



VTrans Fall 2022 Transportation Alternatives (TA) Grant Application

Thoroughly read the ***Vermont Transportation Alternatives Fall 2022 Application Guide*** before you begin your application. It includes important program information and step-by-step instructions. Pay particular attention to the application process requirements. **Applications are due in hand or by e-mail by December 14, 2022.** Please e-mail the completed application to: Scott.robertson@vermont.gov

Spring Hill Road Culvert Replacement
(Project Name/Title)

802-824-3356, ext. 5
(Phone)

Shane O’Keefe, Town Administrator
(Municipality contact person responsible for the management of this project)

townadmin@londonderryvt.org
(e-mail address)

Londonderry
(Town)

\$ 300,000
Amount of **Federal Funds requested** (no more than 80% of the project cost estimate).

05155
(Zip Code)

\$75,000
Amount of Local Match. Example:
Federal Award = \$300,000 (80% of total)
Local Match = \$75,000 (20% of total)
Total Project Cost = \$375,000 (100% of the total)

100 Old School ST, So. Londonderry, VT 05155
(Mailing Address)

County: Windham

Town/Village/City: Londonderry

Specific location, street, or road: Spring Hill Road (TH#41) at Eddy Brook (N 43.18497° W 72.85337°)

Regional Planning Commission: Windham Regional Commission

If a linear project, what is the length in feet? N/A

Is the project on or intersecting to a State maintained highway? Yes No

- *Note: If yes, be sure to include documentation that you have notified the VTrans District Transportation Administrator of the intent to apply for TA funding and have provided them with a brief (one paragraph) description of the proposed project.*

Project type being applied for: Scoping Design/Construction

The municipality understands that a typical construction project utilizing Transportation Alternatives Program funds will take roughly three years (min.) in the Design and ROW phases prior to going to construction (as pointed out in the TA Program Application Guide)? Yes No

Does this project have a previously completed scoping or feasibility study? Yes No

Note:

Attach a map(s) of the project area and clearly show the limits of the project as well as surrounding benefits from the proposed improvement. If the project is within or adjacent to a designated downtown, village or growth center, clearly indicate the relationship of the proposed project to the boundary of the designated area. Color photos of the area are also recommended.

Fiscal Information:

Accounting System Automated Manual Combination

SAM Unique Identifier # U7XXDN8D9MW3

Fiscal Year End Month June

Property Ownership:

If the proposed project is on private property that will need to be acquired by the Municipality through purchase, easement, or eminent domain (includes temporary construction rights) in accordance with the "Uniform Act", then the municipality is committed to exercising its right of **eminent domain** to acquire the rights to construct the project if necessary. Yes No

Funding:

Does this project already have existing funding? If so, please describe. Yes No

RESPONSE: The project has received funding in the amount of \$175,000 from the FY22 VTrans Town Highway Structures Program (Grant #BC2084). Overall project cost is \$567,500, with Transportation Alternative Program grant covering 52.9% of total cost. See attached Project Budget spreadsheet for complete budget allocation.

Will you accept an award less than you applied for? Yes No

- If yes, please indicate whether local funds will be used to make up the shortfall, or if the project scope will be reduced. If the project scope is to be reduced, describe what part of the project (please be specific) you would accept partial funding for.

RESPONSE: Local funds will be raised through a Town Meeting vote or ARPA funds unless other funding sources are available; the Town will continue to seek additional funding. Due to the nature of the infrastructural and environmental issues being addressed by the proposed project, reduction in its scope is not reasonable or feasible.

A support letter from the governing body of the applicant municipality or organization and an acknowledgement and source of the local match and commitment to future maintenance responsibility for construction projects is required (must be dated within 1 year of the application). Is a letter of support attached?

Yes No

Regional Planning Commission Letter of Support:

In order to apply, the project must have a letter of support from the regional planning commission. Is a letter of support attached?

Yes No

Application Scoring Criteria:

1. Please give a brief description of the project (be sure to indicate the primary facility type being applied for and be concise). (10 points max.)

RESPONSE: The project is the replacement of an existing 72-inch corrugated steel culvert with stone headers with a new box culvert with an approximate span of 20 feet at a location on Spring Hill Road at Eddy Brook where there is a diagonal flow of water below the Town Highway. The current culvert restricts channel width leading to an increased potential for scouring, soil migration and debris blockage. The present structure will overtop at the design storm event of 4% of annual exceedance probability (AEP) according to a 5/4/2020 hydraulic study (attached) conducted for the Town by VTrans. This box culvert or a bridge solution are recommended by the study.

2. What is the feasibility of this project? Feasibility (or Scoping) study applications will not be scored on this criterion. Also, please describe the extent of project development completed to date. (10 points max.)

RESPONSE: The project is entirely feasible as it a common type of road infrastructure project. There are complicating geometry issues, but nothing that precludes the project from being successfully designed and completed timely. Due to the local road network the roadway at the subject location can be closed off to traffic for several months as necessary. The project has been developed to a point where it has successfully received a VTrans structures grant based partly on the previously mentioned hydraulic study. The Town has hired an engineer for scoping and design already through a qualifications based selection process. The only right-of-way that would appear to be necessary would be temporary easements for construction as the existing structure is entirely within the Town's ROW. But if necessary to secure these easements by way of eminent domain the Town is prepared to take that step.

3. Does this project address a need identified in a local or regional planning document? If so, please describe. (5 points max.)

RESPONSE: Yes, attached are excerpts from the 2017 Town Plan, all of which support this project. And as described in the attached letter of support from the Windham Regional Commission, the project is supported by the 2021 Windham Regional Plan.

4. Does this project benefit a State Designated Center per the link below (i.e., downtowns, villages, or neighborhood growth centers recognized by the Vermont Department of Economic, Housing and Community Development? (10 Points Max.)

<http://maps.vermont.gov/ACCD/PlanningAtlas/index.html?viewer=PlanningAtlas>

RESPONSE: No, it does not.

5. Provide a project cost estimate below (project costs below include both federal dollars and local dollars). Projects will be scored based on whether the cost appears realistic for the size and scope of the project. For scoping studies, use PE and Local Project Management lines only.

Note: If you are applying for additional funds for an existing project, show the amount being requested for this grant in the PE, ROW, Construction, Construction Engineering, and Municipal Project Management rows below. Also, be clear regarding total project cost and other funding amounts and sources in the additional funding comments box below. (10 points max.)

Preliminary Engineering (PE) <i>(Engineering, Surveying, Permitting)</i>	<u>\$65,000</u>
Right-of-way / Acquisition (ROW) <i>(appraisals, land acquisition and legal fees)</i>	<u>\$ 2500</u>
Construction <i>(construction costs with reasonable contingency)</i>	<u>\$412,045</u>
Construction Engineering <i>(cost to provide inspection during construction)</i>	<u>\$ 40,000</u>
Municipal Project Management Costs <i>(minimum of 10% of total PE, ROW and Construction Phases).</i>	<u>\$ 47,955</u>
Total Project Cost	<u>\$ 567,500</u>

Addition Funding Comments: (ex. Total and additional funding for existing projects)

RESPONSE: As mentioned, the project has received funding in the amount of \$175,000 from the FY22 VTrans Town Highway Structures Program (Grant #BC2084). See the attached Project Budget spreadsheet for complete budget allocation.

6. Select the eligibility category below (A, B, C or D) that best fits your project and answer the corresponding questions for that category (choose only one category). 10 bonus points will be awarded to projects that are primarily Bicycle or Pedestrian facilities.
- A. Bicycle and Pedestrian Facilities (includes Safe Routes for Non-Drivers and Conversion of abandoned railroad corridors.**
- (i) Will the project contribute to a system of pedestrian and/or bicycle facilities? **(10 points max.)**
[Click here to enter text.](#)
 - (ii) Will the project provide access to likely generators of pedestrian and/or bicyclist activity? **(10 points max.)**
[Click here to enter text.](#)
 - (iii) Will the project address a known, documented safety concern? **(10 points max.)**
[Click here to enter text.](#)

B. Community Improvement Activities:

- i. Explain how the project improves the economic wellbeing of the community and/or provide a benefit to state tourism? **(10 points max.)**

[Click here to enter text.](#)

- ii. Describe the anticipated impact to the public; degree of visibility, public exposure and/or public use. **(10 points max.)**

[Click here to enter text.](#)

- iii. Answer only one of the following based on the type of project:

- a) Construction of turnouts, overlooks, and viewing areas as related to scenic or historic sites. *To what extent will the project provide a view of a highly unique and scenic area?* **(10 points max.)**

[Click here to enter text.](#)

- b) Preservation or rehabilitation of historic transportation facilities. *Describe the historic significance of the historic transportation facility and the importance of the facility to the state.* **(10 points max.)**

[Click here to enter text.](#)

- c) Archeological planning and research related to impacts from a transportation project. *Describe the associated transportation project and benefit of the proposed activities.* **(10 points max.)**

[Click here to enter text.](#)

- d) Vegetation management in transportation rights of way to improve roadway safety, prevent invasive species, and provide erosion control. *Describe the extent of the current problem and the impact on the site and surrounding area.* **(10 points max.)**

[Click here to enter text.](#)

C. Environmental Mitigation Activity Related to Stormwater and Highways

- i. Please describe how this application provides environmental mitigation relating to stormwater and highways. **(10 points max.)**

RESPONSE: The overall purpose of the project is to improve stormwater infiltration, to better accommodate high water events and to improve aquatic animal passage. The current culvert does not meet the VTrans Hydraulic Manual standards nor State stream equilibrium standards for bankfull width. A properly sized bridge at this location can allow for unrestricted stormwater flow and thus relieve this tributary of harmful impacts of erosion.

Eddy Brook is an important tributary in the upper reaches of the West River watershed, which travels southeast from Londonderry through six other towns in the Windham Region, ultimately entering the Connecticut River directly north of Downtown Brattleboro. Disturbances in the upper course of the watershed could pose water quality and storm water infiltration challenges for communities downstream and compromise the health of the West River and its place in the ecology of the region. Ensuring that upper reach tributaries such as Eddy Brook can flow as naturally as possible is essential.

- ii. What information or data is provided to substantiate the current stormwater problem and associated environmental impacts? **(10 points max.)**

RESPONSE: During every major storm event, water infiltrates and scours either side of the culvert, sending silt, soil and gravel downstream. And due to the extreme angle of water flow to the culvert and the culvert's substandard dimensions, debris often blocks the flow of water during storm events causing water to flow over the road and around the culvert, further exacerbating the problem. Town forces must continually repair the roadsides with gravel in order to ensure culvert stability and maintain adequate road width.

- iii. What substantiating data or information is provided to show that the proposed application is an effective and maintainable solution to the problem? **(10 points max.)**

RESPONSE: As stated in the attached detailed hydraulic study, a bridge or culvert with an opening span of 20-feet is the recommended solution to allow Eddy Brook to meet State of Vermont hydraulic and environmental standards, thus preventing downstream release and migration of silt, soil and gravel during storm events.

D. Environmental Mitigation Activity Related to Wildlife

- i. Please describe how this application will reduce vehicle-caused wildlife mortality or will restore and maintain connectivity among terrestrial or aquatic habitats. **(10 points max.)**

[Click here to enter text.](#)

- ii. What information or data is provided to substantiate the current problem and associated environmental impacts? **(10 points max.)**

[Click here to enter text.](#)

- iii. What substantiating data or information is provided to show that the proposed application is an effective and manageable solution to the problem? **(10 points max.)**

[Click here to enter text.](#)

Prepared and submitted by:



Shane O'Keefe, Town Administrator
Town of Londonderry, VT
December 14, 2022

Town of Londonderry, Vermont
100 Old School Street
South Londonderry, VT 05155
802-824-3356
www.londonderryvt.org

November 21, 2022

Scott Robertson, P.E.
Project Manager
VTrans - Municipal Assistance Section
Barre City Place,
219 North Main Street, 4th Floor
Barre, VT 05641

RE: FY2023 Transportation Alternatives Program

Dear Mr. Robertson:

Please accept this letter as the Londonderry Selectboard's demonstration of full support for the Town's application for funding under the FY2023 Transportation Alternatives Program for the replacement of the failing 72-inch culvert (#12) on Spring Hill Road at Eddy Brook with a new bridge. The overall purpose of the project is to improve stormwater infiltration, to better accommodate high water events and to improve aquatic animal passage.

The source of the Town's local project match will be budgeted funds approved at a future Town Meeting vote, and the Town's Highway Improvements capital reserve fund. As with all municipal infrastructure, the Town commits to the long-term maintenance and repair of the new bridge once it is put into use.

Thank you for your consideration of the Town' application for funding for this important project, which will help the Town to better accommodate the traveling public while allowing for unrestricted stormwater flow to reduce erosion and its deleterious effects on water quality and wildlife.

Sincerely,



Thomas Cavanagh, Chair
Londonderry Selectboard



December 8, 2022

Mr. Scott Robertson
Transportation Alternatives Program Manager
VT Agency of Transportation
Highway Division
Municipal Assistance Bureau
219 North Main Street
Barre, VT 05641

Dear Scott:

On behalf of the Windham Regional Commission I am writing in support of the application by the Town of Londonderry for a culvert replacement and resizing project on Spring Hill Road in Londonderry through the VTrans Transportation Alternatives Program. The purpose of the grant is to replace 72" culvert #12 crossing Eddy Brook on Spring Hill Road with a large box culvert as recommended by a VTrans Hydraulic Study completed in May 2020. This project will improve storm water infiltration, better accommodate high-water events and improve aquatic animal passage. The current culvert does not meet the VTrans Hydraulic Manual standards nor State stream equilibrium standards for bankfull width. The current culvert restricts channel width leading to an increased potential for debris blockage and the structure will overtop at the design storm event of 4% of AEP.

The application is supported by the Windham Regional Plan, readopted June 2021 including the following provisions:

1. Regional Goals: To maintain and improve the quality of air, water, wildlife and land resources in the region. (pg. 6)
2. To provide for thoughtful and efficient use of the region's natural resources, including the prevention of surface water and groundwater pollution, the protection of fragile natural habitats and endangered or threatened species, the avoidance of agricultural and other land use practices that lead to soil erosion, the management of woodlands on a sustainable basis, and the sensitive treatment of scenic resources. (pg. 26)

3. To plan for, finance, and provide an efficient system of public facilities and services (such as schools, water and wastewater facilities, highways and bridges) to meet future local, regional, and state needs. (pg. 6)
4. Natural Resources Policy: Maintain water flows in streams at levels that support a full range of in-stream uses and values. (pg. 32)
5. Maintain and restore the chemical, biological, and physical quality of the region's surface water per the objective in State water regulations. (pg. 32)
6. Maintain watercourses, lakes, ponds, wetlands, and vernal pools consistent with State regulations and the highest precedent established by the District Environmental Commission and State Environmental Court in order to protect shorelines, to minimize effects of erosion, sedimentation and other sources of pollution, and to maintain scenic, recreational, and habitat values. (pg. 32)

Eddy Brook is an important tributary in the upper reaches of the West River watershed, which travels southeast from Londonderry through six other towns in the Windham Region, ultimately entering the Connecticut River directly north of Downtown Brattleboro. Disturbances in the upper course of the watershed could pose water quality and storm water infiltration challenges for communities downstream and compromise the health of the West River and its place in the ecology of the Region. Ensuring that upper reach tributaries such as Eddy Brook can flow as naturally as possible is essential. We encourage the agency to fund this application.

Sincerely,



Colin Bratton,
Transportation Planning Program Coordinator
Windham Regional Commission

Town of Londonderry, Vermont
Town Plan – October 2017

NATURAL RESOURCES AND CONSERVATION

Goal 1: Protect and enhance biological diversity.

Policies:

- 1.1 Protect significant natural and fragile areas as defined in this plan.
- 1.6 Maintain water quality at levels that support all existing and designated uses of surface waters.

Goal 3: Protect surface and ground water quality and quantity for drinking and other domestic uses, for fish and wildlife habit, and for recreational use.

Policies:

- 3.1 Protect ground and surface waters, steep slopes, shallow soils, areas supplying significant recharge areas for groundwater supplies, and watersheds for future public water supplies.
- 3.4 Maintain and restore the chemical, biological, and physical quality of the region's surface water per the objective in State water quality standards.
- 3.6 Maintain appropriate undisturbed buffers of vegetation along watercourses, lakes, ponds, wetlands, and vernal pools in order to protect shorelines, provide shading to prevent undue increase in stream temperatures, minimize effects of erosion, sedimentation and other sources of pollution, and maintain scenic, recreational, and habitat values.

Goal 6: To protect and enhance the ecological integrity of Londonderry's diverse wildlife species and their habitats.

Policies

- 6.2 Encourage protection of wildlife resources as an economic benefit to the Town.
- 6.3 Protect riparian corridors for wildlife habitat, as well as water quality.

FLOOD RESILIENCE

Goal 2: To reduce the impact of flood hazards on the town's water bodies, natural resources, and historic resources.

Policies:

- 2.1 It is the policy of the Town to foster the protection and restoration of river corridors, floodplains, wetlands, and upland forested areas that attenuate and moderate flooding and fluvial erosion.

TRANSPORTATION

Goal 1: Provide and maintain a safe and efficient transportation network.

Policies:

- 1.1 Focus on road maintenance and development activities and the efficiency, economy, safety, and prevention of deterioration of the roads rather than supporting greater traffic volumes or speeds.
- 1.2 Solicit public opinion when planning significant maintenance or construction projects.

Town of Londonderry, VT

Spring Hill Road Culvert Replacement

FY 2023 Transportation Alternatives Program Grant Application

12/12/2022

Project Budget

Allocated to Grants

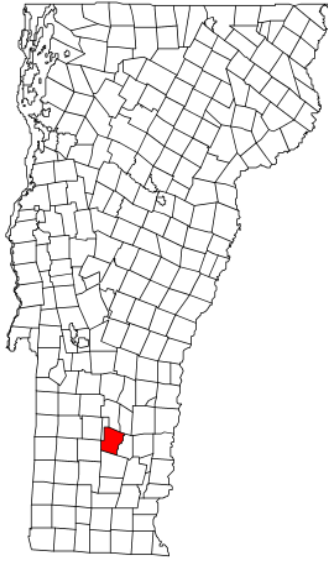
PROJECT EXPENDITURES	Amount	% of Total	Allocated to Grants	
			T.A.	Structure
			66.08%	33.92%
Preliminary Engineering (PE) <i>(Engineering, Surveying, Permitting)</i>	65,000	11.5%	42,952	22,048
Right-of-way / Acquisition (ROW) <i>(appraisals, land acquisition and legal fees)</i>	2,500	0.4%	1,652	848
Construction <i>(construction costs with reasonable contingency)</i>	412,045	72.6%	272,276	139,769
Construction Engineering <i>(cost to provide inspection during construction)</i>	40,000	7.0%	26,432	13,568
Municipal Project Management Costs <i>(10% of total PE, ROW and Construction phases)</i>	47,955	8.5%	31,688	16,267
Total Project Cost	567,500	100.0%	375,000	192,500

PROJECT REVENUES

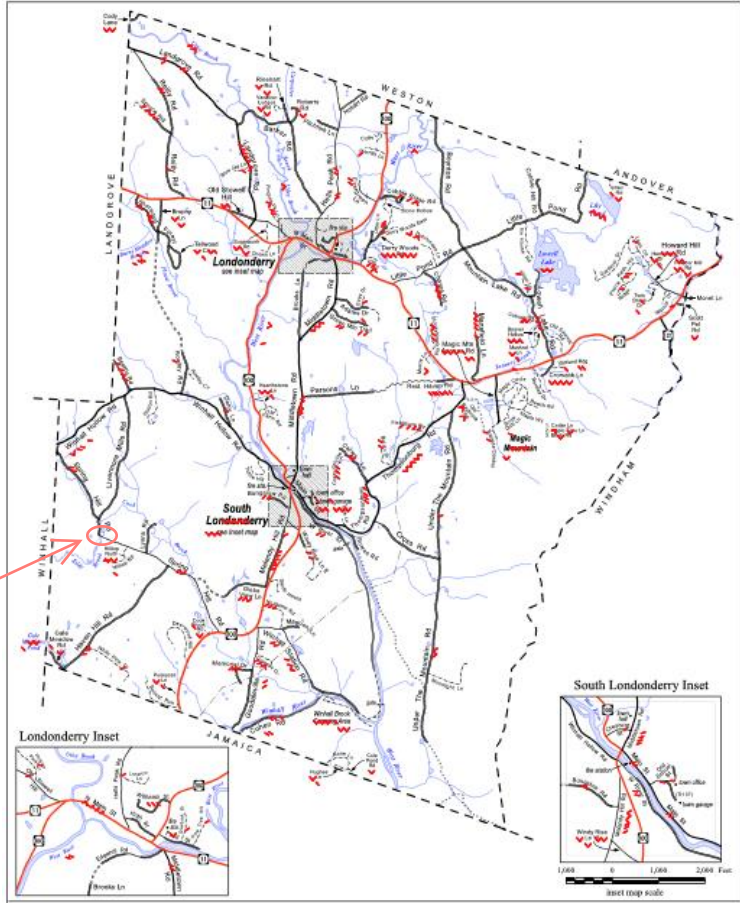
		Amount	% of Total
VTrans Environmental Mitigation Grant Request		300,000	52.86%
Grant-required Local Match (% of TA total)	20%	75,000	13.22%
		375,000	66.08%
VTrans Structures Grant		175,000	30.84%
Grant-required Local Match (% of grant)	10%	17,500	3.08%
		192,500	33.92%
Total Project Revenues		567,500	100.0%

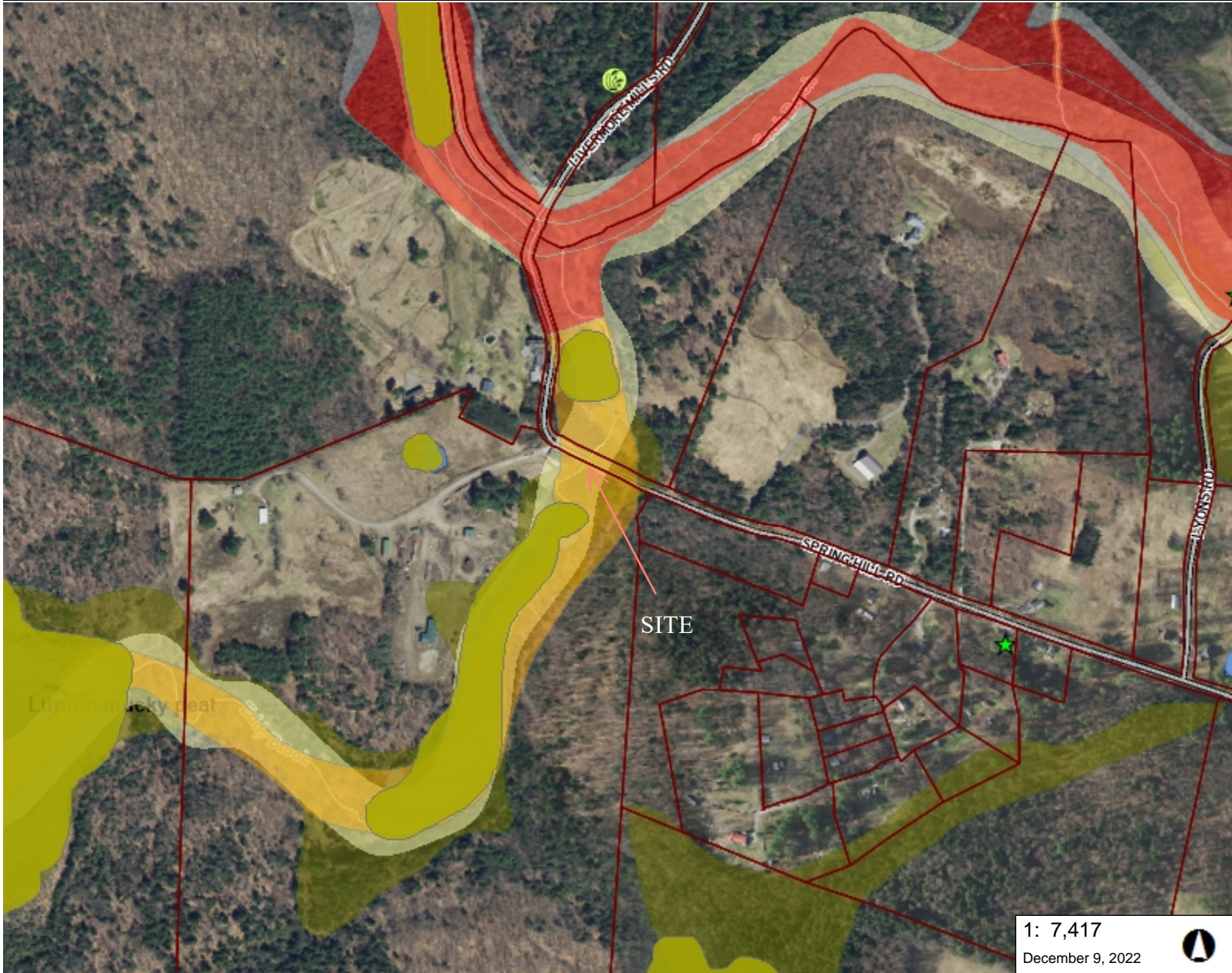
Total VTrans grant funding	475,000	83.7%
Total local match	92,500	16.3%

Town of Londonderry, Vermont
Spring Hill Road Culvert Replacement



SITE





LEGEND

- Vernal Pools Confirmed – AE/A
- Vernal Pools Unconfirmed – AI
- Wetland Projects
- Shoreland 100' Setback
- Shoreland 250' Setback

Wetland - VSWI

- Class 1 Wetland
- Class 2 Wetland
- Buffer
- Wetlands Advisory Layer

Stormwater Permits (Issued)

- Operational
- Construction
- Industrial - NOI
- Industrial - NOX
- Other

Stormwater Permits (Pending)

- Operational
- Construction
- Industrial - NOI
- Industrial - NOX
- Other

Flood Hazard Areas (Only FEM)

- AE (1-percent annual chance flood)
- A (1-percent annual chance floodpl.)
- AO (1-percent annual chance zone feet)
- 0.2-percent annual chance flood ha

1: 7,417
December 9, 2022

NOTES

Map created using ANR's Natural Resources Atlas

377.0 0 188.00 377.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere 1" = 618 Ft. 1cm = 74 Meters

© Vermont Agency of Natural Resources THIS MAP IS NOT TO BE USED FOR NAVIGATION

DISCLAIMER: This map is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. ANR and the State of Vermont make no representations of any kind, including but not limited to, the warranties of merchantability, or fitness for a particular use, nor are any such warranties to be implied with respect to the data on this map.

Town of Londonderry, VT
Spring Hill Road (TH 41), Culvert #12

Upstream Roadway Surface



Downstream Roadway Surface



Town of Londonderry, VT
Spring Hill Road (TH 41), Culvert #12

Upstream Culvert



Town of Londonderry, VT
Spring Hill Road (TH 41), Culvert #12

Downstream Culvert



Town of Londonderry, VT
Spring Hill Road (TH 41), Culvert #12

Upstream Roadway Surface



Downstream Roadway Surface



State of Vermont
Hydraulics Section

Agency of Transportation

Location: Barre City Place, 219 North Main Street, Barre, Vt, 05641
 [phone] 802-917-4883
vtrans.vermont.gov

TO: Meghan Brunk, District 2 Technician
FROM: Fianna Barrows, Structures and Hydraulics Design Engineer
CC: Marc Pickering, District 2 Project Manager
 Scott Jensen, A.N.R. River Management Engineer
DATE: May 4, 2020
SUBJECT: Londonderry TH41 (Spring Hill Road) over Eddy Brook tributary to Cook Brook
 Site Location: 1.7 miles north of VT-100
 GPS coordinates: [N 43.18497° W 72.85337°](#)

We have completed our hydraulic study for the above referenced site, and offer the following information for your use:

A bridge of this size warrants a more detailed hydraulic study if survey becomes available.

Hydrology	
Drainage Area	3.3 square miles
Land Cover	Primarily wooded, with a portion of marshy area, and Bromley Ski Resort.
Average Basin Slope	3.6%
Estimated Slope at Site	1% to 2%
Water Bodies and Wetlands (NLCD 2006)	2.8%

Annual Exceedance Probability (AEP)	Flow Rate in Cubic Feet per Second (cfs)	
43 %	160	
10 %	310	
4 %	410	- Design Flow - Local Road
2 %	500	
1 %	600	- Check Flow

Channel Morphology

This perennial river, upstream of the structure, was marshy and beaver activity was present. Downstream the channel meanders slightly for approximately 350 feet and then flows into a large pond. The runoff from this pond travels about 500 feet and then joins Cook Brook.

The lower portion of this drainage basin has a moderate to flat slope while the top area consists of Bromley Mountain Ski Resort, a steep area. Field measurements of bankfull width varied from 16 feet to 21 feet.

Existing Conditions

The existing structure is a corrugated steel pipe. The clear span, perpendicular to the flow was 6.2 feet. A clear height, from the streambed to the bottom of the superstructure, was measured in the field at 5.6 feet. This structure provides a waterway opening of approximately 28 square feet. There was ponding at the inlet and a large scour hole at the outlet. Debris was partially blocking the inlet, beaver activity seemed evident.

Our calculations, field observations and measurements indicate the existing structure does not meet the current standards of the VTrans Hydraulic Manual nor does the existing structure meet state stream equilibrium standards for bankfull width (span length). The existing structure constricts the channel width, resulting in an increased potential for debris blockage.

This structure will overtop at the design storm event of 4% AEP.

Replacement Recommendations

In sizing a new structure, we attempt to select structures that meet both the current VTrans hydraulic standards, state environmental standards with regard to span length and opening height, and allow for roadway grade and other site constraints.

Based on the above considerations and the information available, we recommend any of the following structures as a replacement at this site:

1. A bridge with a 20-foot opening span between face of abutments perpendicular to flow and minimum clear height of 5 feet would provide a waterway area of approximately 100 square feet. If sloping stone fill is placed in front of each abutment and the waterway area is reduced, this structure will need to be larger. E-Stone, Type III should be used to build the channel through this structure. Based on a simplified hydraulic model, this structure will result in a headwater depth of approximately 3.3 feet at 4% AEP and approximately 4.3 feet at 1% AEP. This would provide approximately 1.7 feet of freeboard at design AEP.
2. Any similar structure with a similar minimum clear span and waterway area, that fits the site conditions, could be considered. Please contact the hydraulics unit with alternatives that have significantly different inlet geometry so headwater depths can be calculated. Any structure with a closed bottom should have bed retention sills and a buried invert with E-Stone, Type III.

Prior to any further action toward implementation of any of the above recommendations, structure size and stream type must be confirmed, and may be modified, by the VT ANR River Management Engineer to ensure compliance with state environmental standards for stream crossing structures.

Other regulatory authorities including the US Army Corps of Engineers may have additional concerns or requirements regarding replacement of this structure.

General Comments

If a new bridge/ open bottom structure is installed, the bottom of abutment footings should be at least six feet below the channel bottom, or to ledge, to prevent undermining. Any new structure should be properly aligned with the channel, span the natural channel width, and be constructed on a grade that matches the channel. Stone Fill, Type III should be used to protect any disturbed channel banks or roadway slopes at the structure's inlet and outlet, up to a height of at least one-foot above the top of the opening.

Please note that while a site visit was made, these recommendations were made without the benefit of a survey and are based on limited information. The final decision regarding replacement of this structure must comply with state regulatory standards, and should take into consideration matching natural channel conditions, roadway grade, environmental concerns, safety, and other requirements.

Please contact us if you have any questions or if we may be of further assistance.

