### #1 Washburn Hay Creek Bridge

State of Wisconsin Department of Natural Resources dnr.wi.gov

### Motorized Recreation Grant Application

For: (choose all that apply)

Form 8700-159 (R 02/2024) Page 1 of 5

Number

**DNR Use Only** 

Due Date: April 15

### ATV/UTV Trail Aid Snowmobile Trail Aid

Notice: Completion of this form is required under Wisconsin Statutes 23.09(26) and 23.33. Failure to complete this form will result in denial of financial assistance. Personally identifiable information found on this form is not intended to be used for any other purpose. The Department of Natural Resources (DNR) may provide this information to requesters as required by Wisconsin's Public Records law {ss. 19.31 - 19.39, Wis. Stats.}.

Instructions: Applications may combine more than one source of funds. They may	
be submitted for consideration of traditional ATV, UTV, Snowmobile and Motorized	Category
Stewardship funding. Submit one copy of all forms and attachments. See Page 2 for	Category
necessary attachments. Send applications to your Community Services Specialist.	addition with the

necessary attachments. Send applications								
Section 1: Applicant Information								
Applicant / Organization Name			Check Re	cipient: Ir	ndividual other that	an autho	rized in	dividual to act
Washburn County Forestry			on behalf		licent			e as applicant.
Individual Authorized to Act on Behalf of Ap	plicant	per Resolution	Check Re	cipient l	Name (Name to /	Appear o	on Chec	ж)
Brandon Shutt			Brandon	Shutt				
Title			Title					
Assistant Recreation Administrator			Assistant	Recreat	tion Administra	tor		
Address			Address					
1760 Roundhouse Road			1760 Roi	undhous	e Road			
City	State	ZIP Code	City				State	ZIP Code
Spooner	WI	54801	Spooner				WI	54801
Telephone Number	Email	Address						
(715) 635-4490	bshutt	t@co.washburr	n.wi.us					
Section 2: Project Information Required	d for al	l Projects						
Project Title				Current	Funded Miles	New M	iles (if a	applicable)
Hay Creek Bridge Replacement								

Hay Creek Bridge Replacement	t							
County	Township	Range	Oe	Section	1/4 1/4	1⁄4	GPS Coordinate Lat. 45.9775	
Washburn	40 N	11	⊙W	1	NW	SE	Long91.668	7

**Project Description Summary** This bridge is part of ATV/Snowmobile Trail 39 (year round ATV). It is 150' long, 12' wide rated 12,000. The bridge (installed in 2002) has a unique design with 3" white oak subdeck attached to steel girders, covered with 2" rough sawn pine. The sub deck is deteriorated and we applied for a grant in 2019 to replace. Costs increases and difficulty securing materials, especially through Covid, resulted in re-analysis of our project. Since the white oak performed miserably, we contracted with an engineer who determined that the decks were integral to the rating of the bridge. They recommended replacement of the decking our project are bridge. 4" x 10" treated, rough sawn pine. They also recommended replacement of the decking with the original configuration of over 1000 3/4" bolts through the girders on 8" intervals. Given the increased materials and increased costs, we are proposing to replace the bridge as a long-term cost saving measure. Engineers approved using existing abutments and pilings (2) and placing three 50' bridge segments on the existing support structures. The wood deck would likely require replacement again in 10 years so a modern bridge is recommended. The costs itemized below reflect monies requested in addition to funds currently awarded under ATV, Snow and RTP grants (\$61,268). Costs 50/50 with Snowmobile.

X I certify that all maintenance land use agreements are on file.

Estimated Cost						
Maintenance	Acquisition	Insurance	Development	Bridge Rehab.	Trail Rehab.	Total Estimated Cost
				\$77,866.00		\$77,866.00
			Leave Blank – DNR	Use Only		
Applicant Certi	fication					
Printed Name of	Authorized Offici	al	Offi	cial's Title		

As the applicant's authorized official, I certify that, to the best of my knowledge, the information in this application is true and correct.

Signature of Authorized Official

**Date Prepared** 

### **Motorized Recreation Grant Application**

Form 8700-159 (R 02/2024)

Washburn County Forestry

Page 3 of 5

Appendix A – Required for	Bridge	Rehal	o/Rep	lace	, Ne	w, or I	Reroute	e with New B	ridge	e	
⊠ Bridge Rehab/Replace	🗌 Ne	w Brid	ge		] Re	route w	ith new l	bridge			
County	Township	Range	Oe	Sect	ion	1/4 1/4	1⁄4	GPS Coordinat Lat. 45.977			
Washburn	40 N	11	٥W	1		NW	SE	Long91.66			
Water Body Name					Bridg	ge Name	)		(	County Inven	tory Number
Hay Creek					Hay	Creek	Bridge		1	N/A	
Funded Trail Name or Number (SN	IARS if app	licable	)					ver received deve			itation funds
Trail 39					in the	e past?	Yes	s 🔿 No y	′ear:́	2002 \$	88,500.00
Bridge is located on: O Private	property			)	Old E	Bridge/C	ulvert Siz	ze 150' x 12'			
	property				New	Bridge/0	Culvert Si	ize 150' x 12'			
Landowner Where Bridge is Locate	ed				Telep	phone N	umber	Length of T	Frail U	se Agreemer	
Washburn County					(715	635-4	490	perpetual			minimum)
Current maximum load 12	2,000	lbs.	Age of	Bridg	ge	Bridge	e Materia	1			
	5,000	lbs.	23				frame w	vood support a	nd wo	ood deck	
Sponsoring Club Name				Clu	ub Co	ontact			Telep	phone Numbe	ər
Rolling Hills				Ra	ndy	King				(612) 801-	-2084
Do you have your trail bridges post								ad of the other b	ridges	on the syste	m if
	$\sim$		No	25	,000		nis bridge	ſ			
What is the weight of your puller &	drag/gradir	ng equi	pment?		,000						
What other recreational trail uses a	re planned	for this	bridge	?							
ATV/Snowmobile											
If there are other Recreational uses	s planned, l	now mu	ich of th	ne bri	dge o	cost will	be paid fo	or by non-snown	nobile	or non-ATV ι	users?
O Yes  No Have you contact	cted your lo	cal <u>DN</u>	R Wate	r Mar	nage	ment Sp	ecialist (\	WMS) regarding	a peri	mit?	
○ Yes ● No Is a permit need	ed? (Pleas	se provi	de any	writte	en co	rrespon	dence fro	om WMS.)			
○ Yes ● No Have you contact	cted your C	ounty Z	Zoning I	Dept.	rega	rding a f	loodplain	determination?			
○ Yes	ydrologic a	and hyd	raulic) :	study	be r	equired?	þ				

### **Bridge Project Detailed Description**

This is an existing bridge constructed in 2002. The design is a steel I-beam frame with steel cross support members. There is a 3" thick rough-sawn white oak "sub-deck running perpendicular to I-beam direction with 3/4" bolts connecting the oak, through the "lip" of the I-beam at 8" intervals. This sub-deck is deteriorating and it is apparent that this was a poor design choice for the bridge surface. The white oak is covered with 2" rough sawn treated pine. Washburn County initially secured grants to replace all wooden components but we contracted with an engineer to determine if there were more feasible ways to attach the deck. They determined that the wood is integral to the design and needed to be bolted in the same manner. They also determined that a 4" x 10" treated pine deck was more suitable as a replacement, as well as 2" x 8" rough sawn (not dimensional) needed to be added as a surface course.

Materials were either impossible to acquire or they were prohibitively expensive. We also feel that rehabilitating this bridge as it was designed will lead to continual rehab costs as the wood deteriorates. The issue is that water gets trapped between the 2 surfaces causing rot. We are proposing to remove the bridge and place three 50' sections of prefabricated bridge sections onto the existing abutments and pilings (2). Our engineer has determined that the sub-structure is suitable for re-use.

We are proposing a scope change on 3 grants totaling \$61,268 (ATV, Snowmobile, RTP) and applying for grants split evenly between ATV and Snowmobile for the balance

### **Motorized Recreation Grant Application**

Form 8700-159 (R 02/2024)

Page 4 of 5

### Appendix A (continued)

### Summarize Costs in Appropriate Categories:

		Bridge Structure	
		Quote 1	Quote 2
		Steel	Steel O Wooden
Bridg	e Dimensions:	150' x 12'	150' x 12'
Bridg	e Manufacturer: <u>Anderson E</u>	Bridge	Northwoods Bridge
Desig	n Weight Load	25,000 lbs.	25,000 lbs.
Cost	of Structure: 1. Engineering	\$ <u>10,000</u>	\$
	2. Structure	\$ <u>170,000</u>	\$ <u>473,398</u>
	Subtotal	\$ <u>180,000</u>	\$ <u>473,398</u>
		Quote 1	Quote 2
	۲	Contractor or 🔿 Sponsor	🔿 Contractor or 🔿 Sponsor
Instal	lation Costs:	Estimate	Estimate
1.	Engineering	\$	\$
2.	Site Preparation	\$ 5,000	\$
3.	Abutments	\$	\$
4.	Pilings/Piers	\$	\$
5.	Approaches	\$	\$
6.	Riprap	\$ <u>2,000</u>	\$
7.	Labor	\$ <u>20,000</u>	\$
8.	Equipment Rental	\$	\$
9.	Culverts	\$	\$
10.	H & H Study	\$	\$
11.	Wetland Delineation	\$	\$
12.	Other Demolition/disposal	\$ 10,000	\$
	Subtotal	\$ <u>37,000</u>	\$
	Total Cos	\$ <u>217,000</u>	\$ 473,398

### For the application grant, you must take the lowest of the two quotes.

En	tire Deck and Railing Projects		<ul> <li>Cont</li> </ul>	ractor	O Sponsor	O Club	
Brid	dge Dimensions:						
Des	sign Weight Load		lbs.				
1.	Materials	\$					
2.	Labor	\$					
	Tota	al \$ <sub>.</sub>					

### **Recreation Grant Project Cost Estimate Worksheet** Form 8700-014 (R 02/23)

Page 1 of 2

For use with Recreation Grant Application Forms

Project Name:		Prepared By:	Date
Hay Creek Bridge	Replacement	Brandon Shutt	03/22/2024
County	Project Applicant:	Landowner Name	Public
Washburn	Washburn County Forestry	Washburn County Forestry	O Private

	DEVELOPMENT PROJECT ITEMS List by individual item or break down by Use Areas (See Item List On Back Of This Form)	Quantity	Unit of Measure	Component Costs	Estimated Total Item Cost
C	Demolition/Disposal	1		\$10,000.00	10,000.00
C	Rip Rap	1		\$2,000.00	2,000.00
C	Site Prep	1		\$5,000.00	5,000.00
C	Engineering	1		\$10,000.00	10,000.00
C	Bridge Structure	3		\$56,667.00	170,001.00
C	Labor	1		\$20,000.00	20,000.00

NOTE:

• For development projects, contingency and indirect costs are not eligible expenses.

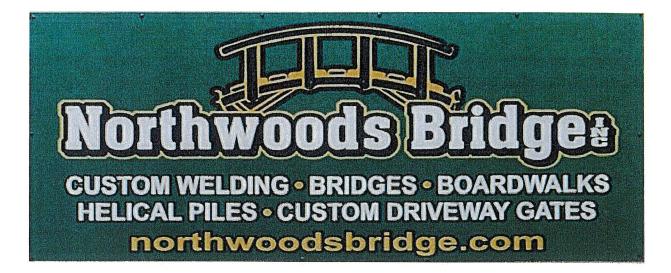
• For acquisition projects, complete the Acquisition Project Cost Estimate Section of this form.

### **Guidelines for Applicant**

Complete this form for each bridge structure you are submitting a grant application for. Provide any additional documents not requested on application checklist to substantiate your points, including actual deeded easements.

Category	Possible Points	Actual Points
1 Condition of the Structure (max of 10 points)		
Has a certified bridge inspection report that supports the project & demonstrates need (see example, must provide copy of report by August 1 for 2024 only)	2 10	10
2 Permits (maximum points 4)		
Consultation with DNR Water Mgmt Specialist has occurred & permit is likely, if needed	1	
Permit in hand / Bridge already permitted	3	3
3 Funding (maximum points 2) Are other funds already committed?		
50% or greater from other funding source(s)?	2	2
11% - 49% from other funding source(s)?	1	
<ul> <li>4 Length of Written Easements or Land Use Agreement (max points 5)(ch.</li> <li>23.09(26)(am)1 WI Stats)</li> </ul>		
On public land (County, State, Federal)	5	5
10 or more year <b>deeded easement</b> on private land or other public land, for all portions of that trail to the nearest road on each side of the bridge	5	
3-9 year <b>deeded easement</b> on private land or other public land, for <u>all portions of that</u> <u>trail to the nearest road</u> on each side of the bridge	4	
10 or more year <b>deeded easement</b> on private land or other public land, for just the bridge site	3	
3-9 deeded easement on private land or other public land, for just the bridge site	2	
10 or more year land use agreement (LUA, not deeded) on private land or other public land	1	
3-9 year land use agreement (LUA, not deeded) on private land or other public land	0	
5 Miles Impacted – How many miles will need to rerouted if the structure is not replaced? Measured from nearest intersection on both sides of the bridge. (max 4 points)		
Less than 20 miles	1	
20 miles or more	3	3
No other snowmobile trails connect. Explain:	4	
DEDUCTIONS		
6 County Active Project Deduction (maximum deduction 1 point) A snowmobile active		
project is one that has exceeded it's initial grant period.		
Two or more active projects - deduct 1 point	-1	
GRAND TOTAL	1	23

Comments/Notes:



## 715-205-1269

## A Division Of Extreme Landscape, LLC

January 18, 2024

Brandon Shutt Washburn County Assistant Recreation Administrator bshutt@co.washburn.wi.us Work: 715-635-4497 Cell: 715-520-0948

I have enclosed the following documentation for the Washburn County Bridge Bid.

Bridge will be built to a state approved engineered drawing.

Bridge will be a free span truss style. Bridge will be set on current abutments & pilling.

This price includes structures, engineering, site prep, labor and rip rap.

The hardware that will be used in the project are:

3"x1/2" galvanized carriage bolts 1/2" galvanized washers 1/2" galvanized nuts Grk 5/16"x2 3/4" screws

The first layer of treated 2x12x12 decking will be bolted down using 3''x1/2'' galvanized carriage bolts with  $\frac{1}{2}''$  galvanized washers and  $\frac{1}{2}''$  galvanized nuts 10 per board.

The second layer pf 2x12x12 treated decking will be fastened with Grk  $2\frac{34}{x5}/16$  screws 10 per board. Welding standards.

The bridge will be constructed from core 10 structural steel and will be welded to D1.1 welding standards

I require 60% down payment to start the project and to order materials. The last 40% to be paid when bridge is completed and installed within 30 days.

The manufacture time will not start until down payment has been received.

To build and deliver and install the 150' Bridge with 2 15' approaches. Northwoods Bridge will do this work for **\$473,397.50**.

Pat Hover Owner Northwoods Bridge, Inc 715-205-1269



111 Willow Street Colfax, WI 54730 (715) 962-2800 FAX: (715) 962-2801

# PROPOSAL

CO47 000

January 23, 2024

- To: Washburn County Snowmobile Trail Administrator
- Re: Hay Creek Snowmobile Bridge Budget

3 @ 50' x 12' (clear width) steel truss bridges w/ (2) 15' Approaches

- Design Standards: AASHTO
- Diagonals per Panel: 1
- Clear width: Inside face structural elements at deck level
- End Vertical: Square
- Bearings: Equal Elevations
- Steel Grade: A588/A847 (Unpainted self-weathering)
- Deck: #1 Southern Yellow Pine (.40 MCA)
- Safety Rails: Horizontal (4" opening)
- Installation: Existing abutments/piers
- Loads: 85 psf live load 35 psf wind load 25,000 lbs. vehicle load
- FOB: Washburn County, WI
- Engineered Drawings State Seal: Wisconsin

### Price-----

		\$217,000
•	Structures (Steel Truss)	\$170,000
۲	Engineering	\$10,000
	Soil Testing	\$0
0	Site Prep	\$5,000
•	Abutments	Existing
0	Labor	\$20,000
0	Rip Rap	\$2,000
0	Demolition/Disposal	\$10,000

\*\*\*\*\*\*\*This price is for budgetary purposes only\*\*\*\*\*\*\*

Please call with any questions.

Thank you,

Kory S. Weathers



August 12, 2020

Mr. Mike Peterson Washburn County Forest Administrator 1760 Roundhouse Road Spooner, WI 54801

## Re: Hay Creek Snowmobile Bridge – Re-Decking and Capacity Review NCE Job No. 20-383

Dear Mr. Peterson:

At your request we have reviewed the structural design capacity for the existing three-span (plus approaches) bridge. We have reviewed only the gravity loads, as the current lateral load requirements match the stated lateral design loads from the original construction documents. The structure was designed and constructed in approximately 2002. The existing structure consists of (4) steel girders per span with 3x white oak wood decking and 2x wood surface decking. The original construction documents state the bridge was designed for 60 psf snow, 14,000# vehicle (8'x10') with 30 psf live load also applied. No wheel loading was described and no overload provision were described.

Structural calculations have been performed based on the current gravity load design standards (described below).

The bridge is to receive new structural and surface decking due to deterioration. As requested, we did consider a new fastener system. However, it is not recommended to use surface screws for fastening primary deck structure. Screws rely only on thread bite, which tends to deteriorate with long term moisture issues leading to loss of strength and poor performance. Therefore, we recommend that the primary decking be through bolted. This report also includes a sketch for requested revised decking size, material specification and connection methods in order to meet or exceed the recommended wheel loading under the current design standard.

### A) Structural gravity load analysis:

**Basis of Calculations:** 

- 1. Current Bridge Design Guidelines PUB-CF-005 2017.
  - a) 60 psf Pedestrian Load (PL)
  - b) 60 psf snow load (SNL)
  - c) 14,000# Vehicle load (VL) This vehicle is assumed to be a power unit plus drag.
  - d) Overload Provision The Vehicle load must be increased by 145% for infrequent loading or 20,000#
  - e) Wheel loads specific wheel loading is not defined. However, the document refers to a minimum 5T (10,000#) vehicle and therefore we assume the intent to be AASHTO H5 loading with a maximum rear wheel load of 4000#.
  - f) 20 psf Wind Load (WL)
- 2. Load combinations:
  - a) DL (self weight) + 0.80(PL + SL + WL)

Or

- b) DL (self weight) + 0.75(SNL + WL + VL) [Note VL = 20,000#]
- 3. The results of our analysis conclude the following

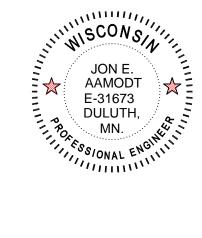
- a) The new decking shall be 4x (match existing width for holes) rough sawn Southern Yellow Pine (SYP) Machine Evaluated (M-35) or Machine Stress Rated 1050f-1.6E decking.
- b) The top wear course of decking shall be 2x8 min. rough sawn SYP #1 dense decking or better.
- c) Assuming like new condition, the existing bridge design meets the current required design criteria described above.
- d) Predicted deflection of the bridge under the described design loading is span / 600 which also meets current design standards.

Respectfully,

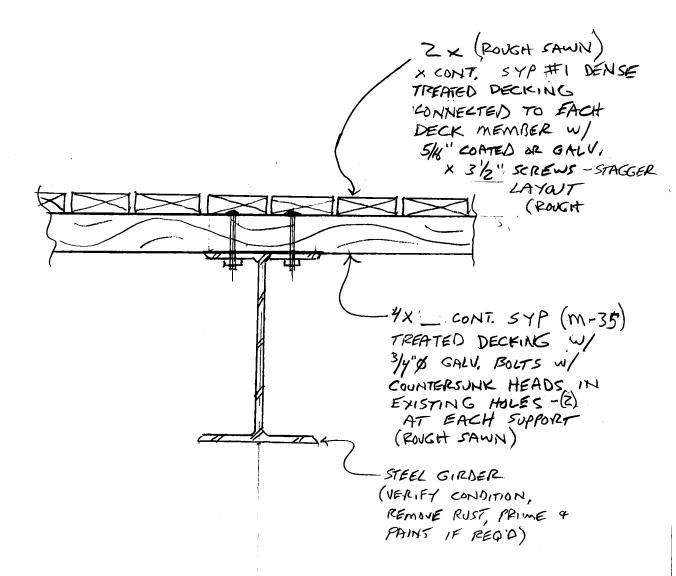
5. Hould

Jon E. Aamodt P.E.

Attached: Recommended decking fastening detail "A"



Northiand	PROJECT#	DATE:	BY:	PAGE
Northland Consulting Engineers L.L.P.	-			
	_ L			



DECKING DETAIL Ą 1/2" =1-0"

(



### WASHBURN COUNTY FOREST

### FOREST ADMINISTRATOR

1760 Roundhouse Road SPOONER, WISCONSIN 54801 (715) **635-4490** Fax (715) 388-7947

### PROJECT NARRATIVE HAY CREEK BRIDGE PROJECT SCOPE CHANGE

<u>INTRODUCTION</u>: Washburn County secured grants in 2019 to re-deck a 150' long snowmobile/ATV trail bridge. Due to bridge design quirks, availability of materials, price of materials and excessive labor requirements, we are proposing to remove the bridge structure and place new pre-fabricated bridge segments on the existing footings and pilings.

BACKGROUND: The Hay Creek Bridge is part of ATV/Snowmobile Trail 39 in Washburn County. This trail is a critical connection between Spooner, Trego, Minong and Hayward. The bridge is steel frame, 150' long, with steel abutments and two steel pilings in the stream and wetlands. It was constructed on-site by Spooner Machine in 2002, and is weight rated for 12,000 pounds.

The bridge deck began to deteriorate and Washburn County applied for bridge rehabilitation grants in 2019. We secured \$15,317 from the snowmobile program (S-5411), \$15,317 from the ATV program (ATV-4099) and \$30,634 from RTP (93619M). Our intention was to replace all of the wood components on the bridge.

<u>ENGINEERING</u>: Before starting the project, we consulted with the engineer that initially designed the bridge to determine if there was a feasible way to increase the weight rating of the bridge and simplify the anchoring system that attached the wood to the steel. The bridge has 3" white oak attached to steel with 2" treated pine deck over the top. The white oak is attached with an extensive bolt system as shown in the attached Image 1 & 6. Their review included the following:

- The 3" white oak "sub-deck" fastened directly to steel is integral to the function of the bridge and would need to be replaced with same.
- They recommend substituting 3" white oak with 4" treated pine (rough sawn, not dimensional).
- Surface decking shall be at least 2" x 8" rough sawn treated southern yellow pine.

**ISSUES:** 

- White oak has not proven to be a viable deck material due to rot/deterioration
- 4" treated pine is difficult to source and was impossible to secure during Covid

- Surface decking would require special order rough sawn treated (this is not dimensional lumber).
- Anchoring system is large bolts through the sub deck and I-beams. Bolt holes would need to be aligned on 8" intervals lengthwise across 4 beams (almost 1,000 ¾" bolts to align from beneath the bridge).
- The cost of materials has increased substantially since we applied for the grant in 2019. It is evident that we would need to secure a major funding increase on the project just to replace with an in-kind bridge deck, and we question the long-term viability of this bridge design.

<u>PROPOSAL</u>: After extensive review, we feel that removing the bridge structure and replacing it with pre-fabricated clear span structures would be the most viable and cost effective long term approach based on the following:

- Engineer review shows that the existing abutments and pilings are suitable to place a new bridge structure
- Three 50' bridge spans can be placed on the existing substructure
- Life span of commercially manufactured clear-span segments will be much longer than the wooden components designed in the original bridge
- Future re-decking projects can be done with commonly available dimensional treated lumber.
- We feel that replacing the bridge materials as designed will result in a need to rehabilitate the project in 10 years.
- New bridge would be rated to 25,000 lbs.

We respectfully request a scope change of S-5411, ATV-4099 and RTP 93619M from Hay Creek Bridge rehabilitation to Hay Creek Bridge partial replacement. Our low estimate for this project is \$217,000. Scope change of the grants would allocate \$61,268 to the new project.

### Hay Creek Bridge Replacement – Photos

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1 ageml





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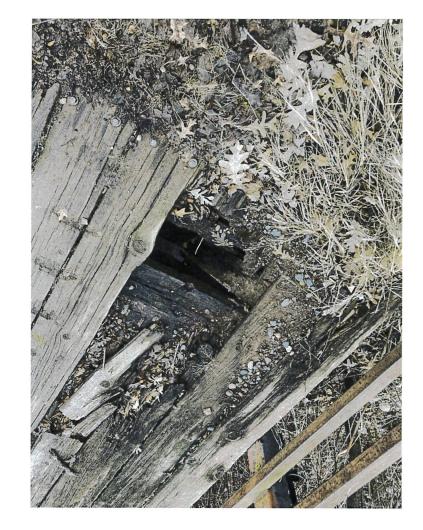
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Hay Creek Bridge Replacement – Photos

### Hay Creek Bridge Replacement – Photos

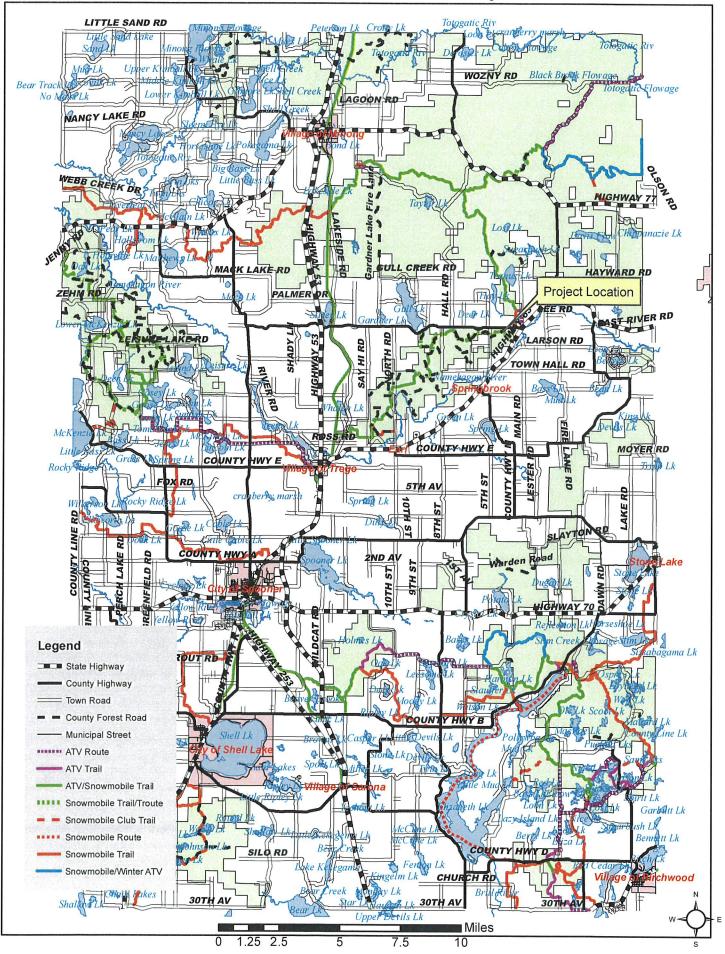
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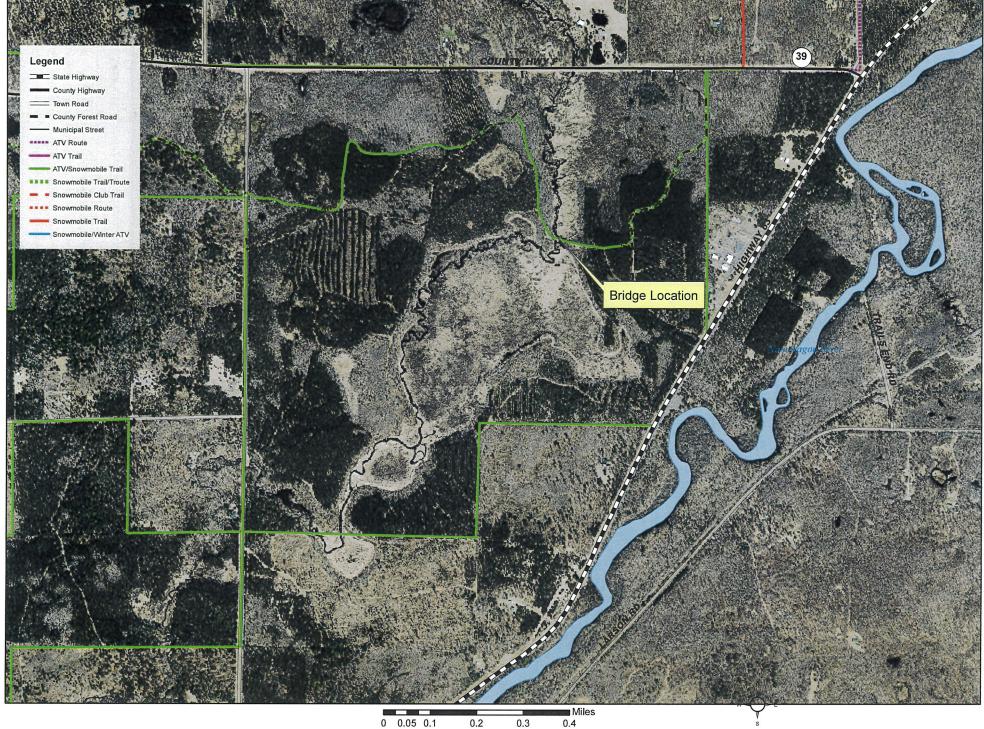




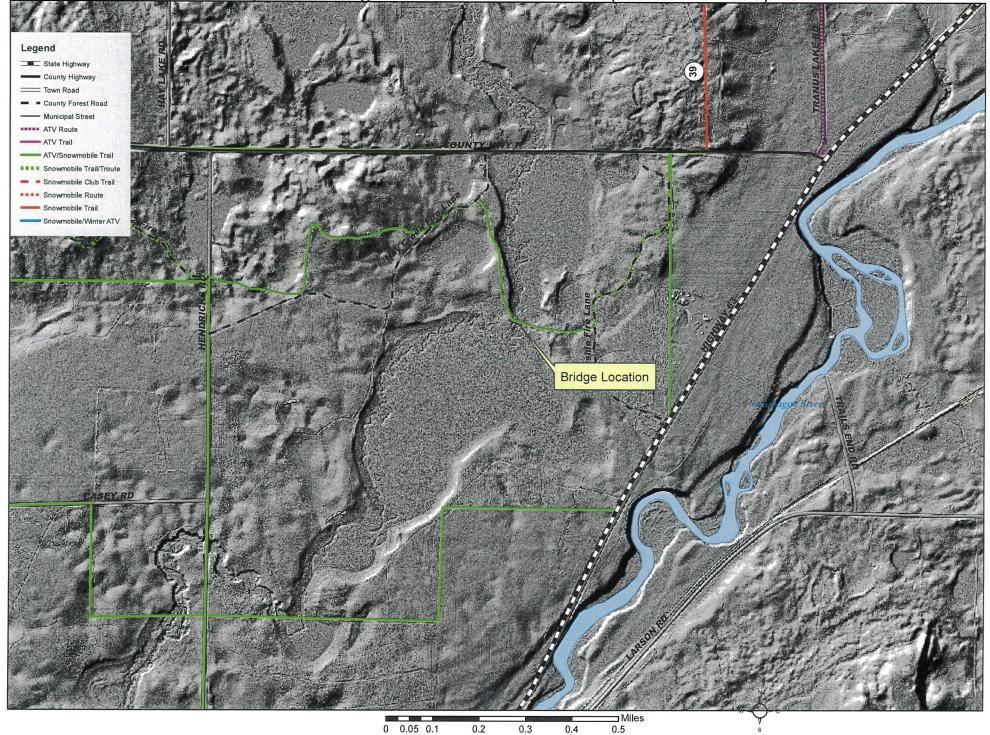
## Hay Creek Bridge Rehabilitation Project - Trail 39



## Hay Creek Bridge Rehabilitation - Trail 39 - (Aerial 2020)

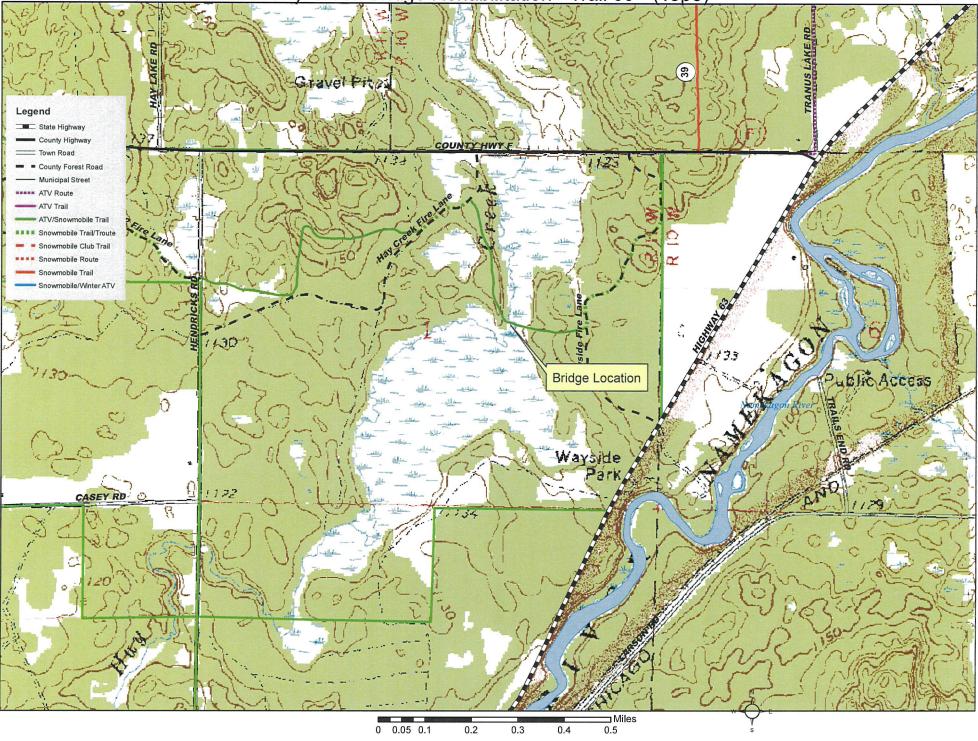


## Hay Creek Bridge Rehabilitation - Trail 39 - (LIDAR Hillshade)

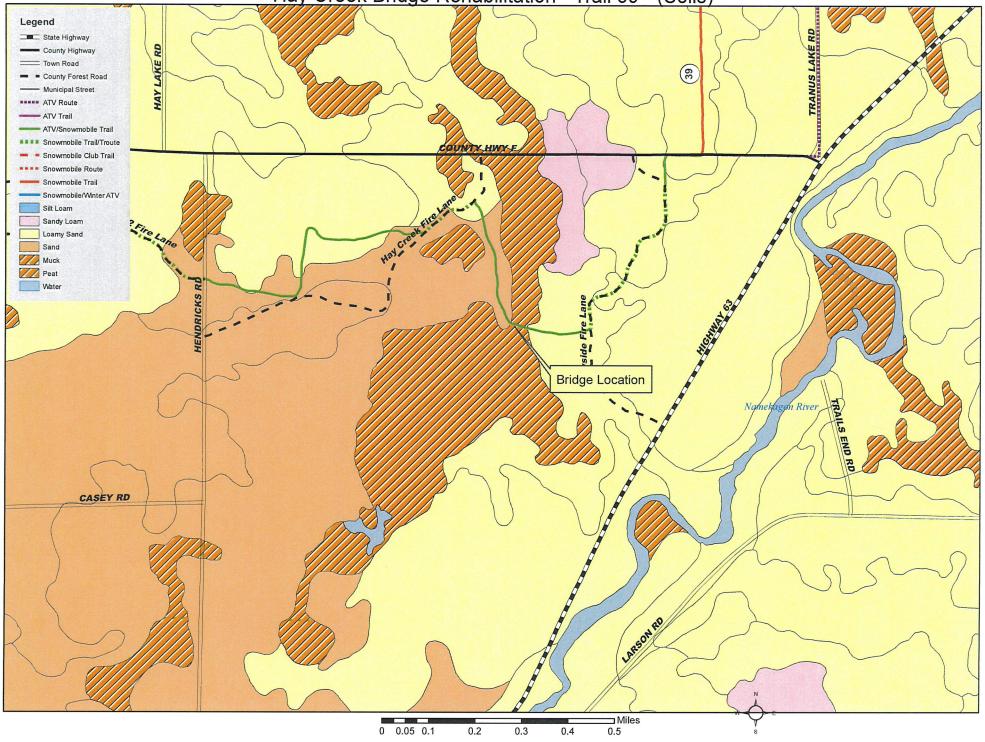


0 0.05 0.1 0.3 0.2 0.4

## Hay Creek Bridge Rehabilitation - Trail 39 - (Topo)



Hay Creek Bridge Rehabilitation - Trail 39 - (Soils)



Hay Creek BridgeRehabilitation - Plat (Springbrook)

