

# **THE LAMPREY, NORTH BRANCH, NORTH, LITTLE, PAWTUCKAWAY AND PISCASSIC RIVERS**

**A Report to the General Court**

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**New Hampshire Rivers Management and Protection Program  
Department of Environmental Services  
Office of the Commissioner**

**January 2011**





# **The Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers**

## **A Report to the General Court**

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## I. INTRODUCTION

The Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers are all part of the Lamprey River watershed, the largest tributary to Great Bay Estuary in coastal New Hampshire. The headwaters of the Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers begin in northwestern Rockingham County and in southern Strafford County with the Lamprey River mainstem beginning in the town of Northwood at the outlet of Meadow Lake. The Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers flow eastward towards Great Bay and the Piscataqua River through fourteen New Hampshire municipalities. In 1990, a 12 mile section of the Lamprey River in the towns of Lee and Durham was designated into the Rivers Management and Protection Program (RMPP). The nomination of these six rivers for designation totals 87.7 miles, including the sections of the Lamprey River from its headwaters in Northwood to the Epping/Lee town line and from the Durham/Newmarket town line to where the rivers meets Great Bay (37.6 miles). Additionally, this nomination seeks to designate the North Branch River (8.2 miles), the North River (15.1 miles), the Little River (7.6 miles), the Pawtuckaway River (3.6 miles) and the Piscassic River (15.6 miles) from their sources to their confluences with the Lamprey River.

As proposed by the nominating organization, the Lamprey River Nominating Committee, the sections of the Lamprey River being nominated are from Meadow Lake in Northwood to the beginning of the currently designated section at the Epping/Lee townline, and from the Durham/Newmarket townline to where the river meets Great Bay in Newmarket. The North Branch River is being nominated from Beaver Pond Dam in Deerfield to its confluence with the Lamprey River in Raymond. The North River is being nominated from North River Pond Dam in Nottingham to its confluence with the Lamprey River in Epping. The Little River is being nominated from Mendum's Pond Dam in Nottingham to its confluence with the Lamprey River in Lee. The Pawtuckaway River is being nominated from Pawtuckaway Lake Dam in Nottingham to its confluence with the Lamprey River in Epping. The Piscassic River is being nominated from 0.5 miles upstream of the Fremont/Brentwood town line to its confluence with the Lamprey River in Newmarket. The Department of Environmental Services (DES) has reviewed the nomination and is recommending the Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers for designation into the RMPP.

The Rivers Management and Protection Act (RSA 483) was enacted in 1988. The act states in part that:

*It is the policy of the state to ensure the continued viability of New Hampshire rivers as valued economic and social assets for the benefit of present and future generations. The state shall encourage and assist in the development of river corridor management plans and regulate the quantity and quality of instream flow along certain protected rivers or segments of rivers to conserve and protect outstanding characteristics including recreational, fisheries, wildlife,*

*environmental, cultural, historical, archeological, scientific, ecological, aesthetic, community significance, agricultural and public water supply so that these valued characteristics shall endure as part of the river uses to be enjoyed by New Hampshire people.*

The act directs DES to receive and evaluate nominations for the designation of rivers or river segments into the RMPP to protect outstanding values and characteristics. Nominations approved by the DES commissioner must be forwarded to the next session of the General Court for review and approval. In fulfillment of this statutory directive, the nomination of the Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers is hereby forwarded to the General Court.

DES recommends that the Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers be designated as a protected river under the RMPP. DES also recommends that the river segments be variously classified as a “natural,” “rural,” “rural-community” or “community” rivers as described in the recommendations contained in this report, thereby affording it the full benefit of the applicable protection measures outlined in RSA 483. The outstanding statewide and local resource values and characteristics that qualify the Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers for designation are described herein.

## **II. THE LAMPREY, NORTH BRANCH, NORTH, LITTLE, PAWTUCKAWAY, AND PISCASSIC RIVERS NOMINATION**

### **A. DESCRIPTION**

The Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers are all part the Lamprey River watershed that is part of the Great Bay Estuary watershed in coastal New Hampshire. The entire Lamprey River watershed is located within New Hampshire and encompasses approximately 137,000 acres or 214 square miles. The Lamprey River originates in the town of Northwood and flows through the towns of Deerfield, Raymond, Epping, Lee, Durham and Newmarket where it becomes tidal as it meets Great Bay. The North Branch River originates in Deerfield and flows through Candia before meeting the Lamprey River in Raymond. The North River flows from its source in Nottingham, through Lee and meets up with the Lamprey River near the Epping/Lee town line. The Little River flows from its source in Barrington, through Nottingham and Lee to its confluence with the Lamprey River. The Pawtuckaway River flows from Pawtuckaway Lake in Nottingham south through Raymond and Epping where it meets the Lamprey River. The Piscassic River flows from its origins near the Fremont/Brentwood town line, through Epping, Exeter, Newfields and Newmarket where it meets the Lamprey River. This nomination includes the sections of the Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers as described in the recommendations found in this report.

### **B. RIVER VALUES AND CHARACTERISTICS**

The Rivers Management and Protection Program identifies a number of river-related values and characteristics that may qualify a river for designation. The Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers support many of these, including a variety of natural, managed, cultural, recreational and other resource values. Some are significant at the local level; others are significant at either the state or national level. The resource values that qualify the Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers for designation include geology, wildlife, vegetation and natural communities, fish, water quality, natural flow, open space, impoundments, water withdrawals, wastewater discharges, hydroelectric, historic and archeological, community river resources, boating, other recreation, public access, scenery, land use and land use controls.

#### **1. Natural Resources**

**a. Geologic Resources:** The rivers of the Lamprey River watershed are low-gradient, coastal streams punctuated with step-like gradient changes caused by the underlying bedrock geology. These geologic underpinnings result in changes in valley width and river gradient. The geology is expressed in the substrate of the relatively dynamic, short sections of river where coarse grained sediment is dominant and bedrock outcrops are abundant. In the sections impounded by bedrock outcrops or dams, the substrate of the channel bed is more fine grained reflecting these low velocity environments. The underlying bedrock consists of a Massabesic Gneiss Complex from the late Proterozoic period, Concord Granite from the late Devonian, and meta-sedimentary and metavolcanic rocks of the Merrimack Trough formed during the Silurian to Ordovician periods. The

Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers have low elevations that flow over acidic bedrock and have extensive areas of deep and coarse sediment.

**b. Wildlife Resources:** The Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers river corridors provide critical wildlife habitat to a wide variety of species that depend on the habitat connectivity provided by the river and large, unfragmented forest areas. The New Hampshire Fish and Game Department's *Wildlife Action Plan* indicates that a significant portion of the Lamprey River watershed is considered to be the highest ranked habitat in New Hampshire and also the highest ranked habitat in the biological region with additional lands as supporting landscapes. The Nature Conservancy's *Land Conservation Plan for New Hampshire's Coastal Watersheds* indicates that the Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers are of exceptional significance for living resources and water quality with several Conservation Focus Areas found within the watershed.

The New Hampshire Natural Heritage Bureau has documented several occurrences of rare, threatened, and endangered wildlife within the Lamprey River watershed. The Lamprey River supports endangered or threatened animal and plant species of statewide significance, including ten animal species and 15 plant species. The North Branch River supports endangered and threatened animal and plant species of statewide significance, including four animal species and one plant species. The Pawtuckaway River supports one endangered animal and one endangered plant species of statewide significance. The North River supports two threatened animal species and one endangered plant species of statewide significance. The Little River supports endangered and threatened animal and plant species of statewide significance, including two animal species and four plant species. The Piscassic River supports endangered and threatened animal and plant species of statewide significance, including four animal species and five plant species.

**c. Vegetation and Natural Communities:** Within the Lamprey River watershed 68 percent of the watershed is covered by forest with nearly 40 percent being mixed coniferous and deciduous forest. The Lamprey, North Branch, North, Pawtuckaway and Piscassic Rivers corridors contain two exemplary ecological systems and six types of exemplary natural ecological communities that have been identified by the New Hampshire Natural Heritage Bureau. Over 250 plant species have been identified in the river corridors, including 20 rare or threatened plants known to occur in the river corridors.

**d. Fish Resources:** The Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers provide critical and diverse habitat for many freshwater and anadromous fish species. Over thirty species of fish are known to use the rivers (with three being listed as threatened or as a species of concern by the state), including a mixture of warmwater, coldwater, and anadromous fish species. The Lamprey, North Branch, Pawtuckaway, North, Little, and Piscassic Rivers have a diverse assemblage of native fish species due to their clean, mostly free flowing waters and a variety of important habitat features. According to the New Hampshire's *Wildlife Action Plan*, the Lamprey, North Branch, North, Little, and Pawtuckaway Rivers contain some of the highest ranked fish habitat in the state. The Lamprey, North, Little and Piscassic Rivers are all stocked with eastern brook, and/or brown and rainbow trout.

**e. Water Quality:** The Lamprey, North Branch, North, Little and Pawtuckaway Rivers are all are classified as Class B waters, and the Piscassic River is classified as a Class A water by the New Hampshire General Court. The 2010 *NH Section 305(b)/303(d) Surface Water Quality Report* indicates that the freshwater portion of the Lamprey River and the North Branch, North, Little, Pawtuckaway and Piscassic Rivers are all impaired from one or more of the following: pH, dissolved oxygen, dissolved oxygen saturation, e.coli, aluminum, and/or lead. The tidal portion of the Lamprey River suffers from 38 different impairments. The Lamprey, North, Little and Piscassic Rivers have been monitored by volunteers through the DES Volunteer River Assessment Program since 1998 and multiple sites in the watershed have been monitored monthly since 1999 by the New Hampshire Water Resources Research Center at the University of New Hampshire as part of ongoing research efforts.

**f. Natural Flow Characteristics:** The Lamprey River is free-flowing for much of its 47 miles from its source in Northwood to where it meets Great Bay in Newmarket, with three impoundments found along the nominated section, including Freeses Pond Dam, Bunker Pond Dam and Macallen Dam. The North Branch, North and Pawtuckaway Rivers are each free-flowing below the dams at their headwaters until they meet the mainstem of the Lamprey River. The Little River contains one impoundment prior to its confluence with the Lamprey River. The Piscassic River is largely free-flowing due to the large wetland complexes it flows through with multiple channels. The two active dams on the Piscassic River include the Piscassic Ice Pond Dam in Newfields and the Piscassic River Dam in Newmarket.

Gaging stations operated by the U.S. Geological Survey (USGS) are located at Packers Falls in Durham and at Langford Road in Raymond. The Packers Falls gaging station has been in operation since 1934. The average annual mean discharge at this station is 288 cubic feet per second (cfs). The Lamprey River has experienced some large flooding events in the past; including the flooding in 2006, 2007 and 2010, with the river cresting at a record 18.3 feet at the Packers Fall gaging station on May 16, 2006. The Raymond gaging station has been in operation since 2008. Mean daily discharges range from a low of 5.3 cfs in September of 2009 to a high flow of 2,420 cfs in February 2010.

**g. Open Space:** There are 2,170 acres of conservation land in the Lamprey River watershed through a combination of state, municipal, and private-owned properties with some easements held by non-profit organizations. There are 947 acres of conservation land in the North Branch River watershed owned by the Department of Resources and Economic Development and the town of Candia. There are 296 acres of conservation land in the Pawtuckaway River watershed held in easements by non-profit organizations. There are 487 acres of conservation land in the North River watershed through a combination of state, municipal, and private-owned properties with some easements held by non-profit organizations. There are 275 acres of conservation land in the Little River watershed through a combination of state and municipal fee ownership or conservation easement. There are 1,687 acres of conservation land in the Piscassic River watershed through a combination of state, municipal, and private-owned properties with some easements held by non-profit organizations.

## 2. Managed Resources

**a. Impoundments:** There are three active dams with impoundments and nine dams in ruins or breached located in the nominated section of the Lamprey River corridor. The North Branch, North and Pawtuckaway Rivers contain no active impoundments. The Little River contains one impoundment and the Piscassic River contains two impoundments. All of the active impoundments in the nominated sections of the Lamprey, Little and Piscassic Rivers are managed for recreational purposes.

**b. Water Withdrawals and Wastewater Discharges:** There are 16 registered water withdrawals from the nominated sections of the Lamprey, North Branch, North and Piscassic Rivers and of these withdrawals two are currently inactive. Along the Lamprey River there are eight water withdrawals with seven being for water supplies and one for sewage treatment. The North Branch River has two withdrawals – one for agriculture and one for commercial purposes. The North River contains two inactive withdrawals for industrial and hydropower purposes. The Piscassic River contains four withdrawals – two for water supply, one for bottled water, and one for sewage treatment. The Pawtuckaway and Little Rivers have no registered withdrawals.

There are five registered discharges into the nominated sections of the Lamprey, North and Little Rivers; of these discharges one is currently inactive. Along the Lamprey River there are three discharges, two are for sewage treatment and one is for recreation. The North River has one inactive discharge for industrial. The Little River has one discharge for hydropower. There are no known point source wastewater discharges along the North Branch, Piscassic or Pawtuckaway Rivers.

**c. Hydroelectric Resources:** There are no issued licenses from the Federal Energy Regulatory Commission for any dams in the Lamprey, North Branch, North, Little, Pawtuckaway or Piscassic Rivers. According to the New Hampshire River Protection and Energy Development Project (1983) the MacCallen Dam in Newmarket along the Lamprey River has potential for hydropower generation with a capacity for 750 kilowatts.

## 3. Cultural Resources

**a. Historic and Archaeological Resources:** The Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers have an extensive history starting with use of the rivers by the Abenaki, the Native Americans occupying southeast New Hampshire, for the rivers' extensive resources. One particularly significant item is an archaeological site on the Lamprey River where prehistoric remnants were discovered in an undisturbed condition, dating back some 8,640 years and placing it among the earliest dated sites in New Hampshire. The NH Division of Historical Resources considers the banks of the Lamprey River to be archeologically sensitive, having a strong potential to possess previously unidentified Native American sites.

From colonial times forward, the Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers contributed to the development patterns in the watershed with communities relying on the rivers for transportation and power during early settlement. Use of the rivers as a source of power for

mills increased towards the end of the 1800s, with many dams being erected to supply the downstream mills with water. With the decline of manufacturing in the region in the last 80 years, the rivers through each of the towns in the Lamprey River watershed have become significant community resources today, appreciated largely as recreational assets. Within the nominated Lamprey, North Branch, Little, and Piscassic Rivers corridors there are 24 structures listed by the National Register of Historic Places, New Hampshire Register of Historic Places, or on the Historic Bridge Inventory.

**b. Community River Resources:** The importance of the Lamprey, North Branch, Little, Pawtuckaway and Piscassic Rivers as community resources is reflected in the local planning and protection efforts of the communities along the river. The Lamprey River is discussed and recognized as a significant community resource in the master plans of the towns of Northwood, Deerfield, Raymond, Epping, Candia, Lee, and Newmarket. The North Branch River is discussed and recognized as a significant community resource in the master plans of the towns of Deerfield and Candia. The Little River is discussed and recognized as a significant community resource in the master plan of the town of Lee. The Pawtuckaway River is discussed and recognized as a significant community resource in the master plan of the town of Raymond. The Piscassic River is discussed and recognized as a significant community resource in the master plan of the town of Newmarket.

#### **4. Recreational Resources**

**a. Fishery:** The fisheries resource of the Lamprey River includes both coldwater and warmwater species and a variety of both native and introduced species that are popular among recreational anglers. The Lamprey River is a popular resource for recreational fishing. Fishing from the shoreline or by wading is popular at a number of reaches that are accessible by the public from roads or park areas. The New Hampshire Fish and Game Department and the Great Bay Chapter of Trout Unlimited both routinely stock trout into the Lamprey River.

**b. Boating:** Several stretches of the Lamprey, North, and Piscassic Rivers are known for good kayaking and canoeing. The Lamprey River above Raymond offers Class I rapids for paddlers in early spring, with the area below Packers Falls offering Class II or III rapids depending on water levels, and access to the tidal section from the boat launch in Newmarket. The Piscassic River offers some boating opportunities below NH Route 87. The North River offers the best whitewater rapids in the spring in the Piscataqua River watershed, a two and a half mile continuous Class II run above NH Route 152, according to the Appalachian Mountain Club's *River Guide to New Hampshire and Vermont*.

**c. Other Recreation:** The Lamprey, North Branch, North, Little, and Pawtuckaway Rivers offers an abundance of recreational opportunities within the river corridors and the watershed. Multiple areas exist, 19 in total, that have areas for hiking, fishing, wildlife viewing, winter activities, field sports and passive recreational activities.

**d. Public Access:** There are 14 public access sites that can be found along the Lamprey, North, and Piscassic Rivers. There are state and/or town-owned public access sites, including eight boat

launches, in five of the riverfront towns and some informal access to the rivers.

## 5. Other Resources

**a. Scenery:** Several viewing points are available along the entire length of the Lamprey River with multiple wildlife viewing opportunities from road crossings or by boat. The MacCallen Dam in Newmarket provides views of some of the mill properties making it one of the most scenic and historical places along the Lamprey River. River herring can also be seen making their runs in late April or early May at the fish ladder. There are two viewing points available along the North Branch River, both at road crossings. Dudley Road, a spur off of NH Route 27, is the location of Scenic Nursery, which provides a view of seasonal plants and open sky next to the river. There is one viewing point available at the bridge on Stingy River Road along the Pawtuckaway River. This site provides a view of an exemplary alder-dogwood-arrowwood alluvial thicket plant community just north of the bridge. Several viewing points are available along the North River with multiple viewing opportunities from road crossings. The North River is visible at NH Route 152, a little north of Gebig Road where Mountain Brook flows into it. Several viewing points are available along the Little River with multiple viewing opportunities from road crossings. At the Old Mill Road crossing, travelers can pause on the bridge to look upstream at the newly constructed Nottingham Lake Dam and watch the volume of flow over the dam. There is one viewing point available at the Packers Falls Road in Newmarket along the Piscassic River. At the dam, the Piscassic River joins the Lamprey River near a large cemetery. This is also the location of an inactive water treatment plant for the town of Newmarket.

**b. Land Use:** The Lamprey River moves from largely rural in the headwaters to more residential and developed downstream. There is increasing development throughout the watershed, particularly near existing population centers. The North Branch River is mostly forest and not very accessible due to shrubs and dense vegetation. The North River is almost exclusively forestland in its headwaters, with more residential and municipal development near the intersection of NH Route 152 and 156. The Little River is primarily rural with a scattering of residential and recreational development. The Pawtuckaway River is primarily rural, passing through mostly forested land and a few farms and orchards. The majority of the Piscassic River is forested with limited commercial development near NH Route 125 and Route 27.

**c. Land Use Controls:** All Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers corridor communities have master plans, subdivision regulations and zoning ordinances.

**d. Water Quantity:** There is a stream gage on the Lamprey River in Raymond at the Langford Road Bridge that has operated since 2008 by the U.S. Geological Survey, and also a stream gage at Packers Falls in Durham that has operated by the U.S. Geological Survey from 1934 to the present.

**e. Riparian Interests/Flowage Rights:** Under New Hampshire common law, owners of frontage on surface waters have riparian rights to use surface waters as long as the use is reasonable with respect to uses of other riparian landowners and has no undue effect on public trust uses of surface waters. Historical legislatively granted water use rights for public water supplies have been issued for

several towns in the watershed; Newmarket, Epping, Lee and Raymond were all given the right to use the Lamprey River and its tributaries for public water supplies (NH Chapter 335, Laws of 1965). Additional legislatively granted riparian interest within the proposed river corridors include the establishment of several municipal water works for the towns of Exeter, Newfields, Newmarket, Northwood and Nottingham.

### **III. CONSIDERATION FOR PROTECTION OF INSTREAM FLOW**

#### **A. INSTREAM FLOW RULE STATUS**

RSA 483 directs DES to implement instream flow protection on all designated rivers, and to adopt administrative rules for this purpose. In 2002, additional legislation authorized a pilot project to be developed on the currently designated sections of the Lamprey River (in Lee and Durham only) and Souhegan River. Rules were promulgated for these two rivers in 2003. No protected instream flows can be developed on other designated rivers until these pilot assessments are completed and the results assessed by the legislature, currently scheduled to be completed by 2012. Although excluded from instream flow protection by existing rules, future rules will include other designated rivers and additional river segments in the development and implementation of protected instream flows. The result will be water management plans for each affected water user and dam owner in a designated river watershed. These water management plans describe specific actions to be taken under certain river flow conditions so that the protected instream flows are maintained. Water management plans have three main components to protect flow: 1) conservation, 2) water use changes, and 3) operation of impoundments.

As of January 2011, the currently designated sections of the Lamprey River in the towns of Lee and Durham do not have established protected instream flows. The final report regarding the protected flows was published in 2009; however, they have not yet been established by the DES Commissioner. The establishment of the protected instream flows and water management plans for affected water users and dam owners are expected to be completed in 2011.

#### **B. INSTREAM FLOW ASSESSMENT**

As an indicator of instream flow conditions for this nomination, an existing tracking tool was used to assess water use versus stream flow. The existing instream flow rules include a requirement for assessing monthly water use in relation to mean monthly stream flow for all designated rivers. The method uses a general standard to compare the water use uniformly between all the designated rivers. The general standard is determined from the monthly stream flow and sets a standard for aggregate water use depending on that flow. The general standard is not a protected flow, but instead is a means for comparing the level of water use and identifying the locations of intense water use within a watershed and between the designated river watersheds.

The nominated sections of the Lamprey River, from below Meadow Lake Dam to the Epping/Lee town line (nominated upper Lamprey River) and from the Durham/Newmarket town line to the tidal limit at the McCallen Dam in Newmarket (nominated freshwater lower Lamprey River) were evaluated and assessed as part of this report. (Please note that the nominated tidal section of the Lamprey River, from below the McCallen Dam 1.8 miles downstream to where the Lamprey River meets Great Bay, was not included in this assessment as no method for determining the general standard on tidal waters currently exists. The only currently registered water user in the tidal section is the Newmarket Waste Water Treatment facility. Though no method currently exists for assessing

flows for tidal waters, the impact of this one water user would likely result in similar or better instream flow conditions compared to the overall Lamprey River assessment.)

In addition to the Lamprey River, the North Branch, North, Little, Pawtuckaway and Piscassic Rivers also had an assessment for 2009. The North Branch and Pawtuckaway Rivers were found to have no registered water users in 2009 and therefore no assessment was conducted. The North River had one registered water user withdrawing water and one inactive discharge in 2009; the one registered water user did not report any withdrawals in 2009 so no further assessment was conducted. The Little River has one registered water user, the Nottingham Lake Dam, which operates as a run of the river hydropower dam with no impact on the instream flows so no further assessment was conducted. The freshwater portion of the nominated Lamprey River and the Piscassic River were found to have active, off-stream water use in 2009 therefore these were the only two rivers to have complete assessments conducted.

The water use assessment for 2009 of the nominated upper Lamprey River segment identified 21 active, registered water withdrawal sources and four active, registered discharges of water. There are no registered withdrawals or discharges on the nominated freshwater lower Lamprey River and there are no active hydropower uses on any of the nominated Lamprey River segments. During 2009, water use exceeded the general standard on the nominated Lamprey River segments in September.

The water use assessment of the Piscassic River identified six active, registered water sources reporting water withdrawals and no active, registered discharges reporting returns of water to the environment in 2009. There are no active hydropower uses on the Piscassic River. During 2009, water use exceeded the general standard on parts of the Piscassic River in September and October

The general standard is not a limitation. Although the exceedance of the general standard understandably raises concerns in the respective communities, an important point to understand is that under the proposed rules the general standard will be utilized as a framework for prioritizing watersheds through which designated rivers flow that are in need of additional study for establishing watershed-specific instream flow standards and development of a water use management plan.

Based on the analysis completed for the nomination, it is apparent that the nominated sections of the Lamprey River and Piscassic River would be two of many designated rivers that do not meet the general standard under existing rules. Any changes in water usage by the Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers corridor communities would not occur immediately upon designation, but in the future after full study and public input.

#### **IV. LOCAL SUPPORT**

The communities of the Lamprey, North Branch, North, Little, Pawtuckaway, and Piscassic Rivers watershed have expressed strong support for the rivers' ecological functions and services in their master plans as well as in ordinances and regulations that require river setbacks and buffers, limited uses and development disturbance near the river, and water quality standards. There is strong local support for the designation of the Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers into the Rivers Management and Protection Program (RMPP). The Lamprey River Nominating Committee initiated the effort to designate the Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers into the RMPP. The Nominating Committee notified the municipal officials of the river communities of the merits and intent to nominate the Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers as designated rivers in the RMPP. These efforts culminated in June 2010, when the Lamprey River Nominating Committee submitted its nomination to the Department of Environmental Services. Throughout the process, all of the public testimony and letters have supported the nomination with the exception of one letter of support with concerns from the New Hampshire Department of Transportation and one letter of opposition. At the public hearing on the nomination, which was held in Epping on August 31, 2010, the testimony was overwhelmingly supportive.

## V. SUMMARY AND RECOMMENDATIONS

The Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers support a variety of significant state and local resources. To better protect and manage these resources, the Department of Environmental Services recommends the following actions.

***Recommendation 1: The General Court should adopt legislation that designates the Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers for inclusion in the Rivers Management and Protection Program and designates the Lamprey, North Branch, North, Little, Pawtuckaway, and Piscassic Rivers as follows:***

Lamprey River:

1. As a rural river from immediately downstream of Meadow Lake Dam in Northwood to the confluence with the North Branch River in Raymond (13.5 miles);
2. As a rural-community river from the confluence with the North Branch River in Raymond to 0.9 miles downstream of the Langford Road crossing in Raymond (3.0 miles);
3. As a community river from 0.9 miles downstream of the Langford Road crossing in Raymond to 0.3 miles downstream of the Epping Street crossing in Raymond (2.0 miles);
4. As a rural-community river from 0.3 miles downstream of the Epping Street crossing in Raymond to the confluence with the Pawtuckaway River in Epping (5.1 miles);
5. As a community river from the confluence with the Pawtuckaway River in Epping to the downstream side of the Route 125 bridge in Epping (4.0 miles);
6. As a rural river from the downstream side of the NH Route 125 bridge in Epping to the Epping/Lee town line (7.3 miles);
7. As a community river from the Durham/Newmarket town line to 1.8 miles downstream of the Macallen dam in Newmarket (2.6 miles).

North Branch River:

1. As a natural river from immediately downstream of the Beaver Pond dam in Deerfield to the confluence with the Lamprey River in Raymond (8.2 miles).

North River:

1. As a rural river from immediately downstream of the North River Pond dam in Nottingham to the confluence with the Lamprey River in Epping (15.1 miles).

Little River:

1. As a rural river from immediately downstream of the Mendum's Pond dam in Nottingham to the confluence with the Lamprey River in Lee (7.8 miles).

Pawtuckaway River:

1. As a rural river from immediately downstream of the Pawtuckaway Lake dam in Nottingham to the confluence with the Lamprey River in Epping (3.6 miles).

Piscassic River:

1. As a natural river from the headwaters 0.5 miles upstream of the Fremont/Brentwood town line to the upstream side of the Piscassic Ice Pond dam in Newfields (9.4 miles);
2. As a rural-community river from the upstream side of the Piscassic Ice Pond dam in Newfields to the downstream side of the Grant Road crossing in Newmarket (3.3 miles);
3. As a community river from the downstream side of the Grant Road crossing in Newmarket to the confluence with the Lamprey River in Newmarket (2.9 miles).

Under the provisions of RSA 483, designation of the river will provide increased protection with respect to the construction of new dams, damaging channel alterations, water quality impairment, and the location of solid and hazardous waste facilities in the river corridor. Designation will also require the establishment of a protected instream flow to maintain water for instream public uses including water quality, fisheries, recreation and scenic values. The existing Lamprey River Advisory Committee will be expanded to include the additional riverfront towns of the Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers. The local river advisory committee will coordinate management and protection of the rivers at the local and regional levels, and will provide the residents in the riverfront communities with a direct avenue for formal input into state decisions affecting the rivers. The local river management advisory committee will provide the residents in the riverfront communities with a direct avenue for formal input into state decisions affecting the rivers. Finally, designation will result in the development of a long-range management plan for the rivers that coordinates state planning and management of fisheries, water quality and quantity, and recreation.

The Lamprey, North Branch, North, Little, Pawtuckaway, and Piscassic Rivers are being recommended for “natural river”, rural river”, “rural-community river”, and “community river” classifications. The entire North Branch River and the upper section of the Piscassic River are being recommended for "natural river" classification. Natural rivers are defined under RSA 483:7-a, I (a) as, “...free-flowing rivers or segments characterized by the high quality of natural and scenic resources. River shorelines are in primarily natural vegetation and river corridors are generally undeveloped. Development, if any, is limited to forest management and scattered housing.” The North Branch River and the upper section of the Piscassic River as they flow through undeveloped areas of forest, large wetland complexes, and large tracts of conservation lands typify the definition of a natural river.

The dominate river classification being sought in this nomination is the rural river classification. Rural rivers are defined under RSA 483:7-a, I(b) as “...those rivers or segments adjacent to lands which are partially or predominantly used for agriculture, forest management and dispersed or clustered residential development. Some instream structures may exist, including low dams,

diversion works and other minor modifications.” Sections of the Lamprey River, and the entire length of the North, Little and Pawtuckaway Rivers typify the definition of a rural river as they travel through forests, scattered housing, agricultural fields and open spaces of the river corridors.

Rural-community rivers are defined under RSA 483:7-a, I(c) as “... those rivers or segments which flow through developed or populated areas of the state and which possess existing or potential community resource values such as those defined in official municipal plans or land use controls. Such rivers have mixed land uses in the corridor reflecting some combination of open space, agricultural, residential, commercial and industrial land uses. Such rivers are readily accessible by road or railroad and may include impoundments or diversions.” Sections of the Lamprey River and the Piscassic River as they begin to get closer to the town centers of Raymond, Epping and Newmarket are flanked by a landscape that contains areas of open space mixed with increasing residential development and commercial areas.

Community rivers are defined under RSA 483:7-a, I(d) as “... those rivers or segments which flow through developed or populated areas of the state and which possess existing or potential community resource values, such as those identified in official municipal plans or land use controls. Such rivers have mixed land uses in the corridor reflecting some combination of open space, agricultural, residential, commercial and industrial land uses. Such rivers are readily accessible by road or railroad, may include existing impoundments or diversions, or potential sites for new impoundments or diversions for hydropower, flood control or water supply purposes, and may include the urban centers of municipalities.” The Lamprey River and Piscassic River as they flow through the downtown areas in Raymond, Epping and Newmarket are seen as vital community resources with mixtures of commercial, industrial, residential and recreational areas that allow residents to enjoy the rivers within the developed landscape. The Lamprey River Nominating Committee, the Rivers Management Advisory Committee and the Department of Environmental Services have all determined that the river segments recommended above for “natural river”, “rural river”, “rural-community river” and “community river” classification meets the applicable definitions and should be so designated.

Designation of the Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers under the Rivers Management and Protection Program will express the intent of the General Court regarding the rivers’ future management and protection, and will focus attention on the rivers as a natural resource of both statewide and local significance. This attention will help to ensure greater scrutiny of plans or proposals that have the potential to significantly alter or destroy those river values and characteristics that qualify the Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers for designation.

***Recommendation 2: The towns of Barrington, Brentwood, Candia, Deerfield, Durham, Epping, Exeter, Fremont, Lee, Newfields, Newmarket, Northwood, Nottingham and Raymond should continue to work together toward the protection of the Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers through the adoption and implementation of a local river corridor management plan.***

While legislative designation of the Lamprey, North Branch, North, Little, Pawtuckaway and Piscassic Rivers will improve the protection and management of the rivers itself, continuing efforts at the local level will be needed to address the use and conservation of the river corridor (the river and the land area located within a distance of 1,320 feet of the normal high water mark or to the landward extent of the 100 year floodplain). A growing recognition by local citizens and officials of the Lamprey, North Branch, North, Little, Pawtuckaway, and Piscassic Rivers valuable contribution to the overall quality of life in their communities is evidenced by their desire to see them designated into the Rivers Management and Protection Program. Citizen appreciation and concern for the rivers should be reflected in the decisions and actions of local officials. The Department of Environmental Services will provide technical assistance to the local river management advisory committee and to the local officials in the riverfront communities on the development and implementation of a local river corridor management plan.

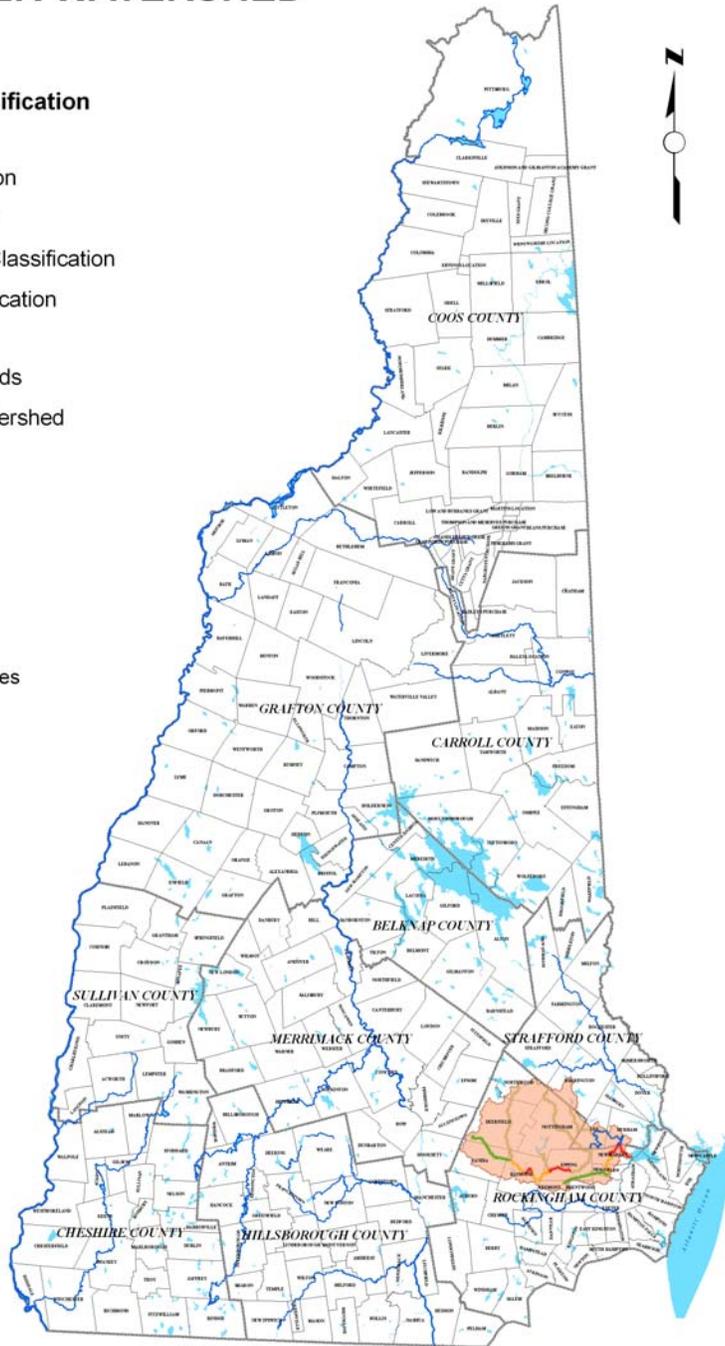
In summary, the establishment of a clear policy and specific instream protection measures by the General Court, and a continuing commitment on the part of local governments and residents to protect and manage the river corridors through sound land use decisions will ensure that the outstanding resources of the Lamprey, North Branch, North, Little, Pawtuckaway, and Piscassic Rivers will endure to be enjoyed by the people of New Hampshire for many years to come.

VI. MAPS

LAMPREY RIVER WATERSHED  
 LOCUS MAP

- Designated River Classification**
- Quarter Mile Buffer**
-  Natural Classification
  -  Rural Classification
  -  Rural Community Classification
  -  Community Classification
- Waterbodies**
-  Ocean, Lakes, Ponds
  -  Lamprey River Watershed
  -  Designated Rivers
  -  County
  -  Town Boundaries

0 3.5 7 14 21 28 Miles

The coverages presented in this map are under constant revision. They may not contain all of the potential or existing data available. NHDES is not responsible for the use or interpretation of this information. Not intended for legal purposes. October 2010  
 H:\RMPP\GIS\Designated Rivers\Upper\_Lamprey

## LAMPREY RIVER WATERSHED BASE MAP

