MASSACHUSETTS WATER RESOURCES AUTHORITY

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MAG250025
Rec'd 10/1/08
of frawley
Logged in 10/1/08

September 26, 2008

Ms. Austine Frawley
EPA New England
Office of Ecosystem Protection
1 Congress Street, Suite 1100
Boston, MA 02114-2023

Ms. Kathleen Keohane
Massachusetts Department of Environmental Protection
Surface Water Discharge Permits Program
627 Main Street
Worcester, MA 01605

Re.: Request for Continued General Permit Coverage
Surface Water Discharge of Non-Contact Cooling Water
Oakdale Power Station
River Road, West Boylston, MA 01539
EPA Permit No. MAG250025
DEP Transmittal No. W059095

Dear Ms. Frawley and Ms. Keohane:

The Massachusetts Water Resources Authority requests to be covered under the Massachusetts General Permit for a Non-Contact Cooling Water Discharge at the referenced facility. The required Notice of Intent (NOI) is attached to this letter. Where required by the NOI, additional explanatory information concerning the facility and the discharge are summarized in the various sections below.

Background

The Oakdale Power Station is located near the mouth of the Quinapoxet River in West Boylston, Massachusetts at the terminus of the Quabbin Aqueduct, a deep-rock tunnel that connects the Quabbin and Wachusett Reservoirs, MWRA's two primary drinking water reservoirs. Water is discharged from the aqueduct through the facility and into the Quinapoxet River. The facility is equipped with hydroelectric generating equipment consisting of a 5,000-hp turbine and a 4,375-KVa generator. Hydroelectric energy is generated with this equipment during water transfer operations between the Quabbin and Wachusett Reservoirs which occurs approximately six to ten months during the year. The aqueduct has a capacity of 610 million gallons per day (MGD).

Water can be discharged from the aqueduct through the hydroelectric turbine via an 84-inch main that connects the top of the outlet shaft to the turbine and/or through a 72-inch main that bypasses the turbine. The hydroelectric turbine runs only when water is being transferred from the Quabbin Aqueduct to the Wachusett Reservoir and typically operates at between 100 MGD and 300 MGD. These transfers occur as needed based on demand and reservoir elevations but average at approximately 200 days per year.

The turbine contains an upper and lower main bearing. The upper oil-lubricated and water cooled bearing surrounds the turbine shaft and is contained in a torus-shaped structure containing 87 gallons of turbine hydraulic oil. A 3/4-inch copper cooling line coils through the center of the bearing housing. The cooling water at no time comes into contact with the oil. The flow rate of the non-contact cooling water is currently between seven and ten gallons per minute (gpm). The lower bearing of the turbine is fiber-based and is water-lubricated and cooled at an approximate flow rate of 35 to 70 gpm. The flow rate of the cooling water is dependant on a number of factors including the amount of water being sent through the turbine and to a lesser extent on the elevation of the Quabbin Reservoir.

The cooling water is drawn from the 84-inch main in the basement of the building. After cooling the water is then discharged to a sump in the basement of the facility, through an oil-water separator, and into the Quabbin Aqueduct outflow from the facility. This water is discharged from the facility to a short outlet channel leading to the river, which empties into the Wachusett Reservoir approximately 750 feet downstream.

NOI Section 2c: Engineering Calculations

Section 2c of the NOI requires that engineering calculations be provided to show the theoretical surface water temperature rise caused by the cooling water discharge. For the purposes of this application, the term "discharge" refers to the effluent flow from the cooling water line. It should also be made clear that this discharge of cooling water effluent only occurs when the turbine is operational and that the turbine only operates when water is being transferred from the Quabbin Aqueduct to the Wachusett Reservoir.

For this calculation records dating back to June 2003, the start of monitoring under the previous General Permit, were reviewed. In this calculation the highest measured effluent temperature as well as the highest non-contact cooling water flow rate ever measured were used. This combination of values results in an extremely conservative calculation of heat loading to the river. This is because the highest recorded temperature was during a malfunction when the cooling water line was partly clogged causing a significant decrease in the amount of flow to the upper turbine bearing. The average effluent temperature is actually 31 degrees lower than this high value used in the calculation. Excluding this high value of 92.0°F, the next highest effluent temperature ever recorded was 73.3°F.

At the time this high effluent temperature was measured, temperature measurements were made of the Quinapoxet River upstream of the facility and of the Quabbin Aqueduct discharge from the facility. These temperatures were 55.1°F and 45.8°F respectively.

A second reason that this calculation is extremely conservative is that the highest recorded non-contact cooling water effluent flow daily flow (0.144 MGD) was used. This value is one order of magnitude greater than the average daily flow. This combination of values yields a maximum heat loading of 1.56°F. Factors in the equation and the calculation are presented below:

ΔT_p (change in temperature, effluent – influent) = 36.9 °F
m_p (mass of effluent) = 0.144 mgd
m_r (mass of river, 7Q10) = 3.4 mgd

$\Delta T_r = m_p/m_r \times \Delta T_p$ where
(0.144 mgd/3.4 mgd) x 36.9 °F = 1.56 °F

NOI Section 2f: Effluent Temperature

The heat loading calculated above is slightly above the 1.5°F allowed by the permit for cold water fisheries. It should be noted that whenever cooling water effluent is being generated water is also being discharged from the Quabbin Aqueduct through the facility to the Quinapoxet River. In 2007 water transfer through Oakdale occurred for 210 days with a total of 53,385 million gallons and an average of 254 MGD. Of this total annual volume, 2.45 million gallons were non-contact cooling water with an average daily discharge of 11,667 gallons per day. Therefore non-contact cooling water represents approximately 0.005% of the total flow.

Quabbin Reservoir water generally is cooler than the Quinapoxet River water. In 2003 Massachusetts Department of Conservation and Recreation, Division of Water Supply Protection (DCR) collected weekly temperature measurements of both the Quabbin Aqueduct discharge through the Oakdale station as well as from the river upstream of the station. This was the last year in which such measurements were obtained. The average temperatures during the June to September monitoring period at these two locations were 55.2°F and 63.7°F respectively. This shows the cooling effect of the discharge on the river.

The theoretical impact of the Quabbin Aqueduct discharge on river temperature can be estimated using the above equation. In 2003 between June and December 38,564 million gallons were discharged from the Quabbin Aqueduct to the Quinapoxet River with an average daily discharge of 238 MGD. Based on USGS stream flow data and the drainage basin area above the Quabbin Aqueduct discharge channel the average river discharge for 2003 was estimated at 107.9 cubic feet per second or 69.7 MGD. This actual river discharge measurement was used instead of the 7Q10 in order to achieve value more representative of actual conditions.

ΔT_p (change in temperature, effluent – influent) = - 8.5°F
m_p (mass of effluent) = 238 mgd
m_r (mass of river, actual measured discharge plus aqueduct discharge) = 307.7 mgd

$\Delta T_r = m_p/m_r \times \Delta T_p$ where
(238 mgd/307.7 mgd) x -8.5°F = - 6.6°F

This calculation suggests an average lowering of the river temperature of 6.6°F with the Quabbin Aqueduct discharge. In 2003 the approximate non-contact cooling discharge was 2.55 million gallons or an average of 15,761 gallons per day. This represents approximately 0.007% of the total daily aqueduct discharge. Factoring in the 1.56°F theoretical maximum increase caused by the contribution of the non-contact cooling water flow clearly does not have any impact on the reduction of river temperature caused by the aqueduct discharge.

This calculated theoretical temperature decrease matches measurements made this year. During monitoring conducted in August and September of this year the river temperature downstream of the facility was an average of 6.9° cooler than upstream of the facility. The influent Quabbin Reservoir water was an average of 12.3° cooler than the river temperature upstream of the facility.

This effect of water transfer operations is well documented in the DCR annual water quality reports for the Wachusett Reservoir and watershed. The 2007 annual report indicates that the Quabbin Aqueduct outflow is cooler than the epilimnetic (surface layer) water of the Wachusett Reservoir and that the Quabbin Aqueduct transfer water gains heat as it passes through the Quinapoxet River and the receiving basin of the Wachusett Reservoir.[1] Because the Quabbin water is colder and denser than the Wachusett water, it forms a "metalimnitic flow path" distinct from ambient Wachusett Reservoir water from the mouth of the Quinapoxet River to MWRA's Cosgrove Intake at the east end of the reservoir in Clinton.

In summary, during water transfer operations, the typical influx of 100 MGD to 300 MGD of cooler Quabbin Reservoir water serves to decrease the temperature of the Quinapoxet River downstream of the facility. It also serves to negate any heat loading contributed by the non-contact cooling water.

NOI Section 2g: pH of Effluent Discharge

The pH of the discharge is identical to the pH of the inflowing Quabbin Aqueduct water, which is identical to the ambient conditions in the Quabbin Reservoir. As noted above, the non-contact cooling water is discharged back to the Quabbin Aqueduct flow prior to discharge from the building into the outfall channel leading to the Quinapoxet River. Between September 1999 and November 2004 MWRA conducted weekly water quality monitoring of the Quabbin Aqueduct outflow from the Oakdale station. The pH range of this water was from 5.2 to 7.7 with an average of 6.7. The pH of the non-contact cooling water is not expected to be different from this water since it is drawn from it and after cooling is discharged back to it and in the process undergoes no physical alteration other than the addition of heat. The average and maximum values in this data set fall within the permit range of 6.5 to 8.3. Approximately 25% of the time the minimum pH values were below the permit minimum of 6.5, however the readings will not be more than 0.5 units outside of the background range as allowed by the permit.

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[1] Massachusetts Department of Conservation and Recreation, Division of Water Supply Protection, Office of Watershed Management, *Water Quality Report: 2007, Wachusett Reservoir and Watershed*; http://www.mass.gov/dcr/waterSupply/watershed/documents/2007wachusett%20wqreport.pdf.

The pH of the influent Quabbin Aqueduct water that has not been subjected to turbine cooling processes represents background conditions. During the weekly permit compliance monitoring, a comparison of the influent and effluent pH measurements will be made if non-contact cooling water effluent pH measurements are below the permit minimum of 6.5.

The pH variations observed in the above data are due to natural process in the reservoir. Depth profiled water quality monitoring conducted at MWRA's intake on the Quabbin Reservoir documents these natural variations. DCR's annual water quality reports for the Quabbin Reservoir summarizes pH and other water quality data collected between April and December at the Quabbin Aqueduct intake[2,3]. In general the pH of the Quabbin Reservoir ranges between 5.5 and 7.5 with a general decrease in pH through the summer into the fall. Depth profile measurements made at this station shows pH stratification of the reservoir between approximately April and October. The range in pH values between the surface and bottom of the reservoir increases through the summer into the fall. In November turnover of the reservoir occurs thereby eliminating the stratification. Water transfer from the Quabbin to the Wachusett Reservoirs generally occurs during the June through October time period with additional transfer before and after this time period depending upon water demand. During this time period in 2006 and 2007, the pH range in the 13 to 23 meter deep intake zone ranged from 5.7 to 7.0.

NOI Section 4: Best Technology Available for CWIS

The flow path of water from the Quabbin Reservoir to the facility has been described above. At the top of Shaft 1 under the Oakdale facility an 84-inch pipe sends the water through the hydroelectric turbine and then to the outlet channel to the river. A 72-inch pipe from the top of the shaft can also be employed to bypass the turbine and discharge water directly to the river. As shown on the following photograph, a two-inch copper pipe has been tapped into this 84-inch pipe. This pipe supplies all the water needs of the facility including non-contact cooling of the upper oil-filled turbine bearing, contact cooling and lubrication of the lower lignite bearing, an emergency eyewash, and a hose spigot. The two-inch line eventually reduces to a ¾-inch copper line for cooling of the upper bearing. Fine mesh screens within these pipes are employed to keep detritus from clogging the cooling water lines and thereby detrimentally affecting cooling of the turbine bearings.

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[2] Massachusetts Department of Conservation and Recreation, Division of Water Supply Protection, Office of Watershed Management, *Water Quality Report: 2006, Quabbin Reservoir Watershed and Ware River Watershed;* http://www.mass.gov/dcr/waterSupply/watershed/documents/2006quabwqreport.pdf.

[3] Massachusetts Department of Conservation and Recreation, Division of Water Supply Protection, Office of Watershed Management, *Water Quality Report: 2007, Quabbin Reservoir Watershed and Ware River Watershed;* http://www.mass.gov/dcr/waterSupply/watershed/documents/2007quabwqreport.pdf.

proposed additional influent sampling will take place inside the power station building at sample taps accessible at all times during station operation.

The Oakdale Power Station tends to be operated on continuous basis for months at a time. However, occasionally the station is operated intermittently for a single or only a few days. It is entirely feasible that the station could be operated for a single day during a given week. With this variable operational schedule it is feasible that MWRA will occasionally not be able to schedule a sampler to visit the facility to conduct the weekly sampling event.

Conclusion

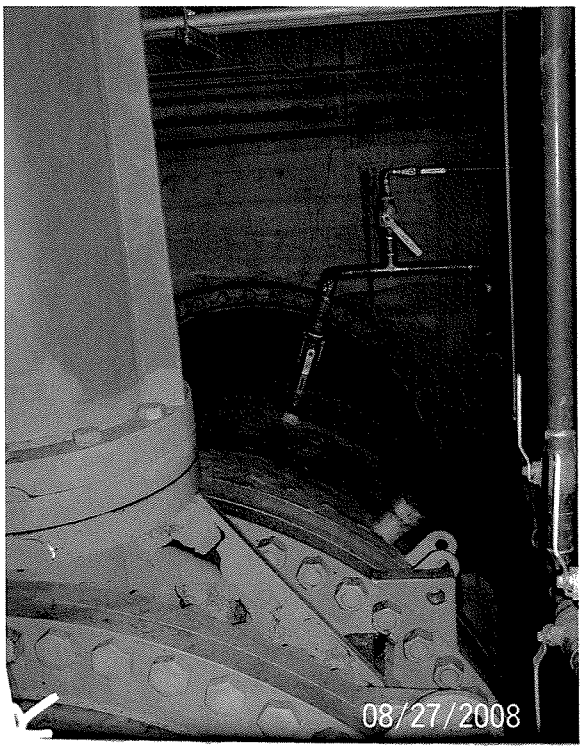
MWRA has made every best effort to provide the required information in the attached NOI form and additional facility-specific explanatory information in this letter. If you have any questions regarding this NOI submittal please call me at 617-788-2555. We look forward to your timely review and approval of this application.

Sincerely,

John R. Nelson
Program Manager, Real Property & Environmental Management

Attachments:
Transmittal Form for Permit Application and Payment (DEP Only)
Notice of Intent Form
Site Location Map
FWS Northeastern Region Listing for Massachusetts

cc: (w/out attachment):
Leon Lataille
Michael Hornbrook
Richard Trubiano
David Coppes
Guy Foss
Ken Perry
Kim LeBeau



For the purposes of this General Permit the "Cooling Water Intake Structure" (CWIS) as defined in the permit is the two-inch water line tap off of the 84-inch water main from the top of the Aqueduct discharge shaft as described and shown above. In accordance with Part 4.2 of the permit, since the Oakdale facility has non-contact cooling water discharged regulated under this permit and since the facility withdraws water from surface source water for use in part as non-contact cooling water this facility must comply with the "Best Technology Available" (BTA) requirements of this permit.

Part 4.3a: General BTA Requirements

Part 4.3a of the General Permit requires that the following specific points be addressed:

- When hydroelectric operations cease for a significant length of time it is the general practice to shut the cooling water flow off to the turbine bearings.
- No fish or invertebrates have ever been observed on the fine mesh screens within the cooling water lines. These screens are employed in accessible locations to allow operators to easily clean them. To date only inorganic material has ever been observed on these screens.
- Water treatment does not occur in the water transfer process between the two reservoirs nor is there any chlorinated water supply to the Oakdale site. MWRA's water treatment facility is located in Marlborough, downstream of the Wachusett Reservoir. In the unanticipated event that impinged fish or invertebrates existed there is no opportunity for their contact with chlorinated water.
- The screens within the cooling water lines are "in-line" and can not be inspected during

facility operation. MWRA proposes that during routine maintenance that occurs when hydroelectric operations are not occurring these screens be inspected for impinged fish and invertebrates. As noted above, no fish or invertebrates have ever been observed being impinged within the lines. In the event that such an event occurs, MWRA will record the details of such an occurrence as required in this section of the permit.

- The flow velocity through the cooling water lines is greater than 0.5 feet per second; however the pipe geometry and historical lack of impinged fish and invertebrates demonstrates the comparable effectiveness of the CWIS geometry "at minimizing the entrainment and impingement mortality of adult and juvenile fish in the CWIS".

Part 4.3b: Facility Specific BTA Requirements

Part 4.3b of the General Permit requires that the following facility-specific points be addressed:

- The design capacity of the CWIS, the two-inch cooling water line, is not known. The flow in this line is dependent on the elevation head difference between the two reservoirs and the quantity of flow through the 84-inch main. Automated recording of the flow through both bearings started in June 2005. The highest recorded daily flow through both bearings occurred in June 2006 with a combined flow of 239,145 gallons, 144,000 gallons of which was the permitted non-contact cooling water through the upper bearing.
- As noted above the maximum monthly average intake to the CWIS during the past 5 years was 0.239 MGD and occurred in July 2006. This value may be an outlier as this and the second highest daily flow occurred on consecutive days. The next highest value in the history of permit monitoring was 0.162 MGD in August 2005. Since completion of a 2005 to 2006 rehabilitation project of facility equipment including the cooling water system the cooling water flow rates have been significantly lower with an average combined cooling water flow rate of approximately 0.12 MGD.
- It is not known if the cooling water flow rate is commensurate with a closed-cycle cooling system, however, MWRA staff have evaluated the use of a closed-cycle cooling system on the upper turbine bearing in the past and concluded that it was not technically feasible in part because the facility is not staffed. MWRA has also evaluated the potential for a groundwater discharge of the cooling water. The evaluation concluded that neither the overburden nor the bedrock aquifer have the capacity to accept the volume of water required without excessive mounding and surface breakout.

NOI Section 6: Determination of Endangered Species act Eligibility

MWRA consulted US Fish and Wildlife Service (FWS) and determined that no federally-listed endangered species and one federally-listed threatened species are reported in Worcester County, Massachusetts. The listed threatened species known as the Small Whorled Pogonia (*Isotria medeoloides*). This species does not have any occurrences in West Boylston nor does it have any designated critical habitat. This finding was confirmed with a review of the Massachusetts Natural Heritage Program which did not report any currently federally-listed species in West Boylston. Therefore, eligibility criteria A is met for this application. As required by the permit, a current copy of the listing of federally-listed endangered and threatened species in

Massachusetts from the FWS New England Field Office web site is attached to this letter.

NOI Section 7: National Historic Preservation Act Requirements

MWRA consulted the National Park Service's National Registry of Historic Places for properties downstream of the Oakdale Power Station. One property was identified on the Quinapoxet River downstream of the Oakdale site and one additional property on the shore of the Wachusett Reservoir in proximity to the mouth of the Quinapoxet River. These include the Quinapoxet River Bridge located at the mouth of the river and the Old Stone Church off of Route 140 on the shore of the reservoir.

The bridge was constructed in 1903 and dates back to the construction of the reservoir. Since it is a bridge it was obviously designed to weather varying river flows including floods and periods of high discharge from the Oakdale Station. Adverse impact to this structure is not anticipated. The quantity of non-contact cooling water flow as a proportion of the total flow from the facility is extremely small, 0.005% and not anticipated to increase in any way.

The Old Stone Church predates the construction of the reservoir by approximately 10 years. The maximum elevation of the reservoir is controlled by crest gates at the Wachusett Dam in Clinton. It would be impossible for reservoir levels to rise to such a level to impact this structure. Adverse impact to this structure from facility non-contact cooling water discharges is therefore not possible. Based on this evaluation, permit eligibility criteria 2 is met for this application.

Proposed Monitoring Program

MWRA will make every possible effort to comply with the non-contact cooling water effluent monitoring program described in Section 1 of the permit. Clarification is required however with respect to the influent or upstream sampling requirement. Table 1 of the permit requires a weekly grab sample for temperature of the "influent". Section 1.2.4 of the permit describes the sampling requirements and uses the term "upstream" instead of "influent". Given the characteristics of the facility these terms mean two different things. The term "influent" refers to the water entering the facility from the Quabbin Aqueduct which is the source of the non-contact cooling water. The term "upstream" refers to the portion of the Quinapoxet River upstream of the Oakdale Power Station discharge. MWRA proposes that the most logical sampling program would include a sample of the river upstream of the facility; this would show the impact of the non-contact cooling water discharge to the river. MWRA also proposes to collect a weekly grab of the "influent" Quabbin Aqueduct water for temperature and pH to use in the event that background comparisons are necessary.

The sampling locations are shown on the attached figure. The upstream location will be immediately upstream of the facility outfall channel and at the top of the dam above the station. The downstream location will be at the mouth of the river approximately 750 feet downstream of the facility. This distance will ensure through mixing of the facility discharge with the river. There are no other outfalls or development of any kind between the facility and the mouth of the river that would impact water quality. The cooling water effluent sampling as well as the

APPENDIX 5

Suggested Form for Notice of Intent (NOI) for the Noncontact Cooling Water General Permit

1. General facility information. Please provide the following information about the facility.

a) Name of facility: ***Oakdale Power Station***		**Type of Business:** *public water supply facility & hydroelectric generating station*
Facility Location Address : *River Road, West Boylston, MA 01583* **longitude:** 71°48'9" **latitude:** 42°23'12"	**Facility SIC codes:** *4941 & 4911*	**Facility Mailing Address (if not location address)** *100 First Avenue* *Charlestown Navy Yard* *Boston, MA 02129*
b) Name of facility owner: *Massachusetts Water Resources Authority*		**Email address of owner:** *john.nelson@mwra.state.ma.us*
Owner's Tel #: *617-788-2555* **Owner's Fax #** *617-788-4894*		**Owner is (check one): 1. Federal____ 2. State __X__ 3.Tribal_____** **4. Private_____ 4. Other _____(Describe)**
Address of owner (if different from facility address) ***100 First Avenue, Charlestown Navy Yard, Boston, MA 02129***		

Legal name of Operator, if not owner: *same as above*

Operator Contact Name: *David Coppes, Director Western Water Operations*

Operator Tel Number: *508-872-4388* **Fax Number:** *508-620-8906*

Operator's email: *david.coppes@mwra.state.ma.us*

Operator Address (if different from owner)

260 Boston Road, Southboro, MA 01772

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? __X__

e) Check Yes or No for the following:

1. **Has a prior NPDES permit been granted for the discharge? Yes __X__ No____ If Yes, Permit Number:** *MAG250025*
2. **Is the discharge a "new discharge" as defined by 40 CFR Section 122.22? Yes_____ No__X__**
3. **Is the facility covered by an individual NPDES permit? Yes_____ No__X__ If Yes, Permit Number ____**
4. **Is there a pending application on file with EPA for this discharge? Yes _____ No __X____ 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:** *Quinapoxet River*
State Water Quality Classification: A **Freshwater:** X **Marine Water:** _____

b) **Describe the discharge activities for which the owner/applicant is seeking coverage:** *hydroelectric turbine generator non-contact cooling water*

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:** X

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** *144,000* **GPD Average Flow** *14,743* **GPD**

f) **What is the maximum daily and average monthly temperature of the discharge (in degrees F)? Max Temp.** *92.0* **Average Temp.** *61.0*

g) **What is the maximum and minimum monthly pH of the discharge (in s.u.)? Max pH** *7.60* **Min pH** *6.10*

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

i) **Is the discharge continuous? Yes** _____ **No** X **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)** *B*
If (P), number of days or months per year of the discharge *~200* **and the specific months of discharge** *generally non-winter months*;
If (I), number of days/year there is a discharge *~200 (average from 2004 – 2007)*

j) Latitude and longitude of each discharge within 100 feet: outfall 1: long. 71°48'9" **lat.** 42°23'12"; **outfall 2: long.** _____ **lat.** _____;
outfall .3: long. _____ **lat.** _____ **(See http://www.epa.gov/tri/report/siting_tool)**

k) Provide the reported or calculated seven day-ten year low flow (7Q10) of the receiving water *3.4* **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** X
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:

a) Indicate source of the NCCW (i.e., municipal water supply, private well, surface water withdrawal, groundwater):

Source: *surface water*

Name of Source Water: *Quabbin Reservoir*

Is the source registered/permitted under MA Water Management Act or NHDES Water User Registration Rule (Env Wq 2202)?

Yes X **No** _____

If yes, registration number: *10830901*

b) If source water is surface water:

i) Is it a freshwater river or stream Yes _____ **No** X

ii) Is it a lake? _____ **reservoir?** X

iii) Is it tidal river? _____ **estuary?** _____ **ocean?** _____

c) Is the source water groundwater? Yes _____ **No** X **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 _____ **No** X

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.

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 X **No** _____ **If No, explain:**

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**

_____ **Operation 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 *~0.25* **MGD**
Maximum monthly average intake of the CWIS during the previous five years *0.24* **MGD Month in which this flow occurred** *July*
Maximum through-screen design intake velocity *~20* **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 LC_{50} 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__X__
b) Has any consultation with the federal services been completed? Yes_X__ No___
c) Is consultation underway? Yes ____ No__X__
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 __X___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:

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 __X___ No ____

Have any State or Tribal historic preservation officers been consulted in this determination? Yes _____ or No __X___ 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 o3) have you met? *2*

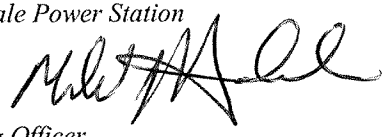
8. Supplemental Information: Please provide any supplemental information. Attach any analytical data used to support the application. Attach any certification(s) required by the general permit

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: *Oakdale Power Station*

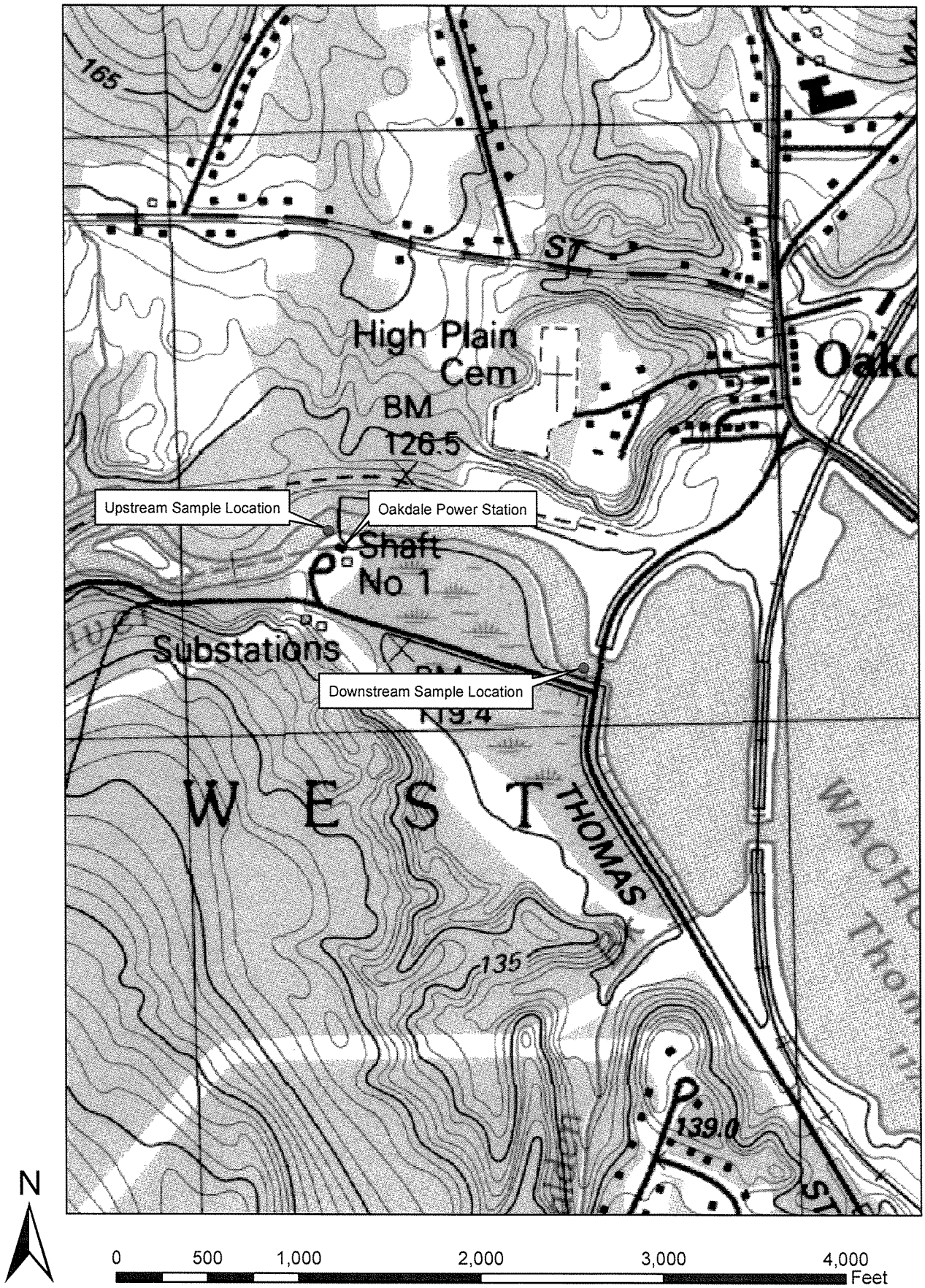
Operator signature: 

Title: *Chief Operating Officer*

Date: 09/26/08

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.

Figure 1: Site Location Map
Oakdale Power Station, West Boylston, MA



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	Aquinnah 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	Glocester, Essex, Ipswich, Rowley, Revere, Newbury, Newburyport and Salisbury
Franklin	Northeastern bulrush	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