI-SC
Flat-leaved Bladderwort	*Utricularia*	*intermedia*	RI-SC
Reversed or Resupinate Bladderwort	*Utricularia*	*resupinata*	RI-SC
Zigzag Bladderwort	*Utricularia*	*subulata*	RI-SC
Swamp-haw, Possum-haw, Southern Wild Raisin	*Viburnum*	*nudum var. nudum*	RI-ST
Downy Yellow Violet, Smooth Yellow Violet, Yellow Forest-violet	*Viola*	*pubescens var. pubescens*	RI-SC
Round-leaved or Early Yellow Violet	*Viola*	*rotundifolia*	RI-SC
Wood Violet	*Viola*	*subsinuata*	RI-SC
Small's yellow-eyed	*Zyris*	*smalliana*	CT-E
Wild Rice	*Zizania*	*aquatica var. aquatica*	RI-SC

CT Critical Habitats:
Acidic Atlantic White Cedar Swamp
Medium fen
Poor fen
Salt Marsh

CT Critical Habitats depicts the classification and distribution of twenty-five rare and specialized wildlife habitats in the state. It represents a compilation of ecological information collected over many years by state agencies, conservation organizations and many individuals. This information can serve to highlight ecologically significant areas and to target areas of species diversity for land conservation and protection. Biologists may use this data to target further research on associated plant and animal species.

RI Heritage Communities:
Deep Emergent Marsh
Dwarf Shrub Fen/Bog
Atlantic White Cedar Swamp
Coastal Plain Pondshore
Coastal Plain Quagmire
Acidic Graminoid Fen
Inland Dune/ Sand Barren
Pitch Pine - Scrub Oak Barrens
Floodplain Forest

RI Heritage Communities are natural communities that were identified in Enser and Lundgren (2006) as "rare" in Rhode Island.

Notes:
- For simplicity and for data security, no sites were given
- CT species list was provided by CT DEEP Natural Diversity Data Base.
- RI lists and statuses are the more recent official state lists: Enser 2006 for animals and RINHP 2016 for plants. The heritage communities are drawn from Enser and Lundgren 2006. All these citations are available on the Survey website here: http://rinhs.org/partners-resources/download-pubs/
- Absence of evidence does not equal evidence of absence.
- These all have sightings in the last 40 years (back thru 1979). RI has no program for systematic re-survey so in many cases the lack of a more recent date just means no one's been to look.

Federally Listed Species:

Common Name	Genus	Species	Federal Status
Animals			
Piping Plover	*Chadarius*	*melodus*	Threatened
Roseate tern	*Sterna*	*dougallii dougallii*	Endangered
Red Knot	*Calidris*	*canutus rufa*	Threatened
Northern Long-eared Bat	*Myotis*	*septentrionalis*	Threatened
Plants			
Sandplain gerardia	*Agalinis*	*acuta*	Threatened
Small whorled pogonia	*Isotria*	*medeoloides*	Endangered

Not listed but high priority species for conservation:

New England Cottontail	*Sylvilagus*	*transitionalis*

Appendix 4: Major Outreach Efforts Of the Wood-Pawcatuck Wild and Scenic Study Committee 2015-2018

Website:
A website, www.wpwildrivers.org, was developed early in the process to be an integral aspect of the Study. A great deal of background information, research and study-related materials have been made available through the site, and it has functioned throughout the Study as an important component of public outreach and communication.

Written Materials:
Brochures, Frequently Asked Questions, and a Factsheet were developed to explain the Wild and Scenic Rivers Study Process and answer questions the public may have. These were distributed at town meetings and committee presentations. They were made available through several outlets, including the website.

Town Communications:
Several times during the Study each Town Representative reported back to their Town Councils or Board of Selectmen to keep them informed of the process and solicit any feedback. These updates became part of the public records.

Presentations to Boards and Commissions:
A slide show was developed to provide information on the benefits of Wild and Scenic Rivers to the local communities. From September 2017 to June 2018 Town Representatives and the Study Coordinator gave presentations to boards and commissions in each town, including Conservation Commissions, Land Trusts, Planning Boards, and Inland Wetland Commissions. They also asked the various groups to provide a letter of support for Wild and Scenic designation.

Stewardship Summits:
Stewardship Summits were held in RI on July 26, 2017 and in CT on October 12, 2017. These summits were attended by state agency personnel and local leaders to discuss concerns about the rivers under study and suggest ways to protect them. The Wood-Pawcatuck Wild and Scenic Stewardship Plan was developed from these summits.

Videos:
A series of five 2-minute videos were commissioned and shown at town meetings and other events. These demonstrated the importance of the rivers from different perspectives of the residents of the river communities. They are available on the website.

Media Events and Media Coverage:
During the course of the study several articles were written in the Wood-Pawcatuck Watershed Newsletter, the Watershed. Other local publications, such as The Westerly Sun and The New London Day printed articles about the rivers and the Wild and Scenic Study Process. Once the Stewardship Plan was completed, a media event was held on May 5, 2018 with five congressional delegates and representatives from CT and RI. This also generated several articles published in the Providence Journal, The Westerly Sun, and Eco RI. That same week an Op Ed piece written by and signed by the executive directors from four non-profit organizations was published in the Providence Journal. The Providence Journal also published their own editorial supporting Wild and Scenic designation for the rivers.

Other events:
Presentations about the Wild and Scenic Study were made at the RI Land and Water Summit. Presentations were also made to several interest groups including the Appalachian Mountain Club Narragansett Chapter, Narragansett Chapter of Trout Unlimited, Rhode Island Rivers Council, and several non-profit land trusts.
Several examples of these outreach efforts are included in the appendices of the accompanying report