



REPLY TO  
ATTENTION OF

**DEPARTMENT OF THE ARMY**  
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS  
696 VIRGINIA ROAD  
CONCORD, MASSACHUSETTS 01742-2751

**COPY**

October 24, 2003

Operations Manager  
Lower Connecticut River Basin Office  
U.S. Army Corps of Engineers, NED  
6 Athol-Richmond Road  
Royalston, Massachusetts 01368-8900

Telephone: (978) 249-2547  
Fax: (978) 249-3680



Honorable Dan H. Mylott:  
Mayor of Fitchburg  
718 Main Street  
Fitchburg, MA 01420

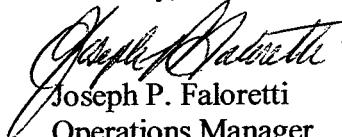
Dear Mayor Mylott:

I conducted the inspection of the Fitchburg Local Flood protection Project on October 22, 2003. Unfortunately, little has changed since our previous inspection this spring. The project remains in poor condition and it appears that the City has made little if any progress toward advancing a maintenance plan. We had hoped that the guidance provided by our recent hydrological report would encourage the City to begin formulating a program. The report makes it possible to greatly reduce the overall maintenance burden by identifying constriction points where maintenance is needed, and other areas, representing the vast majority of the project, that can be left alone. The attached inspection report reflects the findings of this study.

Given the absence of a viable maintenance program the only cutting recently accomplished was a stretch of embankment downstream of Putnam Street, and this work was related to the new riverfront park, not flood control. What is now long overdue is a consolidated effort among the City, Corps, and other interested parties to develop a strategy that satisfies flood control needs while respecting the environmental and aesthetic attributes of the river. I invite you and your staff to join with us in addressing this challenge.

I look forward to hearing from you. I can be reached at (978) 249-2547.

Sincerely,



Joseph P. Faloretti  
Operations Manager  
Lower Connecticut River Basin

Enclosures

Copy Furnished:

President, City Council  
718 Main Street  
Fitchburg, MA 01420

Mr. John Anderson  
Superintendent of Streets  
Department of Public Works  
718 Main Street  
Fitchburg, MA 01420

Mr. Denis Meunier  
Acting Commissioner of Public Works  
718 Main Street  
Fitchburg, MA 01420

Mr. James Law  
Construction-Operations Division  
U.S. Army Corps of Engineers, NED  
696 Virginia Road  
Concord, MA 01742-2751

Nancy Thornton, Director  
Office of Waterways  
Dept. of Env. Management  
349 Lincoln Street Bldg # 45  
Hingham, MA 02043

Mr. Bruce Williams  
Construction-Operations Division  
U.S. Army Corps of Engineers, NED  
696 Virginia Road  
Concord, MA 01742-2751

Mr. Bill Salomaa  
DEM, Div of Water Resources  
251 Causeway Street, Suite 700  
Boston, MA 02114-2104

Mr. Jeffrey C. Mangum  
Project Manager  
Tully Lake  
6 Athol-Richmond Road  
Royalston, MA 01368-8900

Mr. Mike O'Hara  
Office of the Planning Coordinator  
718 Main Street  
Fitchburg, MA 01420

Mr. David Streb  
Planning Coordinator  
718 Main Street  
Fitchburg, MA 01420

Mr. Allen Futterman  
Outreach Coordinator  
Nashua River Watershed Association  
592 Main Street  
Groton, MA 01450

Mr. Martin Jalonski  
Environmental Analyst  
Massachusetts Department  
of Environmental Protection  
627 Main Street  
Worcester, MA 01608

Mr. Orazio Rinaldi  
DEM, Office of Waterways  
349 Lincoln Street, Building # 45  
Hingham, MA 02043

Mr. Michael Donnelly  
Fitchburg Conservation Commission  
718 Main Street  
Fitchburg, MA 01420

Mr. Michael Lanava  
Executive Director  
Fitchburg Economic Development Office  
718 Main Street  
Fitchburg, MA 01420

Mr. Richard Carlson  
Chief, Construction-Operations Division  
U.S. Army Corps of Engineers, NED  
696 Virginia Road  
Concord, MA 01742-2751

Mr. Roy McLachlan  
Assistant Superintendent  
Department of Public Works  
718 Main Street  
Fitchburg, MA 01420

Mr. Dave Larsen  
Engineering-Planning Division  
U.S. Army Corps of Engineers, NED  
696 Virginia Road  
Concord MA 01742-2751

Director & Chief Engineer  
Division of Water Resources  
Dept. of Environmental Management  
Suite 700, 251 Causeway Street  
Boston, MA 02114-2104

## **FITCHBURG, MASSACHUSETTS - LOCAL PROTECTION PROJECT**

### **SEMI-ANNUAL INSPECTION**

**22 October 2003**

#### **INTRODUCTION**

The City of Fitchburg recently cut and removed woody vegetation and treated the stumps in the channel of the North Nashua River from the Putnam Street Bridge to the Cushing Street Bridge as part of the construction of the riverfront park. This stretch of the river is within the First Priority Segment (see below) between the Laurel Street Bridge and Cushing Street Bridge. No other maintenance of the project has been accomplished for a number of years.

The Corps recently completed a hydrological study of the project reach entitled North Nashua River Channel Rehabilitation Study – Fitchburg Local Protection Project, May 2003 to determine the impact of excess vegetation and shoaling on river elevations. A copy of the Channel Rehabilitation Study was attached to the Spring 2003 inspection report.

The report identified the most flood-prone reaches of the project, which were assigned one of three levels of priority. First-priority segments, those most vulnerable to flooding, include the following:

- Laurel Street Bridge to Cushing Street Bridge - The hydrological report revealed that, due to the Railroad Bridge restrictions, this stretch cannot pass the 9000 cubic feet per second (cfs) design flow even if maintained in optimum condition. Moreover, this bottleneck is exacerbated by the presence of vegetation and shoaling in the channel. For example, with the 9000 cfs design flood, elevations would rise an additional 0.9 feet. Hence, removal of shoaling and vegetation within this 400-foot reach would substantially reduce flood damages during a design event or prevent flooding for smaller events.
- Putnam Street Bridge to a point 100 feet upstream of the nearby Railroad Bridge – Bank vegetation would cause the Railroad Bridge to be overtopped by 0.3 feet in a design storm. Vegetation removal along this 300-foot reach would reduce flood stage by 0.7 feet, resulting in 0.4 feet of freeboard.
- From the Railroad Bridge downstream of Oak Hill Road Bridge to a point 800 feet upstream of the bridge – Vegetation and shoaling upstream of Oak Hill Road Bridge increase flood stage by 1.5 feet resulting in the bridge being overtopped by 0.4 feet in a design storm. Vegetation downstream of the bridge reduces freeboard by 0.8 feet to 0.2 feet, so that a design storm would just barely be contained within the channel at this location, and greater events would cause flooding more frequently.

Other sections identified as second and third priority areas include: the reach from the Sawyer Passway Bridge to a point roughly 300 feet downstream of the Water Street Bridge; the reach 200' downstream of the Rollstone bridge to the downstream Railroad Bridge; the stretch between the Water Street and Laurel Street bridges and the reach between the Circle Street and Lower River Street bridges.

**The following conditions were noted during the inspection:**

NOTE: Descriptions in parentheses coincide with station and work area designations on General Plans 1, 2 and 3 of North Nashua River Channel Rehabilitation, Fitchburg, Massachusetts Operations and Maintenance Manual, February 1982.

1. **Project start.** (Several hundred feet upstream of Oak Hill Road Bridge, near station 580+00)

Woody vegetation is present on the riprap slopes and stone gabions and should be removed.

*This reach is a First Priority flood prone area.*

2. **Oak Hill Road Bridge.** (Approximately 300 feet downstream of station 575+00)

Looking upstream - Significant vegetation, including small trees, is present on both sides of the channel. The shoal on the left bank immediately above and under the bridge appears to be expanding and should be removed (see photograph # 2).

Looking downstream - The shoal on the left bank appears to be expanding. The shoal should be removed. Vegetation covering both banks should be removed (see photograph # 1).

*The above are First Priority flood prone areas.*

3. **Daniel Street Bridge.** (Approximately 300 feet downstream of station 565+00)

Looking upstream - A shoal is present in the south (left) half of the channel above the old railroad bridge. This shoal should be closely monitored. Small trees are growing in both sides of the channel (see photograph # 4).

Looking downstream - Both banks are covered with vegetation (see photograph # 3).

*This reach presently has sufficient capacity to pass the design flood of 9000 cubic feet per second (cfs).*

4. **Adjacent to the McDonald's Parking Lot.** (Work areas "D" and "E" Located on the left bank downstream of Daniel Street Bridge.)

Vegetation within the banks of the channel along both sides of the river is 10 to 20 feet high (see photograph # 3).

*This reach presently has sufficient capacity to pass the design flood of 9000 cfs.*

5. **Kimball Street Bridge.** (Station 550+00)

Looking upstream – Heavy brush growth is present along both banks. A shoal on the right bank should be closely monitored.

Looking downstream – Vegetative growth is present on the east (right) bank.

*This reach presently has sufficient capacity to pass the design flood of 9000 cfs.*

6. **Upper River Street Bridge.** (Work area "F")

Looking upstream - Trees are growing out of the walls along both sides of the river. A large poplar is growing near the edge of the water.

Looking downstream - Heavy vegetation is present along both banks.

*This reach presently has sufficient capacity to pass the design flood of 9000 cfs.*

7. **Behind The Former Premier Box Company.** Located on the right bank. (Station 550+00 to 545+00)

Vegetation is present on both banks. A conservation group has proposed development of a river walk between the Upper River Street Bridge and the Sheldon Street Bridge.

*This reach presently has sufficient capacity to pass the design flood of 9000 cfs.*

8. **Sheldon Street Bridge.** (Work area "G")

Looking upstream - Woody vegetation and shoals are present on both banks (see photograph # 6).

Looking downstream - Brush, trees, and other undesirable vegetation are present on both banks. A shoal is present on the left bank (see photograph # 5).

*The channel several hundred feet upstream of the Sheldon Street Bridge is at full capacity during a design flood. However, removal of vegetation within this reach would not provide any significant margin of safety as flows are controlled by the constriction at the bridge.*

9. **Lower River Street Bridge.** (Work area "I")

Looking upstream - Vegetative growth is present along both banks (see photograph # 8).

Looking downstream - The large shoal on the left bank should be removed. Vegetation should be removed from both banks (see photograph # 7).

*The reach downstream of the bridge is a Second Priority flood prone area primarily due to shoaling.*

10. **Circle Street Bridge.** (Station 510+00)

Looking upstream - Trees and brush growing in the training walls along both banks should be removed. The shoal on the left side of the channel should be removed (see photograph # 10).

Looking downstream - Shoals on the both sides of the channel and woody vegetation on the shoals should be removed (see photograph # 9).

*The reach upstream of the bridge is a second priority flood prone area primarily due to shoaling.*

11. **Upper Rollstone Street Bridge.** (Station 505+00)

Looking upstream - Heavy vegetative growth is present along both banks of the river. Trees are growing along the bridge abutment in a shoal area by the left bank. The shoal obstructs the north half of the channel under the bridge.

Looking downstream - The river channel narrows at this point and should be kept completely free of obstructions. The significant growth of trees, brush and other vegetation in the concrete lining along the left side of the channel should be removed.

*The reach downstream of Rollstone Bridge is a Third Priority flood prone area primarily due to excess vegetation.*

12. **Putnam Street Bridge.** (Approximately 300 feet downstream of station 485+00)

Looking upstream – There is heavy growth of trees and vegetation in the training walls along both sides of the river, extending well upstream of the railroad bridge. This is also a narrow stretch of the river and should be kept free and open. The shoals on the north (right) bank approximately 100 yards above the railroad bridge and under the right span of the railroad bridge should be removed. The large shoal in the center of the channel about 200 yards upstream of the railroad bridge should be removed. The large elm growing on a shoal at the center bridge pier and the shoal at the railroad bridge center abutment should be removed (see photographs # 11 & 12).

Looking downstream - All trees, brush and other vegetation has been cut and removed from within the floodwalls and riprap along both sides of the river extending from the Putnam Street Bridge to the just beyond the Cushing Street bridge in conjunction with the new riverfront park (see photographs # 13, 14, 19, 20, 21, 22, 23, 24, 25 & 26).

During the inspection, Fitchburg Economic Development Office Executive Director Mr. Mike Lanava asked about the feasibility of removing the concrete floodwall between the Riverfront Park and the North Nashua River, so that visitors can see the river from the park. This floodwall is part of the flood control project and provides over bank protection during significant events. Mr. Faloretti explained that the Corps would not approve removal of any project feature unless it could be reconstructed in another location (such as the western edge of the park near the railroad right of way, in the case of this floodwall) and provide the same level of protection as the original feature.

**12. Putnam Street Bridge (continued).**

**The city should closely coordinate any such proposals with the Corps of Engineers to insure that the proposal will not negatively impact the function of the project.**

*This is a First Priority flood prone area.*

**13. Railroad Bridge (Looking upstream from the Putnam Street Bridge.)**

The trees and shrubs growing in the channel in the vicinity of the railroad bridge should be removed (see photograph # 12).

*This is a First Priority flood prone area.*

**14. Laurel Street Bridge. (Work areas "O", "P")**

Looking upstream - Major shoaling has taken place in the entire area of the upstream railroad crossing. A large shoal, which is nearly covered with vegetation, restricts the western span and half of the center span. This is a significant restriction, which has decreased the discharge capacity of the channel by nearly 33% and needs to be corrected promptly. The shoals and vegetation should be removed (see photographs # 16 - 18).

Looking downstream - The channel narrows downstream of a manhole on the right bank. The trees, brush and vegetation growing along both banks should be removed (see photograph # 15).

*This is a First Priority flood prone area and the most likely reach to experience flooding.*

**15. Water Street Bridge. (Station 460+00)**

Looking upstream – The large shoal about 100 feet upstream of the bridge along the north (right) bank near the floodwall should be removed. Significant tree growth along the south bank should be removed. Concrete walls line both sides of the river (see photograph # 28).

Looking downstream - A shoal has formed on the left bank adjacent to the floodwall. Numerous willow trees have become established (see photograph # 27).

*The reach upstream of Water Street Bridge is a Second priority flood prone area primarily due to excess vegetation.*

**16. Sawyer Passway Bridge. (Approximately 75 feet downstream of station 450+00) This bridge is located about 1,000 feet upstream of the Fifth Street Bridge.**

Looking upstream - Shoaling in the center of the river above the bridge and has created a restriction within the channel and should be removed. Small trees have fallen over (see photograph # 30).

16. **Sawyer Passway Bridge (continued).**

Railroad Bridge Upstream - This bridge has 3 arches (spans). The lower portion of the right span is completely blocked by a shoal. The shoal should be removed.

Downstream - There is major brush, tree and vegetative growth on both banks downstream to the Fifth Street Bridge (see photograph # 29).

*The reach upstream of the bridge is a Third Priority flood prone area primarily due to excess vegetation.*

17. **Fifth Street Bridge.** (Work area "T")

Looking upstream - Construction of a new bridge is in progress. The steep slopes near the bridge should be monitored closely to prevent erosion.

Looking downstream - There are trees, brush and vegetative growth within the wide floodway.

*This reach presently has sufficient capacity to pass the design flood of 9000 cfs.*

18. **Railroad Bridge.** Located several hundred feet downstream of Fifth Street Bridge. (Station 420+00)

Access to this bridge is no longer available. The city should inspect this bridge and/or make provisions to provide access to the site during the semi-annual inspections.

*This reach presently has sufficient capacity to pass the design flood of 9000 cfs.*

19. **Bemis Road Bridge.** (Work area "U")

Riprap at both bridge abutments is free of vegetation.

Looking upstream - Small trees have become established on the riprap protection and at the toe of the slope along the right bank.

Looking downstream - The river channel is wide and straight. There is a large shoal in the middle of the channel and another on the north (left) bank about 125 yards downstream.

*This reach presently has sufficient capacity to pass the design flood of 9000 cfs.*

20. **Airport Road Bridge.** (Formerly Falulah Road) (Work area "W")

Looking upstream - Brush and trees are present along both banks. There are trees in the channel at the abutments and on the shoal on the left bank (see photograph # 31).

Looking downstream - The shoals along the right and left bank have increased in size. The shoal on the right bank extends under the bridge and a short distance upstream of the bridge (see photograph # 32).

## **20. Airport Road Bridge (continued).**

*This reach presently has sufficient capacity to pass the design flood of 9000 cfs.*

### **GENERAL**

1. The **hydrological study** identifies roughly 5800 linear feet of restricted channel section, which represents about 25% of the total project. The priority areas should be addressed through an aggressive long-term maintenance program. The Corps stands ready to work with the city in developing a specific plan. The remainder of the project, presently capable of passing the 9000 cfs design flood, should continue to be monitored closely to assure that shoaling and vegetative growth does not progress to the extent that channel capacity is reduced to below the design standard. The hydrological study revealed that some vegetation and shoaling along much of the project may be tolerated without compromising design channel capacity. This allows for the adoption of a more balanced approach that addresses the needs of both flood control and environmental resources.
2. A semi-annual report, due in February and August of each year should be submitted by the city to the Corps. This report should provide an update of the city's progress in accomplishing the necessary maintenance of the project and serves as an important tool in assessing the project status. Semi-Annual reports have not been submitted by the city for many years.
3. The city should obtain all necessary local, state and/or federal permits to accomplish maintenance of the project. The Department of Public Works must work closely with the Fitchburg Conservation Commission and the Massachusetts Department of Environmental Protection and other interested parties to develop a plan and obtain the necessary local, state and federal permits before beginning any work in the river and channel. Obtaining the permits will allow the City of Fitchburg to accomplish the maintenance of the project. This work may include, but is not limited to, brush removal and herbicide treatment, as well as the removal of shoals and other obstructions. The plan should address flood control maintenance and environmental issues and concerns.
4. Cutting is only a partial solution to the problem of undesirable vegetation. Significant resprouting occurs on an annual basis. Application of an approved herbicide, accomplished in accordance with state laws and regulations, is recommended to prevent trees, shrubs and other vegetation from quickly sprouting.

Feature	Sat	Unsat	Deficiencies
<b>CONCRETE STRUCTURES</b>			
SURFACE		X	See remarks.
SETTLEMENT		N/A	
JOINTS		N/A	
DRAINS			
<b>MISCELLANEOUS</b>			
EMERGENCY OPERATIONS PLANS			
EMERGENCY EQUIPMENT			
SEMI-ANNUAL REPORT		X	<b>No report submitted.</b>

**Inspection Party:** Gary Worthington, Department of Public Works, Fitchburg  
 Michael Lanava, Executive Director, Fitchburg Economic Development Office  
 Michael O'Hara, Fitchburg Office of the Planning Coordinator  
 Joseph Faloretti, Operations Manager, Lower Connecticut River Basin, USACE

**Photographs Taken:** See attached Photographs

**Remarks & Additional Comments:**

(Indicate here observations, discussions, specific feature deficiencies, recommendations and any other pertinent information. Use continuation sheet if necessary.)

See attached sheets.

X ALL APPLICABLE ITEMS. IF UNSAT INDICATE SPECIFIC DEFICIENCIES. INDICATE IF NOT APPLICABLE.

<b>DATE:</b> <i>24 Oct 03</i>	<b>INSPECTED BY: TYPE NAME &amp; TITLE</b> Joseph P. Faloretti Operations Manager, Lower Connecticut River Basin	<b>SIGNATURE</b> <i>Joseph P. Faloretti</i>
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# LOCAL FLOOD PROTECTION PROJECT INSPECTION REPORT

Project: **Fitchburg, Massachusetts**

Maintaining Agency: **City of Fitchburg, Department of Public Works**

Type Inspection:  **Semi-Annual Staff**  **90 Day Interim**

River Basin: **Lower Connecticut**

Date of Inspection: **22 October 2003**

Feature	Sat	Unsat	Deficiencies
<b>PUMPING STATIONS - STRUCTURES</b>			<b>N/A</b>
INTERIOR			
EXTERIOR			
<b>PUMPS - MOTORS - ENGINES</b>			<b>N/A</b>
TRIAL OPERATED			
GENERAL CONDITION			
POWER SOURCE			
INSULATION TESTS			
METAL INTAKES/OUTLETS			
GATE VALVES			
<b>GATES - DRAINAGE STRUCTURES</b>			<b>N/A</b>
TRIAL OPERATED			
GENERAL CONDITION			
LUBRICATION			
<b>DIKES - DAMS</b>			<b>N/A</b>
GENERAL CONDITION			
SLOPES/EROSION			
SAND BOILS/CAVING			
TRESPASSING			
SLOPE PROTECTION			
DRAINS			
<b>STOP-LOGS - LOG BOOM</b>			<b>N/A</b>
CONDITION OF LOGS			
AVAILABILITY OF LOGS			
HIGHWAY SLOTS			
STORAGE FACILITIES			
<b>CHANNELS - OUTLET WORK CHANNEL</b>			
BANKS		X	See remarks.
OBSTRUCTION CONTROL		X	See remarks.

FORM

NED JAN. 66 **513**

# North Nashua River, Fitchburg, MA, LPP 22 October 2003



**Photo 1: Looking downstream from the Oak Hill Road Bridge**



**Photo 2: Looking upstream from the Oak Hill Road Bridge**

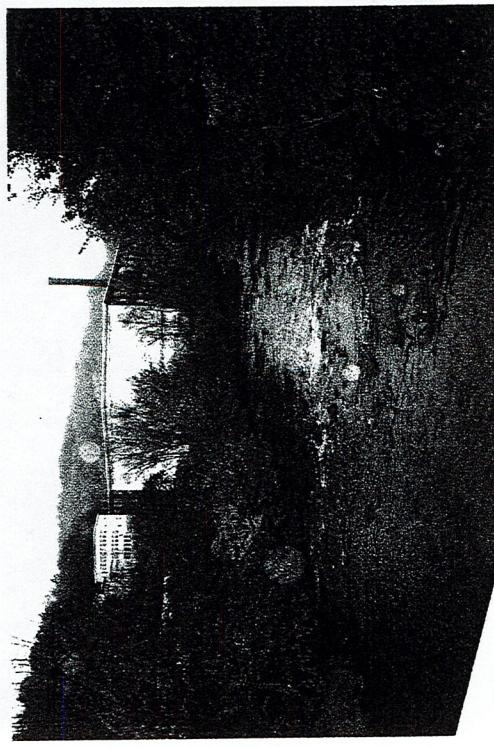


**Photo 3: Looking downstream from the Daniel Street Bridge**



**Photo 4: Looking upstream from the Daniel Street Bridge**

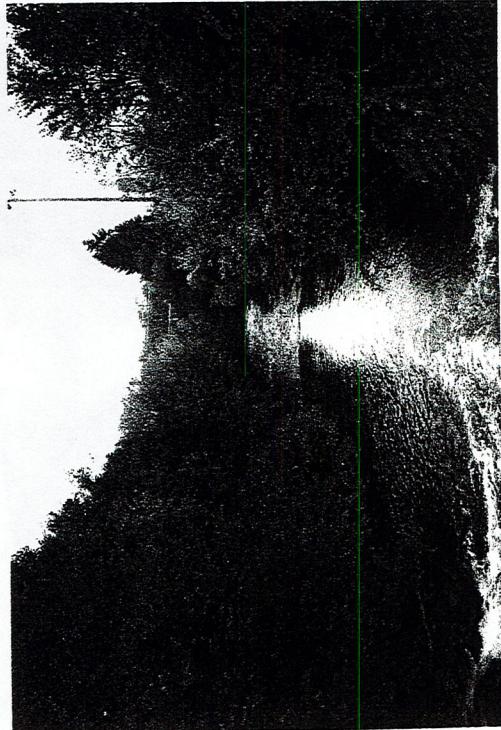
# North Nashua River, Fitchburg, MA, LPP 22 October 2003



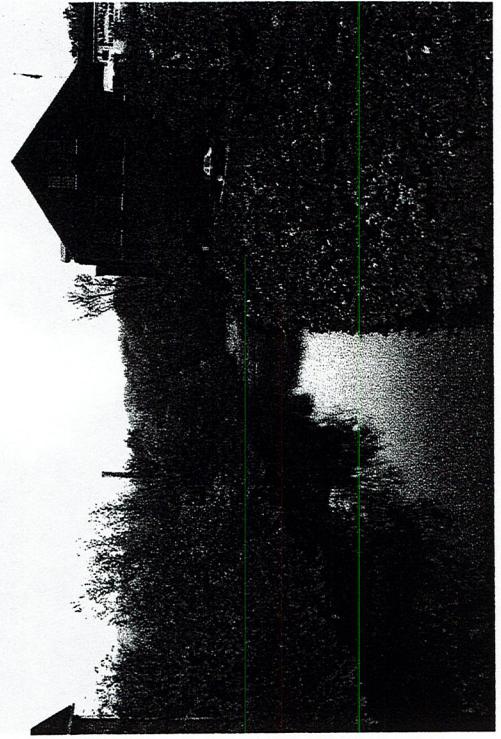
**Photo 5: Looking downstream from the Sheldon Street Bridge**



**Photo 6: Looking upstream from the Sheldon Street Bridge**



**Photo 7: Looking downstream from the Lower River Street Bridge**



**Photo 8: Looking upstream from the Lower River Street Bridge**

# North Nashua River, Fitchburg, MA, LPP 22 October 2003



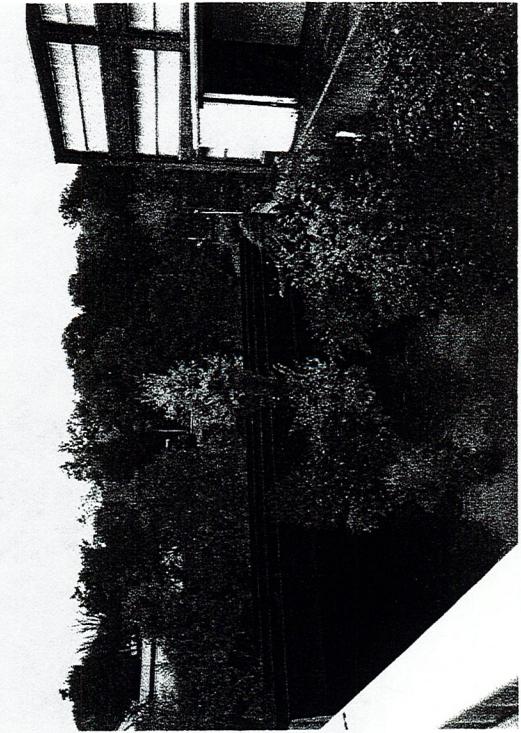
**Photo 9: Looking downstream from the Circle Street Bridge**



**Photo 10: Looking upstream from the Circle Street Bridge**

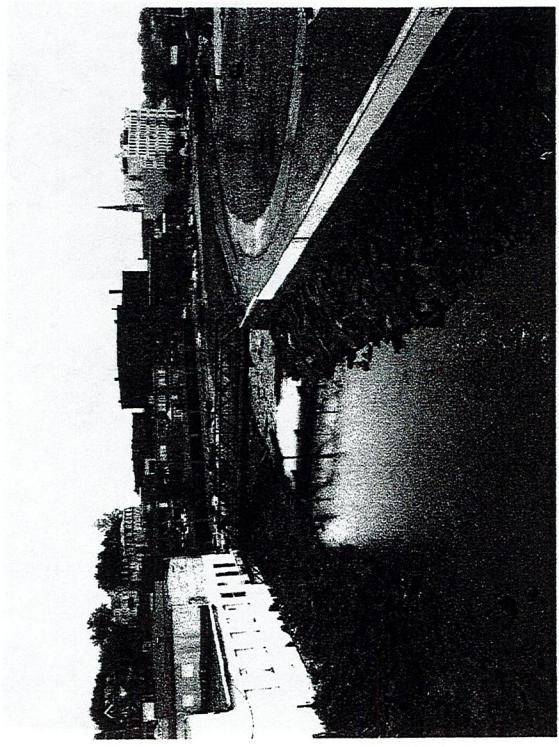


**Photo 11: Looking upstream from the Putnam Street Bridge**

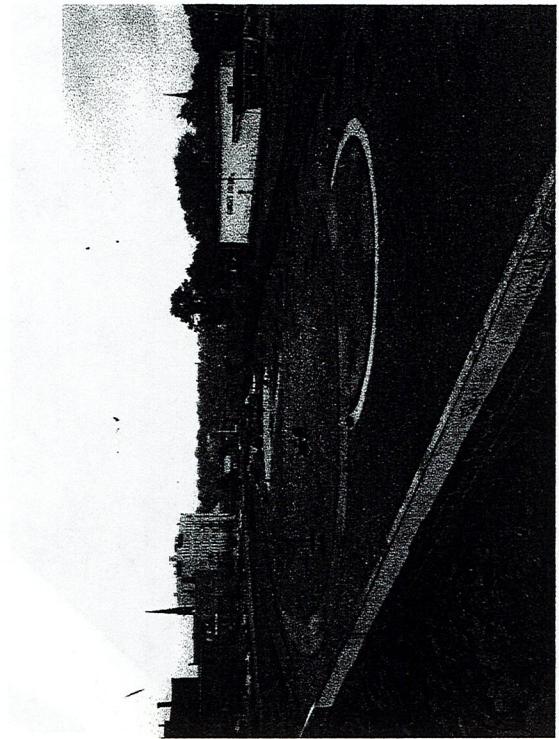


**Photo 12: Looking upstream from the Putnam Street Bridge towards the Railroad Bridge**

# North Nashua River, Fitchburg, MA, LPP 22 October 2003



**Photo 13:** Looking downstream from the Putnam Street Bridge towards the Riverfront Park on the right bank



**Photo 14:** Looking downstream from the Putnam Street Bridge towards the Riverfront Park. Note the floodwall, which is part of the federally-constructed Fitchburg Local Flood Protection Project



**Photo 15:** Looking downstream from the Laurel Street Bridge



**Photo 16:** Looking upstream from the Laurel Street Bridge towards the Railroad Bridge. Note the large shoal blocking the left span of the bridge

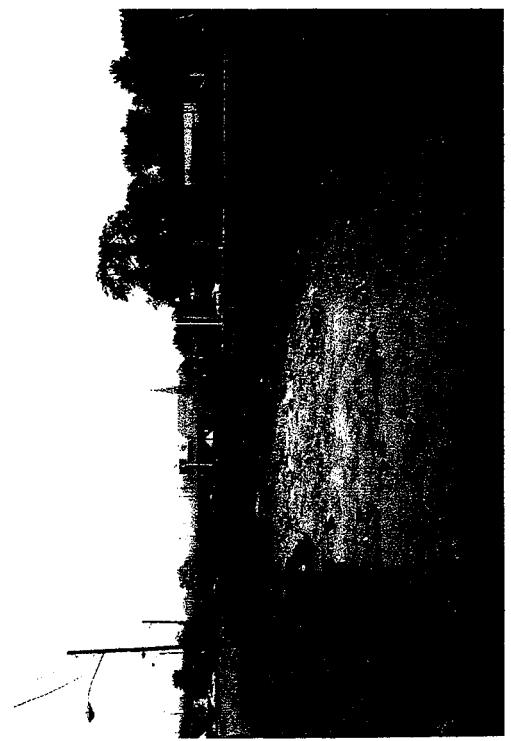
# North Nashua River, Fitchburg, MA, LPP 22 October 2003



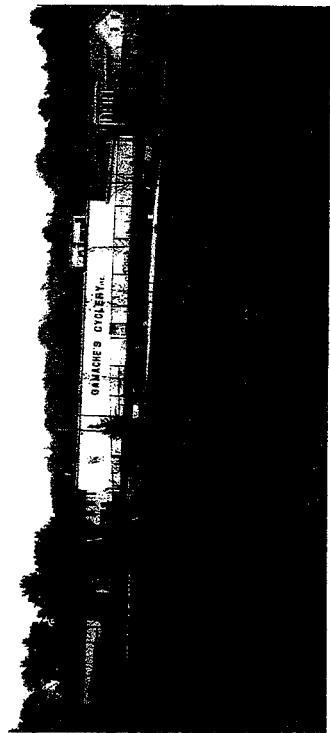
**Photo 17:** Looking upstream from under the Laurel Street Bridge towards the Railroad Bridge. Note the large shoal blocking the left span of the bridge



**Photo 18:** Looking upstream from under the Laurel Street Bridge towards the Railroad Bridge

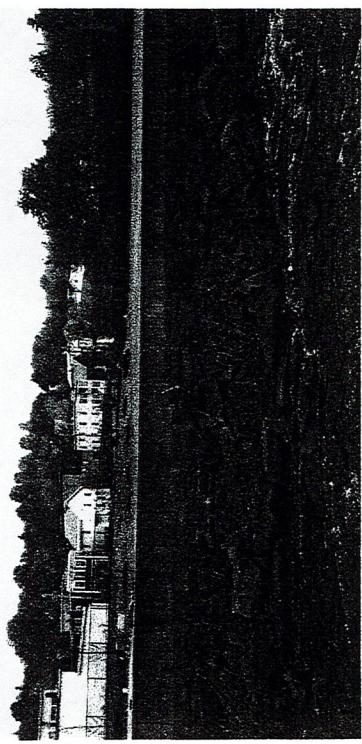


**Photo 19:** North Nashua River, Looking downstream towards the Cushing Street Bridge from the east bank, across from the Riverfront Park

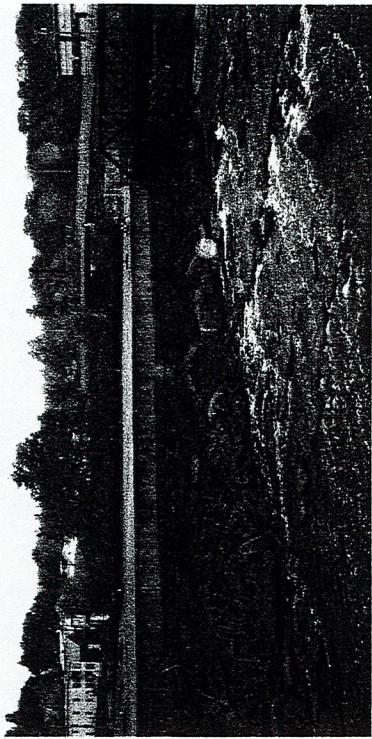


**Photo 20:** Looking towards the Riverfront Park. Note the floodwall, which is part of the federally-constructed Fitchburg Local Flood Protection Project

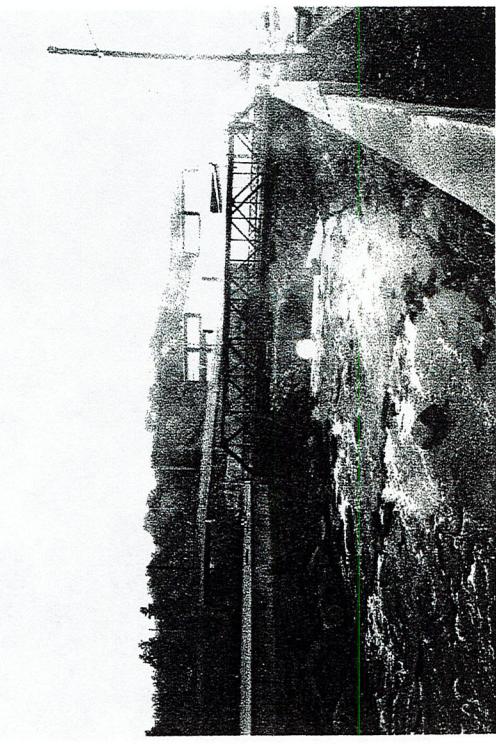
# North Nashua River, Fitchburg, MA, LPP 22 October 2003



**Photo 21:** Looking towards the Riverfront Park from the east bank of the North Nashua River. Note that the channel has been cleared of woody vegetation by the City of Fitchburg.



**Photo 22:** Looking towards the Riverfront Park from the east bank of the North Nashua River. Note that the channel has been cleared of woody vegetation by the City of Fitchburg.

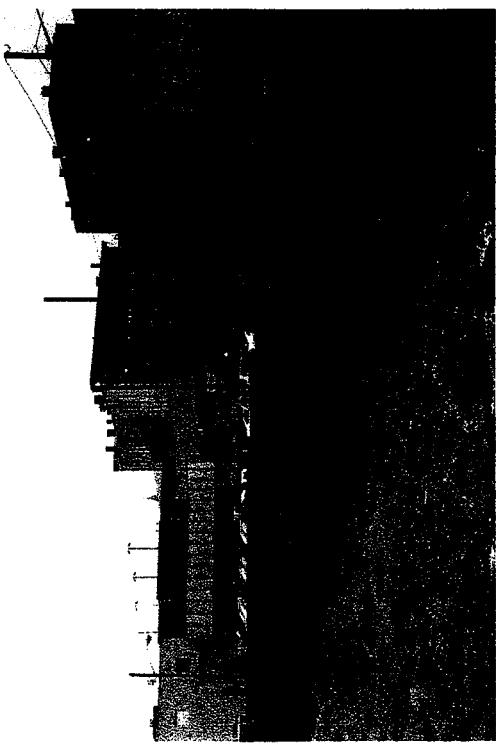


**Photo 23:** Looking upstream from the east bank of the North Nashua River towards the Commercial Street Bridge (currently closed)



**Photo 24:** Looking upstream towards the Riverfront Park from the Cushing Street Entrance

# North Nashua River, Fitchburg, MA, LPP 22 October 2003



**Photo 25:** Looking towards the east bank of the North Nashua River from the Cushing Street Bridge. Note that the channel has been cleared of woody vegetation by the City of Fitchburg.



**Photo 26:** Looking upstream from the Cushing Street Bridge. Note that the channel has been cleared of woody vegetation by the City of Fitchburg.

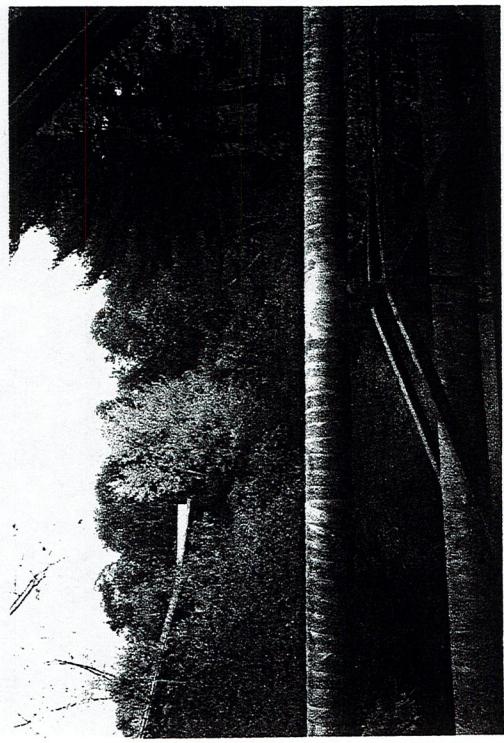


**Photo 27:** Looking downstream from the Water Street Bridge . Note the large Willow growing on the shoal on the left bank.



**Photo 28:** Looking upstream from the Water Street Bridge

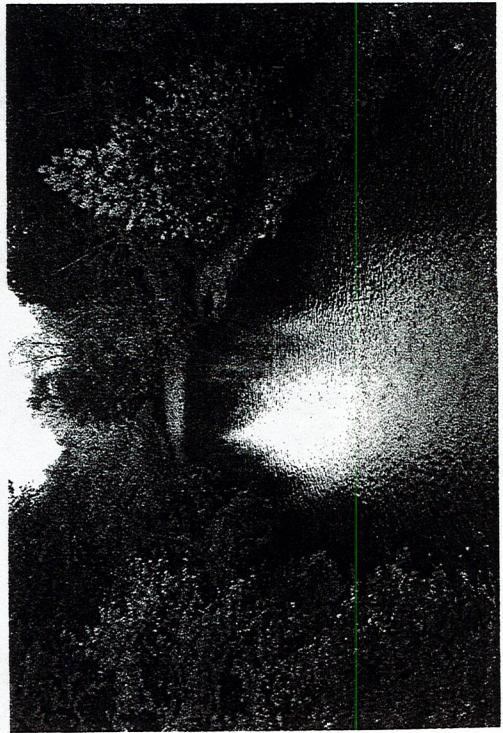
# North Nashua River, Fitchburg, MA, LPP 22 October 2003



**Photo 29:** Looking downstream from the Sawyer Passway Bridge



**Photo 30:** Looking downstream from the Sawyer Passway Bridge



**Photo 31:** Looking downstream from the Airport Road Bridge



**Photo 32:** Looking upstream from the Airport Road Bridge