

GROTON CONSERVATION COMMISSION

Minutes

September 21, 2011

Co-Chairman David Pitkin called the meeting to order at 7:00 p.m. in the lunch room in Town Hall. Members Bruce Easom, Marshall Giguere, and Peter Morrison were present. Members Craig Auman, Nadia Madden, and Bill Neacy were absent. Conservation Administrator Barbara Ganem was present.

Visitors: Wendy Good, Aaron Green, and Adam Burnett (arrived at 7:05 p.m.) were present

Following up on the preceding site walk to the Farmers & Mechanics parcel off Jenkins Rd. members discussed their views on the Forest Cutting Plan prepared by Baystate Forestry. B. Easom said he did not see anything inconsistent in the field. Trees to be cut were marked with blue at both eye level and the butt. Those with 3 blue dots marked the edge of the harvest. He did not observe any violations, and paced off the distance at a number of points to assure there was a 50 ft. offset to wetlands.

Member Morrison agreed there was nothing inconsistent with the measurements. He suggested saving the one tree marked in the field and mentioned there was talk of two other large pines but we did not get to that place in the woods. M. Giguere concurred with fellow Commissioners and thought the cutting plan was conservative and follows the guidelines. He felt the tree marked in the field should not be cut, but objected to adding others.

Adam Burnett arrived at 7:05 p.m., and Vice Chairman Pitkin summarized the Commission discussion to this point. In his comments D. Pitkin agreed the field markings were consistent with the cutting plan, and he thought the oak tree marked in the field was a good one to save. M. Giguere pointed out today was the day for the Commission to make minor adjustments to the cutting plan. He did not feel it appropriate to go back and continue marking additional trees. He also stated September 6th was the last day for the receipt of written comments from the public. D. Pitkin said he wanted to be respectful of people who have shown an interest. M. Giguere suggested we should follow our own rules in which no further comments are accepted once a matter is closed.

B. Easom said the next step is to put it out to bid, and the Commission still has the right to refuse unsatisfactory bids. A. Burnett noted all but one of the bids could be unacceptable.

B. Ganem reported the consultants who are doing the peer review on the north entrance at Academy Hill is Comprehensive Environmental, Inc., and they issued a letter on September 16, 2011. Currently this project is filed under DEP#169-970. The Planning Board is meeting tomorrow night to go over the final design modifications, and members are interested in seeing the work done this fall. The stream has been disconnected since the work was done in November 2010 so it is in the Commission's interest to see this connection made as quickly as possible too. Members noted the applicant has failed to comply with the Order of Conditions on a number of

levels and questioned whether allowing this change through an Emergency Certification may only muddy the waters. M. Giguere commented the elevations of the streambed have been altered. P. Morrison pointed out the new plan calls for widening and deepening the notch in the culvert. Mr. Giguere hesitated to mandate engineering on the fly. D. Pitkin raised the question of where the utilities are located in relation to the culvert as that issue was raised during one of the meetings with the Academy Hill consultants. Members asked why they couldn't use directional drilling to re-locate the utilities.

M. Giguere felt the Commission needs stronger recommendations on how to proceed. CEI has prepared a peer review of the proposed culvert modifications. P. Morrison made a motion, seconded by M. Giguere, to require the applicant to comply with the Order of Conditions for DEP#169-970. The motion failed with only P. Morrison voting in favor. Members agreed they would need clarity in how an Emergency Certification should be fashioned to address all the outstanding issues at this site. B. Ganem agreed to provide copies of the original Order and the Emergency Certification form to assist the Commission in their decision-making.

There being no further business, the meeting was adjourned at 7:30 p.m.

Respectfully submitted,

Barbara V. Ganem
Conservation Administrator

Approved as drafted 9/27/11.

EXHIBITS

Document	Source	Date
Farmers & Mechanics Forest Cutting Plan	Baystate Forestry	7/28/11 (state approval)
Letter re: Cherry Tree Lane, Groton, MA site visit	Comprehensive Environmental, Inc.	9/16/11 (attached)



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September 16, 2011

Groton Conservation Administrator
Town of Groton
173 Main Street
Groton, MA 01450

RE: CHERRY TREE LANE, GROTON, MA
SITE VISIT

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- Transportation
- Stormwater & LID
- Watershed
Restoration

Dear Commission Members:

The purpose of this letter is provide the Groton Conservation Commission a summary of observations and information based on Comprehensive Environmental Inc's (CEI) site visit to Cherry Tree Lane. On September 16, 2011 CEI staff along with Groton Conservation Agent Ms. Barbara Ganem and the applicant's engineer Mr. Todd Lobo, P.E. visited the stream crossing. The following is an overview of issues CEI identified/observed.

Upstream channel:

- The upstream channel is a somewhat poorly defined and appears to originate in groundwater seeps from its upper valley. CEI checked the upper slope and there was a wide area of seepage that seemed to come together at the head of the channel.
- The stream bed is characterized by cobbles and boulders (likely derived from glacial till), with these rocks bedded in a thick, fibrous mat. On the date of the visit, water was present in the mat to near the surface, with a few pools evidencing water flow. However, flow appears in the pools, and then immediately returns into the subsurface, so that there was currently no sustained surface flow.
- The sill at the inlet end of the culvert appears to prevent stream flow from entering the culvert or the stone-filled space between the footings upon which the bottomless culvert was installed. Flow is instead diverted toward the south, roughly parallel to the retaining wall. At the time of the visit, the flow appeared to seep into the roadway embankment fill. Restoration of the stream bed will require some means to confine the restored channel as it approaches the proposed modified culvert inlet. The current condition appears to completely cut-off base flows to the downstream side of the crossing.
- It was difficult to determine a bank-full width of the existing stream, based on field indicators. However, CEI made a few rough measurements of the



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overall width of local scours in leaf litter that ranged from 2 ½ to 4 ½ feet, with some areas of “braided” flow that exceeded these widths.

- It should be noted that the installed crossing would not fully meet the August 2004 or current stream crossing standards, even if the stream bed had not been disturbed by construction. A 58 foot long culvert would need to have a clear opening of about 48 square feet to meet the “openness” requirements of the stream crossing standards. The current 2 x 5 opening is much less than that.

Downstream channel:

- The immediate downstream channel was essentially dry at the time of the visit. Vegetation has grown within the channel likely due to nearly a year of stream rerouting/disconnection on upper end.
- Evidence of channel could be found in disturbance of leaf cover and some fine sediment deposition for some distance from the roadway crossing. However, this segment does not have a very well defined channel.
- Proposed modification of the culvert would lower the concrete sill invert at the headwall by about 18 inches, and the restored channel about 12 inches. This elevation is still well above the natural stream bed/wetland at the outlet. See design comments below.

Species/habitat concerns:

- Per discussion at the site, flow characteristics of this stream are such that it will unlikely sustain fisheries habitat, even during spring flows.
- Other species of concern include Blandings turtle – however, based on discussion at the site, we understand this portion of the site does not comprise an area of concern for this species.

Surrounding Wetlands:

- The adjacent bordering vegetated wetlands (BVW) vary in width along the intermittent stream. The upper channel BVW exhibits more of a forested wetland habitat while the downstream area lacks woody vegetation but appears to have a diversity of herbaceous plants.
- It should be noted that the downstream wetlands have essentially lost their primary source of hydrology with the rerouting of the intermittent stream upstream. CEI observed the stream channel dry and re-colonized with vegetation.

Comments on design:

- The objective of the corrective action appears to be to re-create a stream bed as similar as feasible to the previous stream bed, within the confines of the current structure, and to do so expeditiously, so as to restore the hydrologic



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connection between the upper stream channel and the downstream wetland as soon as possible.

- CEI encourages the implementation of this emergency restoration effort this season so that the stream is restored prior to the higher flows typically observed during the spring months.
- The engineer proposes cutting the inlet and outlet sills to lower inlet and outlet concrete “thresholds” by 18 inches. The proposed detail indicates this would lower the channel at inlet and outlet by about 12 inches. This may not be enough to match into the existing channel, either upstream or downstream. Consideration should be given to additional lowering of the sill at each end of the structure.
- Given the observations of bank-full flow width noted above, an effort should be made to cut the sill to the full width available between culvert footings (roughly 4 feet), instead of the 3 feet proposed.
- We noted in the field and discussed with the engineer that the lowered channel would expose the footings to undermining. We understand that this potential effect is being reviewed with the project structural engineer and will be addressed, so that the modified culvert and foundation will be structurally stable.
- The current design calls for cobble/boulder or log steps, with intermediate pools formed in a substrate of clay material.
 - While the step/pool morphology appears appropriate, the clay material will differ from the natural stream bed. However, it would be difficult to establish a stable bed using material similar to that of the existing upstream channel. That channel is formed in a fibrous mat that has developed from vegetation growth and decay over many years. This material would be difficult to duplicate within the culvert. If an organic, peaty material were to be placed inside the culvert, it might resemble the texture and organic content of the material of the natural stream bed, but it would not have the same structure. Synthetically placed organic material would be subject to displacement by storm flows, because it will not have the interlocking fibrous structure found in the native channel.
 - As an alternative, CEI suggests considering the use of a natural organic fiber mat (there are many different types commercially available) on the surface of the reconstructed clay-lined channel between boulder steps. This mat would provide some reinforcement of the surface of the channel, and serve to trap some of the sediment and leaf litter moving through the culvert, to promote retention of an organic mat inside the culvert.
 - Note that this approach would unlikely replicate within the culvert the complex relationship between groundwater and surface water



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that we observed in the upstream channel. The clay liner, augmented by a surface coir fiber mat, is a compromise to obtain a stable lining with some surficial similarity to the upstream channel. The synthetic step pool morphology will likely help dissipate flow energy.

However, the interchange between ground and surface water will likely be limited under this design.

- For the outlet end of the culvert, we discussed the need to provide a transition from the existing stream bed to the restored bed elevation at the culvert. The concept discussed was the provision of wetland "terraces" developed by the placement of coir fiber rolls. Stream bed would be developed to traverse these terraces, with small "step" drops at each fiber roll, reinforced using cobbles and small boulders. This method will also likely be necessary to develop an inland bank to initially route the stream and re-establish the direction of flow considering much of the area is now vegetated.

Based on a restoration design acceptable to the Commission, CEI can provide field monitoring services to help ensure the Order of Conditions and approved plans are adhered to.

We look forward to working with you further on this effort. If you have any questions or require additional information please feel free to contact us.

Sincerely,

COMPREHENSIVE ENVIRONMENTAL INC.

David Nyman, P.E.
Senior Engineer

Stephanie Hanson, CE
Principal Scientist