



**2013 Annual Performance Report  
Enhancing Connectivity in the Ash-Black Rock Sub-basin of the West Branch  
Narraguagus River. Project Number 53371-2010-358.**

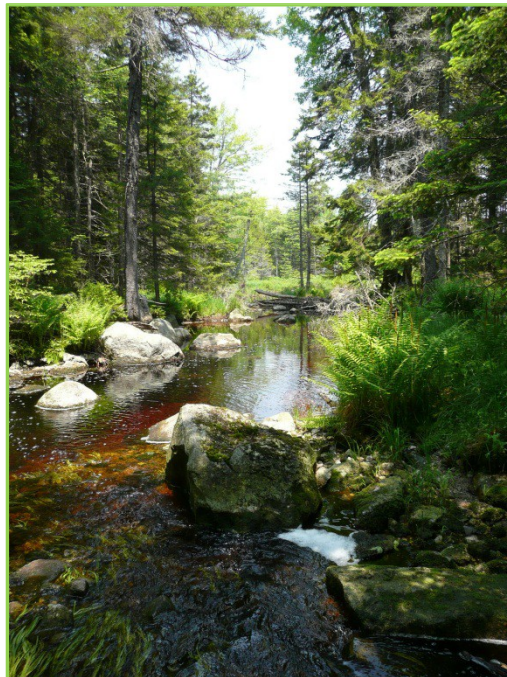


Figure 1: Ash Bog Stream. Photo by Nancy Sferra.

This 2013 Annual Performance Report summarizes the activities conducted at The Nature Conservancy's Spring River Preserve in T10 and T16, Hancock County, Maine, through our Eastern Brook Trout Joint Venture (Project # 53371-2010-358).

**Project Objective:** TNC and Service will work to replace two degraded stream/road crossings with bankfull channel width spanning open bottom structures (Cooperative Agreement 2011)(Figure 2). *To date, we have surpassed our project objective by installing two open bottom structures and replacing two traditional culverts with bridges.*

**2013 Activities:**

In 2013, we anticipated replacing one final culvert with a bridge at Site 128 (UTM 570925; 4945324)(Figure 1). The timing of receiving the elevation data and other field season priorities didn't allow for permitting before the construction window closed. The intention is to complete the final bridge during the 2014 construction window. Elevation data was collected in August 2013 by USFWS (Figure 2).



Figure 1: Map showing location of final culvert for replacement (Site 128 on the Low Road) at Spring River Preserve.

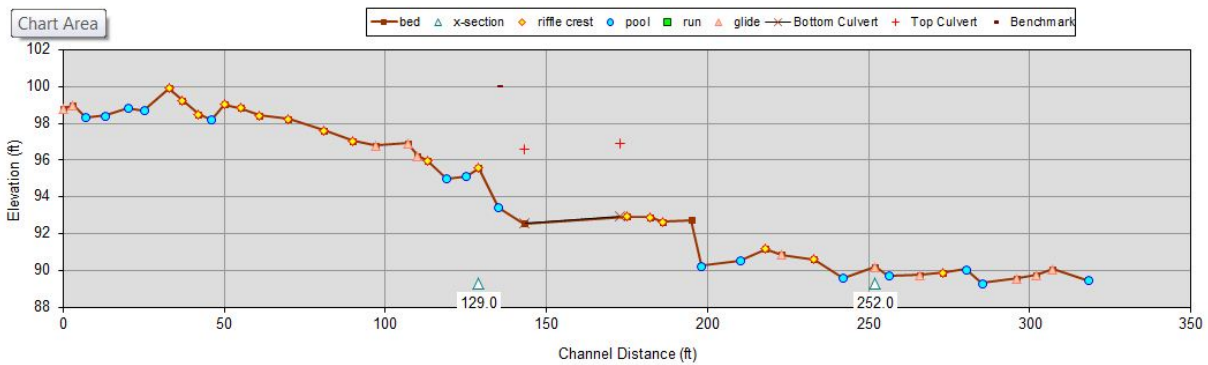


Figure 2: Stream elevations at Site 128 at Spring River Preserve.

Scott Craig, USFWS, downloaded the data logger at the smaller of the two arch culvert locations in May and December 2013 (Table 1). Water temperatures post-construction are lower despite similar air and precipitation numbers between 2011 and 2012. A hot, dry spell from July 13 – 20, 2013, pushed the summer maximum temperatures up in 2013, but overall, the trend is favorable for lower stream temperatures (Figure 3).

Table 1: Yearly summary of stream temperature data taken at Site 130 at Spring River Preserve.

Metric	2013	2012	2011
Summer Mean Temp (June 10 – September 30)	18.1	18.5	18.9
Instantaneous Max.	30.6	28.4	30.7
Mean of 3-Day Max.	30.0	27.4	27.9
Hours >22.5°C	328	319	330

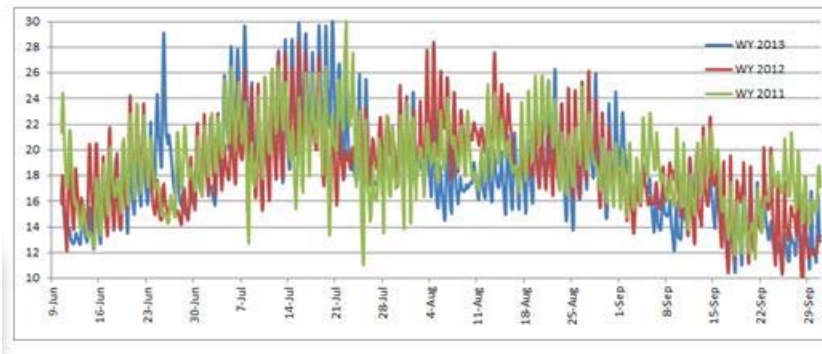


Figure 3: Comparison of yearly stream temperature data at Site 127, 2011 – 2013.

**2012 Activities:**

In late May, culverts installed in 2011 were inspected to ensure proper installation and functioning following spring snow-melt. At that time, several additional stream crossings were inspected to determine the potential for restoration (Figure 4).

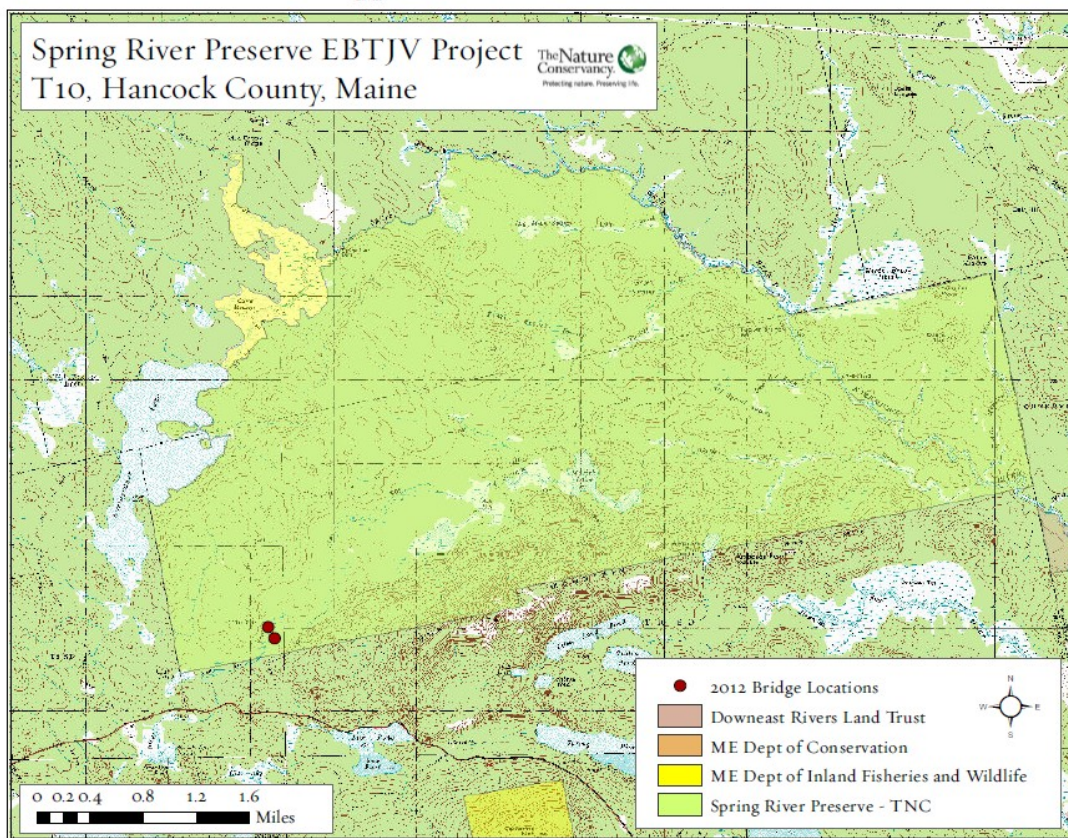


Figure 4: Location of bridges installed in 2012 at Spring River Preserve

Stream elevations, stream profiles, and road elevation data were collected by Scott Craig in late September 2012 in preparation for construction. Stream data is presented in Figures 5 – 9; stream profile data is unavailable for Culvert 133 due to constraints on the location.

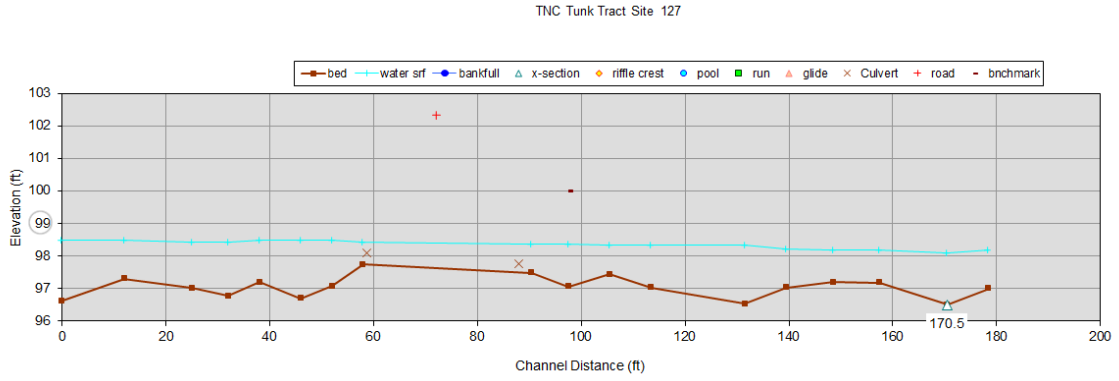


Figure 5: Stream elevations for culvert 127 at Spring River Preserve.

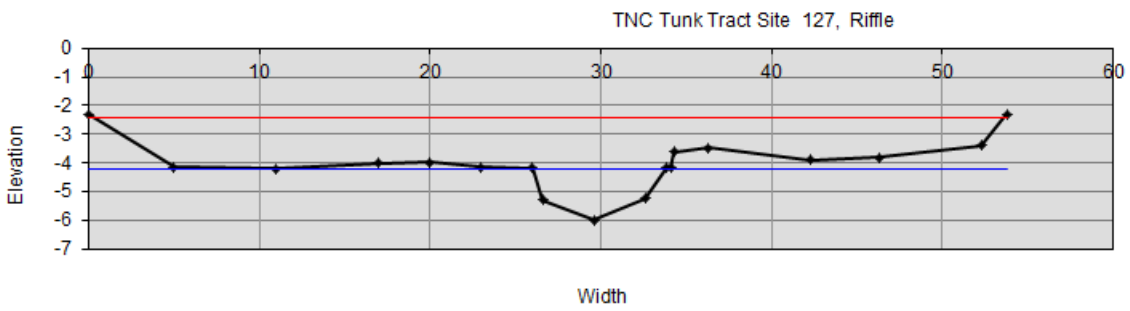


Figure 6: Stream profile for culvert 127 at Spring River Preserve.

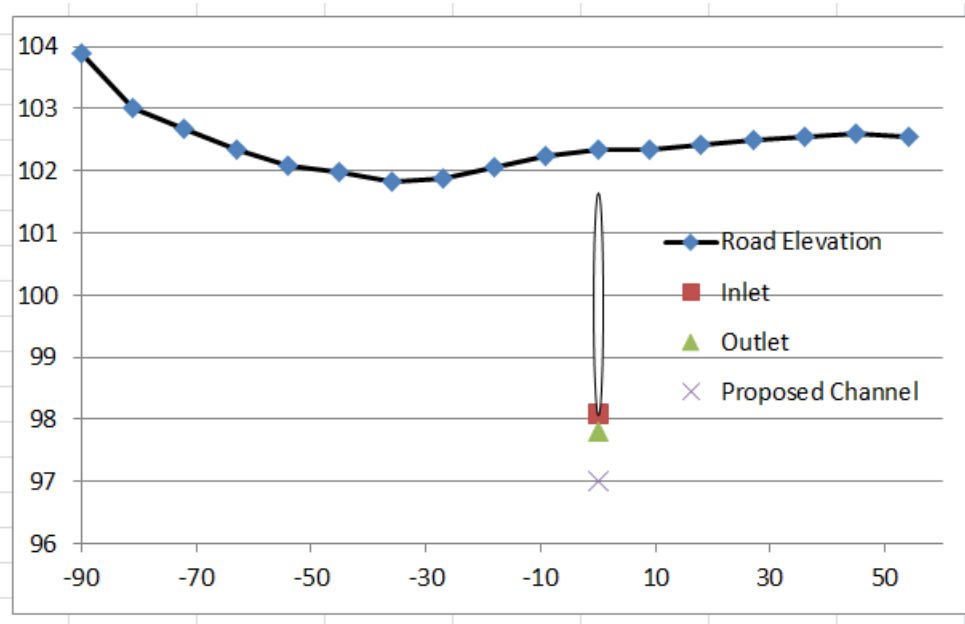


Figure 7: Road profile at site 127 at Spring River Preserve.

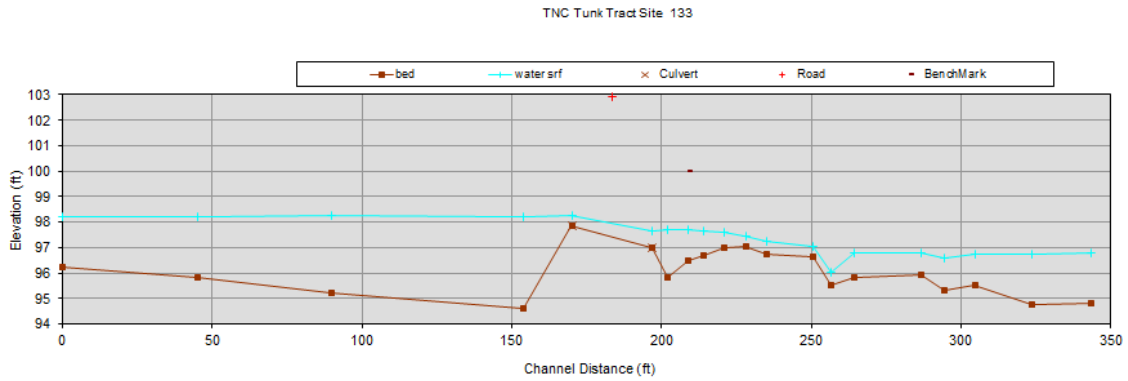


Figure 8: Stream elevation data for site 133 at Spring River Preserve.

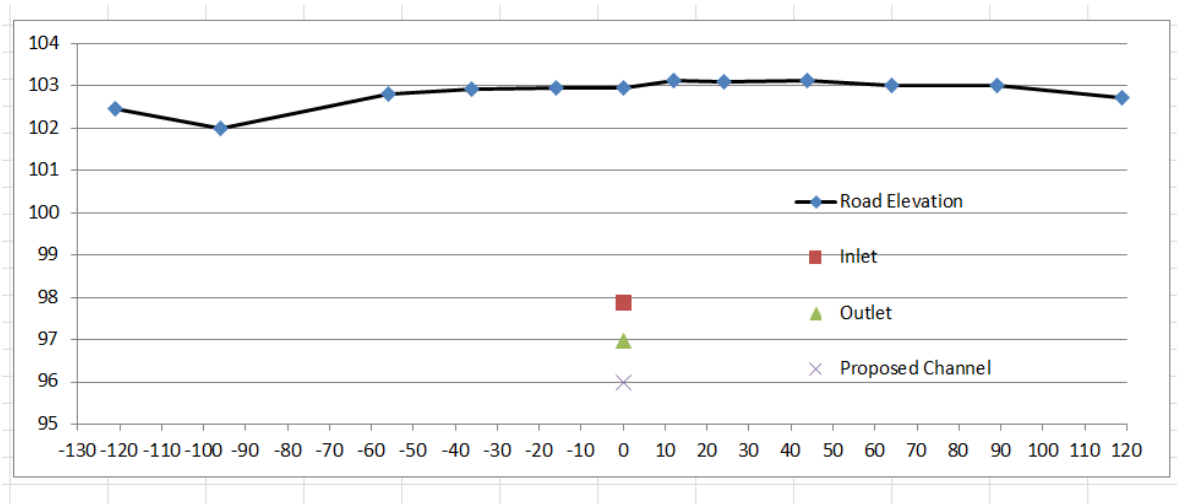


Figure 9: Road elevation for site 133 at Spring River Preserve

TNC contracted with Hanscom Construction for the construction of the two bridges which were built in October 2012 (Figures 10 – 21; Before photos by Scott Craig, USFWS; After photos by Nancy Sferra, TNC).



Figure 10; Before - upstream from site 127



Figure 11: After - upstream from site 127.



Figure 12: Before - inlet at site 127.



Figure 13: After - upstream of site 127.



Figure 14: Bridge at site 127.



Figure 15: After - downstream of site 127

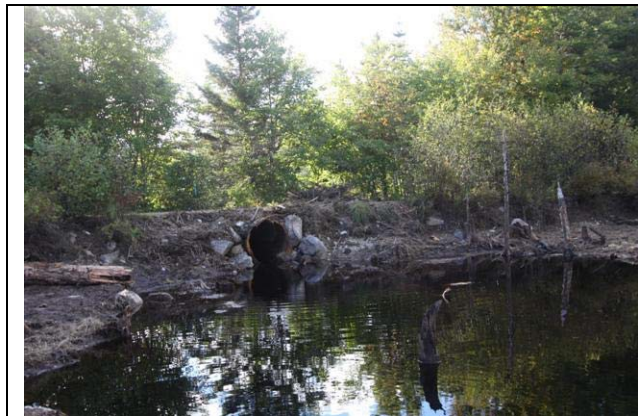


Figure 16: Before - Upstream of site 133.



Figure 17: After - upstream of site 133.



Figure 18: Before - Upstream of site 133.



Figure 19: After - Upstream of site 133.

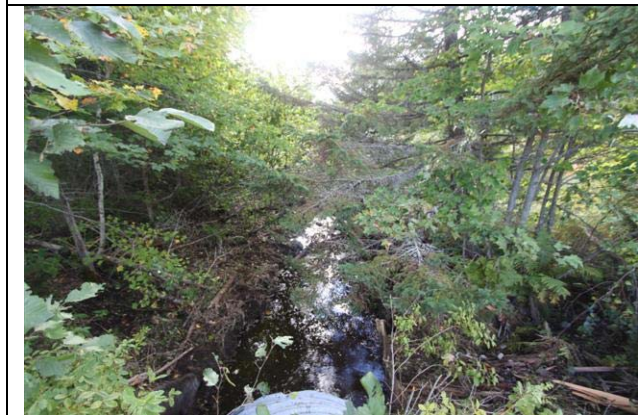


Figure 20: Before - Downstream of site 133.



Figure 21: Before - Downstream of site 133.

2011 Activities

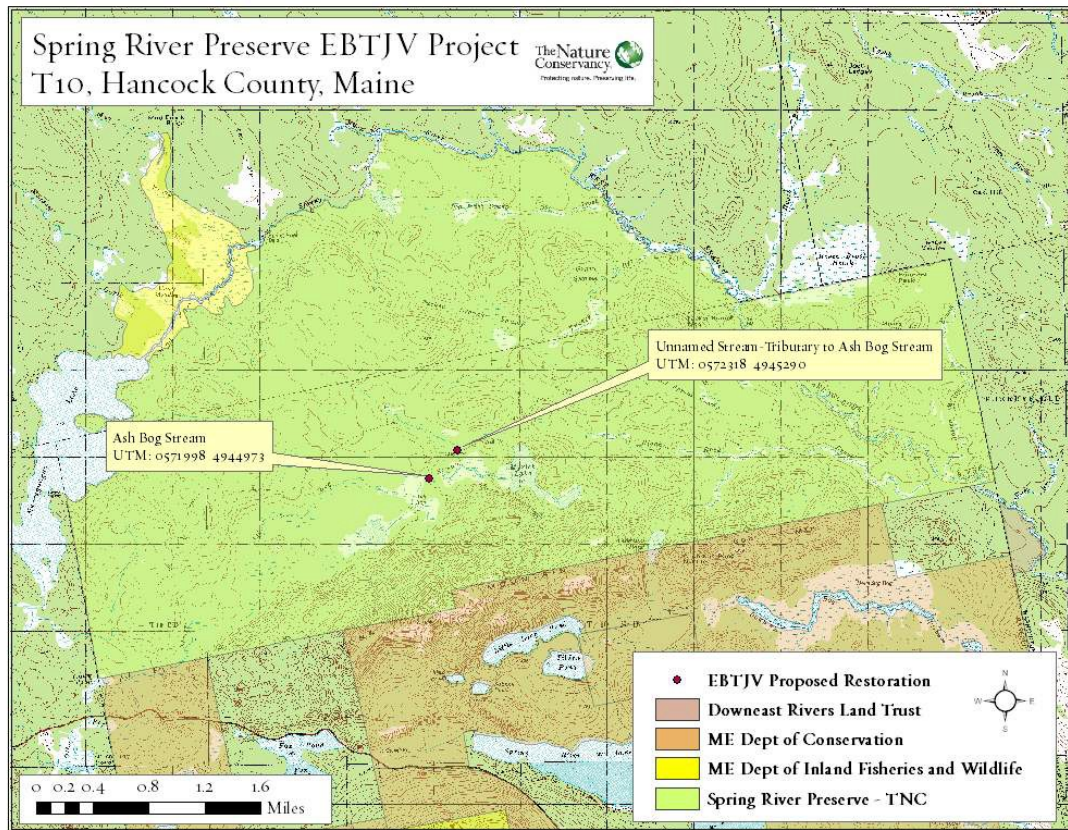


Figure 22: Map showing locations for culvert replacements on Ash Bog Stream and Black Rock Brook on The Nature Conservancy’s Spring River Preserve.

**Pre-construction Activities:** With the help of Scott Craig, USFWS, and Steven Koenig, Project Share, stream simulation data for engineering the replacement of the existing round culverts were documented for both stream locations (Black Rock Brook and Ash Bog Stream) on June 10, 2011. Water surface profiles and culvert sizing was completed by Steve Koenig in July. In addition, water temperature recorders were placed downstream of each project, set to collect water temperature every 30 minutes. The data loggers were downloaded on October 18, 2011, and the logger at the Ash Bog Stream was removed.

Culverts were purchased from ConTech. In order to minimize the amount of fill required at the Black Rock Stream culvert, a compressed half pipe was used. A 9 foot span, 3’ 11’ high was used at Black Rock Brook. A 15 foot span, 6’ 7” high was used at Ash Bog Stream. Both culverts utilized steel footing pads. The engineering work was done prior to the execution of the Cooperative Agreement and the cost of this activity is not included in the financial report.

Summary of Water Temperature Data

Water temperature data and summary was provided by Scott Craig, US Fish and Wildlife Service. Maximum water temperature in 2011 coincided with the day of maximum air temperature (obtained at the Old Stream USGS stream gage). Maximum water temperature occurred on July 22 when the air temperature reached 35.7 °C. The tributary high temperature was 30.7 °C and the mainstem 28.5 °C. Mean water temperature throughout the summer (June 15 to August 31) at the tributary was 19.8 °C and the mainstem 20.5 °C.



Combined warm water temperatures and low pH (<4.5) appear to limit aquatic fauna in these two streams. Specifically, high water temperatures (>24°C) reflect potential impediments to sustained brook trout residence.

Table 2: 2011 temperature summary downstream from each culvert.

Time Frame	Temperature Parameter (°C)	Black Rock Brook	Ash Bog Brook
June 15 - Aug 31	Mean	19.8	20.5
	Max	30.7	28.5
	# Hours >24°C	140.5	171
	% time >24°C	7.5%	9.1%

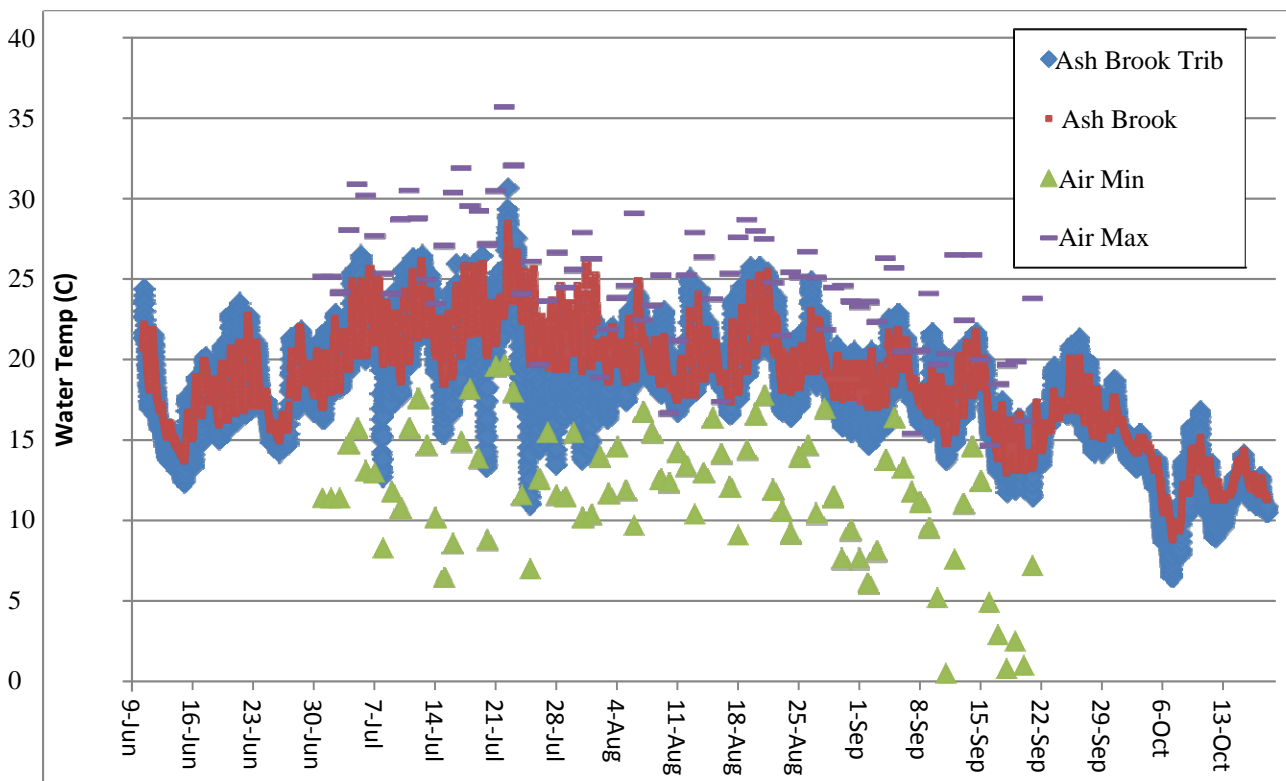


Figure 23: Instantaneous water temperature at the two locations and daily air (max.-min) temperature.



Figure 24: Scott Craig, USFWS, taking stream elevations on Ash Bog Stream. Photo by Nancy Sferra.



Figure 25: Ash Bog Stream culvert. Photo by Dan Grenier.

Construction Activities: Hanscom Construction installed the two culverts in mid-October following delivery of the culverts from ConTech. Hanscom Construction has done previous road retirement on Spring River Preserve, including the restoration of stream crossing, and has extensive experience with Project Share in the installation of open bottom arch culverts. Joseph McKerley (USFWS Maine Fishery Resources Office) removed fish from the project area and helped construction crews for 2.5 days (October 17-19).

No fish were captured at the Ash Bog Stream location. The backpack electrofishing sampling length included 20 meters upstream and 45 meters downstream from the culvert. The pH at this site was 4.3 and the water temperature was 10 °C. Seven fish and three crayfish (unknown genus) were captured at the Black Rock Brook location with all species obtained upstream of the culvert. 30 meters of stream was sampled via backpack electro fishing upstream and 10 meters down. The pH at his site was 4.6 and the water temperature was 9.5 °C.



Figure 25: Crayfish from Ash Bog Brook site. Photo by Nancy Sferra.

Table 3: Species collected during electrofishing at Black Rock Brook in October 2011.

Species	Total Length (mm)	Weight (g)
Nine Spine Stickleback	45	
	48	
	44	
	49	
	51	
Common Shiner	37	
	41	
Crayfish	55	3.6
	68	3.9
	46	1.6

Gravel fill for the project was obtained on-site from previously retired logging roads near the construction sites. Gravel from the road surface was scraped to the natural substrate and trucked to the construction site. Bedrock beneath the Black Rock Brook culvert created some challenges in the installation of that culvert but they were able to break apart the bedrock with the equipment on hand without having to elevate the culvert. Construction took two days at each site.

Photographs including time-lapse and movie imagery were obtained pre and post project. These media products have been forwarded to a USFWS contractor for education and outreach purposes. The contact information for this person is James Boehmer- [jamesboehmer@comcast.net](mailto:jamesboehmer@comcast.net).



Figure 26: Construction work at Black Rock Brook site, October 2011. Photo by Dan Grenier.

Results: No changes were observed at Ash Bog Stream following construction. The stream flow was relatively unchanged due to the volume of water still flowing through the culvert at the time of construction. However, the new bottom arch culvert will allow for unrestricted fish passage in all seasons. The sedge meadow above the Black Rock Brook culvert is significantly changed due to the culvert. The restriction created by the road surface and undersized culvert has been eliminated and the standing water upstream of the culvert has drained out. There is a clear thread of the stream in the sedge meadow with sections of exposed mud flat where there had been pooled water. It is likely that the reforestation of the sedge meadow can be accelerated through tree planting in the spring – northern white cedar and black and red spruce will likely do the best in the restoration area until the site can be colonized by red maple. Additionally, 2011 was an exceptional seed year for white cedar and spruce, both of which are abundant along the wetland edge. There may be some natural regeneration on the mud flats from seed drift of the fringing forest.



Figure 27: Ash Bog Stream downstream section before culvert replacement. Photo by Nancy Sferra.



Figure 28: Ash Bog Stream culvert outlet following construction. Photo by Nancy Sferra.

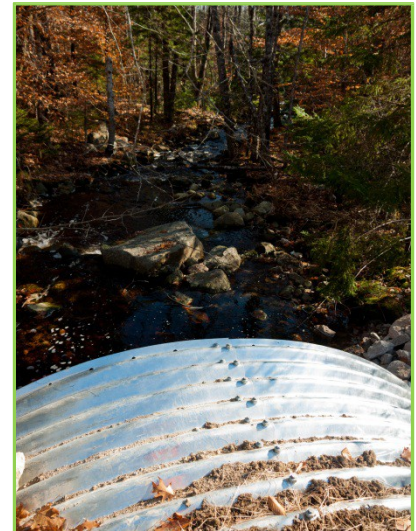


Figure 29: Ash Bog Stream downstream of new culvert outlet. Photo by Nancy Sferra.

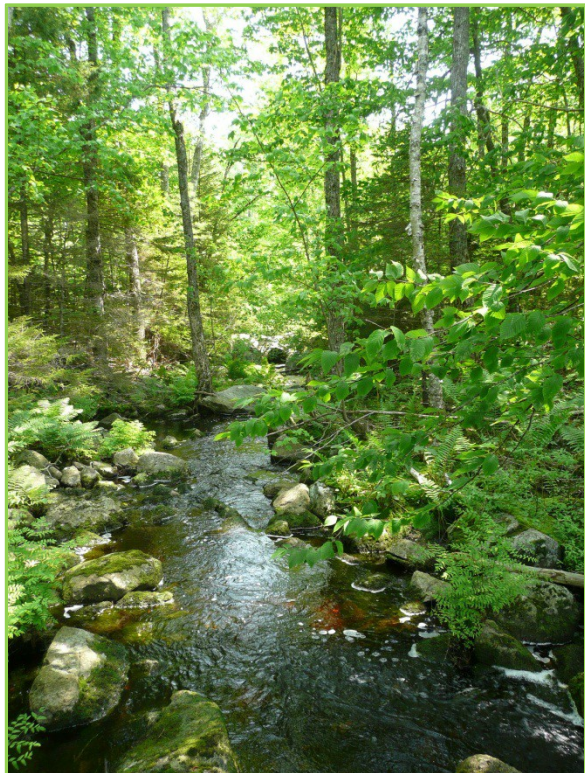


Figure 30: Ash Bog Stream upstream of culvert prior to construction.  
Photo by Nancy Sferra.



Figure 31: Ash Bog Stream upstream of culvert following installation of new culvert. Photo by Nancy Sferra.



Figure 32: Black Rock Brook upstream before construction. Photo by Nancy Sferra.



Figure 33: Black Rock Brook downstream following installation of new culvert. Photo by Nancy Sferra.



Figure 34: Black Rock Brook upstream of culvert before restoration. Photo by Scott Craig.



Figure 35: Black Rock Brook downstream following culvert installation. Photo by Nancy Sferra.



Figure 36: Black Rock Brook culvert looking from the upstream side. Photo by Nancy Sferra.




Figure 37: Black Rock Brook culvert looking from the downstream side. Photo by Nancy Sferra.

Anticipated 2014 Activities:

During 2014, working with staff from MDIFW, we will use the remaining match commitment and additional TNC funds to replace one remaining culvert with a bridge at Site 128.

**Financial Statement**

**FEDERAL FINANCIAL REPORT**  
(Follow form instructions)

1. Federal Agency and Organizational Element to Which Report is Submitted <b>U.S. Fish and Wildlife Service</b>		2. Federal Grant or Other Identifying Number Assigned by Federal Agency (To report multiple grants, use FFR Attachment) <b>F11AC00323</b>		Page <b>1</b> of <b>1</b>
3. Recipient Organization (Name and complete address including Zip code) <b>The Nature Conservancy 14 Maine Street, Suite 401 Brunswick, ME 04011</b>				
4a. DUNS Number <b>07266630</b>	4b. EIN <b>03-0242652</b>	5. Recipient Account Number or Identifying Number (To report multiple grants, use FFR Attachment) <b>1100143010-03</b>	6. Report Type <input type="checkbox"/> Quarterly <input type="checkbox"/> Semi-Annual <input type="checkbox"/> Annual <input checked="" type="checkbox"/> Final	7. Basis of Accounting <input checked="" type="checkbox"/> Cash <input type="checkbox"/> Accrual
8. Project/Grant Period From: (Month, Day, Year) <b>July 26, 2011</b>		To: (Month, Day, Year) <b>December 31, 2014</b>		9. Reporting Period End Date (Month, Day, Year) <b>December 3, 2013</b>
10. Transactions <span style="float: right;">Cumulative</span>				
<small>(Use lines a-c for multiple or multiple grant reporting)</small>				
Federal Cash (To report multiple grants, also use FFR Attachment):				
a. Cash Receipts				
b. Cash Disbursements				
c. Cash on Hand (line a minus b) <span style="float: right;">\$ -</span>				
<small>(Use lines d-o for single grant reporting)</small>				
Federal Expenditures and Unliquidated Balances:				
d. Total Federal funds obligated <span style="float: right;">\$ 47,221.14</span>				
e. Federal share of expenditures <span style="float: right;">47,221.14</span>				
f. Federal share of unliquidated obligations				
g. Total Federal share (sum of lines e and f) <span style="float: right;">\$ 47,221.14</span>				
h. Unobligated balance of Federal funds (line d minus g) <span style="float: right;">2.00</span>				
Recipient Share:				
i. Total recipient share required <span style="float: right;">\$ 51,770.00</span>				
j. Recipient share of expenditures <span style="float: right;">48,142.91</span>				
k. Remaining recipient share to be provided (line i minus j) <span style="float: right;">\$ 3,627.09</span>				
Program Income:				
l. Total Federal program income earned				
m. Program income expended in accordance with the deduction alternative				
n. Program income expended in accordance with the addition alternative				
o. Unexpended program income (line l minus line m or line n) <span style="float: right;">\$ -</span>				
11. Indirect Expense				
a. Type	b. Rate	c. Period From	Period To	d. Base
				e. Amount Charged
				f. Federal Share
g. Total: \$ -				\$ -
12. Remarks: Attach any explanation deemed necessary or information required by Federal approving agency in compliance with governing legislation.				
13. Certification: By signing this report, I certify that it is true, complete, and accurate to the best of my knowledge. I am aware that any false, fictitious, or fraudulent information may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 216, Section 10951)				
a. Typed or Printed Name and Title of Authorized Certifying Official <b>Sue Downs Grants Specialist</b>		c. Telephone (Area code, number and extension) <b>207-739-6182 x205</b>		
b. Signature of Authorized Certifying Official 		d. Email address <b>sdowns@tnc.org</b>		
		e. Date Report Submitted (Month, Day, Year) <b>December 3, 2013</b>		
14. Agency use only.				

Standard Form 425  
OMB Approval Number: 0348-0061  
Expiration Date: 10/31/2011

**Paperwork Burden Statement:**  
According to the Paperwork Reduction Act, on average, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0348-0061. Public reporting burden for this collection of information is estimated to average 1.5 hours per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0061), Washington, DC 20503.

The financial statement for 2013 does not yet reflect the \$900 in match from USFWS for elevation work and stream temperature analysis. Match remaining for work in 2014 is \$2,527.09.