

Town of Milford

CONSERVATION COMMISSION

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September 25, 2023

To: Zoning Board of Adjustment

Re: Case # 2023-01,02,03 Rashid South Street Gas Station project MapLot 043-020-002

Variance for Prohibited Use of a Gas Station (underground storage of liquid petroleum product) located in the Groundwater Protection Area (Z.O. 6.01.3.B.7)

To the Board,

The MCC submitted a memo to the ZBA on August 25, 2023, which was forwarded to the applicant for response. The applicant's response and the MCC memo were compiled into a document identified as ZBA pdf 08252023.

This memo, dated September 25, 2023, reflects the ongoing concerns of the MCC despite the applicant's response.

The MCC does not support this project to install and maintain a gas station at this location. The MCC has continued its research concerning the placement of gas stations and potential risks for leaks of underground petroleum storage tanks, amplified by the applicant's desire to place this gas station on a parcel located over a stratified drift aquifer. Our research was focused on the Hydrogeology of Stratified-Drift Aquifer USGS Report 86-4358, Groundwater Resources in NH, Stratified Drift Aquifers USGS Report 95-4100, consultation with the Milford Town Engineer, and consultation with Dr. Craig Shillaber, Professor Civil and Environmental Engineering for Northeastern University in Boston Mass.

Discussion points:

1. **The Groundwater Protection Area (GWA) Map.** (See attachment).
 - a. This map generated discussion at the June 15, 2023 ZBA hearing concerning its origin and scientific validity. This is the document which was accepted by the Town by way of the Planning Board in 2002. The 1985 Town Meeting approved (987Y/187N) to adopt an Aquifer Protection District ordinance. At the 2003 Town Meeting, residents approved (1991Y/431N) an updated ordinance titled The Groundwater Protection Overlay District which included this map.
 - b. The soils mapped that are shown on this map are taken from the United States Geographical Survey soils mapping, more particularly in this case, the highly transmissive soils found in aquifers. The data used is found as a layer in the GIS mapping for Stratified Drift Aquifers on any State Natural Resource Mapper. These maps are tools used by land use boards to evaluate potential impacts to natural resources. An aquifer is a body of permeable rock which can contain or transmit water. The soil type shown on the gas station site plan is CaB (Canton B) soil. This soil is described, "Well drained. Runoff is

negligible to medium. Internal drainage is medium. Saturated hydraulic conductivity is moderately high to high in the solum and high or very high in the substratum." *USDA – OSD*

- c. The applicant refers to two private wells , one of which is now off-line, located in the Level I Protection Area identified on this map where the development would be sited. However, what has not been addressed is that the pumps and underground storage units will be located less than 300 feet from a Level II Protection Area identified on the map. A pollutant will move 2000 to 4000 square feet per day through this stratified drift soil type. Both the Level 1 and 2 areas are defined, by NH DES and USGS standards, in the Groundwater Protection Area Map legend.

2. Site Suitability and Design

- a. The applicant states that the Groundwater Protection Area map is dated and should not be used in the Board's decision process for this application. The MCC requested (See ZBA pdf 08252023 Item 5.B.iii) soil borings or some other proof that the underlying soils are not stratified-drift aquifer soils as shown on the map. The applicant provided soil logs as requested; however, there is no accompanying analysis. The applicant should provide analysis of these borings. It would appear that these soils are highly transmissive, supporting the delineation of stratified-drift aquifer soils on the GWA map, and even to extend the aquifer boundary. Dr. Shillaber states that, *"Based on the log descriptions, the soils below 2-3ft seem pretty darn permeable to me, particularly at TP1, 2 and 3. Here's a definition of stratified drift aquifer from USGS: "Stratified-drift aquifers consist primarily of sand and gravel deposits that were deposited in layers by meltwater streams flowing from the retreating glacial ice." I don't see evidence in the test pit data to suggest this ISN'T an aquifer if you compare the soil descriptions to this definition."*
- b. The MCC requested the applicant demonstrate how fluids will move across this parcel. The Seasonal High Water (ESHT) Table data is provided in the data logs, but no analysis to support their assertion that any leaks would not move into the underlying stratified-drift soils. Dr. Shillaber responded to our question about the hydrology of the soils, *"Information is provided about seasonal high groundwater, which will actually surround the tanks (they will be buried below seasonal high water). There is not a clear indication of which direction the water is moving. Most likely, it is moving toward the wetland across South St., which is why the seasonal high water is shallow. Where you have surface water indicates the groundwater level at that location. This sand layer is not confined by impermeable layers that could lead to artesian pressure of the groundwater; thus, it is expected the water will move "downhill" (really it goes down gradient). I haven't even seen this much explanation in the docs you sent."*
- c. The applicant has not provided a containment plan, which is required in the Milford Z.O. 6.01.3.C.1 "prior to issuing a permit".

3. Mitigation

- a. To date, the applicant has not offered any mitigation measures other than to "use the latest technology". They cannot provide a 100% guarantee that the tanks will not leak.
- b. The MCC requested the applicant provide a solution to minimize the risk of an accidental UST leak. (See ZBA pdf 08252023 Item 5.c) The tanks will be in the groundwater without any barrier. The applicant's response was to refer to "a magic clay layer down deeper". The MCC would like the Zoning Board members to require a secondary barrier with a monitoring system in place so that any

contaminant can be contained until a cleanup can occur. This containment design should be provided prior to approving this request.

- c. The MCC would like the ZBA members to require a design, prior to approval, of how surficial spills at the pump and from standing vehicles, will be contained on site and treated. There are wetlands across the street that will be impacted by surface runoff, in addition to potential infiltration into the aquifer.

The MCC does not support this application. The underground storage of liquid petroleum tanks is prohibited in this Groundwater Protection Area which was established to protect our groundwater. The parcel soils, although not delineated as part of the aquifer mapped, are of the same characteristic as stratified-drift aquifer soils. This is a specific prohibited use for the reason that accidents happen and the mitigation cannot be 100% effective. The applicant cannot prove with absolute certainty that there will be no contamination to the existing and potential groundwater supply areas, which the existence of the protection area ordinance implicitly acknowledges, nor has provided any design measures to minimize the risk for a petroleum leak into the town aquifers.

Respectfully
Milford Conservation Commission