MEMORANDUM

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TO:	Bruce Wheeler, Habitech Development
FROM:	Donald A. Provencher, P.E.
DATE:	November 14, 2022
REFERENCE:	Potable Vs. Irrigation Water Withdrawals Wandering Pond, Stow, Massachusetts Project No. PE381.01

Provencher Engineering was requested to respond to a question from the Town of Stow as to why irrigation demand for the above proposed project was not included in the proposed public water supply (PWS) wells proposed daily withdrawal volume requested from DEP. As you may know, the proposed project proposes three bedrock PWS wells, each with a proposed withdrawal of 10,674 GPD, for a total site potable water demand withdrawal of 32,022 gallons per day (GPD), which matches the Title 5 sewage design flow estimate for the project.

PWS wells include a Zone 1 wellhead protection area circle centered on each well. The radius of the Zone 1 area is proportional to the proposed withdrawal being requested form each PWS well. No activities unrelated to the PWS can exist inside the Zone 1, such as roadways, houses, stormwater systems, sewers, buildings, etc., except if specifically dedicated to the operation of the PWS infrastructure. The Zone 1 area also needs to be fully contained within the project property boundaries. If irrigation demand was added to the potable demand of the project and that combined withdrawal was included in the PWS wells, the corresponding Zone 1 radii for the PWS wells would increase and expand into the development portion of the project, which is not allowed by DEP.

Another reason not to include irrigation in the PWS withdrawal is to avoid the additional cost of treating irrigation water, which is not required to be treated. Assuming that the potable water from the PWS wells will require some form of treatment, such as for Iron & Manganese, the treatment infrastructure would need to be expanded to accommodate that additional irrigation demand. This would also burden the PWS wells with needing to increase their withdrawals, whereas it is better to spread out the overall water withdrawal demands of the site's groundwater by separating irrigation wells to be located at distances away from the PWS wells.

The PWS infrastructure and storage tanks would have to be increased if irrigation demand was included in the PWS system. This means that the PWS system and storage tanks would be overdesigned during the fall, winter, and spring months when irrigation is not required. This would result in potential stagnation of the potable water system, and infrastructure that is unnecessary most of the year. DEP prefers to disconnect irrigation from potable PWS wells.

Lastly, irrigation wells are permitted through the local Board of Health, and DEP has no jurisdiction over irrigation wells. Therefore, it is preferred to separate the two sources. PE381MM001