The Acton Wakefield Watersheds Alliance

Youth Conservation Corps

2019 Season Report

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Dame Electric, M & M Boat Storage, & Sharper Image Salon

Contents

About AWWA..... 6
Executive Summary..... 7
Salmon Falls – Piscataqua River and Saco River Watersheds Map 9
2019 Technical Assistance (TA) Visits..... 10
2019 Technical Assistance Map 12
2019 Youth Conservation Corps (YCC) Overview..... 13
2019 YCC Project Host Site Map..... 18
Appendix A – 2019 Technical Assistance and Project Host Sites Map 45
Appendix B – NH DES Pollutants Control Report..... 46
Appendix C – ME DEP Pollutants Control Report 52

About AWWA

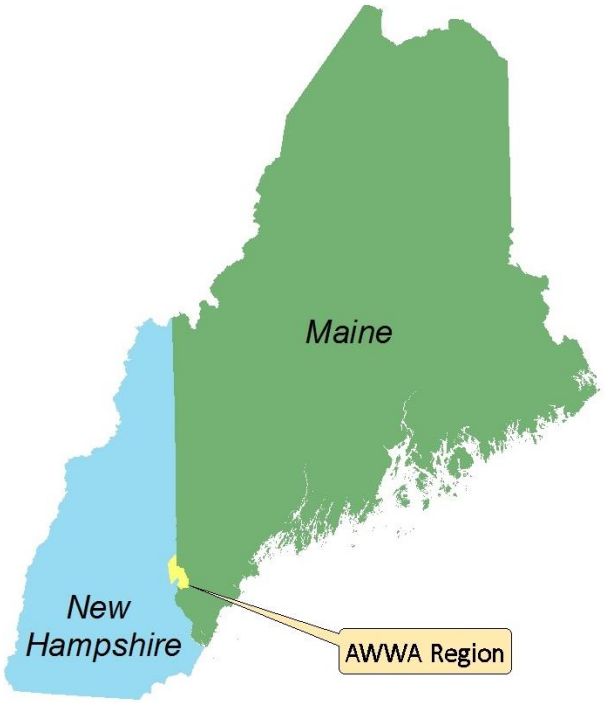
Mission

The mission of the Acton Wakefield Watersheds Alliance is to protect and restore water quality to maintain the social, economic, and environmental stability in our towns and in the region.

The members of AWWA include representatives of local lake associations, members of town committees including planning boards, and local residents. Our partners include UNH and UME Cooperative Extensions, Maine DEP, New Hampshire DES, York County Soil & Water Conservation District, and the local lake associations.

Watersheds

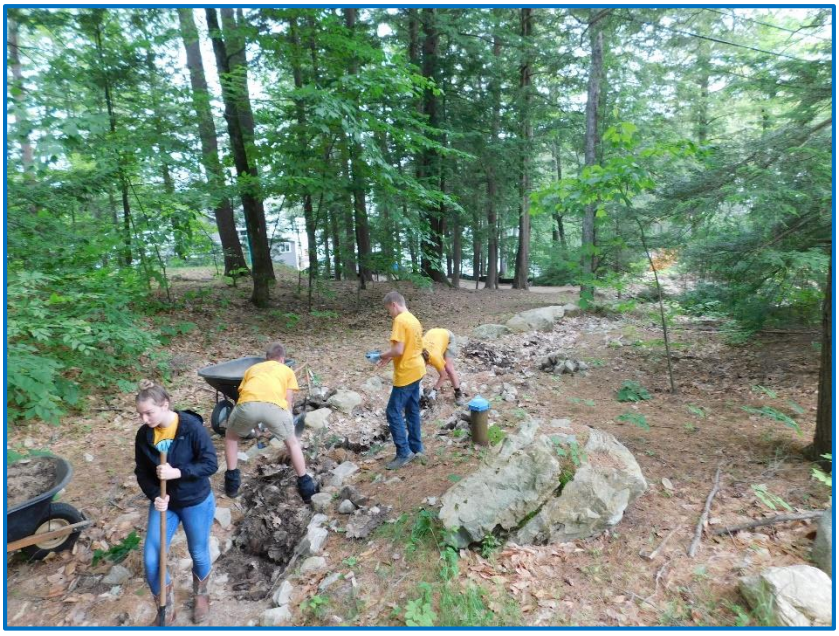
The AWWA Youth Conservation Corps (YCC) focuses its efforts on the Salmon Falls-Piscataqua and Saco River watersheds within the towns of Acton, Maine and Wakefield, New Hampshire. Within these watersheds AWWA currently services 10 water bodies – Balch Lake, Belleau Lake, Branch River, Horn Pond, Great East Lake, Lake Ivanhoe, Lovell Lake, Pine River Pond, Province Lake, and Wilson Lake.



Executive Summary

The Acton Wakefield Watersheds Alliance, a non-profit organization established in 2005, is dedicated to protecting and restoring the water quality of the lakes, ponds, rivers and streams of Wakefield, New Hampshire and the border region of Acton, Maine. AWWA staff members and volunteers work within the communities to strengthen the understanding that what happens on land determines the health of the local waters. Healthy waterbodies provide essential benefits to our communities as a natural resource, wildlife habitat, recreational opportunity and economic engine.

AWWA's Youth Conservation Corps (YCC) program was developed in 2006 to implement erosion control projects in our target region. The program is designed to reduce pollution caused by runoff from rain events and seasonal melt water that flows into our local lakes, rivers, and streams. The YCC tackles this through the installation of "Best Management Practices" (BMPs) or landscaped features that promote the infiltration of runoff or divert the runoff away from the lake toward vegetation where it can soak into the ground. Each project showcases solutions to environmental problems faced by waterfront properties that landowners can do themselves.



The process starts with a technical assistance visit between the homeowner and the AWWA program manager. During this initial meeting, the discussion centers on how the homeowners use their property, identifying areas with erosion, and going over potential fixes. The homeowners have the option to sign a pledge indicating they will install at least one of the recommendations within the next 12 months. If they sign the pledge they receive a free technical assistance packet that includes a site design, recommendations, local suppliers, and BMP fact sheets. At this point, homeowners have the option to apply to become a project host for our YCC program. The homeowner can also implement the recommendations themselves or hire a contractor. In addition to the landscape design provided to the homeowner, the program manager focuses on educating homeowners on why the design features were chosen, what they will accomplish, and how to maintain them. This process is important in raising stakeholder awareness of the relationship between land use and water quality. The AWWA board and staff also focus efforts on local outreach to highlight the conservation practices that can reduce pollution.

If the site is conducive to a YCC project, the homeowner will receive a second packet that outlines specifically what AWWA will do and what is expected of the homeowner. The YCC will then provide free labor to install the BMPs and the homeowner is responsible for buying the materials. Homeowners are also asked to make an optional donation of 20% of the cost of AWWA's labor.

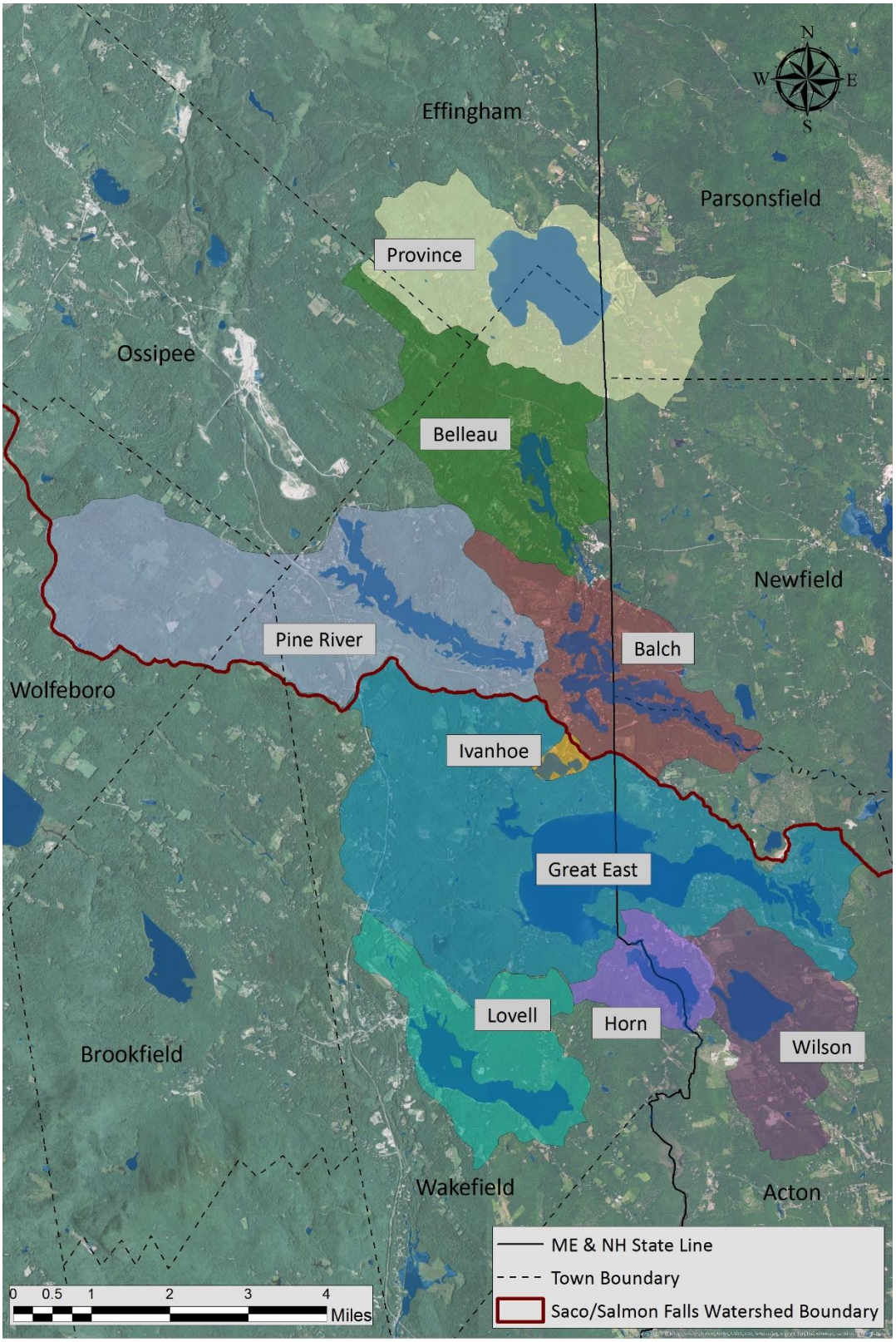
The labor of crew is funded by donations and grants, and the landowner provides all the necessary materials. Behind these projects is a crew of eager high school students supervised by a crew leader and the program manager. The YCC program gives its youth corps the opportunity to effect environmental solutions and empowers them to become the future stewards of our water resources.

Since 2006, the AWWA YCC has completed over 262 projects across 10 water bodies in the Wakefield, NH and Acton, ME region. The past successes set the bar high, but every year the YCC exceeds expectations and does fantastic work.

Jon Balanoff

AWWA Executive Director

Salmon Falls – Piscataqua River and Saco River Watersheds Map



2019 Technical Assistance (TA) Visits

Requests for technical assistance were received from residents on 8 lakes in the AWWA region. These requests were the result of recruitment efforts by AWWA at community events, press articles, presentations at lake association meetings, the display of AWWA signs at past project host sites, and word of mouth from neighbors. All of these efforts came together to further AWWA's message and grow AWWA's project host program.

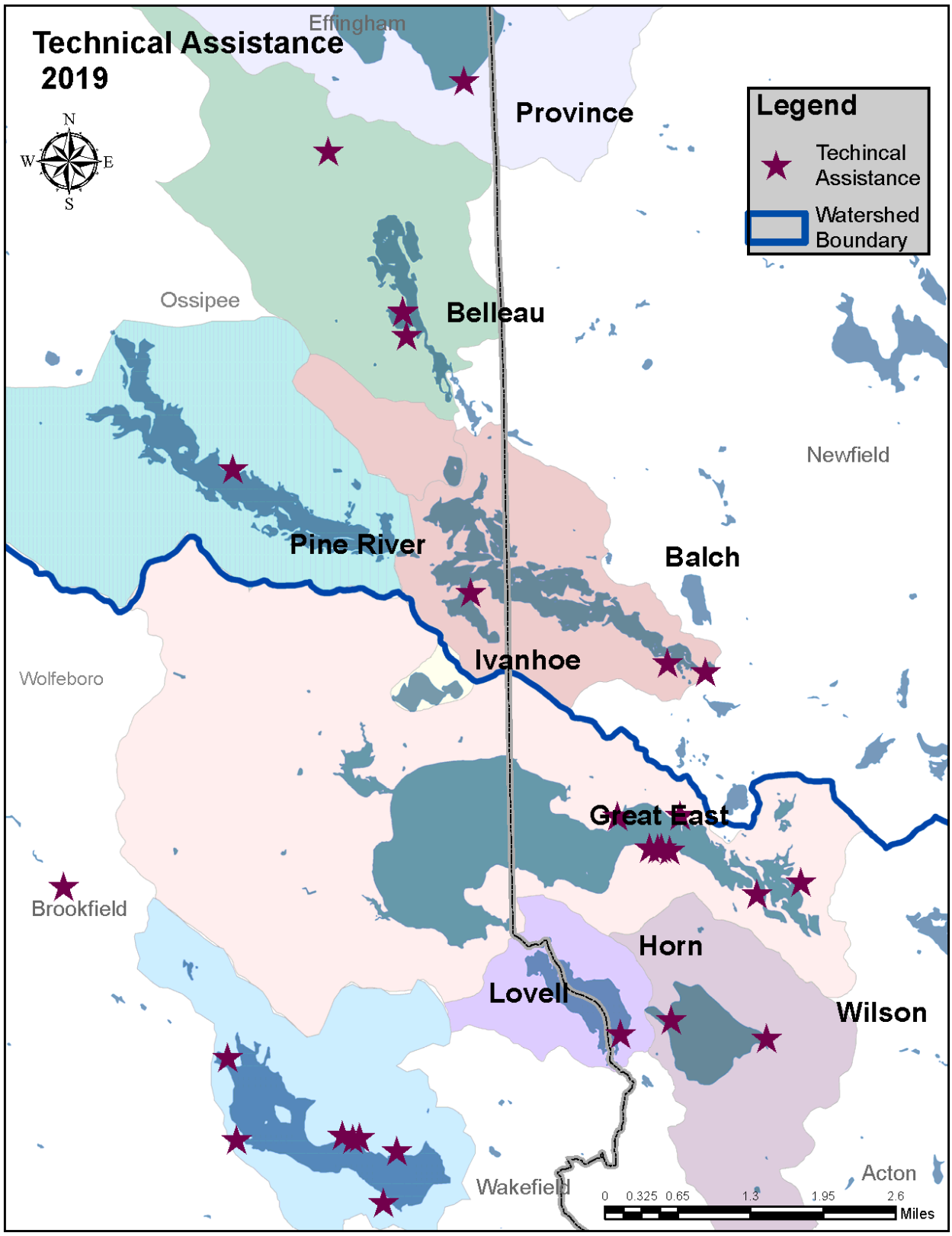
In 2019, AWWA received 38 TA requests from property owners who had erosion issues or wished to have their property assessed for issues that could be harming the lake. Of these, 27 warranted a site visit. Not every technical assistance visit results in a design delivered to property owners for use correcting erosion issues on their property. In some cases, TA visits result in a project being completed in the same year. In other cases, homeowners did not receive designs, as their properties were erosion free and in good shape. In additional cases, some problems require serious engineering beyond the scale of a technical assistance visit.

The property owners that do receive design packets sign a pledge stating that they will perform at least one of the recommended designs in the packet within 12 months. Property owners can go about this in several ways. They can do the work themselves using the BMP fact sheets provided to them, they can hire a contractor to perform the work, or they can apply to be part of the AWWA project host program and have the YCC perform the work.

Every year AWWA contacts the previous year's TA clients and performs checks on their sites. This is in compliance with the pledge signed by the property owners and allows AWWA to pursue the property owner as a project host or to see if the owner needs a new design to fit their budget or landscaping. The technical assistance design packets include an introductory letter, an outline of the recommendations and an explanation of why those specific BMPs were chosen, a landscape design plan, a pledge sheet, a local suppliers list, and fact sheets for the recommend BMPs. The fact sheets outline the purpose, design, and instructions for constructing the BMP.

2019 Technical Assistance Visits by Lake			
Balch lake			
1.	Alexander Konovalchik	236 Lakewood Drive	Acton, ME
2.	Peter Jankowski	14 Lakewood Drive	Acton, ME
3.	Danielle Ishak	34 Cove Road	East Wakefield, NH
Belleau Lake			
4.	Pam Gelardi	11 Lexington Drive	East Wakefield, NH
5.	Joseph Boudreau	521 Beverly Hills Road	East Wakefield, NH
6.	Cheryl Gifford	527 Beverly Hills Road	East Wakefield, NH
Great East Lake			
7.	Andi & Bob Couilliard	188 Langley Shores Drive	Acton, ME
8.	Melanie Wheeler	67 Fulton Rd	Acton, ME
9.	Phil Rice	57 Stuart Drive	Acton, ME
10.	Earl Frost	59 Stuart Drive	Acton, ME
11.	Ed Drake	Livingston-Goodwin Road	East Wakefield, NH
12.	Tricia Longo	161 Ice Road	Acton, ME
13.	Ann Travers	77 Grand View Road	Acton, ME
14.	Gary Ball	159 Parsons Point Rd	Acton, ME
15.	Lee-Anne Richardson	101 Stewart Drive	Acton , ME
Lake Ivanhoe			
16.	Sharon Coyne	34 Middle Road	Sanbornville, NH
Lovell Lake			
17.	Pam Maguire	52 N. Robert's Cove Road	Sanbornville, NH
18.	Area Princi	42 No. Roberts Cove Road	Sanbornville, NH
19.	Carol (& Beth) Avery	88 Pond Road	Sanbornville, NH
20.	Nick Mourginis	356 Lovell Lake Road	Sanbornville, NH
21.	Doug Soares	35 Wayside Drive	Sanbornville, NH
22.	Jeff Thacher	772 Brackett Rd	Sanbornville, NH
23.	Maureen & Ken Cram	1149 Lovell Lake Road	Sanbornville, NH
Province Lake			
24.	Pat Benzing	4982 Province Lake Road	East Wakefield, NH
Pine River Pond			
25.	Samantha Stone	954 Lord Road	Sanbornville, NH
Wilson Lake			
26.	Sherry & Tom Fullerton	63 Eagle Rd	Acton, ME
27.	Ken Karnofsky	135 Point Road	Acton, ME

2019 Technical Assistance Map



2019 Youth Conservation Corps (YCC) Overview

The 2019 AWWA YCC consisted of the Program Manager Jon Balanoff, Crew Leader Isobel Michaud, and crew members, James Shimansky, Bryce Stetson, Cayden Brown, and Chelsea Crawford.

Isobel was referred to us by our current Board Secretary, Jeanne Achille. Having grown up going to Wilson Lake, she was in the process of moving back to New Hampshire to begin a Master's program at UNH when she was hired as crew leader for the summer. Isobel's leadership paired with the knowledge of returning crew members, James and Bryce, created a productive and educational environment. The degree of independence in this crew allowed for Jon to focus primarily on designing BMPs, coordinating with Project Hosts, and learning the additional skills necessary to ultimately fill the role of Executive Director.

Our previous Program Manager, Amy Arsenault, had conducted more than enough TAs in the previous year, and many of these homeowners were already lined up to become project hosts in 2019. In addition to these, Jon was able to set up enough additional TAs to fill our entire season and even have several lined up for 2020. Youth Conservation Corps projects are selected from technical assistance designs based on criteria set by the AWWA YCC Committee.

The YCC was able to complete 12 projects across 7 different waterbodies in the Wakefield and Acton region; installing a total of 111 BMPs. This will prevent an estimated 42.4 tons of sediment and 36.1 pounds of phosphorus from entering the lakes. The crew worked diligently for the entire eight-week duration, wrapping up in the middle of August and presenting their work to the community during our annual YCC Tour. Projects ranged from planting vegetation and mulch. To building a 90' long infiltration path, filling 200' of firehose with sand, and building a 3' deep rain garden. This crew was willing to improvise when necessary and proved to be quick learners. Thank you to all AWWA staff, crew, crew leaders, and everyone who helped make this season a success. This was truly a team effort.

How to Count Best Management Practices for YCC programs

This list standardizes BMP types, which encourages continuity across YCC programs in New Hampshire & Maine. AWWA has adopted this method so that we are consistent with our fellow YCC programs. BMPs are grouped by type, and some types are split into size categories. Larger BMPs will control more pollutant loading from larger drainage areas and, therefore, count as more than one BMP in the "Type of BMP Installed" table. Categories are based on size or how much material is used for each project.

Three types of BMPs:
Infiltration includes trenches, drip edge drains, dry wells, erosion control berms, rain gardens, detention basins and infiltration steps.
Diversion includes rubber razors, water bars, culverts and turnouts.
Stabilization includes rip-rap, vegetative buffers, ECM, driveway stabilization, path stabilization.

Infiltration Standards

Type of BMP	Small (Counts as 1 BMP)	Medium (Counts as 2 BMPs)	Large (counts as 3 BMPs)
Infiltration trench	<10'	10-20'	20'+
Dripline Trench	<10'	10-20'	20'+
Dry well*	<5 cubic feet	5-10 cubic feet	10+ cubic feet
ECM berm	<10'	10-20'	20'+
Rain gardens	At least 9 sq. ft	9-25 square ft	> 25 square ft
Detention basins	<6' diameter	6-10' diameter	10' diameter
Infiltration steps	<5	5-10	10+

*dry well size refers to capacity to store water (if the structure is filled with crushed stone, divide your capacity by 2)

Diversion Standards

Type of BMP	Small (Counts as 1 BMP)	Medium (Counts as 2 BMPs)	Large (counts as 3 BMPs)
Rubber razors	<14'	14-28'	28'+
Water Bars	<10'	10-20'	20'
Culverts (metal or plastic)	<15" diameter pipe	15-24" diameter pipe	> 24" diameter
Turnouts	1 road/driveway turnout	2 road/driveway turnouts	3 road/driveway turnouts
Open Top Culverts	<14'	14-28'	28'+
Seed Bumps/ Drainage Swale	<14'	14-28'	28'+
Ditches	<100'	100-200'	200'+

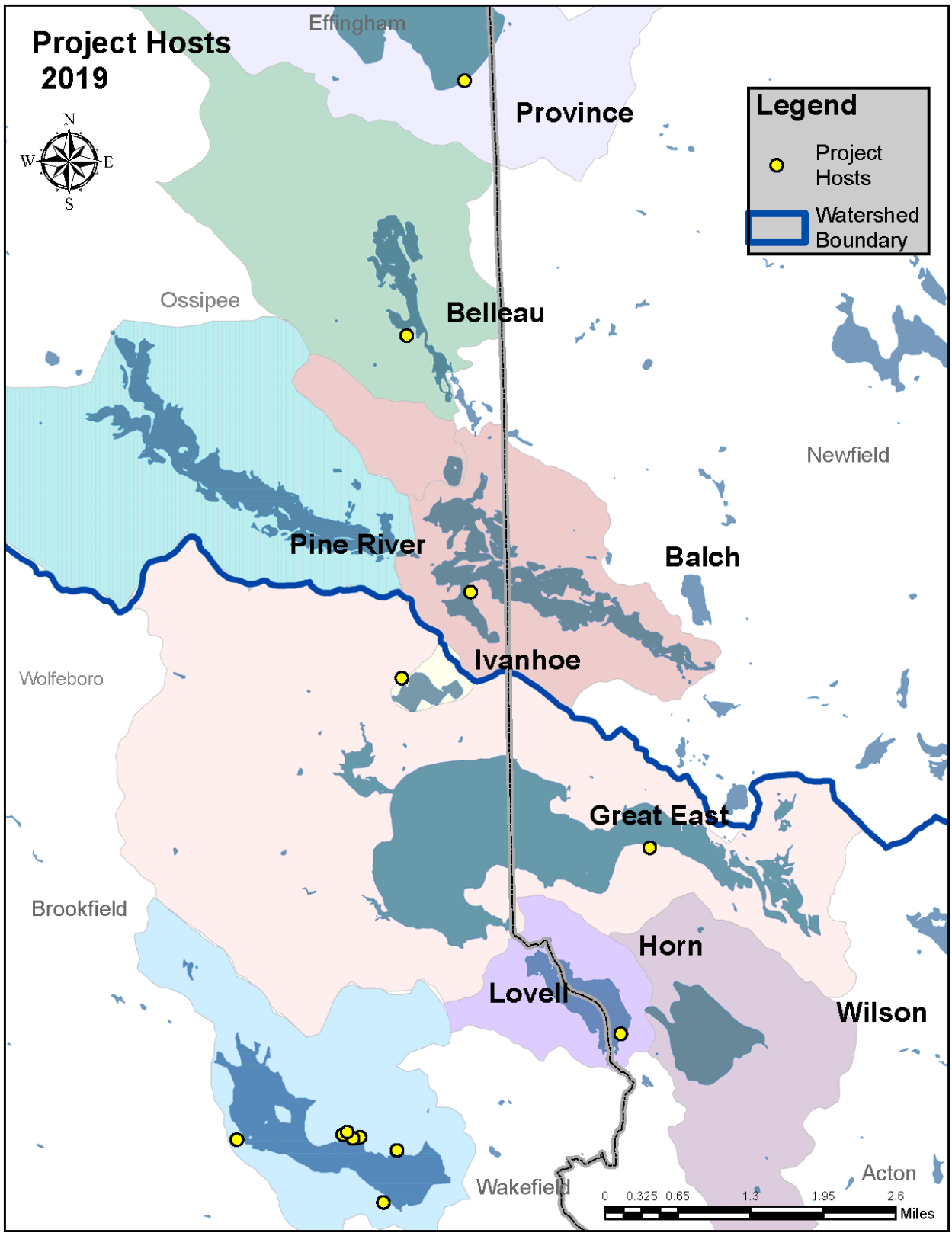
Stabilization Standards

Type of BMP	Small (Counts as 1 BMP)	Medium (Counts as 2 BMPs)	Large (counts as 3 BMPs)
Rip-Rap	<25sq ft	25-50 sq ft	50+ sq ft
Vegetative Buffers	<12 plants	12-24 plants	25+ plants
ECM	<100 sq ft	100-400 sq ft	400+ sq ft
Driveway stabilization	<30 linear ft of driveway	30-60’ linear ft	60+ linear ft
Path Stabilization	<50 linear ft	50-100 linear ft	100+ linear ft
Crown/Ramp Driveway	<30 linear ft of driveway	30-60’ linear ft	60+ linear ft
Crown/Ramp Path	<50 linear ft	50-100 linear ft	100+ linear ft
Cover Path with Erosion Control Mulch	<50 linear ft	50-100 linear ft	100+ linear ft

2019 Summary of Installed BMPs	
Best Management Practice (BMP)	**Number Completed**
Erosion Control Mulch	26
Vegetated Buffer	14
Dripline Trench	4
Waterbar	12
Infiltration Trench	3
Native Vegetation	17
Rubber Razor	5
Infiltration Pathway	11
Firehose Diverter	11
Rain Garden	3
Infiltration Steps	0
Detention Basin	2
Retrofit Infiltration Steps	2
Crushed Stone	0
Dry Well	1

2019 YCC Projects by Lake			
Great East Lake			
1.	Andi & Bob Couilliard	188 Langley Shores Drive	Acton, ME
Balch Lake			
2.	Danielle Ishak	34 Cove Road	East Wakefield, NH
Belleau Lake			
3.	Pam Gelardi	11 Lexington Drive	East Wakefield, NH
Horn Pond			
4.	Nancy Labbe	143 Martha Horn Road	Acton, ME
Lake Ivanhoe			
5.	Joyce Mikesh	21 Shore Road	East Wakefield, NH
Lovell Lake			
6.	Carol Avery	88 Pond Rd	Sanborniville, NH
7.	Pam Maguire	52 N. Robert's Cove Road	Sanbornville, NH
8.	Area Princi	42 No. Roberts Cove Road	Sanbornville, NH
9.	Maureen and Ken Cram	1149 Lovell Lake Road	Sanbornville, NH
10.	Jeff Thacher	772 Brackett Road	Sanbornville, NH
11.	Nick Mourginis	356 Lovell Lake Road	Sanbornville, NH
Province Lake			
12.	Pat Benzing	4982 Province Lake Road	East Wakefield, NH

2019 YCC Project Host Site Map



Andi & Bob Couilliard
Great East Lake – Acton, NH

Andi and Bob were the very first technical assistance recipients of 2019 and they quickly became top candidates to be a YCC Project Host. They had purchased the home that year and Andi was very interested in making sure their property was not impacting the lake. They have a very steep property with a lot of bare soil, so erosion from the road and property was a concern.

Our crew laid erosion control mulch on all of the bare areas of the property and lined them with native vegetation. On a particularly steep section of the property we planted over 100 low growing native vines to hopefully lock to the soil in place as they spread their roots. Near the road, there was a straight dirt pathway sloping down to the house and acting as a vector for road runoff. Here, the crew dug out a pathway and filled it with crushed stone and waterbars to create an infiltration path. The path was lined with stones dug up from the existing path.

Total Number of BMPs	Approximate Cost to Landowner
12	$600
Tons of Sediment Reduced	**Pounds of Phosphorus Reduced**
6.5	5.5
Crew Hours	**Crew Value**
59.25	$1,588.75
BMPs Installed	**Materials Used**
Erosion Control Mulch	Erosion Control Mulch – 7 yards
Native Vegetation	Crushed Stone – 2 yards
Infiltration Path with Waterbars	Pressure Treated Lumber - 16 feet
	Plants - 80

Joyce Mikesh
Lake Ivanhoe – Wakefield, NH

Joyce received technical assistance from AWWA last year and this year we were able to help with her runoff issues. Joyce has dealt with erosion coming from her gutters and shoreline erosion from significantly higher water levels in the past two years. For this property, our crew dug 4-foot-long infiltration trench for each gutter and then buried them in erosion control mulch. We filled her yard with more erosion control mulch and dug a second infiltration trench a set of stairs that descend into the water. Finally, we installed three water bars on a steep, bare slope down to the water that the family uses as a small boat launch for kayaks.

Total Number of BMPs	Approximate Cost to Landowner
8	$300
Tons of Sediment Reduced	**Pounds of Phosphorus Reduced**
1.5	1.3
Crew Hours	**Crew Value**
40.75	$861.25
BMPs Installed	**Materials Used**
Erosion Control Mulch	Erosion Control Mulch – 5 yards
Infiltration Trench	Crushed Stone – 1 yard
Waterbars	Lumber – 8 feet
	Rebar – 8 feet

Carol Avery
Lovell Lake – Sanbornville, NH

Carol Avery and her sister Beth had also reached out to us in 2018 and we conducted their technical assistance visit in the early spring this year. Carol was concerned about the exposed roots in her yard and surrounding her house. The entire back yard and most of the side yard had large roots as high as 6 inches above the ground and posed a tripping hazard. Additionally, the narrow walkway along the side of their house was compacted and acting as a funnel for runoff from the front yard to pour into the back and take soil with it.

Our crew remediated the sheet erosion by adding 6 inches of erosion control mulch to the entire back yard and the path. They also dug a deep infiltration trench that started at a gutter drain and ran across the path, which served to transport roof runoff into the ground and simultaneously capture sheet flow runoff coming down the path. At the other gutter drain, we installed a rain barrel per the Avery's request and Carol's husband attached a spigot to the barrel for outdoor water use. The crew installed a dry well underneath the rain barrel for overflow, and planted a modest vegetated buffer at the water's edge.

Carol Avery Statistics

Total Number of BMPs	**Approximate Cost to Landowner**
12	$569
Tons of Sediment Reduced	**Pounds of Phosphorus Reduced**
5.5	4.7
Crew Hours	**Crew Value**
24	$625
BMPs Installed	**Materials Used**
Vegetated Buffer	Erosion Control Mulch – 14 yards
Erosion Control Mulch	Native Vegetation – 2 plants
Infiltration Trench/Waterbar	Crushed Stone – ½ yard
Rain Barrel/Dry Well	Lumber – 4 feet
	Rebar – 4 feet

Pam & Bob Gelardi
Belleau Lake – East Wakefield, NH

The Gelardi's have a very steep slope down from there house down to the lake. There are several large trees and some low growing brush, and prior to this project the wide path was mostly bare except for some large roots. The 90' path down to the water was also largely straight and very compacted, which created a long funnel for runoff to pick up speed and erode the path more dramatically. They also had a patch of bare soil on their shoreline that needed mulch and vegetation to stabilize the slope.

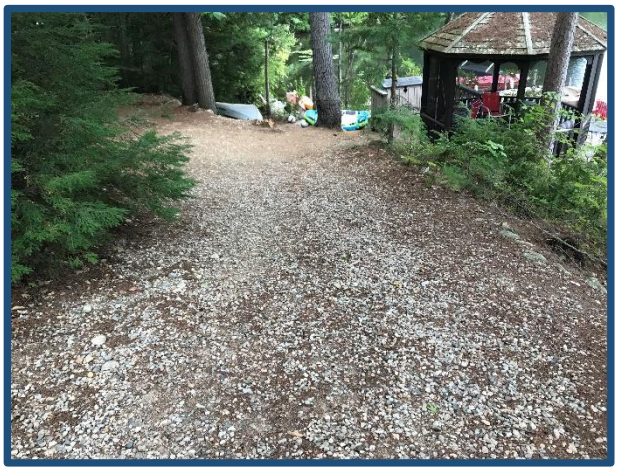
This was one of the biggest YCC projects of the season. We installed a 90-foot-long infiltration path with over 10 waterbars and 7 yards of erosion control mulch covering the sides. The path went from being straight to meandering several times down the hill to further slow down runoff as it travels down the hill and infiltrates the crushed stone. The intention is that the combination of stone, waterbars and meandering will slow water down enough to go into the ground and not make it to the lake.

Total Number of BMPs	Approximate Cost to Landowner
14	$835
Tons of Sediment Reduced	**Pounds of Phosphorus Reduced**
3.2	2.6
Crew Hours	**Crew Value**
85	$1860
BMPs Installed and Maintained	**Materials Used**
Vegetated Buffer	Erosion Control Mulch – 7 yards
Infiltration Pathway w/waterbars	Crushed Stone – 7 yards
Erosion Control Mulch	Pressure Treated Lumber – 40 feet
	Native Vegetation – 7 plants
	Rebar – 40 feet

Nancy Labbe

Horn Pond – Acton, ME

The Labbe's house is on a small peninsula on Horn Pond. As the site of a previous YCC project, most of their erosion issues had previously been addressed. However, they have a narrow dirt road adjacent to their driveway that narrows and leads to a root covered, dirt path to a dock and gazebo. This area was still conveying erosion and runoff down to the lake. At this site, the dirt road was wide enough to justify installing a rubber razor that led into a small dry well. When the path narrowed, the crew installed four waterbars surrounded with crushed stone and surrounded the entire area with erosion control mulch. This is intended to create a directed walking path down to the dock, while protecting the existing roots structures that keep the slope in place.



Total Number of BMPs	Approximate Cost to Landowner
8	$182
Tons of Sediment Reduced	**Pounds of Phosphorus Reduced**
0.8	0.7
Crew Hours	**Crew Value**
23	$605
BMPs Installed and Maintained	**Materials Used**
Rubber Razor	Erosion Control Mulch – 2 yards
Erosion Control Mulch	Crushed Stone –1 yards
Waterbars	Lumber – 24
	Rebar – 16 feet
	Rubber Razor – 25 feet

Nick Mourginis
Lovell Lake – Sanbornville, NH

Mr. Mourginis has been a YCC project host several times over the years and is a committed steward to Lovell Lake. His boathouse property along the lake is largely forested and the buffer remains forested as well with tall, old trees and dense vegetation. There is one portion of the sloping property that is cleared which he uses for access, and there is a dirt path down to the boat house where some infiltration steps have previously been installed.

The cleared area was experiencing a significant amount of erosion and compaction, so our crew spread 20 yards of erosion control mulch on it to slow down the moisture coming down the hill. On the walking path, they dug out 40 feet of the path and replaced it with crushed stone to act as additional infiltration between the existing steps. Our team also expanded on some BMPs from previous years: the infiltration trench next to the boat house was expanded to twice its width, and the trench along the boathouse deck was retrofitted with new stone.

Total Number of BMPs	Approximate Cost to Landowner
13	$770
Tons of Sediment Reduced	**Pounds of Phosphorus Reduced**
6	5.3
Crew Hours	**Crew Value**
63	$1,436.25
BMPs Installed and Maintained	**Materials Used**
Retrofit Infiltration Steps/trench	Crushed Stone – 6 yards
Retrofit Dripline Trench	Erosion Control Mulch – 20 Yards
Infiltration Path	
Erosion Control Mulch	

Danielle Ishak
Balch Lake – East Wakefield, NH

The Ishak's home on Balch Lake was unoccupied for about 3 seasons when Danielle reached out to AWWA to talk about runoff issues. Their property is downslope from a poorly designed dirt road which send a significant amount of sediment down into their driveway. When AWWA first assessed the property there were over 6 inches of sediment in some parts of the driveway. This build up was nearing the point of spilling over another slope that lead down to the lake. This struck us as a problem that could be addressed before the impact to the lake occurred.

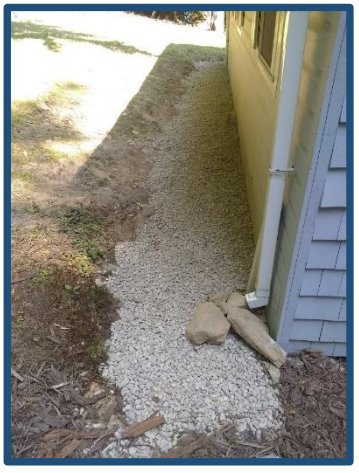
Our crew dug out the entire driveway and used a majority of the sediment to fill firehose diverters to lay out in the driveway. While this does not solve the issues being caused by the road. It will hopefully slowdown and stop runoff and several locations in the driveway and make it easier to maintain so as to prevent this runoff from ever reaching the lake.

Total Number of BMPs	Approximate Cost to Landowner
11	$800
Tons of Sediment Reduced	**Pounds of Phosphorus Reduced**
3.3	2.7
Crew Hours	**Crew Value**
140.75	$1,825
BMPs Installed and Maintained	**Materials Used**
Vegetated Buffer	Pea/Crushed Stone – 2 yards
Infiltration Steps	Native Vegetation – 30 plants
Pea Stone	Erosion Control Mulch – 1 yard
Erosion Control Mulch	Pressure Treated Lumber – 120 feet
2 Rubber Razor Driveway Diverters	Rubber Conveyor Belt – 28 feet

Area Princi
Lovell Lake – Sanbornville, NH

Area has a small, forested camp on Lovell Lake and is surrounded by previous YCC project hosts. After seeing the help her neighbors had received from AWWA she reached out to us last year about erosion occurring in multiple parts of her property. Area had a steep, bare slope down to her house from the dirt road above, with significant gullies forming on it. These gullies lead straight into a compacted dirt path to an old set of wood and earth steps and down to a bare area and a beach. Over all there was a long bare pathway from the road to the lake for runoff to travel on. The result was beach erosion and some erosion behind her stone retaining wall.

For Area's property, the entire slope from the road to the house was mulch and planted with native vegetation, leaving room for a 4' wide path that was line with water bars and gravel. The transition was one of the most significant of any of our projects this year. The compacted pathway below was dug out and filled with crushed stone, and overlaid with fieldstones. The old steps were dug out as well and filled with crushed stone. At the waterfront, the grass behind the retaining wall was replaced with mulch and more native vegetation. This property was a prime example of addressing runoff at every stage from the road to the lake.



Total Number of BMPs	Approximate Cost to Landowner
15	$985
Tons of Sediment Reduced	**Pounds of Phosphorus Reduced**
3.7	3.2
Crew Hours	**Crew Value**
84.5	$1937.50
BMPs Installed and Maintained	**Materials Used**
Vegetated Buffer	Crushed Stone – 6 yards
Infiltration Pathway	Native Vegetation – 13 plants
Dripline Trench	Erosion Control Mulch – 6 yards
Erosion Control Mulch	Pressure Treated Lumber – 24 feet
Water Bar Path	Loam – 2 Yards
Native Vegetation	Rebar – 24 feet
Retrofitted Infiltration Steps	

Ken & Maureen Cram
Lovell Lake – Sanbornville, NH

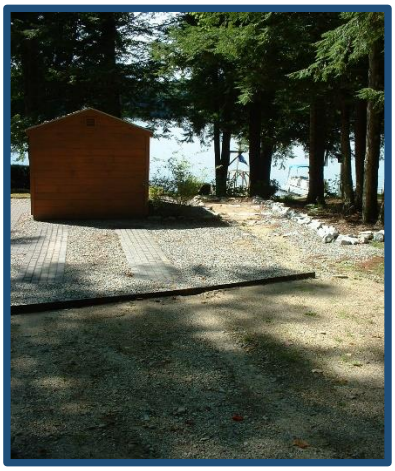
Maureen reached out to AWWA late in the 2019 YCC Season. She and Ken have a unique feature on their property; a small lagoon/inlet that forms a small peninsula in front of their property. The lagoon was partially vegetated at the buffer for the first foot or so, and the tip of the peninsula is an active yearly nesting place for loons. Increased wave action has been eroding the inside of the lagoon and slowly but surely washing away the tip of the peninsula; threatening both their shoreline and the sensitive loon habitat.

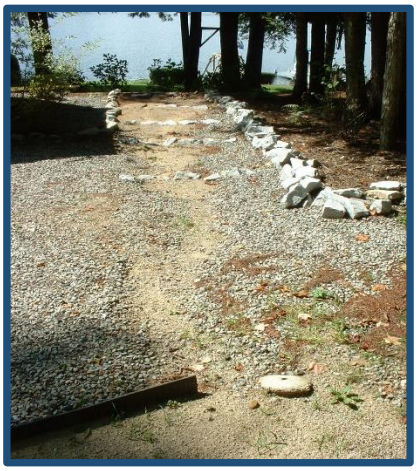
The YCC crew installed their most impressive vegetated buffer of the season here, 400’ wrapping around the whole lagoon, with a mulched and planted buffer 5’ wide all the way around. The crew planted over 50 plants, primarily Lowbush Blueberry and Juniper. This will hopefully lock the lagoon’s buffer soils with a strong network of roots and low, creeping plants. The Crams expressed an interest in revegetating other areas of their property as well and have since stopped mowing a large portion of their lake-side yard and have begun spreading wildflower seed mix instead.

Total Number of BMPs	Approximate Cost to Landowner
9	$1100
Tons of Sediment Reduced	**Pounds of Phosphorus Reduced**
4.2	3.6
Crew Hours	**Crew Value**
84.5	$1,930.50
BMPs Installed and Maintained	**Materials Used**
Erosion Control Mulch – 14 yards	Native Vegetation – 50 plants
Loam – 4 yards	

Pam Mcguire
Lovell Lake – Sanbornville, NH

AWWA did a YCC project for Pam back in 2009, installing rubber razors and waterbars and turning most of her driveway into crushed stone. This year Pam asked for AWWA's help fixing her rubber razor that had been destroyed by a plow truck the previous winter. As it turned out, the entire BMP needed to be dug up and replaced, although the crew was able to reuse the lumber that had been buried. Fresh rubber was installed and more lumber was used to reinforce the structure. This was a small job but a kind gesture to a long time AWWA supporter and previous project host.



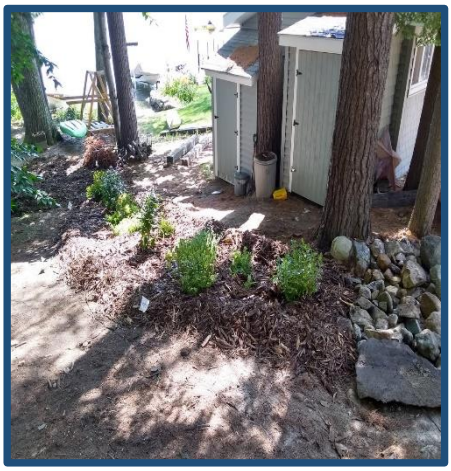


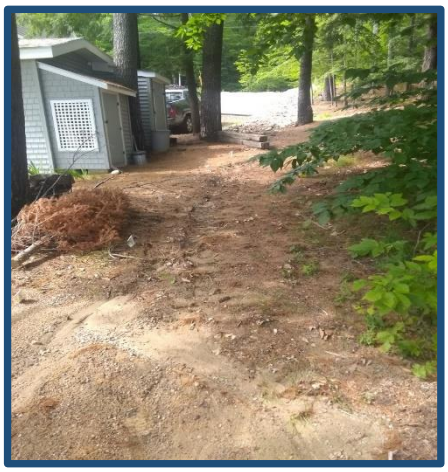
Total Number of BMPs	Approximate Cost to Landowner
2	$160
Tons of Sediment Reduced	**Pounds of Phosphorus Reduced**
0.4	0.4
Crew Hours	**Crew Value**
14	$280
BMPs Installed and Maintained	**Materials Used**
Rubber Razor – 25'	Lumber – 50' (25' recycled)

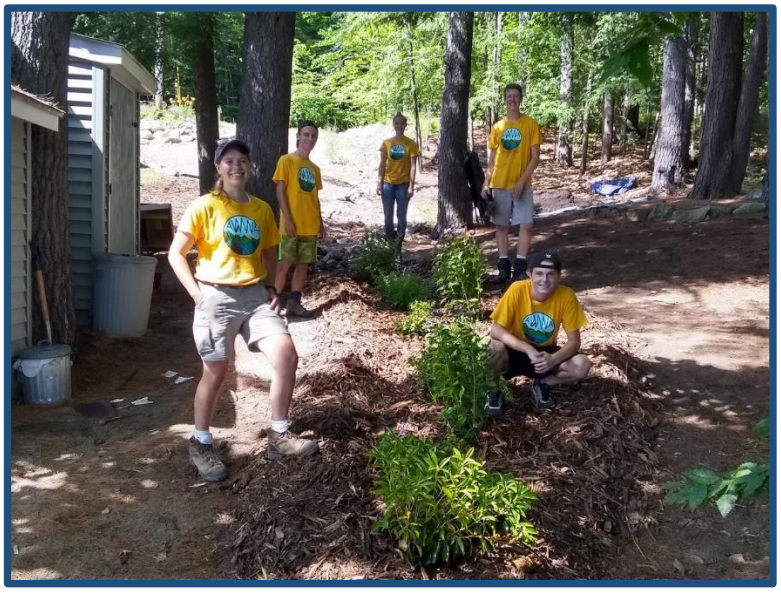
Jeff Thacher
Lovell Lake – Sanbornville, NH

The was our first project of the season, and it was a great introduction for our new crew members. The homeowner contacted us because she wanted to make her property more lake friendly. Luckily, there were some simple BMPs that could be added to achieve this goal.

Along the front of the camp, the YCC added a dripline trench to catch roof runoff before it can erode the surrounding soils. At the water's edge, the YCC dug out several inches of soil and replaced it with crushed stone to create an infiltration pathway. A waterbar was added at the end to keep the stone from falling into the lake. Crushed stone was also spread behind and underneath the deck to cover bare soils that were eroding into the lake.





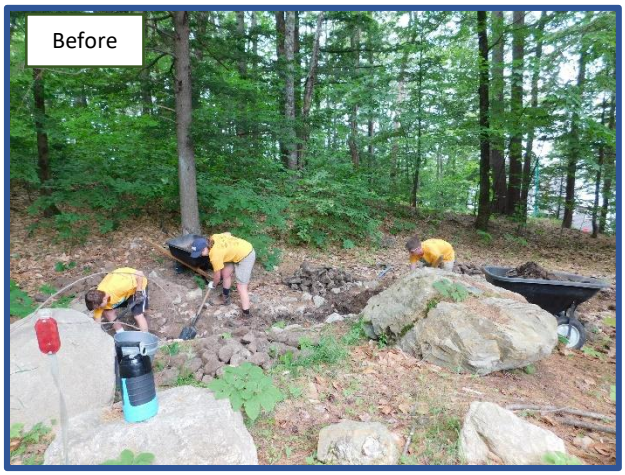


Total Number of BMPs	Approximate Cost to Landowner
7	$805
Tons of Sediment Reduced	**Pounds of Phosphorus Reduced**
0.2	0.1
Crew Hours	**Crew Value**
64.5	$1447.50
BMPs Installed and Maintained	**Materials Used**
Native Vegetation – 18 Plants	Erosion Control Mulch – 4 Yards
Loam – 6 Yards	Crushed Stone – 2 yards

Previous YCC Project Site Maintenance

Brackett Road Trenches

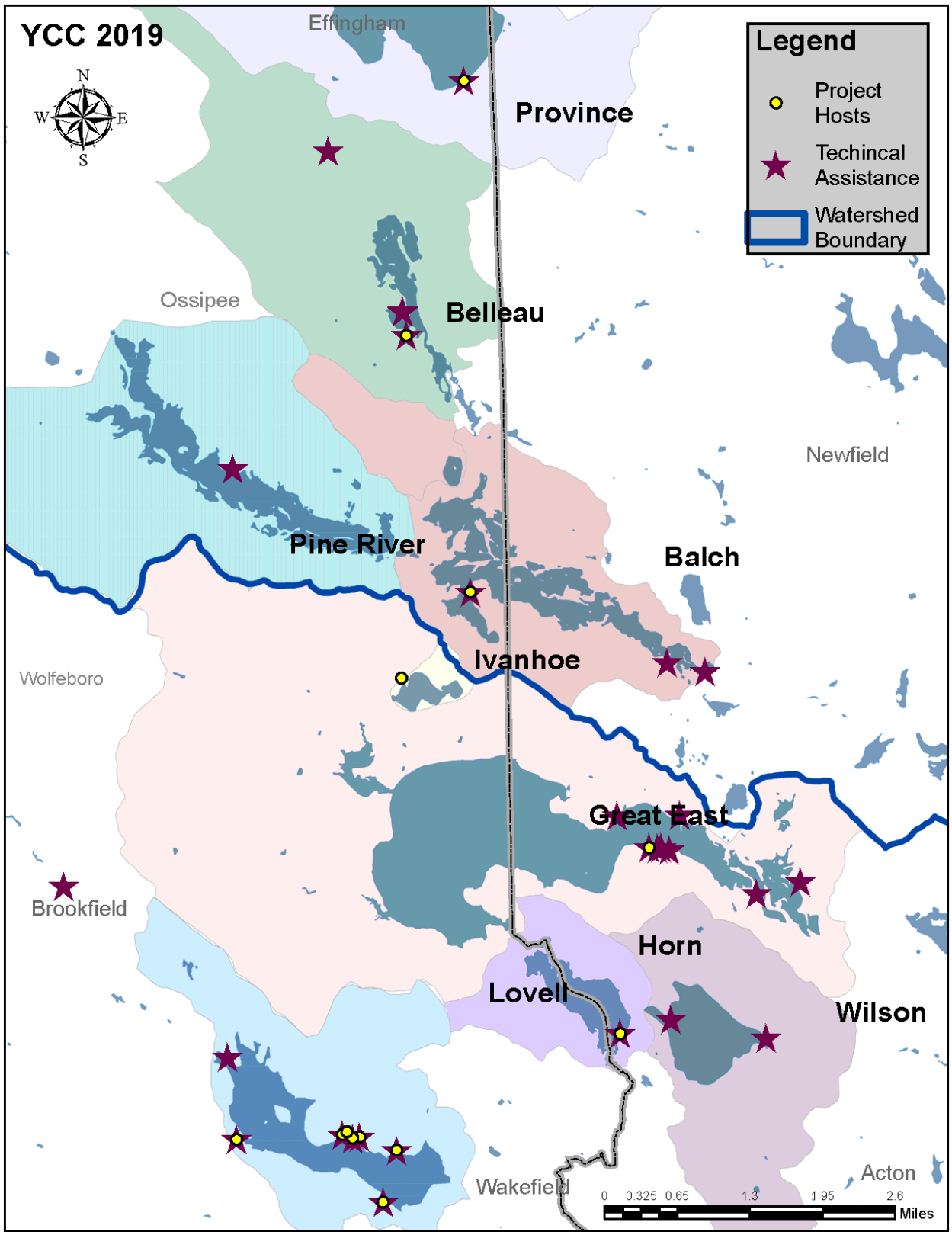
In 2014 the YCC installed infiltration trenches on Brackett Road. These projects were done in conjunction with the UNH Stormwater Center and Wakefield DPW as part of the Brackett Road projects. This year, the YCC had some availabilty and notcied that the trenches could use a cleaning. The crew spent a day cleaning out the trenches and making them more functional.



AWWA Office Gardens

In 2015, the YCC installed two rain gardens at the AWWA office. Every year they get weeded and a fresh coat of erosion control mulch is added.

Appendix A – 2019 Technical Assistance and Project Host Sites Map



Appendix B – NH DES Pollutants Control Report

NPS Projects - Pollutants Controlled Report
New Hampshire Department of Environmental Services, Watershed Assistance Section

DES Project Number: HI-19-C-07 Date of Report: 12/10/2019

Project Title: Salmon Falls Headwaters Watershed Management Plan Implementation Project – Phase 3: Residential NPS Pollution Reduction and Community Outreach

Grantee: Acton Wakefield Watersheds Alliance

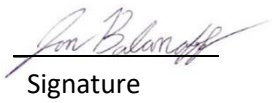
Table 1. Pollutant Load Reduction Estimates for NPS Sites Treated with BMPs

Waterbody Name	Nitrogen pounds per year	Phosphorus pounds per year	Sediment tons per year
Great East Lake (Maine)	N/A	5.5	6.5
Horn Pond (Maine)	N/A	0.7	0.9
Lake Ivanhoe	N/A	1.3	1.5
Lovell Lake	N/A	17.3	20
Province Lake	N/A	5.8	6.9
Belleau Lake	N/A	2.6	3.2
Balch Lake	N/A	2.9	3.4
Totals	**N/A**	**36.1**	**42.4**

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 NHDES and USEPA.

Submitted by (for Grantee):  Jon Balanoff Date: 12/10/2019

Signature Printed Name

Reviewed by (for DES): _____ _____ Date:

Signature Printed Name

NPS Projects - Pollutants Controlled Report

New Hampshire Department of Environmental Services, Watershed Assistance Section

DES Project Number: HI-19-C-07 Date of Report: 12/10/2018

Table 3. List of BMP Sites and Methods Used

Lake: Great East Lake

Site ID (Name or # from site list)	Site Location Description	Latitude and Longitude (decimal degrees)	Brief BMP Description	Estimation Method / Sub-Method Used	Implementation Date	Pounds of Nitrogen Per Year	Pounds of Phosphorus Per Year	Tons of Sediment Per Year
Couilliard	188 Langley Shores Drive	43.581987 -70.948756	Infiltration pathway, erosion control mulch & vegetated buffer	Region 5	6/27/2019	N/A	5.5	6.5
					Totals:	N/A	5.5	6.5

Table 4. List of BMP Sites and Methods Used

Lake: Horn Pond

Site ID (Name or # from site list)	Site Location Description	Latitude and Longitude (decimal degrees)	Brief BMP Description	Estimation Method / Sub-Method Used	Implementation Date	Pounds of Nitrogen Per Year	Pounds of Phosphorus Per Year	Tons of Sediment Per Year
Labbe	143 Martha Horn Road	43.557414 -70.952901	Erosion control mulch, waterbars, rubber razor	Region 5	7/16/2019	N/A	0.7	0.9
					Totals:	N/A	0.7	0.9

Table 5. List of BMP Sites and Methods Used

Lake: Lake Ivanhoe

Site ID (Name or # from site list)	Site Location Description	Latitude and Longitude (decimal degrees)	Brief BMP Description	Estimation Method / Sub-Method Used	Implementation Date	Pounds of Nitrogen Per Year	Pounds of Phosphorus Per Year	Tons of Sediment Per Year
Mikesh	21 Shore Road East Wakefield, NH	43.6027 -70.9929	Erosion control Mulch, infiltration trench, drywells, waterbars	Region 5	7/2/2019	N/A	1.3	1.5
					Totals:	N/A	1.3	1.5

Table 6. List of BMP Sites and Methods Used

Lake: Province Lake

Site ID (Name or # from site list)	Site Location Description	Latitude & Longitude (decimal degrees)	Brief BMP Description	Estimation Method / Sub Method Used	Implementation Date	Pounds of Nitrogen Per Year	Pounds of Phosphorus Per Year	Tons of Sediment Per Year
Pat Benzing	Rt 153 Province Lake Beach East Wakefield, NH	43.680145 -70.985136	Vegetated buffer, erosion control mulch	Region 5	8/14/2019	N/A	5.8	6.9
					Totals:	N/A	5.8	6.9

Table 7. List of BMP Sites and Methods Used

Lake: Lovell Lake

Site ID (Name or # from site list)	Site Location Description	Latitude & Longitude (decimal degrees)	Brief BMP Description	Estimation Method / Sub Method Used	Implementation Date	Pounds of Nitrogen Per Year	Pounds of Phosphorus Per Year	Tons of Sediment Per Year
Avery	88 Pond Road Sanbornville, NH 03872	43.541414 -70.99513	Erosion control Mulch and slate walkway, rain barrel, drywell, infiltration trench, vegetated buffer	Region 5	7/9/2019	N/A	4.7	5.5
McGuire	52 N. Roberts Cove Rd. Sanbornville, NH 03872	43.5431264 -71.0014367	Rubber razor	Region 5	8/5/2019	N/A	0.4	0.4
Princi	42 N. Roberts Cover Rd. Sanbornville, NH 03872	43.543149 -71.000280	Vegetated buffer, infiltration pathway, erosion control mulch, infiltration trench, retrofitted infiltration steps, native vegetation, waterbars	Region 5	8/2/2019	N/A	3.2	3.7
Mourginis	356 Lovell Lake Rd. Sanbornville, NH 03872	43.5429 -71.0206	Retrofit infiltration steps, dripline trench & infiltration trench	Region 5	7/18/2019	N/A	5.3	6.0
Thacher	772 Brackett Road Sanbornville, NH 03872	43.543106 -71.002013	Rain Garden, drywell	Region 5	8/8/2019	N/A	.1	0.2
Cram	1149 Lovell Lake Road Sanbornville, NH 03872	43.535365 -70.994297	Erosion control mulch & vegetated buffer	Region 5	8/5/2019	N/A	3.6	4.2
					Totals:	N/A	17.3	20.0

Table 8. List of BMP Sites and Methods Used

Lake: Balch

Site ID (Name or # from site list)	Site Location Description	Latitude and Longitude (decimal degrees)	Brief BMP Description	Estimation Method / Sub-Method Used	Implementation Date	Pounds of Nitrogen Per Year	Pounds of Phosphorus Per Year	Tons of Sediment Per Year
Ishak	34 Cove Road East Wakefield, NH	43.613931 -70.981745	Firehose diverters, infiltration trench	Region 5	7/24/2019	N/A	2.9	3.4
					Totals:	N/A	2.9	3.4

Table 9. List of BMP Sites and Methods Used

Lake: Belleau

Site ID (Name or # from site list)	Site Location Description	Latitude and Longitude (decimal degrees)	Brief BMP Description	Estimation Method / Sub-Method Used	Implementation Date	Pounds of Nitrogen Per Year	Pounds of Phosphorus Per Year	Tons of Sediment Per Year
Gelardi	11 Lexington Drive East Wakefield, NH	43.6479 -70.9943	infiltration pathway w/ waterbars, vegetated buffer, erosion control mulch.	Region 5	7/11/2018	N/A	2.6	3.2
					Totals:	N/A	2.6	3.2

Appendix C – ME DEP Pollutants Control Report

Pollutants Controlled Report
Maine Department of Environmental Protection
NPS Grants Program – Bureau of Land and Water Quality

YEAR: 2019

NPS Project ID#: 2017RR07

Project Title: Great East Lake Watershed Protection Project (Phase 3 Maine)

Grantee: Acton Wakefield Watersheds Alliance DEP Agreement Admin: Wendy Garland

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

Water Body Name	Sediment tons per year	Phosphorus pounds per year	Nitrogen pounds per year
Great East Lake	5.5	6.5	N/A
Horn Pond	0.7	0.9	N/A
Totals	6.2	7.4	N/A

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

Resource	Planned acres	Actual acres	Planned lineal feet	Actual lineal 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 of the estimates is attached to this PCR for review by DEP / EPA.

Submitted by (for Grantee) Signature: Jon Balanoff Printed Name: Jon Balanoff

Reviewed by DEP AA: _____ Printed Name: _____

Pollutants Controlled Report

Maine Department of Environmental Protection
NPS Grants Program – Bureau of Land and Water Quality

NPS Project ID#: 2017RR07 for the year 2019

TABLES 3 & 4. List NPS Sites, Methods Used, & Pollutants Controlled

Great East

Table ID (name or # from site list)	Brief Description NPS Site	Estimation Method/ Sub-Method Used	Sediment Tons / Yr	Phosphorus Pounds / Yr	Nitrogen Pounds / Yr
Couilliard	Infiltration pathway, erosion control mulch & vegetated buffer	Region 5/GEE	5.5	6.5	N/A
		Totals for the Year:	10.3	8.8	N/A

Horn Pond

Table ID (name or # from site list)	Brief Description NPS Site	Estimation Method/ Sub-Method Used	Sediment Tons / Yr	Phosphorus Pounds / Yr	Nitrogen Pounds / Yr
Labbe	Erosion control mulch, waterbars, rubber razor	Region 5/GEE	0.7	0.9	N/A
		Totals for the Year:	0.7	0.9	N/A

Pollutant Load Reduction Estimation Methods

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

Descriptors to use for Region 5 Model sub-methods:

R5 / GEE	Gulley Stabilization – uses Gulley Erosion Equation
R5 / CEE	Streambank / Ditchbank and Roadbank stabilization – uses Channel Erosion Equation
R5 / Fields	Agricultural Fields – uses Revised Universal Soil Loss Equation (RUSLE), sediment delivery ration and contributing drainage area.
R5 / Filter	Filter Strips – uses relative gross filter strip effectiveness
R5 / 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