

**Ecology Meeting Notes  
Pilgrim Nuclear Power Station (PNPS) Site Audit**

**Date: May 1, 2006**

**Site Tour**

**Attendees: NRC, Earth Tech, Entergy**

On the afternoon of May 1, 2006, Entergy personnel provided a general site tour of the Pilgrim Nuclear Power Station (PNPS) for the Nuclear Regulatory Commission (NRC) and Earth Tech site audit team. Two separate groups were lead on the tour, which consisted of a walk through of the grounds of the facility and a discussion of the electricity generation process at PNPS. The generating facility uses approximately 140 acres of land and is surrounded by another approximately 1,500 acres of land controlled by the facility and managed as a conservation area. The cooling water intake and outlet structures were observed during the site tour. A rock jetty used as a breakwater exists approximately several hundred feet into the bay to create calm waters for the intake structure. Cooling water is discharged into the bay through an approximately 300 foot discharge canal. The temperature of the discharge water is constantly monitored.

The site tour also included observations of the emergency backup diesel generators, location and discussion of the main air discharge stack, cooling water discharge sampling locations, a discussion of the stormwater collection system and observations of the hazardous waste storage area. In addition, a tour of the former public beach access area and nature trail located to the north of the generating facility was conducted. The beach access area consisted of an observation deck located on a bluff above the shoreline. The access area was closed to the public due to security reasons. The nature trail, which also had to be closed to the public, winded along the shoreline and through the wooded area to the north of the facility.

A walk though over a possible habitat of the spotted turtle, a species of concern in the State of Massachusetts, was also performed. The habitat is located to the north of the facility in a depressed area, which ponds water on occasion.

**Date: May 2, 2006**

**Terrestrial Ecology Meeting**

**Attendees: NRC, Earth Tech, Entergy, NSTAR**

NSTAR: Transmission line corridor was last cut in 2004 (hand cut in wetland areas) and last herbicide treated in 2003.

A Vegetation Management Plan (5-year plan) produced by NSTAR is undergoing regulatory review but has not yet been approved and is not yet public. It has been submitted to the Mass. Dept. of Food and Agriculture, the Mass. Pesticide Bureau, and the Mass. Natural Heritage Program. This document covers herbicide usage and mechanical maintenance.

Corridors patrolled 2 times per year (foot, helicopter); entire system every 5 years. The State Natural Heritage group doesn't regularly walk the corridors.

The right-of-way (ROW) is gradually being converted to a no-maintenance ROW consisting of low-maintenance vegetative species.

Every year beginning this year, NSTAR will get permit for "takings" of turtles to allow them to relocate individual turtles encountered out of the corridor. This is a new permit so the permit conditions are still being worked out and as such the record keeping requirements are not spelled out.

H. Nash: Request for list of species potentially occurring at PNPS that are protected under the Migratory Bird Treaty Act, and for lists of species of mammals and birds that commonly occur in habitats on PNPS property and vicinity.

Manomet Bird Observatory is likely to be a good source for info on native birds of the area.

### **Aquatic Ecology Meeting**

**Attendees: NRC, Earth Tech, Entergy, Normandeau**

Normandeau acquired Marine Resources, which has done the marine sampling for the site for ~25 years.

316 Report (ENSR 2000): EPA had the report reviewed by a contractor (Tetra Tech). A copy of those comments is being docketed. Entergy responded to the comments.

Harvesting of Irish moss in the bay stopped in the 1990s – reason not known.

Gas bubble disease: results from nitrogen saturation in the discharge canal. Fish entering the canal were affected historically. Mainly affected adult menhaden – large schools moved into discharge canal. A net was placed in the discharge canal to prevent menhaden (and other fish) from entering the canal. This prevented the large scale occurrences of gas bubble disease, although for a short while after this a few small scale occurrences were noted. The net was eventually removed. No incidents have been recorded since the net was removed. It is unclear whether the gas mixture in the discharge has changed over time.

Now monitor for nitrogen and argon once or twice per month. Methodology used is the same as that described in document #55. Entrainment sampling is done three times per week. At these times, the sampler observes presence/absence of fish schools at discharge. If present, may cause to do sampling.

Routing of impinged fish: typically materials removed from the screens (fish and other material) are routed to the intake canal. However this is stopped during periods when there is high loading of debris on the screens, such as during storms. At that point, the screen wash is diverted to the discharge canal. Control of the diversion is manual, not automatic.

Fish return: The east sluiceway was installed in 1979. The original west sluiceway was installed in 1972. Recapture studies have not been done on the sluiceway/intake.

Impingement: Average impingement rate: 3.8 fish/hour. This rate is more episodic as opposed to on-going. Impingement rate is measured 3 times per week. If an impingement event occurs at another time, the resulting buildup on the screens would act as an alarm and notification that has occurred.

On average, the traveling screens are rotated 3-4 times per day. The screens are washed 3 times per week, when the impingement rate is being checked. Both low and high pressure screen washes are used at the same time. (Low pressure wash ~ 20 lb/sq in., high pressure wash 80 - 100 lb/sq in.) Impinged organisms are first exposed to low, then those not washed off are exposed to high.

Screen wash water is dechlorinated using sodium thiosulfate before being sprayed on the screens.

Molluscicides have never been used (except for chlorine). Instead a thermal backwash is used to control mussels. Backwash and mechanical cleaning done 4-5 times per year. NPDES permit allows these procedures.

Marine Ecology Studies for 2005 (#66) will be ready within the next few weeks.

### **Transmission Corridor Survey**

**Attendees: NRC, Earth Tech, Entergy, NSTAR**

Identified for observation portions of the ~7 mile corridor from PNPS to the Snake Hill Road Substation that were in sensitive areas (i.e., lines crossed wetlands or near priority habitats of rare species as identified by the state of MA).

First observed terminal end of corridor at the substation, which is near Priority Habitat for a subspecies of the red-bellied cooter (listed as endangered). Topography in this area was low hills of sandy soil. Forest community surrounding the corridor included scrub oak, pitch pine, black pine, cherry, red maple, and gray birch. Herbaceous vegetation within the corridor included broom sedge, other grasses, and forbs.

Next observed the area where the corridor crosses wetlands (a creek and cranberry bogs) at its crossing of Long Pond Road. Creek was approximately eight feet wide with noticeable flow, heavily vegetated with trees and shrubs, and separated from the cranberry bogs by berms. No evidence of erosion or other impacts from the transmission corridor.

The only other sensitive area potentially crossed by the corridor and identifiable on topographic maps was a potential vernal pool identified by the state of MA and located west of Beaver Dam Road and south of State Highway 3A. This hilly section of the corridor was walked, but no pool was found.

**Date: May 3, 2006**

### **Entrainment/ Impingement Sampling**

**Attendees: NRC, Earth Tech, Entergy**

A site tour of the screen house, intake and discharge structures was conducted. The tour consisted of observing the 3x weekly entrainment and impingement sampling and a tour of the screen house. The tour was conducted during a heavy rain and wind storm from the Northeast. Consequently the impinged material discharge was being routed primarily to the discharge canal. The four rotating screens and screen wash system were observed. Entrainment sampling,

consisting of placing a plankton net in the discharge canal was observed. Impingement sampling which consists of placing a stainless steel basket into the screenwash sluiceway for approximately one hour was also observed.

#### **Additional aquatic ecology briefing by Joe Egan (PNPS)**

**Thermal Backwash:** Performed 3-5 times per year to control biological fouling.

Plant comes down to 50% power and water is heated to 105-110 degrees F, which is lethal to blue mussels. Byssal threads degrade over 5-10 days, and mussels release without need for mechanical cleaning.

Barnacles also are susceptible, hydroids are more resistant.

EPA requires monitoring of pH and temp: pH can't vary more than ½ unit; temp can't exceed 110 degrees F.

Town of Plymouth POTW discharges to the bay on the town shoreline. Pilgrim Technical Advisory Committee, which included representatives of the regulatory agencies, stopped meeting after Entergy took over.

**Date:** May 4, 2006

#### **Boat Tour**

**Attendees:** NRC, Earth Tech, Entergy, Normandeau

Left the Plymouth docks at ~0830 on a commercial charter fishing boat for a tour of the offshore areas adjacent to PNPS.

The PNPS is on a bluff between the towns of Manomet and Plymouth. This area is characterized by steep (sandy?) cliffs at the waters edge. Erosion of the adjacent cliffs north and south of the facility appears to be occurring. The most recent erosion of these areas appears to be nearest the plant while erosion of the cliffs farther away from the plant appears to potentially be older (as evidenced by the more extensive vegetation on these areas).

The plants security zone was entered (after coordination with the US Coast Guard) to better observe the intake and discharge. This included a closer look at the jetties surrounding the intake. The boat was not able to enter the intake canal due to the falling tide.

The boat also went over the two underwater ledges that are noted on the mariners map for this area. These ledges, located just north of the site at Rocky Point and south of the site at Manomet Point, were clearly seen using the boat's depth finder. Both of the ledges (in particular the northern ledge- off of Rocky Point) had numerous lobster pots in the vicinity. According to the boats captain, these ledges provide significant structure and are frequently fished by local lobster men.

Based on visual observation from the boat no unusual currents were noted.

Other than several bird species (gulls, ducks, etc.) no other animal life was observed.