W-1396
November 29, 2012

Mr. Kevin Brander
Massachusetts Department of Environmental Protections
Northeast Regional Office
205B Lowell Street
Wilmington, MA 01887

Re: **BRP WP 81 – General Permit for Small Wastewater Treatment Facility**
Wayland, Massachusetts

Dear Mr. Kevin Brander

Tighe & Bond is submitting the following documents as part of the General Permit for Small Wastewater Treatment Facilities application as part of the Town Offices groundwater discharge project in Wayland, MA on behalf of the Town of Wayland. Enclosed please find the BRP WP 81 application including a supplemental memo describing the project and all corresponding attachments. The transmittal form (Transmittal No. X253712) for the permit application is also enclosed.

Please contact the undersigned if you have any questions or issues at (508) 471-9605 or IBCatlow@tighebond.com

Very truly yours,

TIGHE & BOND, INC.

Ian B. Catlow, P.E.
Project Manager

Enclosures: Transmittal Form
BRP WP 81 Application
Wayland WWTP Groundwater Discharge Permit Application Supporting Materials
Attachments 1-7

Copy (w/encl): John Moynihan, Town of Wayland
Fred Knight, Wayland Wastewater Management District Commission
Bill Murphy, R.S., Town of Wayland Health Agent
MassDEP Boston
Greg Tomaszewski, MassDEP NERO
Karla L. King, P.E., Tighe & Bond
File W-1396/Correspondence

J:\W\W1396 Wayland\Hydrogeologic Report\Permit Application\BRP WP 81\Cover Letter Massdep.Doc

Enter your transmittal number → X253712 (Transmittal Number)

Your unique Transmittal Number can be accessed online: http://mass.gov/dep/service/online/trasmfrm.shtml

Massachusetts Department of Environmental Protection

Transmittal Form for Permit Application and Payment

1. Please type or print. A separate Transmittal Form must be completed for each permit application.

2. Make your check payable to the Commonwealth of Massachusetts and mail it with a copy of this form to: DEP, P.O. Box 4062, Boston, MA 02211.

3. Three copies of this form will be needed.

Copy 1 - the original must accompany your permit application. **Copy 2** must accompany your fee payment. **Copy 3** should be retained for your records

4. Both fee-paying and exempt applicants must mail a copy of this transmittal form to:

MassDEP
P.O. Box 4062
Boston, MA
02211

*** Note:**
For BWSC Permits, enter the LSP.

A. Permit Information

1. Permit Code: 7 or 8 character code from permit instructions	2. Name of Permit Category
BRP WP 81	General Permit for Small WWTF

3. Type of Project or Activity: Groundwater Discharge for WWTF

B. Applicant Information – Firm or Individual

1. Name of Firm - Or, if party needing this approval is an individual enter name below: Wayland Wastewater Management District Commission, Fred Knight, Chairman

2. **Last Name** of Individual	3. **First Name** of Individual	4. MI

5. Street Address: 41 Cochituate Road

6. City/Town	7. State	8. Zip Code	9. Telephone #	10. Ext. #
Wayland	MA	01778	508-358-3696	

11. Contact Person	12. e-mail address (optional)
John Moynihan, Facilities Director	jmoynihan@wayland.ma.us

C. Facility, Site or Individual Requiring Approval

1. Name of Facility, Site Or Individual: Town of Wayland Wastewater Treatment Plant

2. Street Address: 30 Old Sudbury Road

3. City/Town	4. State	5. Zip Code	6. Telephone #	7. Ext. #
Wayland	MA	01778	508-358-3696	

8. DEP Facility Number (if Known)	9. Federal I.D. Number (if Known)	10. BWSC Tracking # (if Known)

D. Application Prepared by (if different from Section B)*

1. Name of Firm Or Individual: Tighe & Bond

2. Address: 446 Main Street

3. City/Town	4. State	5. Zip Code	6. Telephone #	7. Ext. #
Worcester	MA	01608	508-471-9605	

8. Contact Person	9. LSP Number (BWSC Permits only)
Ian B. Catlow, P.E.	

E. Permit - Project Coordination

1. Is this project subject to MEPA review? ☐ yes ☒ no
   If yes, enter the project's EOEA file number - assigned when an Environmental Notification Form is submitted to the MEPA unit:

EOEA File Number

F. Amount Due

DEP Use Only

Permit No:

Rec'd Date:

Reviewer:

Special Provisions:

1. ☒ **Fee** Exempt (city, town or municipal housing authority)(state agency if fee is $100 or less).
   There are no fee exemptions for BWSC permits, regardless of applicant status.
2. ☐ Hardship Request - payment extensions according to 310 CMR 4.04(3)(c).
3. ☐ Alternative Schedule Project (according to 310 CMR 4.05 and 4.10).
4. ☐ Homeowner (according to 310 CMR 4.02).

Check Number	Dollar Amount	Date

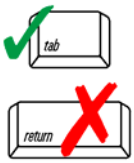
Massachusetts Department of Environmental Protection
Bureau of Resource Protection – General Groundwater Discharge Permits
Notice of Intent for General Permit Coverage
BRP WP 80 General Permit for Specified Discharges
BRP WP 81 General Permit for Small Wastewater Treatment Facilities

X253712
Transmittal #

Facility ID/Permit # (if known)

A. General Information

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



1. Which permit category are you applying for:

☐ BRP WP 80 General Permit for Specified Discharges
☒ BRP WP 81 General Permit for Small Wastewater Treatment Facilities

*Please note: In accordance with 314 CMR 5.09, these permit categories may require that a Hydrogeological Evaluation be submitted **prior to** the submittal of the permit application. Please see the application form and instructions for **BRP WP 83.***

2. Applicant Information:

Wayland Wastewater Management District Commission, Fred Knight, Chairman

41 Cochituate Road
Address

Wayland | MA | 01778
City/Town | State | Zip Code

508-358-3696 | fred@knightway.org
Telephone | Email Address

3. Applicant Contact Information (if different from above):

John Moynihan | Town of Wayland
Contact Name | Company Name (If applicable)

Facilities Director
Title

41 Cochituate Road
Address

Wayland | MA | 01778
City/Town | State | Zip Code

508-358-3696 | jmoynihan@wayland.ma.us
Telephone | Email Address

4. The legal entity which owns this facility is:

☐ Individual ☐ Private ☐ Corporation ☐ Federal

☐ State/County ☒ Municipality ☐ Other: _____

Please provide legal ownership documents with this application.

5. Facility Information:

Town of Wayland Wastewater Treatment Plant
Name of facility

30 Old Sudbury Road
Address

Wayland | MA | 01778
City/Town | State | Zip Code

508-358-3696 | _____
Telephone | Email

A. General Information (cont.)

6. Facility Operator Information:

   Give the name, as it is legally referred to, of the person, firm, public organization or other entity which will operate the facility described in this application. If the facility owner is also the operator, write owner and list mailing address only if different from that listed in number 1 above.

Jeremiah Murphy	WhiteWater, Inc.			
Operator Name	Operator Company			
253B Worcester Road				
Address				
Charlton	MA	01507	888-377-7678	
City/Town	State	Zip Code	Telephone	
License # 2791, Grade 6C	jmurphy@rhwhite.com			
License Number and Operator Grade	Email address			

B. Project Information

1. Does the project affect a site of historic or archeological significance, as defined in regulations of the Massachusetts Historical Commission, 950 CMR 71.00?

   ☐ Yes ☒ No

2. Does this project require a filing under 301 CMR 11.00, the Massachusetts Environmental Policy Act?

   ☐ Yes ☒ No

   If yes, has a filing been made? (Please indicate the EOEA File Number)

   ☐ Yes ☐ No EOEA File Number

3. Is this a RCRA facility as defined in 314 CMR 8.03?

   ☐ Yes ☒ No

   If yes, submit the information on Form HW contained in 314 CMR 8.20 in accordance with the provisions of 314 CMR 8.08.

4. Is the discharge for this facility within:

   a. The Zone I, Zone A, Zone II, or Interim Wellhead Protection Area of a public water supply?

      ☐ Yes ☒ No

   b. A private water supply area?

      ☐ Yes ☒ No

   c. A sole source aquifer?

      ☐ Yes ☒ No

B. Project Information (cont.)

d. 100 feet of an Outstanding Resource Water designated in 314 CMR 4.00, a Special Resource Water designated in 314 CMR 4.00, a cold-water fishery as defined in 314 CMR 9.02, a bathing beach as defined in 104 CMR 445.000, or a shellfish growing area as defined in 314 CMR 9.02?

☐ Yes ☒ No

e. A nitrogen-sensitive area as designated by the Department in accordance with 310 CMR 15.215?

☐ Yes ☒ No

f. An area where the Department has determined based on a Total Maximum Daily Load or other technical report that more stringent effluent limits than those set forth in the General Permit are required to achieve or maintain compliance with the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?

☐ Yes ☒ No

If the answer to any of these questions is Yes, STOP. File for either BRP WP 79 - Individual Sewage Treatment Plant, or BRP WP 85 - Other Individual Groundwater Discharge Permits.

5. Improvements - Are you required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

☒ Yes ☐ No

If yes, answer the following:

Description of order or agreement (include enforcement document number, if applicable):

The proposed discharge will be used in conjunction with the facility's NPDES permit.

Identification No. of Affected Treatment Facility: NPDES Permit No. MA0039853

Description of Project

See attached Technical Memorandum titled "Wayland WWTP Groundwater Discharge Permit Application Supporting Materials"

TBD
Final Compliance Date

B. Project Information (cont.)

6. Has a hydrogeologic study been performed to determine the potential impact on the groundwater of the discharge or activity?

   ☒ Yes : X250635 (Application Transmittal Number) 10/26/12 (Date of Approval)

   Please attach a copy of the DEP Hydrogeologic Report Approval letter.

   ☐ No If no, **STOP.** ***Please Note:*** *In accordance with 314 CMR 5.09, these permit categories may require that a Hydrogeological Evaluation be submitted to the Department* ***prior to*** *the submittal of the permit application. Please see the application form and instructions for BRP WP 83.*

7. Are there any groundwater monitoring wells currently in place in the vicinity of the discharge or proposed discharge?

   ☒ Yes **If yes, please attach information on the type and location of the wells and available monitoring data.**

   ☐ No

8. Have plans and specifications for the treatment works been approved (see instructions) by the Department or if approved prior to July 1975, by the Department of Public Health?

   ☒ Yes **If yes, please attach copy of plans and specifications and approval letter.**

   ☐ No

9. Have opportunities for reclaimed water been evaluated?

   ☒ Yes ☐ No

10. Is there a local regulation governing the construction of wastewater treatment facilities?

    ☐ Yes **If yes, please include a copy of the local approval.**

    ☒ No

C. Facility Information

1. Facility Status: ☒ Existing ☐ Proposed

2. When did or when will this discharge begin? 1969, reconstructed 2012 (Date of Startup)

3. Check type of establishment producing or contributing to discharge:

   ☒ Residential:

   ☒ Condominium

   ☒ Apartment

   ☐ Elderly Housing

   ☐ Nursing Home

C. Facility Information (cont.)

☒ Other (specify): 17,000 gpd produced by Wayland Town Center mixed use development

Total # of Bedrooms: ____

☒ Municipality

☒ Business Nature of Business: Commercial, Office, and Supermarket

☐ School

☐ Other (specify): ____

4. Discharge (check one box only):

☒ Sewage ☐ Carwash

5. Design Flow: 68,572 gpd (52,000 NPDES, 17,000 GWD)
Daily Maximum gpd

STOP. *If the facility is either a Publicly Owned Treatment Works (POTW) or a Privately Owned Sewage Treatment Facility (PWTF) solely treating sewage, and design flow is ≥ 50,000 gpd, file* ***BRP WP 79*** *– Individual Permit for Sewage Treatment Facility.*

b) ☒ Check here if discharge occurs all year, or

1) List months discharge occurs ____

2) Number of days per week discharge occurs 7

6. Basis for design flow:

☐ The State Environmental Code – Title 5

☒ Other: 17,000 gpd is based on available groundwater discharge capacity. This is in addition to the plant's existing 52,000 gpd (12-month rolling average) surface water discharge.

7. Type of treatment and disposal system for discharge to ground:

Membrane bioreactor treatment facility with discharge to leaching trench discharge system. See attached memorandum for additional detail.

8. Location and method of wastewater treatment solids disposal:

Solids hauled to regional facility (New Bedford) for thickening, dewatering, and incineration.

C. Facility Information (cont.)

9. If a commercial establishment applying for a BRP WP 81 permit:

   A. Are any types of wastewater other than sanitary sewage produced?

   ☐ Yes If Yes, **STOP** and instead file for **BRP WP 79.**

   ☒ No

   B. Are any hazardous wastes generated? ☐ Yes ☒ No

10. Location of Facility:

   A. GPS Coordinates:

   1) Enter Latitude and Longitude to the nearest whole second for both the wastewater treatment facility and the effluent disposal area.

   Latitude: 42 d, 21 m, 38.01s N Longitude: 71 d, 21 m, 34.61 s W

   2) Provide a narrative description of the site and the feature to be permitted. As an example: "The site is on the west side of Main Street, the third building north of High Street. The disposal field lies 100 feet off the southwest corner of the building."
   3) Attach a site map based on the MassGIS Coordinate Information Tool that clearly indicates the site. The Coordinate Information Tool is available at http://maps.massgis.state.ma.us/images/dep/xyinfo/get_xy.html.

   B. Provide a topographic map or maps of the area extending at least to one mile beyond the property boundaries of the facility which clearly show the following:

      1) The legal boundaries of the facility;
      2) The location and serial number of each of your existing and proposed intake and discharge structures;
      3) All hazardous waste management facilities;
      4) All springs and surface water bodies in the area, plus all drinking water wells within one mile of the facility which are identified in the public record or otherwise known to you.
      5) All Zone II's or IWPA's.

      If an intake or discharge structure, hazardous waste disposal site, or injection well associated with the facility is located more than one mile from the plant, include it on the map, if possible. If not, attach additional sheets describing the location of the structure, disposal site, or well, and identify the U.S. Geological Survey (or other) map corresponding to the location.

   C. Please list any public or private drinking water supply wells within 2,500 feet of the discharge area:

Well Location	Type of Well (Public/Private)	Status (Active/Inactive)	Safe Yield
See attached table			

C. Facility Information (cont.)

11. Water Supply Data

A. List sources of water supply and annual water consumption for the past five years.

Water Sources	Year 1	Year 2.	Year 3.	Year 4.	Year 5.
See Attached Table					
1.					
2.					
3.					
Total:					

B. Please show the location of your water sources on the map described in question 10.

D. Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my diligent inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I will be responsible for publication of public notice of the applicable permit proceedings identified under 314 CMR 2.06(1)(a) through (d)."

	Fred Knight, Chairman WWMDC
Signature of Applicant	Printed Name of Applicant
Date Signed	
Ian B. Catlow, P.E.	508-471-9605
Name of Preparer	Telephone
Project Manager, Tighe & Bond	ibcatlow@tighebond.com
Title of Preparer	email

Wayland WWTP Groundwater Discharge Permit Application Supporting Materials

TO: Kevin Brander, DEP NERO

FROM: Ian Catlow, P.E.

COPY: John Moynihan, Town of Wayland

Fred Knight, WWMDC

DATE: November 26, 2012

The purpose of the following memorandum is to provide documentation supporting the Wayland Wastewater Management District Commission's (WWMDC) application for coverage under the State's General Permit for Small Wastewater Treatment Facilities (BRP WP 81). Sections that follow provide a brief project description and a summary of system design criteria.

1 Project Background & Description

The Wayland WWTP is located on the former Raytheon property in Wayland Massachusetts. The property is situated along the Sudbury River off of Route 20 between Boston Post Road and Old Sudbury Road (See Site Map, Appendix A). The WWTP was originally constructed in 1961 by Raytheon and designed to treat effluent from its facilities to secondary standards. The WWTP was upgraded in 1973, through the addition of a multimedia filter and chemical feed system, to provide tertiary treatment for the reduction of phosphorus. The existing WWTP outfall discharges to a wetland adjacent to the Sudbury River.

In the 1990's the property was acquired by Wayland Business Center LLC, who redeveloped the abandoned commercial property. The developer also sought to renew the previous Raytheon NPDES permit for the WWTP and was denied because USEPA and MADEP viewed the discharge as a new source. The Federal Clean Water Act (CWA) serves as the regulatory basis for the NPDES program. Two main tenants derived from the Act include the concepts of anti-backsliding and anti-degradation. USEPA Region 1 has traditionally interpreted the anti-backsliding provisions of the Act to mean that a permit cannot be issued with less stringent effluent limits than an existing permit. The anti-degradation provisions of the Act prevent USEPA from issuing a permit that would degrade existing water quality. The authorities initially proposed to require a 0.2 mg/L phosphorous discharge permit. After negotiations, a new NPDES permit was issued in September, 1998 allowing Wayland Business Center, LLC to discharge at a phosphorous limit of 0.5 mg/L in exchange for accepting flows and reducing phosphorous loading from non point sources in the area. The permit stipulated that a minimum of 4,740 gallons per day (GPD) and up to 20,000 GPD must be connected and serviced from failing septic systems. The NPDES was renewed in 2003 and 2008. In 2008, a challenge to the proposed renewal parameters led to a more stringent phosphorous level of 0.1 mg/L. The NPDES permit renewal is required by December 1, 2013.

The Town acquired the WWTP in 1999 via eminent domain. When the Town acquired the WWTP from the Wayland Business Center LLC, it agreed to continue to provide sewer service to the former Raytheon property and committed to provide 45,000 GPD (Title 5 basis) of the WWTP's capacity to the developer. In taking over the plant the Town also

accepted the responsibility for treating the flows from more than two dozen aging and potentially inadequate septic systems in the area.

In 2003 the parcel surrounding the plant was purchased by Twenty Wayland, LLC, who planned to redevelop the existing office buildings as a mixed use development. This development project is slated for completion in late 2013. Based on MassDEP's concern that actual flows discharged by the WWTP will exceed the permitted 12-month rolling average flow limit of 52,000 GPD, MassDEP has required the WWMDC to permit additional discharge capacity under the Groundwater Discharge Permitting Program prior to the release of any additional connections to the WWTP.

In summer 2009, the Town commenced design of a new WWTP utilizing membrane bioreactor technology to handle the more stringent NPDES permit. The new WWTP has been designed and constructed, and recently started accepting flow. As part of the construction project, the original WWTP will be demolished.

However, in order to accommodate flows exceeding the 52,000 GPD 12-month rolling average flow limit for the NDPES permit, the Town is pursuing a Groundwater Discharge permit to accommodate additional flow produced throughout the service area. The total flow, based on Title 5 capacity allocation projections, that the Town anticipates from the current connections and Twenty Wayland is 68,572 GPD. The Groundwater Discharge permit that the Town is pursuing is for 17,000 GPD at the Town Administration Building. This 17,000 GPD will provide sufficient capacity to release the remaining allotment of Twenty Wayland's committed capacity.

2 Project Design Criteria

The following subsections provide an overview of effluent limits, design flows and loads for the Wayland WWTP.

2.1 Effluent Requirements

The NPDES permit and the Groundwater Discharge permit limit the flow and amount of pollutants that the facility may discharge to the receiving water and the groundwater respectively. Effluent requirements for both groundwater discharge and surface discharge to the Sudbury River are discussed in this section.

The majority of the conventional flow and pollutant limits for the Wayland WWTP permit are similar to those imposed on other municipal treatment facilities. Specifically, limits on effluent BOD, TSS, pH, and fecal coliform are similar to those observed at other plants located on the Sudbury, Assabet or Concord Rivers. Additionally, the monthly average flow, reported as an annual rolling average limit, is EPA's standard method of limiting facility flows. This method of flow measurement has benefited communities that experience seasonal high flows due to excessive infiltration and inflow. While Wayland does not appear to have a significant problem with infiltration and inflow, this method of flow reporting may help the Town remain in compliance with its permit as its service area expands and there are seasonal variations in the quantity of wastewater produced by commercial users.

As discussed above, the NPDES permit provides two different sets of discharge limits based on the location of the outfall. Table 2-1 lists the NPDES permit limits for the WWTP discharge to the Sudbury River outfall. Table 2-2 lists the Groundwater Discharge permit limits for the WWTP discharge to soil absorption system at the Town Administration Building.

TABLE 2-1
NPDES Permit Limits for a Discharge to the Sudbury River

Parameter	Average Monthly	Average Weekly	Maximum Daily
Flow	0.052 MGD		

Parameter	Average Monthly Concentration	Average Weekly Concentration	Maximum Daily Concentration
$CBOD_5$	30 mg/l	45 mg/l	Report
TSS	30 mg/l	45 mg/l	Report
Total Phosphorous	0.1 mg/l		
pH Range	Must be maintained within the range:		6.5 - 8.3 SU
Fecal Coliform	200 cfu/100ml		400 cfu/100ml
Whole Effluent Toxicity	Acute $LC_{50} \geq 100\%$ measured Yearly		

TABLE 2-2
Anticipated Groundwater Discharge Permit Limits

Parameter	Average Monthly
Flow	0.017 MGD

Parameter	Average Monthly Concentration
$CBOD_5$	30 mg/l
TSS	30 mg/l
Nitrate Nitrogen	10 mg/l
Total Nitrogen	10 mg/l
Oil and Grease	15 mg/l
Surfactants	1.0 mg/l

The upgrade of the WWTP has taken in to consideration the removal of nitrogen for the purposes of compliance with the Groundwater Discharge permit as well as the potential that nitrogen removal may be a NPDES permit requirement over the design life of the facility upgrade. There are several additional reasons why nitrogen removal was included in the design of the upgraded WWTP, including the following:

- Nitrogen removal at the WWTP will protect water quality at municipal supply wells located downstream of the plant;
- Nitrogen removal at the WWTP will reduce nutrients available to noxious aquatic plants in the Sudbury River, thereby potentially limiting their growth;

- Performing nitrification and denitrification (both needed to remove nitrogen) within the plant can reduce process alkalinity demand by up to 40%;

- Performing nitrification and denitrification within the plant can reduce process oxygen demands by over 15%;

The WWTP was designed for a total nitrogen limit of 10 mg/l for compliance with the groundwater discharge permit, potential future NPDES limits, and for other environmental and process benefits.

2.2 Design Flow

To develop the wastewater treatment plant upgrade design a number of key plant loading and water quality parameters were defined. The loading parameters are usually determined based on historical operating data and projected future flows and loads. In the case of the Wayland WWTP, the historical flows are significantly less than the future flows and loads anticipated from the new development. Since the new development will be providing more than 85% of the future flow, it was necessary to perform the flow and load calculations by taking into account the planned uses within the development as well as the existing offsite flows. A brief summary of design conditions and effluent limitations follows.

Design flows for the basis of WWTP design are based on the average annual daily flow of 52,000 GPD listed in the facility's NPDES permit. Peaking factors developed to evaluate systems under a variety of flow conditions are also utilized to generate maximum monthly, daily and hourly peak flows. These peaking factors are based on data published in the Guide for the Design of Wastewater Treatment Works (TR-16) (NEWIWPCC, 1998), as well as operational data collected from similar facilities. Various peaking factors and projected flows are summarized in Table 2-3.

TABLE 2-3
Design Flow Projections

	Projected Flow Rate		
Flow Parameter	**(GPD)**	**(MGD)**	**Peaking Factor**
Average Daily Flow	52,000	0.052	1.0
Maximum Monthly Flow	78,000	0.078	1.5
Maximum Daily Flow	135,200	0.135	2.6
Peak Hourly Flow	218,400	0.219	4.2

Peaking Factors from New England Interstate Water Pollution Control Commission, Technical Report #16

To achieve consistent compliance with the specified monthly NDPDES permit limits, all biological processes considered were designed to meet permitted effluent limits at maximum monthly flow. Additionally, the WWTP is generally designed with a sufficient hydraulic capacity to pass the peak day flow with one treatment train out of service.

2.3 Design Loads

Generating an accurate estimate of influent pollutant and nutrient loads is important to sizing process units within a WWTP. Influent loadings for this evaluation were determined based on an analysis of the wastewater treatment plant records as well as projected loads for the new development. Anticipated Wayland Town Center loading projections were

created using land use information from the Final Environmental Impact Report, written by Epsilon Associates, Inc. dated February 15, 2008. Using historical user data and standard statistical techniques, influent pollutant loadings were estimated for biochemical oxygen demand (BOD), total suspended solids (TSS), ammonium (NH4), and total phosphorous (TP). Influent pollutant loadings for BOD, TSS total Kjeldahl nitrogen (TKN), and total phosphorous at both average day and maximum month design conditions are summarized in Table 2-4. Corresponding influent concentrations at average day and maximum month design flows are presented in parentheses following the design load.

TABLE 2-4
Design Load Projections

Parameter	Average Daily Load	Maximum Monthly Load
BOD_5	164.90 lb/day (380 mg/l)	230.87 lb/day (355 mg/l)
TSS	164.90 lb/day (380 mg/l)	230.87 lb/day (355 mg/l)
Total Phosphorous	4.34 lb/day (10 mg/l)	5.64 lb/day (9 mg/l)
Total Kjeldahl Nitrogen (as N)	17.36 lb/day (40 mg/l)	22.57 lb/day (35 mg/l)

Peaking Factor created from Figure 3-8 M&E p. 195. (BOD-2; TSS-2; TP-1.3; TKN - 1.7)

3 Process Overview

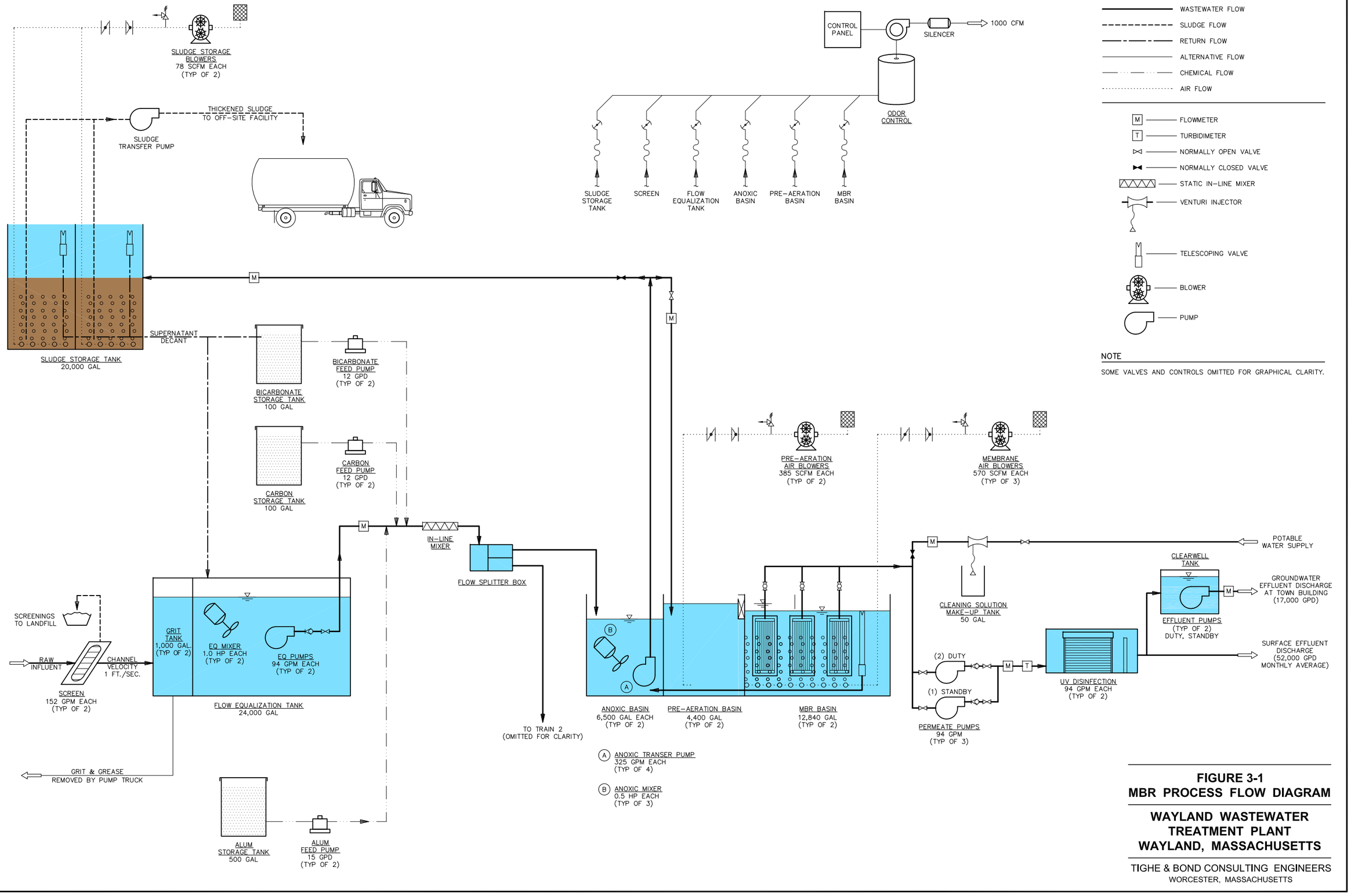
3.1 Membrane Bioreactor Design

Membrane bioreactor systems incorporate many of the components of conventional activated sludge processes which are designed to remove solids, biochemical oxygen demand (BOD), and nitrogen compounds. Conventional systems often include a series of aerated and non-aerated tanks where biological processes occur, followed by a clarifier where solids are removed. Membrane bioreactors eliminate the clarifier from the process by adding submerged membrane filters to the aeration tanks. The membrane filters have pore sizes that are fractions of a micron which keep solids within the aeration tank while allowing clarified water to pass through the system for discharge or additional treatment.

Typical membrane bioreactor (MBR) designs include preliminary treatment, flow equalization, biological nutrient removal, membrane filtration and ultraviolet disinfection prior to discharge. Odor control is often provided for aerated process tanks, or other processes such as sludge thickening that generate odors. All of these functions are located within the new WWTP building located near the Wayland Town Center project. Sludge storage is provided in a tank also located in the new WWTP building. A process flow diagram for the WWTP is included in this section as figure 3-1. The design of the new MBR system consists of the following components.

Fine Screens – Two (2), 2 mm fine screens are located at the head of the plant to provide coarse solids removal and protect the membranes from fouling and damage. Fine screens have been located to accept flow from both gravity and pressure sewers. Each screen is sized for the peak hourly flow of 152 GPM to provide the facility with 100% redundancy. The screens are are operated in a duty/standby fashion, so that in the event of clogging or mechanical failure, influent will be re-directed to the standby unit.

Grit Tank – A grit tank follows the screens to remove grit prior to contact with pumps and mixers. The grit tank is designed to remove particles with a specific gravity of greater than 2.65 at the peak hourly flow rate and provide grit storage. A baffle is located at the effluent



11/24/12 O:\PROJECTS\WT\WT396 WAYLAND\CONCEPTUAL\PROCESS\MBR New FIG 3-1

FIGURE 3-1
MBR PROCESS FLOW DIAGRAM

WAYLAND WASTEWATER TREATMENT PLANT
WAYLAND, MASSACHUSETTS

TIGHE & BOND CONSULTING ENGINEERS
WORCESTER, MASSACHUSETTS

end of the tank to prevent oil, grease and other floatables from passing into the biological treatment system. Both of these design objectives are accomplished within a 1,000 gallon tank. The tank is manually cleaned by a sludge pumping truck. The tank is located in the lower level of the WWTP so that screened influent can flow by gravity through the grit tank and into the equalization tank.

Equalization Tank – An equalization tank (EQ tank) dampens the effects of flow variations to minimize the size of the membrane filters. Influent enters the EQ tank and mechanical mixing prevents solids settling and the development of septic conditions within the tank. Pumps provide a consistent flow rate out of the tank to a flow splitter box, which feeds one or both of the two process trains. The flow equalization pumps are designed to distribute the maximum daily flow of 135,200 GPD over a 24-hour period. The pumps can either be controlled by the liquid level of the tank or cycle timers in the plant's control system. A flow equalization tank volume of 24,000 gallons is provided based on the maximum daily flow described above and diurnal flow variation observed at similar WWTPs.

Chemical Addition Systems – Three (3) chemical addition systems are utilized in the treatment process. Each system consists of a chemical storage tank with mixer and two chemical feed pumps.

- Potassium aluminum sulfate (alum) is used as a coagulant to assist in floc formation and phosphorus removal. The alum system is designed to provide 20 GPD of alum prior to the anoxic tanks.

- A carbon source chemical feed system is also provided to augment the food requirements in the biological process as needed. While process calculations do not presently indicate a need for supplemental carbon, the system is being provided for conditions which may occur during startup, or if the influent loadings are substantially different than presently assumed.

- Bicarbonate is also fed to the system to control the alkalinity within the system to aid in the nitrogen removal process. The alum, carbon and bicarbonate feeds all take place prior to the static mixers which proceed the anoxic tanks.

Biological Treatment Process – The MBR system is operated using the Modified Ludzack-Ettinger (MLE) process, which uses anoxic tanks followed by aeration tanks for BOD reduction, nitrification and denitrification.

- Anoxic Tanks – Two (2) anoxic tanks provide an anoxic zone for denitrification and alkalinity recovery, both of which are necessary to achieve an effluent total nitrogen concentration of less than 10 mg/l. These tanks are operated without aeration as completely mixed reactors through the use of submersible mixers. Process calculations indicate that a volume of 13,000 gallons is needed to reduce total nitrogen concentration to the level stated above at the maximum monthly flow. This volume is split evenly between two cast-in-place concrete tanks located below grade within the treatment plant building. Denitrified flow from the anoxic tanks is pumped to the pre-aeration and MBR tanks at a rate of four to six times the influent flow rate. In the aeration tanks, wastewater is nitrified and then returned to the anoxic tank via recycled flow piping. This internal recycling process reduces the total nitrogen present in the waste and recovers alkalinity lost during aeration. To accomplish this process, two anoxic pumps, each capable of pumping 325 GPM, are provided in each process train. These pumps are operated in a duty/standby mode to provide 100% redundancy.

- Pre-Aeration Tanks –Process calculations indicate that a total aerated volume of 34,400 gallons is needed to completely nitrify influent ammonia and remove BOD to permitted levels. This volume is split between the membrane tanks and the pre-aeration tanks. The size of the membrane tanks is governed largely by the size and spacing requirements of the membrane filters, and any excess aeration volume is dedicated to the pre-aeration tanks. This configuration allows the Operator to 'fine tune' process aeration by adding or subtracting the amount of air provided within the pre-aeration tank to meet process needs. Based on the anticipated size of the membrane filters, the pre-aeration tanks have been sized at 4,400 gallons each. Two (2) pre-aeration tanks, each containing independent fine bubble air diffuser systems are supplied by process air blowers with variable frequency drives. Two process air blowers have a capacity of 385 SCFM each, and are operated in a duty/standby mode. Process air blowers are controlled by dissolved oxygen probes located in each of the pre-aeration basins. The pre-aeration basins are designed as cast in place concrete tanks, sharing common walls with the anoxic tanks and membrane tanks. Effluent flows by gravity to the membrane tanks.

- Membrane Tanks – As described in the pre-aeration tank section, two (2) membrane tanks house the membrane filters and coarse bubble diffusers used for membrane cleaning. These tanks are sized based on manufacturer requirements for membrane size and spacing. Two membrane tanks, each roughly 13,000 gallons in size are required. The design is a plate membrane configuration, and the installed equipment was manufactured by Enviroquip, Inc. This configuration was selected for its high flux rate, low operational pressure requirements, durability and simple cleaning procedures. Plate membranes are also less susceptible to fouling by hair, oil, and grease, all of which will likely be present in the Wayland waste stream.

  Individual membrane cartridges (i.e. plates) are assembled in cassettes which each hold approximately 200 plates in a parallel orientation above a coarse bubble diffuser. Plates are evenly spaced such that diffused air introduced below the plates provides a constant air scour across the plate surface to prevent solids accumulation. This is important to the membrane system design because excessive solids build-up reduces the membrane flux rate. Cleaning air is typically applied to the cassettes at a rate of 0.35 SCFM per plate. Based on preliminary vendor information this yields a minimum cleaning air flow of roughly 210 SCFM. An additional factor of safety of 1.5 is typically applied to this number which yields a total cleaning air requirement of roughly 315 SCFM. This air is provided to the membranes by three tri-lobe positive displacement blowers operated in a 2 duty/1 standby configuration. The blowers are located in sound attenuating enclosures within the plant building to produce less than 69 dB at a distance of 3 meters from the unit.

  Membrane flux is a measure of the liquid filtration capacity of the membranes, typically expressed in units of gallons/ft^2-day. Membrane flux varies with water temperature, solids concentration and a number of other operating parameters, so it is often defined with other operating conditions. The membrane filters are capable of passing the maximum daily flow (135,200 GPD) at a mixed liquor suspended solids (MLSS) concentration of 10,000 mg/l with one treatment train out of service for a period of 24 hours. The system is designed to meet permitted effluent limits at the maximum monthly flow (78,000 GPD) indefinitely with a MLSS concentration of 10,000 mg/l.

  Flow through the membranes is induced by three permeate pumps, two operated in a duty mode with a single standby. Pump capacity is regulated by variable frequency drives and flow control valves based on the WWTP's influent flow rate. To meet the peak day flow condition described above, the permeate pumps must have a

peak capacity of 94 GPM. Inlet and discharge pressures are measured on permeate pumps to monitor membrane fouling. The pressure required to pull water through the membranes is often referred to as trans membrane pressure or TMP. For the plate system, the ideal TMP is between 2 and 4 PSI. Values over 4 PSI indicate that the operator should perform regenerative chemical cleaning of the membranes. These cleanings typically involve pumping a weak bleach or citric acid solution through the membranes in the reverse direction and allowing the solution to diffuse through the membranes over a couple hours. Following the soaking process, forward flow is re-instantiated and the cleaning solution is returned to the head of the plant. Filtered water is pumped to the UV disinfection system.

UV Disinfection Units – Two (2) channel type ultraviolet (UV) disinfection systems are installed in series to meet the WWTP's permit limits for fecal coliform. Each system provides a minimum UV dose of 30,000 uWsec/cm2 after 8,760 hours of operation based on the maximum month design flow with a 65% transmittance @ 254 nanometers wave length.

Solids Handling – Since the MBR system removes sludge from the anoxic tank the sludge produced is usually wasted at between 1 and 1.5% solids. Some settling/thickening will take place in the sludge holding tank. Sludge wasted from the process is diverted to the 20,000 gallon sludge storage tank. Redundant sludge blowers provide mixing and prevent septic conditions from occurring. Under average daily flow conditions, there is adequate storage capacity to hold waste activated sludge for seven days. It is assumed that sludge will be trucked off site roughly twice a week.

Process Building – The process building houses much of the process equipment associated with the MBR system. The building houses: pre-aeration and membrane tanks and blowers; membrane permeate pumps; WAS pumps; chemical storage and dosing equipment; sludge storage blowers; UV disinfection equipment; and process controls. The process building also houses the Operator's office, a laboratory and restroom facilities.

The building was designed and built using cast-in-place concrete foundations, a concrete block (CMU) superstructure, and exterior clapboard finish. The interior CMU finish provides the durability and water resistance needed at a WWTP, while the exterior clapboard skin is similar to other Planning Board approved buildings in the area.

Process tank volumes and equipment operating points for major unit operations are summarized in Table 3-1 and depicted on Figure 3-1.

TABLE 3-1
Design Summary - MBR

Unit Operation	Design Basis	Design Capacity	Notes
Fine screens	2 mm Opening per MBR Mfr. - Peak Peak Instantaneous Flow	152 GPM each	2 screens - 100% Redundancy 218,400 GPD÷1440 min/d = 151.67 GPM
Grit tank	Minimum 5 minutes of residence time at Peak Instantaneous Flow	1,000 GAL each	2 tanks to provide redundancy 152 GPM x 5min= 760 gal
Flow Equalization Tank	33% Peak Day Flow Ability to equalize peak day flow over 24-hours	24,000 GAL	78,000 GPD x 30%=23,400 gal Assume 8ft tank sidewalls with 1ft freeboard 24,000galx0.1337ft^3/gal÷(8ft-1ft) = 458.5ft^2 base Assuming 10ft width, the length would be approximately 45.85ft
Equalization Tank Mixer	0.3 HP/1,000 ft3 per TR-16	1.0 HP each	2 mixers – 100% Redundancy 24,000gal x 0.1337ft3/gal=3208.8ft3 3208.8ft3*0.0003ft3/HP= 0.97 HP
Process feed pumps	Designed to equalize Peak Daily Flow to the process equipment over 24-hour operation	94 GPM @ 20ft of head each	2 pumps - 100% Redundancy 135,200GPD÷1440min/d = 94 GPM The head required to enter anoxic basin is 15 ft. 2" Solids Capacity Operate using VFD off of tank level.
Alum Feed system	Alum Addition	20 gal/day of alum	Standard chemical feed system design with chemical tank (1 month capacity), 2 chemical feed pumps 1duty/1standby, tank level indication
Anoxic basin	Anticipated system capability <5 mg/l NO3 & <10 TN at 10oC	6,500 GAL each	2 basins - 50% of Anoxic basin capacity each. Based on an anoxic basin detention time of 4.0 hours at Max. Month Flows 78,000GPD÷1440 min/d =55 GPM 55 GPM x 60 min/hr x 4.0 hr=13,000 gal 13,000 gal÷2 = 6,500 gal each basin
Anoxic Basin Mixer	0.3 HP/1,000 ft3	0.27 HP each required	3 mixers – 50% Redundancy (1 per anoxic tank with 1 shelf spare) 6,500 gal x 0.1337 ft3/gal=870.1 ft3 870.1 ft3 x0.0003 ft3/HP= 0.261 HP (required)

Unit Operation	Design Basis	Design Capacity	Notes
Anoxic transfer pump	Provide Max Month Flow plus the recycle of Return Activated Sludge (RAS) flow. Assume RAS is 6x.	325 GPM	2 pumps - 100% Redundancy RAS recycle rate of 6 times the Peak Daily Flow (78000 GPD/1440 min/day) x 6 = 325 GPM
Supplemental Carbon Feed system	Carbon Addition TBD	N/A	Standard chemical feed system design with chemical tank (1 month capacity), 2 chemical feed pumps 1duty/1standby, tank level indication
Pre-Aeration Basin	System Capacity - <30 mg/l BOD & <10 mg/l TN at 10oC	4,400 GAL each	2 basins – PA tanks & MBR = 100% of Aeration basin capacity each. Based on an aeration time of 2.71 hours at Max. Month Flows 78,000 GPD÷1440 min/d =55 GPM 55 GPM x 60 min/hr x 2.7 hr=8,776 gal 8,776 gal÷2 = 4,388 gal each basin
Pre-Aeration Basin Blowers	Maintain 2 mg/l DO between 10oC and 20oC Based on Max. Month Flow and loads	385 SCFM each Slate the SOR	2 blowers - 100% Redundancy Blowers discharge to fine bubble diffusers in PA basin.
MBR Basin	To hold membrane trains sized to contain membrane filtration units	12,840 GAL each	2 basins - 50% of membrane capacity each. MBR tank required to hold membrane trains bubble diffusers are used in the MBR basin.
MBR – membrane filters	Peak Day Flow for 24-hours max. monthly flow with 1 train offline	67,600 GPD	100% of max. monthly Flow with one train offline; 100% of Peak Day Flow for 24 hours with one train offline; 100% of Peak Daily Flow with both units operating, indefinitely 135,200 GPD÷2 =67,600 GPD each train
MBR – Blowers	Provide 0.35 SCFM per Membrane Cartridge Based on Peak Day Flow	570 SCFM each	3 blowers - 50% redundancy Blowers discharge to coarse air diffusers in base of membrane cassettes. 35% factor of safely in blower design. Blowers operated on VFDS.

Unit Operation	Design Basis	Design Capacity	Notes
MBR - Permeate Pump	Filter effluent at Peak Day Flow	94 GPM each	3 pumps - 100% redundancy each train 135,200 GPD÷1440 min/d = 94 GPM
MBR basin RAS	Provide 6 Recycle of RAS flow. Assume RAS is 5.3x.	325 GPM pipe flow	2 pumps - 100% Redundancy RAS recycle rate 6 times the max. monthly Flow 55 GPM x 6 = 325 GPM
UV disinfection	Filter effluent at Peak Day Flow	94 GPM each	2 UV trains - 100% redundancy 135,200 GPD÷1440 min/d = 94 GPM 65% ultraviolet radiation transmittance at 254 nanometers wave length; UV radiation dosage not less than 30,000 µWsec/cm2 after adjustments for maximum tube fouling, lamp output reduction after 8760 hours of operation, and other energy absorption losses
Sludge Storage Tank	7 days of storage volume at Average Daily Flow	20,000 gal.	0.83 pounds of TSS per pound of BOD removed. Assuming 153 lb of BOD removed daily… 153lbBODx0.83lbBOD/lbTSS+212lbTSS=339lbTSS …Given a 1.5% Solids concentration. 339lbTSS ÷ 1.5% x 98.5% ÷ 8.342lbH20/gal= 2668.5/gal/day 7 days of storage: 2670 gal/d x 7day = 18,676 gal. Say 20,000 Assume 14 ft tank sidewalls with 2 ft freeboard 25,000 gal x 0.1337 ft3/gal ÷ (14 ft - 2 ft) = 279 ft2 Assuming 10 ft width, the length would be approximately 27.9 ft
Sludge Storage Tank Blowers/Mixing	30 SCFM/1,000 ft3	78 SCFM each	2 mixers – 100% Redundancy 20,000gal x 0.1337ft3/gal=2674.5ft3 2674.5ft3*0.03ft3/HP= 78.3 SCFM
Sludge Transfer pumps 450 GPM			Design to load 9,000 gallon truck in 20 minutes

3.2 Groundwater Discharge

Typical operations will discharge to the outfall at the Sudbury River under the existing NPDES permit. Once a limit is set at the conclusion of negotiations with MassDEP and the issuing of an Administrative Consent Order, a flow limit will be established and if the flow exceeds that flow limit, the additional flow will have to be diverted to the groundwater discharge system at the Town Administration Building. To get flow from the WWTP to the soil absorption system (SAS), a tee will be installed in the existing discharge pipe that will divert flow from the discharge outfall to a clearwell tank located at the WWTP. This tank will be a precast concrete tank with two submersible pumps (one duty, one standby) that will discharge the effluent from the tank through an approximately 4,000 linear foot force main to the SAS. The force main will run out to Old Sudbury Road, then southerly on Cochituate Road to the entrance of the Town Administration Building, located at 41 Cochituate Road in Wayland. The force main will enter the property at the driveway entrance on Cochituate Road and will run parallel to the soccer and baseball field to the SAS located in the southeast corner of the Town property. Figure 3-2 is attached to show the WWTP with the layout of the proposed force main and groundwater discharge location.

The existing effluent flow meter at the plant will be used to control the diversion of wastewater between the two discharge alternatives. Daily flows will be recorded by the WWTP SCADA system and the 12-month rolling average will be computed on a daily basis. If this value exceeds the NPDES limit of 52,000 gpd, the groundwater discharge pumps will be activated and effluent will be directed to the SAS. A new meter on the groundwater discharge pump force main will provide flow measurement for compliance monitoring purposes.

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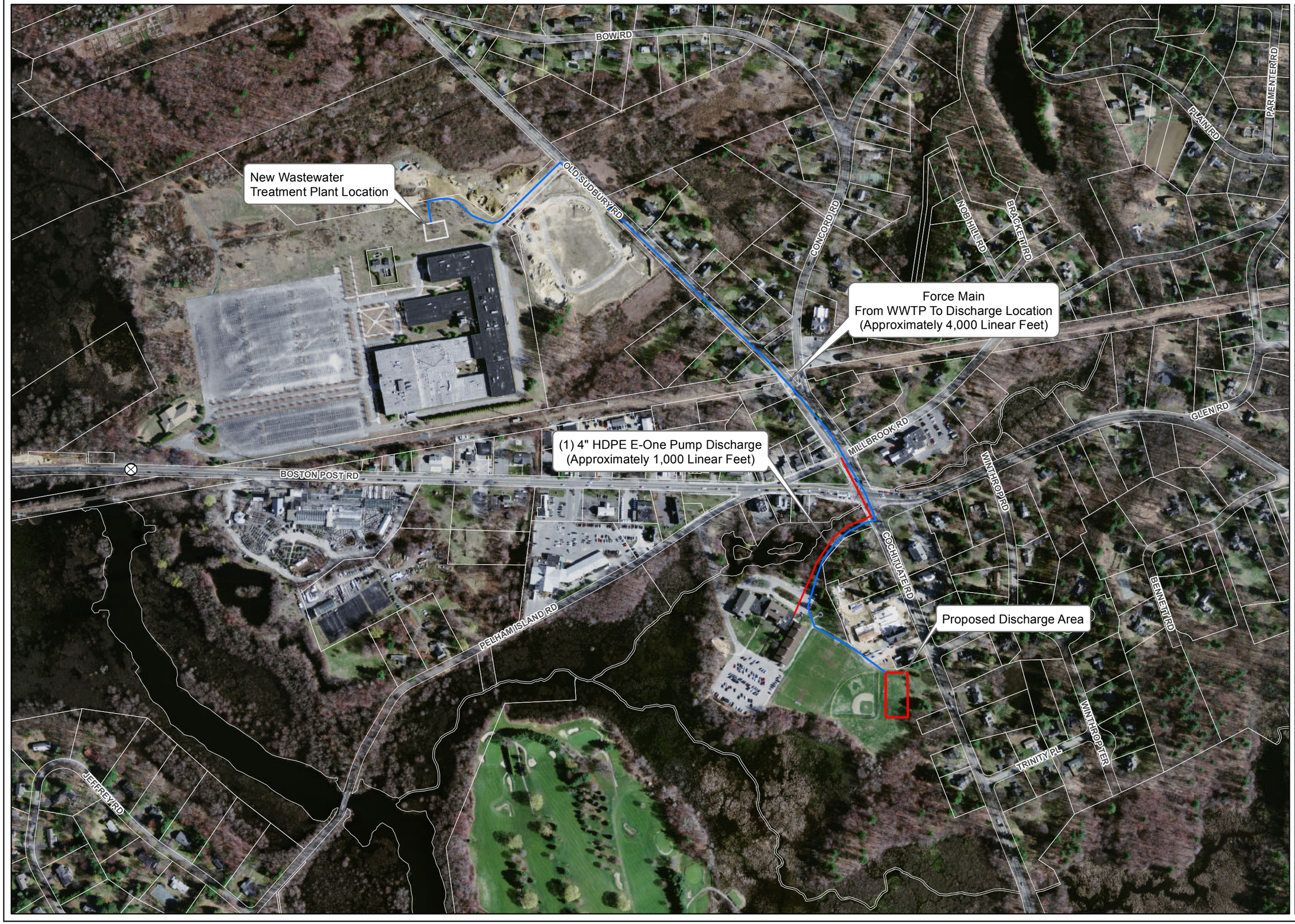
FIGURE 3 - 2
PROPOSED DISCHARGE PIPING AND AREA



LEGEND

- Proposed Valve Chamber
- Proposed Force Main
- Proposed Groundwater Discharge
- Discharge Area
- 3' Wide Leaching Trench
- WWTP Parcel

LOCUS MAP

N
W E
S

0 200 400
Feet

1:4,800

NOTES

1. Based on MassGIS Color Orthophotography (April 2008) Orthophoto Sheet ID # 21179020

Wayland Town Offices
Wayland, Massachusetts

November 2012

Tighe&Bond

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W-3993

Attachment 1
NPDES Permit

MODIFICATION OF
AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act as amended, (33 U.S.C. §§1251 et seq.; the "CWA"), and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §§26-53),

Town of Wayland
Wastewater Management District Commission
41 Cochituate Road
Wayland, MA 01778

is authorized to discharge from the facility located at

Town of Wayland Wastewater Treatment Plant
430/440 Boston Post Road
Wayland, MA 01778

to receiving water named

Wetland adjacent to the Sudbury River (Concord River Watershed - MA 82)

or to receiving water named

Sudbury River (Concord River Watershed - MA82)

in accordance with effluent limitations, monitoring requirements and other conditions set in the permit issued September 30, 2008, except as set forth herein in bold italic and listed as follows:

page 1 - added clarification that the permit authorizes the discharge to the Sudbury River
page 2 - added more stringent total phosphorus limit, deleted orthophosphorus monitoring requirement
page 3 - corrected a typographical error in WET test frequency
page 6 - added more stringent total phosphorus limit
page 7 - deleted orthophosphorus monitoring requirement, added copper monitoring requirement
page 8 - corrected a typographical error in footnote 6
pages 9-10 - corrected typographical errors in numbering
page 10 - added instream monitoring requirement

This modifies the permit issued on September 30,2008 This permit modification only affects the permit conditions identified in the preceding paragraph.

This permit modification shall become effective on ***

This permit modification does not affect the expiration date of the September 30, 2008 permit . Therefore, this permit modification expires at the same time as the September 30, 2008 permit.

Signed this day of

Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

Director
Division of Watershed Management
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

*** This permit modification will become effective on the date of signature if no comments are received during public notice. If comments are received, the effective date will be established no sooner than 30 days following signature.

PART I

A.1. During the period beginning the effective date and lasting until the outfall is extended to the Sudbury River or permit expiration, the permittee is authorized to discharge from outfall serial number **001,** treated effluent to a wetland adjacent to the Sudbury River. Such discharges shall be limited and monitored as specified below. Effluent samples shall be taken after appropriate treatment and prior to discharge to Outfall 001. All sampling shall be representative of the effluent that is discharged through Outfall 001. A routine sampling program shall be developed in which samples are taken at the same location, same time and same day(s) of every month. Any deviations from the routine sampling program shall be documented in correspondence appended to the applicable discharge monitoring report that is submitted to EPA. Additionally, all samples shall be analyzed using the analytical methods found in 40 §CFR 136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITS					MONITORING REQUIREMENTS	
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
FLOW	***	***	0.052 MGD[2]	***	REPORT	CONTINUOUS	RECORDER[2]
FLOW[2]	***	***	Report (MGD)	***	REPORT	CONTINUOUS	RECORDER[2]
BOD_5 [4]	13.0 lbs/Day 6.0 kgs/Day	20 lbs/Day 9 kgs/Day	30 mg/l	45 mg/l	REPORT	1/WEEK	24-HOUR COMPOSITE[3,5]
TSS [4]	13.0 lbs/Day 6.0 kgs/Day	20 lbs/Day 9 kgs/Day	30 mg/l	45 mg/l	REPORT	1/WEEK	24-HOUR COMPOSITE[3,5]
pH RANGE[1]	6.5 - 8.3 SU SEE PERMIT PAGE 9 OF 14, PARAGRAPH I.A.1.b.					1/DAY	GRAB[3]
FECAL COLIFORM[1,6]	***	***	200 cfu/100 ml	***	400 cfu/100 ml	1/WEEK[6]	GRAB[3]
E. COLI[1,6]	***	***	126 cfu/100 ml	***	409 cfu/100 ml	1/WEEK[6]	GRAB[3]
OIL & GREASE	***	***	REPORT	***	***	1/MONTH	GRAB[3]
TOTAL PHOSPHORUS[13] ~~*(April 1st – October 31st)*~~	***	***	~~*0.21*~~mg/l	***	***	1/WEEK	24-HOUR COMPOSITE[3,5]
~~***TOTAL PHOSPHORUS***~~ ~~*(November 1st – March 31st)*~~	~~***~~	~~***~~	~~***0.5 mg/l***~~	~~***~~	~~***~~	~~***1/WEEK***~~	~~***24-HOUR COMPOSITE[3,5]***~~
~~***ORTHO PHOSPHORUS***~~ ~~*(November 1st – March 31st)*~~	***	***	~~***Report mg/l***~~	***	***	~~***1/WEEK***~~	~~***24-HOUR COMPOSITE[3,5]***~~
ALUMINUM[11, 13]	***	***	87 ug/l	***	750 ug/l	1/MONTH	24-HOUR COMPOSITE[3,5]

A.1. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge from outfall serial number **001,** treated effluent to a wetland adjacent to the Sudbury River. Such discharges shall be limited and monitored as specified below. Effluent samples shall be taken after appropriate treatment and prior to discharge to Outfall 001. All sampling shall be representative of the effluent that is discharged through Outfall 001. A routine sampling program shall be developed in which samples are taken at the same location, same time and same day(s) of every month. Any deviations from the routine sampling program shall be documented in correspondence appended to the applicable discharge monitoring report that is submitted to EPA. Additionally, all samples shall be analyzed using the analytical methods found in 40 §CFR 136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITS					MONITORING REQUIREMENTS	
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
COPPER[13]	***	***	9.2 ug/l	***	13.7 ug/l	1/MONTH	24-HOUR COMPOSITE[3,5]
LEAD [12, 13]	***	***	3.1 ug/l	***	79.6 ug/l	1/MONTH	24-HOUR COMPOSITE[3,5]
TOTAL AMMONIA, AS N	***	***	Report (mg/l)	***	Report (mg/l)	1/WEEK	24-HOUR COMPOSITE[3,5]
WHOLE EFFLUENT TOXICITY Footnotes [7, 8, 9, 10]	Acute $LC_{50} \geq 100\%$ Chronic C-NOEC $\geq 100\%$					~~4~~ ***/YEAR***	24-HOUR COMPOSITE[3,5]

Footnotes:

1. Required for State Certification.

2. For flow, report maximum and minimum daily rates and total flow for each operating date. This is an annual average limit, which shall be reported as a rolling average. The first value will be calculated using the monthly average flow for the first full month ending after the effective date of the permit and the eleven previous monthly average flows. Each subsequent month's discharge monitoring report (DMR) will report the annual average flow for the previous 12 months.

3. Effluent samples shall be taken after appropriate treatment and prior to discharge to Outfall 001. All sampling shall be representative of the effluent that is discharged through Outfall 001 to the Sudbury River. A routine sampling program shall be developed in which samples are taken at the same location, same time and same day(s) of every month. Any deviations from the routine sampling program shall be documented in correspondence appended to the applicable discharge monitoring report that is submitted to EPA. In addition, all samples shall be analyzed using the analytical methods found in 40 CFR §136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.

4. Sampling required for influent and effluent.

5. A 24-hour composite sample will consist of at least twenty four (24) grab samples, which are flow proportional, and taken during a 24 hour cycle (e.g. 0700 Monday to 0700 Tuesday).

6. Fecal coliform and *E. coli* limits are in effect year round. The monthly average limits for fecal coliform and *E. coli* are expressed as geometric means. The fecal coliform limits and monitoring shall end one year after the effective date of this permit. The *E. coli* limits shall go into effect one year after the effective date of this permit. The monitoring requirements for *E. coli* are one sample per month for the first year that the permit is in effect and one sample per week once the limits go into effect (one year following the effective date of the permit). This is a State certification requirement.

7. The permittee will conduct 7-day chronic (and modified acute) toxicity tests four times per year, and will test the daphnid, *Ceriodaphnia dubia* as the test species. Toxicity test samples will be collected during the second week in March, June, September and December. The test results will be submitted by the last day of the month following the completion of the test. The results are due April 30th, July 31st, October 31st, and January 31st, respectively. The tests must be performed in accordance with test procedures and protocols specified in **Attachment A** of this permit.

Test Date Second Week in	**Submit Results By:**	**Test Species**	**Acute Limit LC_{50}[8]**	**Chronic Limit C-NOEC**[9]
March June September December	April 30th July 31st October 31st January 31st	*Ceriodaphnia dubia* See Attachment A	≥ 100%	≥ 100%

After submitting four consecutive sets of whole effluent toxicity (WET) test results, all of which demonstrate compliance with the WET permit limits, the permittee may request a reduction in the

WET testing requirements. The permittee is required to continue testing in accordance with the permit until notice is received by certified mail from the EPA that the WET testing requirements have been changed.

8. The LC_{50} is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limit means that a sample of 100% effluent (no dilution) shall cause no more than a 50% mortality rate.

9. C-NOEC (chronic-no observed effect concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life cycle or partial life cycle test which causes no adverse effect on growth, survival, or reproduction at a specific time of observation as determined from hypothesis testing where the test results exhibit a linear dose-response relationship. However, where the test results do not exhibit a linear dose-response relationship, the permittee must report the lowest concentration where there is no observable effect. The "100% or greater" limit is defined as a sample which is composed of 100% effluent. This is a maximum daily limit derived as a percentage of the inverse of the dilution factor of 1.

10. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall follow procedures outlined in **Attachment A Section IV., DILUTION WATER** in order to obtain permission to use an alternate dilution water. In lieu of individual approvals for alternate dilution water required **in Attachment A**, EPA-New England has developed a Self-Implementing Alternative Dilution Water Guidance document (called "Guidance Document") which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. If this Guidance document is revoked, the permittee shall revert to obtaining approval as outlined in **Attachment A**. The "Guidance Document" has been sent to all permittees with their annual set of DMRs and Revised Updated Instructions for Completing EPA's Pre-Printed NPDES Discharge Monitoring Report (DMR) Form 3320-1 and is not intended as a direct attachment to this permit. Any modification or revocation to this "Guidance Document" will be transmitted to the permittees as part of the annual DMR instruction package. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outlined in **Attachment A**.

11. Aluminum sampling shall be conducted concurrently with phosphorus sampling.

12. The minimum level (ML) for lead is defined as 3 ug/l. This value is the minimum level for lead using the Furnace Atomic Absorption analytical method (Standard Method 3113B). This method, or a 40 CFR Part 136 method achieving an equal or lower ML must be used to determine total lead. For effluent limitations less than the ML, compliance/non-compliance will be determined based on the ML. Sample results less than the ML shall be reported as zero on the Discharge Monitoring Report.

13. The Permittee shall comply with the limits in accordance with the compliance schedule appearing in Section F. During the interim, a limit of 0.5 mg/l total phosphorus shall apply with monitoring once per week (1/Week) and there shall be no effluent limitations for aluminum, copper and lead, which shall be monitored once per month (1/Month) using 24 hour composite samples. These interim requirements are in effect until the actions required by the compliance schedule are completed.

A.2.

** During the period beginning with the completion of the outfall relocation to the Sudbury River, and lasting through expiration, the permittee is authorized to discharge from outfall serial number **001,** treated effluent to the Sudbury River. Such discharges shall be limited and monitored as specified below. Effluent samples shall be taken after appropriate treatment and prior to discharge to Outfall 001. All sampling shall be representative of the effluent that is discharged through Outfall 001. A routine sampling program shall be developed in which samples are taken at the same location, same time and same day(s) of every month. Any deviations from the routine sampling program shall be documented in correspondence appended to the applicable discharge monitoring report that is submitted to EPA. Additionally, all samples shall be analyzed using the analytical methods found in 40 §CFR 136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITS					MONITORING REQUIREMENTS	
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
FLOW	***	***	0.052 MGD[2]	***	REPORT	CONTINUOUS	RECORDER[2]
FLOW[2]	***	***	Report (MGD)	***	REPORT	CONTINUOUS	RECORDER[2]
BOD_5 [4]	13.0 lbs/Day 6.0 kgs/Day	20 lbs/Day 9 kgs/Day	30 mg/l	45mg/l	REPORT	1/WEEK	24-HOUR COMPOSITE[3,5]
TSS [4]	13.0 lbs/Day 6.0 kgs/Day	20 lbs/Day 9 kgs/Day	30 mg/l	45 mg/l	REPORT	1/WEEK	24-HOUR COMPOSITE[3,5]
pH RANGE[1]	6.5 - 8.3 SU SEE PERMIT PAGE 9 OF 14 PARAGRAPH I.A.1.b.					1/DAY	GRAB[3]
FECAL COLIFORM[1,6]	***	***	200 cfu/100 ml	***	400 cfu/100 ml	1/WEEK[6]	GRAB[3]
E. COLI[1,6]	***	***	126 cfu/100 ml	***	409 cfu/100 ml	1/WEEK[6]	GRAB[3]
OIL & GREASE	***	***	Report	***	***	1/MONTH	GRAB[3]
TOTAL PHOSPHORUS ~~*(April 1st – October 31st)*~~	***	***	~~*0.21*~~ mg/l	***	***	1/WEEK	24-HOUR COMPOSITE[3,5]
~~***TOTAL PHOSPHORUS***~~ ~~*(November 1st – March 31st)*~~	~~***~~	~~***~~	~~***0.5 mg/l***~~	~~***~~	~~***~~	~~***1/WEEK***~~	~~***24-HOUR COMPOSITE[3,5]***~~

****The Permittee shall notify both EPA and DEP 60 days prior to commencing the discharge to the Sudbury River. The limits found on Pages 6-7 this permit shall apply beginning with the first full calender month after commencing the discharge to the Sudbury River.**

A.2.** During the period beginning with the completion of the outfall relocation to the Sudbury River, and lasting through expiration, the permittee is authorized to discharge from outfall serial number **001,** treated effluent to the Sudbury River. Such discharges shall be limited and monitored as specified below. Effluent samples shall be taken after appropriate treatment and prior to discharge to Outfall 001. All sampling shall be representative of the effluent that is discharged through Outfall 001. A routine sampling program shall be developed in which samples are taken at the same location, same time and same day(s) of every month. Any deviations from the routine sampling program shall be documented in correspondence appended to the applicable discharge monitoring report that is submitted to EPA. Additionally, all samples shall be analyzed using the analytical methods found in 40 §CFR 136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITS					MONITORING REQUIREMENTS	
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
~~*ORTHO PHOSPHORUS (November 1st – March 31st)*~~	~~***~~	~~***~~	~~*Report mg/l*~~	~~***~~	~~***~~	~~*1/WEEK*~~	~~*24-HOUR COMPOSITE*[3,7]~~
TOTAL AMMONIA, AS N	***	***	Report (mg/l)	***	Report (mg/l)	1/WEEK	24-HOUR COMPOSITE[3,5]
COPPER	***	***	*Report (mg/l)*	***	*Report (mg/l)*	*1/MONTH*	*24-HOUR COMPOSITE*[3,5]
ALUMINUM[10]	***	***	Report (mg/l)	***	***	1/MONTH	24-HOUR COMPOSITE[3,5]
WHOLE EFFLUENT TOXICITY Footnotes [7, 8, 9]	Acute $LC_{50} \geq 100\%$					1/YEAR	24-HOUR COMPOSITE[3,5]

****The Permittee shall notify both EPA and DEP 60 days prior commencing discharge to the Sudbury River. The limits found on Pages 6-7 this permit shall apply beginning with the first full calender month after commencing discharge to the Sudbury River.**

Footnotes:

1. Required for State Certification.

2. For flow, report maximum and minimum daily rates and total flow for each operating date. This is an annual average limit, which shall be reported as a rolling average. The first value will be calculated using the monthly average flow for the first full month ending after the effective date of the permit and the eleven previous monthly average flows. Each subsequent month's discharge monitoring report will report the annual average flow for the previous 12 months.

3. Effluent samples shall be taken after appropriate treatment and prior to discharge to Outfall 001. All sampling shall be representative of the effluent that is discharged through Outfall 001 to the Sudbury River. A routine sampling program shall be developed in which samples are taken at the same location, same time and same day(s) of every month. Any deviations from the routine sampling program shall be documented in correspondence appended to the applicable discharge monitoring report that is submitted to EPA. In addition, all samples shall be analyzed using the analytical methods found in 40 CFR §136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.

4. Sampling required for influent and effluent.

5. A 24-hour composite sample will consist of at least twenty four (24) grab samples, which are flow proportional, and taken during a 24 hour cycle (e.g. 0700 Monday to 0700 Tuesday).

6. Fecal coliform and *E. coli* limits are in effect year round. The monthly average limits for fecal coliform and *E. coli* are expressed as geometric means. The fecal coliform limits and monitoring shall end one year after the effective date of this permit. The *E. coli* limits shall go into effect one year after the effective date of this permit. The monitoring requirements for *E. coli* are one sample per month for the first year that the permit is in effect and one sample per week when the limits become effective ~~***go into effect.***~~ (one year following the effective date of the permit.) This is a State certification requirement.

7. The permitee shall conduct acute whole effluent toxicity (WET) testing for the effluent discharged through Outfall 001 once per year using *Ceriodaphnia dubia* and *Pimphales promelas* as test species. Toxicity test samples shall be collected during the second week of August, and the results shall be submitted by September 30th . The test must be performed in accordance with test procedures and protocols specified in **Attachment A** of this permit.

Test Date Second Week in	**Submit Results By:**	**Test Species**	**Acute Limit** LC_{50}[8]
August	September 30th	*Ceriodaphnia dubia* *Pimphales promelas* See Attachment A	≥ 100%

8. The LC_{50} is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limit means that a sample of 100% effluent (no dilution) shall cause no more than a 50% mortality rate.

9. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall follow procedures outlined in **Attachment A Section IV., DILUTION WATER** in order to obtain permission to use an alternate dilution water. In lieu of individual approvals for alternate dilution water required **in Attachment A**, EPA-New England has developed a Self-Implementing Alternative Dilution Water Guidance document (called "Guidance Document") which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. If this Guidance document is revoked, the permittee shall revert to obtaining approval as outlined in **Attachment A**. The "Guidance Document" has been sent to all permittees with their annual set of DMRs and Revised Updated Instructions for Completing EPA's Pre-Printed NPDES Discharge Monitoring Report (DMR) Form 3320-1 and is not intended as a direct attachment to this permit. Any modification or revocation to this "Guidance Document" will be transmitted to the permittees as part of the annual DMR instruction package. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outlined in **Attachment A**.

10. Aluminum sampling shall be conducted concurrently with phosphorus sampling.

Part I.A.~~1~~2. (Continued)

a. The discharge shall not cause an excursion of the water quality standards of the receiving waters.

b. The pH of the effluent shall not be less than 6.5 nor greater than 8.3 Standard Units(SU) at any time.

c. The discharge shall not cause objectionable discoloration of the receiving waters.

d. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.

e. The permittee's treatment facility shall maintain a minimum of 85 percent removal of both total suspended solids and biochemical oxygen demand. The percent removal shall be based on monthly average values.

f. The results of sampling for any parameter above its required frequency must also be reported.

~~2~~3. The permittee must provide adequate notice to the Director of the following:

a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of the Clean Water Act if it were directly discharging those pollutants; and

b. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

c. For purposes of this paragraph, adequate notice shall include information on:
(1) the quantity and quality of effluent introduced into the POTW; and

(2) any anticipated impact of the change on the quantity or quality of effluent to be discharged

from the POTW.

~~3~~4. Prohibitions Concerning Interference and Pass-Through:

a. Pollutants introduced into the POTW by a non-domestic source (user) shall not pass through the POTW or interfere with the operation or performance of the works.

~~4~~5. Toxics Control

a. The permittee shall not discharge any pollutant or combination of pollutants in toxic amounts.

b. Any toxic components of the effluent shall not result in any demonstrable harm to aquatic life or violate any state or federal water quality standard which has been or may be promulgated. Upon promulgation of any such standard, this permit may be revised or amended in accordance with such standards.

~~5~~6. Numerical Effluent Limitations for Toxicants

EPA or MassDEP may use the results of the toxicity tests and chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to Section 304(a)(1) of the Clean Water Act (CWA), state water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including but not limited to those pollutants listed in Appendix D of 40 CFR Part 122.

7. Instream Monitoring Program

Beginning in 2011, the permittee, either by itself, or in cooperation with the Town of Wayland ("Town") and/or another entity, shall conduct in-stream monitoring in the Sudbury River, as described below:

a. The permittee shall sample two locations, one location upstream and one downstream of the treatment plant outfall, once per month, including quality control sampling, from May to September as follows: The permittee will take in-situ measurements of pH, dissolved oxygen, water temperature, and conductivity and will submit water samples to a state-certified laboratory for analysis of chlorophyll a, total and ortho-phosphorus, nitrates, ammonia, and total suspended solids. All samples will be taken prior to 8:30 am. Monitoring results shall be attached to the monthly discharge monitoring report submitted for the month the samples were collected (see Part I.G. for discharge monitoring report schedule).

b. As an alternate method of compliance in lieu of Part I.A.7(a) above, in any calendar year the permittee may participate in the "Water Quality Monitoring in the Lower Sudbury River Project" ("WQM") monitoring program to fulfill its in-stream monitoring obligation. The WQM is described in Attachment C but may be revised from time to time, in accordance with the MassDEP approved amended QAPP WQM for the Lower Sudbury River, or otherwise with the prior written approval of MassDEP. If the permittee elects this option in a given calendar year, the permittee shall notify EPA and MassDEP of this election in writing by April 1st of that year.

c. If a QAPP for the Lower Sudbury River has been approved in writing by the MassDEP and EPA as part of the WQM, then, starting with the date of the latter such approval, for any calendar year in which the permittee elects to proceed pursuant to Part I.A.7(a), the permittee shall conduct the in-stream monitoring program consistent with the QAPP.

d. For any calendar year in which the permittee conducts monitoring pursuant to Part I.A.7(a), the permittee shall submit a report on May 15 of the following year, summarizing the instream monitoring data collected during the previous calendar year.

B. UNAUTHORIZED DISCHARGES

The permittee is authorized to discharge only in accordance with the terms and conditions of this permit and only from the outfall listed in Parts I.A.1. and I.A.2. of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs) are not authorized by this permit and shall be reported in accordance with Section D.1.e. (1) of the General Requirements of this permit (Twenty-four hour reporting).

C. INFILTRATION/INFLOW

The permittee shall control infiltration and inflow (I/I) to the separate sewer system to prevent infiltration/inflow-related effluent limit violations, and any unauthorized discharges of wastewater, including overflows and by-passes, due to excessive infiltration/inflow.

D. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance of the sewer system shall be in compliance with the General Requirements of Part II and the following terms and conditions:

1. Maintenance Staff

   The permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit.

2. Preventative Maintenance Program

   The permittee shall maintain an ongoing preventative maintenance program to prevent overflows and bypasses caused by malfunctions or failures of the sewer system infrastructure. The program shall include an inspection program designed to identify all potential and actual unauthorized discharges.

3. Alternate Power Source

   In order to maintain compliance with the terms and conditions of this permit, the permittee shall provide an alternative power source with which to sufficiently operate its treatment works (as defined at 40 CFR §122.2).

E. SLUDGE CONDITIONS

1. The permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices and with the CWA Section 405(d) technical standards.

2. The permittee shall comply with the more stringent of either the state or federal (40 CFR part 503), requirements.

3. The requirements and technical standards of 40 CFR part 503 apply to facilities which perform one or more of the following use or disposal practices:

a. Land application - the use of sewage sludge to condition or fertilize the soil

b. Surface disposal - the placement of sewage sludge in a sludge-only landfill

c. Sewage sludge incineration in a sludge-only incinerator

4. The 40 CFR part 503 conditions do not apply to facilities which place sludge within a municipal solid waste landfill. These conditions also do not apply to facilities which do not dispose of sewage sludge during the life of the permit but rather treat the sludge (e.g. lagoons- reed beds), or are otherwise excluded under 40 CFR 503.6.

5. The permittee shall use and comply with the attached compliance guidance document (Attachment B) to determine appropriate conditions. Appropriate conditions contain the following elements:

- General requirements
- Pollutant limitations
- Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)
- Management practices
- Record keeping
- Monitoring
- Reporting

Depending upon the quality of material produced by a facility, all conditions may not apply to the facility.

6. The permittee shall monitor the pollutant concentrations, pathogen reduction and vector attraction reduction at the following frequency. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year:

less than 290	1/ year
290 to less than1500	1 /quarter
1500 to less than 15000	6 /year
15000 +	1 /month

7. The permittee shall sample the sewage sludge using the procedures detailed in 40 CFR 503.8.

8. The permittee shall submit an annual report containing the information specified in the guidance by **February 19.** Reports shall be submitted to the address contained in the reporting section of the permit. Sludge monitoring is not required by the permittee when the permittee is not responsible for the ultimate sludge disposal. The permittee must be assured that any third party contractor is in compliance with appropriate regulatory requirements. In such case, the permittee is required only to submit an annual report by **February 19** containing the following information:

- Name and address of contractor responsible for sludge disposal
- Quantity of sludge in dry metric tons removed from the facility by the sludge contractor

F. COMPLIANCE SCHEDULE

In order to comply with the permit limits for total phosphorus, copper, lead and aluminum, the permittee shall take the following actions:

1. Within twelve (12) months of the effective date of the permit, the permittee shall evaluate and select an options for;

   a) extending the outfall to the Sudbury River, or
   b) upgrading the Wayland WWTF , including, but not limited to, evaluating groundwater discharge and water conservation measures.

   The permittee shall document its evaluation and selection process in a report, which it shall be submitted to EPA and MassDEP no later than 30 days following completion of the evaluation of the option(s)..

2. Within twelve (12) months of completing this evaluation, the permittee shall complete the design for the selected option(s). The Permittee shall submit the design to MassDEP.

3. Within two (2) years of completing the design, the permittee shall complete construction of the selected option(s) and achieve the effluent limitations in the permit. Notification of construction completion shall be submitted to EPA and MassDEP.

G. MONITORING AND REPORTING

1. Reporting

   Monitoring results obtained during each calendar month shall be summarized and reported on Discharge Monitoring Report Form(s) postmarked no later than the 15th day of the following month.

   Signed and dated originals of these, and all other reports required herein, shall be submitted to the Director and the State at the following addresses:

   Environmental Protection Agency
   Water Technical Unit (SEW)
   P.O. Box 8127
   Boston, Massachusetts 02114

   The State Agency is (this office should receive all reports except toxicity test reports):

   Massachusetts Department of Environmental Protection
   Northeast Regional Office- Bureau of Resource Protection
   205b Lowell Street
   Wilmington, Massachusetts 01887

Signed and dated Discharge Monitoring Report Forms and toxicity test reports required by this permit shall also be submitted to the State at:

Massachusetts Department of Environmental Protection
Division of Watershed Management- Surface Water Discharge Permit Program
627 Main Street, 2nd Floor
Worcester, Massachusetts 01608

H. STATE PERMIT CONDITIONS

This Discharge Permit is issued jointly by the U. S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) under Federal and State law, respectively. As such, all the terms and conditions of this permit are hereby incorporated into and constitute a discharge permit issued by the Commissioner of the MassDEP pursuant to M.G.L. Chap. 21, §43.

Each Agency shall have the independent right to enforce the terms and conditions of this permit. Any modification, suspension or revocation of this permit shall be effective only with respect to the Agency taking such action, and shall not affect the validity or status of this permit as issued by the other Agency, unless and until each Agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this permit is declared, invalid, illegal or otherwise issued in violation of State law such permit shall remain in full force and effect under Federal law as an NPDES Permit issued by the U.S. Environmental Protection Agency. In the event this permit is declared invalid, illegal or otherwise issued in violation of Federal law, this permit shall remain in full force and effect under State law as a permit issued by the Commonwealth of Massachusetts.

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act as amended, (33 U.S.C. §§1251 et seq.; the "CWA"), and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §§26-53),

Town of Wayland
Wastewater Management District Commission
41 Cochituate Road
Wayland, MA 01778

is authorized to discharge from the facility located at

Town of Wayland Wastewater Treatment Plant
430/440 Boston Post Road
Wayland, MA 01778

to receiving water named

Wetland adjacent to the Sudbury River (Concord River Watershed -MA 82)

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective on December 1, 2008

This permit and the authorization to discharge expires at midnight, five (5) years from the effective date.

This permit supersedes the permit issued on September 4, 1998.

This permit consists of 13 pages in Part I including effluent limitations, monitoring requirements, Attachments A (Whole Effluent Toxicity Procedure and Protocol) and B (Sludge Compliance Guidance), and 25 pages in Part II including General Conditions and Definitions.

Signed this 30th day of September, 2008

/s/ SIGNATURE ON FILE

_____	_____
Director Office of Ecosystem Protection Environmental Protection Agency Boston, MA	Director Division of Watershed Management Department of Environmental Protection Commonwealth of Massachusetts Boston, MA

PART I

A.1. During the period beginning the effective date and lasting until the outfall is extended to the Sudbury River or permit expiration, the permittee is authorized to discharge from outfall serial number **001,** treated effluent to a wetland adjacent to the Sudbury River. Such discharges shall be limited and monitored as specified below. Effluent samples shall be taken after appropriate treatment and prior to discharge to Outfall 001. All sampling shall be representative of the effluent that is discharged through Outfall 001. A routine sampling program shall be developed in which samples are taken at the same location, same time and same day(s) of every month. Any deviations from the routine sampling program shall be documented in correspondence appended to the applicable discharge monitoring report that is submitted to EPA. Additionally, all samples shall be analyzed using the analytical methods found in 40 §CFR 136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITS					MONITORING REQUIREMENTS	
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
FLOW	***	***	0.052 MGD[2]	***	REPORT	CONTINUOUS	RECORDER[2]
FLOW[2]	***	***	Report (MGD)	***	REPORT	CONTINUOUS	RECORDER[2]
BOD_5 [4]	13.0 lbs/Day 6.0 kgs/Day	20 lbs/Day 9 kgs/Day	30 mg/l	45 mg/l	REPORT	1/WEEK	24-HOUR COMPOSITE[3,5]
TSS [4]	13.0 lbs/Day 6.0 kgs/Day	20 lbs/Day 9 kgs/Day	30 mg/l	45 mg/l	REPORT	1/WEEK	24-HOUR COMPOSITE[3,5]
pH RANGE[1]	6.5 - 8.3 SU SEE PERMIT PAGE 9 OF 13, PARAGRAPH I.A.1.b.					1/DAY	GRAB[3]
FECAL COLIFORM[1,6]	***	***	200 cfu/100 ml	***	400 cfu/100 ml	1/WEEK[6]	GRAB[3]
E. COLI[1,6]	***	***	126 cfu/100 ml	***	409 cfu/100 ml	1/WEEK[6]	GRAB[3]
OIL & GREASE	***	***	REPORT	***	***	1/MONTH	GRAB[3]
TOTAL PHOSPHORUS[13] (April 1st - October 31st)	***	***	0.2 mg/l	***	***	1/WEEK	24-HOUR COMPOSITE[3,5]
TOTAL PHOSPHORUS (November 1st - March 31st)	***	***	0.5 mg/l	***	***	1/WEEK	24-HOUR COMPOSITE[3,5]
ORTHO PHOSPHORUS (November 1st - March 31st)	***	***	Report mg/l	***	***	1/WEEK	24-HOUR COMPOSITE[3,5]
ALUMINUM[11, 13]	***	***	87 ug/l	***	750 ug/l	1/MONTH	24-HOUR COMPOSITE[3,5]

A.1. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge from outfall serial number **001,** treated effluent to a wetland adjacent to the Sudbury River. Such discharges shall be limited and monitored as specified below. Effluent samples shall be taken after appropriate treatment and prior to discharge through Outfall 001. All sampling shall be representative of the effluent that is discharged through Outfall 001. A routine sampling program shall be developed in which samples are taken at the same location, same time and same day(s) of every month. Any deviations from the routine sampling program shall be documented in correspondence appended to the applicable discharge monitoring report that is submitted to EPA. Additionally, all samples shall be analyzed using the analytical methods found in 40 §CFR 136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITS					MONITORING REQUIREMENTS	
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
COPPER[13]	***	***	9.2 ug/l	***	13.7 ug/l	1/MONTH	24-HOUR COMPOSITE[3,5]
LEAD [12, 13]	***	***	3.1 ug/l	***	79.6 ug/l	1/MONTH	24-HOUR COMPOSITE[3,5]
TOTAL AMMONIA, AS N	***	***	Report (mg/l)	***	Report (mg/l)	1/WEEK	24-HOUR COMPOSITE[3,5]
WHOLE EFFLUENT TOXICITY Footnotes [7, 8, 9, 10]	Acute $LC_{50} \geq 100\%$ Chronic C-NOEC $\geq 100\%$					1/YEAR	24-HOUR COMPOSITE[3,5]

Footnotes:

1. Required for State Certification.

2. For flow, report maximum and minimum daily rates and total flow for each operating date. This is an annual average limit, which shall be reported as a rolling average. The first value will be calculated using the monthly average flow for the first full month ending after the effective date of the permit and the eleven previous monthly average flows. Each subsequent month's discharge monitoring report (DMR) will report the annual average flow for the previous 12 months.

3. Effluent samples shall be taken after appropriate treatment and prior to discharge through Outfall 001. All sampling shall be representative of the effluent that is discharged through Outfall 001 to the Sudbury River. A routine sampling program shall be developed in which samples are taken at the same location, same time and same day(s) of every month. Any deviations from the routine sampling program shall be documented in correspondence appended to the applicable discharge monitoring report that is submitted to EPA. In addition, all samples shall be analyzed using the analytical methods found in 40 CFR §136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.

4. Sampling required for influent and effluent.

5. A 24-hour composite sample will consist of at least twenty-four (24) grab samples, which are flow proportional, and taken during a 24-hour cycle (e.g. 0700 Monday to 0700 Tuesday).

6. Fecal coliform and *E. coli* limits are in effect year round. The monthly average limits for fecal coliform and *E. coli* are expressed as geometric means. The fecal coliform limits and monitoring shall end one year after the effective date of this permit. The *E. coli* limits shall go into effect one year after the effective date of this permit. The monitoring requirements for *E. coli* are one sample per month for the first year that the permit is in effect and one sample per week once the limits go into effect (one year following the effective date of the permit). This is a State certification requirement.

7. The permittee will conduct 7-day chronic (and modified acute) toxicity tests four times per year, and will test the daphnid, *Ceriodaphnia dubia* as the test species. Toxicity test samples will be collected during the second week in March, June, September and December. The test results will be submitted by the last day of the month following the completion of the test. The results are due April 30th, July 31st, October 31st, and January 31st, respectively. The tests must be performed in accordance with test procedures and protocols specified in **Attachment A** of this permit.

Test Date Second Week in	**Submit Results By:**	**Test Species**	**Acute Limit LC_{50}**[8]	**Chronic Limit C-NOEC**[9]
March June September December	April 30th July 31st October 31st January 31st	*Ceriodaphnia dubia* See Attachment A	≥ 100%	≥ 100%

After submitting four consecutive sets of whole effluent toxicity (WET) test results, all of which demonstrate compliance with the WET permit limits, the permittee may request a reduction in the

WET testing requirements. The permittee is required to continue testing in accordance with the permit until notice is received by certified mail from the EPA that the WET testing requirements have been changed.

8. The LC_{50} is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limit means that a sample of 100% effluent (no dilution) shall cause no more than a 50% mortality rate.

9. C-NOEC (chronic-no observed effect concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life cycle or partial life cycle test which causes no adverse effect on growth, survival, or reproduction at a specific time of observation as determined from hypothesis testing where the test results exhibit a linear dose-response relationship. However, where the test results do not exhibit a linear dose-response relationship, the permittee must report the lowest concentration where there is no observable effect. The "100% or greater" limit is defined as a sample which is composed of 100% effluent. This is a maximum daily limit derived as a percentage of the inverse of the dilution factor of 1.

10. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall follow procedures outlined in **Attachment A Section IV., DILUTION WATER** in order to obtain permission to use an alternate dilution water. In lieu of individual approvals for alternate dilution water required **in Attachment A**, EPA-New England has developed a Self-Implementing Alternative Dilution Water Guidance document (called "Guidance Document") which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. If this Guidance document is revoked, the permittee shall revert to obtaining approval as outlined in **Attachment A**. The "Guidance Document" has been sent to all permittees with their annual set of DMRs and Revised Updated Instructions for Completing EPA's Pre-Printed NPDES Discharge Monitoring Report (DMR) Form 3320-1 and is not intended as a direct attachment to this permit. Any modification or revocation of this "Guidance Document" will be transmitted to the permittees as part of the annual DMR instruction package. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outlined in **Attachment A**.

11. Aluminum sampling shall be conducted concurrently with phosphorus sampling.

12. The minimum level (ML) for lead is defined as 3 ug/l. This value is the minimum level for lead using the Furnace Atomic Absorption analytical method (Standard Method 3113B). This method, or a 40 CFR Part 136 method achieving an equal or lower ML must be used to determine total lead. For effluent limitations less than the ML, compliance/non-compliance will be determined based on the ML. Sample results less than the ML shall be reported as zero on the Discharge Monitoring Report.

13. The Permittee shall comply with the limits in accordance with the compliance schedule appearing in Section F. During the interim, a limit of 0.5 mg/l total phosphorus shall apply with monitoring once per week (1/Week) and there shall be no effluent limitations for aluminum, copper and lead, which shall be monitored once per month (1/Month) using 24 hour composite samples. These interim requirements are in effect until the actions required by the compliance schedule are completed.

A.2.

** During the period beginning with the completion of the outfall relocation to the Sudbury River, and lasting through expiration, the permittee is authorized to discharge from outfall serial number **001,** treated effluent to the Sudbury River. Such discharges shall be limited and monitored as specified below. Effluent samples shall be taken after appropriate treatment and prior to discharge through Outfall 001. All sampling shall be representative of the effluent that is discharged through Outfall 001. A routine sampling program shall be developed in which samples are taken at the same location, same time and same day(s) of every month. Any deviations from the routine sampling program shall be documented in correspondence appended to the applicable discharge monitoring report that is submitted to EPA. Additionally, all samples shall be analyzed using the analytical methods found in 40 §CFR 136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITS					MONITORING REQUIREMENTS	
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
FLOW	***	***	0.052 MGD[2]	***	REPORT	CONTINUOUS	RECORDER[2]
FLOW[2]	***	***	Report (MGD)	***	REPORT	CONTINUOUS	RECORDER[2]
BOD_5 [4]	13.0 lbs/Day 6.0 kgs/Day	20 lbs/Day 9 kgs/Day	30 mg/l	45mg/l	REPORT	1/WEEK	24-HOUR COMPOSITE[3,5]
TSS [4]	13.0 lbs/Day 6.0 kgs/Day	20 lbs/Day 9 kgs/Day	30 mg/l	45 mg/l	REPORT	1/WEEK	24-HOUR COMPOSITE[3,5]
pH RANGE[1]	6.5 - 8.3 SU SEE PERMIT PAGE 9 OF 13 PARAGRAPH I.A.1.b.					1/DAY	GRAB[3]
FECAL COLIFORM[1,6]	***	***	200 cfu/100 ml	***	400 cfu/100 ml	1/WEEK[6]	GRAB[3]
E. COLI[1,6]	***	***	126 cfu/100 ml	***	409 cfu/ 100 ml	1/WEEK[6]	GRAB[3]
OIL & GREASE	***	***	Report	***	***	1/MONTH	GRAB[3]
TOTAL PHOSPHORUS (April 1st - October 31st)	***	***	0.2 mg/l	***	***	1/WEEK	24-HOUR COMPOSITE[3,5]
TOTAL PHOSPHORUS (November 1st - March 31st)	***	***	0.5 mg/l	***	***	1/WEEK	24-HOUR COMPOSITE[3,5]

****The Permittee shall notify both EPA and DEP 60 days prior to commencing the discharge to the Sudbury River. The limits found on Pages 6-7 this permit shall apply beginning with the first full calender month after commencing the discharge to the Sudbury River.**

A.2.** During the period beginning with the completion of the outfall relocation to the Sudbury River, and lasting through expiration, the permittee is authorized to discharge from outfall serial number **001,** treated effluent to the Sudbury River. Such discharges shall be limited and monitored as specified below. Effluent samples shall be taken after appropriate treatment and prior to discharge through Outfall 001. All sampling shall be representative of the effluent that is discharged through Outfall 001. A routine sampling program shall be developed in which samples are taken at the same location, same time and same day(s) of every month. Any deviations from the routine sampling program shall be documented in correspondence appended to the applicable discharge monitoring report that is submitted to EPA. Additionally, all samples shall be analyzed using the analytical methods found in 40 §CFR 136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.

EFFLUENT CHARACTERISTIC	EFFLUENT LIMITS					MONITORING REQUIREMENTS	
PARAMETER	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**AVERAGE MONTHLY**	**AVERAGE WEEKLY**	**MAXIMUM DAILY**	**MEASUREMENT FREQUENCY**	**SAMPLE TYPE**
ORTHO PHOSPHORUS (November 1st - March 31st)	***	***	Report mg/l	***	***	1/WEEK	24-HOUR COMPOSITE[3,5]
TOTAL AMMONIA, AS N	***	***	Report (mg/l)	***	Report (mg/l)	1/WEEK	24-HOUR COMPOSITE[3,5]
ALUMINUM[10]	***	***	Report (mg/l)	***	***	1/MONTH	24-HOUR COMPOSITE[3,5]
WHOLE EFFLUENT TOXICITY Footnotes [7, 8, 9]	Acute $LC_{50} \geq 100\%$					1/YEAR	24-HOUR COMPOSITE[3,5]

****The Permittee shall notify both EPA and DEP 60 days prior commencing discharge to the Sudbury River. The limits found on Pages 6-7 this permit shall apply beginning with the first full calender month after commencing discharge to the Sudbury River.**

Footnotes:

1. Required for State Certification.

2. For flow, report maximum and minimum daily rates and total flow for each operating date. This is an annual average limit, which shall be reported as a rolling average. The first value will be calculated using the monthly average flow for the first full month ending after the effective date of the permit and the eleven previous monthly average flows. Each subsequent month's discharge monitoring report (DMR) will report the annual average flow for the previous 12 months.

3. Effluent samples shall be taken after appropriate treatment and prior to discharge through Outfall 001. All sampling shall be representative of the effluent that is discharged through Outfall 001 to the Sudbury River. A routine sampling program shall be developed in which samples are taken at the same location, same time and same day(s) of every month. Any deviations from the routine sampling program shall be documented in correspondence appended to the applicable discharge monitoring report that is submitted to EPA. In addition, all samples shall be analyzed using the analytical methods found in 40 CFR §136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.

4. Sampling required for influent and effluent.

5. A 24-hour composite sample will consist of at least-twenty four (24) grab samples, which are flow proportional, and taken during a 24-hour cycle (e.g. 0700 Monday to 0700 Tuesday).

6. Fecal coliform and *E. coli* limits are in effect year round. The monthly average limits for fecal coliform and *E. coli* are expressed as geometric means. The fecal coliform limits and monitoring shall end one year after the effective date of this permit. The *E. coli* limits shall go into effect one year after the effective date of this permit. The monitoring requirements for *E. coli* are one sample per month for the first year that the permit is in effect and one sample per week once the limits become effective go into effect (one year following the effective date of the permit). This is a State certification requirement.

7. The permitee shall conduct acute whole effluent toxicity (WET) testing for the effluent discharged through Outfall 001 once per year using *Ceriodaphnia dubia* and *Pimphales promelas* as test species. Toxicity test samples shall be collected during the second week of August, and the results shall be submitted by September 30th . The test must be performed in accordance with test procedures and protocols specified in **Attachment A** of this permit.

Test Date Second Week in	**Submit Results By:**	**Test Species**	**Acute Limit LC_{50}**[8]
August	September 30th	*Ceriodaphnia dubia* *Pimphales promelas* See Attachment A	≥ 100%

8. The LC_{50} is the concentration of effluent which causes mortality to 50% of the test organisms.

Therefore, a 100% limit means that a sample of 100% effluent (no dilution) shall cause no more than a 50% mortality rate.

9. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall follow procedures outlined in **Attachment A Section IV., DILUTION WATER** in order to obtain permission to use an alternate dilution water. In lieu of individual approvals for alternate dilution water required **in Attachment A**, EPA-New England has developed a Self-Implementing Alternative Dilution Water Guidance document (called "Guidance Document") which may be used to obtain automatic approval of an alternate dilution water, including the appropriate species for use with that water. If this Guidance document is revoked, the permittee shall revert to obtaining approval as outlined in **Attachment A**. The "Guidance Document" has been sent to all permittees with their annual set of DMRs and Revised Updated Instructions for Completing EPA's Pre-Printed NPDES Discharge Monitoring Report (DMR) Form 3320-1 and is not intended as a direct attachment to this permit. Any modification or revocation of this "Guidance Document" will be transmitted to the permittees as part of the annual DMR instruction package. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outlined in **Attachment A**.

10. Aluminum sampling shall be conducted concurrently with phosphorus sampling.

Part I.A.1. (Continued)

a. The discharge shall not cause an excursion of the water quality standards of the receiving waters.

b. The pH of the effluent shall not be less than 6.5 nor greater than 8.3 Standard Units (SU) at any time.

c. The discharge shall not cause objectionable discoloration of the receiving waters.

d. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.

e. The permittee's treatment facility shall maintain a minimum of 85 percent removal of both total suspended solids and biochemical oxygen demand. The percent removal shall be based on monthly average values.

f. The results of sampling for any parameter above its required frequency must also be reported.

2. The permittee must provide adequate notice to the Director of the following:

a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of the Clean Water Act if it were directly discharging those pollutants; and

b. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

c. For purposes of this paragraph, adequate notice shall include information on:

(1) the quantity and quality of effluent introduced into the POTW; and

(2) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

3. Prohibitions Concerning Interference and Pass-Through:

a. Pollutants introduced into the POTW by a non-domestic source (user) shall not pass through the POTW or interfere with the operation or performance of the works.

4. Toxics Control

a. The permittee shall not discharge any pollutant or combination of pollutants in toxic amounts.

b. Any toxic components of the effluent shall not result in any demonstrable harm to aquatic life or violate any state or federal water quality standard which has been or may be promulgated. Upon promulgation of any such standard, this permit may be revised or amended in accordance with such standards.

5. Numerical Effluent Limitations for Toxicants

EPA or MassDEP may use the results of the toxicity tests and chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to Section 304(a)(1) of the Clean Water Act (CWA), state water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including but not limited to those pollutants listed in Appendix D of 40 CFR Part 122.

B. UNAUTHORIZED DISCHARGES

The permittee is authorized to discharge only in accordance with the terms and conditions of this permit and only from the outfall listed in Parts I.A.1. and I.A.2. of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs) are not authorized by this permit and shall be reported in accordance with Section D.1.e. (1) of the General Requirements of this permit (Twenty-four hour reporting).

C. INFILTRATION/INFLOW

The permittee shall control infiltration and inflow (I/I) to the separate sewer system to prevent infiltration/inflow-related effluent limit violations, and any unauthorized discharges of wastewater, including overflows and by-passes, due to excessive infiltration/inflow.

D. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance of the sewer system shall be in compliance with the General Requirements of Part II and the following terms and conditions:

1. Maintenance Staff

The permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit.

2. Preventative Maintenance Program

The permittee shall maintain an ongoing preventative maintenance program to prevent overflows and bypasses caused by malfunctions or failures of the sewer system infrastructure. The program shall include an inspection program designed to identify all potential and actual unauthorized discharges.

3. Alternate Power Source

In order to maintain compliance with the terms and conditions of this permit, the permittee shall provide an alternative power source with which to sufficiently operate its treatment works (as defined at 40 CFR §122.2).

E. SLUDGE CONDITIONS

1. The permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices and with the CWA Section 405(d) technical standards.

2. The permittee shall comply with the more stringent of either the state or federal (40 CFR part 503), requirements.

3. The requirements and technical standards of 40 CFR part 503 apply to facilities which perform one or more of the following use or disposal practices:

   a. Land application - the use of sewage sludge to condition or fertilize the soil

   b. Surface disposal - the placement of sewage sludge in a sludge-only landfill

   c. Sewage sludge incineration in a sludge-only incinerator

4. The 40 CFR part 503 conditions do not apply to facilities which place sludge within a municipal solid waste landfill. These conditions also do not apply to facilities which do not dispose of sewage sludge during the life of the permit but rather treat the sludge (e.g. lagoons- reed beds), or are otherwise excluded under 40 CFR § 503.6.

5. The permittee shall use and comply with the attached compliance guidance document (Attachment B) to determine appropriate conditions. Appropriate conditions contain the following elements:

   - General requirements
   - Pollutant limitations
   - Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)
   - Management practices
   - Record keeping
   - Monitoring
   - Reporting

Depending upon the quality of material produced by a facility, all conditions may not apply to the facility.

6. The permittee shall monitor the pollutant concentrations, pathogen reduction and vector attraction reduction at the following frequency. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year:

less than 290	1/ year
290 to less than1500	1 /quarter
1500 to less than 15000	6 /year
15000 +	1 /month

7. The permittee shall sample the sewage sludge using the procedures detailed in 40 CFR § 503.8.

8. The permittee shall submit an annual report containing the information specified in the guidance by **February 19.** Reports shall be submitted to the address contained in the reporting section of the permit. Sludge monitoring is not required by the permittee when the permittee is not responsible for the ultimate sludge disposal. The permittee must be assured that any third party contractor is in compliance with appropriate regulatory requirements. In such case, the permittee is required only to submit an annual report by **February 19** containing the following information:

- Name and address of contractor responsible for sludge disposal
- Quantity of sludge in dry metric tons removed from the facility by the sludge contractor

F. COMPLIANCE SCHEDULE

In order to comply with the permit limits for total phosphorus, copper, lead and aluminum, the permittee shall take the following actions:

1. Within twelve (12) months of the effective date of the permit, the Permittee shall evaluate and select an option(s) for;

   a) extending the outfall to the Sudbury River, or
   b) upgrading the Wayland WWTF , including, but not limited to, evaluating groundwater discharge and water conservation measures.

   The permittee shall document its evaluation and selection process in a report, which shall be submitted to EPA and MassDEP no later than 30 days following completion of the evaluation of the option(s).

2. Within twelve (12) months of completing this evaluation, the permittee shall complete the design for the selected option(s). The permittee shall submit the design to MassDEP.

3. Within two (2) years of completing the design, the permittee shall complete construction of the selected option(s) and achieve the effluent limitations in the permit. Notification of construction completion shall be submitted to EPA and MassDEP.

G. MONITORING AND REPORTING

1. Reporting

Monitoring results obtained during each calendar month shall be summarized and reported on Discharge Monitoring Report Form(s) postmarked no later than the 15th day of the following month.

Signed and dated originals of these, and all other reports required herein, shall be submitted to the Director and the State at the following addresses:

Environmental Protection Agency
Water Technical Unit (SEW)
P.O. Box 8127
Boston, Massachusetts 02114

The State Agency is (this office should receive all reports except toxicity test reports):

Massachusetts Department of Environmental Protection
Northeast Regional Office- Bureau of Resource Protection
205b Lowell Street
Wilmington, Massachusetts 01887

Signed and dated Discharge Monitoring Report Forms and toxicity test reports required by this permit shall also be submitted to the State at:

Massachusetts Department of Environmental Protection
Division of Watershed Management- Surface Water Discharge Permit Program
627 Main Street, 2nd Floor
Worcester, Massachusetts 01608

H. STATE PERMIT CONDITIONS

This Discharge Permit is issued jointly by the U. S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) under Federal and State law, respectively. As such, all the terms and conditions of this permit are hereby incorporated into and constitute a discharge permit issued by the Commissioner of the MassDEP pursuant to M.G.L. Chap. 21, §43.

Each Agency shall have the independent right to enforce the terms and conditions of this permit. Any modification, suspension or revocation of this permit shall be effective only with respect to the Agency taking such action, and shall not affect the validity or status of this permit as issued by the other Agency, unless and until each Agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this permit is declared, invalid, illegal or otherwise issued in violation of State law such permit shall remain in full force and effect under Federal law as an NPDES Permit issued by the U.S. Environmental Protection Agency. In the event this permit is declared invalid, illegal or otherwise issued in violation of Federal law, this permit shall remain in full force and effect under State law as a permit issued by the Commonwealth of Massachusetts.

Attachment 2
Legal Ownership Documents

Attachment 3
DEP Hydrogeologic Report Approval Letter

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Northeast Regional Office • 205B Lowell Street, Wilmington MA 01887 • 978-694-3200

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

RICHARD K. SULLIVAN JR.
Secretary

KENNETH L. KIMMELL
Commissioner

October 26, 2012

John Moynihan, Facilities Director
Wayland Wastewater District Commission
41 Cochituate Road
Wayland, MA 01778

RE: Approval of Hydrogeological Evaluation Report
Wayland Town Office Playing Fields
41 Cochituate Road, Wayland, Massachusetts
Transmittal Number: X250635

Dear Mr. Moynihan:

The Massachusetts Department of Environmental Protection (MassDEP) has completed its review of the hydrogeological evaluation report dated March, 2012 that was submitted on your behalf by Tighe & Bond, Inc. (T&B). An addendum to the report dated October 1, 2012 was submitted by T&B in response to a MassDEP request for additional information. The report and addendum summarize the results of the hydrogeologic evaluation conducted by T&B to support a proposed groundwater discharge of treated sanitary effluent at the Town Office Playing Fields in Wayland, Massachusetts. The evaluation was conducted in accordance with the scope-of-work submitted by T&B on November 16, 2011 and approved by MassDEP on January 23, 2012. Notice of the availability of the scope-of-work was published in the Environmental Monitor on December 21, 2011.

The Town of Wayland is seeking to add 17,000 gallons per day (gpd) of capacity to its Wastewater Management District by permitting a groundwater discharge under the playing fields adjacent to the Town Office Building. The proposed effluent disposal area will accommodate flows that exceed the existing wastewater treatment facility's NPDES permitted flow rate of 52,000 gpd. A new wastewater treatment facility is currently under construction and will utilize membrane bioreactor technology.

The proposed groundwater discharge will be within the playing fields located southeast of the Wayland Town Office Building. The specific site evaluated by T&B lies northeast of the baseball field and includes the existing leachfield of the Town Office Building Title 5 septic system. This location does not lie within any MassDEP designated nitrogen sensitive areas. The primary source for potable water within the Town is the Wayland Water Department. The

nearest public water supply well is located approximately 1.1 miles northwest of the proposed location, and the nearest private drinking water well is approximately 5000 feet to the northeast.

Soil tests and borings performed within the foot print of the proposed soil absorption system (SAS) encountered up to 33 inches of fill underlain by 5 to 7 feet of loamy, fine sand that coarsens downward to a medium-to-coarse sand. These deposits in turn overlie a horizon of gray silt interpreted locally to be the bottom of the unconfined aquifer. Percolation testing of the loamy, fine sand yielded a percolation rate of less than 2 minutes per inch.

The proposed subsurface disposal system was evaluated at a design flow of 17,000 gpd. Soil evaluation and percolation testing of the proposed site support a long term application rate (LTAR) of 2.5 gallons/day/square foot (gpd/ft^2). T&B has, however, proposed a design for the SAS using an LTAR of 1.47 gpd/ft^2. This design will spread the hydraulic load across a greater area and thereby minimize groundwater mounding and site grading impacts. The minimum leaching area required for the proposed discharge is 11,560 square feet. T&B's SAS design consists of twenty nine, 100-foot long trenches having a leaching area of 11,600 square feet. Trenches will be spaced 6 feet apart to accommodate MassDEP's required reserve area. T&B has designated an area of 22,600 square feet (100 feet by 226 feet) for primary and reserve purposes. A site plan of the proposed SAS entitled "Figure 4-3R: Groundwater Contour Plan" and dated September 10, 2012 is included with the submitted report addendum. Construction details of the proposed SAS are found on "Figure 5-1R2: Effluent Disposal Layout" and "Figure 5-2R2: Disposal Bed Profile." Both are also dated October, 2012.

Estimated seasonal high groundwater beneath the proposed SAS is at elevation 124.5 feet above mean sea level (msl). T&B has calculated that groundwater mounding beneath the proposed SAS will be approximately 2.4 feet; resulting in a mounded seasonal high groundwater elevation of 126.9 feet above msl. T&B has therefore proposed a minimum bottom of bed elevation for the SAS of 130.9 feet above msl to ensure that the required four feet of unsaturated separation is maintained between the top of the mounded seasonal high water table and the base of the proposed SAS.

T&B's analysis of groundwater mounding impacts suggests that a groundwater high will develop beneath the SAS and that groundwater will flow from the SAS toward the wetlands located southeast of the site. A monitoring well network has been proposed for the long-term monitoring of groundwater quality in the vicinity of the proposed SAS. The proposed network consists of three wells; one well (UG-1) upgradient of the proposed SAS and two wells (DG-2 and DG-3) downgradient of the SAS. The locations of these proposed wells are shown on Figure 4-3R which is entitled "Groundwater Contour Plan" and dated September 10, 2012.

MassDEP concurs with T&B's determination that the site has sufficient hydraulic capacity to accept a design flow of 17,000 gpd of treated wastewater at a loading rate of 1.47 gpd/ft^2.

Pursuant to 314 CMR 5.09 (1) (f), MassDEP hereby **approves** the hydrogeologic report submitted by T&B and authorizes the applicant to apply for an **Individual Groundwater**

Discharge Permit (BRPWP 79). Submission **of an individual Groundwater Discharge Permit application for this project is subject to the following conditions:**

1. The design flow of the permitted groundwater discharge shall not exceed 17,000 gallons per day.

2. The long term application rate to the SAS shall not be greater than **1.47 gpd/ft^2**.

3. The proposed SAS shall not be constructed until a Groundwater Discharge Permit has been obtained from MassDEP. The proposed SAS shall be constructed within the footprint indicated on Figure 4-3R of the Wayland Town Office Playing Fields Hydrogeologic Report. Figure 4-3R is entitled "Groundwater Contour Plan" and dated September 10, 2012.

4. The proposed SAS shall not be constructed until the existing Title 5 flow from the Town Office Building has been directed to the Wayland Wastewater Treatment Facility and the components of the existing SAS removed from the site.

5. MassDEP approves the proposed monitoring well locations shown on the aforementioned Figure 4-3R. The approved monitoring plan will be referenced in the Groundwater Discharge Permit when issued. MassDEP recognizes that proposed locations are somewhat dependent upon final site development and may require modification; any changes, however, must be submitted to this office for approval prior to well installation. Final monitoring wells must be installed and sampled for all groundwater quality parameters listed in the issued permit no later than 90 days prior to startup of the wastewater treatment plant and discharge to the SAS.

6. An Initial Groundwater Monitoring Well and Groundwater Quality Report must be submitted to this office prior to any discharge of wastewater. This report must include;

    a. a final surveyed site plan depicting the as-built locations of the SAS, the reserve area, all monitoring wells and all appropriate elevation data,

    b. boring logs and well construction details for all monitoring wells, and

    c. the analytical results of the groundwater samples collected from the final groundwater monitoring wells. These results will be used to establish the baseline groundwater quality for the site.

Please be advised that this approval **is not** a Groundwater Discharge Permit. It does, however, authorize the project proponent to apply for an Individual Groundwater Discharge Permit. MassDEP requires that the application (BRPWP 79) be accompanied by a MassDEP Transmittal Form and include all required supporting documentation. Included in the supporting documentation shall be a certification from a Massachusetts Registered Professional Engineer that the approved Hydrogeological Report has been reviewed and accurately reflects site

conditions as of the date of the permit application. Information on any changes noted during the review shall be included in the Engineering Report that accompanies the application.

While the Town may file an application for a Groundwater Discharge Permit, supported by the technical information noted above, it is important to note that MassDEP **will not** issue a Groundwater Discharge Permit until such time as an Administrative Consent Order (ACO) has been executed with the Town, establishing a schedule and timeline for actions needed to address wastewater management needs. This requirement for an ACO has been discussed in detail in prior meetings with the Town, and articulated in MassDEP's letter to the Town dated December 5, 2011. Elements of the ACO shall include, at a minimum:

- Requirement that the Town applies for and receives a MassDEP Groundwater Discharge Permit pursuant to the requirements of 314 CMR 5.00;
- Requirement for the Town to closely monitor and report wastewater flows to the Town's wastewater treatment plant;
- Requirement that the Town proceed to construction with all infrastructure needed to commence a groundwater discharge, in compliance with the terms and conditions of the groundwater discharge permit, when average daily flows to the wastewater treatment plant meet or exceed 80 percent of the NPDES permitted flow limit (41,600 gallons per day) for a consecutive 90-day period of record.
- Requirement that the Town provides a schedule for completion of construction of groundwater discharge facilities, and provides an acceptable operations protocol to ensure that the discharge limits of both the NPDES and groundwater permits will be met.

MassDEP advises the Town to engage in discussions with MassDEP expeditiously so that negotiations can move forward, and actions on a Groundwater Discharge Permit application can proceed on a timely basis.

If you have questions regarding the comments and conditions of this approval, please contact Kevin Brander of my staff at 978-694-3236.

Sincerely,

Eric Worrall
Deputy Regional Director
Bureau of Resource Protection

EW/HS/hs

cc: Fred Turkington/Town of Wayland
Julia Junghanns/Wayland Board of Health
Ian Catlow/Tighe & Bond
Karla King/Tighe & Bond

Marybeth Chubb/MassDEP/Boston
Greg Tomaszewski/MassDEP/NERO
Heidi Zisch, MassDEP/NERO Counsel

Attachment 4
Monitoring Well Data

LEGEND

- TP # — TEST PIT
- MW # — EXISTING MONITORING WELL
- UG/DG # — PROPOSED MONITORING WELL LOCATIONS
- ESHGW CONTOURS
- POST CONSTRUCTION GROUNDWATER MOUND CONTOURS
- --128-- EXISTING GROUND CONTOURS

TP 1
GROUND SURFACE
ELEV=127.53
ESHGW=124.78
D=2.75

MW 1
ROAD BOX
ELEV=127.89
ESHGW=125.46

MW 2
ROAD BOX
ELEV=127.17
ESHGW=125.88

MW 3
ROAD BOX
ELEV=127.80
ESHGW=125.82

MW 7
ROAD BOX
ELEV=128.02
ESHGW=125.25

TP 6
GROUND SURFACE
ELEVATION=126.80
ESHGW=124.13

MW 4
ROAD BOX
ELEV=127.68
ESHGW=125.14

UG-1

TP 7
GROUND SURFACE
ELEVATION=127.60
ESHGW=129.52
D=3.08

TP 8
GROUND SURFACE
ELEVATION=126.32
ESHGW=123.49
D=2.83

TP 2
GROUND SURFACE
ELEVATION=24.98
ESHGW=122.98
D=2.0

TP 3
GROUND SURFACE
ELEVATION=125.64
ESHGW=123.22
D=2.42

TP 4
GROUND SURFACE
ELEVATION=125.06

TP 5
GROUND SURFACE
ELEVATION=127.19
ESHGW=123.02
D=4.17

MW 5
ROAD BOX
ELEV=130.18
ESHGW=124.02

TP 9A
GROUND SURFACE
ELEVATION=130.15
ESHGW=124.5

MW 6
ROAD BOX
ELEV=130.10
ESHGW=123.76

MW 8
ROAD BOX
ELEV=127.46
ESHGW=123.15

TP 10A
GROUND SURFACE
ELEVATION=126.5
ESHGW=122.5

DG-2

DG-3

BENCHMARK
RIM BOLT
HYDRANT
ELEV. 125.95'

EXISTING FENCE POST

SWING TIE 132.75'

SWING TIE 40.47'

SWING TIE 146.83'

SWING TIE 68.15'

147.1

225.0

100.0

EXISTING LEACHFIELD TO BE DEMOLISHED

PROPOSED LEACHFIELD AND RESERVE AREA

HORIZONTAL EXTENT OF GROUNDWATER MOUND

100' WETLANDS BUFFER

WETLANDS LINE 6/2/10

APPROXIMATE LINE OF 100 YEAR FLOOD

COCHITUATE ROAD

HONEY LOCUST

CONCRETE PAD

BIT. CONC.

MAPLE

BRICK RETAINING WALL

CONCRETE RAMP

GRANITE CURB

BIT. CONC.

BRICK RET. W.

SOCCER GOAL

Existing Fence

Bleachers

WETLAND

Tighe&Bond
Consulting Engineers
www.tighebond.com

100 YEARS STRONG
1911-2011

N

SCALE IN FEET
0 30' 60'
GRAPHIC SCALE

Town Office Building Groundwater Discharge

41 Cochituate Road

Wayland, Massachusetts

VERIFY SCALE
BAR IS 1 INCH ON ORIGINAL DRAWING
0 1 INCH
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

Mark	Date	Description

PROJECT NO:	W1396
FILE:	TownHall_2012
DRAWN BY:	BJL
CHECKED:	KLK
APPROVED BY:	IBC

GROUNDWATER CONTOUR PLAN

SCALE: 1"=30'

FIGURE 4-3R2

O:\Projects\W\W1396\Town Hall\W-1396_TownHall-2012_FIG 4-3.dwg Oct 01, 2012-4:56pm Plotted By: bj

10/01/12

Boring and Monitoring Well Data
Wayland: Town Office Ball Fields

Monitoring Well ID	Date Installed	Approximate Ground Surface Elevation *FT*	Depth to Bottom (from ground) *FT*	Bottom Elevation *FT*	At Time of Construction	
					Depth to Groundwater (from ground) *FT*	Groundwater Elevation *FT*
MW-1	1/9/2012	127.89	10.0	117.9	3.75	124.14
MW-2	1/9/2012	125.47	12.0	113.5	2.61	122.86
MW-3	1/9/2012	125.41	12.0	113.4	3.30	122.11
MW-4	1/9/2012	127.68	10.0	117.7	3.86	123.82
MW-5	1/9/2012	130.18	10.0	120.2	7.48	122.70
MW-6	1/9/2012	130.1	10.0	120.1	7.66	122.44
MW-7	1/9/2012	128.02	10.0	118.0	4.09	123.93
MW-8	1/9/2012	127.46	10.0	117.5	5.63	121.83

Notes:

1. Elevations based on survey performed by

Tighe&Bond

Consulting Engineers
Westfield, Massachusetts

Boring No. **MW-1**
Page 1 of 1
File No.
Checked by:

Project: W-1396
Location: 41 Cochituate Rd, Wayland, MA
Client:

Drilling Co.: TDS
Foreman:
T&B Rep.: ADM1
Date Start: 01/09/12 End: 01/09/12
Location See Exploration Location Plan
GS. Elev. Datum:

	Casing	Sampler
Type		
I.D./O.D.		
Hammer Wt.		
Hammer Fall		
Other		

Groundwater Readings

Date	Time	Depth	Casing	Sta. Time
1/13/2012	1400	2.2'		

Depth (ft.)	Casing Blows Per Ft.	Sample No. / Rec. (in)	Sample Depth (ft.)	Blows Per 6"	Sample Description	General Stratigraphy	Notes	Well Construction
			0-1	3	Brown, SANDY LOAM			Road Box
				3				
			1-3	5	Brown, f SAND, some silt			2' Riser
				4				
				3				
				6				
			3-5	4	Brown, m-c SAND, Water @ 4'			
				6				
				9				
5				11				
			5-6	9	Brown, f SAND and silt			
				5				
			6-10	3	Gray, SILT, trace f sand			8' Screen
				6				
				6				
				5				
				3				
				3				
				7				
10				6				
								Well Set at 10'
15								
20								
25								
30								

Notes:

Tighe&Bond

Consulting Engineers
Westfield, Massachusetts

Boring No. **MW-2**
Page 1 of 1
File No.
Checked by:

Project: W-1396
Location: 41 Cochituate Rd, Wayland, MA
Client:

Drilling Co.: TDS
Foreman:
T&B Rep.: ADM1
Date Start: 01/09/12 End: 01/09/12
Location See Exploration Location Plan
GS. Elev. Datum:

	Casing	Sampler
Type		
I.D./O.D.		
Hammer Wt.		
Hammer Fall		
Other		

Groundwater Readings

Date	Time	Depth	Casing	Sta. Time
1/13/2012	1000	2'		

Depth (ft.)	Casing Blows Per Ft.	Sample No. / Rec. (in)	Sample Depth (ft.)	Blows Per 6"	Sample Description	General Stratigraphy	Notes	Well Construction
			0-1	4	Brown, SANDY LOAM			Road Box
				4				
			1-3	7	Brown, f SAND, some silt			2' Riser
				6				
				5				
				4				
			3-4	4	Brown, c SAND, some m sand			
				4				
			4-6	7	Brown, f SAND and silt, Water @ 4'			
5				7				
				6				
				5				
			6-12	7	Gray, SILT			10' Screen
				7				
				4				
				3				
				3				
				3				
				6				
10				7				
				7				
				7				
				5				
				6				
								Well Set at 12'
15								
20								
25								
30								

Notes:

Tighe&Bond

Consulting Engineers
Westfield, Massachusetts

Boring No. **MW-3**
Page 1 of 1
File No.
Checked by:

Project: W-1396
Location: 41 Cochituate Rd, Wayland, MA
Client:

Drilling Co.: TDS
Foreman:
T&B Rep.: ADM1
Date Start: 01/09/12 End: 01/09/12
Location See Exploration Location Plan
GS. Elev. Datum:

	Casing	Sampler
Type		
I.D./O.D.		
Hammer Wt.		
Hammer Fall		
Other		

Groundwater Readings

Date	Time	Depth	Casing	Sta. Time
1/13/2012	1045	2.7'		

Depth (ft.)	Casing Blows Per Ft.	Sample No. / Rec. (in)	Sample Depth (ft.)	Blows Per 6"	Sample Description	General Stratigraphy	Notes	Well Construction
			0-1	5 6	Brown, SANDY LOAM			Road Box
			1-3	6 5 4 6	Brown, f SAND, some silt			2' Riser
			3-4	4 6	Brown, c SAND, some m sand			
5			4-6	7 13 8 8	Brown, f SAND and silt, Water @ 4'			
			6-15	6 7 10 8 2 4 6 7	Gray, SILT, trace f sand			10' Screen
10								
								Well Set at 12'
				5 5 6 6				
15								
20								
25								
30								

Notes:

Tighe&Bond

Consulting Engineers
Westfield, Massachusetts

Boring No. **MW-4**
Page 1 of 1
File No.
Checked by:

Project: W-1396
Location: 41 Cochituate Rd, Wayland, MA
Client:

Drilling Co.: TDS
Foreman:
T&B Rep.: ADM1
Date Start: 01/09/12 End: 01/09/12
Location See Exploration Location Plan
GS. Elev. Datum:

	Casing	Sampler
Type		
I.D./O.D.		
Hammer Wt.		
Hammer Fall		
Other		

Groundwater Readings

Date	Time	Depth	Casing	Sta. Time
1/13/2012	1245	3.5'		

Depth (ft.)	Casing Blows Per Ft.	Sample No. / Rec. (in)	Sample Depth (ft.)	Blows Per 6"	Sample Description	General Stratigraphy	Notes	Well Construction
			0-1	4 4	Brown, SANDY LOAM			Road Box
			1-3	6 5 3 6	Brown, f SAND, some silt			2' Riser
			3-4	11 8	Brown, c SAND, some m sand			
5			4-6	4 6 8 7	Brown, f SAND and silt, Water @ 4'			8' Screen
			6-10	6 6 7 5 3 4 6 8	Gray, SILT, trace f sand			
10								Well Set at 10'
15								
20								
25								
30								

Notes:

Tighe&Bond

Consulting Engineers
Westfield, Massachusetts

Boring No. **MW-5**
Page 1 of 1
File No.
Checked by:

Project: W-1396
Location: 41 Cochituate Rd, Wayland, MA
Client:

Drilling Co.: TDS
Foreman:
T&B Rep.: ADM1
Date Start: 01/10/12 End: 01/10/12
Location See Exploration Location Plan
GS. Elev. Datum:

	Casing	Sampler
Type		
I.D./O.D.		
Hammer Wt.		
Hammer Fall		
Other		

Groundwater Readings

Date	Time	Depth	Casing	Sta. Time
1/13/2012	1450	7.55'		

Depth (ft.)	Casing Blows Per Ft.	Sample No. / Rec. (in)	Sample Depth (ft.)	Blows Per 6"	Sample Description	General Stratigraphy	Notes	Well Construction
			0-1	4 4	Brown, SANDY LOAM			Road Box
			1-3	6 5 3 4	Brown, f-m SAND, trace gravel			2' Riser
			3-5	5 4 4 8	Light brown, f-m SAND, Water @ 4'			
5			6-8	6 6 6 6 10 7	Brown, m-c SAND, trace gravel			8' Screen
			8-10	8 5 10 9	Gray, SILT, trace f sand			
10								Well Set at 10'
15								
20								
25								
30								

Notes:

Tighe&Bond

Consulting Engineers
Westfield, Massachusetts

Boring No. **MW-6**
Page 1 of 1
File No.
Checked by:

Project: W-1396
Location: 41 Cochituate Rd, Wayland, MA
Client:

Drilling Co.: TDS
Foreman:
T&B Rep.: ADM1
Date Start: 01/10/12 End: 01/10/12
Location See Exploration Location Plan
GS. Elev. Datum:

	Casing	Sampler
Type		
I.D./O.D.		
Hammer Wt.		
Hammer Fall		
Other		

Groundwater Readings

Date	Time	Depth	Casing	Sta. Time
1/13/2012	1525	7.75'		

Depth (ft.)	Casing Blows Per Ft.	Sample No. / Rec. (in)	Sample Depth (ft.)	Blows Per 6"	Sample Description	General Stratigraphy	Notes	Well Construction
			0-1	3 4	Brown, SANDY LOAM			Road Box
			1-3	4 6 4 5	Brown, f-m SAND, trace gravel			2' Riser
			3-5	4 8 12 14	Light brown, f-m SAND, Water @ 4'			
5			6-8	10 7 6 6 5 6	Brown, m-c SAND, trace gravel			8' Screen
			8-10	3 5 6 12	Gray, SILT, trace f sand			
10								Well Set at 10'
15								
20								
25								
30								

Notes:

Tighe&Bond

Consulting Engineers
Westfield, Massachusetts

Boring No. **MW-7**
Page 1 of 1
File No.
Checked by:

Project: W-1396
Location: 41 Cochituate Rd, Wayland, MA
Client:

Drilling Co.: TDS
Foreman:
T&B Rep.: ADM1
Date Start: 01/09/12 End: 01/09/12
Location See Exploration Location Plan
GS. Elev. Datum:

	Casing	Sampler
Type		
I.D./O.D.		
Hammer Wt.		
Hammer Fall		
Other		

Groundwater Readings

Date	Time	Depth	Casing	Sta. Time
1/13/2012	1330	3.45'		

Depth (ft.)	Casing Blows Per Ft.	Sample No. / Rec. (in)	Sample Depth (ft.)	Blows Per 6"	Sample Description	General Stratigraphy	Notes	Well Construction
			0-1	4 4	Brown, SANDY LOAM			Road Box
			1-3	6 5 3 6	Brown, f SAND, some silt			2' Riser
			3-4	11 8	Brown, m-c SAND, trace gravel			
5			4-6	4 6 8 7	Brown, f SAND and silt, Water @ 4'			8' Screen
			6-10	6 6 7 5 3 4 6 8	Gray, SILT, trace f sand			
10								Well Set at 10'
15								
20								
25								
30								

Notes:

Tighe&Bond

Consulting Engineers
Westfield, Massachusetts

Project: W-1396
Location: 41 Cochituate Rd, Wayland, MA
Client:

Boring No. **MW-8**
Page 1 of 1
File No.
Checked by:

Drilling Co.: TDS
Foreman:
T&B Rep.: ADM1
Date Start: 01/10/12 End: 01/10/12
Location See Exploration Location Plan
GS. Elev. Datum:

	Casing	Sampler
Type		
I.D./O.D.		
Hammer Wt.		
Hammer Fall		
Other		

Groundwater Readings

Date	Time	Depth	Casing	Sta. Time
1/13/2012	1600	5.60'		

Depth (ft.)	Casing Blows Per Ft.	Sample No. / Rec. (in)	Sample Depth (ft.)	Blows Per 6"	Sample Description	General Stratigraphy	Notes	Well Construction
			0-1	5 4	Brown, SANDY LOAM			Road Box
			1-3	4 3	Brown, f-m SAND, Water @ 5'			2' Riser
				8 6				
			3-5	7 10				
				11 11				
5			6-8	5 4	Brown, m-c SAND			8' Screen
				8 7				
				7 4				
			8-10	3 3	Gray, SILT, trace f sand			
				3 11				
10								Well Set at 10'
15								
20								
25								
30								

Notes:

Attachment 5
Plans and Specifications Approval Letter

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NORTHEAST REGIONAL OFFICE
205B Lowell Street, Wilmington, MA 01887 • (978) 694-3200

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

IAN A. BOWLES
Secretary

LAURIE BURT
Commissioner

August 23, 2010

David Schofield, Chairman
Wayland Wastewater Management District Commission (WWMDC)
41 Cochituate Road
Wayland, MA 01778

RE: **Wayland,** Wastewater Treatment Plant Upgrade Project, April 2010, Plans and Specifications (Volume 1 & 2)

Dear Mr. Schofield:

The Northeast Regional Office of the Massachusetts Department of Environmental Protection, ("MassDEP" or the "Department") has received and reviewed the above-referenced plans and specifications prepared on behalf of the Wayland Wastewater Management District Commission (WWMDC), by Tighe & Bond Consulting Engineers.

The Plans are 53 sheets and entitled:

Wastewater Treatment Plant Upgrade
Wayland, Massachusetts
April 2010
Tighe & Bond Consulting Engineers
Ian Catlow, P.E., No. 46112
Robert Peirent, P.E. No. 36038

The Specifications are similarly titled and include Volumes 1 & 2.

The contract work consists of upgrading the Commission's wastewater treatment plant from an Extended Aeration plant to a Membrane Bioreactor System facility. Construction of the new plant is comprehensive in scope and includes, but is not limited to, the following major components:

- Site preparation;

- Construction of a new masonry structure;
- Installation of a precast concrete valve chamber;
- Influent screening equipment;
- Equalization tank and submersible mixers;
- Membrane bioreactor equipment including membrane cartridges, permeate pumps, fine bubble aeration diffusers, instrumentation and controls;
- UV disinfection equipment;
- Chemical injection equipment and chemical dosing pumps;
- Sludge storage facilities;
- SCADA system;
- Construction of new water mains, hydrants, and service connections;
- Construction of a new outfall to the Sudbury River (crossing Route 20);
- Demolition of the existing wastewater treatment facility; and
- all ancillary work necessary to complete construction of the new wastewater treatment facility.

After review of both the plans and specifications, and in light of receipt of an August 12, 2010 e-mail from Mr. Ian Catlow of Tighe & Bond responding to MassDEP comments, MassDEP hereby approves the above referenced plans and specifications with the following conditions:

1. The Final Plans (all sheets) and Specifications shall be signed and stamped by a Massachusetts Registered Professional Engineer.
2. Prior to construction, WWMDC shall provide MassDEP with a copy of the Final Plans and Specifications, which shall incorporate the revisions noted in the August 12, 2010 email noted above.
3. WWMDC shall obtain all required local, state, and federal permits prior to undertaking the construction work.
4. Any modifications to the approved plans and specifications must be reviewed and approved by MassDEP in writing.

If you have any questions regarding this letter, please contact Lisa Dallaire of my staff at (978) 694-3238.

Sincerely,

Eric Worrall
Deputy Regional Director
Bureau of Resource Protection

CC: Fred Turkington, Town Manager, Town of Wayland
Ian Catlow, Tighe & Bond Consulting Engineers
David Ferris, MassDEP/BRP/Boston
George Harding, WCC, USEPA-New England, Region I, 1 Congress Street, Suite 1000, Boston, MA 02114-2023
David Boucher, Chief Operator, 430/440 Boston Post Road, Wayland, MA 01778

Attachment 6
Location of the Facility Narrative and Site Map

MassDEP
Massachusetts Department of Environmental Protection

Coordinate Information Tool

Click on the map and get coordinate information in NAD83 UTM and WGS84 (Lat/Lon).

Enter Address: 41 cochituate road, wayland, ma Search

1. Enter a complete street address then click the Search button.
2. If the address search is correct, click to get coordinate information for that location.
3. To refine the map display use the Map Tools then click on location with the tool.

Helpful Links

Priority Resource Map Viewer

Commonwealth of Massachusetts Office of Geographic Information (MassGIS)

Map Tools:

Select Base Map: Street Satellite Terrain

The site is located at 41 Cochituate Road, to the southeast of the baseball field.

1:25,000

0 2,000

Feet

Based on USGS Topographic Map for Natick, MA Quadrangle. Revised 1987
Circle indicates a 1 mile radius

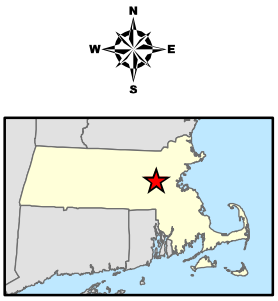


FIGURE 1-1
SITE LOCUS MAP

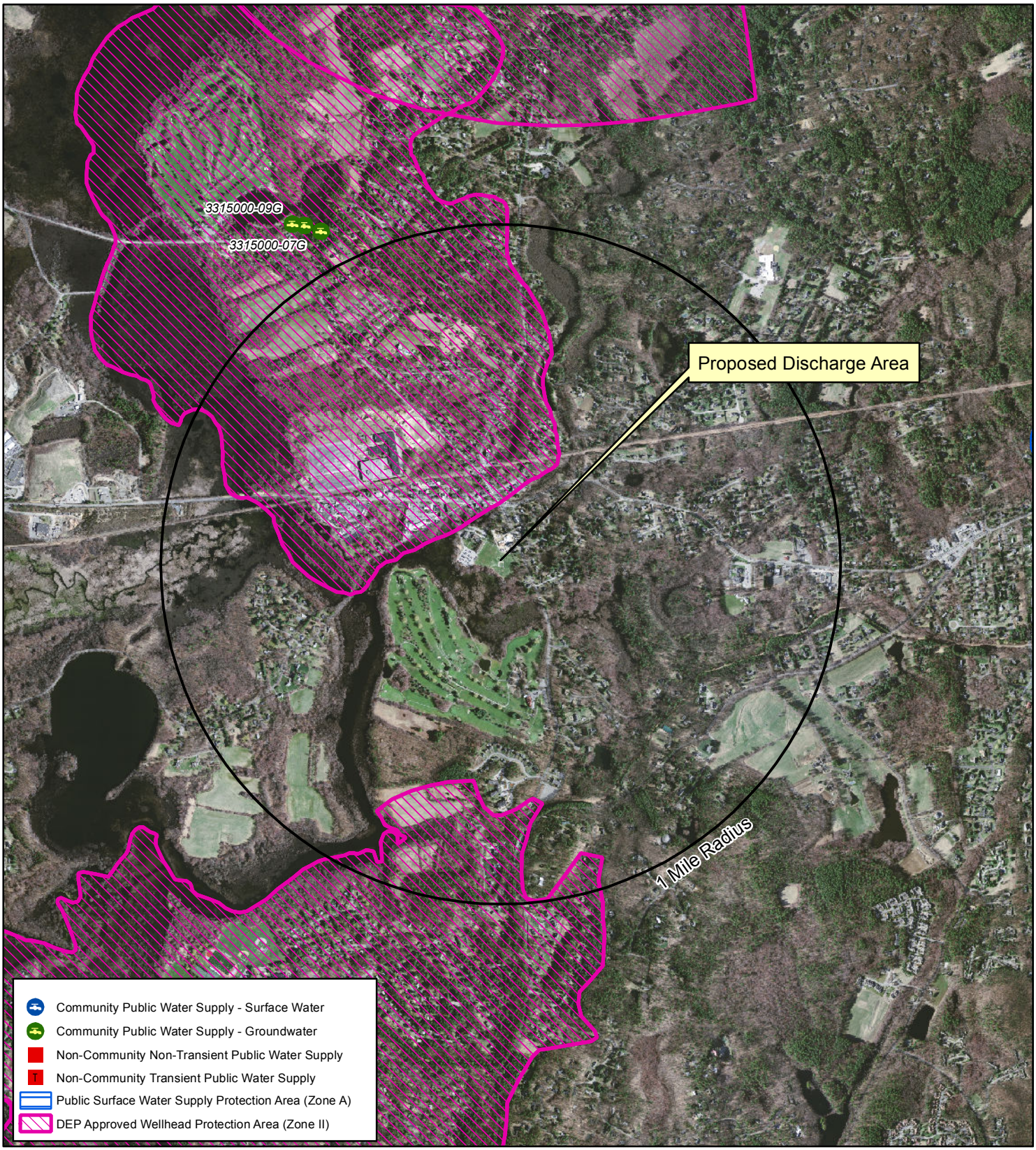
Wayland Town Offices
Wayland, Massachusetts

Tighe&Bond

March, 2012

G:\GIS\MA\WaylandMA\avproj\pipline_topo.mxd Date Saved: 11/18/2011 User: scs

W-1396



1:25,000

0 2,000

Feet

Data source: Office of Geographic and Environmental Information (MassGIS) Data valid as of February 2012
Based on MassGIS Color Orthophotography (April 2009)
Circle indicate 1 mile radius

FIGURE 3-1
PUBLIC WATER SUPPLIES

Wayland Town Offices
Wayland, Massachusetts

Tighe&Bond

March, 2012

Private Wells

Town	Address	Well Type	Total Depth	Depth to Bedrock	Water Level
Wayland	412 Commonwealth Road	Monitoring	52	14	45
Wayland	Route 20	Monitoring	24	0	14
Wayland	18 Black Oak Road	Irrigation	951	2	30
Wayland	130 Main Street	Monitoring	15	0	8.5
Wayland	6 Barley Lane	Monitoring	16	0	8
Wayland	East Plain Street	Monitoring	8	0	.5
Wayland	Route 20	Monitoring	33	0	31
Wayland	12 Charles Street	Monitoring	35	0	28
Wayland	131 Boston Post Road	Monitoring	27	0	19
Wayland	Route 20	Monitoring	15	0	6
Wayland	533 Boston Post Road	Monitoring	25	0	7
Wayland	Oak Street	Monitoring	53.5	0	6
Wayland	310 Cochituate Road	Monitoring	14	0	7
Wayland	533 Boston Post Road	Monitoring	17	0	6.4
Wayland	19 Main Street	Monitoring	15	0	7
Wayland	9 Gennaro Circle	Domestic	138	117	25
Wayland	11 Gennaro Circle	GTCL	105	90	15
Wayland	10 Gennaro Circle	GTCL	131	118	36
Wayland	356 Boston Post Road	Monitoring	15		8
Wayland	400 Boston Post Road	Monitoring	30		15
Wayland	95 Claypit Hill Road	Irrigation	320	92	30
Wayland	32 Claypit Hill Road	Domestic	685	117	11
Wayland	8 Bennett Road	Irrigation	500	90	35
Wayland	325 Boston Post Road	Monitoring	13	0	6
Wayland	51 Plain Road	Irrigation	260	91	6
Wayland	61 Old Sudbury Road	Irrigation	160	93	40
Wayland	304 Boston Post Road	Monitoring	20	0	12
Wayland	397 Boston Post Road	Irrigation	900	60	20
Wayland	4 Plain Road	Monitoring	18		11

Source: MassDEP SearchWell website (http://public.dep.state.ma.us/searchwell/), 2012

Attachment 7
Water Supply Data

BRP WP 81 Application, Item C.11 - Water Supply Data
Town of Wayland

Water Sources	Year 1 (2007)	Year 2 (2008)	Year 3 (2009)	Year 4 (2010)	Year 5 (2011)
Baldwin Pond	114,386,991	57,916,800	98,635,400	157,224,787	170,942,831
Campbell	87,541,900	49,695,600	86,387,400	32,160,360	24,996,800
Chamberlain	95,239,799	77,208,812	12,201,800	97,910,512	47,212,519
Meadowview	0	662,701	65,599	0	0
Happy Hollow Well #1	141,675,500	156,122,601	110,239,718	66,001,532	81,718,647
Happy Hollow Well #2	198,611,944	206,195,906	221,260,000	152,188,423	151,322,772
TOTAL	**637,456,134**	**547,802,420**	**528,789,917**	**505,485,614**	**476,193,569**