Youth Conservation Corps Streams Project

A Final Report to

The New Hampshire State Conservation Committee

Submitted by

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Summary

Beginning in June 2007, the Acton Wakefield Watersheds Alliance added weekend work to its Youth Conservation Corps program. The focus of the June weekend projects was on repairing erosion problems on municipal and public sites in the Wakefield area of the AWWA region. The YCC Technical Director met with town officials and the local priest to determine the causes of the erosion problems at identified sites and to design Best Management Practices to correct the situations. Under the guidance of the YCC Technical Director, the YCC crew leader and four high-school age crew members implemented designs and installed the BMPs on the four chosen sites.

Ten possible project sites were evaluated and considered with four of the sites becoming actual AWWA YCC projects in Wakefield. Selection criteria included condition of the site, scope and size of the project, BMPs needed, public visibility, implementation feasibility, material availability, time involved, etc. An additional three sites in Acton, Maine were identified and remedied in September. Photographs of the Acton sites are included in the AWWA YCC 2007 Season Report.

The Pollutant Load reduction estimates performed, using the Region 5 Model, indicated a sediment load reduction of 5.4 tons per year and a phosphorus load reduction of 4.7 pounds per year as a result of the BMPs installed on the chosen sites in Wakefield.

Over the course of the summer and fall the Wakefield stream projects were revisited and maintained by the YCC crew. AWWA staff worked with municipal and church officials to determine off-season maintenance requirements.

During the period April 1, 2007 to September 30, 2007 the AWWA YCC program accumulated $44,569.19 in match contributions. The match came from a combination of town support, lake association support, business donations and volunteer labor. As the Moose Plate project ran concurrently with the summer season it is difficult to sort out exactly which part of the match goes to each program. Documentation of the entire AWWA match is available if requested.

The Board of Directors and staff of the Acton Wakefield Watersheds Alliance express their gratitude to the NH State Conservation Committee for its generous support.

TASK 1 Unselected AWWA YCC Project Considerations

5. Culverts - Perkins Hill Road:

These culverts were in need of maintenance and cleaning due to recent heavy precipitation. However, the current state of the culverts is to so calamitous that it would have a negative affect on water quality. However, in the near future maintenance should be performed as a preventative to future issues that may require reactionary treatment.

6. Retention Wells - Canal Road:

It was never made clear as to who was responsible for the maintenance of these structures and therefore they were not chosen to be serviced by the AWWA YCC. Considerable sediment has accumulated in them and must be removed for them to function properly.

7. Culverts - Witchtrot Road:

As with the retention wells on Canal Road, it was never made clear as to who was responsible for the maintenance of these structures and therefore the AWWA YCC did not service them. Considerable sediment and debris has accumulated in them and must be removed for them to function properly.

8. Across Street from St. Anthony's Church - Meadow Street:

This site actually belongs to a private landowner and was thus outside the scope of these municipal projects. However, runoff from the road is eroding the soil on the property and depositing sediment into the Branch River.

9. Lovell Lake Beach - Wakefield Road:

No significant erosion was found on this site so no remediation was required from the AWWA YCC.

10. Belleau Lake Beach (not pictured) - Belleau Boulevard:

BMPs had already been established at this site and were doing an adequate job at control the erosion occurring down the beach. The current maintenance of the site is sufficient enough that the site does not need the help of the AWWA YCC.

TASK 2 Selected AWWA YCC Project Sites

1. Province Lake - Bonnyman Road:
This is a town owned property adjacent to the south shore of Province Lake. Several large-diameter white pines were recently removed from the site causing considerable vegetation loss and subsequent erosion of sediment from the site into the lake. Also, a large amount of water from the road enters the site with enough velocity to wash sand across the site and down into the lake. Along the road, an infiltration trench was created. Following the flow of water, timbers were established leading to plunge pools. The area was then covered in erosion control mix. Also, numerous plants were planted where previous vegetation had been eradicated. By the water, riprap was added where deep gully erosion had occurred. Also, steps were constructed to allow a new access to the lake, replacing the old access where private property had to be trespassed and gully erosion was occurring.

Before: After:

Before: After:

Before:

After:

Sign:

2. Lovell Lake Boat Ramp - Witchtrot Road:

Water coming down Witchtrot Road is able to make its first escape at the beginning of this property causing significant erosion. Also, sand from the road is deposited on the site and is swept into the lake. This area is often used for temporary parking for those using the boat ramp to access Lovell Lake. A rain garden was constructed to collect road runoff. This runoff is directed into the rain garden by timbers and an infiltration trench (not yet created). Timbers parallel to Witchtrot Road prevent sand and water from spreading over the grass and into the lake. And erosion control mix was laid to prevent sand from washing away.

Before:

After:

Sign:

3. St. Anthony's Church - Meadow Street:

Runoff from the church's parking lot enters the Branch River bringing considerable loads of sand. This runoff exits the parking lot at various breaks in the asphalt berm that surrounds the parking lot. At two of these breaks, infiltration trenches were created to divert water into rain gardens, preventing the runoff from reaching the Branch River. Along the driveway of the church, an infiltration trench was created to slow water and collect it before allowing it to slowly seep into the native vegetation.

Before:

After:

Before:

After:

Sign:

4. Rear of Mobile Station - Meadow Street / White Mountain Highway:

Runoff from Route 16 has created gully erosion down the property into the Branch River. Riprap will be placed in the gully to prevent this erosion and to slow down the runoff so it does not carve up the slope due to the reduced velocity of the water.

Before:

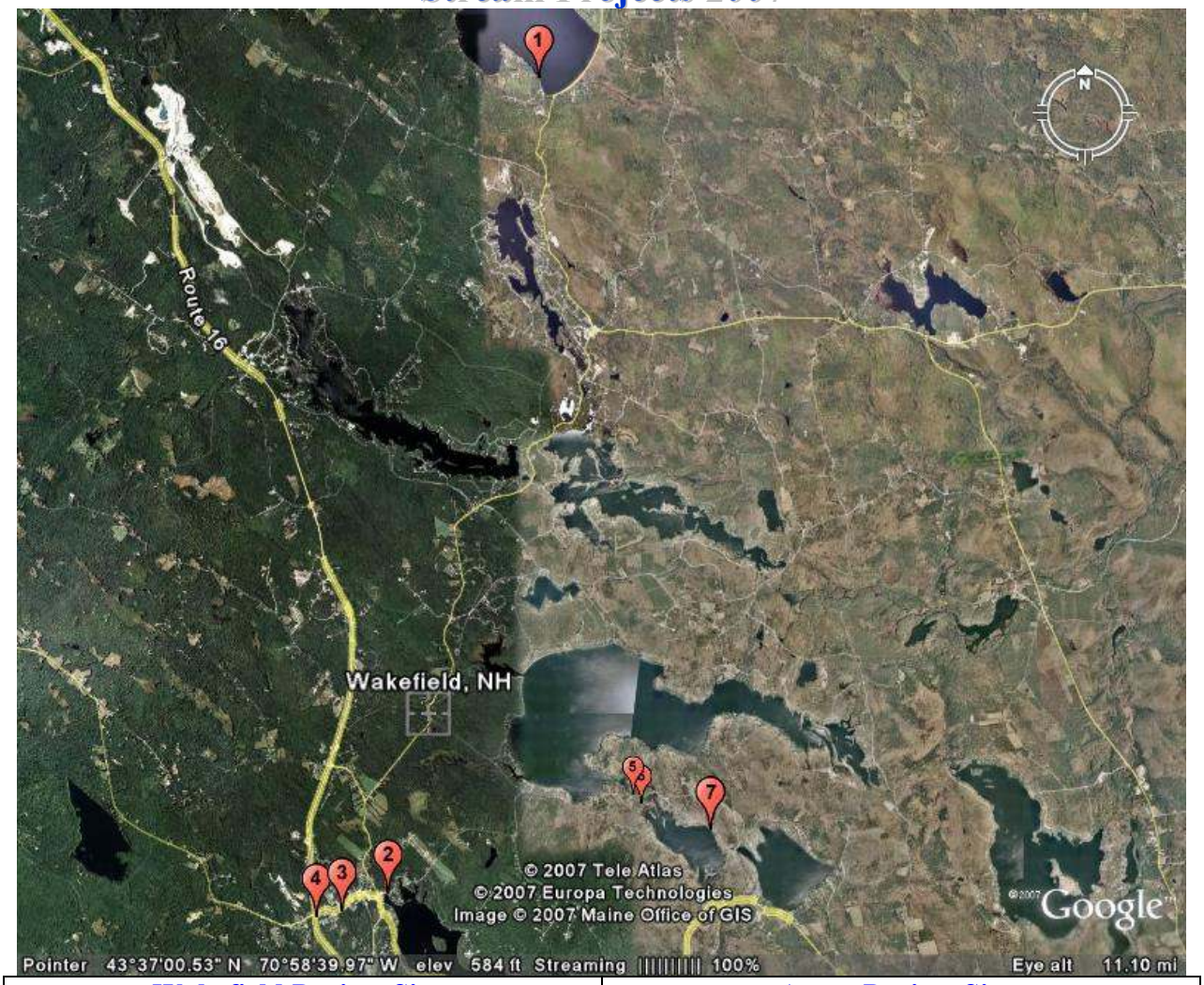
After:

Sign:

TASK 3 Progress Reports, Photos of sites, signage & PLR Report

The Acton Wakefield Watersheds Alliance submitted an interim report with the invoice for Task 1 on July 18, 2007 with documentation for both Tasks 1and 2 and match figures for the time period April 1. 2007 to June 30, 2007. This final report includes the Pollutant Load Reduction estimates, the required map of the project sites as well as a map of the AWWA region watersheds.

Acton Wakefield Watersheds Alliance
Stream Projects 2007



Wakefield Project Sites	Acton Project Sites
1. Bonnyman Rd.	5. Robinson Rd.
2. Lovell Lake Boat Ramp	6. Canal Rd.
3. St. Anthony's Church	7. Horn Pond Access
4. Mobil Station – Rt 16	

NPS Projects - Pollutants Controlled Report

New Hampshire Department of Environmental Services, Watershed Assistance Section

DES Project Number: ___B-06-C-02_____ **Annual Report for the year:** 2007__

Project Title: _Youth Conservation Corps_____

Grantee: __Acton Wakefield Watersheds Alliance_____

Table 1. Pollutant Load Reduction Estimates for NPS Sites Treated with BMPs

Waterbody Name	Sediment tons per year	Phosphorus pounds per year	Nitrogen pounds per year
Province Lake	3.4	2.9	N/A
Branch River	1.6	1.4	N/A
Lovell Lake	0.4	0.4	N/A
Totals	5.4	4.7	N/A

Table 2. Wetlands, Streambanks, Shoreline Protected / Restored During This Project

Resource	Planned acres	Actual acres	Planned linear feet	Actual linear feet
Wetlands restored			not applicable	not applicable
Wetlands created			not applicable	not applicable
Streambank /shoreline protected	not applicable	not applicable		
Stream channel stabilized	not applicable	not applicable		

The estimations in this report were determined using the appropriate estimation model(s) and applied according to the procedures prescribed for the model. To the best of my knowledge these are reasonable estimates using appropriate methods. Documentation is kept on file by the grantee and is available for review by DES / EPA.

Submitted by (for Grantee): _____ _____ on ___/___/___
Signature Printed Name

Reviewed by (for DES): _____ _____ on ___/___/___
Signature Printed Name

NPS Projects - Pollutants Controlled Report

New Hampshire Department of Environmental Services, Watershed Assistance Section

DES Project Number: **B-06-C-02** Annual Report for the year: ____2007_____

Table 3. List of NPS Sites and Methods Used

Site ID (name or # from site list)	Brief Description NPS Site	Estimation Method / Sub-Method Used	Tons of Sediment This Year	Pounds of Phosphorus This Year	Pounds of Nitrogen This Year
Province Lake Property (Province Lake)	Waterbars, Drywells, Pathway, Infiltration Trench, Native Vegetative	Region 5/GEE	3.4	2.9	N/A
St. Anthony's Church Property (Branch River)	Rain Gardens, 120' Infiltration Trench	Region 5/GEE	1.2	1.0	N/A
Lovell Boat Ramp Property (Lovell Lake)	Waterbars, Erosion Control Mix, Rain Garden, Native Vegetation	Region 5/GEE	0.4	0.4	N/A
White Mtn Highway Property (Branch River)	Riprap Stabilization	Region 5/GEE	0.4	0.4	N/A
		Totals for the Year:	5.4	4.7	N/A

Pollutant Load Reduction Estimation Methods

1. Region 5 Model Refer to EPA website http://it.tetratech-ffx.com/stepl/default.htm
Go to the Region 5 Load Estimation Users Manual, "Michigan Method".

Descriptors to use for Region 5 Model sub-methods:

Region 5 / GEE	Gulley Stabilization - uses Gulley Erosion Equation
Region 5 / CEE	Streambank / Ditchbank and Roadbank Stabilization - uses Channel Erosion Equation
Region 5 / Fields	Agricultural Fields - uses Revised Universal Soil Loss Equation (RUSLE), sediment delivery ratio and contributing drainage area.
Region 5 / Filter	Filter Strips - uses relative gross filter strip effectiveness
Region 5 / Feedlot	Feedlot Pollution Reduction - uses a 12 step method

2. WEPP Model. Refer to USFS website http://forest.moscowfsl.wsu.edu/fswepp/
Water Erosion Prediction Project (WEPP) computer model

Acton Wakefield Watersheds Alliance Region