

## **Restoration of the North Branch of the Hoosic River, Removal of the Briggsville Dam**

NFHAP funding requested: \$ 50,000

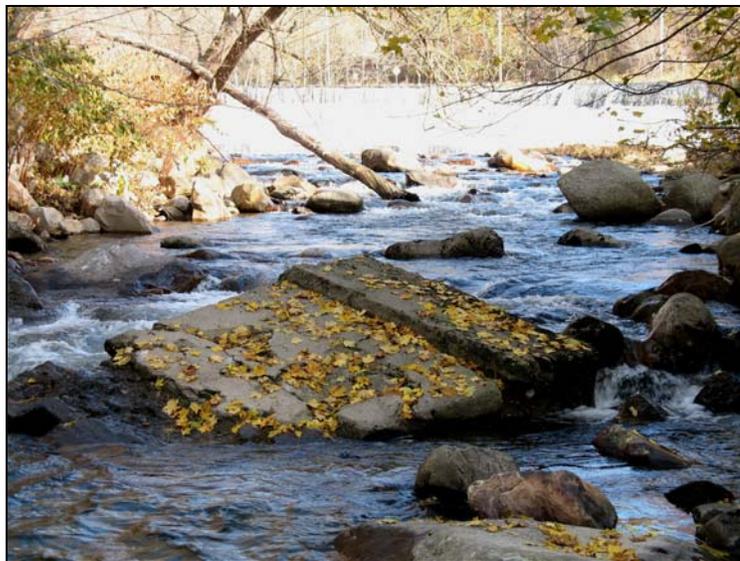
Project Location: Massachusetts, Berkshire County, Clarksburg  
Congressional District: Massachusetts's 1st congressional district

### **Applicant**

Massachusetts Department of  
Fish and Game  
Riverways Program  
251 Causeway St. Suite 400  
Boston, MA 02114  
617-626-1546 (tel.)  
617-626-1505 (fax)  
Eileen Goldberg  
[eileen.goldberg@state.ma.us](mailto:eileen.goldberg@state.ma.us)

### **Sponsoring Fish and Wildlife Service Fisheries Office**

Massachusetts Office  
103 East Plumtree Road  
Sunderland, MA 01375  
Martha Naley  
(413) 548-9138 (tel.)  
[martha\\_naley@fws.gov](mailto:martha_naley@fws.gov)



North Branch of the Hoosic River

August 16, 2007

## **PROJECT DESCRIPTION, SCOPE OF WORK, AND PARTNER INFORMATION**

### **A. Project Description and Scope of Work**

#### *Introduction*

Massachusetts Riverways Program (Riverways) in partnership with a diverse group of stakeholders seeks to restore the North Branch Hoosic River headwaters through the removal of the Briggsville Dam in Clarksburg, MA. This on-the-ground habitat restoration project is in direct support of the Massachusetts Wildlife Action Plan and the Massachusetts Eastern Brook Trout Conservation Strategy (See Supporting Documentation Section VI) as it will restore habitat for Eastern brook trout, a critical species identified in the plans as well state listed aquatic and economically important species. Improved connectivity through barrier removal is also highlighted in the EBTJV document Eastern Brook Trout: Roadmap to Restoration and supporting draft conservation strategy.

The removal of the Briggsville dam will 1) eliminate a barrier to the movement of aquatic and riparian species; 2) re-establish the river's natural flow regime; 3) improve water quality, sediment dynamics, and the temperature regime for coldwater species; and 4) restore natural clean gravel and cobble necessary for brook trout and several other species of interest.

A feasibility study completed in June 2007 identified dam removal as the preferred alternative and provided background analysis essential to complete the project. The dam is no longer serving a functional purpose and is a liability to its current owner, Cascade School Supplies, who is highly supportive of the project. Cascade School Supplies also owns and manages the affected lands in the immediate project area.

The completed feasibility study includes an evaluation of existing data, topographic surveying, channel surveying of cross sections and longitudinal profile, resource mapping, sediment sampling, hydrology and hydraulic study, evaluation of surrounding infrastructure, sediment management analysis and conceptual restoration alternatives. This information is available at the Fuss and O'Neill website (pre-qualified engineers contracted by Riverways): [http://www.fando.com/index.cfm/AboutUs/FTP\\_Login](http://www.fando.com/index.cfm/AboutUs/FTP_Login) (search in public, Riverways, and Briggsville folders). The Fuss and O'Neill engineering assessment was supported by KCI Technologies.

#### *Goals and Objectives*

The Briggsville Dam is a 15-foot high and 145-foot long broad crest weir dam. The project involves full dam removal, stabilizing and vegetating banks, and restoring native stream and riparian habitat. Completion of this dam removal will provide unobstructed access to more than *30 miles of free-flowing, high quality headwater streams* measured from the next downstream dam. The Briggsville Dam is situated in the headwaters of the mainstem of the North Branch of the Hoosic River and removal of the dam will encourage downstream dam owners to also consider and implement dam removal. A majority of these newly accessible, high quality tributary streams are permanently protected as part of the 400 acre Clarksburg State Forest, the 150 acre Florida State Forest and the much larger Green Mountain National Forest in adjacent Vermont. The project will directly restore passage to 3 miles of main stem river (See attached FONS form) and restore appropriate bedform features to approximately ¼ mile of river.

The Eastern brook trout is a native heritage species that inhabits the coldest cleanest waters of Massachusetts. The brook trout has spearheaded many conservation efforts in recent years due to a documented decline in its population. In Massachusetts there are over 3,000 dams. Dams limit

successful migration to preferred spawning habitat, inundate habitat with sediment and stagnant flow, and significantly affect the brook trout's natural temperature regime and dissolved oxygen content.

#### *Funding Need and Scope of Work*

Support from EBTJV and NFHAP would assist in final design and de-construction. The project is being actively managed by Massachusetts Riverways Program and is a [Priority Project](#). In 2006 Riverways Program successfully coordinated three dam removals and recently received a national partnership award from Coastal America for the removal of two dams on Yokum Brook.

Components of final design contract include:

- Outreach and partner meetings
- Supplemental engineering and preliminary and final design
- Preparation of construction cost estimates
- Finalization of sediment management plan
- Permitting

Components of construction include:

- Bidding and contractor selection
- Mobilization and de-mobilization
- Dewatering and sediment control
- Sediment dredging, demolition and excavation
- Instream habitat enhancements (Large woody-debris)
- Construction oversight
- Post monitoring

After permits have been secured, construction will be executed through a competitive bid process after preparation of a bid package that includes complete technical specifications.

Expected results of dam removal will be the creation of a more natural bedform, development of a more complex habitat structure, natural sediment deposition and movement, lower water temperatures, improved water quality and unimpeded fish passage. The intent is that these benefits will be permanent and self-sustaining, and therefore require no long term management, operation and maintenance.

#### *Monitoring*

To assess the expected results, pre- and post-dam removal monitoring will be completed that includes physical and biological parameters including fish monitoring using portable electro-fishing methods per Mass DFW sampling standards, macro-invertebrate sampling with kick-nets based on EPA monitoring protocols, physical geomorphic monitoring based on Gulf of Maine Council for the Marine Environment Barrier Removal Standards (e.g. monumented cross sections, longitudinal profile, etc.). Photo station monitoring and temperature monitoring (6 stations) will also be completed.

A timetable for accomplishment of major activities during the one-year performance period is outlined in Section C.

#### **B. Partner Information**

The partners below represent a full spectrum of local, state and federal organizations, and include an important public/private partnership arrangement. A strong partnership is integral to project development and advancement. Partners participate in all phases of the project from scope

development to implementation through a Technical Advisory Committee which meets regularly. By having strong local partners such as municipal officials and TU volunteers issues that may arise from local residents can be addressed quickly and locally. This coupling of local partners with state and federal groups has already resulted in positive press on the project and strong buy in from abutters and neighbors.

*Partner Table*

<b>Partner Name</b>	<b>Contribution In-Kind</b>	<b>Contribution Cash</b>	<b>Federal or Non-Federal</b>	<b>Partner Category</b>	<b>Role of Partner</b>
Mass Riverways Program	\$28,500	\$65,000	Non-Federal	State-agency	Project management, technical and community outreach, financial assistance
Hoosic River Watershed Association	\$1,000		Non-federal	Local Conservation Group	Community outreach assistance and monitoring data
American Rivers	\$ 2,000		Non-federal	Conservation Group (National)	Technical Assistance and financial support
USFWS (Partners for Fish and Wildlife Program and Local USFWS Office)	\$ 2,500		Federal	Federal Agency	Technical Assistance (Financial Assistance Possible)
Cascade School Supplies		\$15,000	Non-federal	Corporation	Dam owner, community outreach assistance, financial support
Mass Division of Fisheries and Wildlife	\$ 2,000		Non-federal	State-agency	Technical assistance and monitoring coordination
Town of Clarksburg	\$ 500		Non-federal	Local Government	Community assistance
Hoosuck Chapter of Trout Unlimited	\$ 2,000		Non-federal	Local Conservation Group	Technical and community assistance, monitoring support

*The partner table does not include all funding organizations –but is a reflection of partners actively involved in the project planning and execution through the Technical Advisory Committee*

**C. Milestones and Timeline**

The following time line outlines the key project milestones:

<b>Milestone</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
Feasibility		<i>Completed</i>				
Final Design/Permitting						
Construction						
Monitoring						

*Monitoring may continue past 2011 if funding is available*

A feasibility study has been completed and full dam removal is recommended as the preferred alternative by a qualified engineer. A Technical Advisory Committee has been formed and has met for the past year. The committee includes project partners listed. The project leads have an established approach to dam removal which includes a specific technical analysis as well as a strategic community outreach plan. The local Board of Selectmen and Conservation Commission have officially supported dam removal and the local newspaper has issued an editorial in support of removing the Dam.

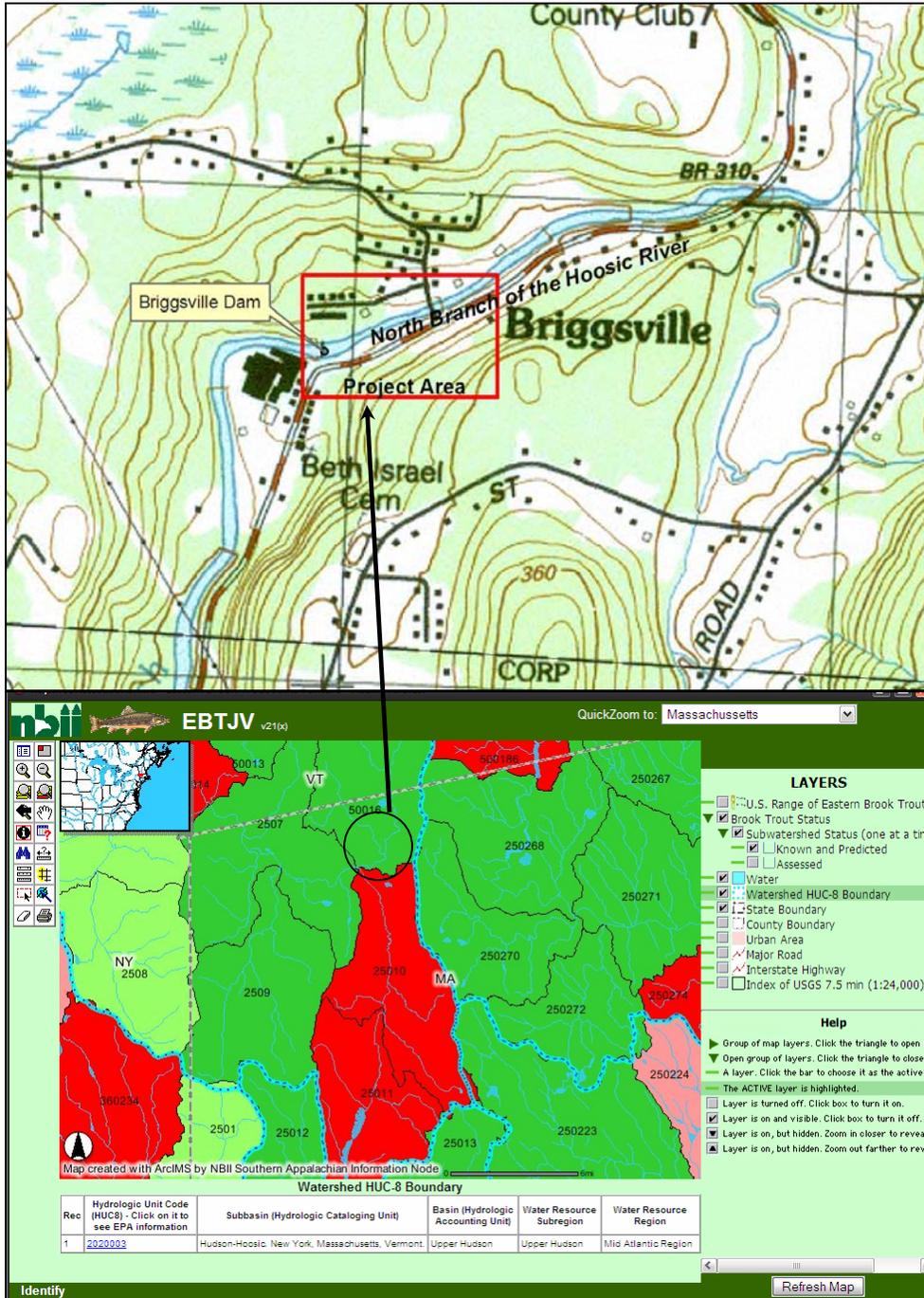
### III. MAP OF PROJECT AREA (one only)

Hydrologic Unit Code (HUC8) - 2020003

HUC6 - 2507

Lat. 42.714538

Long. -73.083054



## V. PHOTOGRAPHS



*Photo 1. Oblique Airphoto of Site (MassGIS), Showing dam and impoundment*



*Photo 2. Briggsville Dam (Riverways Program)*

## V. PROJECT BUDGET

### Project Budget

Total Project Budget: \$293,990

NFHAP Request: \$50,000

(additional \$125,490 pending from Wildlife Action Opportunities Fund request)

#### Budget Table

Tasks	NFHAP Request	WCS Wildlife Action Opportunities Fund (All Cash) (Pending Application)	Mass. Riverways Program (State Match)	Cascade School Supplies (Cash Match)	Partners (In-kind Match)	Sub-Total
<i>1. Salary and Benefits</i>		2,130	11,000 (In-kind)			\$ 13,130
<i>Overhead/Indirect</i>		360	5,000 (In-kind)			\$ 5,360
<i>2. Operating Expenses</i>			2,500 (In-kind)		1,000	\$ 3,500
<i>Feasibility</i>			30,000 (Cash)*		1,000	\$ 31,000
<i>Final Design</i>	25,000		25,000 (Cash)	5,000	2,000	\$ 57,000
<i>Permitting</i>			10,000 (In-kind)	5,000		\$ 15,000
<i>Construction</i>	25,000	123,000	10,000 (Cash)	5,000	1,000	\$ 164,000
<i>Monitoring</i>					5,000	\$ 5,000
<b>Total</b>	\$ 50,000	\$ 125,490	\$ 93,500	\$ 15,000	\$ 10,000	\$293,990

1. Other funding sources have been identified to supplement construction if needed including USFWS and NRCS (WHIP). National Grid has also been identified as a potential funding partner through the Massachusetts Corporate Wetlands Restoration Partnership

2. Contributions all support restoration of 30 miles of contiguous habitat and 3 miles of direct habitat restored

\*Feasibility work was completed by June of 2007 and may not be considered match for some grant requests.

## VI. EVALUATION QUESTIONS (3 pages maximum)

### A. Conservation of Sustainable Brook Trout Populations:

The removal of the Briggsville Dam directly supports the [Eastern Brook Trout Conservation Strategy Document](#) (Conservation Strategy) and the Commonwealth of Massachusetts Wildlife Action Plan (Action Plan) under Section E. Habitat Restoration and Management, Chapter Seven: Overview of Conservation Strategies, of the 2005 (Revised 2006) [Massachusetts Comprehensive Wildlife Conservation Strategy](#), Massachusetts Division of Fisheries and Wildlife.

According to the Action Plan and Conservation Strategy, recommended conservation actions include:

- Pursuing dam removal and fish passage projects to reconnect mainstem habitats to tributary habitats (for mainstem habitats) (p. 246)
- Identifying dam removal as a primary restoration tool and encouraging dam removal (mid-sized and small river habitats) (pp. 253, 287)

The Action Plan also specifically identifies brook trout as "Species of Greatest Conservation Need in Large & Mid-sized Rivers" (p. 248). Relative to species like brook trout the plan states:

"Dams on small streams cause several impacts to aquatic habitats. First, they create habitat unsuitable for native fluvial species and preferred by native and non-native pond species. Second, they stop the flow and transfer of energy, sediments, and nutrients. Water retained in small stream impoundments warms with increased exposure to sunlight and nutrients trapped in the impoundments become available for macrophyte or algal growth. All of these impacts translate into altered water quality downstream of the impoundment. Third, dams create barriers to fish passage that result in isolated populations of fluvial fish less able to cope with environmental extremes. Finally, most dams have no provision for minimum flow and, other than leakage, provide no flow downstream in the summer months or other low flow periods. Low or no flow events then increase in frequency and magnitude and reduce the ability of the fish population to recover. All of these impacts will affect surrounding habitats as well." (p. 278)

### B. Endangered Species:

Fish samples collected in 1990 and 2002 by MDFW on the North Branch of the Hoosic River show a high abundance of longnose dace, blacknose dace, and creek chub, and presence of three native fish species of concern -- the long nose sucker, brook trout, and slimy sculpin. The longnose sucker is listed as a State Species of Special Concern in Massachusetts. Longnose suckers travel upstream to spawn from mid-April through July in moderate to fast stream currents and gravel substrates. Dams are a significant concern when they prevent successful migration to preferred spawning habitats.

The slimy sculpin is considered by MDFW and its cooperators as one of the species in greatest need of conservation in Massachusetts. The slimy sculpin is a bottom dweller that prefers cold, rocky streams and is considered a fluvial specialist. Dams can prevent

successful migration to preferred spawning habitat. The slimy sculpin is also intolerant of disturbance and pollution, which is a key reason for being listed for increased conservation needs. Additionally, they are an important prey fish for brook trout, as well as other large game fish. In 1990, slimy sculpin were relatively abundant, comprising 4% of the total catch with twenty-two (22) individuals; this number declined in 2002 to only three (3) individuals.

According to the Conservation Strategy:

“Coldwater habitat is shared by several other species besides brook trout. Slimy sculpin, longnose sucker, Atlantic salmon, rainbow and brown trout can all be found within some of the same streams as brook trout. In the western part of the state, brook trout typically coexist with slimy sculpin and, on rare occasion, longnose sucker. This species of sucker is listed as a species of special concern under our State Endangered Species Act and occurs in low abundance with brook trout.” (p. 1).

The macroinvertebrate species of concern near the Briggsville Dam is the ocellated damner dragonfly. The ocellated damner is listed as a State Species of Concern in Massachusetts and although it does not have a federal status, it is identified as a rare species. During its life cycle, the ocellated damner requires shaded, swift flowing, cold, rocky streams adjacent to forested uplands. Areas up and downstream of the Briggsville Dam impoundment are suitable habitat for the ocellated damner.

**C. Economically important species not also listed as threatened and endangered species:**

The North Branch of the Hoosic is a favorite destination of anglers and therefore is an important resource to restore to enhance and support the local fishing industry. Trout Unlimited became interested in this project for this reason and for the opportunity to promote wild trout water and a “blue ribbon” stream reach. Presently the site is freely accessed without charge by anglers and there has been no intent expressed by the dam owner to limit access in the future.

**D. Special Considerations:**

Dam removal in Massachusetts has been made much easier to permit and implement due to recent guidance issued by Massachusetts Department of Environmental Protection that encourages pro-active habitat restoration. Time of permitting and cost of regulatory review has been reduced and has encouraged more dam owners to pro-actively initiate dam removals in the Commonwealth.

**E. EBTJV Targeted Watershed:** See attached map, page 5

**F. Habitat Connectivity and Enhancing Population Mobility:**

The project location is in an area mapped by the EBTJV as being greater than 50% intact, although the project site is immediately upstream of an area that is designated greater than 50% reduced. Aquatic and riparian habitat is impaired as the North Branch flows through the City of North Adams and meets the mainstem of the Hoosic River. By improving connectivity and by establishing a precedent for dam removal for downstream

dam owners to follow, this project has a direct influence on habitat currently designed as impaired.

The Briggsville Dam is the most upstream dam in the headwaters of the North Branch. By removing this dam, tributary health is improved and continuity is expanded to more than 30 miles of free-flowing, high quality headwater streams as measured from the next downstream dam.

A significant portion of the upstream area is permanently protected (greater than 50%) and an even higher percentage (greater than 70%) is undeveloped. Protected open space includes the Green Mountain National Forest, and the Clarksburg and Florida State Forests making the probability of supporting a more vibrant sustainable wild trout population in the long term viable and highly likely.

#### **G. Management Assets:**

Full dam removal is designed to be self-sustaining, therefore requiring little adaptive management and no long term operation and maintenance. Depending on the approved approach for sediment management, adaptive management may be used to ensure that sediment mobilization and subsequent head cutting does not adversely impact surrounding infrastructure or the biological integrity of the aquatic habitat.

As described in the narrative monitoring is being spearheaded by Mass Division of Fisheries and Wildlife and the plan includes monitoring both physical and biological parameters. The approach is summarized below:

- fish monitoring using portable electro-fishing methods per Mass DFW sampling standards
- macro-invertebrate sampling with kick-nets based per EPA monitoring protocols
- physical, photo station and temperature monitoring per Gulf of Maine Council for the Marine Environment Barrier Removal Monitoring Standards (e.g. monumented cross sections, longitudinal profile, etc.) (Draft Document)

To ensure that the project is implemented properly during construction a qualified engineer will perform construction oversight/monitoring and will be assisted by project partners.

To acknowledge project partners and educate visitors an interpretive sign will be installed on site to illustrate the benefits of dam removal. Riverways and partners have installed on other project sites interpretive panels and signage to promote aquatic habitat restoration.

#### **H. Supporting Documentation**

Please visit [http://www.fando.com/index.cfm/AboutUs/FTP\\_Login](http://www.fando.com/index.cfm/AboutUs/FTP_Login) (search in public, Riverways, and Briggsville folders) for feasibility report, results of the hydraulic model, analysis of surrounding infrastructure and other relevant supporting information.

