

FROM: Mr. Marvin Resnikoff Buffalo, N.Y. 14201			DATE OF DOC 4-2-74	DATE RECD 4-18-74	LTR X	MEMO	RPT	OTHER
TO: Jan Norris			ORIG 1 signed	CC	OTHER	SENT AEC PDR SENT LOCAL PDR		XXX XXX
CLASS	UNCLASS XXX	PROP INFO	INPUT	NO CYS REC'D 1	DOCKET NO: 50-410			

DESCRIPTION:
Ltr notarized 4-2-74.....furn comments on the
Environmental impact of Nine Mile point.....

PLANT NAME: Nine Mile Point

ENCLOSURES:

ACKNOWLEDGED
DO NOT REMOVE

FOR ACTION/INFORMATION 4-20-74 JB

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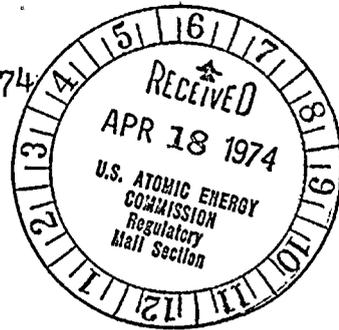
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April 2, 1974



Mr. Jan Norris
Environmental Project Manager
U.S. Atomic Energy Commission
Washington, D.C. 20545

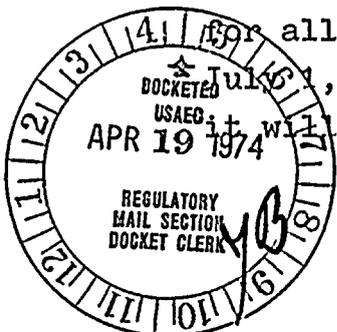
Re: 50-410

Dear Mr. Norris:

On January 27, 1974, I sent a letter to Mr. Bernard Bordenick of the AEC Regulatory Staff requesting permission to submit a letter as a form of limited appearance on behalf of Ecology Action of Oswego, N.Y. in the matter of the application of Niagara Mohawk for a construction permit for the Nine Mile Point 2 project, docket 50-410. I have not received an acknowledgement of receipt of that letter, nor an answer to that request. As I understand the AEC Rules of Practice, 10CFR Part 2, it is entirely at the discretion of the presiding officer whether a limited appearance request be granted and the information accepted. However, since the previous hearing, new information has appeared, which, I believe, will compel the AEC to re-open the hearings. Now the AEC may dismiss the following remarks, or not acknowledge receipt of the letter, which this time has been sent registered, but then, it is inconceivable to me, as a layman lawyer, that the entire case could not be open to judicial review

The Environmental Protection Agency has recently published its proposed effluent limitations, guidelines and standards for steam electric power generating point source category, in the Federal Register, March 4, 1974 (39 FR 8293). These guidelines are only proposed, but they have already benefited from input of a wide spectrum of agencies and groups and it is quite likely that section 40 CFR Chapter 1 will be amended to include Part 423, as written in the Federal Register. Part 423 will require the use of mechanical draft cooling towers

for all steam electric power generators constructed after July 1, 1977, thereby including Nine Mile Point 2. Further, require that Nine Mile Point 1 and Fitzpatrick be





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backfitted before July 1, 1983. As I understand the proposed rules, Niagara Mohawk may then apply to the Regional Administrator or the State of New York for a modification of the limitations if fundamentally different factors are found to exist than listed in the Development Document. On the basis of proposed part 423 to 40 CFR Chapter 1, I believe it is necessary for the AEC to convene a new public hearing where Niagara Mohawk can present its detailed plans for, and environmental impact of, mechanical draft cooling towers, or a case for modification of the limitations imposed by part 423.

The Final Environmental Statement for Nine Mile Point unit 1 (ref. 1) has become available to us since the last hearings on Nine Mile Point 2. The fish kill is estimated now between 2 and 4 million. Reasonable men and women may differ on the intent and meaning of the state laws, but it appears quite likely that the State of New York standards for thermal discharge 6 NYCRR 704, that

"None alone or in combination with other substances or wastes in sufficient amounts or at such temperatures as to be injurious to fish life", is being contravened. The specific mechanism for this enormous fish kill appears to be that fish are attracted to the Nine Mile Point area by a thermal pool which violates the state criteria by an order of magnitude and more, and by nutrient matter and dead fish in the area, and are then taken into the intake structure themselves. If once-through cooling, with this large thermal pool and with an intake velocity of 2 fps were not present, then no fish would be killed. It remains then for the New York State Department of Environmental Conservation to hold a hearing, and for Niagara Mohawk to show cause why its discharge permit should not be revoked. In the likely event that NYSDEC will not do this, Ecology Action should sue NYSDEC to enforce the state laws, and I have recommended this action to their attorney Richard Goldsmith.



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The AEC has estimated a fish kill of 5 to 7 million due to the three plants in combination (erf.2). To put this figure in perspective, it is equal in weight (though not in market quality) to the total commercial fish catch on the U.S. side of Lake Ontario. The AEC thus estimates that Nine Mile Point unit 2 will significantly add to, what the AEC already describes as, a "significant" kill at Nine Mile Point unit 1. The remainder of this letter then will deal with the question whether the Nine Mile Point unit 2 plant will violate the state criteria:

"The water temperature at the surface of a lake shall not be raised more than 3°F over the temperature that existed before the addition of heat of artificial origin, except that within a radius of 300 feet or equivalent area from the point of discharge, this temperature may be exceeded. In lakes subject to stratification, the thermal discharges shall be confined to the epilimnetic area."

I believe that the Nine Mile Point unit 2 will violate both parts of the state criteria. It is clear that the utilities are having increasing difficulty with this law as the size of generating plants becomes larger. The surface criteria will require the utilities to place submerged diffusers at greater depths, and yet still maintain the discharge in the epilimnetic area. The law, in effect, places a limit on the size of generating stations, which I believe Nine Mile Point unit 2 exceeds, or the law necessitates alternate cooling modes, as in the new EPA guidelines.

The first questions are, is Lake Ontario subject to stratification, and, if so, will the combined discharge of Nine Mile Point units 1 and 2 be confined to the epilimnetic area? The AEC recognizes, in its comments in ref. 2, after it was brought to its attention by the EPA, on p.L-6, that indeed Nine Mile Point 2 will occasionally be discharging hot water below the thermocline. While conceding the existence of the thermocline the AEC maintains that "the New York State standard defining the hypolimnion does not, as written, apply to Lake Ontario" and further, that "there is no significant impact resulting



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from occasional discharges into the hypolimnion." To be absolutely clear about things, New York State law does not say not to discharge hot effluent into the hypolimnion; it says that the hot effluent should be discharged into the epilimnetic area. Since the thermocline is not a line, but a layer, there is no reason on that part of the AEC or NYSDEC to concede a few feet in depth to Niagara Mohawk. The reputable scientific literature is in agreement that the lake is subject to stratification. While upwellings do occur, and mixing does occur, this is always followed by a re-stratification during the summer months. I have reviewed the data by Storrs for 1963, 1964 (ref.3), by Sweers for 1966, 1967 (ref.4), by ~~LOTEL~~ ^(ref.5) for 1972, 1973 (in region of RG&E's proposed Sterling plant), and by QLM for 1969, 1970 (ref.6). The studies are in agreement, except for QLM (more below), and agree with the statement ^{by the EPA} on p. L-14 of ref.2, that the thermocline varies in depth from 10 to 70 feet during the summer months. The AEC describes the amount of hot effluent discharged as "occasional"; I believe that the AEC should quantify the word "occasional", but it appears to me that during the June through mid September period, the proposed Nine Mile Point units 1 + 2 will not discharge into the epilimnetic area at least one third, and perhaps half the time in an average summer. The discussion here is a little academic because, as QLM demonstrates in ref.6, there no longer exists a thermocline and stable stratification in the Nine Mile Point area. A comparison of figs. 17 and 18, temperature vs. water depth profile for 1969, 1970 shows that water temperatures in the Nine Mile Point area were essentially isothermal during 1970, though stratified during 1969. The difference between the two years can be attributed to the fact that the Nine Mile Point unit 1 plant was started up in December, 1969, and has radically altered the summer stratification. If the AEC uses this 1970 data or sweers data in the Nine Mile Point area in their conclusion that a stable thermocline does not exist, it is incorrectly based; only data before the addition of heat of artificial origin is admissible.



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Given that the Nine Mile Point unit 2 will violate the state criteria with regard to discharge below the epilimnetic area, the question is, what are the harmful effects? As mentioned on page 4, the AEC describes the effects as minimal because Lake Ontario is a "well-mixed lake", that during the winter the lake is essentially isothermal. The AEC sketches a study by Dobson which purportedly shows the chemical concentrations and the oxygen saturation to be relatively uniform, Now it is during the summer, not the winter, when the effects of mixing would be important; an examination of the extensive data by Sweers (ref.4) (95% confidence level) shows that the stratification of temperature is strictly correlated with the variation of the other parameters, the percent oxygen saturation, the specific conductance and the pH. The AEC dismisses the entire question of harmful effects of discharge below the epilimnion in less than one page, while discussions regarding surface criteria and submerged diffuser take up a considerable part of the environmental statement. I do not believe that AEC's one page analysis satisfies Section 102 (2) (c) of the NEPA.

Finally, I would like to discuss whether the surface criteria will be satisfied, and specifically, whether the hydraulic modeling was adequate. I share the AEC's reservations, as stated on p.3-16 of ref.2, especially, the desire for field data which the AEC hopes to obtain in a post-operational monitoring program. After briefly inspecting the hydraulic model at Acres American, reading comments 3 and 4 by CNY-PIRG, and the response to them by Niagara Mohawk and the AEC staff, there remains rather puzzling questions to me, and perhaps to others: (i) the Acres American hydraulic model results listed on p.62, table 13 of ref.6 have both a plotted dilution and 3°F area, and a corrected dilution and corrected 3°F area, which is smaller. The reasoning by Acres American for this corrected dilution factor seems highly artificial, e.g., to correct for mechanical heating due to pumping, and was re-



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jected by the AEC staff since only the uncorrected values appear in the AEC final environmental statement. Could the AEC state precisely on what basis the Acres American corrections were rejected? The question is pertinent because we wish to investigate further whether the hydraulic model data is valid.

(ii) the hydraulic model results for drift west to east, 0.5 fps, were available to the AEC before February, 1973, yet were not included in the June, 1973 final environmental statement, though other information from ref. 6 was. The data shows an average plotted 3⁰F area of 27.8 acres, clearly in violation of 6 NYCRR 704, and therefore necessitating a request by Niagara Mohawk for a modification of the surface criteria by NYSDEC. There is a variation by a factor of 7 of this E-W data, from 5.7 to 41.0 acres. Could Acres American provide a more detailed accounting for this large variation? For example, what effect did the room temperatures and drafts have on the test results since the tests were performed December, 1972? The question of this large variation is pertinent because we wish to make an independent assessment of the reliability of all their data. We might add that Niagara Mohawk claims on p.3-16 of ref.2 that "the design ensures compliance ...with the thermal discharge criteria", but if the W-E data is included in the environmental statement, that claim is obviously false.

(iii) the Acres American hydraulic model contains a discharge structure for Nine Mile Point unit 1. However, the AEC staff has discounted the use of the Acres American hydraulic model for the Nine Mile Point unit 1 plant (p.11-7 of ref.2) essentially because of the low Reynolds number involved. Could the AEC provide us with the test results of the Acres American model of the Nine Mile Point unit 1 discharge so that we can make an independent assessment?

(iv) Could the AEC provide us with the reasons for limiting the flow to the three weirs nearest the shoreline?

(v) It is not clear from the hydraulic model how the consultant, Acres American, arrived at the conclusion that "in no case was there any measurable increase in one plant's intake temperatures ascribable to the other plant's discharge." The hydraulic model submerged diffuser is at a depth of 6 inches, the intakes at a depth of 3 inches in the model, and the flow is turbulent; thus there is no vertical temperature stratification and the water is well-mixed. It is therefore unclear how the consultants came to that conclusion.

(vi) During November, for example, the intake temperature will be several degrees warmer than the surface temperature, perhaps as much as 4° warmer. This increase the size of the thermal pool considerably.

(vii) Finally, could the AEC make available to Ecology Action the results from the hydraulic model for the Fitzpatrick submerged discharge diffuser? Along the same line, could Niagara Mohawk inform us of the winter operating conditions for the Nine Mile Point unit 2 plant? We note that RG&E's Ginna nuclear plant recirculates part of the discharge water when the lake temperatures drop to 37°F or below, and this causes a rise in the discharge temperature difference ΔT from 16°F to 23.4°F . According to the response on p.B-20 (ref.1), the Nine Mile Point unit 1 plant discharges effluent at 73°F when the lake ambient temperature is 32°F , indicating a ΔT of 41°F . Will the Nine Mile Point unit 2 plant also modify, in any manner, their winter operating procedures necessitating a change in ΔT ? If so, what will be the effect on the size of the thermal pool?

In summary, the proposed guidelines of the EPA regarding discharge from large steam electric generating stations, the inadequate discussion of discharge below the epilimnetic area, and questions regarding the hydraulic modeling of the Nine Mile Point area by Acres American require the re-opening of new hearings. I would be pleased to discuss the matter further with the AEC staff.



Sincerely yours,



Marvin Resnikoff
174 West Ave.
Buffalo, NY 14201
(716)856-6587

cc: Suzanne Weber
Richard Goldsmith
Bernard M. Bordenick
Gerald Murphy

References:

1. Final Environmental Statement, Nine Mile Point unit 1, January, 1974, docket 50-220, related to operation.
2. Final Environmental Statement, Nine Mile Point unit 2, related to construction, June, 1973, docket 50-410.
3. Storr, J.F., "Temperature Variation with Depth at Nine Mile Point (Summer, 1963 and 1964). A report submitted to Niagara Mohawk Power Corporation, June 1968.
4. Sweers, H.E., "Structure, Dynamics and Chemistry of Lake Ontario", Manuscript Report Series No. 10, Dept of Energy Mines and Resources, 1969.
5. LOTEL, Part 80, Application by RG&E to the New York State Board on Electric Generation siting and the Environment, vol. 2, August, 1973, revised January, 1974.
6. QLM, vol. 1, "Effects of Circulating Water Systems on Lake Ontario Water Temperature and Aquatic Biology, Feb., 1973.


ELIZABETH HERMAN
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My Commission Expires March 30, 1975

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