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In the Matter of a Petition	*
For a Declaratory Ruling by	*
	*
Nancy Burton	*
Connecticut Coalition Against Millstone	*
**********	*

Declaratory Ruling

Pursuant to General Statutes § 4-176 and Regs., Conn. State Agencies § 22a-3a-4(c)(3), I am issuing this Declaratory Ruling in response to a Petition for Declaratory Ruling (the Petition) submitted by Nancy Burton and the Connecticut Coalition Against Millstone (Petitioners) on October 6, 2014. The Petition arises out of a July 23, 2014 letter from the Department of Energy and Environmental Protection (DEEP/Department) to Dominion Nuclear Connecticut (Dominion). In that letter, the Department concluded that the discharge permit issued by the Department to Dominion for the operation of Millstone Power Station (Millstone) did not have to be modified as a result of a potential 5ºF increase in the temperature of the intake water used for cooling by Millstone. By notice issued on December 4, 2015, I indicated my intent to issue rulings in response to the Petition no later than April 6, 2015.

The Petition presented five questions for my consideration:

"1. Does Millstone's projected use of intake water withdrawn from the Long Island Sound hotter than 75 degrees F. and as high as 80 degrees F. constitute a process change resulting in an increase of an existing pollutant – the thermal plume – beyond conditions defined in Permit CT 0003263 and therefore require Dominion to submit an application for modification of the permit?

2. Was DEEP required to reject the Dominion notification based on its lack of sufficient information, as evidenced by DEEP's order to Dominion to conduct studies and gather data to establish that a modification to Permit CT0003263 was not legally required[?]

3. Did DEEP fail to carry out the monitoring and scientific analysis required to establish the degree to which Millstone's thermal plume is causing irreparable and irreversible harm to the marine ecosystem of the Long Island Sound?

4. Did DEEP fail to carry out the monitoring and scientific analysis required to establish whether the thermal plume involves conduct which has or which is reasonably likely to have the effect of unreasonably polluting, impairing or destroying the public trust in the air, water or other natural waters of the state, in violation of the Connecticut Environmental Protection Act?

5. In light of specific findings set forth in DEEP Letter (*sic*), including the following:

> (a) "The most recent thermal plume study conducted in September 2012 has a number of issues associated with it: the study was conducted under less than critical conditions";
>
> (b) "a portion of the 4 degree F. plume appeared to be mapped beyond the 8,000 foot mixing zone limit";
>
> (c) "the isotherm maps developed from the study do not include portions of the 4 degree F. [Δ]T isotherm (at maximum flood) and the 1.5 degree F. ◊T isotherms (at maximum flood, maximum ebb, and low slack)";
>
> (d) "the next recent thermal plume study was conducted twenty-five years prior to this in August 1987";
>
> (e) "this study investigated the thermal plume associated with the then, three-unit Station operation";
>
> (f) "it used dye (a conservative tracer) to measure a non-conservative pollutant";
>
> (g) "While this study may be useful from a historical perspective, it is limited in what it can offer in terms of defining existing plume size. Based on the above, an additional thermal plume study should be undertaken";
>
> (h) "there are some issues with the predictive modeling that may be resolved through the use of another model with expanded capabilities. This could lead to some resolution about the isotherm length discrepancy and could provide some clarity as to the expected impacts at ambient temperatures of 80 degrees F"

did DEEP knowingly and deliberately rubber-stamp Dominion's notification when DEEP knew critical aspects of Dominion's notification were based on inaccurate, misleading and insufficient information and thereby did DEEP violate the public trust in the environment, contrary to the provisions of the Connecticut Environmental Protection Act, Connecticut General Statutes § 22a-14 *et seq*.?"

I
THE PARTIES AND THE RECORD

The Parties to this proceeding are the Petitioners, staff of the Department and Dominion.

In the initial Notice of the Petition, posted on the Department's website on October 31, 2014, I indicated I would accept comments from the public for thirty days. On November 21, 2014, I extended the deadline for public comments to December 19, 2014. I received one public comment, filed by Dominion, who at that time was not yet an intervening party.

On December 4, 2014, I issued an Order indicating that I would accept information from the Petitioners and Staff of the Department, then the parties to this matter, on or before January 9, 2015 and that responses to any information submitted would be due on or before January 23, 2015. On January 8, 2015, Department staff submitted a cover letter and twenty-five documents for my consideration;[1] the Petitioners submitted no additional information at that time. On January 23, 2015, the Petitioners submitted comments in response to those submitted by Dominion.

On March 24, 2015, Dominion submitted a request to intervene as a party in this matter. I granted Dominion intervening party status on April 1, 2015.

[1] I refer to the documents submitted by Department staff throughout this ruling, identifying them with the citation DEEP-#. A table, identifying these documents by number, was submitted by Department staff and is attached as Appendix 1.

II

FINDINGS OF FACT

A

Background

1. Millstone is a nuclear power plant, owned and operated by Dominion located in Waterford, Connecticut. Millstone occupies a 500-acre site on Millstone Point, west-southwest of New London, surrounded on three sides by water. The site is bounded to the west by Niantic Bay and to the east by Jordan Cove. (DEEP-1, DEEP-2, DEEP-9.)[2]

2. Millstone has two operating pressurized water reactors which generate electricity, known as "Unit 2" and "Unit 3", respectively, capable of generating approximately 2,111 megawatts of power per day. Millstone uses water from Long Island Sound to cool its reactors; in the vernacular of the Nuclear Regulatory Commission, Long Island Sound is the "ultimate heat sink" (UHS) for Millstone. Water used for cooling by Millstone enters intake structures in Niantic Bay and, after being used by the plant, is discharged from two outlets to an area known as the "quarry cut" which bisects the southern tip of Millstone Point. Eventually, discharged cooling water leaves the quarry cut area and enters Long Island Sound (DEEP-1, DEEP-2.)

3. The intake temperature of water used by Millstone for cooling is considered a safety issue and is regulated by the Nuclear Regulatory Commission (NRC). (DEEP-11.)

4. Millstone's discharges to the quarry cut require a permit under General Statutes § 22a-430. Because heat is a pollutant, the Department regulates, among other things, the temperature of the water discharged by Millstone. (DEEP-1, DEEP-2, DEEP-25.)

[2] A map of the area, taken from exhibit DEEP-7, is attached as Appendix 2.

B
NPDES PERMIT

5. On September 1, 2010, the Department issued NPDES Permit number CT0003263 (Permit) to Dominion for various discharges from Millstone. That Permit identifies the two points where spent cooling water discharges to the quarry cut as DSN-001B and DSN-001C[3] and the discharge from the quarry cut to Long Island Sound as DSN-001-1[4]. The permitted discharge from DSN-001B to the quarry cut is 844,652,000 gallons of water per day. The permitted discharge from DSN-001C to the quarry cut is 1,410,933,000 gallons of water per day. Dominion is permitted to discharge 2,225,625,000 gallons of water per day from DSN-001-1 at the quarry cut to Long Island Sound. The Permit provides for a thermal mixing zone of 8,000 feet from the point of discharge, DSN-001-1, at the quarry cut into Long Island Sound. This mixing zone is to enable excess heat to dissipate. (DEEP-1.)

6. The Permit contains dozens of conditions and limitations on Millstone's water discharges. Those relevant here require that:
    a. The temperature of water discharged from DSN-001B (from Unit 2) shall not, under the most common operating circumstance, be more than 32º greater than the temperature of the intake water,[5]
    b. The temperature of water discharged from DSN-001C (from Unit 3) shall not, under the most common operating circumstance, be more than 28º greater than the temperature of the intake water,[6]

[3] DSN-001B is the discharge of spent cooling water from Unit 2, DSN-001C is the discharge of spent cooling water from Unit 3.

[4] DSN-001-1 is made up primarily of the combined discharge of DSN-001B and DSN-001C, although other discharges, described in Table A on page 10 of the Permit, contribute to this discharge. (DEEP-1.)

[5] The full permit condition states, "[t]he differential temperature increase at the Unit 2 discharge above the intake water temperature shall not exceed 32ºF during full condenser cooling water flow operations and shall not exceed 44ºF for more than 24 hours due to pump failure or maintenance. During reduced flow due to extended (more than 24 hours) pump outage or maintenance, the delta T shall not exceed 38ºF with a corresponding limit of 44ºF for 24 hours due to failure or maintenance of an additional pump. During the reduced intake flow period specified in Section 10(C) of this permit, the delta T shall not exceed 46ºF during periods of reduced flow with a corresponding limit of 48ºF for 24 hours due to pump failure or maintenance." (DEEP-1.)

[6] The full permit condition states, "[t]he differential temperature increase at the Unit 3 discharge above the intake water temperature shall not exceed 28ºF during full condenser cooling water flow operations and shall not exceed 30ºF for more than 24 hours due to pump failure or maintenance. During reduced flow due to extended (more than 24 hours) pump outage or maintenance, the delta T shall not exceed 30ºF with a corresponding limit of 36ºF for 24 hours

c. The temperature of water discharged from DSN-001-1 shall not exceed 105ºF at the point of discharge from the quarry cut,

d. At the boundary of the mixing zone, 8,000 feet from DSN-001-1, "[t]he temperature of any discharge shall not increase the temperature of the receiving waters above 83ºF," and

e. At the 8,000 foot boundary of the mixing zone, when compared to the ambient temperature of the receiving waters, the temperature of the discharge from Millstone shall not "raise the temperature of the receiving waters by more than 4ºF." This condition is commonly identified as the "ΔT."

The thermal mixing zone, and accompanying temperature limits, reflect the requirements of the Connecticut Water Quality Standards (WQS). See Regs., Conn. State Agencies §§ 22a-426-1 to 22a-426-9. (DEEP-1, DEEP-2.)

7. The Permit expires on August 31, 2015. Dominion submitted a renewal application on February 6, 2015. (DEEP-1.)

8. The Permit requires that Dominion conduct additional study on the thermal plume emanating from the quarry cut into Long Island Sound. See conditions §§ 10(U) and 10(V) of the Permit. In particular, Dominion was required to perform a study and prepare a report mapping the thermal plume and delineating thermal isotherms, or visual representations of temperature changes calculated using actual temperature readings and a mathematical formula, of 1.5ºF and 4ºF above the ambient temperature of the receiving waters. (DEEP-1).

9. On April 30, 2013, in response to the Permit, Dominion submitted to the Department a document entitled *April 2013 Report for a Combined Field and Analytical Thermal Plume Study* (Thermal Plume Study). This report contained thermal isotherm maps and conclusions drawn from a field study of the thermal plume discharging from the quarry cut into Long Island Sound. The field work was conducted on September 11-12, 2012 using both moored (fixed location) and vessel mounted (moving) temperature data loggers. A point located two miles

due to failure or maintenance of an additional pump. During the reduced intake flow period specified in Section 10(C) of this permit, the delta T shall not exceed 38ºF during periods of reduced flow with a corresponding limit of 40ºF for 24 hours due to pump failure or maintenance." (DEEP-1.)

south-southeast of the quarry cut was selected to monitor the ambient temperature of the receiving waters. This point, referred to in the Thermal Plume Study as "T4," is located near a feature identified as "Bartlett Reef" on nautical maps of the area. (DEEP-7.)

10. As part of the Thermal Plume Study, temperature data was recorded at fixed locations at the point of cooling water intake, near the outlet of the quarry cut, at Bartlett Reef, and from vessels traversing a series of "approximately 18 to 20 lateral transects . . . across the existing plume structure." Two vessels, one traversing the near field (within a radius of 2,000 feet from the point of discharge) and one traversing the far field (outside a radius of 2,000 feet from the discharge), collected temperature data and mapped isotherms calculated based on recorded temperatures at each of four tidal cycles: low slack; max flood; high slack; and, max ebb.[7] Mapping of each tidal cycle occurred over approximately one and one half hours.[8] The methodology used was unable to distinguish whether the temperature being measured was attributable to Millstone's discharge or to other potential sources. (DEEP-1, DEEP-7.)

11. To determine ambient temperature for each tidal cycle, readings at Bartlett Reef were taken every five minutes and averaged for the full length of the mapping period. The temperatures recorded from the moving vessels were not synchronized to temperature readings taken at Bartlett Reef on an ongoing basis, rather, the temperatures from the moving vessels were compared to the average of the readings at Bartlett Reed for the mapping session. (DEEP-7, DEEP-17.)

12. The temperature readings at fixed locations at the end of the quarry cut (where water entered Long Island Sound) showed no exceedance of permit conditions. The 4ºF isotherms mapped during low slack, high slack and max ebb tides showed no exceedance of the permit conditions, -- i.e., the isotherms did not extend beyond the edge of the 8,000 foot thermal mixing zone. However, at max flood tide, the 4ºF isotherm did extend past the edge of the mixing zone,

[7] "Low slack" tide is low tide, when the tide has gone out. "Max flood" tide is the period between low tide and high tide when greatest volume of water is rushing in. "High slack" tide is high tide, when the tide has come in. "Max ebb" tide is the period between high tide and low tide when the greatest volume of water is rushing out.

[8] The exact times over which mapping occurred for each tidal cycle are documented on p.30 of DEEP-7.

indicating a possible exceedance of permit limits. All absolute temperature readings taken at the mixing zone boundary did not exceed the 83ºF limit contained in the Permit. (DEEP-9).

C
THE NOTIFICATION

13. At the time the Permit was issued, the NRC licenses for the operation of Millstone set the upper limit for the temperature of the water used for cooling at 75ºF. If the temperature of intake water exceeds 75ºF, the NRC licenses required that the plant shut down. The temperature limits in the Department's Permit for the discharge of this cooling water were based on the intake water being at or below the 75º authorized by the NRC. On August 12, 2012, the temperature of water at the intake for Unit 2 exceeded 75ºF, forcing that reactor to be shut down for the period between August 12, 2012 and August 24, 2012. (DEEP-9, DEEP-11, DEEP-25.)

14. On May 30, 2013, given the shutdown required in August 2012, Dominion submitted license amendment requests (LARs) to the NRC seeking to increase the temperature limit of the intake water from 75ºF to 80ºF. The proposed LARs would apply to both Unit 2 and Unit 3. (DEEP-9).

15. On July 30, 2013, pursuant to Regs., Conn. State Agencies § 22a-430-3(i), Dominion notified the Department of its LAR request that would allow Millstone to increase the maximum temperature of intake water from 75ºF to 80ºF (the Notification) on a form provided by the Department. In the Notification, Dominion sought a determination under section 22a-430-3(i)(2), that the process change occasioned by the potential increase in the temperature of intake water would not require a modification to its Permit.

16. Pursuant to Regs., Conn. State Agencies § 22a-430-3(i)(2), no process modification of the type for which Dominion provided its Notification, can be implemented without notifying the Department. Upon receipt of notice of a process modification like the Notification, the Department must determine whether a permit modification is unnecessary or if, in the

commissioner's judgment, the activity would result in any discharge beyond permit conditions, that a permit modification is required.

17. To demonstrate that the proposed process modification could be implemented without violating current permit conditions, Dominion submitted a cover letter and computer modeling study prepared by Dr. E. Eric Adams, a thermal plume modeling expert at the Massachusetts Institute of Technology. Dr. Adams' report used data from the Performance Evaluations of Power Systems Efficiencies (PEPSE) model to calculate water temperatures at the point of discharge to the quarry cut. Dr. Adams used this data and additional computer modeling to evaluate the effect that an increase in the temperature of the intake water might have on the temperature of Millstone's thermal plume. In the Notification, Dominion indicated that even if the temperature of Millstone's intake water were increased to 80ºF, "[e]ngineering evaluations indicate that the maximum discharge temperatures for [Unit 2] and [Unit 3] outfalls (DSNs 001B, 001C) and the Station Outfall at the Quarry Cut (DSN-001-1) will stay within the existing station NPDES permit limits and conditions." Dominion further indicated that, based on Dr. Adams' evaluation of the proposed increase in the temperature of intake water, "neither the 4ºF [ΔT] limit, nor the absolute limit of 83ºF will be challenged at the boundary of the 8000' mixing zone." As a result, according to Dominion, no modification to the Permit for Millstone was needed if the NRC granted its request to increase the temperature of Millstone's intake water. (DEEP-9.)

18. Dr. Adams' report evaluated the proposed increase in intake temperatures for compliance with both the absolute temperature and 4º ΔT limits. Dr. Adams identified and analyzed three factors that in his opinion could cause changes in the temperature of the thermal plume: the "thermodynamic efficiency of [Millstone] (due to higher condenser back pressure)"; the "increase in the coefficient of thermal expansion," described as a change in the density of the thermal plume relative to the receiving waters; and, "an increase in the rate of surface heat exchange . . . mainly due to an increase in evaporation." Dr. Adams concluded that "[t]here will be insignificant impact on the dynamics and the shape of the far field plume (defined in terms of excess temperature above ambient, ΔT), and that the size of the ΔT = 4ºF isotherm will actually be slightly smaller, though the effective change in size is insignificant." Dr.

Adams also indicated that, so long as the water temperature of the ambient receiving waters remain below the temperature of intake water, the water temperature of the thermal plume at 8,000 feet will not exceed 83ºF.[9] (DEEP-9.)

D

THE DEPARTMENT'S REVIEW OF THE NOTIFICATION

19. On August 16, 2013, in response to the Notification, the Department requested additional information from Dominion, beginning an exchange of correspondence and documentation regarding the Notification. Initially, the Department requested additional information on the location at which the temperature of intake water is measured; evaluation of dissolved oxygen, biological conditions, and the spawning and growth of indigenous organisms; and, additional detail regarding Dr. Adams' report. (DEEP-10.)

20. Dominion responded to the Department's initial request for information on September 19, 2013. As part of its response, Dominion stated, among other things, that the PEPSE model has been "widely used throughout the utility industry for over 30 years to model nuclear and fossil fuel power plant steam cycle thermal performance." Dominion also provided an addendum to Dr. Adams' initial report which identifies the potential for slight increases in the temperature of the thermal plume created by Millstone's discharge in the "near field," within 2,000 feet of the quarry cut as a result of the increase in the temperature of intake water, and provides thermal contour maps based on Dr. Adams' computer model. Dr. Adams' ultimate conclusion, that the thermal plume would not exceed permit conditions at the boundary of the 8,000 foot thermal mixing zone, remained unchanged. (DEEP-11.)

21. The Department requested additional information again on January 15, 2014. It sought reports and raw data concerning the temperature of intake water, the temperature of waters surrounding Millstone, and any long term projections regarding the ambient temperature of

[9] In his report, Dr. Adams indicates that when the intake temperature exceeds 79ºF there is, "some ambiguity" regarding compliance with the 83º absolute temperature limit "depending on how the ambient temperature is defined." However, Dr. Adams goes on to explain that, based on field data collected during the Thermal Plume Study, the temperature of the ambient receiving waters is, on average, lower than that of the intake water. Dr. Adams concludes that so long as the ambient temperature remains below the temperature of the intake water, the temperature of the thermal plume will not exceed 83ºF at 8,000 feet.

receiving waters that had been made by Dominion's experts. Millstone responded to this request on February 7, 2014 and provided the information requested. (DEEP-12, DEEP-13, DEEP-13a to DEEP-13g.)

22. On April 16, 2014, the Department requested more information from Dominion. The information sought was not limited to the Notification, but instead fell into two categories, although both were related. The request regarding the Notification sought information on the assumptions used in the PEPSE modeling and the makeup of discharges DSN-001B and DSN-001C. Additional information was also requested regarding the Thermal Plume Study and sought clarification on the conditions the day the data for this report was compiled, the methodology used to evaluate the results, and the raw data collected in the field. In particular, the Department requested that Dominion address the results of the Thermal Plume Study where at maximum flood tide (high tide) the temperature of the water at the 8,000 foot limit of the mixing zone was more than 4ºF warmer than the ambient monitoring point. (DEEP-14.)

23. On May 13, 2014, the NRC approved the LARs submitted by Dominion, authorizing it to increase the maximum temperature of its intake water from 75ºF to 80ºF at both Unit 2 and Unit 3. (DEEP-16).

24. On May 16, 2014, Millstone responded to the Department's request for additional information. Millstone provided narrative responses and disks containing field data. Dominion responded to the Department's questions regarding the ΔT at the 8,000 foot boundary of the thermal mixing zone by stating that water temperatures at the boundary of the mixing zone were caused by natural phenomena, including the warming of near shore waters during daylight hours and not by the thermal discharge from Millstone and emphasized the difficulty of distinguishing those two sources in the field. (DEEP-17.)

25. The Department made a fourth request for additional information and clarification on May 28, 2014. This request primarily sought information needed to compare data compiled in the Thermal Plume Study with data previously reported to the Department in discharge monitoring reports. The request indicated that, based on the results of the Thermal Plume Study, even though three out of four results were fine, nevertheless "there are issues concerning whether

the 8,000 foot thermal mixing zone limit is being met under existing circumstances . . . [and] whether this limit will be met should Millstone implement the proposed change requested [in the Notification]." Additional field sampling data on the temperature of water within the quarry cut was also requested on June 19, 2014, following a meeting between DEEP staff and representatives from Dominion. (DEEP-18, DEEP-20.)

26. Dominion responded to these requests with a series of submissions on June 19, 27, 30 and July 2, 2014. The June 27, 2014 submission responded to the questions raised in the Department's May 28, 2014 letter. Dominion responded to the question regarding the ΔT at the edge of the 8,000 mixing zone by characterizing the result in question as "an anomaly," in part because it was observed only during the max flood tide, when the tide is coming in and water is rushing towards the quarry cut. The maximum extent of the thermal plume was previously understood to be at max ebb tide, when the tide is receding and water is rushing away from the quarry cut, carrying with it warm water from the thermal plume. Dominion further indicated the max flood tide result was not "predicted by the model, did not appear in [an earlier dye tracer study] and is contrary to the direction and magnitude of the max flood currents in the area." Millstone concluded that "the existing hydrodynamic model effectively characterizes the areal extent of the thermal plume originating from [Millstone] and has been validated by dye tracer studies. The model results indicate that the 4ºF isotherm associated with the thermal plume is well within the 8,000 foot mixing zone boundary." Dominion indicated that, based on the Thermal Plume Study, the 4ºF isotherm caused by discharges from the plant extended, at maximum, to 4,710 feet. (DEEP-22.)

E

THE DEPARTMENTS DETERMINATION

27. In considering the Notification, the Department evaluated all of the information submitted regarding the thermal plume produced by the discharge of cooling water from Millstone, including, but not limited to, the Thermal Plume Study, and Dr. Adams' report, which incorporated the PEPSE model and other computer modeling. (DEEP-25.)

28. On July 23, 2014, pursuant to Regs., Conn. State Agencies § 22a-430-3(i)(2), the Department determined that an increase in the temperature of Millstone's intake water from 75ºF to 80ºF,

"would not result in the discharge of any new water, substance or material or increase the quantity or concentration of an existing pollutant beyond permit conditions" and, as such, that "a permit modification is unnecessary." The Department concluded that if the temperature of the intake water increased, the temperature of Millstone's discharge at DSN-001B (Unit 2 into the quarry cut) would increase by 0.1ºF and that the temperature of the discharge at DSN-001C (Unit 3 into the quarry cut) would increase by 0.2ºF. The Department noted that these small increases remained within the limits of the permit. The Department also determined that these small changes in the temperature of Millstone's discharges into the quarry cut would have little effect on the temperature of the thermal plume at the edge of the thermal mixing zone, more than 8,000 feet away. The Department relied upon its experience with thermal plumes, as well as Dr. Adams' evaluation, noting, that his "[r]eport concludes that there will be an insignificant impact on the dynamics and shape of the far field plume as a result of the increased temperatures." The Department also cited Dr. Adams' conclusions with regard to the requirement concerning the absolute temperature limit of 83ºF at 8,000 feet discussed in paragraph 17 above.

29. The Department acknowledged the one result of the Thermal Plume Study that, "the 4.0 ºF ΔT isotherm crosses the 8,000 foot thermal mixing zone limit at maximum flood [tide]." However, the Department determined that "[m]ixing of a thermal plume in coastal waters is a complex matter. Plumes are not steady but vary in time and exhibit patchiness. Density gradients, velocity, bifurcation, entrainment, and other physical processes cause the plume to spread and thin at unsteady rates, which in turn result in patchiness." The Department included with its July 23rd letter a compliance schedule requiring, among other things, "additional mapping information" to "more conclusively determine the degree and extent of the thermal plume." (DEEP-25.)

III
CONCLUSIONS OF LAW

1. ***"Does Millstone's projected use of intake water withdrawn from the Long Island Sound hotter than 75 degrees F. and as high as 80 degrees F. constitute a process change resulting in an increase of an existing pollutant – the thermal plume – beyond conditions defined in Permit CT 0003263 and therefore require Dominion to submit an application for modification of the permit?"***

In my judgment, based on the record in this proceeding,[10] I conclude that Dominion was not required to seek a permit modification in order to increase the temperature of Millstone's intake water from 75ºF to 80ºF. I reach this decision because based on this record I am not able to conclude that if the temperature of intake water is increased to 80ºF, the discharges from Millstone would exceed the conditions contained in Millstone's NPDES permit.[11]

In making my decision, Regs., Conn. State Agencies § 22a-430-3(i)(2) requires that I use my "judgment," or exercise discretion. An exercise of discretion is proper if the conclusion reached is supported by substantial evidence in the record. See *Town of Newtown v. Keeney*, 234 Conn. 312 (1995)(the substantial evidence test is the appropriate standard of review when considering an alleged abuse of the Department's discretion). My conclusion that a permit modification is not required is supported by substantial evidence.

Millstone's proposal to increase the temperature of its intake water 5ºF was reviewed by the Department's experts, who are qualified to evaluate the reliability of data and the likelihood

[10] I note that the record in this proceeding is the same as the record that was available when the Department made issued its July 23, 2015 letter regarding Dominion's Notification.

[11] The Petitioners do not indicate the nature of any required permit modification. However, if it were determined that Dominion was required to seek a permit modification, the procedures required for any such modification, all of them, are and will be available during the renewal of the Permit, for which Millstone applied in February 2015. In short, procedural and substantive rights, identical to those that would have been available had Dominion been required to apply for a permit modification, will be available as a result of the permit renewal application. There is essentially no relief available to the Petitioners if a permit modification had been required that will not otherwise be made available to the Petitioners.

this proposed change would result in a discharge that might violate the conditions of the Permit.[12] Department staff determined that the temperature of the cooling water components of DSN-001B and DSN-001C would increase 0.1º F and 0.2º F, respectively. In exercising my judgment, I rely on the expertise of Department staff, who concluded that these insignificant increases in temperature would be of little consequence and unlikely to have any effect on the temperature of the water at the edge of the thermal mixing zone, thousands of feet away. In addition, the results of the computer modeling conducted by Dr. Adams' conclude that the proposed modification can be implemented within existing permit limits. His conclusion was "that neither the 4ºF [ΔT] limit, nor the absolute limit of 83ºF will be challenged at the boundary of the 8000' mixing zone," as a result of a 5ºF increase in the temperature of the intake water at Millstone. In fact, according to Dominion, the thermal plume only extended out 4,710 feet.

When considering technically complex issues, such as the one under consideration here, administrative agencies typically rely on experts, as I do now. See *River Bend Associates, Inc. v. Conservation & Inland Wetlands Commission*, 269 Conn. 57, 78 (2004) (determination of impacts on an inland wetland is a technically complex matter for which inland wetlands commissions typically rely on evidence provided by experts). Both Dr. Adams' and Department staff are experts and their conclusions, form a substantial basis in fact from which I may act.

[12]Dominion's submissions were reviewed by Permitting and Enforcement Division of the Department's Bureau of Materials Management and Compliance Assurance. The primary reviewer of submitted materials was Christine Gleason, a sanitary engineer. Ms. Gleason, who has a bachelor's degree in chemistry and a master's degree in environmental engineering, has worked for the Division since 2006. Ms. Gleason is an expert on matters related to NPDES permits, including the evaluation of data produced by water quality monitoring and predictive modeling and the implementation of Connecticut's Water Quality Standards. Ms. Gleason frequently reviews proposed process modifications for compliance with existing permit conditions. Ms. Gleason's review of the Notification was supervised by Oswald Inglese, Jr. Mr. Inglese is the director of the Division and has worked on issues related to water discharges for seventeen years of his approximately twenty-seven year career at the Department. Mr. Inglese has a Master's of Science degree in civil engineering and is a licensed professional engineer. Mr. Inglese has expertise in evaluating NPDES permits based on his own scientific conclusions and those drawn by his staff. (DEEP-27, DEEP-28.)

I further rely on the Department's experts to evaluate the information within their area of expertise, including information supplied by others, and determine what information is reliable. "When the application of agency regulations requires a technical, case-by-case review, that is precisely the type of situation that calls for agency expertise." *MacDermid v. Department of Environmental Protection,* 257 Conn. 128, 139 (2001). "An agency may rely on its own expertise in evaluating evidence within the area of its expertise." *Connecticut Building Wrecking Co. v. Carothers,* 218 Conn. 580, 593 (1991).

I note that the Petitioners have provided no additional factual information for me to consider. The Petitioners have not provided any information to rebut the modeling or other data supplied by Millstone. Indeed, the Petitioners have not provided any information from experts, or anyone else, that challenges any of the conclusions reached either by Millstone or by the Department.

To be sure, the Thermal Plume Study indicated that, during one tidal cycle, on one day, the temperature of the water being sampled apparently exceeded the 4ºF ΔT limit at the boundary of the thermal mixing zone. The possibility that based upon the record, a different conclusion could be reached regarding whether a 5ºF increase in the temperature of Millstone's intake water could lead to discharges in violation of its current permit does not undermine my conclusion. It is axiomatic that the evidence

> . . . to support any [conclusion made by the Department] must be substantial; the credibility of witnesses and the determination of factual issues are matters within the province of the administrative agency. . . .[E]vidence is sufficient to sustain an agency finding if it affords a substantial basis in fact from which the fact in issue can be reasonably inferred. . . .[T]he possibility of drawing two inconsistent conclusions from the evidence does not prevent [a determination] from being supported by substantial evidence. . . .

(Citations omitted; internal quotation marks omitted.) *Samperi v. Inland Wetlands Agency*, 226 Conn. 579, 587-588 (1993).

To put this data in context, I note that the current Permit, like the prior permits issued for Millstone, does not require monitoring of the temperature at the boundary of the mixing zone or in ambient waters. Therefore, there is no field data, other than that in the Thermal Plume Study, regarding the temperature of the water at the edge of the thermal mixing zone. I do not find this single max flood tide data point to be dispositive on either the question of current compliance or on whether the 5ºF increase in the temperature of the intake water being sought would affect Dominion's future compliance.

It is important to note that the Thermal Plume Study also monitored water temperature at the point where the discharge leaves the quarry cut and found the temperature of the discharge to be within permit limits. The Thermal Plume Study also found no exceedance of the 4ºF ΔT limit at the boundary of the thermal mixing zone during three other tidal cycle measurements the same day. The ΔT was only exceeded during max flood tide. At max flood tide, water is rushing into Niantic Bay from Long Island Sound toward the point of discharge which, if anything, should suppress the size of the thermal plume. It has previously been understood that the thermal plume is largest at max ebb tide, the opposite of max flood tide, when the tide is going out and water is rushing away from the discharge and potentially stretching the thermal plume. Moreover, the Thermal Plume Study had no mechanism to distinguish whether the temperature of the water being sampled was influenced by Millstone's discharge or from other potential sources. All of this suggests that the temperature of the water that exceeded Millstone's permit limits may not have been caused by Millstone's discharge. While I have no reason to doubt the accuracy of any

temperature readings taken during the Thermal Plume Study, that study and its usefulness in this context is limited by its methodology.

After reviewing the record in this matter, I determine that in my judgment, I am unable to conclude that an increase in the temperature of the intake water proposed by Millstone will result in a discharge beyond existing permit conditions. I reach this conclusion based on the substantial evidence in the record and in reliance upon Department staff's expert evaluation of that evidence. For these reasons, based on the record, I conclude that pursuant to Regs., Conn. State Agencies § 22a-430-3(i)(2) Dominion was not required to seek a permit modification as a result of its July 30, 2013 Notification.

2. "Was DEEP required to reject the Dominion notification based on its lack of sufficient information, as evidenced by DEEP's order to Dominion to conduct studies and gather data to establish that a modification to Permit CT0003263 was not legally required[?]"

I conclude that the Department was not "required to reject" the Notification. The only circumstance in which the Department would reject a notification of process modification filed under Regs., Conn. State Agencies § 22a-430-3(2)(i), such as the one at issue here, is if the information submitted is incomplete such that the Department cannot make a determination regarding the impact of a proposed process change. Dominion, responding to various requests for additional information, provided sufficient information for the Department to consider and act upon the Notification. The Notification was made on the form provided by the Department and included scientific analysis supporting its contention that a permit modification was not required. During the course of the Department's analysis, Dominion provided additional information each time it was requested. As discussed in response to the Petitioners' first question above, the information provided by Dominion was substantial and provided a sufficient basis for the Department to act.

The Department's July 23, 2014 determination contains a schedule for the submission of additional information which may form the basis for future permitting or enforcement decisions. However, that additional information was not necessary to evaluate and make a decision on the Notification. The Department relied on the substantial evidence discussed in response to the Petitioner's first question above.

Upon receipt of a notice of a proposed process change under § 22a-430-3(2)(i), once sufficient information to make a decision has been provided, the Department has two options: "(i) the commissioner notifies the permittee in writing that a permit modification is unnecessary or (ii) if in the commissioner's judgment the activity would result in any such discharge beyond permit conditions, the permittee obtains a modification of his or her permit . . . ." Regs., Conn. State Agencies § 22a-430(3)(i)(2). I conclude that the Department was not "required to reject" the Notification because once Millstone had provided information sufficient to make a determination, the applicable regulations contain neither a requirement, nor an option, to "reject" such a Notification.

3. Did DEEP fail to carry out the monitoring and scientific analysis required to establish the degree to which Millstone's thermal plume is causing irreparable and irreversible harm to the marine ecosystem of the Long Island Sound?

This portion of the Petition asks whether the Department failed "to carry out the monitoring and scientific analysis required to establish the degree to which Millstone's thermal plume is causing irreparable and irreversible harm to the marine ecosystem of Long Island Sound." Because the focus of the Petition was Dominion's Notification, I assume this question in posed in that context.

As a matter of course, the Department does not carry out monitoring of the discharges for which it issues permits. There are simply no resources available for this task. The Petition

provides no legal authority, nor am I aware of any, which requires the Department to conduct such monitoring.[13] To conduct the type of monitoring required by the Permit is expensive and resource intensive and the Department has not been appropriated the funds or provided with the personnel necessary to conduct this monitoring.

The Permit does contain extensive monitoring requirements, but Dominion is required to conduct the monitoring, not the Department. This is consistent with the Department's overall approach to permitting.

The Petition also questions whether the Department failed to carry out "scientific analysis" regarding the extent to which the thermal plume from Millstone is causing irreparable and irreversible harm. It is not clear what scientific analysis the Petitioners expect the Department to conduct. None is suggested. As previously discussed, the Department's analysis of the issues raised in the Notification was extensive. The Department's experts repeatedly sought information and questioned the underlying assumptions presented in the information received. Department staff reviewed and evaluated hundreds of pages of sampling results, thermal mapping, and analytical studies, before making a determination that a permit modification was not required. The Department, then, did undertake the scientific analysis required by the Notification.

For all of these reasons, I conclude that the Department did not fail to conduct any monitoring of Millstone's thermal plume and that extensive scientific analysis of issues raised by the Notification was performed.

[13] While there are a number of authorities that authorize the Department to conduct monitoring of discharges, none of these statutes compel the Department to conduct such monitoring.

4. "Did DEEP fail to carry out the monitoring and scientific analysis required to establish whether the thermal plume involves conduct which has or which is reasonably likely to have the effect of unreasonably polluting, impairing or destroying the public trust in the air, water or other natural waters of the state, in violation of the Connecticut Environmental Protection Act?"

The Petitioners' fourth question concerns the applicability of requirements contained in the Connecticut Environmental Protection Act of 1971 (CEPA), General Statutes §§ 22a-14 through 22a-20. The Petitioners question is, at best, unclear, since in administrative proceedings, CEPA allows individuals or organizations to intervene as parties for the purpose of raising allegations of unreasonable environmental harm. See General Statutes § 22a-19. However, the Petitioners are already a party to this declaratory ruling proceeding independent of any rights under CEPA.

I recognize that there are circumstances when, before the Department can authorize a proposed activity, CEPA requires that the Department analyze whether the proposed activity is reasonably likely to result in unreasonable pollution. Id. This is not a circumstance where such an analysis is required. A prerequisite to such analysis is the filing of a verified pleading, containing "specific factual allegations" detailing the nature of the alleged environmental harm. No such pleading was filed in this declaratory ruling proceeding. Indeed, the Petitioners provided no allegations of particularized environmental harm for me to consider, as would have been their burden had the Petitioners sought to have CEPA apply to this proceeding. [14]

Based on the above, I conclude that since the Petitioners, already a party to this proceeding, have not properly invoked CEPA, that CEPA does not apply to this declaratory ruling proceeding.

[14] Neither the Petition, nor my review of CEPA, identifies any requirement for the Department to conduct monitoring under CEPA. Also, for the reasons set forth above, no additional analysis of the issues raised by the Notification was required under CEPA.

5. "In light of specific findings set forth in DEEP Letter (*sic*), including the following:

(a) "The most recent thermal plume study conducted in September 2012 has a number of issues associated with it: the study was conducted under less than critical conditions";
(b) "a portion of the 4 degree F. plume appeared to be mapped beyond the 8,000 foot mixing zone limit";
(c) "the isotherm maps developed from the study do not include portions of the 4 degree F. [Δ]T isotherm (at maximum flood) and the 1.5 degree F. ◊T isotherms (at maximum flood, maximum ebb, and low slack)";
(d) "the next recent thermal plume study was conducted twenty-five years prior to this in August 1987";
(e) "this study investigated the thermal plume associated with the then, three-unit Station operation";
(f) "it used dye (a conservative tracer) to measure a non-conservative pollutant";
(g) "While this study may be useful from a historical perspective, it is limited in what it can offer in terms of defining existing plume size. Based on the above, an additional thermal plume study should be undertaken";
(h) "there are some issues with the predictive modeling that may be resolved through the use of another model with expanded capabilities. This could lead to some resolution about the isotherm length discrepancy and could provide some clarity as to the expected impacts at ambient temperatures of 80 degrees F"

did DEEP knowingly and deliberately rubber-stamp Dominion's notification when DEEP knew critical aspects of Dominion's notification were based on inaccurate, misleading and insufficient information and thereby did DEEP violate the public trust in the environment, contrary to the provisions of the Connecticut Environmental Protection Act, Connecticut General Statutes § 22a-14 *et seq*.?"

The Petitioners' final question is more of a rhetorical restatement of its first and fourth questions and I incorporate my response to those questions into my response to this final request question. I reiterate my conclusions.

I would not characterize the review of the Notification, which took more than a year, and involved the review of hundreds of pages of scientific reports and data by Department staff with substantial expertise in evaluating the discharge of wastewater as "knowingly and deliberately" affixing a "rubber-stamp." Frankly, such accusations do a gross disservice to the staff at the Department who worked extremely hard on this matter. The Department's review of the Notification and basis for issuing it have already been discussed in this ruling.

IV
CONCLUSION

For the reasons set forth above, based on the record in this matter, I conclude that pursuant to Regs., Conn. State Agencies § 22a-430-3(i)(2), Dominion is not required to seek a permit modification with respect to its July 30, 2013 Notification.

Robert J. Klee, Commissioner

4/2/15
Date

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DOCUMENT REFERENCE KEY

1	Millstone's NPDES permit, CT0003263 issued on September 1, 2010	
2	Fact Sheet for CT0003263, issued on September 1, 2010	
3	Thermal Plume Modeling At The Millstone Nuclear Power Plant, August 1979	
4	Excerpt from "Monitoring the Marine Environment of Long Island Sound at Millstone Nuclear Power Station" Three-Unit Operational Studies 1986 -1987	
5	Thermal Plume Analysis for Millstone Power Station, Units 2-3, July 2001	
6	Additional Thermal Plume Analysis for Millstone Power Station, Units 2-3, March 2003	
7	April 2013 Report for a Combined Field and Analytical Thermal Plume Study (D18389)	
8	Millstone's DMRs for 2012-2013	
9	Application 201303619, July 30, 2013 (D18404)	
10	DEEP's August 16, 2013 Request for Additional Information	
11	Millstone's September 19, 2013 submittal (D18439)	
12	DEEP's January 15, 2014 Request for Additional Information	
13	Millstone's February 7, 2014 submittal (D18484)	
	a	Cover Letter to Response
	b	DEEP Request_MP_stats 12-13.xls
	c	DEEP Request_trawl_tempsal 12-13.xls
	d	DEEP Request N2 study 12-13.xls
	e	DEEP Request_Ambient 76-13.xls
	f	Final Report OS Hydrothermal Survey
	g	Far Field Thermal Plume Liang & Tsai
14	DEEP's April 16, 2014 Request for Additional Information	
15	DEEP's April 23, 2014 letter to Reynolds and Super	
16	Federal Register Notice, May 13, 2014 (Vol. 79, No. 92)	
17	Millstone's May 15, 2014 submittal (D18514)	
18	DEEP's May 28, 2014 Request for Additional Information	
19	Handouts from Millstone from June 18, 2014 meeting	
20	DEEP's June 19, 2014 Request for Additional Information (Follow-up from meeting)	
21	Millstone's June 19, 2014 e-mail: Temperature Graph	
22	Millstone's June 27, 2014 submittal (D18521)	
23	Millstone's June 30, 2014 e-mail: Temperature Graph	
24	Millstone's July 2, 2014 e-mail: Temperature Graph	
25	DEEP's July 23, 2014 letter	
26	DEEP's August 8, 2014 letter	
27	Affidavit of Christine Gleason	
28	Affidavit of Oswald Inglese, Jr.	

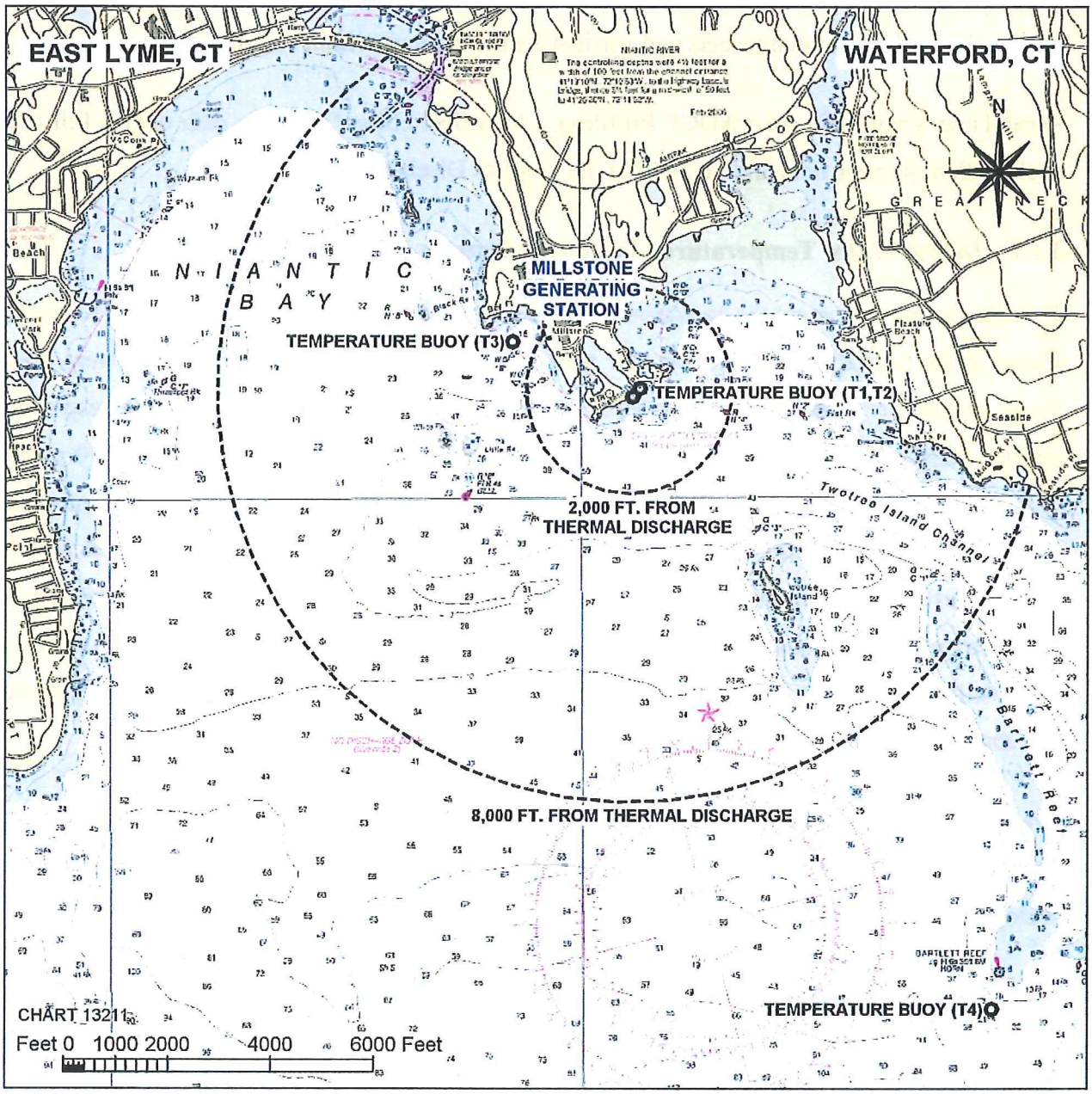

Figure 1: Location Map