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December 9, 2021

21-3-8445

RFA Planning Consultant Inc.
211 Dundas St. East, Suite 202
Belleville ON K8N 1E2

Attention: Ryan Fowler c/o Carolyn F. Ross B.Sc. (Hons.)

**Re: Fry Road Distillery
1990 Fry Road, Sophiasburgh, ON**

Dear Mr. Fowler,

We have concluded our review of the fire protection water supply for the proposed distillery at 1990 Fry Road, Sophiasburgh, ON.

Background;

The Greer Galloway Group was retained to complete an assessment of the water required to be stored on site for the purposes of fire protection at the proposed development a distillery at 1990 Fry Road in Prince Edward County, Ontario. The 14.75 ha property is located 0.5 km north and west of the intersection of Fry Road and Bethesda Road in Sophiasburgh, Ontario. The legal description of the property is Part of Lot 24, Concession 2 Southwest of Green Point Sophiasburgh Ward in the County of Prince Edward.

The proponents propose to rezone land use of the property to allow for a distillery. There is an existing Quonset steel building (which is to be converted into a distillery), farm building (which is to be converted into the tasting room and retail space), and single-detached dwelling on the west edge of the property. South, east, and north of the structures are farm fields.

Building Assessment

Building Characteristics:

For the purposes of this report, the protection of the distillery building (Quonset hut) as well as the existing barn (future tasting and retail room) is under consideration. The existing single detached dwelling is greater than 13 m from the proposed distillery and will not impact the calculations. The existing barn to the west is of sufficient size and proximity to factor into the calculations.

Quonset Hut:

The proposed zoning and building use are F-1 – High Hazard Industrial

The total building area after construction will be 139.4 m².

All buildings shall be one (1) storey

Building Exposures:

The frontage along Fry Road is treated as nominally north-south for the purpose of this evaluation.

North: >12 m to the property line

South: >12 m to adjacent structures

West: 9 m to adjacent structures (barn),

East: >12 m to the property line, parking area is adjacent to the building.

Barn:

The proposed zoning and building use are E – Mercatile

The total building area after construction will be 360 m².

All buildings shall be equivalent to two (2) storeys

Building Exposures:



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The frontage along Fry Road is treated as nominally north-south for the purpose of this evaluation.

North: >12 m to the property line
South: >12 m to adjacent structures
West: 9.5 m to the property line,
East: 9 m to adjacent structures (Quonset Hut),

Site parameters

The Quonset Hut falls within Part 3 of the Ontario Building Code
The Quonset Hut building area is less than 200 m² and is not an F-3 occupancy

The barn falls within Part 3 of the Ontario Building Code
The barn area is greater than 200 m² and is not an F-3 occupancy

Existing water supply

The property is not serviced by municipal sources. Water on the premises is provided by a well with an evaluated yield of 18 L/min. The property also draws water for domestic use from the quarry at the intersection of Fry and Bethesda Roads. Domestic and distillery use are planned to switch exclusively to the well source when the distillery is operational.

Required water supply – Quonset Hut

Under OFM-TG-03-1999 Fire Protection Water Supply Guideline for Part 3 in the Ontario Building Code there are four (4) categories of buildings to consider for the amount of fire protection required:

- 1) Buildings not requiring on-site fire protection water supply;
- 2) Sprinklered buildings;
- 3) Buildings requiring on-site fire protection water supply; and
- 4) Additions to existing buildings.

The category selection is based on an elimination basis. The building is not served by municipal water or a conforming transportable water supply according to the requirements of category 1. In accordance with the OBC (3.2.2.66), the building does not require sprinklers and does not fall in category 2. As the building is subject to a change of use, it does not strictly conform to the requirements of category 4. Therefore, the building will require an on-site fire protection water supply under category 3.

The equation for fire protection water quantity is:

$$Q = K V S_{Tot} \text{ (Equation 1)}$$

Where

Q = Minimum supply of water in litres (L)

K = Water supply coefficient

V = Total building volume in cubic metres

S_{Tot} = Total of spatial coefficient values from property line and building exposures

As a building with F-1 occupancy (high hazard industrial) with non-combustible construction (steel Quonset construction) without fire-rated separations and in accordance with Table 1 of the OFM document, **the value of K is 37.**

The total floor area of the building is 139.4 m².

The entire building is a single storey with a nominal ceiling height of 3.3 m (11 ft).

The total building volume (V) after the contemplated construction is 460 m³.

The S_{Tot} equation is :

$$S_{Tot} = 1.0 + [(S_{Side1}) + (S_{Side2}) + (S_{Side3}) + \dots + (S_{SideN})]$$

Where N is the number of exposures to be accounted. On North and East exposures, the distance to an adjacent structure or property boundary is 12 m or greater. In accordance with Figure 1 of the OFM document these exposures do not increase the S_{Tot} factor. The West exposures to the adjacent building is 9 m and adds a factor of 0.3 to S_{Tot}.



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The final value of S_{Tot} is 1.3.

Using the derived values in Equation 1, $Q = 22,127$ litres.

Required water supply – Barn

Under *OFM-TG-03-1999 Fire Protection Water Supply Guideline for Part 3 in the Ontario Building Code* there are four (4) categories of buildings to consider for the amount of fire protection required:

- 1) Buildings not requiring on-site fire protection water supply;
- 2) Sprinklered buildings;
- 3) Buildings requiring on-site fire protection water supply; and
- 4) Additions to existing buildings.

The category selection is based on an elimination basis. The building is not served by municipal water or a conforming transportable water supply according to the requirements of category 1. In accordance with the OBC (3.2.2.66), the building does not require sprinklers and does not fall in category 2. As the building is subject to a change of use, it does not strictly conform to the requirements of category 4. Therefore, the building will require an on-site fire protection water supply under category 3.

The equation for fire protection water quantity is:

$$Q = K V S_{Tot} \text{ (Equation 1)}$$

Where

Q = Minimum supply of water in litres (L)

K = Water supply coefficient

V = Total building volume in cubic metres

S_{Tot} = Total of spatial coefficient values from property line and building exposures

As a building with E occupancy (mercantile) with combustible construction without fire-rated separations and in accordance with Table 1 of the OFM document, **the value of K is 39.**

The total floor area of the building is 360 m².

The entire building is a high single storey that will be treated with an average ceiling height of 6 m (20 ft).

The total building volume (V) is 2160 m³.

The S_{Tot} equation is :

$$S_{Tot} = 1.0 + [(S_{Side1}) + (S_{Side2}) + (S_{Side3}) + \dots + (S_{SideN})]$$

Where N is the number of exposures to be accounted. On North and East exposures, the distance to an adjacent structure or property boundary is 12 m or greater. In accordance with Figure 1 of the OFM document these exposures do not increase the S_{Tot} factor. The East exposures to the adjacent building is 9 m and adds a factor of 0.1 to S_{Tot} . The West exposures to the property line is 9.5 m and adds a factor of 0.05 to S_{Tot} .

The final value of S_{Tot} is 1.15.

Using the derived values in Equation 1, $Q = 96,876$ litres.

Following the procedure from *OFM-TG-03-1999* a minimum volume flow for 30 minutes is required. According to Table 2, because $Q < 108,000$ L, the flow to be maintained is 2700 L/min. At a 30 minute draw, **the minimum prescribed water supply is 81,000 L.**

Required water supply – Property

The development is multiple buildings on a single property. In that case NFPA 1142 indicates the water to be stored is the water required to protect the most significant structure. Both structures have the same on-site requirement therefore the requirement for either will satisfy the total requirement. Based on the above assessment and the OFM Guideline, the volume of on-site water available for fire suppression should not be less than 81,000 litres



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(21,400 US Gal). Typical commercial water storage systems for this application are available in 37,800 L (10,000 US Gal) and 94,635 L (25,000 US Gal) capacities. A 94,635 L (25,000 US Gal) tank will provide the required water storage with an added factor of safety.

Dry Hydrant for Storage Mitigation

Approximately 500 m east (by road) from the proposed distillery, at the intersection of Fry and Bethesda Roads, is an abandoned quarry site recharged with ground water. Greer Galloway has evaluated the quarry as a potential source of water for fire protection with the use of a Dry Hydrant.

The total area of the quarry exceeds 450 m² and is shallower on the western portion (1 m or less). On the eastern portion, the depth of water in the quarry has been measured at approximately 2 m. Applying a reasonable offset from the shoreline, a 2 m depth over an area of 100 m² in the eastern portion of the pond is a probable storage volume. This is the equivalent of 200,000 L of current storage. To temper the estimate, if the water level was reduced by 0.5 m owing to dry summer conditions and followed by a winter that froze the top 0.6 m of remaining volume, the accessible depth is reduced to 0.9 m and the accessible volume to 90,000 L. This is still in excess of the required on-site storage of 81,000 L as determined by the OFM Guideline.

Conversations with Prince Edward County Fire & Rescue have provided the following criteria for a contemplated new dry hydrant:

- A new dry hydrant must follow the standards of existing dry hydrants in Prince Edward County. This includes an air injection system for displacing water to prevent freezing.
- The dry hydrant shall match the 6NH fitting used by Prince Edward County Emergency Services.
- The Distillery will have responsibility for maintaining the hydrant including periodic air injections and removal of snow for fire department access.

Recommendation

Under the requirements of *OFM-TG-03-1999 Fire Protection Water Supply Guideline for Part 3 in the Ontario Building Code* a fire protection water volume of 81,000 litres (21,400 US Gal) shall be made available for 1990 Fry Road, Sophiasburgh, ON to meet the requirements of the Ontario Building Code to protect the Quonset hut and the barn. The installation of a dry hydrant at the intersection of Fry and Bethesda Roads will provide access to a source of water meeting or exceeding that volume. It is recommended the distillery owner engage with Prince Edward County Fire & Rescue and municipal departments to create the agreements relating to the installation, access and maintenance of the dry hydrant. It is also recommended to engage an engineering firm to prepare the design documents for a dry hydrant at that location.

We trust this brief letter is sufficient for your present requirements, if you have any questions or point that require clarification, please contact the undersigned at your convenience.

Best Regards,

**THE GREER GALLOWAY GROUP INC.
CONSULTING ENGINEERS**

**Peter Zandbergen, P. Eng.
Mechanical Engineer**

