



April 15, 2024

Town of Fairhaven Conservation Commission
Town Hall
40 Center Street
Fairhaven, Massachusetts 02719
Attn: Bruce Webb, Conservation Agent and Sustainability Coordinator

RE: **DEP File No. 23-1391, Fairhaven Properties, LLC - Self-Storage Facility Site Plan, Bridge Street, Fairhaven, MA (Assessors Map 36 - Lot 15J)**

Dear Mr. Webb,

Attached please find the revised Site Plans and Stormwater Report for the above referenced project. The revisions are in response to the peer review comments of GCG Associates in their letter dated December 5, 2023. The following is our response to each review comments. We have included the original comment and numbering and provided our response in bold below.

GENERAL PLAN AND DEVELOPMENT COMMENTS

1. This is a re-development project; the proposed self-storage facility development has reduced the impervious area from 181,949 s.f. (square feet) to 171,226 s.f. with a net decrease of 10,723 s.f. impervious surface based on the HydroCAD pre-development and post-development sub-catchments impervious coverage areas. Under the definition of the Massachusetts Stormwater Handbook (MSH) Standard 7, this project meets the re-development requirements and should be treated and regulated as such.

We concur that the project is a re-development project and should be reviewed and regulated as such.

2. The existing paved parking lot was constructed between 5/1996 to 12/2001, per Google Earth historic aerial image. The parking lot was an expansion of the 200 Mill Road commercial facility, a detention basin with two sediment forebays was installed to mitigate the parking lot expansion surface runoff. However, the drainage system was installed when the 1996 MSH standards were a guideline, which was modified and became a regulation in February 2008. Therefore, the existing stormwater facility does not comply with the current MSH standards and local stormwater management requirements.

As a redevelopment project, the project has been designed in accordance with the MSH standards and the Town of Fairhaven stormwater management requirements to the greatest extent practicable.

3. Section 194-9 required the stormwater management plan to utilize the 24-hour rainfall data taken from the NOAA Atlas 14 (or most recent data from NOAA) and Type III Storm as voted through the June 14, 2021, Annual Town Meeting Article 59. Based on the NOAA web page the 100-year 24-hour precipitation at the site address should be 7.60 inches, slightly higher than the 7.1 inches stated in the TP-40 (Rainfall data used in the original design). Therefore, the existing detention basin could have the capacity to handle the 100-year storm event. The 8.56-inch rainfall used in the HydroCAD 100-year event showed the detention basin overtopped during the existing and proposed conditions.

The hydrologic calculations have been revised to reflect the NOAA Atlas 14 rainfalls of 3.12", 4.96", 6.00", and 7.60" for the 2, 10, 25, and 100-year storms respectively.

4. This proposal utilizes the existing detention basin to treat and control the site surface runoff. However, based on the soil test logs TP-3 and TP-6, the bottom of the existing detention basin and sediment forebay appeared to be below the estimated seasonal high groundwater (ESHGW) elevations at 34.76 and 34.41, respectively. MSH, Vol.2, Ch.2, Pg.51, states "A water table within two feet of the bottom of the extended dry detention basin can also create problems with standing water. In this situation, using a wet basin may be more appropriate. Furthermore, the proposed mowing the detention basin grass surface at least twice per year as specified in the operation and maintenance plan would not be feasible as the bottom of the basin is below or at the water table. The historic aerial images also shown the center forebay with ponding water in multiple occasions, a sediment forebay should have a minimum 2 feet separation between the bottom of the forebay to ESHGW unless it was designed as a wet forebay associated with constructed wetland or wet basin.

Based upon the test pit logs, the recorded mottling depths (ranging from 11" to 45" below the ground surface) uniformly coincide with the bottom of the fill horizon and top of native soil horizon (very firm till). The observed variegated features do not represent the actual high groundwater elevation but are rather the result of a wetting front formed as a result of the distinct textural and consistence changes in the soil profile. Field observations of groundwater weeping reveal a more likely seasonal high groundwater (ESHGW) elevation at the established wetland line. This would place the ESHGW elevation at or slightly below elevation 33.0.

Considering an ESHGW of elevation 33.0 and the current Massachusetts Stormwater Management Standards, we concur that a Wet Basin modification is an appropriate choice and have revised the plans accordingly.

5. Based on the Locus Map (LM-1) aerial image, the current detention basin is heavily covered by tree canopies. The Existing Conditions Plan, (EC-1) also showed the entire detention basin within the tree line which indicated the detention basin had not been maintained for many years. Per MSH's Extended Dry Detention Basin maintenance requirements, "the basin's upper stage, side slopes, embankment, and emergency spillway, should be mowed at least twice per year. Trash and debris should be removed at least twice per year. Sediment should be removed at least once every 5 years." Overgrown trees or shrubs should be removed within the basin and on the impounding embankments as they increase the chance of basin failure due to root decay or surface disturbance. GCG recommends reconstructing the detention basin to meet current standards, the existing basin bottom is below the ESHGW and should be designed accordingly. GCG recommends considering alternative wet basin design similar to Chapter 198-31.1. C. (4)(b) Wet extended ponds/basins (WP) BMP or similar MSH constructed wetland or wetland basin designs to address the ESHGW issues.

Per GCG's recommendation, the plans have been revised to show modifying the existing Extended Dry Detention Basin to a Wet Basin. This will involve removing all existing trees and shrubs from the basin bottom, berm, and slopes. The system Operation and Maintenance Plan has been revised accordingly.

6. The Site Grading Plan (SG-1)'s southerly parking lot shows a low point (elevation 37.07) at the northwesterly corner of the accessible parking area, and another low point at the east side of test pit TP-4, (TC=38.03. BC=37.53). These low spots are within the pavement area and enclosed by proposed curbing, which will cause ponding in the parking lot. The applicant should address the ponding issues within the paved parking area and divert the runoff to BMP treatments.
The Site Grading Plan has been revised to prevent ponding in the specified area.
7. There appeared to be a drainage swale (contour 37) along the southeastern paved parking area and connects to the new stormwater basin and FES-1. FES-1 invert (calculated 35.01) should be shown on the plan. Proposed contour 38 should be connected to the existing 38 contour and direct the runoff toward Bridge Street as shown on the Drainage Area Map Proposed Conditions' sub-catchment A5.
The requested information has been added to the Site Grading Plan.
8. Proposed new stormwater basin (with FES-1) bottom elevation 35 is 0.24 feet above the ESHGW 34.76 (TP-3), and 0.59 feet above the ESHGW 34.41 (TP-6). MSH Vol.2, Ch.2, Pg.51, "A water table within two feet of the bottom of the extended dry detention basin can also create problems with standing water". "In this case, using a wet basin may be more appropriate."
As noted in our response to Comment #4, we estimate the ESHGW to be at elevation 33.0, therefore the existing basin bottom is at the ESHGW. We are proposing to modify the existing basin to a Wet Basin with a water elevation of 32.75 to maintain a permanent wet pool.
9. Proposed detention basin (P2) at the northwestern corner of the parking area bottom contour 39.5 is 0.28 feet above the ESHGW elevation 39.22, (TP-1). The drawdown time and potential of standing water may affect the storage volume used in the calculations. GCG recommends designing the two basins based on Section 198-31.1, C. (4) BMP's standards.
Proposed Detention Basin DB-2 has been eliminated as reflected on the revised plans.
10. Demolition Plan DP-1 showed a label to "remove existing curb inlet" at the southwest corner of the sediment forebay in Basin P1. However, another label is pointing at the drainpipe and called for "maintain existing stormwater pipe & structure." Please clarify the intent of the existing curb inlet to be maintained or removal. If this curb inlet remains, GCG does not recommend connecting the proposed WQU-1 to this curb inlet. The new drainage structure should avoid inlet connection to prevent resuspension of sediments in large storms.
The Demolition Plan has been revised to reflect the structures and pipe to remain and be removed.
11. Proprietary WQU units (both Stormceptor STC 450i and STC 900 units) should be qualified for 50% TSS removal credit only, per NJDEP letter dated August 31, 2011, Re: MTD Laboratory Test Certification for the Stormceptor STC by Imbrium Systems Corporation. Effective Date: September 1, 2011; Expiration Date: September 1, 2013; TSS Removal Rate: 50%.
The proprietary Water Quality Units have been eliminated from the design.
12. MSH Vol.2, Ch.2, Pg. 49- Extended Dry Detention Basin- "Pollutant Removal Efficiencies - Total Suspended Solids (TSS) - 50% provided it is combines with sediment forebay or equivalent." Therefore, the pretreatment BMP (forebay or deep sump hooded catch basin) should not receive an additional 25% TSS removal credit.
The Extended Dry Detention Basin is being modified to a Wet Basin. The pollutant removal efficiencies have been updated in the updated TSS removal calculations.

13. MSH Vol.2, Ch.1, Pg.9 - Table SS1 - TSS Removal Credits for Street Sweeping. The Operation and Maintenance plan's Maintenance of Pavement Systems specified "Sweep or Vacuum asphalt pavement areas annually with a commercial cleaning unit and dispose of removed material." Street Sweeping is a mandatory non-structural BMP, GCG recommends sweeping the pavement area at least twice per year, (early spring and late fall). However, it will not meet any of the TSS Removal Rate credit per Table SS1. The table requires at a minimum of monthly average, with sweeping scheduled primarily in spring and fall which translates to roughly sweeping once every two weeks with a mechanical sweeper between spring and fall to qualify for the 5% TSS removal credit.

The Operation and Maintenance Plan has been revised to sweep all pavement surfaces two (2) times per year, however no TSS removal credit is being claimed in the revised TSS removal calculations.

14. All existing curb inlets to remain should be verified that the structures meet the 4 feet deep sump and oil hood requirements to meet the 25% TSS removal credit. Curb inlet not meeting the 25% TSS removal credit should be replaced or eliminated by re-grading pavement to direct runoff to qualified inlet structures.

Existing curb inlets to remain have been noted to be replaced in the event they do not have the required 4-foot deep sump.

15. Provide a detail or profile or section view of the sediment forebay. Based on the Existing Conditions Plan (EC-1)'s contours shown, this sediment forebay appeared to be a depression below the ESHGW in the middle of the detention basin. Multiple historic aerial images showed standing water within the forebay, MSH Vol.2, Ch.2, Pg.15 stated "Unless part of a wet basin, post construction sediment forebays must be designed to dewater between storms. Set the bottom of the forebay at a minimum of 2 feet above seasonal high groundwater, and place pervious material on the bottom floor to facilitate dewatering between storms." The current forebay (below the ESHGW) status would make the operation and maintenance requirements (clean sediment and grass mowing) not feasible.

The Extended Dry Detention Basin is being modified to a Wet Basin. A new Wet Basin forebay is now located at the northerly end of the modified Basin.

16. Provide additional details of the existing outlet structure, (weir opening elevations), there are some discrepancies with the Outlet Control Structure Modification shown on the Detail Sheet #2 (DT- 02) and the HydroCAD models. The Existing Detention Pond HydroCAD model Outlet Control Structure Device #2 showed 2" wide weir invert elevation at 33.82' and the 1' wide weir invert at 36.82'. The Modified Detention Pond (proposed conditions) HydroCAD model has a 2" wide weir invert at 33.83, the applicant should clarify that if the design intention was to raise the 2" weir invert by 0.01 feet. In addition, the modified detention pond model device #2 should add a 0.00 weir width at elevation 37.32 to match the existing conditions model. Furthermore, the Outlet Control Structure Modification detail shows an elevation label 37.42 at the existing 1-foot-wide weir opening, should this elevation be 36.82?

The outlet control structure has been modified. The updated configuration is now shown on the Outlet Control Structure Modification detail (Plan Sheet DT-02).

17. This site has relatively high groundwater and infiltration practice is not appropriate. The proposed net decrease of impervious area should reduce the overall runoff volume in comparison with the existing conditions. However, the existing and proposed conditions HydroCAD reports were based on dry detention basins modeling. Since the existing and proposed basins are with the bottom elevation below or within a few inches of the ESHGW. The actual available storage volumes are not a true representation of the volume. GCG recommends re-designing the basins to work with the ESHGW by considering wet basin design with higher TSS and Total Phosphorus (TP) removal rate. As presented, the treatment chain with deep sump hood catch basin, through a Stormceptor WQU and extended dry detention basin with a sediment forebay, which will provide 81% of TSS removal credit. MSH given 10% to 30% TP removal credit with the extended dry detention basin BMP only, and no TP removal credit for catch basin and WQU unit. The Stormceptor inlet discharges directly to the extended dry detention basin with sediment forebay should receive 75% TSS removal credit and 10% to 30% TP removal credit. However, the existing extended dry detention basin's function and storage is questionable due to the high ESHGW issues.

As recommended, the Extended Dry Detention Basin is being modified to a Wet Basin. All hydrologic and Pollutant Removal Efficiency calculations have been revised accordingly.

18. MSH Vol.2 Ch.2, Pg.50- Extended Dry Detention Basin should "Design the lower stages of the basin to detain the 2-year storm for at least 24 hours to remove pollutants from the runoff. Due to the high ESHGW, the available storage volume to retain the 2-year storm for 24-hours is questionable.

As recommended, the Extended Dry Detention Basin is being modified to a Wet Basin. All hydrologic calculations have been revised accordingly.

19. Section 198-31.1(1)6(1), redevelopment project shall provide removal of 80% of the average annual (not per storm) post-construction load of Total Suspended Solids (TSS) generated from the total post-construction impervious area on the site AND 50% of the average annual (not per storm) load of Total Phosphorus (TP) generated from the total post-construction impervious surface area on the site. the pollutant removal percentages based on calculations developed consistent with EPA Region 1's BMP Accounting and Tracking Tool (2016) or other BMP performance evaluation tool provided by EPA Region 1, where available. Furthermore, both MSH and Fairhaven Stormwater regulations defined the impervious area including roof areas. Therefore, the water quality volume should be based on the total on-site impervious area including roof drain.

As required, all Pollutant Removal Efficiency calculations have been revised.

20. 198-31.1. A(1)(b). - Water Quality, this section requires the First Flush of stormwater runoff be treated prior to discharge off the site. Based on Section 198-33, Definitions, and word use - First Flush means the first 1.25 inches of stormwater runoff. See formula in Section 198-31.

The modified Wet Basin and forebay have been sized in accordance with Section 198-31.

21. The drainage volume control structure should assume the surface structure to be impervious, i.e., detention basin ponding surface should be modeled as impervious surface with CN 98.

The revised hydrologic calculations now model the Wet Basin surface as impervious.

22. HydroCAD modeling for basin should exclude all storage volume below the ESHGW, sediment forebay volume should be reserved for sediment storage and should be excluded from stormwater storage, forebay should be designed to drawdown within 72 hours, unless it is designed as a wet basin, which should follow the MSH's stormwater wetland design criteria per MSH Vol.2, Ch.2, Pg. 43 Table CSW.1.

As recommended, the Extended Dry Detention Basin has been modified to a Wet Basin and all hydrologic calculations have been revised accordingly. As a redevelopment project, the modified Wet Basin is designed in accordance with MSH Volume 2 to the greatest extent practicable.

23. Operation and Maintenance (O&M) Plan, the catch basin grate should be cleaned at least four times per year; Curb inlets meeting the deep sump and hood requirements should be included in the catch basin O&M section, (curb inlet not meeting the requirements should be replaced or eliminated); Roof drain gutter or roof drain inlet should be inspected and cleaned at least twice a year; Proposed and existing detention basins bottom are at or below ESHGW, mowing and removing sediment will not be feasible; Sediment forebay is existing and below ESHGW and O&M plan should be modified accordingly.

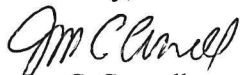
The Operation and Maintenance Plan has been revised for the catch basins and roof drain inlets as well as now including the Wet Basin maintenance requirements.

24. This is a re-development project, and the detention basin is an existing facility, and subject to the maximum extent practicable requirements under MSH Standard 7. However, the existing detention basin is below ESHGW, and technically a wet basin. GCG recommends modifying the basin to comply with the wet basin standards and impose a proper wet basin operation and maintenance plan. Section 198-31.1, C. (4)(b) Wet extend detention ponds/basins (WP), which provides detailed design requirements to address the wet basin situations.

As recommended, the existing Extended Dry Detention Basin has been modified to Wet Basin in accordance with MSH Volume 2 and Town of Fairhaven Zoning Bylaw Section 198-31.1 (Stormwater Management) to the greatest extent practicable.

Please do not hesitate to write or call should you have any questions or require additional information to complete your review.

Sincerely,



Jon C. Connell
Project Manager

With Enclosures

Cc: GCG Associates (Michael J. Carter, P.E.)