

Brattleboro Reformer

Entergy expert grilled by thermal discharge opponents at hearing

By BOB AUDETTE, Reformer Staff

Saturday, June 30

NEWFANE -- Attorneys for organizations opposed to Entergy's request to increase the overall temperature of the Connecticut River during the summer by 1 degree hammered away at an expert called to defend the proposal, calling into question the methods he used to reach his conclusions and the conclusions themselves.

In three days of testimony, scientists called by the owner of Vermont Yankee nuclear power plant said the thermal discharge from the plant was not responsible for the less-than-spectacular results of shad and salmon restoration in the Connecticut River that began in the 1970s.

Instead, they blamed the Turners Falls Dam in Massachusetts and striped bass predation for the failure of the plan to increase the numbers of the two species.

But on Friday, lawyers for the state, the New England Coalition on Nuclear Pollution and the Connecticut River Watershed Council questioned whether the studies that were used were sufficient to reach those conclusions.

"You have not had a particular focus on the effect of temperatures on fish?" asked Patrick Parenteau, for the watershed council, of Lawrence Barnthouse.

"That's correct," said Barnthouse, who testified Thursday that his reviews of scientific studies and reports on American shad supported his conclusion that the plume of hot water expelled by the Yankee power plant into the Vernon Pool was not responsible for the low counts of shad in the body of water collected behind Vernon Dam.

"Discharge from Vermont Yankee was inconsistent with almost all the criteria," he said. "Passage at Turners Fall was consistent. Something about that dam is preventing shad (from traveling upstream)."

But shad returns fluctuated in the 1990s, said Parenteau, reaching a peak in 1991-92 and declining in 1992-94, rebounding in 1995-96 and then "crashing" in 1997.

In 1991, he said, 37,000 shad were counted passing through the Vernon Dam. This year, only 57 have been counted. Is it any coincidence, he asked, that the fluctuations and eventual decline followed a new thermal discharge regimen instituted in 1991?

If it was due to the discharge, said Barnthouse, "you would see the decline immediately, both as a reduced count and in passing efficiency and that's not what you see."

"If the Vermont Yankee discharge did not have an effect on the juvenile shad returning to the Vernon Pool would you expect to see another peak four to five years after 1995-96?" asked Parenteau.

"If nothing else is going on in the river, that would effect returns," said Barnthouse.

"What do you see in 1999-2000?" asked Parenteau. "Do you see a continuing decline?"

"Yes, I do," he said.

Parenteau asked Barnthouse if he would consider necessary a cumulative impact study to fully determine the effects of water temperature on shad in the Vernon Pool, and not only during the summer months, but also the effects of thermal discharge during the winter.

Questions in this line have been objected to several times by Entergy attorneys who contend it is outside the scope of the current hearing.

During Friday's testimony, Sarah Heaton Concannon registered a "continuing objection" to any line of reasoning related to hot water discharge during the winter months, when the heated plume increases the Vernon Pool's temperature by up to 13.4 degrees.

Judge Meredith Wright allowed the questioning to continue, but gave Entergy attorneys the opportunity to appeal to have it stricken after all testimony is given.

Parenteau also asked Entergy's witness why he only reviewed the time from 1991 to 2003. "Vermont Yankee has been discharging increased temperatures into the Vernon Pool since 1978," he said.

"We do not have data for that earlier period," responded Barnthouse, in an exchange with Parenteau that became testy at times.

Though Barnthouse admitted he did not actually conduct any experiments on shad in the Connecticut River, he said his experience as an environmental impact assessor allowed him to apply epidemiological study standards to his own review of published articles on shad.

Barnthouse referred to his methodological approach as "ecological detection."

"The question ecologist ask often cannot be answered by simple experiments," read Parenteau from "The ecological detective: Confronting models with data," which Barnthouse said he used. Do you agree, asked Parenteau, "where it is possible to do experiments, either in the laboratory or in the field, would be the preferred means of testing the effects of temperature on shad?"

"When possible or feasible, yes," he said.

Would conducting such hands-on experiments be the preferred method of assessing the impact? asked Parenteau.

"That's hardly ever possible," responded Barnthouse, who said Parenteau's argument was "much too simplistic."

Parenteau then asked Barnthouse about the "avoidance temperature" of American shad, which was set at 86 degrees during a study conducted on the thermal plume from the now-decommissioned Connecticut Yankee nuclear plant in 1976.

Barnthouse said he had reviewed the 1976 study of juvenile shad removed from the river, placed in cages and then lowered into the plant's thermal plume.

"Has this study been updated since 1976?" asked Parenteau.

"Not to my knowledge," responded Barnthouse, admitting no similar study had been conducted on shad in the Vernon Pool.

Fish at Connecticut Yankee were removed from 75 degree water and immediately placed in the thermal plume, up to 10 degrees warmer. Why not perform a gradual increase in temperature, asked Parenteau, to determine if shad's avoidance level is lower?

Because a fish passing through the plume would encounter it relatively quickly, said Barnthouse. He said he would expect the behavior of juvenile shad in the Vernon Pool to be similar to that of the shad studied near Connecticut Yankee, which is 20 miles above the river's outflow into Long Island Sound.

Though a scientist would never assume the conditions were identical between two different locations, "what you look for is similarities." In this case, he found enough similarities to conclude the study of fish at Connecticut Yankee was applicable to the Vernon Pool.

Hearings continue on the amended thermal discharge permit on July 6 in Newfane.

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