

# FIELDSTONE

Surveying ♦ Engineering  
Land Planning ♦ Septic Designs

LAND CONSULTANTS, PLLC

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July 8, 2020

Mark Stinson  
MassDEP  
Western Regional Office  
436 Dwight Street  
Springfield, MA 01103

RE: Response Comments per Wetlands File # WE 229-0258 letter dated June 11, 2020  
Chestnut Hill Loop Road Bridge Replacement – Town of Bernardston Massachusetts  
Replacement of MADOT Bridge M-28-030 (C6N) over Chestnut Hill Brook

Please see additional information provided below in response to MADEP Letter dated June 11, 2020.

- 1) The correct limited project for this work is 310 CMR 10.53 (3)(i).

**Under WPA Form 3 section 7b for limited project was incorrectly classified as K. Routine maintenance and repair of roadway drainage structures including culverts. The correct limited project should have been as listed above which is for “(i) The maintenance, repair and improvement (but not substantial enlargement except when necessary to meet the Massachusetts Stream Crossing Standards) of structures, including dams and reservoirs and appurtenant works to such dams and reservoirs, buildings, piers, towers, headwalls, bridges, and culverts which existed on the effective date of 310 CMR 10.51 through 10.60 (April 1, 1983). When water levels are drawn down for the maintenance, repair, or improvement of dams or reservoirs or appurtenant works to such dams or reservoirs under 310 CMR 10.53(3)(i), water levels that existed immediately prior to such projects being undertaken shall be restored upon completion of the work, and a new Notice of Intent need not be filed for such restoration. If the Department of Conservation and Recreation Office of Dam Safety determines that it would not be safe to restore the water level existing prior to the project being undertaken, the applicant shall submit a new Notice of Intent within ninety days of the date of the determination describing the measures necessary with a schedule for repairing or replacing the dam and returning water levels to the previous condition, or removing the dam and restoring the riparian habitat.”**

NOI Response Comments: Chestnut Hill Loop Road Bridge Replacement – Montague, MA

- 2) Chestnut Hill Brook is a Cold Water Fishery Resource. Preventing sediment from entering the water column and maintaining and/or increasing shading of the water are important factors in protecting this valuable resource.

**We recognize the value of this resource and the proposed project has been designed to replace the failing bridge crossing with a larger open bottom structure to project for lower velocities, additional stormwater capacity, and natural stream bottom and fish habitat restoration. Best management procedures will be utilized to minimize and potential erosion during construction by employing a bypass system and conduction the work during low flow conditions.**

- 3) Whether submitting a project that fully meets the performance standards or is submitted as a limited project, a narrative must always be included showing how the work meets the performance standards, or in the case of a limited project, what standards are met and then what standards cannot be met and then explain how the work complies to the maximum extent practicable for those standards. No information was included in the NOI doing this. Insufficient information has been included in the NOI to permit the project. A wetlands replication report is required.

**A project overview narrative was included in the NOI package but did not contain specific performance standards of the proposed replacement; a supplemental narrative has been attached to this letter to augment the Replacement Stream Crossing Evaluation Worksheet which was included in the NOI and which outlines the alternatives to the proposed replacement including 1: in-kind replacement 2: Meeting General Performance Standards and 3: Meeting minimum applicable standards.**

- 4) To prevent failure, all constructed banks should have a height to width ratio of no greater than 1:1.5 (vertical:horizontal) unless the stream is naturally incised. They should be tied into the up and downstream banks and configured to be stable during a 100-year storm event. The banks should be designed and constructed so as not to hinder riverine wildlife use of the streambed and banks for passage.

**All the designed / constructed banks meet MADOT standards and do not exceed 1:1.5 and will tie into the upstream and downstream streambanks and configured to be stable during a 100-year storm event. The banks and stream bed are designed not only to not hinder wildlife passage but a terrestrial corridor is being added within the structure to provide dry wildlife passage where none currently exists while still maintaining the deep year round channel to maintain normal year round stream flow for aquatic organisms and fish passage.**

- 5) In order to provide appropriate water depths and velocities at a variety of flows and especially low flows it is necessary to preserve or reconstruct the streambed within the structure. It is important that a continuous thalweg (deepest portion of the channel) be maintained through

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the structure. When constructing the streambed special attention should be paid to the sizing and arrangement of materials within the structure.

**The streambed has been designed to utilize natural rounded river stone within the streambed while still maintaining year round flow and providing a terrestrial corridor as well. Special attention will be given to re-creating the natural configuration of streambed within the structure and any other disturbed areas in the streambed.**

- 6) This current crossing has been surveyed recently through the NAACC Data Center. The parties should follow this link. [https://naacc.org/naacc\\_display\\_crossing.cfm?aqId=75790](https://naacc.org/naacc_display_crossing.cfm?aqId=75790). That information shows no dry passage currently for wildlife but with no scour pool. After the new work is completed, the commission might request that the crossing information be updated on that database. One may contact this reviewer for more information.

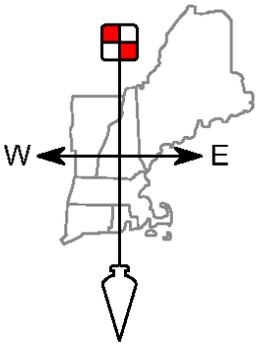
**The website has been reviewed and appears to be a valuable resource and it would be beneficial to notify the NAACC data center after construction to update their database.**

Sincerely,  
**Fieldstone Land Consultants, PLLC**



Christopher A. Guida, CSS, CWS, SE

CC: Town of Montague – Conservation Commission



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July 8, 2020

MassDEP  
Western Regional Office  
436 Dwight Street  
Springfield, MA 01103

RE: Chestnut Hill Loop Road Bridge Replacement – Town of Montague Massachusetts  
NOI Narrative for replacement of MADOT Bridge M-28-030 (C6N) over Chestnut Hill  
Brook

As an agent for Stantec Consulting Services, Inc (Stantec) and Town of Montague, MA Fieldstone Land Consultants, PLLC (Fieldstone) has prepared the following summary narrative to address compliance with WPA performance standards for the replacement of the existing bridge on Chestnut Hill Loop Road in Montague, MA. A thorough Hydrologic Analysis Report has been prepared by Stantec for the purposes of designing the replacement bridge structure and certify compliance with the MADEP Stream Crossing Standards and goals to the maximum extent practicable, specifically 1) Fish & Aquatic Organism Passage, 2) River/Stream Continuity and 3) Wildlife Passage. This report has been attached to the NOI and is referenced throughout the following Narrative summary.

### **Wetland Delineation:**

The wetlands on site were delineated by Christopher A. Guida, New Hampshire Certified Wetland Scientist #53 using the 1987 US Army Corps of Engineers Wetland Delineation Manual Y-87 and regional supplements, the Field Indicators for Identifying Hydric Soils in New England Version 4 and Massachusetts Manual for Delineating Bordering Vegetated Wetlands under the Massachusetts Wetland Protection Act. Soil auger holes were advanced at regular intervals to verify hydric soil conditions, hydrophytic plant community dominance and hydrology were continuously evaluated during wetland delineation. However, due to the anthropogenic manipulation in the area, fill material, bank/slope along roadway and the stream channel near bridge area. The wetland boundary is essentially the top of bank along the roadway and farther away from the road there are BVW along the stream channel of Chestnut Hill Brook as observed by vegetation, scour marks, silt / sediment lines and high water marks on bridge structures. Wetland soils and vegetation was used to delineate the BVW in the unaltered portions of the wetlands; altered areas along the road shoulder utilized existing features

NOI Narrative: Chestnut Hill Loop Road Bridge Replacement – Montague, MA

and high water marks along with vegetation along the roadway. Wetland delineation and classification was conducted in September 2019.

The jurisdictional wetlands located on site have been classified in accordance with the US Fish and Wildlife Classification of Wetlands and Deepwater Habitats in the United States (Cowardin et al 1979). Generally speaking there is only one wetland category to be impacted within the project area; these wetlands are classified as Riverine, Upper Perennial Unconsolidated Bottom, Cobble-Gravel, seasonally flooded/saturated (R3UB1E). Chestnut Hill Brook appears to typically have year round flow even though dry conditions may be observed during late summer months. The stream be appeared to have had some anthropogenic manipulation in the past associated with roadway construction.

**Alternative Analysis:**

The existing roadway and bridge was in place prior to August 1, 1996 and replacement of the subject bridge is critical for the general public welfare and safety. The general existing roadway grades must be maintained in order to provide for continued safe travel. The attached Hydrologic, Hydraulic and Scour Protection Report and design plan set have taken into account the required engineering design and safety standards in accordance with Mass DOT as well as Mass DEP environmental standards include in the Massachusetts Wetland Protection Act (WPA). The existing bridge span is 10 ft wide by 4.5 ft high and the proposed replacement span will be 12' wide by 5.1' high which is more compliant with stream crossing guidelines to meet 1.2 times the bank full width to the best extent reasonably practicable given restrictive area due to sharp curves along the roadway and surrounding private property and dwellings. The intent and spirit of the requirements meet the goals of the standards, specifically to 1) provide and enhance Passage for Fish and other Aquatic Organisms, 2) Provide / restore / enhance River/Stream Continuity, and 3) provide/ restore / enhance Wildlife Passage through the project area.

The project will maintain the current year-round flow and provide a deeper channel (thalweg) on one side for aquatic passage continuity and provide a terrestrial passage for other wildlife, which does not currently exist. The streambed within the structure will be infilled with natural and replicated stream bed and elevated terrestrial bench through the length of the structure. The total proposed wetland disturbance is 2,815 square feet (sf) which will be restored upon completion. An alternatives analysis worksheet for replacement stream crossings was included in the NOI as well.

**Massachusetts Department of Environmental Protection 310 CMR 10 Performance Standards:**

310 CMR 10.54 Bank (Naturally Occurring Banks and Beaches)

The proposed bridge replacement will only disturb approximately 140 linear feet and only 45 lf will not be restored because it will be part the new wing walls of the new bridge structure. The banks along in the area currently consist of stone, rip-rap and other assorted fill material along the roadway and adjacent to the existing bridge structure. Vegetation is primarily shrubs and trees on either side of the bridge along with small saplings and poison ivy and assorted road side grasses.

Replacement bridge structure will remain within the existing disturbed area of the current bridge

NOI Narrative: Chestnut Hill Loop Road Bridge Replacement – Montague, MA

crossing. Existing banks within the work area do not appear to provide any important or unique habitat due to the proximity and association with existing bridge structure. Disturbed banks will be stabilized and revegetated in accordance with MADEP guidelines and is detailed within plan set by Stantec. Proposed work will meet the General Performance standards by maintaining the physical stability of the bank, will not impair water carrying capacity of the bank, or groundwater and surface water quality or the capacity of the bank to provide breeding habitat and wildlife habitat functions relative to existing functions currently provide. Current functions are somewhat limited due to proximity to the bridge structure.

#### 310 CMR 10.55 Bordering Vegetated Wetlands

The proposed bridge replacement will disturb approximately 2815 SF of BVW along the streambed in the vicinity of the roadway for structure replacement, slope stabilization and stream by-pass during construction. All disturbed BVW will be restored upon completion of the project and removal of the bypass structure.

#### 310 CMR 10.56 Land Under Water Bodies and Waterways

The streambed under the existing structure is currently mostly natural riverstone with some concrete residue from degraded bridge structure. The area to be disturbed will be replicated with natural riverstone and provide a new terrestrial passage where none currently exists. The existing stream bed in the vicinity of the bridge is primarily unconsolidated sand and gravel and cobble bottom. The proposed replacement bridge will meet performance standards to best extent possible by providing a 12 ft wide span open bottom structure with replicated stream bed to allow for low flow water passage and a terrestrial passage as well to provide continuity of the stream channel for aquatic and terrestrial wildlife passage. Rip rap material with a D-50 of 18" to a depth of 36" with Mirafi filter fabric installed under and over the rip-rap and then a minimum of 24" to 36" of natural rounded river stone as a natural streambed within the structure. Natural river stone will place over the rip-rap base material to restore the streambed which is important due to Chestnut Hill Brook being listed as a Cold Water Fisheries Habitat. The required 1.2 times bankfull width would require a 15' span that would be excessive and require unnecessary excavation and additional impact to tie the bridge in with existing grades.

#### 310 CMR 10.58 Riverfront Area

The proposed bridge replacement requires work within the Riverfront Area overlay as Chestnut Hill Brook is indicated as a perennial stream on the USGS Quadrangle. The proposed work is limited within the immediate area of Chestnut Hill Loop Road right of way of the bridge/box culvert. The project area is vegetated with roadside grasses, poison ivy, raspberries and a few early successional sprouts and saplings which are cut and trimmed annually as part of routine roadway shoulder and right of way maintenance. Disturbed areas will be isolated with appropriate erosion control methods such as silt fence which serves as erosion control as well as a visual barrier to construction personnel as the limit of work/disturbance area. All work is proposed to be conducted during low flow conditions during seasonally dry portion of the year in summer months. During the wetland delineation in September 2019 it was observed that the stream bed was flowing but based on the characteristics of the

NOI Narrative: Chestnut Hill Loop Road Bridge Replacement – Montague, MA

watershed the brook likely dries up significantly in July and August.

The Riverfront Area within the project zone has been manipulated in the past as part of the road construction and residential dwelling construction, however all of the disturbance was existing prior to 1996. The proposed box culvert replacement project intends to maintain the riverfront integrity of the area as well as improve the existing crossing by widening the structure opening to greatest extent practicable, providing a true span with open bottom. All disturbed areas will be restored, stabilized and re-vegetated upon completion.

**Performance Standards Summary:**

The existing bridge structure is in dire need of replacement due to concrete degradation and undermined footings around the concrete structure. The necessity of the bridge replacement for general public safety concerns is being taken as an opportunity to restore and enhance the existing streambed, provide terrestrial passage through the structure, restore banks and surrounding area as close to its natural state to the greatest extent practicable. Although the proposed span is slightly less than the required size is a vast improvement over the existing structure and will enhance and restore the ecological integrity and continuity through the Chestnut Hill Brook System to the best extent practicable. The replacement, restoration and improvement project will serve improve the safety and structural integrity of the roadway / bridge as well as reduce the environmental impact of the crossing on the Chestnut Hill Brook resource area. Restoration and enhancement will include removing existing 10' wide degraded span and replacing it with a 12' wide x 5.1' high open bottom structure with terrestrial pathway, recreating streambed within the structure. The project will restore continuity through the overall wetland / stream system for fish and aquatic species as well as terrestrial wildlife that may migrate through the structure along the stream bank. Streambed restoration is especially important due Chestnut Hill Brook being classified as a Cold Water Fisheries stream. Strict adherence to the requirements would not provide for significant improvement over proposed upgrade especially since the increase size would require additional resource disturbance.

The project is not located within an Area of Critical Environmental Concern (ACEC) nor NHESP Natural Heritage Endangered Habitat, or Priority Habitat of Rare Species.

Thank you for your consideration.

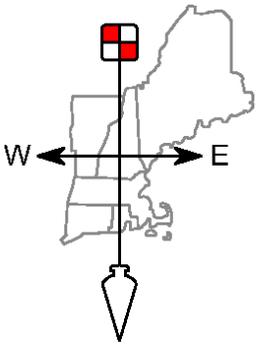
Very truly yours,

**Fieldstone Land Consultants, PLLC**



Christopher A. Guida, CSS, CWS, SE

CC: Town of Montague – Conservation Commission



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June 11, 2020

Massachusetts Department of Environmental Protection  
Western Regional Office  
State House West, 4<sup>th</sup> Floor  
436 Dwight Street  
Springfield, MA 01103

**RE: Project Narrative (WPA Form 3 – Notice of Intent)  
Massachusetts Wetlands Protection Act M.G.I. c. 131, section 40  
MassDOT Bridge #M-28-030 (C6N)  
Chestnut Hill Loop Road  
Montague, MA 01351**

The WPA Form 3 – Notice of Intent Application has been revised to correct typographical errors and reflect the numbers shown on the previously submitted plans. Corrections were made to the following items:

- B.b. 1 - Size of Proposed Alteration for Bordering Vegetated Wetland from 6,920 square feet to 2,815 square feet (sq ft)
- B.b. 2 - Size of Proposed Alteration Land Under Waterbodies and Waterways from 2,818 sq ft to 396 sq ft
- B.c. 1 - Proposed Replacement for Bordering Vegetated Wetland from 3,575 sq ft to 2,815 sq ft
- B.c. 2 - Proposed Replacement for Land Under Waterbodies and Waterways from 2,815 sq ft to 396 sq ft.

These typographical errors were limited to page 3 of the WPA Form 3 – Notice of Intent Application. There have been no changes to the plan set or other supporting documents that accompanies this application.

The project proposes the replacement of an existing bridge crossing where Chestnut Hill Brook passes under Chestnut Hill Loop Road in the Town of Montague, Massachusetts. The crossing is approximately 200-feet (ft.) east of the intersection of Chestnut Hill Loop Road, Chestnut Hill Road West, and Chestnut Hill Road East. The existing crossing is a cast in place concrete deck structure set on rubble rock that is approximately 18-ft long with no headwalls and has a clear span of roughly 10-ft. The width of the roadway over Chestnut Hill Brook is 16-ft, and the open area of the stream crossing is 42 sq ft, more or less. The existing concrete slab rubble and mortar rock abutments are collapsing on the westerly side of the crossing.

2300.00

WPA Form 3 – Notice of Intent [MassDOT Bridge #M-28-030 (C6N)]

Chestnut Hill Loop Road is a Town of Montague-maintained rural road with light to moderate traffic. Chestnut Hill Loop Road is classified as a rural local road or rural collector, based on MassDOT criteria. The existing land uses in the vicinity of Chestnut Hill Loop Road are primarily undeveloped forested areas and residential homes. According to USGS StreamStats, Chestnut Hill Brook has a tributary watershed area of approximately 0.94 square miles (601.6 acres). Downstream of Chestnut Hill Loop Road crossing, Chestnut Hill Brook discharges into minor waterbodies until it reaches the Connecticut River. There is a severe stream channel radial curve at the inlet and outlet of the existing crossing which is the result of rerouting the stream channel during construction of the original crossing. The stream bed/substrate is generally natural material with well-graded gravel and sand. The stream channel is gentle sloping at approximately 1%, with flat areas and ponding locations observed.

The proposed structure for the crossing is a single span 3-sided rigid frame structure with a proposed span of 12-feet and a length of 26-feet between the inlet and outlet of the bridge. The low chord height of the replacement single span precast concrete stream crossing is approximately 4.3-feet above the average riverbed bottom and has an open area of nearly 50 sq ft. A 12-ft span is proposed in order to operate within existing right-of-way constraints, reduce impact to the abutting property owner and to accommodate local budgetary constraints. An alternative analysis spreadsheet accompanies this application and addresses multiple criteria for the replacement stream crossing.

The widening of the bridge and installation of stream channel armoring. The proposed bridge opening will convey approximately 522 cubic feet per second (CFS) and will result in a more continuous laminar stormwater flow, reducing the upstream 100-Year storm event and mitigates downstream erosion. The project also proposes armament of the stream bank along the severe radial curve to minimize erosional and sedimentation hazards. The open-bottom/natural substrate associated with the crossing will improve terrestrial passage for low-flow aquatic organisms and improve connectivity between the upstream and downstream habitats. Bridge replacement is necessary to rectify existing unsafe structural conditions and will incorporate improved crossing with wildlife enhancement features in design and construction.

Resource delineation was done in accordance with Massachusetts Wetland Protection Act and US Army Corps of Engineers Wetland Delineation Manual 1987 and applicable regional supplements. BVW was delineated primarily with vegetation alone, however, given the proximity to perennial stream there were other factors present such as flood scour marks and drift lines, top of bank area and soils that were incorporated and supported the delineation.

Sincerely,



Christopher A. Guida. CSS, CWS  
Certified Soil & Wetland Scientist