

Project Identification, Development & Implementation: Tributaries to Black River, Upstream of Lake Rescue in Plymouth, Ludlow, and Reading, VT

Project Description:

Lake Rescue Association (LRA) is requesting funding to address excessive sedimentation in tributaries to the upper Black River, Windsor County. Sedimentation in Lake Rescue (Round Pond), Echo Lake and Amherst Lake has been an issue since the 1973 flood, and reached critical levels in the months following Tropical Storm Irene (August 2011; see Fig 1). Round Pond at the northern extent of Lake Rescue received 5.1 acre feet of sediment between Nov 2010 and Nov 2011 based on bathymetric surveys conducted pre- and post-Irene by the VTDEC (Pembroke, 2012). Sedimentation has impacted navigability and recreational use of Lake Rescue as well as Echo Lake to the north (upstream), constraining access at Camp Plymouth State Park (Echo Lake) and a state fishing access (Round Pond). Sedimentation in upstream reaches of Black River and tributaries has lead to increased channel instability and fluvial erosion hazards impacting roads, bridges, culverts, homes, and infrastructure in Plymouth.

Funding will enable implementation of several projects identified in the stream geomorphic assessment of the Patch Brook and Buffalo Brook / Reading Pond Brook (SMRC, 2009) and summarized in the Basin 10 Water Quality Management Plan (May 2012). Relevant recommendation numbers and page numbers from this plan are cited in blue text below. Project efforts will be focused on tributaries which feed the upper Black River, including Patch Brook, Buffalo Brook, Money Brook, Great Roaring Brook and Tinker Brook. In cooperation with regional, state and federal partners, projects and practices will be identified, prioritized and developed to achieve reductions in sediment loading from these tributaries and increased flow and sediment attenuation in the watershed. Through the actions of partner organizations, a subset of identified projects will proceed to implementation, facilitated and supported by the coordination efforts of Lake Rescue Association and its technical consultant.

The following tasks will be accomplished; detailed subtasks and performance measures are presented on the next page:

(1) identify, prioritize, and plan for improved forest management practices and stream restoration projects in the Buffalo Brook watershed, working with VT Departments of Forests, Parks & Recreation; VT Fish & Wildlife; and the towns of Plymouth and Reading (see Fig 2). This area is largely undeveloped forest land in state and private ownership. Much of the land is owned by VFPR, while the roads are owned by the town of Plymouth. A pre-Irene geomorphic assessment identified abandoned logging/mining road segments as a significant source of sediment (Fig 2D, 2E). Camp Plymouth State Park at the mouth of Buffalo Brook sustained substantial damages related to sediment during TS Irene. Support letters from the town of Plymouth, VFPR and VFW are included as an attachment to this application. {#73A,B, p93; #95A,C, p.105; p115}

(2) complete an alternatives analysis to address excessive sedimentation from Money Brook tributary. Landslides and stream erosion (Fig 3C) have been associated with past flood damages to the Pingree residence, farm lands, and Rt 100 in flood events during 1973, 1976 and 2011 (Fig 3B, 3E-G). Sediment loading from this tributary (Fig 3D impacts water quality in downstream lakes (Fig 1). With landowner willingness, the landslides on upper reaches of this tributary will be evaluated by George Springston of Norwich University to determine the nature, magnitude and extent of recent bank failures, evaluate slope stability, and characterize magnitude of future sediment loading expected from this site. Possible alternatives evaluated will include river corridor easements, landslide stabilization, stream restoration including stabilized flood chutes, additional or wider bridge spans, and constructed wetlands to achieve detention times necessary for attenuation of fine sediment. A separate ERP application has been submitted by Vermont River Conservancy for scoping of river corridor easement opportunities and landowner outreach. VRC will collaborate with LRA and its technical consultant. {#96B, p106}

(3) complete an alternatives analysis for future management of Patch Brook Road in Plymouth, including options for relocating or abandoning this road which has failed multiple times, sending large volumes of road sediment into Patch Brook and the Black River above Lake Rescue (see Fig 4); alternatives considered will include a "do nothing" alternative (i.e., continue to rebuild this road after each flood), moving the road alignment (involving right-of-way issues, easements), and abandoning the road segment to utilize alternative access roads. This evaluation will consider implications (and costs) of each alternative on sediment loading to receiving waters, and associated fluvial erosion hazards to downstream properties and infrastructure. Public input will be sought through a series of public forums. {#11, p58; p114}

(4) visually assess and document conditions during spring runoff and other high-flow events to pinpoint locations of stormwater and road runoff. {#82C, p98}

(5) conduct landowner contacts and coordinate with watershed stakeholders to develop additional projects including riparian wetland restoration; river corridor easements; buffer enhancements; improved road and driveway maintenance. {#24D, p67}

(6) prepare project packets for identified projects that characterize the stressors impacting upper Black River headwaters, describe the nature of the project and mitigative strategies, include conceptual designs and budgets, identify construction sequence and permitting needs (where applicable), document landowner and stakeholder commitments, identify funding sources, and summarize the stage of development for each priority project as of the end of the grant period.

Performance Measures and Associated Payments

Performance Measure and Outcome	SCHEDULE	Payment (number of allowable partial payments)*
A. Project Coordination 1. Form a Steering Committee 2. Hold semi-annual meetings (minimum 3)	January 2013 February 2013, October 2013, and March 2014	\$ 3,917 (3)
B. Buffalo Brook – improved forest management practices 1. Task meeting – establish jurisdiction/ roles (Plymouth, Reading, VFPR, VFW) 2. Geomorphic Assess. updates (post-Irene) 3. Project ID, conceptual designs, budgets 4. Task meeting – select priority projects, funding strategies. 5. Prepare task summary report	March 2013 May 2013 – July 2013 July 2013 – Oct 2013 Oct 2013	\$ 6,678 (4)
C. Alt Anal: Money Brook / Pingree Field 1. Compile historical damage / cost data 2. Identify alternatives 3. Task meeting: Pingrees, ANR, NRCS, others 4. Prepare conceptual designs / budgets for alternatives 5. Task meeting: Pingrees, ANR, NRCS – select priority alternative, funding strategies 6. Prepare task summary report	February 2013 Feb - April 2013 April 2013 April – July 2013 July 2013 September 2013	\$ 13,711 (4)
D. Alt Anal: Patch Brook Road 1. Compile historical damage and cost data 2. Identify landowners / alternative routes 3. Task meeting: Plymouth, ANR, SWRPC 4. Prepare conceptual designs / budgets for alternatives 5. Hold public forum 6. Prepare task summary report	Feb 2013 - May 2013 Feb 2013 – May 2013 May 2013 May 2013 - July 2013 July 2013 Sept 2013	\$ 7,118 (4)
E. Project Development 1. Develop Landowner Database 2. Review Remote Sensing Data/ Irene damages/ Prioritize Outreach 3. Windshield Survey / High-water Observations 4. Landowner Outreach & Project Identification / Development 5. Outreach meetings with Plymouth, Ludlow town boards, road commissioners. 6. Prepare project packets.	February 2013 Feb – March 2013 Feb – Nov 2013 Ongoing Feb – Nov 2013 May 2014	\$ 10,086 (4)
Total		\$ 41,510

Detailed Budget

	LRA \$55	SMRC Labor K.Underwood \$80	SMRC Mileage \$0.56	Norwich Univ G. Springston Lump Sum	Partners
A Project Coordination					
1 Kick-off Meeting/ Form Steering Committee	4	3	140		ANR
2 Steering Committee Meeting #1	6	4	140		ANR, Town Plymouth
2 Steering Committee Meeting #2	6	4	140		ANR, Town Plymouth
2 Steering Committee Meeting #3 / LRA Bd mtng	6	6	140		ANR, Town Plymouth
B Buffalo Brook - improved forest management practices					
1 Task meeting - establish jurisdiction / roles	6	6	140		ANR, VFPR, VFW
2 Geomorphic assessment updates (post-Irene)		16	280		ANR, VFPR
3 Project ID, conceptual designs, budgets		28			ANR, VFPR, VFW
4 Task meeting - select priority projects, identify funding	6	8	140		ANR, VFPR, VFW
5 Prepare task summary report	2	12			
C Alternatives Analysis: Money Brook / Pingree Fields					
1 Compile historical damage / cost data	4	4			ANR, Town Plymouth
2 Determine nature, magnitude, extent of upstream slope failures		8		\$6,000	Norwich University
3 Identify Alternatives		12	140	\$500.00	ANR, Plymouth, SWCRPC, Vtrans
4 Task meeting: Pingrees, ANR, NRCS, others re: alternatives	6	6	140	\$500.00	Pingrees, ANR, NRCS, Plymouth
5 Prepare conceptual designs/ budgets for alternatives		24			
6 Task meeting: select priority alternatives, funding strategies	4	4	140		Pingrees, ANR, NRCS, Plymouth
7 Prepare task summary report	2	12			
D Alternatives Analysis: Patch Brook Road					
1 Compile historical damage / cost data	2	6	140		Town Plymouth
2 Identify landowners/ alternative routes		8			Town Plymouth
3 Task meeting: Plymouth, ANR	6	4	140		ANR, Town Plymouth
4 Prepare conceptual designs/ budgets for alternatives		28			
5 Hold public forum (2)	12	12	280		ANR, Town Plymouth, TRORPC
6 Prepare task summary report	2	12			
E Project Development					
1 Develop landowner database		6			
2 Review Remote Sensing Data / Irene damages/ prioritize outreach	6	6			ANR
3 Windshield Survey/ High-water Observations	8	12	280		
4 Landowner Outreach & Project ID / Development	12	24	560		ANR, NRCS, VRC, VLT, BBR
5 Mtngs Plymouth, Ludlow town boards, rd commissioners	18	12	280		Towns, TRORPC, SWCRPC
6 Compile project packets	6	24			
	124	311	3220		
Contracted	\$6,820	\$24,880	\$1,787	\$7,000	
Overhead	\$1,023				
				\$41,510	

Figure 1. Round Pond (foreground) and Lake Rescue in the days following Tropical Storm Irene. These instream lakes on the Black River continued to run turbid for several weeks, due to upstream channel work in the town of Plymouth and ongoing sources of sediment including Money Brook.



Figure 2. Forest Management Practices, Buffalo Brook watershed

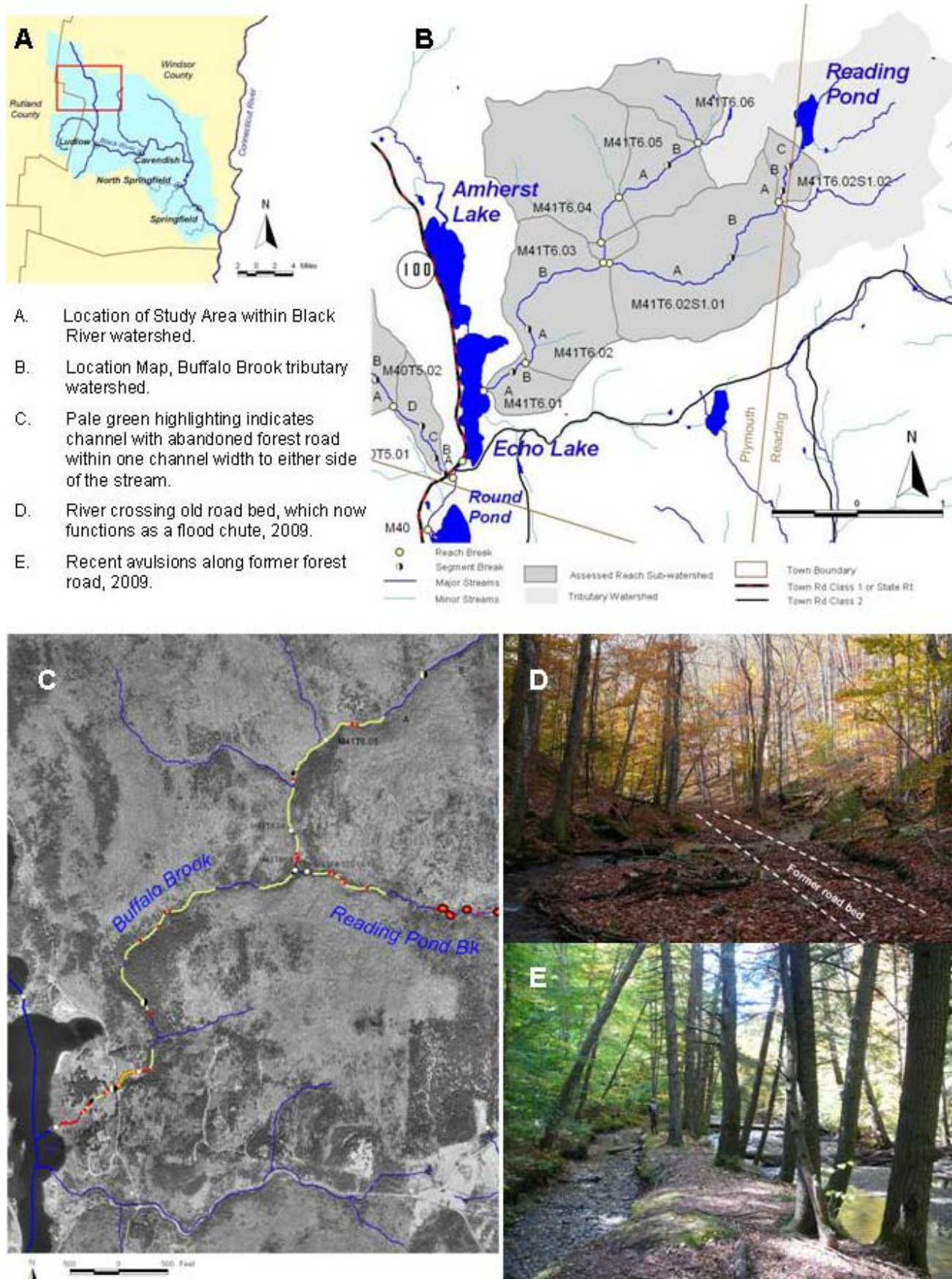


Figure 3. Alternatives Analysis: Money Brook

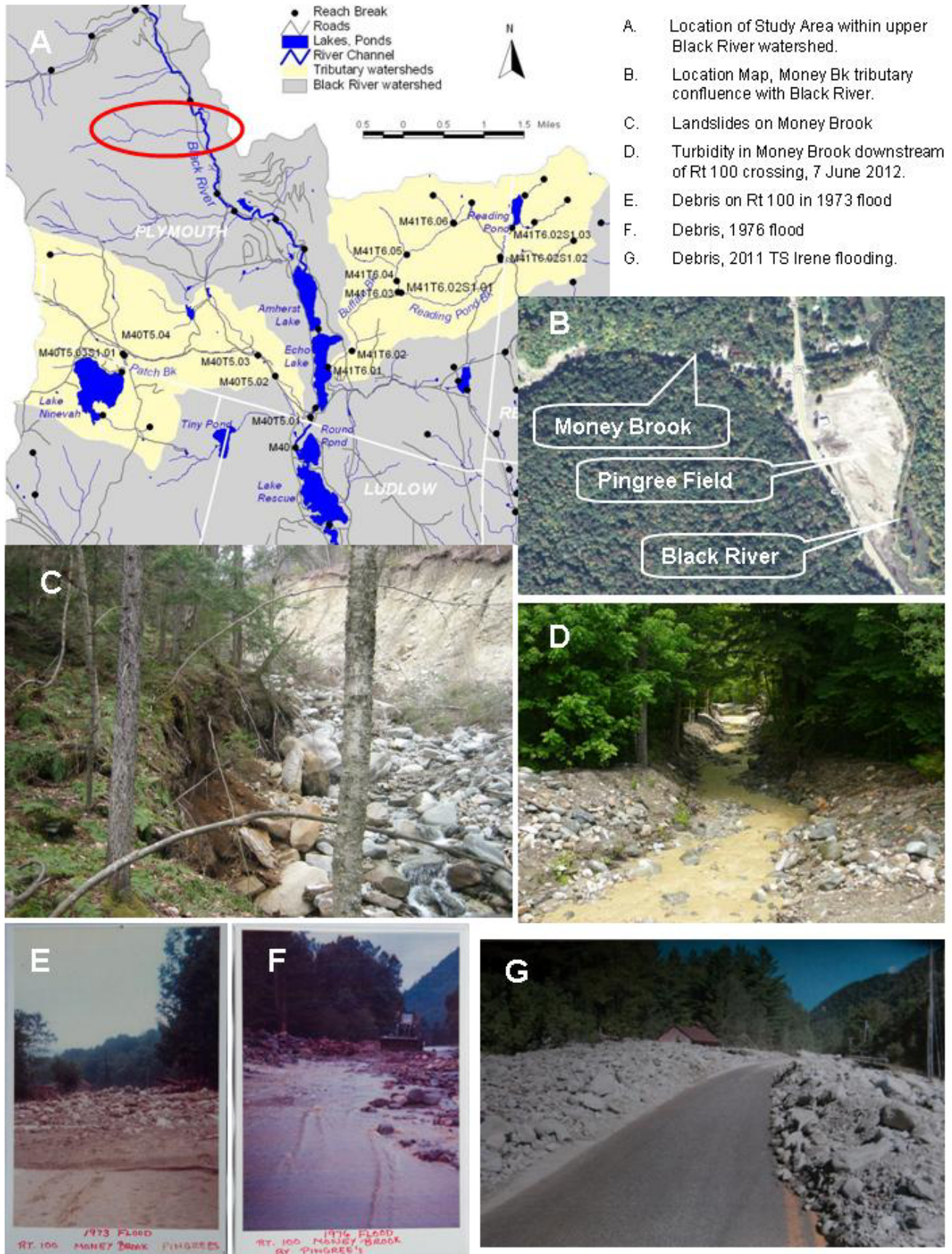
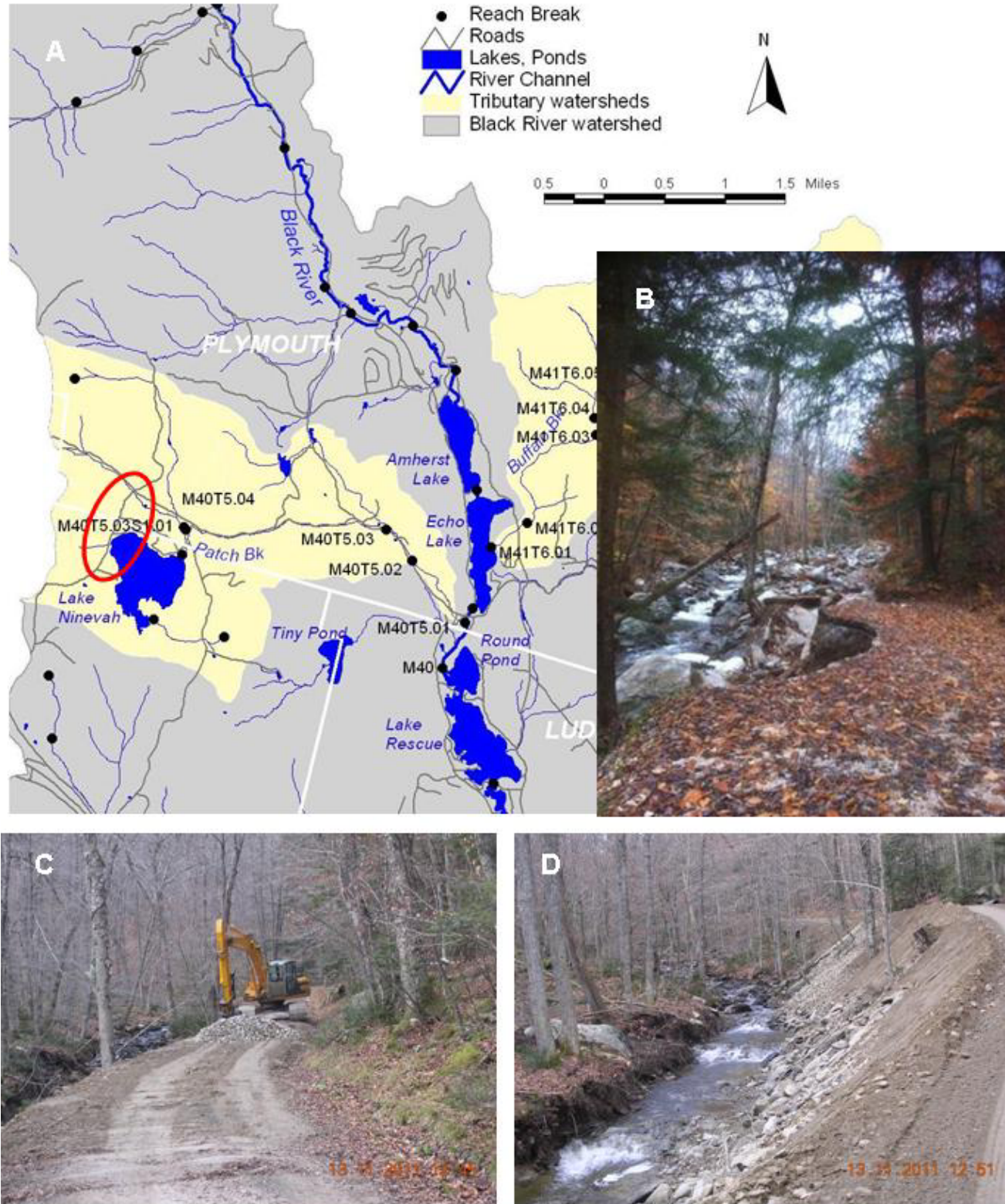


Figure 4. Alternatives Analysis: Patch Brook Road

- A. Location of Study Area within upper Black River watershed (Patch Brook tributary).
- B. Erosion along Patch Brook Road, Patch Brook during TS Irene 28 August 2011.
- C. Restoring Patch Brook Road, 13 November 2011.
- D. Large volumes of gravel fill used to rebuild eroded sections of Patch Brook Road, November 2011.





State of Vermont

Department of Forests, Parks & Recreation

100 Mineral Street, Suite 304
Springfield, VT 05156-3168

www.vtfpr.org

[phone] 802-885-8855

[fax] 802-885-8890

[tdd] 802-253-0191

Agency of Natural Resources

[direct line] 802-885-8820

jay.maciejowski@state.vt.us

December 5, 2011

Christina Salerno
Lake Rescue Association
7 Norman Drive
Ludlow, VT 05149

Re: VT Watershed Grant application, Buffalo Brook watershed (upper Black River)

Dear Chris,

The Vermont Department of Forests, Parks & Recreation and Department of Fish & Wildlife are very interested in the project you propose to reduce sediment production in the Buffalo Brook and Reading Pond Brook tributaries to the Black River. We welcome a collaboration with VT Department of Environmental Conservation and with your local watershed group and geomorphic consultant to identify, prioritize, and plan for improved forest management practices and stream restoration projects.

The project you propose will be a great assistance to our Departments and will be consistent with management recommendations in the Recreation Plan for the Arthur Davis Wildlife Management Area and the management plan for Camp Plymouth State Park.

We wholeheartedly support the Lake Rescue Association application for a 2012 Vermont Watershed Grant, and look forward to working with you.

Sincerely,

Jay Maciejowski
Forestry District Manager, Springfield
Vermont Department of Forests, Parks & Recreation

Forrest Hammond
Wildlife Biologist, Springfield
Vermont Fish & Wildlife Department



Municipal Manager
P.O. Box 359
Ludlow, VT 05149-0359



Ludlow, Vermont

A Better Place To Live, Work & Play

Municipal Offices
Ph. 802-228-2841
Fax 802-228-2813
townhall@ludlow.vt.us
village@ludlow.vt.us

August 10, 2012

Vermont DEC
Watershed Management Division
ATTN: Heather Bullett, Grants Management Specialist

Re: Lake Rescue Association Grant Request
Ecosystem Restoration Program

Dear Ms. Bullett,

Please consider this letter one of strong support for the above grant request. As Municipal Manager in Ludlow I have had the opportunity over the last 9/12 years to observe what I consider the ecological disasters that have occurred in our Ludlow Lakes as well as those in Plymouth, as a result of episodes in the tributaries of the Black River that originate in the Town of Plymouth.

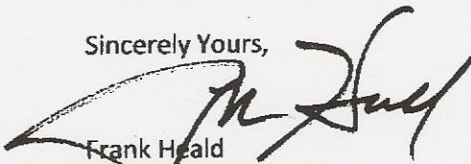
The recent situation with Money Brook after Tropical Storm Irene has been the most egregious, however when an errant beaver dam failed on Buffalo Creek a few years ago the siltation that flowed into Lakes Pauline, Rescue, and Echo was devastating to those of us who care about the quality of our waters.

In addition we believe that more can be done with the road systems that adjoin these tributaries much as we have accomplished in Ludlow working with Vermont Local Roads and the Lake Rescue Association.

While we realize that the current time and money available will not solve the problems over night, it is vitally important that we begin the process if we are to preserve the water quality integrity of the lake systems in Ludlow and Plymouth for future generations.

Thank you for your consideration.

Sincerely Yours,



Frank Heald
Municipal Manager

Any Season Is The Right Season to Visit Ludlow