



Attention: Bob Vicaretti, Sr., Chairman of the Deerpark Planning Board - August 19, 2020

DRAFT

[This update supersedes my previous August 12, 2020 submission.]

Significant Safety Concern: Millennium Pipeline Blast Impact Radius Issue

Material received to date regarding the proposed Rivendale Subdivision in the Town of Deerpark does not address the safety risk to dwellings proposed some 600 to 1,200 feet southwest of the Millennium Pipeline. On August 18, 2020, Jim Wilson of Millennium responded to my inquiries requesting information on the Maximum Allowable Operating Pressure (MAOP) of their 36-inch and 24-inch diameter pipelines that conduct natural gas. He stated via telephone that the MAOPs for these pipelines are 1200 psi and 935 psi, respectively. The Code of Federal Regulations, which codifies rules published in the Federal Registration, includes Part 192 - Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards. Section 192.903 provides the C-FER Technologies Formula (2000) for use in determining the Potential Impact Radius (PIR) (aka Blast Impact Radius, Incineration Zone) outward from gas pipeline ruptures where building failure, human death, and property damage may occur. §192.903, subsection (4)(c) provides the following definition and meaning that directly correspond to public health and safety:

“Potential impact circle is a circle of radius equal to the potential impact radius (PIR). Potential impact radius (PIR) means the radius of a circle within which the potential failure of a pipeline could have significant impact on people or property. PIR is determined by the formula ...” (emphasis added)

Based on a pipeline diameter of 36-inches and an operating pressure of 1200 psi, use of this formula produces a likely Potential Impact Radius (aka Blast Impact Radius) of 860 feet. This value is low and conservative because the Federal Register fails to consider more current and rigorous engineering assessment and modeling work conducted by chemical engineers and Safety Engineering Specialists Sklavounos and Rigas (2006) and structural and thermomechanical engineers Russo and Parisi (2016). The latter two engineers concluded:

- *“If a new building or pipeline has to be constructed, their relative distance should not be smaller than the safety distance. Therefore, urban planners should implement such a safety distance in their territorial plans in order to regulate the location of buildings and the path of pipelines.”*

Even if the conservative C-FER Technologies Formula is used, some of the proposed Rivendale Subdivision dwellings are proposed within the Potential Impact Radius as calculated in the Federal Register. Twelve home sites within the proposed 20-home subdivision fall within the 860-foot Potential Impact Radius (Lots 5-13 and 18-20).

The Federal Register classifies pipeline locations according to criteria that identifies locations where fewer or greater numbers of people may be adversely impacted in the event of a major pipeline rupture (§192.5 Class locations). This pipeline location classification focuses on housing density or location use, with class location numbers increasing as more and more people may be impacted due to pipeline rupture. Areas where particularly high numbers of people and property may be impacted are classified as high consequence areas. The proposed Rivendale Subdivision is a Class 2 location because it would have more than 10 but fewer than 46 buildings intended for human occupancy. While the number of proposed housing units is far fewer than in higher class location classifications and is therefore not classified as a high consequence area (§192.903), this arbitrary Class 2 location designation does nothing to reduce the risk of death and property damage to subdivision homes and people. The severity and magnitude of catastrophic pipeline rupture is documented in the attached 12-page 11-19-18 HydroQuest report titled: *Blast Impact Fact Sheet - Atlantic Sunrise Pipeline - In Harm's Way - Public Awareness*, incorporated here by reference in the hearing documentation material.

Public health and safety relative to proposed Rivendale Subdivision dwellings and the Millennium Pipeline should be addressed in a full Environmental Impact Statement. The project applicant should produce blast calculations in keeping with those of C-FER Technologies, as well as the more current engineering work of Sklavounos and Rigas (2006) and Russo and Parisi (2016). Then, based on the results obtained, the applicant should address project modifications designed to minimize the risk of blast impact to people and project homes proximal to the Millennium Pipeline should a pipeline rupture occur. This health and safety assessment should also address the potentially compounded destructive force stemming from two nearby high-pressure gas pipelines in the event that failure of one triggers the immediate failure of the other. The applicant's project redesign should demonstrate consistency with Russo and Parisi' (2016) conclusion: "*If a new building or pipeline has to be constructed, their relative distance should not be smaller than the safety distance.*"

Water Supply

The material available provides no documentation on aquifer testing results to determine the adequacy of the groundwater supply, its quality, or potential drawdown impacts on neighboring wells. The project cannot be evaluated without this information.

Issues raised by: Paul A. Rubin, Professional Geologist