UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
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JAN 14 2009

David Webster, Manager
Industrial Permits Branch
Office of Ecosystem Protection
US Environmental Protection Agency, Region 1
1 Congress Street, Suite 1100
Boston, Massachusetts 02114-2023

RE: NPDES Mirant Canal Station

Dear Mr. Webster,

This is in response to your letter dated December 10, 2008 requesting consultation pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended, regarding the US Environmental Protection Agency's (EPA) draft National Pollutant Discharge Elimination System (NPDES) permit conditions to the Mirant Canal Station (Station) in Sandwich, Massachusetts. The present NPDES permit authorizes the withdrawal of water from and the discharge of heated effluent into the Cape Cod Canal. This permit was last issued on June 23, 1989. A revised NPDES permit was issued by the EPA on August 1, 2008. Consultation was completed on that version of the permit in a letter dated January 25, 2006 in which NMFS concurred with the EPA's determination that the proposed action was not likely to adversely affect NMFS listed species. The August 1, 2008 permit is currently stayed due to permit appeal filed with the EPA Environmental Appeals Board on September 2, 2008. At this time, the EPA is withdrawing certain provisions of the final NPDES permit and has proposed five new draft permit conditions, namely parts I.A.2.f, I.A.7.f, I.A.8, I.A.13.g, and I.A.13.h. These sections deal with the installation of cooling tower technology and cooling tower blowdown discharge limitations and monitoring requirements. Through the use of this technology, the permittee will ensure a reduction of entrainment and impingement at the facility, thereby meeting the entrainment and impingement requirements of the permit. The new permit as issued on August 1, 2008, along with the currently proposed modifications, will supersede the 1989 permit and will expire five years from the effective date. EPA has made the preliminary determination that the conditions and restrictions contained within the draft permit are not likely to adversely affect species listed as threatened or endangered by NOAA's National Marine Fisheries Service (NMFS) and has requested that NMFS concur with this determination.

Mirant Canal Facility

Mirant Canal is an 1120 megawatt (MW) fossil fuel electrical generation facility. The Station is a "base-load" facility, having an average yearly capacity utilization rate of ~20%. Electricity is generated by means of two 560 MW oil/gas fired steam turbine units. Unit 1 began operation in 1968 and uses #6 fuel oil. Unit 2 began operation in 1976 and has dual fuel capacity (#6 oil or natural gas). There are also two smaller Babcock Wilcox auxiliary boilers.

The Station is located on the east bank of the Cape Cod Canal. Mirant Canal Station discharges steam turbine condenser waste heat to the Canal by means of a once-through cooling water system. There are two intake flumes used to withdraw canal water for condenser cooling. One intake structure is dedicated to the Unit 1 condenser and the other is dedicated to the Unit 2 condenser. Each intake has two intake pumps. A total intake flow of 361,000 gallons-per-minute (gpm); equivalent to 518 million gallons per day (mgd) is permitted. Both of the intake screen washes discharge to a return flume located between the intake flumes.

There are five permitted discharges at the Station. Three discharges, Outfalls 010, 011 and 012, are internal process waste locations which flow to the main discharge flume (Outfall 001). The main plant discharge location (001) is a 750-foot long, 25-foot wide, open flume with runs parallel to the Cape Cod Canal. The end of the flume is equipped with a buried conduit leading to a submerged slot diffuser and wastewater exits the flume though the diffuser into the Cape Cod Canal. Most of the condenser cooling water and internal plant process wastewater, and some of its storm water, discharges through Outfall 001.

Outfall 002 also discharges into the Canal. Intake screen wash water from both the Unit 1 and Unit 2 intakes discharge to the Canal from Outfall 002 along with approximately 3 mgd of condenser cooling water. Storm water from the Station discharges to the Canal through Outfall 001 or to the soil from the on-site swales. The stormwater system is permitted under the current Multi-Sector General Permit for Industrial Activities.

The permit consists of the NPDES Permit Conditions applicable to all permits and special conditions that outline facility-specific effluent limitations and monitoring requirements. These special conditions include concentration limits and monitoring requirements for flow, heat, pH, Oil and Grease, Copper and Iron. The permit also requires whole effluent toxicity (WET) testing quarterly. As noted above, EPA's proposed action only proposes to modify certain sections of the permit. All other sections of the permit will remain as published on August 1, 2008.

NMFS Listed Species Cape Cod Canal

Several listed species of whales and sea turtles are known to occur seasonally in the coastal waters of Massachusetts. Federally endangered North Atlantic right whales (*Eubalaena glacialis*) and humpback whales (*Megaptera novaeangliae*) are found seasonally in Massachusetts waters. North Atlantic right whales have been documented in the nearshore waters of Massachusetts from December through June and are likely to be present in Cape Cod Bay from December 15 – April 15 and Great South Channel from March 1 – June 30. Humpback whales feed during the spring, summer, and fall over a range that encompasses the eastern coast of the United States. Humpback whales are found off the coast of Massachusetts from March 15 – November 30. Fin (*Balaenoptera physalus*), Sei (*Balaenoptera borealis*) and Sperm (*Physter macrocephalus*) whales are also seasonally present in New England waters but are typically found in deeper offshore waters. Large whales, including humpbacks and right whales, have been documented in the Cape Cod Canal and humpback and right whales are frequently observed in Cape Cod Bay at the mouth of the canal. For example, one humpback whale transited the length of the canal, exiting into Buzzards Bay on June 1, 1998 (NMFS 1998). Right whales have also been documented in the Canal (for example, April 15, 2002, May 17, 2002, December 3, 2008) and based on historical documentation of right whales in the Canal, the

Center for Coastal Studies has estimated that right whales enter the Canal once every few years (CCS 2004).

The sea turtles in Massachusetts nearshore waters are typically small juveniles with the most abundant being the federally threatened loggerhead (*Caretta caretta*) followed by the federally endangered Kemp's ridley (*Lepidochelys kempi*). Loggerheads and Kemp's ridleys have been documented in waters as cold as 11°C, but generally migrate northward when water temperatures exceed 16°C. These species are typically present in Massachusetts waters from June 1 – early November. Federally endangered leatherback sea turtles (*Dermochelys coriacea*) are located in Massachusetts waters during the warmer months as well. While leatherbacks are predominantly pelagic, they may occur close to shore, especially when pursuing their preferred jellyfish prey. Green sea turtles *(Chelonia mydas)* may also occur sporadically in Massachusetts waters, but those instances would be rare. Sea turtles are known to occur in the waters on either side of the Cape Cod Canal (i.e., Buzzards Bay and Cape Cod Bay) and entangled leatherbacks are frequently documented near the mouth of the canal. While sea turtle use of the canal has not been documented, as these species are observed on either side of the canal and there is nothing precluding their use of the canal, it is likely that sea turtles also occur in the canal. The Fact Sheet for this permit states that one sea turtle was observed near the Station in 1977 and that no sea turtles have been sighted near the plant or its intakes since this date.

Effects of Actions

Five Sections of the draft permit are proposed to be modified. Two sections (I.A.7.f and I.A.8) are administrative in nature and will have no effect on listed species. Section I.A.13.g requires the permittee to minimize adverse impacts of entrainment due to the CWIS.

Intake Structure

Currently, once-through cooling water for both Units is withdrawn through separate intake structures located in the Canal. Each of the two screen houses contains trash racks and two vertical-traveling screens prior to the circulating water pumps. Each screen is 10 feet wide, has a mesh opening size of 3/8 inch, and is rotated as necessary. The spray wash system removes fish and debris from the screens. Fish and debris from each intake structure are returned to the Canal. At full flow, the approach velocities at the entrance to the intake structures are 1.2 feet/second for Unit 1 and 1.1feet/second for Unit 2. The approach velocities at the intake screens are 0.7 feet/second for Unit 1 and 0.8feet/second for Unit 2.

The 2005 Draft Fact Permit Fact Sheet states that estimates of entrainment and impingement mortality calculated by the permittee show that approximately 2.6 to 3.6 billion eggs and 187-318 million larvae per year are entrained, while over 71,000 individuals per year are impinged at the Station. For the two years sampling was performed, the permittee estimated that 415,874 and 787,604 equivalent adult fish were lost due to entrainment each year. The effect that the loss of fish eggs, larvae, and adults has on foraging marine mammals and sea turtles is unknown. However, as noted in NMFS' January 25, 2006 letter to EPA, as the marine mammals and sea turtles in the Canal are transient and are likely using the canal to transit to and from Cape Cod Bay and Buzzards Bay, and large amounts of suitable forage occur in these waterbodies, the effect of this loss of forage on marine mammals and sea turtles is likely to be insignificant.

In order to reduce the adverse impacts of cooling water intake structures (CWIS) to the environment, the design, location, construction and capacity of the Mirant Canal Station's CWIS should reflect the best technology available (BTA) to reduce these impacts (CWA section 316(b)). The draft permit provision under consideration suggests the best technology available to reduce current levels of entrainment on the Mirant Canal Station's CWIS is to put in place a system comparable to what would be achieved through the use of closed cycle cooling for all electrical generating units. The system chosen would be optimized to maximize cooling water intake flow reductions to the extent practicable in light of site specific constraints (i.e., restrictions on chlorine discharges). The EPA believes the BTA for the facility can be fulfilled by either utilizing a closed cycle cooling system for electrical generating Units 1 and 2 or a system comparable that will achieve the same effects as a closed cycle cooling system. With the use of either system, adequate protection against impingement and entrainment is expected due to intake velocities in plants with a closed cycle cooling system being 0.5 feet/second.

Based on the approach velocities of the current intake structures and the proposed closed cycle cooling system, it is believed that marine mammals and sea turtles are able to readily avoid becoming impinged on the structures of either system. These species are too large to be vulnerable to entrainment. The 2005 Draft Permit Fact Sheet reports that no sea turtles or marine mammals have ever been documented as impinged on the intake structures. As such, EPA has made the determination that the intakes will have no direct effects on these species. Due to the low approach velocities and the lack of any evidence of an impingement risk, NMFS agrees that it is unlikely that marine mammals or sea turtles are vulnerable to entrainment or impingement at the Station's intake's, whether the intakes remain as is or are converted to a close-cycle cooling system or similar technology.

Discharge of Priority and Non-Priority Pollutants

If the permittee installs and operates cooling water technology, cooling water blowdown will be limited and monitored as specified in section I.A.2.f of the draft permit. This section requires monitoring for flow and priority/non-priority pollutants and discharge limits for free available chlorine, total recoverable chromium, and total recoverable zinc.

Chlorine

The acute chlorine standard for Massachusetts waters is 0.013mg/L. Based on average flow of the internal waste stream within the plant and the dilution calculations, the EPA has determined that a permit limit of 0.2mg/L of Free Available Chlorine (FAC) will assure that the Water Quality Standard of 0.013mg/L is met in the receiving water. There are a number of studies that have examined the effects of Total Residual Chlorine (TRC) (Post 1987; Buckley 1976) on fish; however, no directed studies that have examined the effects of TRC or FAC on marine mammals or sea turtles have been conducted. The EPA has set the Criteria Maximum Concentration (CMC or acute criteria; defined in 40 CFR 131.36 as equals the highest concentration of a pollutant to which aquatic life can be exposed for a short period of time (up to 96 hours) without deleterious effects) at 0.019mg/L.

FAC limits protective of sea turtles and marine mammals are not known, however, water quality criteria levels have been set to be protective of the most sensitive species (EPA 1986). Additionally, FAC levels are likely to be even lower in Buzzards Bay and Cape Cod Bay where

the majority of sea turtles and marine mammals are likely to be found as rapid mixing of the effluent and ambient Canal water is likely to occur which will facilitate further dilution of the effluent. As noted above, receiving water concentrations required by the permit is 0.013mg/L. The anticipated FAC level within the Canal satisfies the EPA's ambient water quality criteria and is lower than CMC levels known to effect aquatic life. As such, NMFS believes the effects of chlorine on sea turtles and marine mammals will be insignificant and discountable.

Zinc

The CMC for zinc in saltwater set by the EPA is 0.090mg/L. Based on average flow of the internal waste stream within the plant and the dilution calculations, the EPA has determined that a permit limit of 1.0mg/L of Total Recoverable Zinc will assure that the Water Quality Standard of 0.090mg/L is met in the receiving water. No information on zinc toxicity for marine mammals or sea turtles is readily available. While zinc limits protective of sea turtles and marine mammals are not known, water quality criteria levels have been set to be protective of the most sensitive species (EPA 1986). In addition, as with FAC, the Total Recoverable Zinc within the canal will be diluted further due to rapid mixing of effluent water and ambient Canal water, therefore reducing any potential effects of zinc toxicity to sea turtle or marine mammal species. As noted above, receiving water concentrations required by the permit is 0.090mg/L. The anticipated level of zinc within the Canal satisfies the EPA's ambient water quality criteria and is lower than CMC levels known to effect aquatic life. As such, NMFS believes the effects of zinc on sea turtles and marine mammals will be insignificant and discountable.

Chromium

The CMC for chromium in saltwater set by the EPA is 1.100mg/L. Based on average flow of the internal waste stream within the plant and the dilution calculations, the EPA has determined that a permit limit of 0.2mg/L of Total Recoverable Chromium will assure that the Water Quality Standard of 1.100mg/L is met in the receiving water. No information on chromium toxicity for marine mammals or sea turtles is readily available; however studies on other vertebrates have shown kidney and liver damage when exposed to high concentrations of chromium (ATSDR, 2000). While chromium limits protective of sea turtles and marine mammals are not known, water quality criteria levels have been set to be protective of the most sensitive species (EPA 1986). In addition, the Total Recoverable Chromium within the canal will be diluted further due to rapid mixing of effluent water and ambient Canal water and as noted above, receiving water concentrations required by the permit is 1.100mg/L. The anticipated level of chromium within the Canal satisfies the EPA's ambient water quality criteria and is lower than levels of chromium known to effect aquatic life. As such, NMFS believes the effects of chromium on sea turtles and marine mammals will be insignificant and discountable.

Conclusions

Based on the above analysis of water quality effects and the determination that all effects, if adverse, will be insignificant or discountable, NMFS is able to concur with EPA's determination that the proposed NPDES permit for this facility is not likely to adversely affect listed whales or sea turtles. Therefore, no further consultation pursuant to Section 7 of the ESA is required.

ATSDR, 2000. Toxicological profile for chromium. U.S. Department of Health and Human Service, Public Health Service, Atlanta, Georgia.

As you know, NMFS, USFWS, and EPA are currently engaged in Section 7 consultations on EPA's water quality standards and aquatic life criteria. Those consultations may reveal effects of the EPA's program that NMFS did not consider in this evaluation or they may change national water quality criteria and standards in ways that affect the water quality program for the State of Massachusetts. Either outcome might require NMFS to reconsider the conclusions reached in this letter. Reinitiation of consultation is required and shall be requested by the Federal agency or by the Service, where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (a) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in the consultation; (b) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the consultation; or (c) If a new species is listed or critical habitat designated that may be affected by the identified action. Should you have any questions regarding these comments, please contact Danielle Palmer (978)282-8468 x6468.

Sincerely,

Patricia A. Kurkul
Regional Administrator

Cc: Boelke, F/NER4

File Code: Sec 7 EPA MA NPDES Mirant Canal Station
PCTS I/NER/2008/