

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

May 10, 1974

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



Re: Docket No. 50-286

Dear Mr. Knighton:

Enclosed are Responses to the following Requests for Additional Environmental Information forwarded with your letter dated January 15, 1974: A.4 and A.9.

This completes the Responses except for an additional portion of a response to Request A.6. Our consultant is still working on this and we expect to be able to furnish it to you shortly.

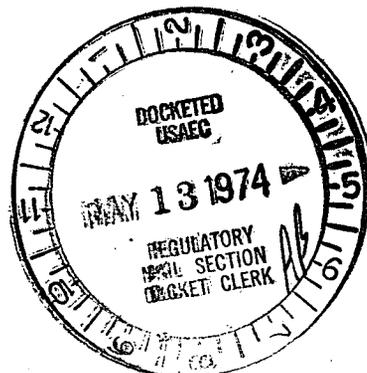
In accordance with our previous arrangement, this submittal consists of 3 signed and 17 copies of this letter and 20 copies of the Responses. When we have the complete Responses to the Requests contained in your letter of January 15, 1974, we will file 200 copies as Supplement No. 11 to the Environmental Report as requested in your letter.

Sincerely yours,

William J. Cahill, Jr.
Vice President

Enc.

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



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Question 4:

Provide copies of impingement data for different species of fish collected at Lovett and Danskammer plants from 1971 to the present. Provide similar data available for the Bowline and Roseton plants from the date of startup to the present time. Provide monthly estimates of the number of fish impinged (and species composition) at the Indian Point Units Nos. 1, 2 and 3 and compare the results with those taken at the other plants for comparable time periods. Determine, if possible, the effect of the number of fish impinged on the total fish population.

Response:

Presentation and analysis of impingement data for 1971-72 at Danskammer will be provided in a QLM report to Central Hudson Gas and Electric Corporation, scheduled for May, 1974. Impingement data for 1973 at Danskammer will be presented in a similar report scheduled for September, 1974. Upon receipt of these reports from Central Hudson Gas and Electric Corporation, Con Edison will provide copies to the AEC.

Presentation and analysis of impingement data at Bowline and Lovett in 1973 will be provided in a QLM report to Orange & Rockland Utilities, scheduled for July, 1974. Upon receipt of this report from Orange & Rockland Utilities, Con Edison will provide copies to the AEC.

Monthly estimates of the number and species composition of fish impinged based on data at Indian Point Unit 1 through 1972, are given in the Indian Point Unit 3 Environmental Report, Appendix BB. Tabulations of more recent impingement data at all three Indian Point Units are being prepared in response to an HRFA interrogatory. Also, results of 1972-1973 impingement studies by Texas Instruments at Indian Point

will be provided in a Texas Instruments report to Con Edison scheduled for June, 1974.

A preliminary estimate of the effect of impingement on total fish populations is given in Texas Instruments Second Semi-Annual Report (November, 1973) on page V-35. This topic will be addressed further in future Annual and Semi-Annual reports.

Question 9. In reference to Figure II-2 on page II-8 of the Texas Instruments Annual Report (April 1973), provide tabulation of data for minimum, maximum, and average daily water temperatures for all twelve months, including May, June, and July which have been provided in ER, IP-3, App. FF, pp. IV-28 to IV-30.

Response: Tabulated data for minimum, maximum, and average daily water temperatures in the vicinity of Indian Point are given in Table 9-1. These data were taken from the U.S.G.S. Water Resources Data for New York, Part 2, Water Quality Record for the period October 1959 to February 1969. The source indicates that data collected through September 1966 was taken once daily on the east bank of the Hudson at Charles Point on Lent's Cove. From October 1966 to February 1969 the data was collected near the west bank of the river on the streamward side of the Hudson River Reserve Fleet Administration Barge at Jones Point. The data record for October 1966 to February 1969 list both a maximum and minimum temperature for each day. In the analysis of the data for this latter period, only the daily maxima were considered.

It is likely that these temperatures do not exactly correspond to temperatures which can be expected at the Indian Point intakes. For example, the data for 1959-1966 were recorded on Lent's Cove, where insolation and thermal discharges may lead to higher water temperatures than that of the river water at the plant's intakes. Furthermore, in collecting their data the USGS were not specifically preparing for thermal surveys. This is reflected in the accuracy of their measurements. USGS data were measured to the nearest ⁰F with a thermometer (1959-1966) or a thermister (after 1966).

Table 9-1

Hudson River Water Temperature ($^{\circ}$ F) in the Vicinity of Indian Point
(U.S.G.S. 1959-1969)

	Date	Minimum	Maximum	Mean
January	1	32.0	42.0	35.7
	2	32.0	42.0	35.7
	3	33.0	42.0	35.7
	4	32.0	41.0	35.1
	5	32.0	41.0	34.9
	6	32.0	41.0	34.9
	7	32.0	41.0	34.9
	8	32.0	41.0	34.7
	9	32.0	41.0	34.1
	10	32.0	41.0	34.1
	11	32.0	41.0	34.3
	12	32.0	41.0	34.3
	13	32.0	40.0	33.9
	14	32.0	40.0	33.7
	15	32.0	40.0	33.6
	16	32.0	40.0	33.6
	17	32.0	40.0	33.7
	18	32.0	40.0	33.6
	19	32.0	40.0	33.4
	20	32.0	39.0	33.7
	21	32.0	39.0	33.3
	22	32.0	39.0	33.5
	23	32.0	40.0	33.4
	24	32.0	40.0	33.4
	25	32.0	40.0	33.5
	26	32.0	40.0	33.3
	27	32.0	40.0	33.4
	28	32.0	40.0	33.4
	29	32.0	39.0	33.3
	30	32.0	39.0	33.1
	31	32.0	38.0	33.6

Table 9-1 (Continued)

	Date	Minimum	Maximum	Mean
February	1	32.0	38.0	33.2
	2	32.0	38.0	33.2
	3	32.0	37.0	33.3
	4	32.0	37.0	32.9
	5	32.0	38.0	33.0
	6	32.0	37.0	33.1
	7	32.0	38.0	33.2
	8	32.0	38.0	33.5
	9	32.0	37.0	33.1
	10	32.0	38.0	33.3
	11	32.0	38.0	33.4
	12	32.0	37.0	33.3
	13	32.0	37.0	33.3
	14	32.0	37.0	33.3
	15	32.0	38.0	33.3
	16	32.0	38.0	33.5
	17	32.0	37.0	33.4
	18	32.0	37.0	33.1
	19	32.0	38.0	33.2
	20	32.0	37.0	33.0
	21	32.0	38.0	33.5
	22	32.0	38.0	33.5
	23	32.0	38.0	33.5
	24	32.0	38.0	33.2
	25	32.0	37.0	32.9
	26	32.0	37.0	33.0
	27	32.0	37.0	33.2
	28	32.0	37.0	33.0
	29	33.0	34.0	33.3

Table 9-1 (Continued)

	Date	Minimum	Maximum	Mean
March	1	32.0	37.0	33.2
	2	32.0	37.0	33.2
	3	32.0	37.0	33.3
	4	32.0	37.0	33.9
	5	32.0	37.0	33.7
	6	32.0	37.0	33.7
	7	32.0	37.0	33.9
	8	32.0	37.0	34.1
	9	32.0	37.0	33.9
	10	32.0	37.0	34.0
	11	32.0	37.0	34.2
	12	32.0	38.0	33.8
	13	32.0	38.0	34.0
	14	32.0	38.0	33.8
	15	32.0	37.0	33.6
	16	32.0	38.0	34.3
	17	32.0	37.0	34.3
	18	32.0	38.0	34.5
	19	33.0	38.0	35.0
	20	33.0	36.0	34.9
	21	33.0	37.0	35.1
	22	33.0	37.0	35.3
	23	34.0	38.0	35.6
	24	34.0	38.0	35.6
	25	34.0	39.0	36.0
	26	35.0	38.0	36.3
	27	35.0	39.0	36.7
	28	35.0	41.0	37.6
	29	35.0	41.0	38.3
	30	36.0	43.0	39.1
	31	36.0	43.0	39.2

Table 9-1 (Continued)

	Date	Minimum	Maximum	Mean
April	1	37.0	44.0	40.1
	2	37.0	43.0	39.9
	3	37.0	45.0	40.6
	4	37.0	43.0	40.3
	5	38.0	43.0	40.6
	6	39.0	45.0	41.4
	7	40.0	45.0	41.8
	8	39.0	45.0	41.9
	9	39.0	45.0	42.0
	10	39.0	45.0	42.3
	11	39.0	46.0	42.9
	12	41.0	45.0	42.8
	13	41.0	46.0	43.1
	14	42.0	45.0	43.3
	15	42.0	46.0	43.8
	16	42.0	50.0	44.6
	17	43.0	46.0	44.8
	18	44.0	46.0	44.8
	19	44.0	46.0	45.4
	20	44.0	47.0	45.9
	21	45.0	48.0	46.1
	22	45.0	48.0	46.4
	23	46.0	48.0	46.9
	24	46.0	48.0	47.1
	25	46.0	50.0	47.8
	26	47.0	55.0	49.4
	27	47.0	55.0	49.6
	28	47.0	55.0	49.9
	29	47.0	57.0	50.6
	30	47.0	57.0	51.1

Table 9-1 (Continued)

	Date	Minimum	Maximum	Mean
May	1	48.0	57.0	51.4
	2	48.0	57.0	52.2
	3	48.0	59.0	52.2
	4	50.0	59.0	52.9
	5	50.0	59.0	53.2
	6	51.0	59.0	53.4
	7	51.0	59.0	54.1
	8	52.0	59.0	54.6
	9	52.0	59.0	54.7
	10	52.0	59.0	55.2
	11	52.0	61.0	55.4
	12	52.0	61.0	55.7
	13	52.0	61.0	55.9
	14	52.0	63.0	56.4
	15	52.0	63.0	56.6
	16	54.0	59.0	56.5
	17	53.0	59.0	56.8
	18	53.0	63.0	58.1
	19	54.0	63.0	58.4
	20	54.0	63.0	58.9
	21	55.0	63.0	59.1
	22	56.0	63.0	59.7
	23	54.0	63.0	59.7
	24	56.0	63.0	60.3
	25	57.0	65.0	61.1
	26	58.0	65.0	61.7
	27	58.0	65.0	61.9
	28	58.0	65.0	62.0
	29	58.0	65.0	61.8
	30	59.0	67.0	62.6
	31	59.0	66.0	62.6

Table 9-1 (Continued)

	Date	Minimum	Maximum	Mean
June	1	60.0	67.0	63.1
	2	61.0	67.0	63.7
	3	59.0	68.0	63.7
	4	59.0	68.0	64.0
	5	60.0	67.0	64.4
	6	62.0	68.0	64.7
	7	63.0	68.0	65.3
	8	64.0	68.0	65.9
	9	65.0	69.0	66.4
	10	65.0	70.0	67.0
	11	65.0	70.0	67.5
	12	66.0	71.0	67.8
	13	66.0	70.0	68.0
	14	66.0	70.0	68.4
	15	66.0	71.0	68.8
	16	66.0	71.0	68.8
	17	67.0	72.0	68.9
	18	67.0	71.0	69.0
	19	67.0	70.0	68.9
	20	68.0	71.0	69.1
	21	69.0	71.0	69.6
	22	69.0	72.0	70.4
	23	69.0	72.0	70.5
	24	69.0	73.0	71.1
	25	70.0	73.0	71.3
	26	70.0	73.0	71.2
	27	70.0	73.0	71.2
	28	70.0	76.0	72.3
	29	70.0	76.0	72.8
	30	70.0	78.0	73.3

Table 9-1 (Continued)

	Date	Minimum	Maximum	Mean
July	1	71.0	79.0	74.4
	2	72.0	75.0	74.1
	3	72.0	76.0	74.3
	4	72.0	76.0	74.1
	5	72.0	76.0	74.0
	6	72.0	76.0	73.6
	7	72.0	76.0	74.0
	8	73.0	76.0	74.4
	9	73.0	76.0	74.5
	10	74.0	77.0	75.1
	11	73.0	78.0	75.1
	12	74.0	79.0	75.6
	13	74.0	79.0	75.8
	14	74.0	80.0	75.8
	15	74.0	81.0	75.8
	16	74.0	81.0	76.0
	17	73.0	80.0	76.0
	18	73.0	80.0	76.3
	19	74.0	80.0	76.4
	20	74.0	80.0	76.5
	21	74.0	79.0	76.8
	22	75.0	79.0	76.9
	23	75.0	79.0	77.0
	24	73.0	79.0	77.1
	25	75.0	80.0	77.4
	26	74.0	80.0	77.2
	27	74.0	81.0	77.7
	28	74.0	79.0	77.2
	29	74.0	81.0	77.4
	30	73.0	80.0	77.3
	31	74.0	81.0	77.7

Table 9-1 (Continued)

	Date	Minimum	Maximum	Mean
August	1	75.0	81.0	77.8
	2	75.0	81.0	78.0
	3	75.0	81.0	78.0
	4	75.0	81.0	77.8
	5	75.0	81.0	77.8
	6	74.0	81.0	77.4
	7	75.0	81.0	77.4
	8	75.0	81.0	77.4
	9	75.0	81.0	77.5
	10	76.0	81.0	77.5
	11	74.0	80.0	77.3
	12	74.0	80.0	77.3
	13	74.0	79.0	76.9
	14	74.0	80.0	77.0
	15	74.0	80.0	76.8
	16	74.0	80.0	76.5
	17	74.0	80.0	76.4
	18	74.0	80.0	76.4
	19	73.0	80.0	76.3
	20	74.0	80.0	76.8
	21	74.0	81.0	76.5
	22	74.0	81.0	76.9
	23	74.0	80.0	76.8
	24	74.0	79.0	76.3
	25	75.0	79.0	76.7
	26	75.0	79.0	76.6
	27	74.0	79.0	76.2
	28	74.0	78.0	76.3
	29	74.0	79.0	76.4
	30	74.0	78.0	76.0
	31	74.0	78.0	76.1

Table 9-1 (Continued)

	Date	Minimum	Maximum	Mean
September	1	74.0	78.0	76.0
	2	74.0	78.0	75.9
	3	74.0	78.0	75.9
	4	74.0	78.0	75.9
	5	74.0	79.0	75.5
	6	73.0	79.0	75.2
	7	72.0	79.0	74.8
	8	73.0	79.0	74.8
	9	72.0	78.0	74.5
	10	72.0	78.0	74.8
	11	71.0	79.0	74.8
	12	71.0	79.0	74.5
	13	72.0	79.0	74.3
	14	71.0	79.0	73.8
	15	70.0	80.0	73.5
	16	70.0	79.0	73.1
	17	70.0	78.0	72.8
	18	70.0	76.0	72.1
	19	70.0	76.0	72.4
	20	69.0	76.0	71.9
	21	69.0	76.0	71.6
	22	69.0	74.0	70.9
	23	68.0	75.0	71.1
	24	67.0	73.0	70.4
	25	66.0	75.0	70.5
	26	66.0	75.0	70.3
	27	66.0	75.0	69.6
	28	66.0	75.0	69.9
	29	66.0	74.0	69.3
	30	64.0	73.0	68.7

Table 9-1 (Continued)

	Date	Minimum	Maximum	Mean
October	1	64.0	73.0	69.3
	2	64.0	73.0	68.9
	3	64.0	73.0	68.7
	4	63.0	72.0	67.9
	5	63.0	72.0	67.7
	6	60.0	72.0	66.6
	7	62.0	71.0	66.6
	8	61.0	71.0	66.3
	9	62.0	71.0	66.1
	10	62.0	71.0	65.9
	11	62.0	71.0	65.7
	12	61.0	71.0	65.5
	13	61.0	70.0	65.2
	14	61.0	70.0	65.0
	15	61.0	68.0	64.7
	16	60.0	68.0	64.6
	17	60.0	68.0	64.6
	18	59.0	68.0	64.4
	19	59.0	67.0	63.6
	20	59.0	66.0	63.3
	21	59.0	66.0	62.9
	22	58.0	64.0	62.2
	23	59.0	64.0	62.2
	24	57.0	64.0	61.6
	25	58.0	64.0	61.4
	26	58.0	64.0	60.9
	27	58.0	64.0	60.8
	28	57.0	63.0	60.5
	29	57.0	63.0	60.0
	30	57.0	61.0	59.4
	31	57.0	61.0	59.2

Table 9-1 (Continued)

	Date	Minimum	Maximum	Mean
November	1	57.0	61.0	58.7
	2	56.0	61.0	58.3
	3	56.0	59.0	57.7
	4	55.0	59.0	57.2
	5	54.0	59.0	57.0
	6	54.0	59.0	56.9
	7	54.0	59.0	56.1
	8	53.0	58.0	55.6
	9	52.0	57.0	55.1
	10	52.0	58.0	54.9
	11	52.0	58.0	54.4
	12	52.0	57.0	54.2
	13	52.0	57.0	54.2
	14	52.0	56.0	54.0
	15	52.0	56.0	53.7
	16	51.0	56.0	52.9
	17	51.0	56.0	52.8
	18	50.0	56.0	52.1
	19	48.0	55.0	51.5
	20	48.0	54.0	50.7
	21	46.0	54.0	50.2
	22	46.0	54.0	50.0
	23	46.0	54.0	49.9
	24	46.0	54.0	49.6
	25	46.0	53.0	49.3
	26	45.0	52.0	48.7
	27	45.0	52.0	48.3
	28	45.0	52.0	48.0
	29	45.0	52.0	47.7
	30	43.0	52.0	47.0

Table 9-1 (Continued)

	Date	Minimum	Maximum	Mean
December	1	43.0	51.0	46.6
	2	42.0	51.0	46.3
	3	40.0	50.0	45.7
	4	40.0	50.0	45.4
	5	40.0	48.0	45.2
	6	40.0	48.0	45.0
	7	40.0	48.0	44.7
	8	40.0	48.0	44.1
	9	39.0	47.0	43.3
	10	39.0	47.0	43.4
	11	39.0	47.0	42.8
	12	37.0	47.0	41.9
	13	37.0	47.0	41.8
	14	37.0	47.0	41.1
	15	36.0	47.0	41.0
	16	36.0	47.0	40.5
	17	35.0	47.0	40.1
	18	35.0	47.0	39.5
	19	35.0	46.0	39.5
	20	35.0	46.0	39.2
	21	34.0	46.0	38.8
	22	34.0	46.0	38.2
	23	34.0	45.0	37.8
	24	35.0	45.0	37.9
	25	34.0	44.0	37.3
	26	34.0	43.0	36.9
	27	34.0	42.0	36.7
	28	33.0	42.0	36.5
	29	33.0	42.0	36.3
	30	32.0	42.0	36.0
	31	32.0	42.0	36.0