

November 17, 2025

Please add this letter from H&H Engineering Associates, licensed civil engineers, to the official record for the public hearing on Ledyard Inland Wetlands and Watercourses Commission permit application (IWWC#25-19SITE) ("Lambtown Road Ext. culvert replacement with new custom inlet control structure at Ed Lamb Brook").

NOV 18 2025

Land Use Department

The most relevant points from the attached letter follow:

It is H+H's opinion that the project will require removal of an existing beaver dam at the existing culvert inlet and that the new culvert and beaver control structure will result in the **lowering of the open water created by the dam by approximately 3'.**

The lowering of the open water elevation will also result in a **reduction of open water surface area. From LiDAR topographic data a 0.5' lowering will reduce the surface area from approximately 17.0 acres to 11.5 acres and will cause a reduction of the depth of standing water in over 4.0 acres of adjacent emergent marsh, bogs, and pool areas.**

It is H+H's opinion that dewatering and/or by-pass pumping is required for the installation of the project under dry conditions. If it is necessary to maintain the existing open water elevation to protect wetland functions and habitat during construction, then **a coffer dam will be required. Otherwise, the dewatering will likely result in the temporary lowering of the open water to its bottom elevation.**

The submitted plans do not depict any construction erosion and sedimentation control measures. To minimize the potential for erosion at the dewatering pipe outlet it is H+H' opinion **that a dewatering pipe outlet location should be identified, and erosion control measures specified.**

The plans depict a shift in the culvert inlet and outlet locations that will require a minor relocation of Ed Lamb Brook. To minimize erosion, it is H+H's opinion **that erosion measures should be specified.**

The plans do not identify the engineering firm or individual that designed the drainage improvements. And the plans are not stamped and signed by a licensed professional engineer. Also, the IWWC submission **does not include an engineering report, calculations or a wetland impact report.**

Determination of flood **WSEs require a hydrologic & hydraulic analysis of the watershed and hydraulic** structures (culvert, etc.) which are typically completed to size the structures for a selected design storm.

As the 2010 existing conditions map does not show open water (pond) bottom contours or spot elevations it is not possible to determine if the trash rack opening is at or below the bottom. **If the bottom elevation is above the inlet invert it will be necessary to excavate a channel into the pond.....**

Installation of the beaver control structure requires excavation into the upstream roadway embankment. Depending on the embankment topography (not shown of the existing condition map) and soil type, it is H+H's opinion that **the excavation may need to be supported or laid back for slope stability. Further, structure wing walls may be required to retain embankment grades adjacent to the structure. The installation of these structures would result in significant earthwork along the edge of pond.**

It is H+H's opinion that dewatering and/or by-pass pumping is required for the installation of the project under dry conditions and, if it is necessary to maintain the existing open water elevation to protect wetland functions and habitat during construction, then a coffer dam will be required. **If a coffer dam is not installed the dewatering will likely result in the temporary lowering of the open water to its bottom elevation.** Either way, to minimize the potential for erosion it is H+H's opinion that the dewatering pipe outlet location should be identified, and erosion control measures specified. Further, this type of concrete structure would typically require a crushed stone base which would add an additional 0.5' - 1.0' of excavation depth.

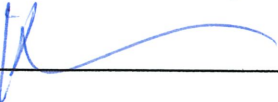
Typically, **culvert installations require outlet protection in accordance CTDOT standards.** Also, as noted above, the new culvert outlet location is different than the original culvert outlet which implies that reconfiguration of the outlet area is necessary. **The resulting earthwork warrants erosion control measures.**

Sincerely,

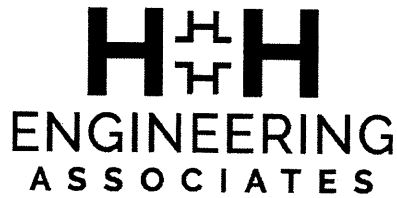
James C. Lamb Family Trust

By: 

Edmund Lamb, co-trustee
47 Lambtown Road, Ledyard, CT 06339

By: 

Karen Lamb, co-trustee
34 Lambtown Road, Ledyard, CT 06339



H+H Engineering Associates, LLC
232 Greenmanville Avenue, Suite 201
Mystic, Connecticut 06355
860-980-8008
www.hh-engineers.com

Via E-mail

November 17, 2025

James C. Lamb Family Trust

c/o Edmund Lamb and Karen Lamb, co-trustees
34 Lambtown Road
Ledyard, CT 06339

RE: Engineering Review
Culvert Replacement Project
Lambtown Road Extension, Ledyard, CT

Dear Edmund Lamb and Karen Lamb,

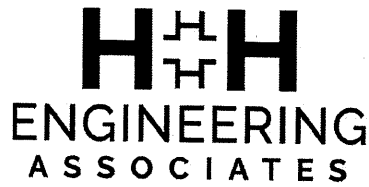
At your request, H+H Engineering Associates, LLC (H+H) has completed an engineering evaluation of the Town of Ledyard (Town), CT Inland Wetlands and Watercourses Commission permit application (IW/WC#25-19SITE) and the submitted design plans. The application is for the replacement of an existing culvert at the Ed Lamb Brook crossing of Lambtown Road Extension and the installation of a concrete beaver control structure. The purpose of the evaluation was to assess potential temporary and permanent hydrologic impacts to a marsh complex (open water, bog, emergent marsh, aquatic beds, and vernal pools) at the site.

This letter report presents the results of our evaluation.

Summary of Project Impacts:

1. It is H+H's opinion that the project will require removal of an existing beaver dam at the existing culvert inlet and that the new culvert and beaver control structure will result in the lowering of the open water created by the dam by approximately 3'.
2. The lowering of the open water elevation will also result in a reduction of open water surface area. From LiDAR topographic data a 0.5' lowering will reduce the surface area from approximately 17.0 acres to 11.5 acres and will cause a reduction of the depth of standing water in over 4.0 acres of adjacent emergent marsh, bogs, and pool areas.
3. It is H+H's opinion that dewatering and/or by-pass pumping is required for the installation of the project under dry conditions. If it is necessary to maintain the existing open water elevation to protect wetland functions and habitat during construction, then a coffer dam will be required. Otherwise, the dewatering will likely result in the temporary lowering of the open water to its bottom elevation.
4. The submitted plans do not depict any construction erosion and sedimentation control measures. To minimize the potential for erosion at the dewatering pipe outlet it is H+H's opinion that a dewatering pipe outlet location should be identified, and erosion control measures specified.

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2025-0229



5. The plans depict a shift in the culvert inlet and outlet locations that will require a minor relocation of Ed Lamb Brook. To minimize erosion, it is H+H's opinion that erosion measures should be specified.

Basis of Evaluation:

H+H's evaluation is based on a review of plans submitted with the permit application entitled:

"PLANS SHOWING EXISTING DRAINAGE CONDITIONS, PROPOSED DRAINAGE IMPROVEMENTS, PREPARED FOR THE TOWN OF LEDYARD LAMBTOWN ROAD EXTENSION LEDYARD, CONNECTICUT SCALE: 1" = 20' May 2025"

We also conducted field inspections of the site, a review of the October 7, 2025 IWWC meeting minutes, and a review of information provided by the Lamb Family Trust concerning the marsh complex (open water, bog, emergent marsh, aquatic beds and vernal pools) at the project site.

The plans do not identify the engineering firm or individual that designed the drainage improvements. And the plans are not stamped and signed by a licensed professional engineer. Also, the IWWC submission does not include an engineering report, calculations, or a wetland impact report.

Based on the information provided, our evaluation is as follows:

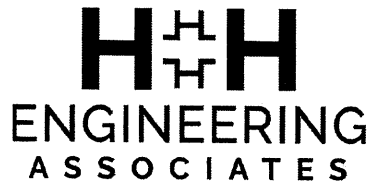
Existing Conditions

1. From a field inspection conducted on October 29, 2025, H+H observed flow from Ed Lamb Brook and the marsh complex into the existing 30" CMP culvert via what appears to be outlet pipes from five beaver deceiver structures. The pipes are supported by a sill located a few feet upstream of the culvert inlet and, at the time of inspection, most flow was from an 8" CPP with an outlet invert elevation of 198.0'. It is presumed that the top elevation of the sill is approximately the same elevation as the CPP invert (198.0').
2. A beaver dam located immediately upstream and adjacent to the sill impounds the marsh complex to an elevation approximately 1.5' - 2' above the sill (estimated from observation) resulting in a water surface elevation of approximately 199.5'+. This is 1.2' higher than the 198.3' water surface elevation (WSE) shown on the 2010 existing conditions map.

Proposed Drainage Improvements

1. The project involves the replacement of the existing culvert with a new 30" HDPE culvert and beaver control structure. It is H+H's opinion that the construction will require removal of the beaver dam and excavation dewatering to enable construction under dry conditions.
2. The location of the beaver control structure and new culvert appears to be a few feet west of the existing culvert inlet and the new culvert outlet appears to be just west and adjacent to the existing culvert outlet. The new culvert inlet and outlet invert elevations are the same as existing.

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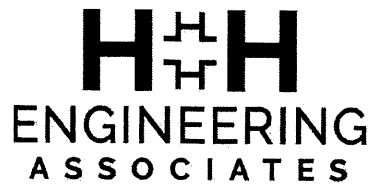


Operation characteristics of the beaver control structure follow:

1. The structure is presumably intended to prevent beavers from building a dam at the culvert inlet. Research suggests that beavers build dams at culverts because they are attracted to rapid flow and noise similar to that at a culvert inlet. When blocked, a deep, calm pool is created that provides a safe habitat.
2. H+H assumes that the structure's submerged trash rack inlet shown on the control structure detail sheet is intended to minimize the entrance flow velocity and noise thereby minimizing beaver attraction. However, we have not researched this type of structure and cannot comment on its effectiveness.
3. The structure has two chambers (inlet and outlet) separated by a baffle/weir. The inlet chamber encompasses the area between the trash rack opening and the baffle and the outlet chamber encompasses the area between the baffle and the 30" culvert. Initially, water enters the chamber via the trash rack opening (inlet elevation of 195.3'),' ponds behind the baffle to elevation 196.4' (which coincides with the culvert inlet elevation) and then flows over the baffle weir crest into the outlet chamber. Water will then permanently pond in the structure to the culvert inlet elevation (196.4') plus the headwater depth required for the culvert to convey normal brook discharges.
4. As the effective flow area of the trash rack opening (area between the crest of the weir and the top of the rack) is approximately the same as the 30" culvert, depending on its hydraulic characteristics, the trash rack should have similar flow capacity as the culvert and should prevent debris (and beavers) from entering the inlet chamber. The intended purpose of the baffle is uncertain, however; it should settle suspended solids within the chamber.
5. During flood conditions water may enter the grate inlet at the top of the structure (elevation 200.5'). Depending on the flow rate and hydraulic capacity of the beaver control structure, the top grate inlet and the culvert, severe floods may also overtop the road. Determination of flood WSEs require a hydrologic & hydraulic analysis of the watershed and hydraulic structures (culvert, etc.) which are typically completed to size the structures for a selected design storm.

Potential Project Impacts

1. If the beaver dam is removed, the WSE throughout much of the marsh complex would be approximately 196.4'+ (culvert inlet invert elevation) which is approximately 2' lower than that shown on the existing condition survey (198.3') and approximately 3'+/- lower than the estimated 199.5' WSE caused by the beaver dam (observed on October 29, 2025).
2. As the 2010 existing conditions map does not show open water (pond) bottom contours or spot elevations it is not possible to determine if the trash rack opening is at or below the bottom. If the bottom elevation is above the inlet invert it will be necessary to excavate a channel into the pond to a location where the bottom is at or below the opening elevation (195.3').



3. Installation of the beaver control structure requires excavation into the upstream roadway embankment. Depending on the embankment topography (not shown of the existing condition map) and soil type, it is H+H's opinion that the excavation may need to be supported or laid back for slope stability. Further, structure wing walls may be required to retain embankment grades adjacent to the structure. The installation of these structures would result in significant earthwork along the edge of pond.
4. Per the plans, the bottom of the beaver control structure is at elevation 193.8' which is approximately 4.5' below the 2010 198.3' WSE and approximately 6+ feet below the top of road. It is H+H's opinion that dewatering and/or by-pass pumping is required for the installation of the project under dry conditions and, if it is necessary to maintain the existing open water elevation to protect wetland functions and habitat during construction, then a coffer dam will be required. If a coffer dam is not installed the dewatering will likely result in the temporary lowering of the open water to its bottom elevation. Either way, to minimize the potential for erosion it is H+H's opinion that the dewatering pipe outlet location should be identified, and erosion control measures specified. Further, this type of concrete structure would typically require a crushed stone base which would add an additional 0.5' - 1.0' of excavation depth.
5. Typically, culvert installations require outlet protection in accordance with CTDOT standards. Also, as noted above, the new culvert outlet location is different than the original culvert outlet which implies that reconfiguration of the outlet area is necessary. The resulting earthwork warrants erosion control measures.

We trust that this report is satisfactorily for its intended use. If you have any questions, please contact us at 860-980-4488.

Sincerely,

H+H Engineering Associates, LLC

A handwritten signature in black ink, appearing to read 'Seamus Moran'.

Seamus Moran, P.E.
Principal

11/17/2025

Date

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