

Town of Charleston

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W Charleston VT 05872
Phone No: (802) 895-2814
Fax No: (802) 895-2814
charlestonadmin@comcast.net

April 12, 2016

Alan May
AOT Municipal Assistance Bureau
1 National Life Drive
Montpelier, VT 05633

Dear Alan:

The Town of Charleston appreciates the ongoing guidance and consultation of the various agencies collaborating in the Better Roads Grants program as we seek solutions to critical road erosion issues here in town. Please find attached the Town of Charleston's FY2017 applications to the Better Roads Grant Program.

For your reference, we are providing this list and brief comments about the relative priority of this year's proposed projects. All three roads have been identified on Charleston's Road Erosion Inventory & Capital Budget Plan, with Hudson Rd at the top of the list.

Hudson Rd Cement Culvert at Bowen Hill Road and Hudson Rd Multiple Culverts Upgrade are critical projects long overdue. Hudson is a key cross-town road with high traffic, and it has been the site of repeated closures due to washouts in recent federal disasters. As Hudson parallels the nearby Clyde River, erosion and culvert failure discharges sediment directly into the river. Both projects are included in a pending FEMA Hazard Mitigation Grant proposal first submitted in 2014, however, no award has been made and Charleston's eligibility is in question because the town does not participate in the NFIP. We have reason to believe that this will be resolved one way or the other before the award of Better Roads Grants, and we will update your office with any news. If Charleston is not awarded the FEMA grant, work must still proceed on Hudson Rd in 2016, and Better Roads funds will be essential.

East Echo Lake Rd Ditching and Crowning will remedy critical erosion issues at the site of the inlet leading from Seymour Lake to Echo Lake that compromise the road and discharge sediment and pollutants into Echo Lake. Working with the Echo Lake Protective Association, VT ANR, and Better Roads staff, this project is deemed high priority for 2016 with project outcomes expected to be highly effective.

Gratton Hill Rd Ditching and Culvert Upgrades Sites 1-3 (3 projects) cover a sizable segment of road that could be addressed one-by-one if needed. Ideally, completing all three projects in one year would enable the town to start at the top of the grade and also address critical ditch failures and bank erosion at the bottom of the road where ditches

feed into a brook leading directly to the Clyde River below. If the projects are not selected, Charleston will make spot repairs and reapply for assistance in FY2018.

Thank you for your time and consideration. Please don't hesitate to contact me or Colleen Kellogg in the Town Office if you have any questions or need additional information.

Sincerely,

A handwritten signature in cursive script that reads "Dean Bennett". The signature is written in black ink and is positioned above the typed name.

Dean Bennett, Chair
Charleston Selectboard



FY17 Vermont Better Roads Grant Application

Please complete this page ONCE and return with your Grant Category Application(s)

Town/Organization: _____ Contact Person(s): _____

Address: _____

Street Address

Town

Zip

Email: _____ Phone: () _____ - _____

DUNS #: _____ Fiscal Year End Month (MM): _____

Accounting System: Automated Manual Combination

Please use the suggested documentation checklist below to ensure that all of the relevant items regarding your application have been included.

- Grant application cover sheet (Only submit one)
- Grant application form (One per category/project)
- Itemized Cost estimate for labor, equipment, and materials (see enclosed Cost Estimate Worksheet). If applicable, please break down funding by source (i.e. different grant sources)
- Project Location Map (please show location of affected water)
- Sketch of proposed erosion control measures or other management practices, including distances in feet
 - Also show approximate location of town/other right-of-way and/or property lines
- Photo(s) of the project area
- Letters of Support (RPC, VTrans District Technical Staff, ANR Rivers and Streams Engineers, etc.)
- If Category C River/Road Conflict or Category D River/Stream Structure or Culvert, you must attach ANR/ACOE consultation



Vermont Better Roads Grant Program Application

Please complete one application per category and/or project you are applying for. You may make copies of the application for multiple applications per category and/or multiple categories.

Please check the Category you are applying for:

- B. Correction of a Road Related Erosion Problem and/or Stormwater Mitigation Retrofit for both gravel and paved roads
- C. Correction of a Stream Bank or Slope Related Problem
- D. Structure/culvert upgrades

Town/Organization: _____

Project Name: _____

Road Name: _____ TH #: _____ Structure # (if applicable): _____

Road Type: Paved or Unpaved (circle one) Curbed or Uncurbed (circle one)
 Class 1 Class 2 Class 3 Class 4 (circle one)

Watershed: _____

Please provide a thorough description of the problem (ex. Roadway has steep slope with no ditch which is causing roadway erosion):

Description of Project and how you plan to complete the work (ex. Stone line 500' of ditch by reshaping ditch and stone lining, working from the top of the project down to the bottom):

Expected Effects (+ & -) on water quality (ex. Erosion will be eliminated by placing the stone ditch):



Distance from end of project to nearest water (stream, lake, or stormwater system that outlets directly to water). Please circle one: 0-50' 50-250' 250'+

Progress to Date:

Is there an emergency reason this project must be completed quickly? If yes, please explain:

Has this project been identified through a municipal road inventory, capital budget plan, tactical basin plan, culvert inventory, or other management plan? If yes, please list which.

Yes: _____

No

Please list any professionals you may have contacted for assistance with this project (ANR River Management Engineer, Army Corps of Engineers, VTrans District Technical staff, Basin Planner etc.):

Is the project located in the town "Right of Way?" Yes, No, Both (if "Both" please explain further).

Will the town road crew complete this work? Yes, No, Some (if "some" please explain further).



Describe how the grant funds will be spent and/or attach a project budget:

How do you plan to meet the required 20% match on this grant?:

Requested Grant Amount (\$20,000 max Category B, \$40,000 max Categories C & D): _____

Estimated Total Project Cost (including 20% local match): _____

Estimated Completion Date: _____

REQUIRED ATTACHMENTS:

- Itemized Cost Estimate (labor, equipment, materials)
(For assistance, call Better Backroads at 802-828-4585)
- Project Location Map
(Please show location of affected water; 1:12,000 USGS map, if possible)
- Sketch of proposed erosion control measures, including:
 - Distances (ft.)
 - Estimate of waste & borrow quantities
 - Approx. location of town/other right-of-way and/or property lines
- Photo(s) of the project area.
- Agreement for Entry and/or Deed of Easement (if project is outside Town ROW).
- If project involves stream or river/road conflict, include documentation of consultation with a River Management Engineer.
- Other appropriate supporting documents.

By signing this application I certify that all the information provided is accurate to the best of my knowledge. We will comply with all the requirements of the grant including making our books available for audit if required.

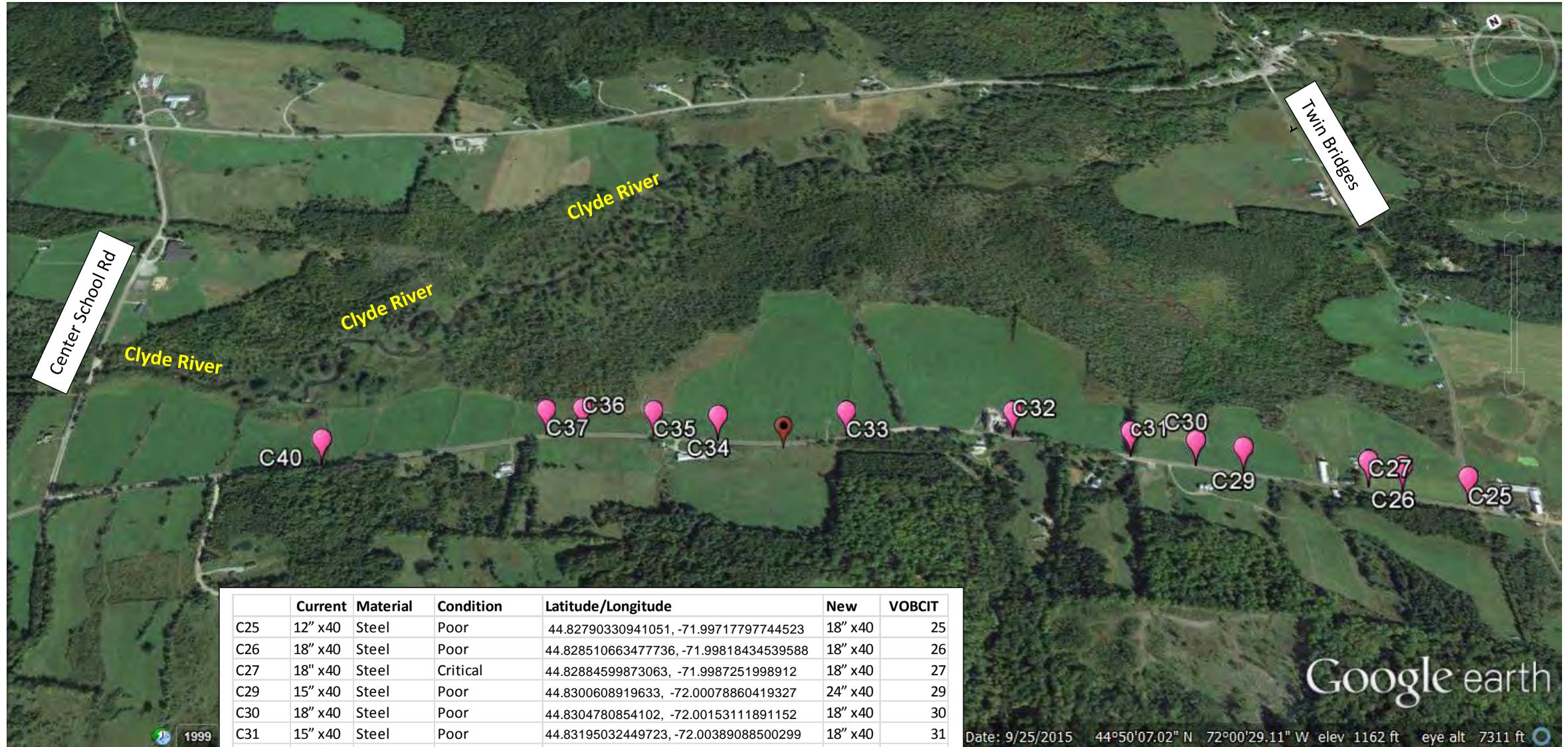
SIGNATURE OF APPLICANT: (Must be Town Administrator/Manager or Select Board Chair)

Name: _____ Dean Bennett _____ Title: ___Selectboard Chair___

**Project: Hudson Road Multiple Culvert Upgrades
Charleston FY2017 Better Roads Application**

	Current	Material	Condition	Latitude/Longitude	New	VOBCIT ID
C25	12" x40	Steel	Poor	44.82790330941051, -71.99717797744523	18" x40	25
C26	18" x40	Steel	Poor	44.828510663477736, -71.99818434539588	18" x40	26
C27	18" x40	Steel	Critical	44.82884599873063, -71.9987251998912	18" x40	27
C29	15" x40	Steel	Poor	44.8300608919633, -72.00078860419327	24" x40	29
C30	18" x40	Steel	Poor	44.8304780854102, -72.00153111891152	18" x40	30
C31	15" x40	Steel	Poor	44.83195032449723, -72.00389088500299	18" x40	31
C32	15" x40	Steel	undersized	44.832310059407675, -72.00449484031397	18" x40	32
C33	18" x40	Steel	Poor	44.833582914245746, -72.00780241828853	18" x40	33
C34	15" x40	Steel	Poor	44.83453885504065, -72.01037425351447	18" x40	34
C35	15" x40	Steel	Poor	44.8351199630215, -72.01158344958459	18" x40	35
C36	15" x40	Steel	Critical	44.83570175951002, -72.01295707742858	18" x40	36
C37	24" x40	Steel	Poor	44.83596365058647, -72.01367406905969	24" x40	37
C40	18" x40	Steel	Poor	44.83716106233902, -72.01840940136591	18" x40	40

Project: Hudson Rd Multiple Culvert Upgrades (Locations of 13 culverts to be replaced)
 Charleston FY2017 Better Roads Application



Town of Charleston
Better Roads Application FY2017
Project: Hudson Rd Multiple Culvert Upgrades
Construction Costs Estimate

Project

13 HDPE culverts (2 @ 24" and 11 @ 18")
 Cost based on 5 days (1 week) at 10 hrs/day

Labor

1 Worker @ \$20.42/hr including fringe benefits x 40 hrs	\$816.80
1 Worker @ \$23.09/hr including fringe benefits x 40 hrs	\$923.60
1 Worker @ \$27.78/hr including fringe benefits x 40 hrs	\$1,111.20
Total Reg Hours Cost	\$2,851.60

1 Worker @ \$28.76/hr including fringe benefits x 10 hrs	\$287.60
1 Worker @ \$32.54/hr including fringe benefits x 10 hrs	\$325.40
1 Worker @ \$39.14/hr including fringe benefits x 10 hrs	\$391.40
Total OT Cost	\$1,004.40

Total Labor **\$3,856.00**

Equipment

2 16yd Trucks @ \$80/hr x 40 hrs	\$6,400.00
Excavator @ \$50/hr x 40 hrs	\$2,000.00
Rental Compactor @ \$29/hr x 20 hrs	\$600.00
Rental mulcher @ \$65 day	\$130.00
Total Equipment Cost	\$9,130.00

Materials

24" x 40' HDPE culvert - Qty 2	\$1,600.00
18" x 40' HDPE culvert @ \$13/ft x Qty 11	\$5,720.00
6"- Erosion Stone @ \$14/CY x 48CY, splash pools/headers	\$672.00
3/4" crushed gravel at \$10/CY x 380 CY	\$3,800.00
Seed Mix	\$80.00
Mulch Hay 10 bales @ 3.50/bale	\$35.00
Total Materials Cost	\$11,907.00

Total Project Estimate	\$24,893.00
Requested Grant Amount	\$19,914.40
Local Match	\$4,978.60

Price based on actual town labor rates including fringe benefits, and standard town equipment use rates (based on FEMA equipment rates and cost codes)

Town of Charleston - Road Erosion Site Inventory May 2014			
Site#3-Hudson Road- Center School Rd to Twin Bridge Rd			
Priority:	#3-2016		
Road Name:	Hudson Rd		
TH#:	#1		
Location:	From Center School Rd (east) to 1000 ft. past Twin Bridge Rd		
Nearest Water Body:	The Clyde River is the nearest body of water. It still has an intact flood plan with minimal intrusion from structures.		
Distance to Water Body:	Approximately 2000 ft. depending on river's twists and turns.		
Current Condition:	<p>This section of the Hudson Rd has been repeatedly washed out, in the last 4 years in particular. This is due to significant logging of the ridge above the road and to the increase of heavy runoff events. The road also has the heaviest traffic in town, over 850 per day on weekdays much of it heavy trucks. The road has an insufficient gravel base and surface coat that cannot stand this degree of wear requiring an extreme amount of maintenance during mud season and when saturated from summer rain. Culvert are too small to take the heavy runoff and need to be oversized in this section with riprap headers and splash pools. Ditches cleaned and lined with matting and seeded.</p>		
Proposed Solution:	<p>Replace culverts at the Bowen Hill , at Letorneau's, and Twin Bridge Rd with 30" or larger with rip rap and splash pools. Place and compact 12" of base run gravel in two lifts from the intersection of Center School Rd and the Hudson Rd east to 1000ft. past the intersection of Twin Bridge Rd and the Hudson Rd. Place and compact in two lifts 12" of 3/4" crusher run gravel on the same section.</p>		
Estimated Costs to Improve/ Repair			
Culvert ,Ditch and Bank Stabilization			
Materials:	1-36" x 40' smooth HDP culvert w/headwall and splash pool	Cost:	\$27,400.00
Materials:	1 -30" x 40' smooth HDP culvert w/riprap headwall & splash pool	Cost:	\$3,800.00
Materials:	2 -18" x 20' smooth HDP culverts	Cost:	\$1,216.00
Materials:	1 -24" x 40' smooth HDP culvert w/riprap headwall & splash pool	Cost:	\$1,820.00
Materials	3060' ditching, matting and seeding	Cost:	\$10,000.00

Machinery:	Excavator costs included in culvert estimates	Cost:	\$0.00
Machinery:	Grader (local match)	Cost:	\$0.00
Machinery:	Town trucks, loaders (local match)	Cost:	0
Labor:	Included in equipment rental or town employees (local match)	Cost:	0
Total Culvert, Ditching and Bank Stabilization Costs:			\$44,236.00
Crowning and Re-grading Roads			
Materials:	7928 cubic yards of bank run gravel in place on rd @\$21.45	Cost:	\$170,055.00
Materials:	7267 cubic yards of 3/4" crusher run gravel in place @\$21.45	Cost:	\$155,884.30
Machinery:	4 Ten wheeler trucks @\$80.00/hr 448 hours	Cost:	\$35,904.00
Machinery:	Vibrating roller @ \$375.00/day 3 days	Cost:	\$1,125.00
Machinery:	Grader (local match)	Cost:	0
Labor:	Flagger @\$200.00/day 14 days	Cost:	\$2,240.00
Total Crowning and Re-grading Roads			\$335,208.0
			0
Total Estimate for this project:			\$379,444.0
			0

**Project: Hudson Rd Multiple Culverts Upgrade
Charleston FY2017 Better Roads Application**



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**Project: Hudson Rd Multiple Culverts Upgrade
Charleston FY2017 Better Roads Application**



C36 replace current 15". Splash pit to be installed.



C38 is in excellent condition. Stone splash pit will be installed



C39 Culvert good but splash pit needed



C40 inlet



Washout at C40 outlet

State of Vermont
Highway Division
Maintenance & Operations Bureau
District 9
4611 US Route 5
Newport, VT 05855
vtrans.vermont.gov

Agency of Transportation

[phone] 802-334-7934
[fax] 802-334-3337
[ttd] 800-253-0191

April 11, 2016

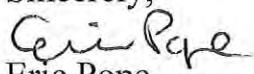
Letter of Recommendation

To Whom It May Concern,

The Town of Charleston has expressed concern over the condition of 13 culverts on Hudson Rd. The Town has been in close contact with the District 9 office and we have performed site visits to investigate and concur with their concern. All of the Culverts are undersized and/or are in poor condition and need to be replaced in order to mitigate the reoccurrence of severe washouts and erosion that have resulted in silting of the Clyde River.

It is of our opinion, being the District Project Manager and Tech Team, that this project is a good fit for a Better Roads Grant. We have assisted the town to determine proper hydraulic sizing and will continue to provide support and assistance throughout the project.

Thank You.

Sincerely,

Eric Pope
District 9 Technician

24 Apr 2014

Project: **Hudson Road Drainage Project**

Pg 1 of 5

Total Benefits: **\$555,397**

Total Costs: **\$460,039**

BCR: **1.21**

Project Number:

Disaster #: DR-4022-VT

Program: HMGP

Agency: **Town of Charleston**

State: **Vermont**

Point of Contact: Tom Jensen

Analyst: Tom Jensen

Project Summary:

Project Number:

Disaster #: DR-4022-VT

Program: HMGP

Agency: Town of Charleston

Analyst: Tom Jensen

Point of Contact: Tom Jensen

Phone Number: 802-895-4137

Address: PO Box 3, West Charlesto, Vermont, 05872

Email: jensentom5@aol.com

Comments:

Structure Summary For:

Hudson Road, Hudson Road, Charleston, Vermont, 05872, Orleans

Structure Type: Other

Historic Building: No

Contact: Tom Jensen

Benefits: \$555,397

Costs: \$460,039

BCR: 1.21

Mitigation	Hazard	BCR	Benefits	Costs
Drainage Improvement	Damage-Frequency Assessment	1.21	\$555,397	\$460,039

24 Apr 2014

Project: **Hudson Road Drainage Project**

Pg 2 of 5

Total Benefits: **\$555,397**

Total Costs: **\$460,039**

BCR: **1.21**

Project Number:

Disaster #: DR-4022-VT

Program: HMGP

Agency: **Town of Charleston**

State: **Vermont**

Point of Contact: Tom Jensen

Analyst: Tom Jensen

Structure and Mitigation Details For: Hudson Road, Hudson Road, Charleston, Vermont, 05872, Orleans

Benefits: \$555,397

Costs: \$460,039

BCR: 1.21

Hazard: **Damage-Frequency Assessment - Flood**

Mitigation Option: Drainage Improvement

Latitude:

Longitude:

Project Useful Life: 50

Mitigation Information

Basis of Damages: Historical Damages

Number of Estimated Damage Events: 3

Number of Events with Know Recurrence

Intervals: 0

Roads And Bridges

Estimated Number of One-Way
Traffic Trips Per Day: 833

Additional Time per One-Way Trip: 0:30

Number of Additional Miles: 15.0

Federal Rate: 0.550

Economic Loss Per Day of
Loss of Function: \$19,213

Facility Description:

Hudson Road, a 4.5 mile Gravel Surfaced road in
Charleston, VT

Historic Damages Before and After Mitigation

Analysis Year: 2014

Analysis Duration: 39

Utilities (\$/day):

Year Built: 1976

User Input Analysis Duration:

Buildings (\$/day):

Roads/Bridges (\$/day): \$19,213.15

Total Benefits: **\$555,397**

Total Costs: **\$460,039**

BCR: **1.21**

Project Number:

Disaster #: DR-4022-VT

Program: HMGP

Agency: **Town of Charleston**

State: **Vermont**

Point of Contact: Tom Jensen

Analyst: Tom Jensen

Damages Before Mitigation

Damage Year: 2011

RI: 5.00

Are Damages In Current Dollars? No

Buildings (Days):

Utilities (Days):

Roads (Days): 4.0

Project Worksheet Damages (\$)	\$45,186
Town Annual Damages (\$)	\$2,500
Total	\$124,539
Total Inflated	\$128,707

Damages After Mitigation

RI: 10.00

Are Damages In Current Dollars? Yes

Buildings (Days):

Utilities (Days):

Roads (Days): 4.0

Project Worksheet Damages (\$)	\$45,186
Town Annual Damages (\$)	\$2,500
Total	\$124,539

Damage Year: 2011

RI: 2.00

Are Damages In Current Dollars? No

Buildings (Days):

Utilities (Days):

Roads (Days): 2.0

Project Worksheet Damages (\$)	\$9,830
Town Annual Damages (\$)	\$2,500
Total	\$50,756
Total Inflated	\$51,834

RI: 5.00

Are Damages In Current Dollars? Yes

Buildings (Days):

Utilities (Days):

Roads (Days): 2.0

Project Worksheet Damages (\$)	\$9,830
Town Annual Damages (\$)	\$2,500
Total	\$50,756

Damage Year: 2013

RI: 1.00

Are Damages In Current Dollars? No

Buildings (Days):

Utilities (Days):

Roads (Days): 2.0

Project Worksheet Damages (\$)	\$8,967
Town Annual Damages (\$)	\$2,500
Total	\$49,893
Total Inflated	\$50,182

RI: 2.00

Are Damages In Current Dollars? Yes

Buildings (Days):

Utilities (Days):

Roads (Days): 2.0

Project Worksheet Damages (\$)	\$8,967
Town Annual Damages (\$)	\$2,500
Total	\$49,893

24 Apr 2014

Project: **Hudson Road Drainage Project**

Pg 4 of 5

Total Benefits: **\$555,397**

Total Costs: **\$460,039**

BCR: **1.21**

Project Number:

Disaster #: DR-4022-VT

Program: HMGP

Agency: **Town of Charleston**

State: **Vermont**

Point of Contact: Tom Jensen

Analyst: Tom Jensen

Summary Of Benefits

Expected Annual Damages Before Mitigation

Expected Annual Damages After Mitigation

Expected Avoided Damages After Mitigation (Benefits)

Annual:	\$75,746
Present Value:	\$1,045,351

Annual:	\$35,502
Present Value:	\$489,954

Annual:	\$40,244
Present Value:	\$555,397

Mitigation Benefits: \$555,397

Mitigation Costs: \$460,039

Benefits Minus Costs: \$95,358

Benefit-Cost Ratio: 1.21

Cost Estimate

Project Useful Life (years): 50

Construction Type:

Mitigation Project Cost: \$404,836

Detailed Scope of Work: Yes

Annual Project Maintenance Cost: \$4,000

Detailed Estimate for Entire Project: Yes

Final Mitigation Project Cost: \$460,039

Years of Maintenance: 50

Cost Basis Year:

Present Worth of Annual Maintenance Costs: \$55,203

Construction Start Year:

Estimate Reflects Current Prices: Yes

Construction End Year:

Project Escalation:

24 Apr 2014

Project: **Hudson Road Drainage Project**

Pg 5 of 5

Total Benefits: **\$555,397**Total Costs: **\$460,039**BCR: **1.21**

Project Number:

Disaster #: DR-4022-VT

Program: HMGP

Agency: **Town of Charleston**State: **Vermont**

Point of Contact: Tom Jensen

Analyst: Tom Jensen

Justification/Attachments

Field	Description	Attachments
Additional Time per One-Way Trip	Based on time required to detour if Hudson Road is closed. The time required to detour the 15 miles is 30 minutes, on rural roads.	
Analysis Year	Analysis is the current year, 2014.	
Annual Project Maintenance Cost	Based on Infrastructure improvement projects, default value is 50 years.	
Estimated Number of One-Way Traffic Trips Per Day	See Traffic Data COUNT from JAMAR Technologies, traffic counts for July 22, 2010 is 833 VPD.	Traffic Data.pdf
Facility Description	Brief description of the facility, Hudson Road. A 1.6 mile stretch of the road is being mitigated.	Traffic Data.pdf
Historic damages before mitigation	See attached Project Worksheets (PW's) for DR-1995, occurred in May of 2011; also attached PW's for DR-4022 and DR-4140	August 2013 DR-4140.pdf; August 2011 DR-4022.pdf; May 2011 DR-1195 PW.pdf
Mitigation Project Cost	Based on an estimate prepared using VT "Orange Book" 2009-2011 Edition, for project cost information.	
Number of Additional Miles	Map attached and on file with project application. Detour route is Route 105 West, to Junction of Rt 5A, back to Hudson Road.	
Roads/Bridges	Project is for Hudson Road, an existing gravel-surfaced road.	
Year Built	Road has been in existence for hundreds of years; year built used as the first issued flood maps for Orleans County.	