

**Keohane, Kathleen (DEP)**

**From:** Vocke, Richard [RVocke@VHB.com]  
**Sent:** Tuesday, July 07, 2009 1:06 PM  
**To:** Keohane, Kathleen (DEP)  
**Subject:** IBM Westford

MAG 250976

Hi Kathleen.

I spoke with Brian Hurley at IBM Westford last week. Brian is the lead maintenance person for the IBM Westford location and familiar with the cooling equipment at the facility. Brian confirmed that the 500 gallon per day is still the best estimate for average discharge from the cooling tower, but we agreed to drop the maximum daily discharge from 5,000 gallons down to 3,000 gallons. Not sure how this will impact the NOI, but it should be a more accurate picture of the discharge at the site.

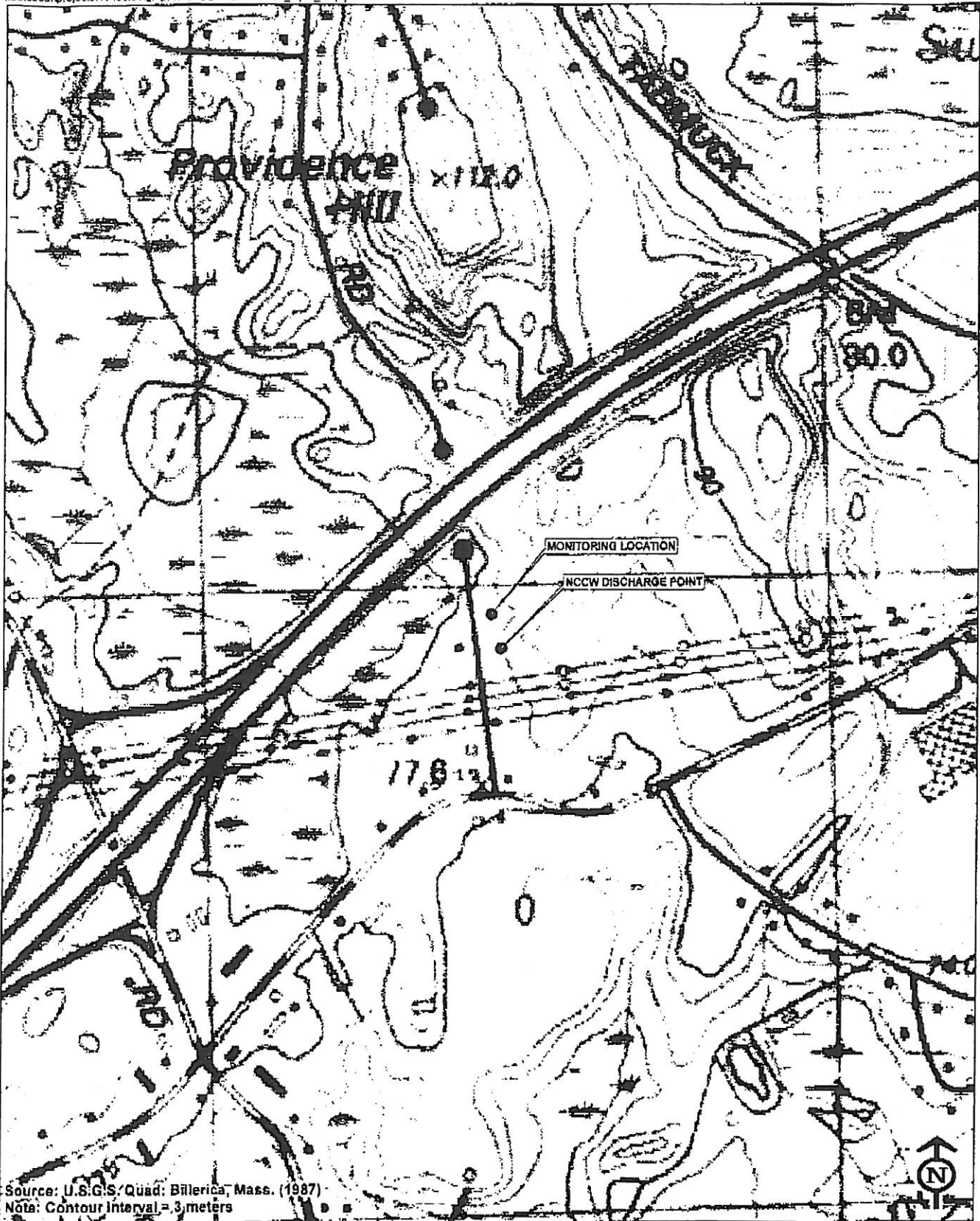
Please contact me with any further questions.

Thank you,  
Rich Vocke, LEED AP  
Sr. Project Manager  
VHB/Vanasse Hangen Brustlin, Inc.  
54 Tuttle Place, Middletown, CT 06457  
(860) 632-1500 ext.2305 - Fax (860) 632-7879  
RVocke@vhb.com

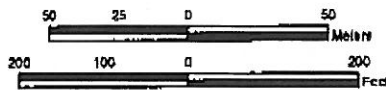
This communication is confidential and intended only for the recipient(s). Any other use, dissemination, copying, or disclosure of this communication is strictly prohibited. If you have received this communication in error please notify us and destroy it immediately. Vanasse Hangen Brustlin, Inc. is not responsible for any undetectable alteration, transmission error, conversion, media degradation, software error, or interference with this transmission. Vanasse Hangen Brustlin, Inc. | 101 Walnut St | Watertown, MA 02472 | 617.924.1770

new application  
rec'd 8/18/09  
afrawley

N:\C:\mdata\project\41435.01\graphics\FIGURES\Westford\_topol\_map.pdf



Quadrangle Location



**Vanasse Hangen Brustlin, Inc.**  
**NOI for the Noncontact Cooling**  
**Water General Permit**  
**5 Technology Park Drive**  
**Westford, Massachusetts**

MAG 250976  
 new # ID of 818109

APPENDIX 5

Suggested Form for Notice of Intent (NOI) for the Noncontact Cooling Water General Permit  
 I. General facility information. Please provide the following information about the facility.

a) Name of facility: IBM Corporation		Type of Business: Office building
Facility Location Address: 5 Technology Park Drive, Westford, MA		Facility Mailing Address (if not location address)
Facility SIC codes: 7379	Longitude: -71.250025° Latitude: 42.342008°	Email address of owner: gprolita@us.ibm.com
b) Name of facility owner: IBM Corporation		Owner is (check one): 1. Federal _____ 2. State _____ 3. Tribal _____ 4. Private <input checked="" type="checkbox"/> 5. Other _____ (Describe)
Owner's Tel #: (914) 765-4612	Owner's Fax #: (914) 765-4649	
Address of owner (if different from facility address) New Orchard Road, Armonk, NY 10504		
Legal name of Operator, if not owner: Grubb & Ellis Management Services, Inc.		
Operator Contact Name: Julia Rudd		
Operator Tel Number: (781) 280-2405		Fax Number: _____
Operator's email: julia_rudd@us.ibm.com		
Operator Address (if different from owner) 100 Crosby Drive, Bedford, MA 01730		
d) Attach topographic map indicating the locations of the facility and the receiving water; all NCCW discharge points; upstream and downstream monitoring points. Map attached? <input checked="" type="checkbox"/>		
e) Check Yes or No for the following:		
1. Has a prior NPDES permit been granted for the discharge? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If Yes, Permit Number: _____		
2. Is the discharge a "new discharge" as defined by 40 CFR Section 122.22? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
3. Is the facility covered by an individual NPDES permit? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If Yes, Permit Number _____		
4. Is there a pending application on file with EPA for this discharge? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If Yes, date of submittal: _____		

**2. Discharge information.** Please provide information about the discharge, (attaching additional sheets as needed)

a) Name of receiving water into which discharge will occur: On-site stormwater retention basin, discharge to State Water Quality Classification: Class B Freshwater: yes Marine Water: \_\_\_\_\_

b) Describe the discharge activities for which the owner/applicant is seeking coverage: Noncontact cooling water from a cooling tower.

c) **FOR MASSACHUSETTS FACILITIES ONLY:** Engineering Calculations: Submit the completed engineering calculation of the surface water temperature rise as shown in Attachment A of the General Permit. Check if attached: ✓

d) Number of outfalls 1

For each outfall:

e) What is the maximum daily and average monthly flow of the discharge? Note that EPA will use the flow reported here as the facility's permitted effluent flow limit. Max Daily Flow 5,000 GPD Average Flow 500 GPD

f) What is the maximum daily and average monthly temperature of the discharge (in degrees F)? Max Temp. 80 Average Temp. 62

g) What is the maximum and minimum monthly pH of the discharge (in s.u.)? Max pH 9.1 Min pH 8.5

h) **FOR MASSACHUSETTS FACILITIES ONLY:** Is the source water of the NCCW potable water? Yes ✓ No \_\_\_\_\_ If Yes, EPA will calculate the Total Residual Chlorine limit for facilities located in Massachusetts.

i) Is the discharge continuous? Yes \_\_\_\_\_ No ✓ If no, is the discharge periodic (P) (occurs regularly, i.e., monthly or seasonally, but is not continuous all year) or intermittent (I) (occurs sometimes but not regularly) or both (B) P \_\_\_\_\_ If (P), number of days or months per year of the discharge 8 and the specific months of discharge Mar, Apr, May, Jun, Jul, Aug, Sep; If (I), number of days/year there is a discharge \_\_\_\_\_

j) Latitude and longitude of each discharge within 100 feet: outfall 1: long. \_\_\_\_\_ lat. \_\_\_\_\_; outfall 2: long. \_\_\_\_\_ lat. \_\_\_\_\_; outfall 3: long. \_\_\_\_\_ lat. \_\_\_\_\_ (See <http://www.epa.gov/ttr/report/siting.html>)

k) Provide the reported or calculated seven day-ten year low flow (7Q10) of the receiving water (0.01 MGD), 0.003 cfs. Please attach any calculation sheets used to support stream flow and dilution calculations. See General Permit Attachment B for equations and additional information.

**MASSACHUSETTS FACILITIES:** See Part 3.4 and Appendix 1 of the General Permit for more information on ACEC. Areas of Critical Environmental Concern (ACEC): Does the discharge occur in an ACEC? Yes \_\_\_\_\_ No ✓ If yes, provide the name of the ACEC: \_\_\_\_\_

3. NCCW Source Water Information. Please provide information about the NCCW source water, using separate sheets as necessary:

<p>a) Indicate source of the NCCW (i.e., municipal water supply, private well, surface water withdrawal, groundwater):                  Source: <u>municipal water supply</u>                  Name of Source Water: <u>Westford Water Department</u></p> <p>Is the source registered/permitted under MA Water Management Act or NHDES Water User Registration Rule (Env Wq 2202)?                  Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>If yes, registration number: <u>9P31333001</u></p>	<p>b) If source water is surface water:                  i) Is it a freshwater river or stream? Yes <input type="checkbox"/> No <input type="checkbox"/>                  ii) Is it a lake? <input type="checkbox"/> reservoir? <input type="checkbox"/>                  iii) Is it tidal river? <input type="checkbox"/> estuary? <input type="checkbox"/> ocean? <input type="checkbox"/>                  c) Is the source water groundwater? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, see Appendix 8 and submit effluent and surface water test results, as required in Part 5.4 of the General Permit.                  d) Does the facility use both a primary and backup source of noncontact cooling water?                  Yes <input type="checkbox"/> No <input type="checkbox"/>                  If yes, attach information that identifies and explains the primary and backup sources of noncontact cooling water for and how often the backup supply was used in last three years.</p>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

4. Best Technology Available for CWIS

Are you subject to BTA requirements at Part 4.2 of the General Permit? (Facility's discharge is covered by this General Permit and the facility withdraws noncontact cooling water from surface source water). Yes  No  If No, explain: Source is municipal water supply

If YES, attach the facility-specific BTA description as required in Part 4.3 of the General Permit. For additional information and guidance, see Questions 13-23 of the NCCW Fact Sheet, posted at <http://www.epa.gov/region1/npdes/nccwgp.html>. Provide a map showing the location of each CWIS intake structure; NCCW outfall(s) and any CWIS feature referred to in the BTA description.

Include in your description:

- Measures to meet the General Permit Part 4.3.a general BTA requirements, including documentation that describes the facility's monitoring program for impinged fish and/or invertebrate; or the required alternative monitoring plan frequency and/or protocol
- A characterization of the source water body's aquatic life habitat in the vicinity of each CWIS during the seasons when the CWIS may be in use
- The attributes of the current CWIS
- Design measures of the CWIS
- Operational measures of the CWIS
- Historical occurrence of impinged fish for the past five years
- If applicable, a demonstration that the facility's intake rate is commensurate with a closed-cycle recirculation system
- Other components to reduce impingement and/or entrainment of aquatic life



**4. BTA FOR CWIS CONTINUED:**

Provide the following information for each CWIS to support your attached facility-specific BTA description.

Design capacity of the of the CWIS \_\_\_\_\_ MGD

Maximum monthly average intake of the CWIS during the previous five years \_\_\_\_\_ MGD Month in which this flow occurred \_\_\_\_\_

Maximum through-screen design intake velocity \_\_\_\_\_ feet/second (fps)

For facilities where the CWIS is located on a freshwater river or stream, provide the following information:

The source water's annual mean flow \_\_\_\_\_ cubic feet/second (cfs) as available from USGS or other appropriate source

The design intake flow as a % of the source water's annual mean flow \_\_\_\_\_ Attach calculations if equal to or less than 5% of annual mean flow.

The source water's 7Q10 \_\_\_\_\_ cfs. See Attachment B of the General Permit for more information on 7Q10 determinations.

The design intake flow as a percent of the source water's 7Q10 \_\_\_\_\_

**5. Contaminant Information**

If applicable, attach a listing of all non-toxic pH neutralization and/or dechlorination chemicals used, including chemical name and manufacturer; maximum and average daily quantity used as well as the maximum and average daily expected concentrations (mg/l) in the NCCW discharge, and the vendor's reported aquatic toxicity (NOAEL and/or LC50 in percent for aquatic organism(s)).

**6. Determination of Endangered Species Act Eligibility:** Provide documentation of ESA eligibility as required at Part 3.4 and Appendix 2, Part C, Step 4, of the General Permit. In addition, respond to the following questions.

a) Are any listed threatened or endangered species, or designated critical habitat, in proximity to the discharge? Yes \_\_\_\_\_ No

b) Has any consultation with the federal services been completed? Yes \_\_\_\_\_ No

c) Is consultation underway? Yes \_\_\_\_\_ No

d) What were the results of the consultation with the U.S. Fish and Wildlife Service and/or NOAA Fisheries Service (check one):  
 a "no jeopardy" opinion \_\_\_\_\_ or written concurrence \_\_\_\_\_ on a finding that the discharges are not likely to adversely affect any endangered species or

e) Which of the five eligibility criteria listed in Appendix 2, Section B (A,B,C,D or E) have you met? A

f) Attach a copy of the most current federal listing of endangered and threatened species from the USF&W web site listed in Appendices 2, 2.1 and 4

**7. Documentation of National Historic Preservation Act requirements:** Please respond to the following questions:

a) Are any historic properties listed or eligible for listing on the National Register of Historic Places located on the facility site or in proximity to the discharge? Yes \_\_\_\_\_ No

b) Have any State or Tribal historic preservation officers been consulted in this determination? Yes \_\_\_\_\_ or No  If yes, attach the results of the consultation(s).

c) Which of the three National Historic Preservation Act requirements listed in Appendix 3, Section C (1,2 or 3) have you met? 1

8. Supplemental Information: Please provide any supplemental information. Attach any analytical data used to support the application. Attach any certification(s) required by the general permit
9. Signature Requirements: The Notice of Intent must be signed by the operator in accordance with the signatory requirements of 40 CFR Section 122.22 (see below) including the following certification:
- I certify under penalty of law that (1) no biocides or other chemical additives except for those used for pH adjustment and/or dechlorination are used in the noncontact cooling water (NCCW) system; (2) the discharge consists solely of NCCW (to reduce temperature) and authorized pH adjustment and/or dechlorination chemicals; (3) the discharge does not come in contact with any raw materials, intermediate product, water product (other than heat) or finished product; (4) if the discharge of noncontact cooling water subsequently mixes with other wastewater (i.e. stormwater) prior to discharging to the receiving water, any monitoring provided under this permit will be only for noncontact cooling water; (5) where applicable, the facility has complied with the requirements of this permit specific to the Endangered Species Act and National Historic Preservation Act; and (6) 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 inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I certify that I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Facility Name: IBM Corporation
Operator signature: 
Title: Environmental Affairs Program Manager
Date: 5/18/09

- Federal regulations require this application to be signed as follows:
1. For a corporation, by a principal executive officer of at least the level of vice president;
  2. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively, or,
  3. For a municipality, State, Federal or other public facility, by either a principal executive officer or ranking elected official.

**ATTACHMENT A - NCCW General Permit**  
**Engineering Calculation for Massachusetts Facilities**  
**IBM Corporation, 5 Technology Park Drive, Westford, MA**

Calculation of the water body temperature rise:

$$\Delta T_r = m_p / m_r \times \Delta T_p$$

Where  $\Delta T_r$  = change in water body temperature, °F  
 $m_p$  = mass of effluent (gpd)  
 $m_r$  = mass of water body (gpd)  
 $\Delta T_p$  = change in temperature, effluent-influent, °F

And  $m_p$  = 500 gpd  
 $m_r$  = 10,000 gpd (0.01 MGD)  
 $\Delta T_p$  = 1.6°F

$$\Delta T_r = 500 \text{ gpd} / 10,000 \text{ gpd} \times 1.6^\circ\text{F}$$

$$\Delta T_r = 0.08^\circ\text{F}$$



**FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES  
IN MASSACHUSETTS**

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Barnstable	Piping Plover	Threatened	Coastal Beaches	All Towns
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	All Towns
	Northeastern beach tiger beetle	Threatened	Coastal Beaches	Chatham
	Sandplain gerardia	Endangered	Open areas with sandy soils.	Sandwich and Falmouth.
	Northern Red-bellied cooter	Endangered	Inland Ponds and Rivers	Bourne (north of the Cape Cod Canal)
Berkshire	Bog Turtle	Threatened	Wetlands	Egremont and Sheffield
Bristol	Piping Plover	Threatened	Coastal Beaches	Fairhaven, Dartmouth, Westport
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Fairhaven, New Bedford, Dartmouth, Westport
	Northern Red-bellied cooter	Endangered	Inland Ponds and Rivers	Raynham and Taunton
Dukes	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	All Towns
	Piping Plover	Threatened	Coastal Beaches	All Towns
	Northeastern beach tiger beetle	Threatened	Coastal Beaches	Aquinnab and Chilmark
	Sandplain gerardia	Endangered	Open areas with sandy soils.	West Tisbury
Essex	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Gloucester, Essex and Manchester
	Piping Plover	Threatened	Coastal Beaches	Gloucester, Essex, Ipswich, Rowley, Revere, Newbury, Newburyport and Salisbury
Franklin	Northeastern bubrush	Endangered	Wetlands	Montague
	Dwarf wedgemussel	Endangered	Mill River	Whately
Hampshire	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Hadley
	Puritan tiger beetle	Threatened	Sandy beaches along the Connecticut River	Northampton and Hadley
	Dwarf wedgemussel	Endangered	Rivers and Streams.	Hadley, Hatfield, Amherst and Northampton
Hampden	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Southwick
Middlesex	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Groton
Nantucket	Piping Plover	Threatened	Coastal Beaches	Nantucket
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Nantucket
	American burying beetle	Endangered	Upland grassy meadows	Nantucket
Plymouth	Piping Plover	Threatened	Coastal Beaches	Scituate, Marshfield, Duxbury, Plymouth, Wareham and Mattapoisett
	Northern Red-bellied cooter	Endangered	Inland Ponds and Rivers	Kingston, Middleborough, Carver, Plymouth, Bourne, and Wareham
	Roseate Tern	Endangered	Coastal beaches and the Atlantic Ocean	Plymouth, Marion, Wareham, and Mattapoisett.
Suffolk	Piping Plover	Threatened	Coastal Beaches	Winthrop
Worcester	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Leominster

- Eastern cougar and gray wolf are considered extirpated in Massachusetts.
- Endangered gray wolves are not known to be present in Massachusetts, but dispersing individuals from source populations in Canada may occur statewide.
- Critical habitat for the Northern Red-bellied cooter is present in Plymouth County.

7/31/2008

IBM ~~Westford~~ Westford

5/5/09

Nashoba Brook MA 82-14

Smart Monitoring =  $19.8^{\circ}\text{C} = 67.6^{\circ}\text{F}$

OAR =  $25.8^{\circ}\text{C} = 78.4^{\circ}\text{F}$

$$\Delta T_p = 80 - 78.4^{\circ}\text{F} = 1.6^{\circ}\text{F}$$

$$\Delta T_r = \frac{m_p}{m_r} \times \Delta T_p$$

$$= \frac{0.0005}{0.01} \times 1.6^{\circ}\text{F} = 0.08^{\circ}\text{F}$$

IBM Westford

2/27/09  
rev. 7/8/09

ave

$$7Q10 = 0.01 \text{ MGD}$$

$$500 \text{ gpd} = 0.0005$$

$$\frac{0.01 + 0.0005}{0.0005} = 21$$

$$21 \times 11 = 231 \text{ ug/l}$$

max

$$\frac{3000}{5000} \text{ gpd} = 0.005$$

$$\frac{0.003}{\frac{0.005 + 0.01}{0.005}} = 4.3$$

$$4.3 \times 19 = 82$$

$$\frac{0.13}{0.002} \text{ gpd} \times 0.02 = 0.003 \text{ cfs}$$