VTrans Fall 2023 Transportation Alternatives (TAP)
and
Municipal Highway and Stormwater Mitigation Program Grant (MHSMP)

Combined Application

Thoroughly read the TAP and MHSMP application guidebooks 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 by e-mail by December 8, 2023.** Please e-mail the completed application to: Ross.gouin@vermont.gov and Scott.robertson@vermont.gov.

Slate Rock Road Box Culvert
(Project Name/Title)

Erika Elder
(Municipality contact person responsible for the management of this project)

Guilford
(Town)

05301
(Zip Code)

236 School Road
(Mailing Address)

802 254 6857
(Phone)

townadmin@guilfordvt.gov
(e-mail address)

$ $360,000
Amount of **Federal Funds requested** (no more than 80% of the project cost estimate).

$90,000
Amount of Local Match. Example:
Federal Award = $600,000 (*80% of total*)
Local Match = $150,000 (*20% of total*)
Total Project Cost = $750,000 (*100% of the total*)

County: Windham

Town/Village/City: Guilford

Specific location, street, or road: 340 Slate Rock Road, Guilford VT 05301

Regional Planning Commission: Windham Regional Commission

If a linear project, what is the length in feet? 35'

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 TAP or MHSMP Program funds will take roughly three years (min.) in the Design and ROW phases prior to going to construction (as pointed out in the TAP and MHSMP Application Guides)? 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 #YVRHMWKH1H85 Click here to enter text.

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 ☒
Click here to enter text.

Please note that existing projects will not be considered for additional funding without a current NEPA clearance and ROW clearance. Please provide date of clearances below:
Click here to enter text.

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.

  Local funds will be used to make up the shortfall. This project is a priority for the town of Guilford given its importance to ensuring residents and emergency vehicles can access Slate Rock Road during storm water events.

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 ☐

PLEASE NOTE*:* If this application is for salt or sand shed funding, the applicant must read and understand the ***Municipal Assistance Section Salt Shed Application Guide***. All of the following scoring questions below must thoroughly convey an understanding of the salt and sand guidance provided.

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.)

   The project is to construct a 35' foot long concrete box culvert with an opening span of 14' feet and a height of 8' feet on the Fall River at its intersection with Slate Rock Road in Guilford, as recommended by the attached VTrans hydraulics study. The box invert will be buried 3' feet and the structure will be filled level to the streambed with E-Stone, Type III, providing the conditions necessary for aquatic organism passage. This structure will replace the existing 5.8' foot diameter boiler tube culvert (#762-05) that does not meet stream equilibrium standards of the VTrans Hydraulics Manual nor for bankfull width. There is significant ponding at the outlet, and the existing culvert will result in water overtopping the roadway before the 4% AEP.

   The culvert has failed repeatedly during past major stormwater events and washed out Slate Rock Road. This causes large amounts of sediment to enter the Fall River as well as cuts off all vehicle, including emergency vehicle, access to approximately 30 households on Slate Rock, Hamilton, and Lakeridge Roads. Please see attached photos of past damages.

   The Fall River is a direct tributary of the Connecticut, travelling southeast from its origin on the slopes of the East Mountain in Guilford through Bernardston, Massachusetts before entering into the Connecticut directly north of the village of Turners Falls, MA. Improving water quality in the upper course of the stream is critical to the health of the overall watershed. The consistent failure of the existing culvert and resulting sedimentation threatens the health of the Fall River as well as the larger Connecticut River watershed. This project will improve resiliency and water quality consistent with State and Regional goals for water quality and resiliency in the Connecticut River watershed.

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 to date. (10 points max.)**
   This project is based on the recommendations made in the attached in the VTrans Hydraulics Study from 2022. The Road Foreman, Selectboard and Town Administrator have identified upsizing this culvert as a top priority due to its importance in ensuring access to residents and emergency vehicles during storms to homes for which Slate Rock Road is the sole access. This is in addition to work with the Regional Planning Commission to identify local infrastructure needs and priorities.

3. **Does this project address a need identified in a local or regional planning document? If so, please describe.**
   (5 points max.)
   The 2022 Guilford Local Hazard Mitigation Plan identifies Slate Rock Road along the Fall River as one of the three areas in town most prone to regular wash outs, erosion and sedimentation:

- "The branch of the Fall River, adjacent to Slate Rock Road, has reoccurring flash flooding that have washed out sections of the road repeatedly. (pg. 16)"
- "Slate Rock, Bonnyvale, and Carriage Roads see the greatest amount of repetitive damage nearly on an annual basis. (pg. 16)"

This project is also consistent with the goals identified in the 2021 Windham Regional Plan, including:

- "To maintain and improve the quality of air, water, wildlife and land resources in the region. (pg. 6)"

- "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)"

- "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)"

- "Maintain water flows in streams at levels that support a full range of in-stream uses and values. (pg. 32)"

- "Maintain and restore the chemical, biological, and physical quality of the region's surface water per the objective in State water regulations. (pg. 32)"

- "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)"

In addition to the identified regional goals this project is consistent with the policies outlined in the 2023 Guilford Town Plan, including:

- "That the transportation system provides the needed convenience and service, while respecting the integrity of the environment. (pg. 53)"
- "Preserve and improve the quality and ecological integrity of our air, land, water, and plant and wildlife resources. (pg. 57)"
- "Follow best road management practices of VT Local Roads and VTRANS to conserve wildlife corridor functions. (pg. 70)"
- "Protect surface and ground water quality and quantity for drinking and other domestic uses, for fish and wildlife habit, and for recreational use. (pg. 73)"
- "Provide long-term stewardship of riparian habitat. (pg. 73)"
- "Maintain or enhance water quality by protecting our rivers, streams, ponds, wetlands and vernal pools from contamination, including runoff from roads. (pg. 79)"

4. **Does this project:**
   A. **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?**
   Not applicable for Environmental Mitigation Categories **(5 points max.)**
   http://maps.vermont.gov/ACCD/PlanningAtlas/index.html?viewer=PlanningAtlas
   Click here to enter text.

   B. **Benefit mobility for disadvantaged populations to include elderly, disabled, minorities, and low-income residents. Please describe this impact (if applicable) in detail. Supporting documentation, including recent data must be included.**
   Not applicable for Environmental Mitigation Categories **(10 points max.)**
   Click here to enter text.

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.)

   Right-of-way / Acquisition (ROW)

(appraisals, land acquisition and legal fees)	*$* Project is within existing town ROW
Construction *(construction costs with reasonable contingency)*	*$380,000*
Construction Engineering *(cost to provide inspection during construction)*	*$* $30,000
Municipal Project Management Costs *(minimum of 10% of total PE, ROW and Construction Phases).*	*$* $40,000
Total Project Cost	***$*** 450,000

Addition Funding Comments: (ex. Total and additional funding for existing projects)
Click here to enter text.

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?*
b) **(10 points max.)**

Click here to enter text.

c) 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.

d) 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.

e) 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 (Including Salt and Sand Sheds)**

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

Culvert #762-05 where the Fall River meets Slate Rock Road is undersized and prone to failure during high water events. This has been confirmed by VTrans in the attached Hydraulics Study. This culvert does not meet current standards of the VTrans Hydraulic Manual or state stream equilibrium standards for bankfull width and water will overtop the culvert at less than 4% AEP. The culvert restricts channel width and is prone to blockage and there is significant ponding at the outlet even under normal conditions, disrupting the natural flow of the stream channel.

The failure of culvert #762-05 has caused substantial damage to Slate Rock Road during past storms, washing out the roadway and putting large amounts of sediment into the Fall River. The Fall River is part of Vermont Basin #12, Deerfield-Lower Connecticut Direct. These sedimentation events are harmful to the health and ecology of the Fall River and ultimately the larger Connecticut River watershed. Erosion and sedimentation damage riparian habitats and harm the health of aquatic organisms, endangering Vermont's vital natural environment. The Fall River is currently classified by the Agency of Natural Resources as a B1-very good waterway for aquatic biota and fisheries. Culvert #762-05 is located in the upper reaches of the Fall River watercourse just over a mile from the stream's origin on the slopes of East Mountain. Erosion and sedimentation in upper course tributaries have severe and compounding downstream impacts, making addressing sedimentation related to the deficiency of culvert #762-05 particularly vital to the overall health of the Fall River as well as meeting state goals related to the Long Island Sound TMDL.

The proposed box culvert is based on the recommendations made in the attached VTrans hydraulics report. This includes an inside opening span of 14 feet and minimum height of 8 feet. The box invert will be buried 3 feet. This will result in a clear height of 5 feet above streambed, providing approximately 70 square feet of waterway area. A new structure of this size will result in a headwater depth of 3.2 feet at 4% AEP and 4.2 feet at 1% AEP.

The new box culvert built to the standards of the VTrans Hydraulic Manual will ensure that this structure is capable of handling flows from increasingly frequently large stormwater events. This project will limit future damage to Slate Rock Road, reducing sedimentation and protecting water quality in the Fall River. Southern Vermont has experienced severe storms in both the July 2021 and July 2023. These storms did substantial damage to the roadways and stormwater infrastructure in the region and resulted in huge amounts of sediment being deposited into our waterways. As these type of stormwater events become more frequent it is critical that existing deficient infrastructure be upgraded to meet state standards. Upgrading culvert #762-05 will reduce future damages to transportation infrastructure and mitigation impacts on water quality and aquatic resources on the Fall River and the broader Connecticut River watershed.

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

Please see attached photos of past damages. The 2022 Guilford Local Hazard Mitigation plan identified Slate Rock Road as one the most damage prone roadways in town, experiencing significant damage and erosion on a nearly annual basis. Much of this damage has been caused by the failure of culvert #762-05. The undersized structure is unable to handle stormwater during heavy rainfall and is prone to blockage. Water overtops the structure and washes out Slate Rock Road depositing large amounts of sediment into the Fall River. Furthermore, Road Segment 168255, where culvert #762-05 is located, was identified as not meeting the standards of the Municipal Roads General Permit by a Road Erosion Inventory completed by the Windham Regional Commission due to its steep slope and identified erosion problems. The persistent erosion problems associated with the existing structure are a severe threat to water quality and the overall health of the Fall River. Replacing the existing structure with one that meets state standards will address these persistent erosion problems, reducing sedimentation and safeguarding the health of the Fall River.

Continued sedimentation of the Fall River endangers the river's status as a B1- very good waterway for aquatic biota and fisheries. Sedimentation due to the erosion of road materials has numerous negative impacts on aquatic life, including but not limited to; clouding streams and decreasing light penetration impacting feeding and schooling practices, destroying the protective mucous covering of many types of aquatic animals making them more susceptible to infection and disease and absorbing warmth from the sun increasing water temperature. Replacing culvert #762-05 is critical to limiting future sedimentation and safeguarding the health of this important waterway.

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.)**

The proposed 14' by 8' foot box culvert is consistent with the recommendations made in the attached VTrans Hydraulics Study and will fully meet the standards of the VTrans Hydraulic Manual and state stream equilibrium standards for bankfull width. The structure will have a clear height of 5 feet above streambed, providing approximately 70 square feet of waterway area. A new structure of this size will result in a headwater depth of 3.2 feet at 4% AEP and 4.2 feet at 1% AEP.

A new structure consistent with state standards will be capable of handling increased flows during the high-water events and will be more resilient to failure during such storms. This will protect against erosion and greatly reduce the chances of future wash outs of Slate Rock Road, improving resiliency, protecting water quality and the overall health of the Fall River. Severe rain storms are have become more frequent in Southern Vermont in recent years due to the effects of climate change and these impacts are expected to continue to increase in frequency and severity making it all the more critical that culvert #762-05 be replaced by a new structure of sufficient size.

☐ **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.


Slate Rock Rd - Culvert 5
Guilford, Vt.
Culverts, with id
<18
18-35
36-71
72+
5
4
3
0
100
200 Feet
map by Windham Regional Commission, Brattleboro, VT
12/5/2023

THE TOWN OF GUILFORD VERMONT
236 School Road Guilford Vermont 05301-8319
802•254•6857 guilfordvt.gov Fax 802•257•5764

November 30, 2023

Ross Gouin

VTrans Municipal Assistance Bureau

2178 Airport Rd.

Berlin, VT 05641

Dear Mr. Gouin,

Thank you for considering the Town of Guilford for the VTrans Municipal Highway and Stormwater Mitigation program. The funding is to replace an existing 4' boiler tube culvert on the Fall River crossing Slate Rock Road with a 14' wide by 8' high concrete box culvert. The existing culvert is undersized and does not meet the standards of the VTrans Hydraulic Manual nor does the existing structure meet state stream equilibrium standards for bankfull width.

The Select Board acknowledges that there is a 20% match if awarded the grant.

The existing culvert is undersized and has failed repeatedly during high water events in the past few years. The stream overtops the culvert and washes out Slate Rock Road incurring significant continuing maintenance costs for the town and putting a large amount of sediment into the Fall River and eventually the Connecticut. Slate Rock Road is the sole vehicle access for approximately 50 households. During past stormwater events the failure of the culvert has made the road impassable and isolated residents for several hours until repairs were completed. Replacing the existing culvert with a box culvert that meets State standards for bankfull width will address these issues, improving resiliency and water quality as well as reducing future maintenance costs for the town.

The Town of Guilford will continue to maintain the culvert in accordance with the town's Road and Bridge Standards as set forth by the state.

Sincerely,

Erika Elder, Guilford Town Administrator

VERMONT

State of Vermont
Structures and Hydraulics Section
Barre City Place
219 North Main Street | Barre, VT 05641
vtrans.vermont.gov

Agency of Transportation

[phone] 802-371-7326
[fax] 802-828-3566
[ttd] 800-253-0191

TO: Marc Pickering, District 2 Project Manager
Meghan Brunk, District 2 Technician

CC: Scott Jenson, ANR River Management Engineer

FROM: Christian Boisvert, Hydraulics Project Engineer

DATE: September 16, 2022

SUBJECT: Guilford TH-51, Slate Rock Road, over Falls River tributary to Connecticut River
Site location: Br50, 0.4 miles west of US-5
Coordinates: 42.752924, -72.576041

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

Hydrology

The following physical characteristics are descriptive of this drainage basin:

Drainage Area	1.23 square miles
Land Cover	Forested and Open Fields
Water Bodies and Wetlands (NLCD 2006)	0.5 %

Using the USGS hydrologic method, the following design flow rates were selected:

Annual Exceedance Probability (AEP)	Flow Rate in Cubic Feet per Second (cfs)	
50 %	74	
10 %	160	
4 %	220	Design Flow – Local Road
2 %	270	
1 %	320	Check Flow

Channel Morphology

The channel for this perennial stream is straight with an estimated local channel slope of 5%. Field measurements of bankfull width varied from 12 to 16 feet at a bankfull depth of 1 to 2 feet upstream and downstream of the structure.

Existing Conditions

The existing structure is a 5.8-foot diameter boiler tube, providing a waterway opening of 26.4 square feet. Our calculations, field observations and measurements indicate the existing structure does not meet 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 complication is known to cause ponding at the inlet, increase stream velocity and scour at the outlet, and may lead to erosion and failure of channel banks.

This structure results in water overtopping the roadway before the 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:

- A concrete box with an inside opening span of 14 feet and minimum height of 8 feet. The box invert should be buried 3 feet. This will result in a clear height of 5 feet above streambed, providing approximately 70 square feet of waterway area. Bed retention sills should be added in the bottom of the structure. Sills should be 12 inches high across the full width of the structure, and should be buried so the top of the sills will not be visible. Sills should be spaced no more than 8 feet apart throughout the structure with one sill placed at both the inlet and the outlet. The structure should be filled level to the streambed with E-Stone, Type III, allowing flow to be kept above the surface, providing the conditions necessary for aquatic organism passage. This structure results in a headwater depth of 3.2 feet at 4% AEP and 4.2 feet at 1% AEP.

- A pipe arch with a clear span of 107 inches and height of 101 inches. The invert should be buried 3 feet. This will result in a clear height of 5.4 feet above streambed, providing approximately 66 square feet of waterway area. Bed retention sills need to be added and filled as described for the box above. This structure results in a headwater depth of 3.5 feet at 4% AEP and 4.6 feet at 1% AEP.

- An open bottom arch with a minimum clear span of 14 feet and clear height of 5.6 feet, providing approximately 58 square feet of waterway area. E-Stone, Type III, might need to be used to build the channel through this structure. The bottom of abutment footings should be at least 6 feet below the channel bottom, or to ledge, to prevent undermining. This structure results in a headwater depth of 3.7 feet at 4% AEP and 5.0 feet at 1% AEP.

Note: *Any similar structure that fits the site conditions could be considered. If an open bottom structure is installed, the VTrans Hydraulics Manual requires 1-foot freeboard at the design AEP.*

To match the approximate local stream slope, the structures recommended above have been modeled with a culvert slope of 5%. With this slope, the channel at the outlet will need to be built up to connect E-Stone through the culvert to the upstream end. When complete, there should be no drop at the outlet.

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. The stone fill should not constrict the channel or structure opening.

Prior to any action toward the implementation of any recommendations received from VTrans, stream type and structure size 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. Regulatory authorities including the US Army Corps of Engineers may have additional concerns or requirements regarding this structure.

General Comments

It is always desirable for a new structure to have flared wingwalls, matched into the channel banks at the inlet and outlet, to smoothly transition flow and protect the structure and roadway approaches from erosion. It is also recommended that full height concrete headwalls be constructed at the inlet and outlet. Any closed bottom structure should also be equipped with cutoff walls, extending to a depth equal to the culvert rise, up to 4 feet, or to ledge, to serve as undermining prevention. E-Stone thickness plus the bottom of structure thickness should be included when determining the total cutoff wall depth. If a new bridge is installed, the bottom of abutment footings should be at least 6 feet below the channel bottom, or to ledge, to prevent undermining. Abutments on piles should be designed to be free standing for a scour depth at least 6 feet below channel bottom. 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.

The structures recommended above have been sized with respect to hydraulic and environmental standards and do not consider debris blockage complications. **To minimize maintenance and ensure constructability, it is recommended that the structure height be adequate for installation of E-Stone and passage of debris.**

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.

WINDHAM
REGIONAL
COMMISSION

December 7th, 2023

Mr. Ross Gouin
Municipal Highway and Stormwater Mitigation Program Manager
VT Agency of Transportation
Highway Division
Municipal Assistance Bureau
219 North Main Street
Barre, VT 05641

Dear Ross:

On behalf of the Windham Regional Commission I am writing in support of the application by the Town of Guilford for the construction of a 14’ by 8’ foot box culvert on the Fall River where it meets Slate Rock Road through the VTrans Municipal Highway and Stormwater Mitigation Program. The existing 5.8' foot boiler tube culvert is undersized and does not meet VTrans Hydraulic Manual standards nor State stream equilibrium standards for bankfull width. Slate Rock Road experiences regular erosion and damages due to the deficiency of the existing structure and the culvert has overtopped during past major rainfall events, causing flooding in addition to washing out the roadway and causing substantial sedimentation of the Fall River. This project will improve storm water infiltration, better accommodate high-water events and improve aquatic animal passage in the Windham Region. We strongly encourage the agency to fund this application.

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)

The Fall River is direct tributary of the Connecticut River that originates just over a mile from the location of this structure before running 14 miles southeast and entering the Connecticut River directly north of Turners Falls, Massachusetts.The Fall River is listed as a B1 "Very Good" waterway for aquatic resources and fisheries by the Agency of Natural Resources. Sedimentation in the upper reaches of the stream has significant downstream impacts on water quality. The repeated failure of the existing undersized structure is a major contributor to sedimentation in the lower reaches of the stream, threatening the overall health of the Fall River. Replacing the existing culvert with a box culvert that meets state standards is a critical step towards maintaining the very good status of the waterway as well in making progress towards Vermont's goals to limit its contribution to poor water quality in the Connecticut River and Long Island Sound.

Sincerely,

Colin Bratton,
Transportation Planning Program Coordinator
Windham Regional Commission

VERMONT

State of Vermont
Department of Environmental Conservation

Agency of Natural Resources

WATERSHED MANAGEMENT DIVISION **RIVER MANAGEMENT PROGRAM**

December 7, 2023

Colin Bratton
Transportation Planning Program Coordinator
Windham Regional Commission

Subject: ANR River Management Support for Slate Rock Rd culvert over Falls River in the town of Guilford.

Dear Mr. Bratton,

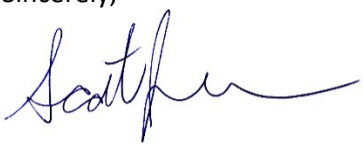
The Vermont Agency of Natural Resource (ANR) is providing comments for the proposed culvert replacement on Slate Rock Rd culvert over Falls River in the town of Guilford.

The proposed project will provide a bank fullwidth structure and eliminate the significant stream and storm erosion noted at the culvert. A properly sized structure will improve the flood resiliency of the crossing which will result in lower road maintenance costs and improved public safety. The decreased stream velocities through the culvert will improve fish passage. The proposed project will also result in increased stream equilibrium and connectivity, which is a desirable outcome and one of the main goals of the River Management Program. These are all desirable outcomes and in line with the objectives of ANR.

The River Management Program strongly supports this project.

Please feel free to contact me with any questions at scott.jensen@vermont.gov or at (802) 490-6962.

Sincerely,



Scott Jensen, P.E.
River Management Engineer
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