

William J. Cahill, Jr.
Vice President

Regulatory

File Cy.

Consolidated Edison Company of New York, Inc.
4 Irving Place, New York, N Y 10003
Telephone (212) 460-3819



March 15, 1974

Mr. George W. Knighton, Chief
Environmental Projects Branch No. 1
Directorate of Licensing
U.S. Atomic Energy Commission
Washington, D.C. 20545

Docket No. 50-286

Dear Mr. Knighton:

Enclosed are Responses to the following numbered Requests for Additional Environmental Information forwarded with your letter dated January 15, 1974: A. - 1, 2, 3, 5, 7, 8, 10, 11, 13, 14, 15, 16, 18, 19, 21, 23, 25, and B. - 1.

As stated in the letter of Mr. Carl L. Newman to you dated February 28, 1974, we will endeavor to supply the balance of the information requested by April 1, 1974.

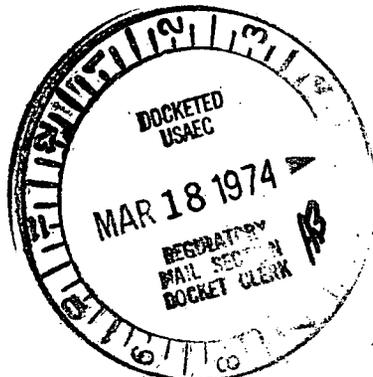
This submittal consists of 3 signed and 17 copies of this letter and 20 copies of the Responses. When we have the complete Response to the Request contained in your letter of January 15, 1974, we will file 200 copies as Supplement No. 11 to the Environmental Report, as requested in your letter.

Sincerely yours,

A handwritten signature in cursive script that reads "William J. Cahill, Jr.".

William J. Cahill, Jr.
Vice President

Enc.



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cc: (w/enc.)
Secretary, USAEC - (2)
Samuel W. Jensch, Esq.
Mr. R. B. Briggs
Dr. Franklin C. Daiber
Myron Karman, Esq.
J. Bruce MacDonald, Esq.
Hon. Louis J. Lefkowitz
Hon. George Segnit
Chairman, ASLB Panel

A. Biological Impacts

Question 1.

Provide a justification for suggesting a loss factor of 5% for the impingement of fish caught at the Unit 3 intake structure, used in Appendix FF of the Environmental Report, p. IV-18. Include in your justification the data and logic used for this loss factor.

Response:

In the Indian Point 2 ASLB proceeding, Applicant and Inter-venors stipulated that a 25% loss factor for recent counts of impinged fish would be reasonable (Stipulation dated October 30, 1972). Con Edison estimates that the loss factor for Indian Point 3 intake fish counts would be 5% because most of the mechanisms causing losses at Units 1 and 2 have been eliminated in the design of the Unit 3 intake structure and the collecting method employed. These changes are:

1. Fixed screens are not employed at Unit 3. Many of the losses at Units 1 and 2 occur when fixed screens are sprayed and impinged fish are knocked out into the river. At Unit 3 the traveling screens are at the front of the intake structure and fish are removed by simply rotating the screens and lips on the screen lift the fish out of the water to the deck level where they fall into a collecting sluice.
2. The majority of fish losses at Units 1 and 2 occur in the sluice when the collecting screens clog with debris. At Unit 3 the collecting screen is replaced by a screened collection box which can handle a much larger debris load which eliminates this mechanism of fish loss.

Fish impinged at Unit 3 could still be lost due to screen carry-over and in handling after collection. A 5% loss factor has been estimated as reasonable. No tests have yet been conducted because of the very limited operation of the Unit 3 intakes.

Question 2.

Provide all information available from the Indian Point site subsequent to that information reported in Appendix BB of the Environmental Report, relating to survival of impinged fish. Include the applicant's efforts and success in determining the survival of the impinged fish returned to the river.

Response:

Limited survival tests were carried out in 1972-1973. Short term survival tests were carried out on fish collected on Units 2 and 3 traveling screens. Results of these will be reported in the Indian Point second annual report which is scheduled for June, 1974.

Question 3.

Provide data and a regression analysis to evaluate the relationship between the number of white perch impinged (and probability of a white perch being impinged) and water temperature. Compare the number of perch impinged in relation to the population of perch in the river.

Response:

Data and regression analysis relating white perch impingement to plant and environmental variables will be discussed extensively in the impingement section of the Indian Point second annual report which is scheduled for June, 1974. Some preliminary discussion of fish populations and the impact of impingement on them is given in the 1973 Indian Point Semi-Annual report, copies of which have been furnished to the AEC and other parties.

Question 5.

- a) Provide a summary report on the chlorination program carried out at the Unit Nos. 1 and 2 condensers during the summer - fall 1973. Include information relating to total residual chlorine analysis in terms of dates, times and places of sampling, the sampling analyses and results.
- b) Any information subsequent to that reported in Appendix Z to the Environmental Report regarding the sensitivity to residual chlorine of fish eggs, larvae and young juveniles in the vicinity of Indian Point should be provided.

Response:

- a) No chlorination study program was carried out during the summer-fall of 1973 because Unit No. 1 was out of service and there was only limited operation of Unit No. 2
- b) No information has been obtained subsequent to that reported in Appendix Z to the Environmental Report on the sensitivity to residual chlorine of fish eggs, larvae, and young juveniles in the vicinity of Indian Point.

A study is currently under way to determine the effect of cooling tower blowdown (one constituent of which is chlorine) on juvenile fish in the vicinity of Indian Point. Results of this study will be presented in two reports on the Effect of Cooling Tower Blowdown at Indian Point - the first scheduled for May, 1974 and the second scheduled for November 1974.

Question 7.

Provide copies of all reports (monthly, semiannual, and annual) prepared by Texas Instruments, Inc. for Consolidated Edison subsequent to that already provided on: (a) Hudson River Ecological Study; (b) Cornwall Environmental Study; (c) Indian Point Impingement Study; (d) Ossining Environmental Study; (e) Evaluation of High Frequency Sonar For Fish Stock Evaluation in the Hudson River Estuary (issued in May 1973) (f) Intake-Discharge Structure Report. In reference to the October 1973 report on the 1973 Hudson River Program, p. I-3, provide further data for 1973 that will be available which will include: (a) ichthyoplankton data from April through July on all species; (b) beach seine collection data from March through December; (c) transect ichthyoplankton data for 1973 egg and larvae season; and (d) mark-recapture population estimates for adult white perch and young striped bass and white perch.

Response:

The requested reports will be supplied to the AEC as they are published. Please note that there are no monthly reports for Con Edison's studies.

In reference to the request for supplementary data from the 1973 Studies:

- a) Ichthyoplankton data for species other than striped bass will be summarized in the soon to be published report "Fisheries Survey of the Hudson River, March-July 1973, Volume III. Copies of this report will be sent to the AEC upon publication. The complete data for other species will be issued as supplements to the reports "1973 Hudson River Program, Fisheries Data Summary, May-July" (hereafter called Volume I) and "1973 Hudson River Program Fisheries Data Summary, July-November," (hereafter called Volume II). These supplements are scheduled to be published in June, 1974.

- b) Beach seine collection data for March through November is available in Volume I and II. December data although limited will be available as a supplement to Volume II and will be summarized in the report "Fisheries Survey of the Hudson River, July-December, 1973 - (Volume IV). This report is scheduled for publication in June, 1974.
- c) Transect ichthyoplankton data at Cornwall is available in Volume I. The transect data at Indian Point will shortly be available from N.Y.U. Transect data from Bowline, Lovett, Danskammer, Roseton and four upriver transects will soon be available from Orange and Rockland, Central Hudson and P.A.S.N.Y. Copies of these data will be provided to the AEC upon their receipt by Con Edison.
- d) Detailed Mark-Recapture population estimates are available in the recently released Indian Point Second Semi-Annual Report, six copies of which have been sent to the AEC. Further estimates and a detailed discussion will appear in the Indian Point Second Annual Report which is scheduled to be published in June, 1974.

Question 8.

Provide copies of the New York University 1971, 1972 and 1973 Annual Reports and other reports containing information on the entrainment studies and other ecological studies being conducted by the applicant's consultants at NYU.

Response:

The 1971-72 annual report has been published and six copies provided to the AEC. The 1973 NYU Annual Report is scheduled to be published in about June, 1974, at which time copies will be provided to the AEC.

Question 10.

Provide analysis of the relationship between the water temperatures in the Indian Point vicinity and salt-intrusion length (or lower Hudson River freshwater flow). Report the time of year for the conditions above to apply.

Response:

Data and discussions of water temperature in the Indian Point vicinity and salt intrusion length in 1972 are available in the Indian Point First Annual Report (April, 1973). Similar data and discussions for 1973 will be available in the Indian Point Second Annual Report (scheduled for June, 1974).

Question 11.

Provide 1972-1973 information relating to: (a) standing crop estimates of eggs, larvae and juvenile striped bass, white perch, and shad; and (b) size and age composition of spawning stock of striped bass, white perch and shad. Provide gear efficiency correction for the collection of data for the standing crop estimates.

Response:

- a. Standing crop estimates for 1973 of eggs, larvae and juvenile striped bass, white perch, and shad will be available in Volume IV of the 1973 Hudson River Fisheries Data Summary Report (scheduled for June, 1974). Preliminary estimates of juvenile white perch and striped bass populations in 1972 can be found in the Indian Point First Annual Report and Second Semi-Annual Report. No estimate has been made of 1972 shad populations.
- b. The size and age composition of spawning stock of striped bass, white perch, and shad in 1973 will be discussed in the Indian Point Second Annual Report (scheduled for June, 1974) and Volume IV of the Hudson River Fisheries Data Summary Report (scheduled for June, 1974). Gear efficiency will also be discussed; however, correction factors for the standing crop estimates will not be estimated directly.

Similar Data for 1972 is limited. All such data which is presently available for 1972 can be found in the Indian Point First Annual Report (April 1973). Longitudinal data for 1972 is presently lacking although some such data will be available from other studies on the River.

Question 13.

Supply the water quality data obtained for Transect 2 (June 28-29, 1973), pp. IIC-5 through IIC-7. Justify the reasons why no water quality data, particularly temperature, were collected for Transect 1 (May 21-22, 1973), pp. IIC-2 through IIC-4. Explain the reasons why water quality data were not collected right at the beginning of the ichthyoplankton survey study. Present a description of plans to carry out further data reduction and data analysis of the transect data.

Response:

Water quality data is available for Transect 2. This data is presented on page IIC-7 of the October, 1973 Fisheries Data Summary Report. Due to late delivery by our supplier, water quality equipment was not available for use either in the early riverwide ichthyoplankton collections or when Transect 1 was sampled in May. However, water temperature was measured for transect 1 and was 13°C. Also, salinity in the Cornwall area was known to be zero when this transect was sampled.

Transect data will be analysed in detail to determine variation in the distribution of ichthyoplankton with tides, night and day, east and west side of river and depth using analysis of variance techniques. Species and life stages will be considered. Comparisons of the species composition and size frequency by these factors will also be examined. Length-frequency data and data on other species besides striped bass will be available.

Question 14.

With respect to Figure 2, p. IA-7, what criteria were used in setting up the Tucker trawl stations? In particular, explain why so many surface trawls relative to subsurface trawls were taken.

Response:

This figure describes the five lateral transects at Cornwall. Each transect has a bottom sample and a number of mid-water and surface samples depending upon the depth. This is a standard scientific procedure used to determine egg and larval distribution with depth, and does not reflect any excessive surface and mid-depth sampling, as opposed to bottom sampling.

Question 15.

Explain the extent of so large a variability (eg., 1 vs. 1500 M³) in the volume values reported on pp. II A-3 to II A-27. Provide information as to efforts taken to standardize towing speed and time during collection of the samples.

Response:

Towing speeds were standardized at 1 m/sec with sled and 1.5 m/sec with Tucker Trawl. Towing times for both gear were standardized at 2 minutes in high concentrations of eggs and larvae and 5 minutes in other cases. Variability in the measurement of volume sampled arises from two sources:

- 1) The first of the three nets on the epibenthic sled at times remained open too long because the release bar was not properly dropping. This yields greater than average volumes of water sampled for the first net and less than average volumes of water sampled for the subsequent nets.
- 2) Difficulties were sometimes encountered with the flowmeters in the nets which resulted in either no measurement or a questionable measurement. In these cases a value of 1 was recorded for the volume sampled.

Question 16.

On page II A-3, yolk sac larvae (3.1 to 6.2 mm) were found starting the week of April 30. However, striped bass were not found in the beach seines until the last week of June (p. II A-8) (mean length 16 mm and 23 mm). Was this seven to eight week period in between the April and June weeks longer than expected?

Response:

This question suggests a misapplication of the data. In analyzing the data one should be careful not to interpret this to mean the typical growth rate from yolk sac (3-6 mm) to early juvenile stages (16-23 mm) is seven to eight weeks. Reasons for this are: (1) early juveniles (16 to 23 mm) were captured as early as mid-May and more commonly by mid-June in ichthyoplankton gear, (2) yolk-sac larvae were not common until mid-May and thus the probability of capturing juveniles in late June who were yolk-sac larvae before mid-May is remote, and (3) earlier spawned striped bass larvae have a lower growth rate and probably higher mortality than later spawned individuals due to the lower river water temperature during the early part of the larvae season.

Question 18.

Provide any distinction made between beach areas, shoal areas, and deep water areas in collection of the data reported. Present adequate data to estimate relative abundance of the various stages of striped bass larvae in these three areas.

Response:

Shore (beach) areas are defined as the immediate shoreline beach zone sampled by beach seines.

Shoal areas are defined as the extension of shore zone to channel, not including flats which have a mean low tide depth of less than one foot. An arbitrary maximum cutoff point of 20 ft has generally been used. By this definition, very little shoal area exists above river mile 70.

Deepwater areas are defined as the main channel of the river either natural or dredged. An arbitrary standard of water greater than 20 ft has generally been used.

Data which can be used to estimate relative abundance in these areas are provided in the reports:

"1973 Hudson River Program - Fisheries Data Summary"

Volume I - May-July, 1973 (October, 1973)

Volume II - July-Nov., 1973 (December, 1973)

Volume III - March-July, 1973 (March, 1974*)

Volume IV - July-Nov., 1973 (June, 1974*)

*Scheduled Data

Question 19.

State criteria used in selecting the primary and alternative transects for conducting the ichthyoplankton survey. State the reasons for carrying out a second transect four weeks after the first transect and for not using the same transect both times.

Response:

These transects are the licensed sites for the Cornwall plant intakes. The second transect is located at the alternate licensed site and was added later in the program.

Question 21.

In "general indication" No. 2, p. 1-2, it is stated that the striped bass eggs and larvae concentrate near the river bottom:

- a. In what sense is this finding that the eggs and larvae concentrate near the river bottom to be a new finding?
- b. Describe plans for further data reduction and data analysis of the ichthyoplankton data.

Response:

- a) Although the fact that striped bass eggs and larvae seem to concentrate at the bottom has already been demonstrated by past studies, these studies did not provide data for the strata 1-4 feet above the bottom as does the epibenthic sled used in the present study. It is the epibenthic sled findings which show much higher concentrations of eggs and larvae in this lower strata than had been previously assumed which are "new".
- b) Further data reduction and analysis will include the following which will be available in Volumes II, III, and IV of the Fisheries Survey of the Hudson River 1973.

Data Reduction:

1. Length-frequency data for ichthyoplankton samples by species.
2. Further ichthyoplankton data summaries will be available for other species besides the striped bass.

Data Analysis:

1. Absolute abundance of eggs and larvae will be estimated based on catch-per-unit volume and river volume.
 2. Relative abundance of juveniles based on catch-per-effort weighted as to area of habitat available within river segments will be estimated.
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Question 23.

Describe how the straight lines drawn connecting successive data points in the figures presented in Section II-B should be interpreted.

Response:

The straight lines were drawn for visual convenience. We believe they help depict the longitudinal distribution of eggs and larvae. Segment average points incorporating more data points are used in later volumes. The validity of either technique depends on the use made of the data and the actual distribution pattern in the river. More explanation of the sampled distributions will be made in future reports.

Question 25.

Describe any problems in distinguishing between striped bass larvae and white perch larvae. Present the criteria used in the distinction of the two types of post sac larvae at each of the following standard lengths of 7, 9, 11, 13, 15, 17 + millimeters.

Response:

Striped bass and white perch from 8-14 mm are difficult to distinguish. In order to distinguish between them we drew upon 1) all of the available literature, 2) reference collections of each species, and 3) the personal experience of our investigators, which we believe to be second to none. A detailed description of techniques and problems in identification prepared jointly by all groups involved on the Hudson, is scheduled for publication in April, 1974.

B. Non-Biological Impacts

1. Provide information as to your plans for decommissioning Indian Point Unit No. 1. Identify which structures and facilities will be removed and those retained. Describe any action that will be taken to clear the site area where Unit No. 1 facilities are located. Identify any licensable quantities of radioactive materials that would be stored on site, the term of such storage, and arrangements for custodial care. Estimate the cost of decommissioning on the basis of the present economy. If decisions on these measures have not yet been made, provide information for each alternative that you believe to be practicable.

Response:

Following the completion of operation, Applicant will permanently shut down the facility. The precise nature of the shutdown process is difficult to determine at present, in view of the likelihood of regulatory and technological changes in the coming years. However, the process will probably involve removal of all spent fuel from the facility and shipment offsite; decontamination of the facility through appropriate chemical cleaning and flushing; treatment and disposal of any contaminated water; disposal of resins, filters and miscellaneous radioactive materials; sealing of the containment and adjustments to alarm systems in anticipation of post-shutdown security monitoring; and completion of a final post-shutdown radiation check. During these procedures, security forces at the facility will be maintained at a level to assure proper control of the area. Applicant does not expect that any licensable quantities of radioactive materials would be stored on-site. There are at present no plans to remove any Indian Point Unit No. 1 structures or facilities. Since the Indian Point site is committed to nuclear power generation by the presence of Units 2 and 3, in addition to Unit No. 1, there would be little purpose to clearing the site in connection with decommissioning Unit No. 1. In addition, certain features of the Unit No. 1 facility, as for example, the Health Physics Monitoring Area, are shared with Unit No. 2. In accordance with the provisions of 10CFR50.82, at such time as Applicant would file for the termination of the facility license in connection with decommissioning Unit No. 1, the Commission will be provided with all necessary information to

provide reasonable assurance that decommissioning will be performed so as not to be inimical to the common defense and security or to the health and safety of the public.

Applicant estimates that decommissioning of the facility will require nine months to complete, and will cost approximately \$3,000,000 in 1974 dollars, based on 1974 technology.

Following the shutdown process outlined above, Applicant will conduct a security and radiological monitoring program. This will involve a round-the-clock guard to insure against intruders. An alarm system, telephone communications, locked doors and windows, a lighting system, and a perimeter fence will be maintained for this purpose. In addition, regular monitoring of radioactivity in the vicinity of the facility will be performed.

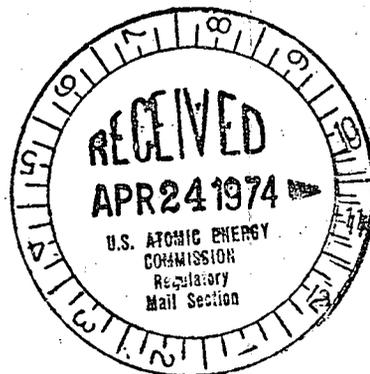
Applicant estimates the annual cost of such a program, in 1974 dollars and using 1974 technology, to be approximately \$300,000.

William J. Cahill, Jr.
Vice President

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4 Irving Place, New York, N Y 10003
Telephone (212) 460-3819

March 1, 1974

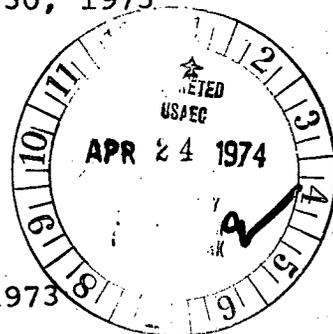
Dr. Mary Jane Oestmann
Project Manager for
Environmental Reports
Directorate of Safety & Licensing
Atomic Energy Commission
Washington, D. C. 20545



Dear Dr. Oestmann:

Attached for your information and files, please find the following reports prepared for Con Edison by Texas Instruments, Inc.

- 1) Hudson River Ecological Study in the Area of Indian Point - Second Semi-Annual Report, January 1-June 30, 1973
- 2) 1973 Hudson River Program, Fisheries Data Summary, May-July (Volume 1)
- 3) 1973 Hudson River Program, Fisheries Data Summary, July-November (volume 2)
- 4) Fisheries Survey of the Hudson River, March-July 1973 (volume 3)



The final volume (volume 4) entitled "Fisheries Survey of the Hudson River, March-December 1973," will be forwarded to you upon its completion.

Very truly yours,

A handwritten signature in cursive script that reads "William J. Cahill, Jr.".

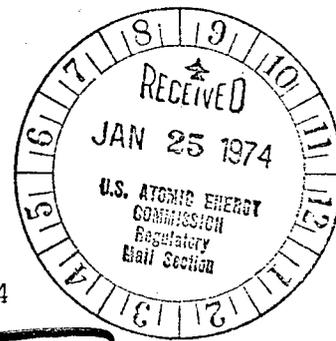
William J. Cahill, Jr.

Attach.
jvp/klg

Carl L. Newman
Vice President
Regulatory Mail Section

Regulatory

File Cy.



January 24, 1974

Re: Docket No. 50-286

Mr. George Knighton
Environmental Projects
Branch No. 1
Directorate of Licensing
Washington, D. C. 20545

Dear Mr. Knighton:

In accordance with your letter of January 16, 1974, Applicant herewith submits a draft of environmental technical specifications for your study.

Consonant with the Staff's requests, these draft proposed environmental technical specifications will be suitable for all three facilities at the Indian Point Station.

We agree that a meeting to review this draft on February 25, 1974 would be desirable. Please notify us of the location for that meeting.

As requested in your letter, this submittal consists of three (3) signed originals and thirty-seven (37) copies.

Very truly yours,

Carl L. Newman
Vice President

Enclosures.

