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EPA Washington, D.C. Mr. J.R. Quarles, Jr.	7-26-74	8-1-74	X			

TO:	ORIG	CC	OTHER	SENT AEC PDR XXX SENT LOCAL PDR XXX
Mr. Muntzing	1 signed			

CLASS	UNCLASS	PROP INFO	INPUT	NO CYS REC'D	DOCKET NO:
	XXX			2	50-220

DESCRIPTION:
Ltr furn comments on the DES for Nine Mile Point Unit #1.....

ENCLOSURES:

ACKNOWLEDGED

DO NOT REMOVE

PLANT NAME: Nine Mile Point #1

FOR ACTION/INFORMATION 8-3-74 JB

BUTLER (L) W/ CYS	SCHWENCER (L) W/ CYS	ZIEMANN (L) W/ CYS	✓ REGAN (E) W/ CYS
CLARK (L) W/ CYS	STOLZ (L) W/ CYS	DICKER (E) W/ CYS	W/ CYS
~~PARR (L)~~ W/ CYS	VASSALLO (L) W/ CYS	~~KNIGHTON (E)~~ W/ CYS	W/ CYS
KNIEL (L) W/ CYS	PURPLE (L) W/ CYS	YOUNGBLOOD (E) W/ CYS	W/ CYS

ENVIRON

INTERNAL DISTRIBUTION

✓ REG FILE	TECH REVIEW	DENTON	LIC ASST	A/T IND
AEC PDR	HENDRIE	GRIMES	DIGGS (L)	BRAITMAN
OGC	SCHROEDER	GAMMILL	GEARIN (L)	SALTZMAN
✓ MUNTZING/STAFF	MACCARY	KASTNER	GOULBOURNE (L)	B. HURT
CASE	KNIGHT	✓ BALLARD	KREUTZER (E)	
GIAMBUSSO	PAWLICKI	SPANGLER	LEE (L)	PLANS
BOYD	SHAO		MAIGRET (L)	MCDONALD
MOORE (L)(LWR-2)	STELLO	ENVIRO	✓ REED (E)	CHAPMAN
DEYOUNG (L)(LWR-1)	HOUSTON	MULLER	SERVICE (L)	DUBE w/input
SKOVHOLT (L)	NOVAK	DICKER	SHEPPARD (L)	E. COUPE
✓ GOLLER (L)	ROSS	KNIGHTON	SLATER (E)	✓ Lear
P. COLLINS	IPPOLITO	YOUNGBLOOD	SMITH (L)	D. THOMPSON (2)
DENISE	TEDESCO	REGAN	✓ TEETS (L)	KLECKER
✓ REG OPR	LONG	✓ PROJECT MGR	WILLIAMS (E)	EISENHUT
FILE & REGION (3)	LAINAS	ZDittmann	WILSON (L)	
MORRIS	✓ BENAROYA	✓ HARLESS		
STEELE	VOLLMER			

EXTERNAL DISTRIBUTION

✓ 1 - LOCAL PDR Oswego, N.Y.
✓ 1 - TIC (ABERNATHY)
✓ 1 - NSIC (BUCHANAN)
1 - ASLB
1 - P. R. DAVIS
16 - ACRS HOLDING

✓ (1) ~~(2)~~ ~~(10)~~ - NATIONAL LABS BNL
1-ASLBP(E/W Bldg, Rm 529)
✓ 1-W. PENNINGTON, Rm E-201 GT
1-B&M SWINEBROAD, Rm E-201 GT
1-CONSULTANTS
NEWMARK/BLUME/AGBABIAN

1-PDR-SAN/LA/NY
1-BROOKHAVEN NAT LAB
1-G. ULRIKSON, ORNL
1-AGMED (RUTH GUSSMAN)
Rm B-127 GT
1-RD..MUELLER, Rm F-309
GT

BN

Regulatory Docket File

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUL 26 1974

50-220

OFFICE OF THE ADMINISTRATOR

Dear Mr. Muntzing:

In accordance with Section 309 of the Clean Air Act, as amended, we have reviewed the final environmental impact statement on the Nine Mile Point Nuclear Station Unit 1. This statement was issued in conjunction with the application of Niagara Mohawk Power Corporation for the conversion of the current provisional operating license to a full-term license. Our detailed comments are enclosed.

As you may be aware, in our earlier review of the draft statement on this facility, we concluded that, because of a "...lack of information concerning the effects of the plant on the biota of the receiving waters...," EPA had environmental reservations concerning the proposed action and suggested the issuance of a full-term license would be inappropriate. We recognized that since the plant was already operating under a provisional license, there would be no undue hardship in delaying the full-term license until after completion of a monitoring program and analysis of its results.

As acknowledged in the final statement, observations at Unit 1 to date have revealed high fish kills during certain seasons of the year due to impingement. The AEC staff contends, however, that there should be "...little or no noticeable effect on the fish population of the lake [Ontario] as a whole." Further, the AEC staff predicts that entrained small fish, eggs, and fish larvae will not "...survive passage through the plant cooling system and will add an incremental loss to the fish population." As with impingement losses, however, the staff concluded that the overall effect on fish populations from this source will be small. Comparable conclusions are reached concerning the effects of the plant's thermal plume. As a consequence, the AEC staff recommends that the full-term license be granted subject, among other things, to the establishment of a "...revised and comprehensive environmental monitoring program...."

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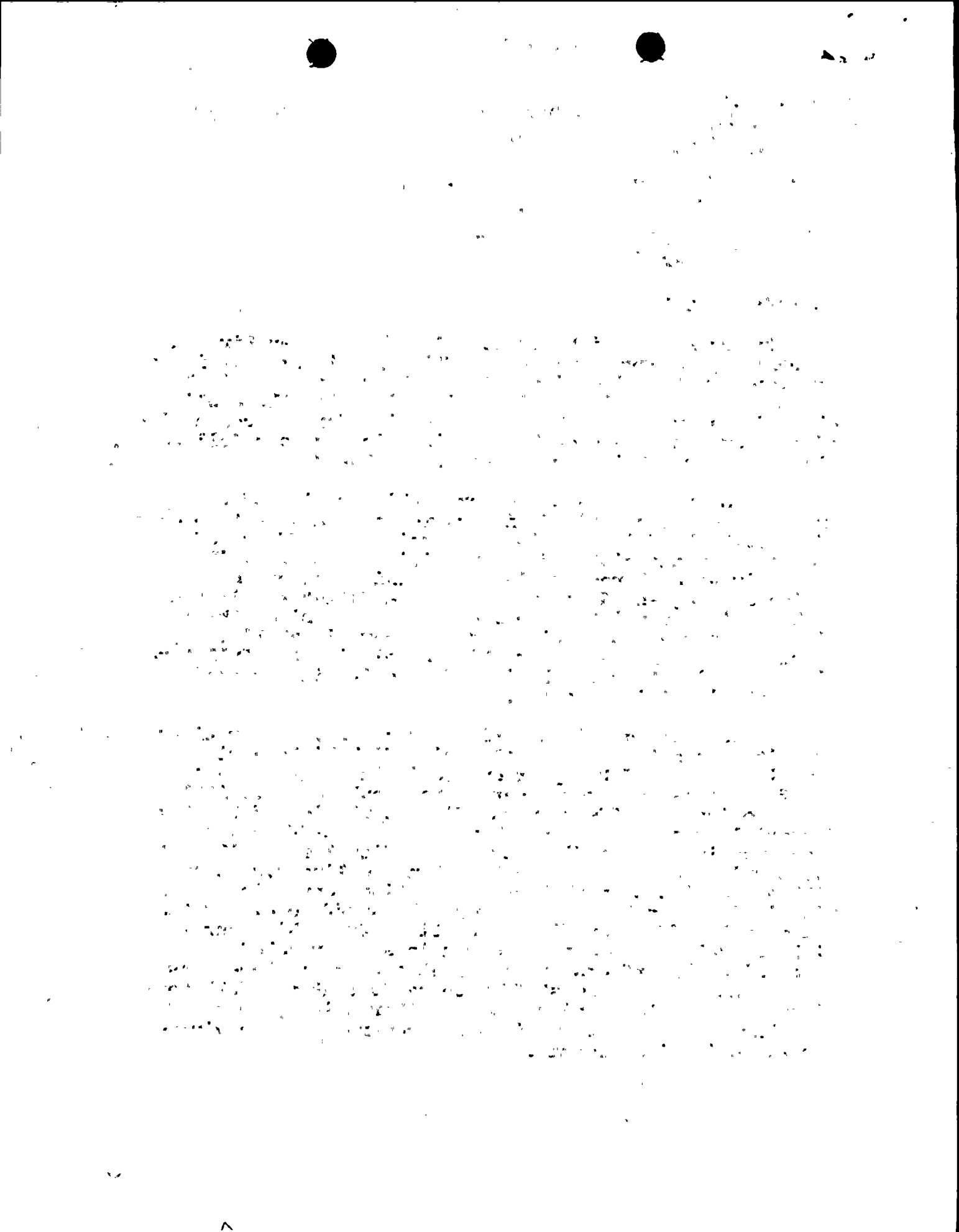
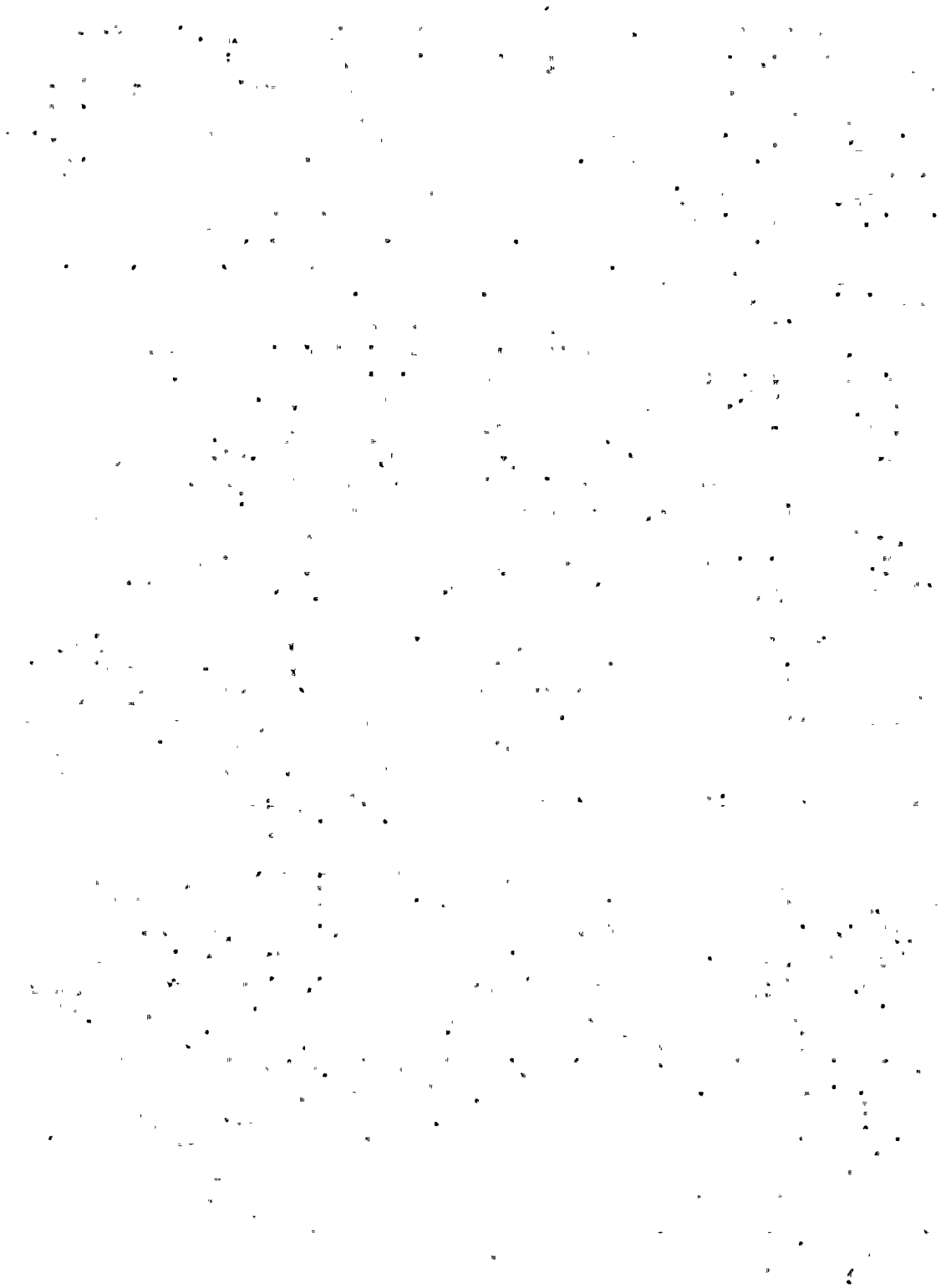


EPA is in favor of the continuation of monitoring and ecological surveys at Nine Mile Point Unit 1. On the other hand, we believe that the data and observations to date under the provisional license constitute sufficient evidence of direct biological damage and possible potential damage to fish populations to cause serious concern with the present cooling system. For example, the large impingement kills experienced to date indicate the plant may not be in compliance with Section 316(b) of the Federal Water Pollution Control Act of 1972 (FWPCA) which specifies that the "...location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact...." In addition, the present once-through cooling system may not be in compliance with Section 301 of the FWPCA which requires that steam electric power plants employ the "Best Practicable Control Technology Currently Available" by July 1, 1977, and the "Best Available Technology Economically Achievable" by July 1, 1983. These terms, defined by EPA's proposed effluent limitations for this category of point source (issued March 4, 1974), call for closed-cycle cooling.

All of the above factors will be carefully considered by EPA prior to issuing a final permit under the National Pollutant Discharge Elimination System (Section 402 of the FWPCA) for this facility. Based on presently available evidence and the above provisions of the FWPCA, it is our opinion that closed-cycle cooling is called for at Nine Mile Point Unit 1 and the draft permit issued by EPA on May 31, 1974, reflects this determination.

It should be noted that Section 316(a) can offer recourse to the applicant regarding the thermal effluent restrictions of Section 301. Such relief, however, can only be granted by the Administrator of EPA if it can be demonstrated that the imposed restrictions are "...more stringent than necessary to assure the pro[t]ection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on the body of water into which the discharge is made...." If the applicant can indeed make such a case for Nine Mile Point Unit 1, EPA could allow use of a once-through cooling system. We believe, however, that the present information does not support the AEC staff's contention that little or no impact on Lake Ontario biota populations as a whole has or will occur and, thus, would not support a Section 316(a) variance.



It is our opinion that the observed fish kills due to impingement and the possible fish population impacts due to entrainment and thermal effects discussed in the enclosed detailed comments are, in themselves, of significance with respect to the overall biotic populations of Lake Ontario. We regard these impacts, in lieu of reliable evidence to the contrary, as indicating that the Nine Mile Point Unit 1 is having an unacceptable impact on the environment. As the final environmental impact statement supports issuing a full-term license for this facility, EPA has environmental reservations concerning this action. Therefore, we recommend that, in order to assure environmental protection, the AEC incorporate as part of its full-term license a condition which specifically requires the applicant to comply with all provisions of EPA's upcoming NPDES permit.

EPA and representatives of your Environmental Projects staff met in New York on June 25, 1974, to discuss problems associated with this plant. Such cooperative working relationships will, I am confident, enable us to resolve the outstanding environmental issues. Should you or your staff wish to discuss these comments further, please let us know.

Sincerely yours,

John R. Quarles, Jr.
Deputy Administrator

Mr. L. Manning Muntzing
Director of Regulation
U.S. Atomic Energy Commission
Washington, D.C. 20545

Enclosure

DETAILED COMMENTS ON THE NINE MILE POINT NUCLEAR STATION UNIT 1 FINAL ENVIRONMENTAL IMPACT STATEMENT

Introduction

In accordance with Section 309 of the Clean Air Act, as amended, the Environmental Protection Agency has reviewed the final environmental impact statement on Nine Mile Point Nuclear Station Unit 1. This statement was issued by the U.S. Atomic Energy Commission on January 29, 1974, in conjunction with the application of Niagara Mohawk Power Corporation for conversion of the present provisional operating license to a full-term license. This plant is located on Lake Ontario in the State of New York.

Cooling System Design and Requirements of the Federal Water Pollution Control Act Amendments of 1972

The present once-through cooling system may not comply with the requirements of Section 301 of the Federal Water Pollution Control Act Amendments of 1972 which calls for the employment of "Best Practicable Control Technology Currently Available" by July 1, 1977, and "Best Available Technology Economically Achievable" by July 1, 1983. A definition of these terms was contained in EPA's proposed effluent guidelines for steam electric power plants as published in the Federal Register on March 4, 1974. These proposed guidelines call for "...evaporative external cooling to achieve essentially no discharge of heat, except for cold-side blowdown in a closed, recirculating cooling system."

Further, particularly in light of the large fish kills discussed below, the present system does not appear to satisfy Section 316(b) of the FWPCA which requires the applicant to assure that the "...location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact...." This requirement would apply to the Nine Mile Point Unit 1 plant regardless of the type of cooling system utilized.

Both the Section 301 and Section 316(b) requirements will be carefully considered by EPA prior to issuing a final permit under the National Pollutant Discharge Elimination System (Section 402 of the FWPCA) for this facility. Based on presently available evidence and the above provisions of the FWPCA, it is our opinion that closed-cycle cooling is called for at Nine Mile Point Unit 1 and the draft permit issued by EPA on May 31, 1974, reflects this determination.

It should be noted that Section 316(a) of the FWPCA does offer the applicant an opportunity to appeal the thermal effluent limitations imposed under Section 301. It allows the Administrator of EPA to set more appropriate effluent limitations if the applicant can demonstrate that those imposed are "...more stringent than necessary to assure the pro[t]ection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on the body of water into which the discharge is made...." If the applicant can indeed make such a case for the Nine Mile Point Unit 1 plant, the Administrator could allow use of a once-through system. It is our opinion, however, that the data and information to date argue for conversion to closed-cycle cooling or, at best, do not appear to provide a sufficient basis for a Section 316(a) variance. Of course, we do not wish to rule out any arguments based on later or more comprehensive studies or to prejudge any Section 316(a) case the applicant may wish to make. Therefore, a final determination must await a full consideration of all relevant factors in the NPDES and Section 316(a) processes.

Our concerns with the impacts of the Nine Mile Point Unit 1 once-through cooling system on Lake Ontario biota are discussed in detail in the following sections. We believe these concerns support our contention that the plant is having an unacceptable impact.

Impingement Effects

The final statement states the following:

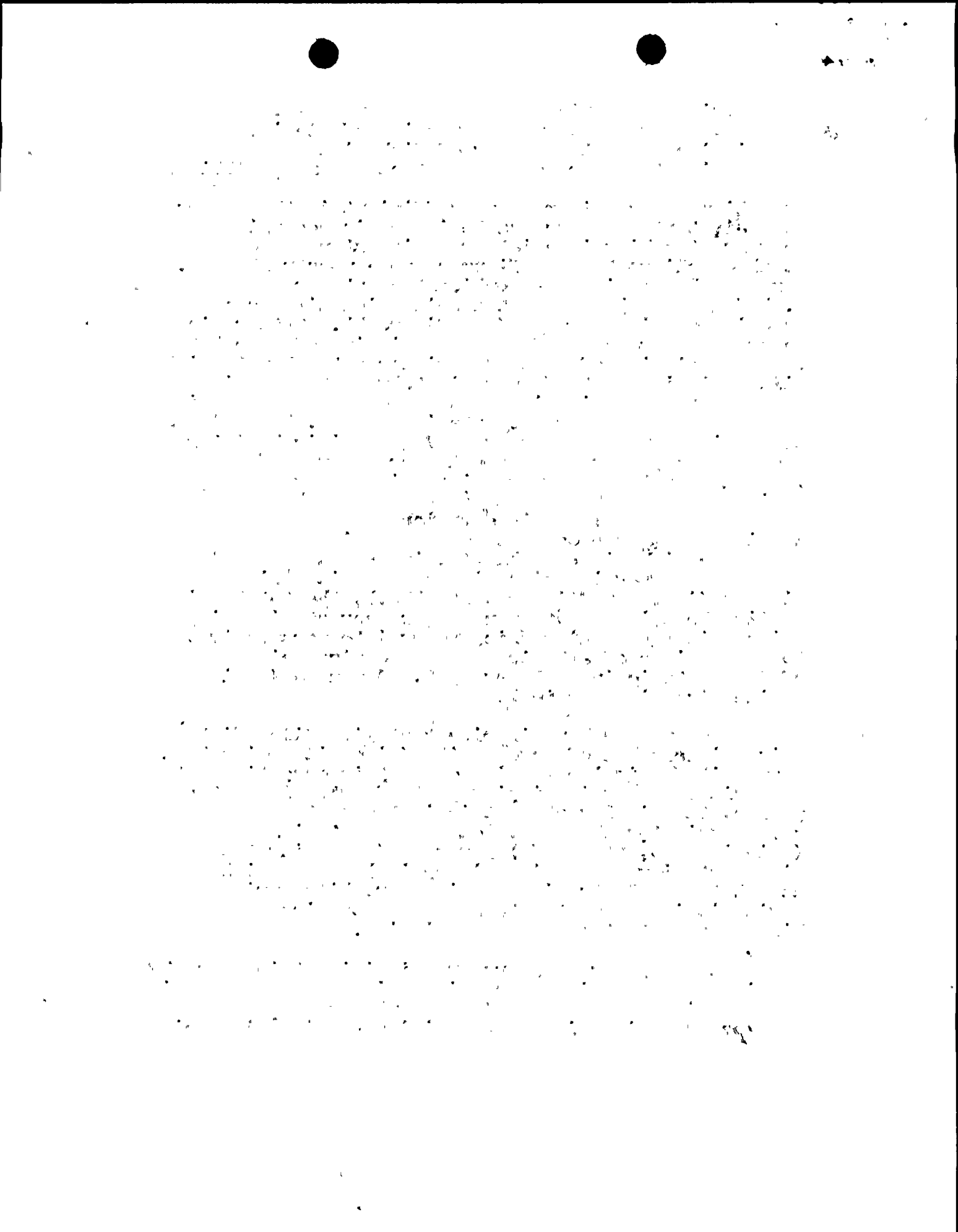
> ...[F]ish kill data for the NMP-1 intake are dominated by large numbers of alewives collected during the spring. Disregarding such surges of alewife mortality at the intake, the NMP-1 intake may have collected at least 1,000,000 fish (weighing about 50,000 lbs)

during the period June 1972 - June 1973. If, however, the peak mortality of alewives is included, the number of fish killed during the year could be between 2 and 4 million.

We believe these figures are sufficient in themselves to claim that an unacceptable impact is occurring and to warrant taking immediate remedial steps. However, we also believe the AEC figures are demonstrably low. For example, taking the applicant's data from Table 5.11 (page 5-23), we plotted daily fish kill as a function of time of year (See Figure 1). Integrating under the curve shown from the beginning of June 1972 to the beginning of June 1973 yields a total potential kill by impingement of approximately 6,000,000 fish for that year. This figure may also be an underestimate. For example, there are no data in Table 5.11 at all for the entire month of February 1973--a critical winter month. Also, there are no data for 7 days before and 7 days after the huge mortality which occurred on April 11, 1973. Both of these factors would serve to lower the result of integration under the curve, leading one to suspect that even our figure of 6,000,000 fish might be low. Using the AEC staff's method of converting fish kill numbers into fish biomass (i.e., 10^6 fish = $5X10^4$ lbs.), the total weight of fish lost is 300,000 pounds per year at Nine Mile Point Unit 1. Putting this number into perspective, total landings of all fish on the American side of Lake Ontario in 1971 were 302,600 pounds (National Marine Fisheries Service).

It should be kept in mind that Nine Mile Point Unit 1 is but one of three units (Nine Mile Point 1 and 2 and Fitzpatrick) operating on what is essentially the same site. Regarding impingement effects of all three plants, the final statement indicates that the AEC staff estimates that "...about 2,500,000 fish (weighing 125,000 pounds) per year (excluding the high mortality of alewives in spring) may be killed at all three plants; if the high mortality during spring is included, the total number of fish killed may be between 5 and 7 million."

Although these numbers are significant in themselves, as with our reasoning concerning Unit 1 above, we believe these estimates are low. For example, the AEC staff assumes that since intake velocities at Nine Mile Point



Unit 2 and Fitzpatrick will be less than at Nine Mile Point Unit 1, impingement loss rates will also be lower. This is not necessarily a sound assumption, since studies at the Indian Point units have shown significant kills at much lower velocities (e.g., 0.2 fps to 0.9 fps). While lower intake velocities may tend to reduce losses, total water use may also be an important factor relating fish kills by impingement. As the water use at Nine Mile Point Unit 1 is only one-fifth the total use at all three units, total losses for all three units may be estimated to be five times the losses at Nine Mile Point Unit 1 or 1,500,000 lbs. This figure, although it is a rough estimate, is fully five times the total landings of all fish on the American side of Lake Ontario for 1971.

In light of the above factors, we cannot agree with the AEC staff that operations at the Nine Mile Point Unit 1 are not "injurious to fish life" and impingement losses will be considered by EPA in evaluating the plant under Section 316(b) of the FWPCA.

Entrainment Effects

Fish entrained in the cooling system at Nine Mile Point Unit 1 will be exposed to a temperature rise of up to 32°F for over 2 minutes. At summer ambient temperatures this means a discharge temperature of up to 110°F. It is proposed, however, that the discharge of Units 1 and 2 be combined in a diffuser configuration. In that case the temperature rise will still be 32°F, but entrainment time will increase to 9 minutes. Under such conditions, there is no need to do thermal tolerance calculations as EPA did for the R.E. Ginna Nuclear Power Plant Unit 1 (EPA letter dated February 27, 1974), where the temperature increase was only 18.4°F. At the high temperatures exhibited, it is safe to assume that virtually none of the fish species entrained at the Nine Mile Point Unit 1 during the summer months will survive and the final statement acknowledges this assumption. This is true not only for young fish but also for their larvae and most probably for their eggs. Also, in the summer months, zero survival of most species can be expected at Nine Mile Point Unit 2 and the nearby James Fitzpatrick plant.

The harm done to any particular body of water as a result of entrainment at a generating station will depend, in part, on whether the station is located in a spawning and nursery area. Quoting the final statement,

> Observations incidental to the Applicant's survey indicate that the alewife spawns near the site....However, because of limited sampling, the possibility of spawning by other species cannot be discounted. (Page 2-19)

It should be pointed out that many of the fish species listed in Table 2.4 show preference for spawning areas similar to the Nine Mile Point site; two good examples would be the white and yellow perch.

With respect to entrainment also, then, we cannot agree with the AEC and the applicant that operations at the station are not "injurious to fish life." Such fish losses are, in our opinion, in violation of New York State's Environmental Conservation Law (Chapter 664, Title 13, Section 11-1301). It states that: "Fish unintentionally taken contrary to any provision of Fish and Wildlife Law or order of the department shall be returned to the water at once without unnecessary injury." In addition, direct fish losses and potential population impacts attributable to entrainment will be considered by EPA under Section 316(b) of the FWPCA.

Thermal Effects

In our opinion, several aspects of the thermal discharge from Nine Mile Point Unit 1 were not adequately evaluated in the final statement. Although these effects are difficult to quantify, they are additive to the more quantifiable effects discussed previously. Thus, they are important, are pertinent to an overall environmental assessment of this plant, and will be considered by EPA in the NPDES/316(a) process. Such effects are as follows:

1. Thermal effects are important in some instances to reproductive success. Studies done recently suggest that many coldwater species require low prespawning temperatures to achieve normal maturation and optimum reproductive success. A good example would be the yellow perch, common in the Nine Mile Point area. Studies have shown that

the level of reproductive success among perch held at 39°F for 6 months was twice as great as for fish held at 43°F for 6 months and about 4 times as great as for fish held at 46°F for 6 months. Implications for Nine Mile would obviously be that losses in reproductive success in fishes wintering in the thermal plume would be additive to impingement and entrainment.

2. Both disease and parasitism are enhanced in fishes held at a higher temperature. Losses due to these causes are additive to the above factors.

3. Losses due to thermal shock of fishes wintering in the plume are also additive.

4. Effects of elevated temperatures on incubating eggs may also affect populations due to premature hatching.

5. Thermal-induced behavioral changes can lead to increased predation rates on many species of fish. Many studies suggest that many species are much more susceptible to predation inside a plume than outside it. This loss would also be additive to impingement and entrainment.

The thermal plume as it now exists has, at times, covered two miles or more of shoreline with the 5°F isotherm. This is in considerable violation of current New York State criteria recommending that the 3°F isotherm be confined within a 300 foot radius from the discharge. In the future, the discharges from Units 1 and 2 will be combined in a multi-port diffuser configuration. In our opinion, it is very likely that this plume will interact with the plume from the Fitzpatrick station to the east, leading once again to violation of New York guidelines. The rationale behind this opinion is discussed in depth in EPA's comments on Nine Mile Point Unit 2 draft and final environmental impact statements.

Revised New York State water quality standards for fresh surface waters will require that no deleterious substance be discharged which will be injurious to fish life. The extent of the Nine Mile Point Unit 1 plume and its combination with others nearby will have an injurious effect, presently undetermined, on fish life and, thus, may be in violation of this standard.