PRIME ENGINEERING
INC

December 11, 2019

Fairhaven Conservation Commission
40 Center Street
Fairhaven, MA 02719

RE: LEWIS LANDING
FILE #SE 023-1308

Dear Commission Members:

Enclosed are 2 sets of revised plans that have been revised in response to the November 20, 2019 comment letter from GCG Associates, Inc. Our responses are as follows:

Drawing Sheet 1 – Existing Conditions Plan

1) The Conservation Commission has approved the wetland line.

2) Once the project is approved, an easement will be granted.

3) There will be no vehicle traffic in the constructed wetland, so a localized protuberance of a pipe bell will be of no consequence. Pipe cover will not be provided.

4) The test pit logs are presented on Sheet 1, Existing Conditions, and the signator of that sheet is an approved Soil Evaluator, therefore, the requested signed soil log has been provided.

Drawing Sheet 3 – Grading and Utilities Plan

1) The infiltration units east of storage building #1 has been relocated to achieve the 15-foot separation from a 3:1 slope. The increase in impervious area on the site is 32,883 SF proposed impervious, minus 5,475 SF existing impervious = 27,408 SF. 65% of 27,408 SF is 17,815 SF that must be infiltrated. The roof areas being infiltrated is 12,102 SF. A waiver is being requested.

2) A waiver is being requested.

3) No response necessary. A waiver is being requested.

4) A waiver is being requested.

5) The elevations have been adjusted so the hood can fit.

6) A constructed pocket wetland has been selected due to its superior performance compared to extended detention basins. Infiltration units were rejected due to the poor soils, high water table and their inherent propensity to failure. In accordance with the MassDEP Stormwater Manual, the following are projected removal rates:

Removal Efficiency	**Nitrogen**	**Phosphorous**	**Total Suspended Solids**
Constructed Wetlands	20-55%	40-60%	80%
Extended Detention Basins	10-30%	15-50%	50%

It is clear the proposed treatment system meets the performance standards of Fairhaven Stormwater Management regulations.

7) The Fairhaven regulations require that, if an extended basin is being designed, it needs a 10-acre plus contributing drainage area. The proposed constructed pocket wetlands are suitable for drainage areas of 1 to 10 acres. (The Site is an area of 2.46 acres). No below the outlet storage volume is required in a constructed pocket wetland.

8) Attachment B demonstrates that the emergency spill water (inlet grate) has the capacity to pass the 100-year storm. If that failed, the excess flow would go over the drive to the wetlands.

9) A 4:1 slope has been provided on the east and west ends. The sewer line has been shifted in order to provide more cover.

10) No response necessary.

11) No response necessary.

12) We certify that the basin as designed will be easily maintained.

13) As in standard protocol, the curbing is called out on the Site Layout Plan (showing curbing on the Grading and Utilities Plan would make that plan cluttered and difficult to read). The Cape Cod berm detail has been revised. The grass strip filter has been modified.

Drawing Sheet 4 – Erosion Control Plan

1) The anti-tracking pad has been lengthened to 50 feet.

2) Silt sacks have been added.

Drawing 6 – Detail Sheet (6 of 7)

1) Resolved.

2) The detail has been revised as requested.

3) The pocket wetland ratios are presented on Detail Sheet 2 and Attachment A.

Stormwater Report

1) The sewer pipe has been relocated.

2) The water quality volume will pass through the constructed pocket wetland and receive the required treatment. This is not an extended detention basin, so there is no need for 24-hour detention. Attachment A demonstrates that the constructed pocket wetland meets the design criteria.

3) A waiver is being requested.

4) Double grates have been added as requested.

5) A waiver has been requested.

6) The 10-foot filter strip has been added.

7) Resolved.

8) Refer to response to Grading and Utilities Item 6.

Operation and Maintenance Plan

1) Resolved.

2) The Operation and Maintenance Plan has been modified.

3) Resolved.

4) The Operation and Maintenance Plan has been revised.

Sincerely yours,

PRIME ENGINEERING, INC.

Richard J. Rheaume, P.E., LSC
Chief Engineer

ATTACHMENT A

WATER QUALITY CALCULATIONS

WATER QUALITY CALCULATIONS

POST 1-B:

*786 SQ. FT. X 0.5 IN. X 1 FT./12 IN. = 32.8 CU. FT.

PROVIDED:

RAIN GARDEN: 132 SQ. FT. X 1 FT = 132 CU. FT.

*ALL IMPERVIOUS AREA IN POST 1-B BESIDES 786 SQ. FT. OF PAVEMENT IS ROOF OR PATIO AND THUS DOES NOT CONTRIBUTE SIGNIFICANT TSS.

POST 1-A:

24,539** SQ. FT. X 0.5 IN. X 1FT./12 IN. = 1,022 CU. FT.
**DOES NOT INCLUDE ROOF AREAS AS THEY WILL BE INFILTRATED

PROVIDED:

LOW MARSH: 1,238 SQ. FT. X 1 FT. = 1,238 CU. FT.
HIGH MARSH: 1,100 SQ. FT. X .5 FT. = 550 CU. FT.
MICROPOOL: 138 SQ. FT. X 1 FT. = 138 SQ. FT.
FOREBAY: 824 CU. FT.

TOTAL: 1,238 + 550 + 138 + 824 = 2,750 CU. FT.

FEATURE	REQUIRED %	% OF VOL. STORED
FOREBAY	10%	81%
HIGH MARSH	25%	54%
LOW MARSH	55%	121%
MICROPOOL	10%	14%

FOREBAY SIZING CALCULATIONS

CONTRIBUTING IMPERVIOUS AREA: 32,883 SQ. FT.

(32,883 SQ. FT.) X (0.25 IN.) X (1 FT./12 IN.) = 685 CU. FT.

VOLUME PROVIDED = ((331 SQ. FT. @ EL. 60)+(81 SQ. FT. @ EL. 56)/2) X 4 FT. DEPTH = 824 CU. FT.

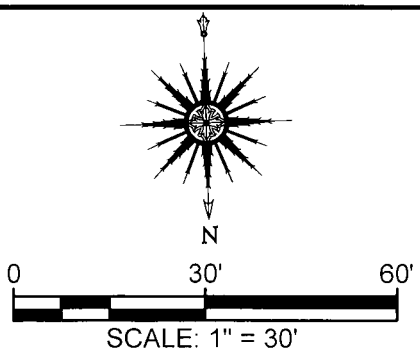
FIRST FLUSH CALCULATIONS

CONTRIBUTING IMPERVIOUS AREA: 24,539** SQ. FT.

24,539 SQ. FT. X 1.25 IN. X 1FT./12 IN. = 2,556 CU. FT. REQUIRED
**DOES NOT INCLUDE ROOF AREAS AS THEY WILL BE INFILTRATED

LOW MARSH: 1,238 SQ. FT. X 1 FT. = 1,238 CU. FT.
HIGH MARSH: 1,100 SQ. FT. X .5 FT. = 550 CU. FT.
MICROPOOL: 138 SQ. FT. X 1 FT. = 138 SQ. FT.
FOREBAY: 824 CU. FT.

TOTAL: 1,238 + 550 + 138 + 824 = 2,750 CU. FT.



DRAWING TITLE: CALCULATION SHEET
PROJECT: MAP 31 - LOT 117C
FAIRHAVEN, MASSACHUSETTS
CLIENT: DANA LEWIS
FAIRHAVEN, MASSACHUSETTS

APPROX. SCALE: SEE DETAIL
DATE: NOV. 8, 2019
DRAWN BY: SWL
DESIGNED BY:
CHECKED BY:
APPROVED BY:

• CIVIL ENGINEERING
• LAND SURVEYING
• ENVIRONMENTAL ASSESSMENT

PRIME ENGINEERING INC

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ATTACHMENT B

EMERGENCY SPILL WATER GRATE

Emergency Spill Water Grate

The specific stool-type inlet grate has 2.5 square feet of openings. With a .54 head, it can pass 7.94 CFS which is the peak inflow to the detention basin. Therefore, with a brim-full basin, the emergency spillway can safely pass the 100-year peak inflow without over tapping the dike.