



*Protecting our water, our land, our communities*

August 15, 2022

Town of Pepperell Planning Board  
Town Hall  
1 Main Street  
Pepperell, MA 01463

RE: Proposed 40R Zoning Overlay District

Dear Pepperell Planning Board Members,

The Nashua River Watershed Association (NRWA) submits the following comments and observations about the proposed 40R zoning overlay district. The NRWA is a regional leader in natural resource protection in the 32 communities of the Nashua River watershed in north central Massachusetts and southern New Hampshire. Our mission is to “work for a healthy ecosystem with clean water and open spaces for human and wildlife communities, where people work together to sustain mutual economic and environmental well-being in the Nashua River watershed.” Our goals include conserving open spaces for water quality, wildlife habitat, farms, forests, and recreation, and encouraging careful land use with well-planned development. We understand the need for affordable housing, and appreciate the goal to be pro-active in finding such. However, we believe well-planned development includes protection of those resources that are impossible to regain once lost. It is with these goals in mind that we voice these concerns about the proposed development that potentially threatens ecosystems we and our partners have endeavored to protect for over 50 years.

These comments pertain to all five sites *originally proposed* for the 40R zoning overlay district in Pepperell (though the proposal has since been amended to include only two of the original sites).

Overall, the comments submitted by the Conservation Commission, DPW Director, and Climate Change Committee were very thorough and encapsulate the concerns that we have also identified about the project. Taken in its original form, three overarching concerns can be summarized:

- 1) Overtaxing the water supply capacity of the municipal water system (as detailed in the DPW letter and addressed elsewhere in this letter).
- 2) Intrusion into environmentally sensitive areas.
- 3) Increase in impervious area in relatively close proximity to the Reedy Meadow Brook, the Nashua River, and other tributaries.

The immediate problem of water supply constraints is removed by recent reduction in proposed parcels to be included in the overlay district. The other two problems remain. These and problems specific to individual sites are discussed below.

## Sites Still Included in the Proposed 40R District

### Leighton Street

The Leighton Street proposal (which is the only site where a conceptual building plan has been submitted) appears to be the most environmentally intrusive and poses the biggest risk to the town's water supply.

Reedy Meadow Brook, a cold-water fishery and tributary to the Nashua River runs across the site's northwest corner. Reedy Meadow Brook is bordered on-site by forested swamp that helps maintain water quality and temperature in the Brook. A large swath of swamp also extends from the southeast into the site's center. An intermittent stream connects this wetland to Reedy Meadow Brook, running east - west across the site. Much of the site's upland lies within the 100' buffer zone of the on-site wetlands. (Note: wetland resources on neighboring parcels are not delineated on the conceptual plans, but should be in any future renditions.)

As described in the "Prime Forest" layer viewed on MassMapper (the MA GIS online platform), the site also contains forests ranked as "Prime3" at the state level and additional wetland and upland forests that are considered locally important. These forests provide a number of ecosystems services for Pepperell, including carbon sequestration, groundwater filtration and infiltration, and air/water cooling.

Under the proposed 40R zone, 180 units would be allowed by-right on the 8.2 acres of "buildable land" on-site. The actual proposed development includes 5 multi-plex buildings and multiple long stretches of parking lot. Two of the buildings are half located inside the 100' buffer zone; similarly, five large sections of parking lots are located in the 100' buffer zone. A crossing of the wetland and intermittent stream would be necessary to develop the site as proposed. Almost the entire upland area on-site would be covered in impervious surface under the current proposal.

This amount of impervious surface, in such close proximity to the stream and wetland resources on-site, would almost certainly have extremely negative effects on the abiotic and biotic integrity of these environmental resources. It has been widely shown that when the % of impervious surface exceeds 25% of a drainage area, severe water quality and habitat degradation occur in most water resources (e.g., Peterson et al, 2010)<sup>1</sup>. Streams that are more environmentally sensitive can experience impairment at coverages of 5-10% impervious surface. Impairment results primarily from stormwater runoff and the heat trapping effects of pavement and roofs. In turn, runoff and heat cause increases in water temperature, sedimentation, and intrusion by a variety of pollutants (e.g., heavy metals, *E.coli*, excess nutrients) in water resources. Natural vegetation slows and filters overland runoff flow, allowing stormwater to infiltrate the soil and enter the groundwater supply rather than be swept off-site, contributing to increased flooding downstream.

According to the MA 2018 Integrated List of Waters for the Clean Water Act, Reedy Meadow Brook is a cold-water fishery, which in 2003 (the last date sampled), showed abundant Eastern Brook trout, a cold-water specialist. Banded sunfish, another species intolerant of warm water temperatures, was also

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<sup>1</sup> Peterson, J., Stone, A., and J. Houle. 2010. *Protecting water resources and managing stormwater: a bird's eye view for New Hampshire communities*. University of New Hampshire Cooperative Extension, Durham, NH.

present. NRWA data from 2019 and 2022 show that dissolved oxygen levels in Reedy Meadow Brook are generally high, which results from cool water temperatures and low nutrient loads, and indicates excellent habitat for these cold-water specialists. The fish-community data is nearly 20 years old, however. Any proposal for significant alteration of the Leighton Street lot, therefore, should potentially require a credible assessment of the current status of cold-water specialists in Reedy Meadow Brook.

The 2018 Integrated List also shows that the Reedy Meadow Brook drainage basin is already 8.1% impervious cover (and 30% developed area). In light of this, the proposed widely-impervious development at Leighton Street is likely to significantly degrade the wildlife-habitat and water quality values of Reedy Meadow Brook.

Forests and wetland soils on-site are a strategic asset in Pepperell's efforts to naturally mitigate the negative impacts of climate change. Both trees and wetland soils are excellent at sequestering and storing carbon. Intense development of the site would likely lead to the release of carbon already stored on-site, would arrest future carbon sequestration on-site, and would make it more difficult for Pepperell and Massachusetts to avoid harmful impacts from climate change.

### **Water resources**

There is concern that the additional demand on the Town's water supplies resulting from the proposed development will result in a cumulative demand that exceeds the capacities of the Town's wells. With three of the five sites withdrawn from consideration at this time, there is less threat that the Town's potable water supplies will be stretched beyond their limit. However, there are concerns about impacts that development of the Leighton Street site may have on sensitive water supply resources.

The Leighton Street site is of particular concern due to its location just north of the two Jersey Street wells, and the sensitive, high-quality water resources underlying the property. The entire Leighton Street site is over the aquifer for these wells. The site's southwest portion is over high yield aquifer; the rest is over medium yield aquifer, and the site is entirely within Zone 3, the Aquifer-Watershed Protection Zone (AWPZ), of the Water Resource Protection Overlay District (WRPOD). It is adjacent to the Zone 2 Well Protection Zone (WPZ), and serves as the "secondary recharge area" for Zone 2. These zones were created specifically to protect the land, surface water, and groundwater that impact the quality of the water being contributed to the Jersey Street wells.

As described above, water quantity and quality at the Jersey Street wells may be negatively impacted by this development:

- The proposed building footprint and parking lots inside the 100' buffer zone create impenetrable surfaces that do not allow rain water to infiltrate to the groundwater and replenish the aquifer. The water table will be lowered, which is particularly concerning for water supply during times of drought.
- What rainwater does infiltrate will contain contaminants from the parking lots and roofs that may reach the groundwater.

Natural land covers are nearly zero percent impervious,<sup>2</sup> allow recharge to the underlying aquifer, and serve as a natural filter for contaminants infiltrating to groundwater. The forests and wetlands on-site

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<sup>2</sup> [https://cfpub.epa.gov/watertrain/moduleFrame.cfm?parent\\_object\\_id=170](https://cfpub.epa.gov/watertrain/moduleFrame.cfm?parent_object_id=170)

are critically important for preserving the quantity and quality of groundwater entering the subterranean public water supply aquifer.

The Town's water supplies are already affected by contamination. The Nashua Road well is off-line due to PFAS contamination. Protection of the Town's remaining water supplies is of paramount importance, and the proposed development presents an unreasonable threat to the Town's remaining water supply.

The Town's existing wellfields should be protected, because they will not easily be replaced. Developing new public wells in Massachusetts is now much more difficult than when the existing wells were brought on-line. In 2012, the Massachusetts DEP released the Sustainable Water Resources Initiative (SWMI) Final Framework<sup>3</sup>, the overall principle being: *The Commonwealth's water resources are public resources that require sustainable management practices for the well-being and safety of our citizens, protection of the natural environment, and for economic growth.*

From the SWMI Frameworks, the revised Water Management Act regulations (310 CMR 36.00) were promulgated. These regulations require "clear, predictable and science-based permitting, [that] ensure prudent and sustainable use of water, maintain healthy watersheds and gradually improve degraded ones." The result is a more stringent set of regulations, that make siting new wells much more difficult. Potential impacts from a development of this size in the resource area of the Town's wells must be considered. It is much easier to protect water supplies in hand than to locate and develop new water resources at a yet unknown location.

Pepperell's first Open Space and Recreation Plan (OSRP), prepared in 1969, and every OSRP prepared since has stressed the importance of protecting open space for water protection. Given the Leighton Street site's abundant, high-quality environmental resources, this site should not be included in the proposed 40R zoning overlay district. The present undeveloped status of the Leighton Street site is of utmost importance for protecting water supplies and surface water resources. **We urge the Planning Board to reconsider the development at this location in favor of protecting the natural resources that are impossible to recreate.**

### Senior Center

The Senior Center property is bounded to the west by an intermittent stream (tributary to the Nissitissit River) and shrub wetland. Because of this stream, FEMA-designated floodplain is also present on the western edge of the property. The Senior Center itself is a large building situated in the center of the lot. East of the building is a swath of forest that is ranked "Prime3" in the Prime Forest layer of MassMapper.

The Senior Center property is located north of an Agricultural-Preservation-Restricted (APR) parcel that borders on the Nissitissit River, just west of its confluence with the Nashua River. The APR parcel is highly ranked wildlife habitat, designated under the BioMap2 program (which identifies critical habitat for biodiversity conservation) as: Critical Natural Landscape Upland / Buffer of Aquatic Core, Core Habitat for Species of Conservation Concern, a Critical Natural Landscape, and Core Habitat. It is also designated as Priority Habitat for rare species. This APR parcel is also located in the Petapawag Area of Critical Environmental Concern.

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<sup>3</sup> <https://www.mass.gov/service-details/sustainable-water-management-initiative>

No buildings are yet proposed on this site, but 127 units would be allowed under the proposed 40R district. Given the configuration of the wetland and structural features existing on the lot, most of these units would presumably be built in the Prime Forest in the eastern portion of the lot.

Besides the negative impacts of cutting forest discussed above, one notable impact of building in this location would be removing a wildlife corridor and high-quality buffer between the industrial Lomar Park to the east and the Senior Center.

**Overall, however, the environmental impacts of building on this site appear less significant than those proposed at multiple of the other 40R sites.**

## **Sites Withdrawn from the Proposed 40R District**

### Peter Fitzpatrick School

The site is located at the northern edge of a very large area of an undeveloped forest-wetland complex, which includes the Pepperell Town Forest, land owned by the Nashoba Conservation Trust, and privately held land. North of the site is a developed portion of town: the beginning of the downtown district. The site already contains a large building (the former school), an open recreation field, and a playground at its northern limit.

The Fitzpatrick School site contains a number of important environmental resources. West of the school is a forested area ranked as “Prime1” and “Prime2” in the MassMapper Prime Forest layer. Additional forest south of the school and field are ranked as Locally Important forests. Greens Brook, a tributary to Varnum Brook and ultimately the Nashua River, flows west-to-east across the site’s southern edge. Extensive bordering vegetated wetland associated with Greens Brook extends northward into the site. These wetlands include both deep marsh and forested swamp. The 100’ buffer zone to these wetlands extends into the recreational field. Wetlands along the southern border are listed by FEMA as being within the floodway of Greens Brook. Most of the remaining on-site wetlands are also located within the floodplain of Greens Brook and have a 1% chance of flooding every year; or a 26% chance of flooding over 30 years.

According to the 40R proposal, 157 units would be allowed by-right on-site. Given the vast extent of on-site wetlands, the only significant area seemingly left available for development would be the Prime forests in the northwestern portion of the site and the recreational field and playground immediately behind the existing school building. Presumably, no development would occur in the wetlands, but some development would likely intrude into the 100’ buffer zone.

Overall, the impacts of a proposed 40R zone at the Fitzpatrick School depend on the details of any actual build-out proposal. If the wetlands and their buffer zone along the southern edge can be maintained as a resource in their own right and as an extension of the vast area of open space to the south, then the impacts to the water resources could be minimized. Environmental impacts would then be concentrated on the Prime forest in the northwest corner of the site. **While forest loss is a significant issue, especially in light of climate change, locating development near the town center might be a worthwhile trade-off.**

### Mill Site:

The site was a former paper mill, which was torn down in 2011. In the years since, the site has been unused, but still contains large areas of impervious cover. The Nashua River forms the eastern boundary of the site. Varnum Brook flows beneath the site before converging with the Nashua River at the eastern edge of the site. Varnum Brook is partially buried beneath the site. Most of the site lies within the floodplain of the Nashua River, as designated by FEMA.

A narrow strip of vegetated land separates the Nashua River from the on-site impervious areas. This buffer and the River itself, are designated by the Natural Heritage and Endangered Species Program as Priority Habitat for rare species; and by the Biomap 2 Program as Core Habitat and as Core Habitat for Species of Special Concern. The entire site lies within the Petapawag Area of Critical Environmental Concern.

The proposed 40R district would allow 285 units on 9 acres of “buildable land” at the Mill Street location. Having such development in proximity to the river could, as described for other sites above, decrease the water quality and wildlife habitat value of the site, and increase the likelihood of flooding in downtown Pepperell.

From an environmental perspective, the ideal use for the site would be restoration of a greenway to protect the critical rare species habitat, and water quality and quantity in and adjacent to the Nashua River. This would also provide much needed green space for residents of downtown Pepperell, decrease the heat island effect of Pepperell’s urban core, and reduce flooding downstream of the site, fortifying Pepperell against future flooding from climate change.

**Short of full restoration, the proposed Mill Street 40R site, if carefully designed, has potential as a suitable 40R location.** It could provide needed housing in proximity to existing services, while also improving the environmental integrity of Pepperell’s urban core.

In order to accomplish this, housing, parking, and driveways would need to be concentrated along Mill Street, away from the river, and would need to be designed using Low Impact Development principles. Critically, from an Environmental Justice perspective, on-site housing and accessory structures would need to be located outside of the FEMA-designated floodplain. Equally important, the vegetated buffer along the River would need to be substantially widened and should be permanently restricted against future development. Daylighting the on-site portion of Varnum Brook would also create the possibility for aquatic life to return to this portion of the Brook. To accomplish all of this, it may be that the number of allowed units on-site would need to be reduced.

### Hotel Place:

Hotel Place is located in downtown Pepperell near Railroad Square and already contains a number of buildings. There are no critical environmental resources at Hotel Place, although the site is within a ¼ mile of the Nashua River.

**This is the most reasonable place, of all five proposed sites, to place a 40R overlay district.** Developing this site would be in-fill development, close to the urban core of Pepperell and would not harm significant environmental resources.

Low Impact Development principles should be applied at Hotel Place, however, to ensure that stormwater management is improved, rather than worsened by development in this highly impervious portion of town.

Thank you for the opportunity to comment.

Sincerely,



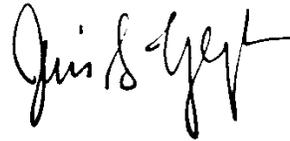
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