



# TOWN OF WAYLAND


41 COCHITUATE ROAD  
WAYLAND, MASSACHUSETTS 01778

Julia Junghanns, R.S., C.H.O.  
DIRECTOR OF PUBLIC HEALTH  
TEL. (508) 358-3617  
www.wayland.ma.us

## MEMORANDUM

Date: April 11, 2018

To: The Zoning Board of Appeals

From: The Board of Health  
Julia Junghanns, R.S., C.H.O., Director of Public Health 

Subject: CH40B Project 113-119 Boston Post Road, Cascade Wayland

On Monday April 9th the Board of Health made the following motion:

A. Soslow motion: The developer Eden Management as of this date has failed to provide data and access that permits the Board of Health to grant the developers waiver requests; reference to Exhibit A-4 Page 8 and 9 from the Comprehensive Permit Application dated July 26, 2017.

Second B. McNamara, Vote 5-0 all in favor.

Please find the attached memorandums that have been provided to the Zoning Board of Appeals, communicating and requesting information, going back to July 22, 2016.

EXHIBIT A-4

WAYLAND BOARD OF HEALTH REGULATIONS

In supplementation of the general information contained on page 1 of Exhibit A, the applicant believes the following waivers are required for issuance of the Comprehensive Permit and therefore requests the permit granting authority issue waivers relative to the following requirements:

Section Number	Title	Requirement, Waiver Requested
Board of Health Regulations	BOARD OF HEALTH REGULATIONS	Applicant seeks a waiver from this section as the Zoning Board of Appeals is provided with the authority to issue all local approvals.
Floor Drain Regulation Wayland Board of Health	FLOOR DRAIN REGULATION WAYLAND BOARD OF HEALTH	As part of the Project the snowmelt and other rain will need to be collected in a floor drain and discharged to an industrial holding tank. The rain will not go into a septic system. The Applicant requests a waiver from this local regulation.
Regulations for On-Site Subsurface Disposal Systems Section 3	GROUND WATER TESTING SEASON	Applicant requests waiver from the limitations of the ground water testing season as required by Section 3.
Section 4	PERIODIC FLOODING	Applicant request a waiver from the Board of Health's requirements of periodic flooding. Applicant will meet state regulations.
Section II (C)(1)	LEACHING FACILITIES	The Board of Health Regulations sets a maximum volume of sewage flow to 165 gallons a day per bedroom for new construction of multiple dwelling units. The Applicant requests a waiver from this local regulation. Applicant will comply with the requirements of 310 CMR 15.203.

Section II (C)(2)	LEACHING FACILITIES	The Board of Health allows leach fields, leaching trenches, leaching pits and leaching galleries to be designed to Title 5 standards with approval of the Director of the Board of Health. Applicant requests a waiver from the requirement to obtain approval from the Director as the Zoning Board of Appeals is provided with the authority to issue all local approvals.
Section II (D)	DISTANCES	Section II(D) regulates the location of disposal facilities. The Applicant requests a waiver from the local regulations to build the Project as proposed by the Plans.
Section II (E)	FLOOD PLAINS AND LAND AND LAND SUBJECT TO FLOODING	Section II(E) regulates the location of construction, basements and grading by the Board of Health. The Applicant requests a waiver from this local regulation to build the Project as proposed by the Plans.
Section II (G) (2)	PUMP DESIGNS	Board of Health Regulations require no more than 1 inch of effluent on each dose cover. Applicant requests a waiver to have effluent greater than 1 inch.
Section II (G) (5)	PUMP DESIGNS	Board of Health regulations require that the distribution boxes shall be "back vented" to the pump chamber with a minimum 2 inch PVC schedule 40 pipe. Applicant requests waiver from this requirement.
Section II (L)	HYDROGEOLOGICAL EVALUATION	The Board of Health regulations require a hydrogeological evaluation at the expense of the applicant. Per the regulations, the Board of Health determines whether the ground and surface water is not compromised. The Applicant will perform a Title V mounding analysis as required.

## Junghanns, Julia

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**From:** George Heufelder <gheufelder@barnstablecounty.org>  
**Sent:** Thursday, March 01, 2018 11:06 AM  
**To:** Junghanns, Julia  
**Subject:** Re: Questions on Aquapoint Bioclere and I/A technology

**Follow Up Flag:** Follow up  
**Flag Status:** Completed

Julia:

I am in Oregon giving a talk on wastewater, but below are my brief comments.

In General:

The tests performed at MASSTC were on the smaller model of the Bioclere. There may be a legitimate concern that the system being proposed is not the model that was tested. The concern that the test report is "outdated" is not a legitimate concern. The data are valid.

On a system of that size (over 2,000 gallons), there are likely some engineering differences that should be looked at by qualified individuals. Things such as carbon enhancements and alkalinity adjustments are among those concerns along with flow equalization and others. In short, I repeat that to use the MASSTC data on the small system might give one a general idea of the technology concept, but it should not be the sole source of information to predict performance on a 9800 gpd system.

Regarding the comment on phosphorus, the concern is legitimate if the receiving brook is freshwater, however if the brook feeds marine waters, the concern for nitrogen removal should also be considered. The engineer could propose a polishing unit in conjunction with the Bioclere as they have done in other situations where the concern is phosphorus.

The third concern expressed below speaks to the need for operation and maintenance. Clogged nozzles are only one thing that can go wrong without proper maintenance. In short, these concerns can be addressed by conditioning approval on certain maintenance schedules. Even the best, most robust technologies fail if not maintained.

Regarding the technology itself? It would be well within the realm of performing due diligence to request data from systems of comparable size and inspect these data. Look for comparability in all items such as carbon feeds, alkalinity feeds, etc. You might find some data from their groundwater discharge permit systems. The technology is standard and robust. A trickling filter with recycle to achieve denitrification. No mystery or uncertainty there. The devil is in the details.

Is there another technology that can better meet the goal? Again, this technology properly adjusted to meet the anticipated load is as robust as many others. It comes down to how the technology will be modified to handle the anticipated loads. There are other technologies (various other trickling filters, sludge-activated treatment, membrane bioreactors, etc. etc) that could be applied, but each one would have to stand the same test.

1) data from comparable sized and use systems.

- 2) An operation and maintenance schedule (and contract) that matches the needs and concerns
- 3) a monitoring program that verifies performance

I hope that this helps. Again, I am away and this is a hasty response from a hotel lobby.

Regards

George

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**From:** George Heufelder  
**Sent:** Thursday, March 1, 2018 10:34 AM  
**To:** Brian Baumgaertel  
**Subject:** Re: Questions on Aquapoint Bioclere and I/A technology

Got it

Sent from my iPhone

On Mar 1, 2018, at 7:15 AM, Brian Baumgaertel <[bbaumgaertel@barnstablecounty.org](mailto:bbaumgaertel@barnstablecounty.org)> wrote:

Would I be correct if I assumed you answered this?

- Brian Baumgaertel, REHS/RS, WWTPO  
Environmental Specialist/Sanitarian  
Co-Director, Massachusetts Alternative Septic System Test Center

Barnstable County Department of Health and Environment  
Barnstable, Massachusetts  
Tel: 508-375-6888

Sent from mobile. Please excuse any typos or autocorrects.

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**From:** Junghanns, Julia <[JJunghanns@wayland.ma.us](mailto:JJunghanns@wayland.ma.us)>  
**Sent:** Wednesday, February 28, 2018 11:19:20 AM  
**To:** George Heufelder; Brian Baumgaertel  
**Subject:** Questions on Aquapoint Bioclere and I/A technology

Hi George/Brian,

I am hoping for some feedback and guidance regarding the efficacy of the Aquapoint, Inc. (AQP) Bioclere™ Model 16/12 for use in a septic design for an affordable housing project, 89 bedrooms, 9,800 gpd. The Wayland ZBA is currently going through the hearing process with a Ch40B Affordable housing project that is planning to use this technology.

The flow is approx. 9,800 gpd, the area is NOT in a Zone II, however, wetlands are about 50 feet away along with a cold water brook (where trout spawn). Soils, and perc rates vary; loading rates are shown at .74-.53, estimated seasonal high ground water is identified at 3-4 feet from the surface. Some areas of ledge have been encountered in one of the leaching areas, and I'm trying to get additional testing done so we can see a delineation of the ledge and to ensure they can meet Title 5. Due to the size of the project it is a tight lot and there is no alternative area to move the leaching area. We are currently awaiting a hydrogeo study of the project site. I have also asked for an updated site plan(see attached site plan) that shows more detail (ledge,eshgw,perc rates, soil types, footprint of the project buildings).

The project proponent is claiming that testing was conducted for this technology over a thirteen month period (please find attached letter) at the Massachusetts Alternative Septic System Test Center (MASSTC), located at Otis Air National Guard Base in Bourne, Massachusetts. Sanitary sewerage from the base residential housing was used for the testing. An eight-week startup period preceded the verification test to provide time for the development of an acclimated biological growth in the Bioclere™ system. The verification test included monthly sampling of the influent and effluent wastewater, and five test sequences designed to test the unit response to differing load conditions and power failure. The Bioclere™ system proved capable of removing ammonia nitrogen in the aerobic unit and nitrate in the anaerobic/anoxic primary tank. The influent total nitrogen (TN), as measured by the TKN, averaged 37 mg/L with a median of 38 mg/L. The effluent TN average 16 mg/L over the verification period, with a median concentration of 14 mg/L, which included an average TKN concentration of 10 mg/L and a median concentration of 6.3 mg/L. The system operating conditions (pump and timer settings) remained constant during the test. Only routine maintenance and system checks were performed for most of the test, except when a nozzle – plugging problem occurred. The plugged nozzles impacted treatment performance, but performance improved quickly once they were cleared.

Statements were made by project opponents as follows:

1. Although it may be true that the Bioclere can reduce nitrate loads by ~60%, that has little importance for Pine Brook. Nitrates drive eutrophication in coastal salt water areas, not fresh water like Pine Brook -- where phosphorus contamination is the problem.
2. The only certification test of the AquaPoint Bioclere system that is available on their website was done in Massachusetts in 2003. First, this test report is outdated. Second, the test was run with a small, single home model designed for 400 gallons per day. I could find no performance / certification tests for their large units, which may not deliver the same results in a large scale.
3. The BioClere system failed during the 2003 test, due to clogged nozzles. This highlights the risk with a complex treatment system that includes filters, pumps, nozzles, timers, level switches and other electronics. The system can fail, releasing 100% nitrogen loaded wastewater into the septic field. The 2003 version included no automated alerts – they discovered the failure of the nozzles only when test results were unexpectedly poor! If the version they sell today still does not include automated alerts, that is another issue. No one is going to constantly monitor the Cascade system, to make sure nitrogen reduction is operating correctly.

I am inquiring to clarify/verify the information that we have received (both supporting and debating the AquaPoint Bioclere technology) and to see if there is any other type of technology

that may be more appropriate/provide better treatment for this size project (9,800 gpd) and site due to the environmental sensitivity, i.e.; to protect the brook/wetlands and potential ways to help prevent thermal impacts on the coldwater brook from the septic system, and/or environmental studies that would help. We have not received a septic design yet, however, the leaching fields are shown on a site plan to be about 50 feet away from wetlands/a cold water brook (where trout spawn). As I mentioned, there are areas of ledge in some test holes (although SO FAR soil testing shows 4 feet of contiguous pervious material).

Any feedback or guidance you are able to provide would be greatly appreciated! This is a huge project and has been a bear to deal with (highly contested)so far and it's not even before the BoH yet. At this point we are providing feedback to the ZBA. There is one additional email I will share also.

Thanks so much,  
Julia

Julia Junghanns, R.S., C.H.O.  
Director of Public Health  
Town of Wayland  
Health Department  
41 Cochituate Road, 01778

508-358-3617 ph  
508-358-3619 fax

email: [jjunghanns@wayland.ma.us](mailto:jjunghanns@wayland.ma.us)



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<Onsite\_Cascade\_Septic-Design-Memo\_02\_06\_18.pdf>

<Cascade Wayland - memo to ZBA .pdf>

<284101P013B-001-2-12-18.pdf>



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Julia Junghanns, R.S., C.H.O.  
DIRECTOR OF PUBLIC HEALTH  
TEL. (508) 358-3617  
www.wayland.ma.us

## MEMORANDUM

Date: February 8, 2018  
To: The Zoning Board of Appeals  
From: Julia Junghanns, R.S., C.H.O., Director of Public Health  
Subject: 113-119 Boston Post Road - Cascade Wayland – serious concerns and timely issues

This memo is to communicate serious concerns the BoH and I have regarding this project. I am not convinced that the soil testing meets Title 5 Regulations and I do not have confidence that a subsurface sewage disposal system can be designed that meets the State Title 5 Regulations or required offsets to the brook, wetlands, and floodplain. This statement is due to lack of information and concerns as follows:

**Ledge** – a large septic system is required to support the design flow for this project. There is limited usable area to locate a leach field due to the adjacent brook, wetlands, floodplain, and areas of ledge. There are no alternative areas on the site. Ledge was encountered during soil testing, and during monitoring well installation, however, we do not know the extent of the ledge. If the project went forward and ledge was encountered during construction then the system could not be installed and we would stop the job as there is no alternative location;  
**15.240: Soil Absorption Systems:** On-site subsurface sewage disposal systems shall be located in an area where there is at least a four foot depth of naturally occurring pervious soil below the entire area of the soil absorption area and reserve area unless a variance is issued in accordance with the provisions of 310 CMR 15.415(2). The four foot stratum must be free of impervious and unsuitable materials.

**Hydrogeo study not provided:** this was requested by BoH to assist in our review due to concerns for; the design flow of 9,900 gpd, the soils/ESHGW/ledge/offsets, and waivers being requested. This study has been going on since 10/31/17 and is critical for our review. **Mounding analysis not provided:** The hydrogeo study will include a mounding analysis. The 50 foot offset to wetlands will be measured from the edge of the mound and I do not know if required offset can be met. This is critical to the design and protection of the brook and wetlands. We were advised by Joe Peznola that the hydrogeo study is expected around February 19<sup>th</sup> and given the timetable, this does not allow adequate time for review. I urge the ZBA to require that the study be provided and request an extension for this project to allow adequate time for staff and peer review of the study once it is provided.

**Additional soil testing due to concern for ledge:** I request additional soil testing and investigation to be done by the project applicant based on concerns for ledge (bedrock). I have serious concerns regarding the areas of ledge that have been encountered due to the large size of the system, the close proximity to wetlands, the cold water brook, and no alternative area to relocate the system. Untreated sewage can move quickly from the leaching area into ledge fractures and contaminate the brook. When Title 5 Regulations were created they did not expect systems this size/gpd to be proposed, wetland offsets in Title 5 did not consider these large systems as they expected wastewater treatment facilities to support these large flows. This issue could also impact stormwater. **The following investigation is requested to be provided by the developer as part of the hydrogeo study:** Determine the integrity of the ledge; is it porous and/or rotten rock, research and map the underground topography; depth of ledge and depth/extent of soils as per Title 5 15.240, show the delineation of ledge on a map (where the ledge begins and ends).

**Thermal effects:** I also have serious concerns for the ambient temperature of the cold water brook and recommend further investigation into the thermal effects from the septic effluent on the cold water Brook. Consideration should be taken for soils in the area (depths/extent of soils, soil types, ledge) and impact to brook.





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DIRECTOR OF PUBLIC HEALTH  
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www.wayland.ma.us

## MEMORANDUM

Date: February 9, 2018  
To: The Zoning Board of Appeals  
From: Julia Junghanns, R.S., C.H.O., Director of Public Health  
Subject: Cascade Wayland and Winsor Place – CH40B projects list of outstanding information

**This memo is to share a list of outstanding items as of today that we require regarding these projects:**

**24 School Street-Winsor Place: Cumulative ground water mounding analysis:** for any septic system over 2,000 gpd this analysis is required as per Title 5 Regulations 15.240 (12). The septic design was submitted for our review on November 29, 2017 without the groundwater mounding analysis, therefore the submittal is incomplete. This analysis is critical for our review to see the extent of the mound. The required 50 foot offset to wetlands will be measured from the edge of the mound. I do not know if Title 5 Regulations can be met until it is received. The **revised stormwater report** is also still outstanding and critical to the design and how it impacts the septic system.

**113-119 BPR – Cascade Wayland: Accurate list of waivers:** We request a list of the BoH waivers being requested in writing by the applicant. Originally the waiver list referenced waivers from, "all BoH Regulations" which is not acceptable.

**Missing information:** The architectural plans have been revised including the footprint of the building and the outline of the proposed leaching areas. On 2/7 we received site plans that include deep test hole locations, and numbers for identification, however, the outline of the 2 leaching areas is not shown. We request this be added to the plan and a full sized plan be provided, otherwise it is not useful for our review. The soil testing details from 11/10/17 in the storm water drainage area(s) have still not been provided.

**Hydrogeo study not provided:** this was requested by BoH to assist in our review due to concerns for; the design flow of 9,900 gpd, the soils/ESHGW/ledge/offsets, and waivers being requested. This study has been going on since 10/31/17. The study will include a mounding analysis. The 50 foot offset to wetlands will be measured from the edge of the mound and I do not know if required offsets can be met. We were advised by Joe Peznola that the study is expected around February 19th and given the timetable, this does not allow adequate time for review. I urge the ZBA to require that the study be provided and request an extension for this project to allow adequate time for staff and peer review of the study once it is provided.

**Additional soil testing due to concern for ledge:** I request additional soil testing and investigation to be done by the project applicant based on concerns for ledge (bedrock). I have serious concerns regarding the areas of ledge that have been encountered due to the large size of the system, close proximity to wetlands, cold water brook, and no alternative area to relocate the system. Untreated sewage can move quickly from the leaching area into ledge fractures and contaminate the brook. When Title 5 Regulations were created they did not expect systems this size/gpd to be proposed, wetland offsets in Title 5 did not consider these large systems as they expected wastewater treatment facilities to support these large flows. This issue could also impact stormwater. The following investigation is requested to be provided by the developer as part of the hydrogeo study: Determine the integrity of the ledge; is it porous and/or rotten rock, research and map the underground topography; depth of ledge and depth/extent of soils as per Title 5 15.240, show the delineation of ledge on a map (where the ledge begins and ends).

**24 School Street-Winsor Place and 113-119 BPR – Cascade Wayland:** Updated site plans must be provided showing the revised footprint of the buildings and outline of septic system leaching areas and septic components, soil test hole locations, associated numbers and any monitoring wells onsite.



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Julia Junghanns, R.S., C.H.O.  
DIRECTOR OF PUBLIC HEALTH  
TEL. (508) 358-3617  
www.wayland.ma.us

## MEMORANDUM

Date: February 5, 2018  
To: Board of Health  
From: Julia Junghanns, R.S., C.H.O., Director of Public Health  
Subject: 113-119 Boston Post Road - Cascade Wayland – timely issues

Key dates: ZBA deadline – March 24, 2018, next ZBA hearing 2/27/18. Septic design plans have not been submitted to BoH for review. A hydrogeo study was requested by BoH to assist in our decision regarding their waiver requests and has been going on since the draft scope of work was received on 10/31/17. This is critical to our review. We were advised by Joe Peznola that it is expected around February 19<sup>th</sup>. As a note: ledge (bedrock) has been encountered on the property in soil testing witnessed by office staff. The architectural plans have been revised including the foot print of the building and the outline of the proposed leaching areas. We have requested that the plans be revised to include deep test hole locations, numbers for identification, and also soil testing details from 11/10/17 in the storm water drainage area(s). This information has still not been provided.

**I recommend further investigation based on concerns for ledge (bedrock).** At this time I have a concern for the areas of ledge that have been encountered on the project site due to the large size of the system proposed at over 9,000 gpd, and the close proximity to the wetlands and cold water brook. Untreated sewage can move quickly from the leaching area into ledge fractures and contaminate the brook. When Title 5 Regulations were created, they did not expect systems this size/gpd to be proposed, wetland offsets in Title 5 do not take consideration for these large systems. This issue could also impact stormwater. The following investigation is recommended as follows **to be requested from the developer** in the hydrogeo study:

- Determine the integrity of the ledge, is it porous and/or rotten rock
- Research the underground topography; i.e. depth and depth/extent of soils and ledge (where does the ledge begin and end). I suggest a non-intrusive investigation to find out where the ledge begins/ends and to provide a map of delineation.
- How big is the groundwater mound (this information will be included in the hydrogeo report)-this is critical to the design and protection of the brook and wetlands. The offset to wetlands should be measured from the edge of the mound.

**I also recommend further investigation into the thermal effects from the septic effluent on the cold water Brook.** Conservation will address this during their hearing process. Consideration should be taken for soils in the area (depths, types, ledge) and impact to brook.

Although we have not seen this in writing, Joe Peznola has advised that the following waivers have been requested from "BoH Regulations": flow of 110 vs 165 gpd, offset to wetlands, more than 1 inch of effluent on each dose cover. Note: Wayland BoH Regulations for offset to wetland require 100 feet; however, "such distances are considered minimum and may be increased for multiple Dwellings or higher volume sewage discharges. These distances shall be determined by the Board of Health on an individual basis, depending on the particular circumstances. **The BoH should look at potential tiering of distances for offset to wetlands.**

**Consider requesting to have monitoring wells placed right before the wetlands to be tested in the future.**




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TEL. (508) 358-3617  
www.wayland.ma.us

## MEMORANDUM

To: Zoning Board of Appeals

From: Julia Junghanns, Director of Public Health  
The Board of Health 

Date: August 17, 2017

Subject: 113-119 Boston Post Road-Chapter 40B Affordable Housing Project  
(Mahoney's Garden Center) Cascade Wayland

The Board of Health has received the Comprehensive Permit application for the construction of an affordable housing project at 113-119 Boston Post Road. The ZBA has requested comments from the Board of Health (BoH) regarding this project. At this time, we have received a grading, drainage and utility plan that shows a septic layout but we have not received a detailed septic system design plan for this project. Additionally, there are discrepancies in the numbers provided for expected design flows.

Health Department Staff and the Board of Health have reviewed the proposed site plans (layout, grading, and utility plans) and building plans for this project. Based on a review of these plans we are providing comments however we request that the ZBA wait for further comments from the BoH before this project is approved. Once we receive a detailed septic design plan or WWTF design and clarification of expected design flows we will know which Town or State Regulations they will need to request waivers from and we will be able to provide more specific comments. As per the State Title 5 Regulations, the BoH is allowed up to 45 days from the date of receipt to review and provide comment or disapproval.

The property is NOT located in a Zone II (Nitrogen Sensitive) area as defined by MassDep.

### Discrepancies in Design Flow

The Comprehensive Permit Application letter (page 4) outlines details of this project as follows: 60 units and 96 bedrooms are proposed (15 affordable units). Using 110 gallons per bedroom the flow would be 10,560 gallons per day. A flow of over 10,000 gallons per day would require a Ground Water Discharge Permit from MassDep. If the project is over 10,000 gpd then the project proponents must pursue and obtain a GWDP with Mass Dep.

The grading, drainage, and utility plans, include a septic system shown with 2 leaching fields providing a design flow of 9,900 gallons per day. This is equivalent to 90 bedrooms using 110 gallons per day. The layout includes what appear to be 2 recirculating sand filters (or some type of active innovative and alternative technology). Since we do not have detailed design plans for the septic system we can only speculate. At this time we have no information to confirm what type of technology is being proposed or the corresponding state approval letter with outlined requirements. These types of systems can be added to a septic design for many

reasons such as; to reduce the required size (square footage) of a leaching area, improve the quality of the sewerage effluent, or reduce the offset required to the water table.

Since we have no details regarding what the proposed Innovative and Alternative system would be (nor do we know for sure if one will be proposed) we cannot determine if it would provide adequate treatment for this project which will be very close to or over a design flow of 10,000 gpd. Additionally, the property is an environmentally sensitive area due to Pine Brook being located at the rear of the property. Careful consideration should be given in determining method of sewerage treatment for this project site. A small package treatment plant could be a better option for this site.

On page 6 of the Comprehensive Permit Application; under "Wastewater" the letter references as follows: "Cascade will design and build a new wastewater system. Depending upon the particulars we will build either an IA septic system or a Private Waste Water Treatment Facility. In either case this will be a significant improvement for effluent treatment when compared to existing or adjacent conditions. We anticipate Cascade will require treatment of approximately 4,450 gallons per day. DEP Empirical value." The proponents have not made this demonstration in the documents provided. Our specific concerns are described in detail in this memorandum.

#### **Hydrogeologic study with MassDep for a GWDP**

We are in receipt of a letter from MassDep, dated June 29, 2017 titled, "Hydrogeologic Scope of Work/Approval". Details in the letter explain that, "MassDep completed a review of the hydrogeologic scope of work submitted by the project proponent to support a future groundwater discharge application for Cascade Wayland residential development. The document is dated May 5, 2017 and outlines the tasks that will be completed to assess the soil and groundwater conditions at the proposed discharge location. The information gathered during the investigation will be used to determine the suitability of the site to accept 9,900 gallons per day of treated sanitary effluent." This means that they have begun the process with MassDep to conduct a hydrogeological study on the property in preparation of obtaining a Groundwater Discharge Permit. However, the flow being represented in the letter is 9,900 gallons per day which is under 10,000 gallons per day and therefore would not technically require a Groundwater Discharge Permit from MassDep. From what I understand, the project proponent could still pursue a GWDP with MassDep even if the flow does not require it. I contacted MassDep directly to discuss this letter and obtain an update on any activity, and as of August 8th no one from Dep has been contacted by the project proponent to set up soil testing or a site visit, and they have not heard from anyone since the end of June.

#### **Soil conditions**

Soil testing and percolation testing have been conducted on the property and we have witnessed at least 18 deep test holes on this job site. Soils on the project site vary greatly and range from well-draining sands to poorer soils of very fine loamy sand, and sandy loams. Percolation rates range from less than 2 mpi to 16 mpi. The higher percolation rates require larger sized leaching areas. The grading, drainage, and utility plan show 2 deep test holes that lie in the locations of the proposed leaching areas (one in each leaching area), however, there are at least 8 test holes including percolation tests that were conducted in the areas of the proposed leaching areas (and are not shown on the plans). These test holes show estimated seasonal high ground water as high as 34" from the surface of the ground. Groundwater mounding calculations are required for projects of greater than 2,000 gpd. An important fact to note is that soil testing was conducted in the winter (Dec/Jan), not during high ground water season (as per Town BoH Regulation). Depending on the layout of the leaching areas, we would require soil testing and percolation testing providing a minimum of one test hole and perc in each corner of both leaching areas (4(2)=8) and also one in the middle of each leaching area.

Leaching area sizing: Assuming 96 bedrooms using 110 gpd, a 20 minute per inch percolation rate and a loading rate of .53 the leaching field would be 19,925 square feet with a reserve area the same size. Based on these assumptions using the Town BoH Regulations of 165 gallons per bedroom the leach field size would be 29,887 square feet (a difference of 9,962 square feet). Town Regulations for new construction require a larger leaching area to prevent premature failures. Our Town BoH Regulations for residential new construction require 165 gpd per bedroom to size the leaching area and a reserve area of the same size would be required.

The Board and the Director feel that the project is too large for the property due to the soil conditions, high ground water table, and the environmental sensitivity of the area due to the close proximity to Pine Brook. If the project were downsized to 62 bedrooms the leaching field sizing could meet Wayland BoH Regulations.

Affordable Housing 40B projects often propose to overlook Town Regulations and utilize the State Title 5 Regulations requesting waivers from the ZBA (see outlined waivers below). Depending on the final location of the leaching areas additional soil testing and percolation testing may be required. In poor soils an appropriately sized leaching area will be critical to ensure the septic system does not fail prematurely. The Local Regulations should be seriously considered to ensure longevity of the new septic system. Also, the reserve area should be constructed at the same time as the primary septic system which would help to avoid major construction complications and problems when the primary system fails. NO garbage grinders should be allowed.

There are no deep test holes or percolation tests in the area of the infiltration/drainage structure. The drainage structure is very close to or inside Pine Brook, as well as close to the property line. Impacts on the stream from the drainage structure should be looked at closely. Soil testing and percolation testing should be conducted in the areas of the proposed drainage structures with specific attention to identifying the estimated seasonal high ground water table. This soil testing should be witnessed by Health Department staff. Information on the drainage is not detailed. A detailed drainage report with design criteria and drainage calculations should be required to be completed for the project. A peer review on drainage should be done by a professional consultant.

#### **Waiver Requests from BoH Regulations**

The below noted waiver requests are identified in the Comprehensive Permit Application on page 8 & 9 "Exhibit A-4" as follows:

Board of Health Regulations

Floor Drain Regulation

Regulations for On-site Subsurface Disposal Systems; Section 3, Section 4, Section II(C )(1), Section II(C )(2), Section II (D), Section II (E ), Section II (G)(2), Section II (G) (5), Section II (L)

We request that the ZBA wait for further comments from the BoH before waiving any Board of Health Regulations for this project. Once we receive a detailed septic design plan or WWTF design and clarification of expected design flows we will know more about this project and which Town or State Regulations they will need to request waivers from. Also, the discrepancies in the design flow need to be resolved. We will then be able to provide more specific comments regarding the above referenced waiver requests. As per the State Title 5 Regulations, the BoH is allowed up to 45 days from the date of receipt of a septic system design to review and provide comment or disapproval.

#### **Wetland offsets and proximity to Pine Brook**

Town BoH Regulations require a 100 foot offset to wetlands for flows of 1,000 gallons per day or more. There is a brook and wetlands in close proximity at the rear of the property, and the project is within the 100 year flood plain.

The grading, drainage and utility plans show that the leaching area is approximately 59 feet from the wetlands. This would place an undue risk to the brook and wetlands and also the potential for excessive runoff or flooding of the brook. There is also a large retaining wall shown on the plans that runs along the property line.

Pine Brook is designated by the state as a cold water habitat for Eastern Brook Trout, therefore, it is very important to maintain the cold temperature of the stream. Wastewater (hot in temperature) could end up in the brook impacting the temperature of the brook and creating a thermal problem. One consideration would be to move the leaching fields away from the brook & wetlands and closer to the road.

**General comments**

The Board and the Director feel that the design flow for the project is too large for the property due to; soil conditions, the high ground water table, and the environmental sensitivity of the area due to the close proximity to Pine Brook. The project should be scaled back to suit the varied/poor soil conditions, high ground water table, and environmental sensitivity of the area. If the project were downsized to 62 bedrooms the leaching field sizing could meet Wayland BoH Regulations.

Board member, Dr. Arnold Soslow provided comments at the BoH meeting that a Waste Water Treatment Facility (WWTF) is necessary for a project this size which will be close to 10,000 gpd.

The project proponent made statements at a BoH meeting that they are reducing the impervious area. However, it is unclear what the existing impervious area is as compared to the proposed impervious area. We have no numbers to compare to support this statement.



# TOWN OF WAYLAND

41 COCHITUATE ROAD  
WAYLAND, MASSACHUSETTS 01778

Julia Junghanns, R.S., C.H.O.  
DIRECTOR OF PUBLIC HEALTH  
TEL. (508) 358-3617  
www.wayland.ma.us

## MEMORANDUM

To: Board of Selectmen, Planning Board, Zoning Board

From: Julia Junghanns, Director of Public Health  
The Board of Health

Date: July 22, 2016

Subject: 113-119 Boston Post Road-Chapter 40B Affordable Housing Project  
(Mahoney's Garden Center) Brookside Residential Development

We received a letter from the proposed developer of this project. The letter outlines details of this residential development project as follows: 60 units and 90 bedrooms are proposed using 110 gallons per bedroom with a flow of 9,900 gallons per day. Assuming a 20 minute per inch percolation rate and a loading rate of .53 the leaching field would be 18,680 square feet with a reserve area the same size. Based on these assumptions using the Town BoH Regulations of 165 gallons per bedroom the leach field size would be 28,018 square feet. These Regulations incorporate a larger leaching area to prevent premature failures.

The current septic plans serving Mahoney's Garden Center show poor soils and high percolation rates. Our Town BoH Regulations for residential new construction require 165 gpd per bedroom to size the leaching area and a reserve area of the same size would be required. Affordable Housing 40B projects often propose to utilize the State Title 5 Regulations which overlooks the Town Regulations, and often requesting waivers from the ZBA. Soil testing and percolation testing must be conducted at this project site and this issue will be discussed in more depth once we have more information on the soils. In poor soils an appropriately sized leaching area will be critical to ensure the septic system does not fail prematurely. The Local Regulations should be seriously considered to ensure longevity of the new septic system. Other considerations; the reserve area should be constructed at the same time as the primary septic system. This would avoid major construction complications and problems when the primary system fails. Also, NO garbage grinders should be allowed, Town BoH Regulations require a 75 foot offset to wetlands, there is a stream/brook in close proximity and the flood plain boundary, and groundwater mounding calculations are required for projects of greater than 2,000 gpd. Once we have a draft septic design we will have a better idea of other Town or State Regulations that they may be requesting waivers from. The DPW should be consulted to determine if there is adequate town water supply for a project this size.

We feel that the project is too large and the number of bedrooms proposed in this concept plan should be scaled back to suit the environmental sensitivity of the area and the poor soil conditions.