Jones River Watershed Association

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February 6, 2012

CERTIFIED MAIL and email

Ms. Mary Colligan
Assistant Regional Administrator
Protected Resources Division
U.S. Department of Commerce
National Ocean and Atmospheric Administration
Fisheries Service
Northeast Regional Office
55 Great Republic Drive
Gloucester MA 01930-2276

Re: **Endangered Species Act, Section 7 Consultation:**
U.S. Nuclear Regulatory Commission, Pilgrim Nuclear Power Station, Plymouth, Massachusetts: Relicensing

Dear Ms. Colligan:

We are writing about the Section 7 consultation by the National Marine Fisheries Service (NMFS) for the Pilgrim Nuclear Power Station (PNPS) in Plymouth, Massachusetts. This consultation is required under the Endangered Species Act (ESA), 16 U.S.C.S. §§ 1536 *et seq*. As you may know, the U.S. Nuclear Regulatory Commission (NRC) is conducting re-licensing proceedings on PNPS's operating license. The license expires on June 8, 2012 and the licensee, Entergy Nuclear Operations, Inc. (Entergy) seeks permission to continue operating for another 20 years. See, Pilgrim LR Proceeding, 50-293-LR, 06-848-02-LR, NRC Docket No. 50-293. Since it began operation in December, 1972, PNPS has been using once-through cooling water from Cape Cod Bay and discharging pollutants to the Bay.

Our research appears to show that the NMFS has yet to concur with the NRC's July 2007 "biological assessment" under the ESA, nor has NMFS issued its own biological opinion or otherwise concluded an informal consultation. The last relevant communication in the relicensing proceeding record is a January 23, 2007 letter from NMFS stating '[c]omments relative to the Section 7 Endangered Species Act consultation will be provided by NMFS Protected Resources Division under separate cover." NUREG-1437, Supp. 29, page E-45. [1] We have been unable to locate a NMFS concurrence letter or any subsequent comments from NMFS on the NRC biological assessment for PNPS.

[1] Unless otherwise noted, citations are to NRC's "Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants, Supplement 29, Regarding Pilgrim Nuclear Power Station, Final Report, July 2007," NUREG-1437, and its Appendices. (NUREG-1437). Available on line: http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437/supplement29/index.html; Vol. 1 ML 071990020; Vol. 2 Appendices ML 071990027.

If NMFS has yet to make its decision on whether to concur with the NRC's biological assessment, we urge the NMFS to withhold concurrence at this time, for the reasons stated below. If NMFS has concurred, we request that the concurrence letter be placed in the NRC docket as part of the record in NRC's operating relicensing proceeding.

Relevant Law

The ESA regulations at 50 CFR 402.14(a) provide in pertinent part,
"[e]ach Federal agency shall review its actions at the earliest possible time to determine whether any action **may affect listed species or critical habitat**. If such a determination is made, **formal consultation is required**, except as noted in paragraph (b) of this section."

The two exceptions in 50 CFR 402.15(b) provide,

"(1) A Federal agency need not initiate formal consultation if, as a result of the preparation of a **biological assessment** under § 402.12 or **as a result of informal consultation** with the Service under § 402.13, the Federal agency determines, **with the written concurrence of the Director,** that the proposed action **is not likely to adversely affect any listed species or critical habitat**." In this case, the Director is the assistant administrator of NMFS. 50 CFR 402.02. (emphasis supplied)

The NRC has determined that **ten federally listed endangered or threatened species** that are under full or partial NMFS jurisdiction "**may be affected** by continuing operations of PNPS." NUREG-1437, p. E-73. The NMFS also informed the NRC that Cape Cod Bay is critical habitat for the Northern right whale. See, NMFS letter to NRC, June 8, 2006, NUREG-1437, p. E-15. ESA consultation is also required on this critical habitat in its own right as well as on the ten listed species. The NRC has not addressed the critical habitat for Northern right whales in the 2007 biological assessment.

In its 2007 biological assessment, NRC determined that operation of PNPS for another 20 years "would not have any adverse impact on any threatened or endangered marine aquatic species." NUREG-1437, p. E-73. On this conclusion, the NRC is required to initiate a formal consultation, obtain NMFS concurrence on the 2007 biological assessment, or otherwise conclude an informal consultation.

Relevant Facts

PNPS is located on Cape Cod Bay and withdraws up to 510 million gallons per day (mgd) of **once through cooling water** from the Bay. Under the federal Clean Water Act and its state counterpart, PNPS has an NPDES permit. This permit expired on April 29, 1996, but has been administratively extended by U.S. EPA for 16 years.[2] The state water quality

[2] Jointly issued State Permit No. 359 and Federal Permit No. MA 0003537. The NPDES permit is based on a daily plant operating capacity of 655 MW. See, Aug. 30, 1994 Modification of NPDES permit. Following a power optimization overhaul in 2003, Entergy is now producing 715 MW daily. NUREG-1437, p. 1-8. The annual capacity factor for 2010 was 98.5%, meaning that PNPS operated at 100% capacity for 98.5% of the time. Entergy "Marine Ecology Study" No. 77, Annual Report for 2010, p. 2. This raises questions about whether the

certification is also expired. In addition to NPDES regulated pollutants, liquids containing radioactive wastes are also discharged to Cape Cod Bay under NRC regulations. The NPDES permit allows Entergy to discharge to Cape Cod Bay least 510 mgd of heated condenser cooling water (daily maximum), 255 mgd of thermal backwash (daily maximum), 19.4 mgd of service cooling water (monthly average), .06 mgd of make up water (daily maximum), 4.1 mgd of intake screen wash, and stormwater runoff from at least four storm drains.

As described by the Massachusetts Supreme Judicial Court in upholding the state's authority to regulate the PNPS intake and discharges, "the environmental impact of these systems is staggering." Entergy Nuclear Generation Company vs. Department of Environmental Protection, SJC-10732, 2011 Mass. Lexis 163, April 11, 2011. The state's highest court further stated:

"As the sources referenced by the department indicate, the ecological harms associated with CWISs are well understood. The intake of water by a CWIS at "a single power plant can kill or injure billions of aquatic organisms in a single year." Riverkeeper, Inc. v. United States Envtl. Protection Agency, 475 F.3d 83, 90 (2d Cir. 2007), rev'd in part on other grounds, Entergy Corp. v. Riverkeeper, Inc., 129 S. Ct. 1498, 173 L. Ed. 2d 369 (2009). See Riverkeeper, Inc. v. United States Envtl. Protection Agency, 358 F.3d 174, 181 (2d Cir. 2004). In light of the SJC's ruling, a careful ESA consultation is warranted.

In the PNPS relicensing process, Energy prepared an Environmental Report (ER) that the NRC used, along with other information, as the basis for its final environmental impact statement. NUREG-1437, p. E-53. The NRC agency staff then produced the 2007 biological assessment based on the final environmental impact statement.

Entergy has submitted a NPDES renewal application to EPA. Entergy makes no secret about its position that it should not be required to change its operating methods to reduce its environmental impacts on Cape Cod Bay.[3] The pending NPDES permit renewal process, which Entergy is likely to delay by challenging any efforts to require operational changes to its water use and discharge, should not drive NMFS's consultation process. Entergy itself has argued against a delay in a similar nuclear power plant relicensing proceeding.[4] While we are not suggesting that NMFS has delayed its concurrence decision pending EPA action on the NPDES permit and State Water Quality Certification, we are simply pointing out Entergy's position that NMFS should not delay its decision.

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annual quantity thermal discharges and discharges of other pollutants has been higher in recent years, including 2010, given the increased annual operating capacity.

[3] See, e.g., ENSR and Entergy Corp., "Application of a Comprehensive Framework for Assessing Alternative Cooling Water Intake Structure Technologies Under 316b", http://www.gunderboom.com/PDFfiles/ENSR%20Technical%20Paper.pdf

[4] Letter from Goodwin Proctor to NRC, Sept. 6, 2011 on Indian Point reactors. http://pbadupws.nrc.gov/docs/ML1125/ML11257A103.pdf

Deficiencies in NRC's Biological Assessment

It is our view that NMFS concurrence with the NRC's biological assessment is unwarranted and would be inconsistent with the ESA. The assessment relies almost entirely upon information produced by Entergy's consultants and ignores scientifically and commercially available data. 16 U.S.C. 1536(a)(2). The species and habitat data is clearly not sufficient to make an informed decision as to the effects of PNPS's operations. Bob Marshall Alliance v. Watt, 685 F. Supp. 1514, (D. Mt. 1986), aff'd in part and rev'd in part and rev'd in part on other grounds, 852 F.2d 1223 (9th Cir.) *cert. den*. 489 U.S. 1066 (1989).[5] The NRC's biological assessment ignores readily available data from such organizations as the Whale and Dolphin Conservation Society (WDCS), Provincetown Center for Coastal Studies, and others that would provide specific information about the impacts of PNPS on listed species.

Some specific deficiencies in the NRC's biological assessment are listed below. This is not a comprehensive list.

First, the biological assessment **unlawfully limits the geographical area** it covers. The action area for purposes of the ESA is defined in 50 CFR 402.02 as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." The NRC has improperly attempted to limit the scope of its biological assessment to "near PNPS" or "at PNPS." See e.g., E-66, p. E-67, E-68, E-73. One reason this is improper is highlighted by comments by the Massachusetts Office of Coastal Zone Management (CZM) on Entergy's Clean Water Act 316 demonstration report. *Exhibit 1, hereto,* June 27, 2000 letter. CZM has stated that the thermal loading from the PNPS may impact "hundreds of acres of Cape Cod Bay." Thus, it is this agency's position that Entergy's operations at PNPS affect not just the area "at" or "near" PNPS but "hundreds of acres of Cape Cod Bay". While CZM's comments relate to Entergy's CWA compliance, it is also relevant to the assessment of impacts on listed species and critical habitat in Cape Cod Bay.

CZM stated Entergy's impingement events may impact "food web dynamics in the region of Cape Cod Bay near the Entergy-Pilgrim station" and "at least one modeling study predicts that hundreds of acres of Cape Cod Bay may increase by one degree Celsius or more due to thermal loading from the discharge…." It cites "evidence that the rate of fish impinged by the continuous action of the cooling water intake structures is thousands to tens of thousands per year…." The NRC has not addressed how thermal loading, impingement, and entrainment impact the food web, food supply for the listed species and critical habitat.

Second, the biological assessment ignores scientific data readily available **about whale activity in the area**. For example, a quick review of available data produced this photo of a federally endangered fin whale (*balaenopter physalus*) in front of PNPS. The NRC's biological assessment contains a scant half page of "assessment" of the impacts of PNPS on the fin whale. NUREG-1437, p. E-71.

[5] In this case, the court ruled the Department of Interior violated ESA by failing to gather species and habitat data sufficient to make informed biological assessment of effects of oil and gas leasing in National Forest area, because such failure during agency planning process creates likelihood of future conflict as development proceeds and, in effect, gives development priority over endangered species.

Photo courtesy of Whale and Dolphin Conservation Society. A view of PNPS from Cape Cod Bay is also shown in another photo, which provides a clearer picture of the four tanks at PNPS also shown in the WDCS photo. From the Boston Globe: http://www.boston.com/business/ticker/2008/11/nuclear_watchdo.html

Third, NRC's Biological Assessment as to the **effects on sea turtles** is contradictory and lacking in specific habitat data. It relies on stranding data, and on Entergy's monitoring data. p. E-66. It states, "The applicant has been monitoring aquatic communities in western Cape Cod Bay since 1969. No Federally endangered or threatened species have ever been observed in Cape Cod Bay near PNPS, or in the facility intake and discharge areas, during the duration of these studies."

The reliance on Entergy's "monitoring" is totally misplaced because Entergy's monitoring covers only fisheries and plankton – not turtles or whales. Based upon our preliminary review of the 77 Environmental Monitoring Reports prepared by PNPS in the last forty years, we have found no requirement that the presence of sea turtles or whales be documented or reported.[6] Therefore, these reports cannot form the basis of a reasonable biological assessment regarding sea turtles.

Further, the NRC's statement about the absence of listed species near PNPS is at odds with the statement in the EIS at NUREG-1437, page E-65 that a federally endangered loggerhead turtle was stranded .63 miles south of PNPS on Priscilla Beach in 2003. Finally, as NMFS has noted, sea turtles have been impacted by other nuclear power plants on the East Coast. See, e.g. Nov. 21, 2006 NMFS Biological Opinion for Oyster Creek Nuclear Generating Station.

Fourth, the NRC biological assessment fails to address the fact that **river herring are now considered a candidate species under the ESA.** 76 Fed. Reg. 67652, 67656 (Nov. 2, 2011). About two months ago, NMFS announced a 90-day finding for a petition to list

[6] The monitoring is done under Entergy's NPDES Permit, Paragraphs A.8.b & e, and Attachment A, Paragraph 1.F.

Alewife (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*), collectively referred to as river herring, as threatened under the ESA and to designate critical habitat concurrent with a listing. 76 Fed. Reg. at 67652. NMFS's ESA determination on river herring is due by August 5, 2011.[7]

According to the NRC, alewife (*Alosa pseudoharengus*) "is one of the most commonly impinged species at PNPS (ENSR 2006). Alewife larvae and juveniles have been collected in the PNPS entrainment sampling. Juveniles and/or adults have been consistently collected in the PNPS impingement sampling program. Over the last 25 years (1980 to 2005), alewives have had the third highest number of individuals impinged at PNPS, based on annual extrapolated totals (Normandeau 2006b)." NUREG-1437, p. 2-34. This assessment raises several serious questions. For example, the NRC states that alewife "spawning occurs in freshwater rivers and streams," p 2-34, but then says larvae are found in the entrainment sampling at PNPS. It seems extraordinary that larvae would be entrained at PNPS's saltwater intake, several miles from suitable freshwater habitat in the area such as Eel River and Jones River. This raises the question, which has not been assessed, as to whether PNPS thermal discharges are disrupting alewife reproduction.

Entergy's own records show that during a ten-year period, 1994 to 2004, 46,286 alewife and 16,188 blueback herring were impinged at PNPS, for a total of 62,474 river herring. These facts stand in stark contrast to the wholly inaccurate predictions on the impact to alewife from PNPS in the mid-1970s. In 1975, PNPS's consultant Stone and Webster stated that over the 40 year operation of PNPS (1972 to 2012) impingement and entrainment would result in a loss of 29,410 alewife.[8] Worse yet, this prediction was based on the operation of **two** nuclear generating units at PNPS – the second one was not built. The impingement numbers for alewife (42,286) and blueback herring (16,188) from 1994 to 2004, a ten year period, were 1.5 times as many alewife impinged as predicted for the full 40 year time period.

In relation to the total Jones River river herring stock, PNPS's impingement and entrainment numbers are significant. In 2004 alone, PNPS impinged 2,192 river herring (alewife and blueback herring). In the following year, 2005, the total estimated Jones River river herring stock was 804 – therefore in 2004, PNPS impinged 2.75 times as many fish as the entire Jones River river herring run the next year (2005).

Fifth, the NRC improperly excluded potential impacts from Entergy's dredging project from the biological assessment. The EIS states, "other activities that may affect marine aquatic resources in Cape Cod Bay include periodic maintenance dredging….However, based on discussions with plant personnel, there are no plans for dredging of the intake embayment or discharge canal at PNPS." NUREG-1437, p. 4-75. This is inaccurate. In 2012, Entergy is scheduled to dredge the intake channel. It has permission from the state to dredge 43,200 cubic yards of in-situ sediments plus a potential 11,000 cubic yards of over dredge.[9] Entergy requested and received a waiver of the state requirement for an

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[7] The decision on listing river herring could be made before the NRC makes its decision on PNPS' nuclear plant operating relicensing. The duty to consult with NMFS under the ESA can be ongoing, and consultation must be reinitiated under certain circumstances. 50 CFR 402.16. If the listing decision on river herring is made before June 8, 2012, a new consultation must be initiated.

[8] "316 Demonstration for Pilgrim Nuclear Power Station, Units 1 and 2, July 1975", prepared by Stone & Webster Engineering Corporation, p. 7-4.

[9] See, Massachusetts Environmental Policy Act Certificate, EEOEA #14744.

environmental impact report for this project. And, by improperly excluding this project from the NRC's EIS, Entergy's dredging project has evaded federal review. ESA consultation is required because as NRC states, "periodic maintenance dredging" **may affect** marine aquatic resources in Cape Cod Bay." NUREG, p. 4-75. "Marine aquatic resources" clearly include listed species, and the candidate species river herring.

Thank you for consideration of our inquiry. We look forward to hearing your response to how NMFS will be addressing the need for concurrence on NRC's conclusions. Please feel free to contact Meg Sheehan a 508-259-9154 or meg@ecolaw.biz if you have any questions about the issues raised in this letter.

Very truly yours,
For Jones River Watershed Association

Margaret E. Sheehan

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Cc:
Nuclear Regulatory Commission
U.S. EPA, Curt Spaulding, Region I Administrator
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The Herring Alliance
Whale and Dolphin Conservation Society
Provincetown Center for Coastal Studies
Massachusetts Audubon Society
The Nature Conservancy, Massachusetts Chapter
Cape Cod Hook Fisherman's Association
Trout Unlimited, Massachusetts/Rhode Island Chapter
Massachusetts Rivers Alliance
Connecticut River Watershed Council
Town of Plymouth, Board of Selectmen, Town Manager, Department of Public Works and Conservation Commission
Town of Kingston, Board of Selectmen and Conservation Commission
Town of Duxbury, Board of Selectmen and Conservation Commission
Cape Downwinders
Pilgrim Coalition
Cape Cod Bay Watch

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June 27, 2000

Mr. Dave Webster
Manager, Massachusetts State Program Office
U.S. Environmental Protection Agency
New England Region
1 Congress St.
Boston, MA 02114

RE: MCZM review of the Entergy-Pilgrim Station § 316 Demonstration Report.

Dear Dave:

The Massachusetts Coastal Zone Management Office (MCZM) has reviewed the § 316 Demonstration Report prepared by Entergy Nuclear Generation Company (ENGC) for Entergy-Pilgrim Station. We find that the Demonstration Report does not adequately support the conclusion of no significant impact to the species inhabiting the waters surrounding Entergy-Pilgrim Station.

The Demonstration Report provides 25 years of hydrothermal and biological data collected near the intake and discharge structures of Entergy-Pilgrim Station. While the hydrothermal data provided show that biological impacts are minimal, at least one modeling study predicts that hundreds of acres of Cape Cod Bay may increase by one degree Celsius or more due to thermal loading from the discharge. The Demonstration Report does not provide adequate evidence to determine how a temperature increase of just a few degrees may affect the development and survivorship of eggs and larvae or how a temperature increase may affect the future fecundity of adults exposed to the discharge plume in Cape Cod Bay.

The Demonstration Report provides evidence that the rate of fish impinged by the continuous action of the cooling water intake structures is thousands to tens of thousands per year. Certain schooling species (e.g., smelt and silversides) that are prey for recreationally and commercially important fish and shorebirds, comprise the majority of these impinged individuals. While large impingement events are confined to only a few fish species, it has yet to be determined how large single-day losses of these important prey species affect food web dynamics in the region of Cape Cod Bay near the Entergy-Pilgrim Station.

Of most concern is the entrainment of eggs and planktonic larvae by the cooling water intake structures. The Demonstration Report provides ample evidence that eggs

and larvae of many commercially and biologically important fish species are entrained by the cooling water intake structures. The removal of these eggs and larvae from the ecosystem and food web is an issue that has not been adequately addressed by the Demonstration Report. The death and physical destruction of these early life forms effectively removes these individuals from one trophic level and places their biomass and the energy it represents into another trophic level.

Because winter flounder is a species of interest in Cape Cod Bay, the Demonstration Report determines equivalent adult figures for the number of winter flounder adults that would have lived had the larvae not been entrained (but not for any other species). We do not believe that the ENGC has provided enough evidence to state that the number of equivalent adults killed by entrainment is not an adverse impact. By ENGC's calculations, between 47,000 and 77,000 equivalent adult winter flounder were killed in 1997 and 1998, respectively. When converted to pounds of fish taken, these values approach 40% of the annual total recreational and commercial catch. Given that winter flounder stocks are declining and the Entergy-Pilgrim Station is killing tens of thousands of winter flounder annually, we cannot agree that ENGC has demonstrated that they are not having an adverse environmental impact.

In Summary, we find that the Demonstration Report presents 25 years of data that suggest that thermal loading and impingement due to the cooling water intake structures at the Entergy-Pilgrim Station have relatively minor impacts to adult fish. The Demonstration Report does not provide sufficient scientific evidence to state unequivocally that the entrainment of fish larvae and eggs does not constitute a long-term adverse impact to the food web comprised of the collective populations of species within Cape Cod Bay.

Sincerely,

Thomas W. Skinner
Director

TWS/tpc

cc: Gerald Szal
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