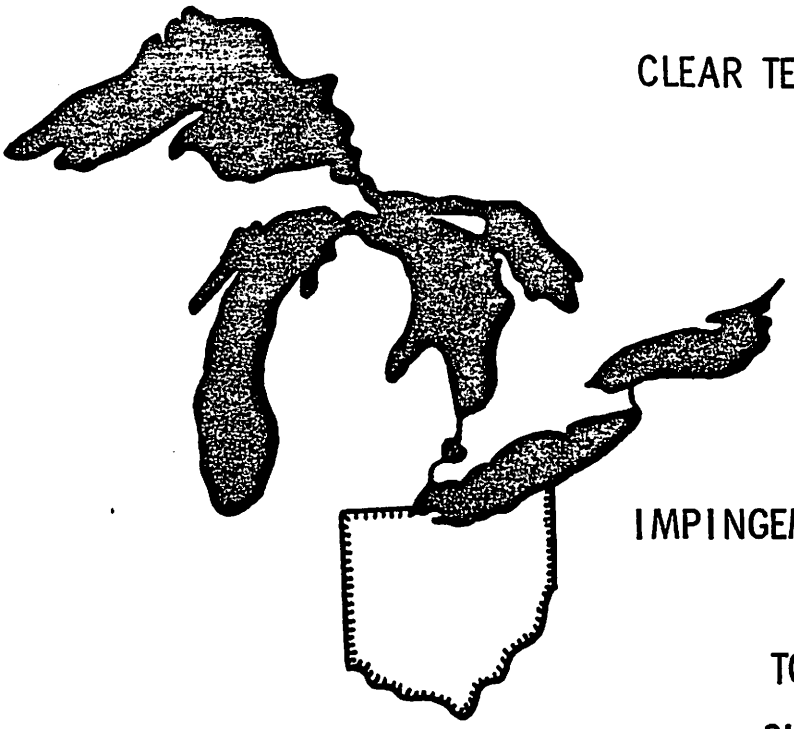

CLEAR TECHNICAL REPORT NO. 78a

SUPPLEMENT
(with Corrections)

IMPINGEMENT AND ENTRAINMENT STUDIES AT THE ACME POWER STATION, TOLEDO EDISON COMPANY

316(B) PROGRAM, TASK II

Prepared by

Jeffrey M. Reutter

Submitted to

Toledo Edison Company
Toledo, Ohio

MAY 1979

CENTER FOR LAKE ERIE AREA RESEARCH
THE OHIO STATE UNIVERSITY
COLUMBUS, OHIO

INTRODUCTION AND OBJECTIVES

The Ohio State University's Center for Lake Erie Area Research (CLEAR) monitored the entrainment and impingement of fish at the Toledo Edison Company's Acme Power Station from 1 September 1976 to 15 September 1977 for that station's 316(b) demonstration. The results of this study were thoroughly documented and discussed within the parent document to which this report serves as a supplement (Reutter et al., 1978).

In the original report, in an effort to determine the relative significance of the impingement losses, comparisons were made with the sport and commercial harvests from the Ohio waters of the lake. The sport and commercial harvests were determined by the Ohio Department of Natural Resources' Division of Wildlife (Scholl, 1978). The Division recently discovered an error in their program which computes sport harvest. This error had caused their estimates of the sport harvest of the various fish species to be 2-5 times lower than the true values. When this error was found, the Division immediately corrected their estimates of the sport harvest back through 1975 (Ohio Department of Natural Resources, 1979).

It is the purpose of this supplement to correct the sport harvest figures and relative impact assessments which were presented in the original 316(b) demonstration. It should also be noted, that the Ohio Division of Wildlife has slightly modified their estimates of the commercial fishing harvest for 1977, and these corrected values are also presented.

RESULTS

To facilitate comparisons, corrected tables within this supplement are numbered as they appeared in the original report. These corrected tables are numbers 6, 25, and 27. Table 6 presents the sport and commercial fishing harvests from 1977 and has been totally revised. Only the 1977 estimates from Table 25 have changed. The percentages within Table 27, which compare impingement to the sport and commercial harvests, have changed, but the actual estimates of the number and weight impinged are unchanged.

DISCUSSION

Comparing Table 27, as presented within this supplement, to Table 27, within the original 316(b) demonstration, shows the drastic decrease in the estimated relative impact of impingement losses at the Acme Power Station on the Lake Erie fishery resource. This reduction in the relative impact was brought about by the Division of Wildlife increasing the sport harvest estimates. The actual estimates of the number and weight of fish impinged have not changed.

As discussed on pages 44 and 45 of the original report, comparisons on a weight basis are probably more appropriate than comparisons by number

since most of the impinged fish were below commercial or sport size. And, based on the new estimates, it can now be demonstrated that by weight impingement of each of the 6 major sport and commercial species at the Acme Power Station was 0.2 percent or less of the combined sport and commercial harvests for each of the species from the Ohio waters of Lake Erie. Furthermore, the combined weight of the 6 species impinged was less than 0.04 percent of the combined weight of the 6 captured by Ohio sport and commercial fishermen. It should also be noted that the Ohio commercial harvest is only approximately 20 percent of the commercial harvest from the entire lake. In addition, and of primary importance to sport fishermen, will be the fact that the weights of impinged yellow perch and walleye were reduced from 0.1 and 0.05 percent, respectively, to 0.02 and 0.01 percent, respectively, of the sport harvest.

In summary, the estimated impact on the Lake Erie fishery resource of impingement losses at the Acme Power Station, relative to sport and commercial harvests, has been significantly reduced due to corrections (increases) in the sport harvest estimates.

TABLE 6

ESTIMATED 1977 SPORT AND COMMERCIAL FISH HARVEST FROM THE OHIO WATERS OF LAKE ERIE[a]

SPECIES	SPORT HARVEST		COMMERCIAL HARVEST		TOTAL HARVEST	
	No. of Individuals	Weight (Kilograms)	No. of Individuals	Weight (Kilograms)	No. of Individuals	Weight (Kilograms)
Yellow Perch	11,356,000	1,037,474	11,604,440[b]	1,056,004	22,960,440	2,093,478
Walleye	2,200,000	2,186,126	0 [b]	0	2,200,000	2,186,126
White Bass	1,509,000	311,952	2,427,044[b]	501,670	3,936,044	813,622
Freshwater Drum	456,000	242,783	686,200[b]	365,470	1,142,200	608,253
Channel Catfish	172,000	69,410	288,040[b]	116,224	460,040	185,634
Smallmouth Bass	26,000	13,372	0 [b]	0	26,000	13,372
Others	[c]	[c]	——	1,834,614[d]	——	1,834,614[e]
Total	15,719,000	3,861,117	——	3,873,982	——	7,735,099

[a] Ohio Division of Wildlife (1979)
[b] Estimated based on mean weight of sport fish.
[c] Data not available.
[d] Sixty-eight % carp.
[e] Excludes weight of "Others" caught by sport anglers.

TABLE 25

COMMERCIAL FISH LANDINGS FROM THE OHIO WATERS OF LAKE ERIE: 1974-1977*

SPECIES	1974	1975	1976	1977
Buffalo	14,528	14,982	13,620	15,890
Bullhead	12,258	14,074	19,522	29,056
Carp	1,284,366	1,265,298	1,196,290	1,249,408
Channel Catfish	136,200	117,586	101,242	115,316
Freshwater Drum	307,812	340,500	432,208	361,838
Goldfish	29,510	23,608	60,836	250,154
Quillback/Shad**	28,148	60,382	331,874	274,670
Rainbow Smelt	2,270	4,086	15,890	454
Sucker	39,952	24,516	28,602	14,982
White Bass	1,314,330	760,450	680,546	501,216
Yellow Perch	797,678	675,552	652,852	1,051,918
Total	3,962,512	3,301,488	3,533,482	3,864,902

* Scholl (1978) and Ohio Division of Wildlife (1979). Data presented in kilograms.

** This is primarily the quillback carpsucker (Carpiodes cyprinus), but occasionally some fishermen include gizzard shad (Dorosoma cepedianum).

TABLE 27

COMPARISON OF IMPINGEMENT LOSSES AT THE ACME POWER STATION WITH SPORT AND COMMERCIAL HARVESTS FROM THE OHIO WATERS OF LAKE ERIE[a]

SPECIES	NUMBER IMPINGED				WEIGHT IMPINGED			
	No. of Individuals	% of Sport Harvest	% of Comm. Harvest[b]	% of Total Harvest[c]	Kilograms	% of Sport Harvest	% of Comm. Harvest	% of Total Harvest[c]
Freshwater Drum	114,152	25.0	16.6	10.0	1,286	0.5	0.4	0.2
White Bass	21,549	1.4	0.9	0.5	427	0.1	0.1	0.1
Yellow Perch	6,063	0.1	0.05	0.03	216	0.02	0.02	0.01
Channel Catfish	3,225	1.9	1.1	0.7	32	0.05	0.03	0.02
Walleye	454	0.02	——[d]	0.02	131	0.01	——[d]	0.01
Smallmouth Bass	0	0.0	0.0	0.0	0	0.0	0.0	0.0
Others[h]	5,583,621[e]	——[f]	——[f]	——[f]	41,444	——[g]	2.3	——[g]
Total[h]	5,729,064	0.9[j]	1.0[j]	0.5[j]	43,535	0.05[j]	1.1	0.035[j]

[a] Sport and commercial harvests during 1977. Impingement from 1 September 1976 to 15 September 1977.
[b] Number in commercial catch was estimated by dividing the weight of the commercial harvest by the average weight from the sport harvest.
[c] Total harvest = sport + commercial harvests.
[d] Not taken commercially.
[e] 82.1% of total number was gizzard shad and emerald shiners.
[f] Reliable estimates of the number collected commercially or by sport fishermen are not available.
[g] Data not available.
[h] Excluding fish runs.
[j] Number or weight of "others" was excluded from this computation.

BIBLIOGRAPHY

Ohio Division of Wildlife. 1979. Status of Ohio's Lake Erie Fisheries: January 1979. Ohio Dept. of Nat. Res. 19pp.

Reutter, J. M., C. E. Herdendorf, and G. W. Sturm. 1978. Impingement and Entrainment Studies at the Acme Power Station, Toledo Edison Co. 316(b) Program, Task II. The Ohio State Univ., Columbus, Ohio. CLEAR Tech. Rept. No. 78a. 161pp.

Scholl, R. L. 1978. Status of Ohio's Lake Erie Fisheries: January 1, 1978. Ohio Dept. of Nat. Res. Div. of Wildlife. 20pp.