

THREE MILE ISLAND AQUATIC STUDY
MONTHLY PROGRESS REPORT FOR AUGUST 1987

Prepared For

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By

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INTRODUCTION

The objective of this monthly report is to document compliance with the nonradiological (aquatic) environmental monitoring programs specified in Sections 3.1.1a(4), 3.1.2a., and 4.6.1 of the Environmental Technical Specification (ETS). These programs are being carried out as directed in the Environmental Controls Aquatic Sampling Manual. Program elements being conducted under contract to GPU Nuclear Corporation include benthic macroinvertebrates, ichthyoplankton, fish population dynamics (seine and electrofishing), creel surveys, and water quality. The ultimate purpose of these studies is to obtain a database sufficient to establish the natural fluctuations within the ecosystem and identify any significant biological alterations resulting from the Three Mile Island Nuclear Station (TMINS).

Compliance with all programs specified in the ETS and detailed in the Aquatic Sampling Manual was achieved in August 1987 (Table 1). Inclement weather resulted in changes to the TMINS Aquatic Sampling Schedule in August. Ichthyoplankton sampling was rescheduled from 4 to 6 August due to thunderstorms.

Data presented herein are considered provisional, pending subsequent proofing, analysis, and presentation in the annual report.

Benthic Macroinvertebrates

Objective: To assess the abundance, distribution, and diversity of benthic macroinvertebrates at three stations in the vicinity of TMINS.

Progress: Replicate (4) macroinvertebrate samples were collected at each of the three stations on 6 August 1987 (Table 1). Sorting of the 6 August samples has been completed; identification of the 11 May samples is complete. Analysis of the 4 June samples is in progress.

Ichthyoplankton

Objective: To determine species composition, relative abundance, density, and seasonal and spatial distribution of ichthyoplankton at eight stations in the vicinity of TMINS.

Progress: Replicate (2) ichthyoplankton samples were taken at each of the eight stations on 6, 11, 18, and 25 August 1987 (Table 1). All samples collected through 25 August have been sorted; identifications have been completed through mid-June 1987. The TMI-EC audit of the ichthyoplankton field procedures was conducted on 18 August 1987.

Seine

Objective: To assess species composition, relative abundance, seasonal and spatial distribution, condition factor, occurrence of parasites, anomalies, and fish kills, and species diversity of fishes vulnerable to seine capture at six stations in the vicinity of TMINS.

Progress: Seine collections were taken at each of the six stations on 5 and 17 August 1987 (Table 1). Processing is completed through 22 June; work has begun on the 13 July samples. Results of the June 1987 samples are being tabulated and will appear in the September report. The TMI-EC audit of the seine field procedures was conducted on 17 August 1987.

Electrofishing

Objective: To assess species composition, relative abundance, occurrence of parasites, anomalies, and species diversity of fishes vulnerable to electrofisher captured at six stations in the vicinity of TMINS.

Progress: Electrofishing at the six zones was completed on 10-11 and 19-20 August 1987 (Table 1). A combined total of 523 fish of 21 species was collected in August (Tables 2 and 3). Most fish (160 specimens) were collected at Station 4A1; most species (17) were taken

at Station 4A1. The catch was dominated by the redbreast sunfish, smallmouth bass, and pumpkinseed. Gizzard shad and quillback were also abundant. Ectoparasites and anomalies were observed on 33 fish; anchor worms (Lernaea) were most prevalent. Redbreast sunfish, smallmouth bass, and bluegill were most commonly affected. The TMI-EC audit of the electrofishing field procedures was conducted on 19 August 1987.

Creel Survey

Objective: To investigate the extent and success of sportfishing, and determine angler residence and use of catch, in the Susquehanna River near TMINS.

Progress: Creel surveys were conducted on 7, 16, 22, and 27 August 1987 (Table 1). Interviews consisted of 282 anglers who fished a total of 567.50 hours, caught 1140 fish, and harvested 280 fish (24.6% of the total catch) (Tables 4 through 7). The average catch per effort (c/e) and harvest per effort were 2.01 and 0.49 per hour, respectively. Smallmouth bass, channel catfish, and walleye were the predominant species caught (459, 353, and 99 specimens, respectively). Fishing pressure was greatest in the General Reservoir with 134 anglers interviewed and a total of 276.00 hours fished. Most

fish were caught in the General Reservoir (510) but most were harvested (174) from the York Haven Generating Station (YHGS). The highest catch per effort (4.81) and harvest per effort (0.78) occurred at the West Dam and YHGS areas, respectively. Anglers were predominantly residents of York or Dauphin counties and the majority reported that they eat or would eat a portion of their catch. The TMI-EC audit of the creel survey field procedures was conducted on 27 August 1987.

Water Quality Analysis

Objective: To measure select physical and chemical parameters of the Susquehanna River in the vicinity of TMINS concurrent with General Ecological Survey samples.

Progress: Water quality samples were collected on 6 August 1987 and forwarded to TMI-EC (Table 1). Selected water quality parameters were also measured at sampling times and locations described in the Aquatic Sampling Manual.

TABLE 1

Sampling conducted in August 1987 in compliance with Three Mile Island Nuclear Station's Environmental Technical Specifications. X's equal week in which program/work completed.

PROGRAM	August				
	1-8	9-15	16-22	23-29	30-31
Benthic Macroinvertebrates	X				
Ichthyoplankton	X	X	X	X	
Seine	X		X		
Electrofishing		X	X		
Creel Survey	X		XX	X	
Water Quality Analysis	X				

TABLE 2.

Fishes taken by the AC electrofisher near TMINS on 10-11 August 1987. Zone prefix TM-EL- deleted from table.

Zone	4A1	13A1	10A3	9B5	10B3	11B1	Total
Time	2140	2247	2326	0010	2040	1952	
Duration(min)	20	16	15	15	18	18	
Air Temp(C)	20.0	20.5	20.0	19.0	21.0	21.7	
Water Temp(C)	26.0	26.0	26.0	26.0	26.5	27.1	
Dissolved Oxygen(mg/l)	9.6	9.2	8.6	9.0	8.4	11.6	
pH	7.8	7.8	7.7	7.8	8.0	8.5	
Conductivity(micromhos/cm)	400	400	475	400	250	250	
Secchi Disc(cm)	45.7	45.7	40.6	45.7	63.5	48.3	
Volts	210	210	200	205	210	210	
Amps	10.0	11.0	12.0	12.0	9.5	7.5	
Gizzard shad	11	8	2	-	9	10	40
Common carp	-	1	1	-	-	1	3
Spottail shiner	-	1	-	-	-	-	1
Spotfin shiner	-	4	-	-	-	-	4
Fallfish	-	1	-	-	-	-	1
Quillback	1	6	3	5	4	9	28
White sucker	-	1	1	-	-	-	2
Shorthead redhorse	1	-	-	-	-	-	1
Channel catfish	-	-	-	-	-	2	2
Rock bass	-	-	-	1	1	1	3
Redbreast sunfish	2	4	23	3	14	-	46
Green sunfish	5	1	2	-	-	-	8
Pumpkinseed	10	1	6	2	2	15	36
Bluegill	9	1	-	-	5	3	18
Lepomis hybrid	2	1	-	-	-	-	3
Smallmouth bass	9	11	2	1	7	-	30
Largemouth bass	17	-	-	-	2	3	22
Black crappie	-	-	1	1	1	-	3
Walleye	1	-	5	3	-	-	9
No. of Specimens	68	41	46	16	45	44	260
No. of Species	10	12	10	7	9	8	18

TABLE 3.

Fishes taken by the AC electrofisher near IMINS on 19-20 August 1987. Zone prefix TM-EL- deleted from table.

Zone	4A1	13A1	10A3	9B5	10B3	11B1	Total
Time	1955	2100	2152	2245	2324	0004	
Duration(min)	18	23	15	15	16	16	
Air Temp(C)	26.0	26.0	24.0	23.0	23.0	21.7	
Water Temp(C)	28.0	27.5	27.5	28.0	28.0	28.0	
Dissolved Oxygen(mg/l)	12.4	11.4	9.4	9.4	7.9	9.4	
pH	8.1	7.8	7.1	8.0	8.2	8.5	
Conductivity(micromhos/cm)	440	400	475	350	300	250	
Secchi Disc(cm)	53.3	40.6	40.6	55.9	66.0	55.9	
Volts	200	205	200	200	200	205	
Amps	8.0	9.0	10.0	10.0	10.0	8.0	
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Gizzard shad	12	13	1	3	2	2	33
Common carp	2	1	1	-	1	4	9
Spottail shiner	1	-	-	1	-	-	2
Quillback	-	4	11	11	5	10	41
White sucker	1	-	-	-	-	-	1
Northern hog sucker	-	-	1	-	-	-	1
Shorthead redhorse	-	2	-	-	-	-	2
Yellow bullhead	1	-	-	-	-	-	1
Channel catfish	1	-	-	1	-	-	2
Rock bass	1	1	-	-	-	1	3
Redbreast sunfish	12	2	10	5	4	-	33
Green sunfish	2	2	-	-	-	3	7
Pumpkinseed	17	1	5	-	1	15	39
Bluegill	5	3	2	-	2	1	13
Smallmouth bass	17	16	3	2	8	2	48
Largemouth bass	14	-	-	-	-	4	18
White crappie	1	1	-	-	-	-	2
Walleye	5	-	2	-	1	-	8
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No. of Specimens	92	46	36	23	24	42	263
No. of Species	15	11	9	6	8	9	18

TABLE 4.

Creel survey data from the General Reservoir (GR) for each survey day in August 1987.

Day	7 Fri	16 Sun	22 Sat	27 Thu	
Weather	Overcast	Partly Cloudy	Heavy Rain; Partly Cloudy	Fog; Partly Cloudy	
River Stage(m)	1.01	0.99	0.95	0.95	
Air Temp(C)	23.0	29.5	23.0	25.0	24.0
Water Temp(C)	25.5	27.0	25.0	26.0	22.7
Times:					
a) morning (0900-1300)	a	a	a	a	
b) afternoon (1301-1700)	b	b	b	b	
c) evening (1701-2100)	c	c	c	c	
Total Per Time Period:					TOTAL
Anglers	8	10	9	7	15
Fish Caught	21	56	69	15	134
Fish Kept	6	16	2	3	25
Hours Fished	12.00	37.50	28.00	17.50	80
Catch/Effort(h)	1.75	1.68	2.46	0.86	276.00
Day Totals:					1.85
Anglers	25	52	29	28	
Fish Caught	79	181	177	73	
Fish Kept	33	19	11	17	
Hours Fished	53.50	109.25	82.00	31.25	
Catch/Effort(h)	1.48	1.66	2.16	2.34	
Yellow bullhead	-	-	1R	-	1R
Channel catfish	3K1R	7K7R	6K31R	1K3R	81R 102
Rock bass	-	3K2R	1K17R	2R	17K 38R 55
Redbreast sunfish	-	-	-	1K1R	8K 1R 9
Pumpkinseed	-	1K	2R	-	1K 2R 3
Bluegill	-	4K	10R	-	11K 10R 21
Sunfishes	-	-	-	-	-
(Lepomis spp.)*	-	1R	-	-	-
Smallmouth bass	3K14R	1K30R	33R	4R	18R 18
Yellow perch	-	-	1K27R	10R	22K 277R 299
Walleye	-	-	-	-	1R 1
* General Identification	-	-	-	1R	1R
K Kept	-	-	-	-	-
R Released	-	-	-	-	-

TABLE 5.

Creel survey data from the West Dam (WD) for each survey day in August 1987.

Day	7 Fri	16 Sun	22 Sat	27 Thu	
Weather	Overcast;Partly Cloudy	Partly Cloudy;Clear	Overcast	Fog;Partly Cloudy	
River Stage(m)	1.01	0.99	0.95	0.95	
Air Temp(C)	23.3	27.0	26.5	21.5	25.0
Water Temp(C)	25.0	27.0	23.5	20.3	23.0
Times:					
a) morning (0900-1300)	a	a	a	a	
b) afternoon (1301-1700)	b	b	b	b	
c) evening (1701-2100)	c	c	c	c	
Total Per Time Period:					TOTAL
Anglers	1	9	3	2	24
Fish Caught	1	86	1	8	173
Fish Kept	-	14	1	1	16
Hours Fished	1.00	18.50	0.75	3.00	36.00
Catch/Effort(h)	1.00	4.65	1.33	2.67	4.81
Day Totals:					
Anglers	1	12	6	5	
Fish Caught	1	125	24	23	
Fish Kept	-	14	1	1	
Hours Fished	1.00	24.50	5.25	5.25	
Catch/Effort(h)	1.00	5.10	4.57	4.38	
Common carp	-	-	-	-	2R
Channel catfish	-	6K23R	1K	1K3R	8K
Rock bass	-	2R	-	-	3R
Redbreast sunfish	-	3K	-	-	3K
Bluegill	-	2K	-	-	2K
Sunfishes	-	-	-	-	-
(Lepomis spp.)*	-	19R	-	1R	26R
Smallmouth bass	1R	1K22R	-	3R	63R
Walleye	-	2K6R	-	1R	14R
* General Identification					
K Kept					
R Released					

TABLE 6.

Creel survey data from the East Dam (ED) for each survey day in August 1987.

Day Weather	7 Fri Overcast	16 Sun Partly Cloudy	22 Sat Overcast	27 Thu Fog;Partly Cloudy	
River Stage(m)	1.01	0.99	0.95	0.95	
Air Temp(C)	23.7	27.0	21.7	19.7	25.0
Water Temp(C)	24.8	27.0	23.0	20.0	23.0
Times:					
a) morning (0900-1300)	a	a	a	a	b
b) afternoon (1301-1700)	b	b	b	b	c
c) evening (1701-2100)	c	c	c	c	
Total Per Time Period:					TOTAL
Anglers	1	2	3	3	22
Fish Caught	1	16	16	7	102
Fish Kept	1	-	1	-	10
Hours Fished	1.50	0.50	1.50	6.50	33.50
Catch/Effort(h)	0.67	4.00	10.67	1.08	3.04
Day Totals:					
Anglers	5	5	6	6	
Fish Caught	17	1	70	14	
Fish Kept	1	-	9	-	
Hours Fished	5.50	4.00	14.50	9.50	
Catch/Effort(h)	3.09	0.25	4.83	1.47	
Common carp	-	-	-	-	4R 4
Rock bass	-	-	-	-	4R 4
Redbreast sunfish	1K	-	2R	-	1K 1
Bluegill	-	-	-	-	6K 10
Sunfishes	-	-	1K4R	-	
(Lepomis spp.)*	-	-	-	-	
Smallmouth bass	-	-	4R	3R	11R 11
Walleye	-	-	1R	-	32R 35
* General Identification	-	-	8R	1R	37R 37
K Kept	-	-	-	-	
R Released	-	-	-	-	

TABLE 7.

Creel survey data from the York Haven Generating Station (YHGS) for each survey day in August 1987.

Day	7 Fri	16 Sun	22 Sat	27 Thu	
Weather	Overcast;Haze	Partly Cloudy; Clear	Overcast	Fog;Partly Cloudy	
River Stage(m)	1.01	0.99	0.95	0.95	
Air Temp(C)	25.0	30.0	26.0	20.5	25.0
Water Temp(C)	26.5	28.0	25.0	20.5	22.0
Times:					
a) morning (0900-1300)	a	a	a	a	
b) afternoon (1301-1700)	b	b	b	b	
c) evening (1701-2100)	c	c	c	c	
Total Per Time Period:					TOTAL
Anglers	2	6	11	2	7
Fish Caught	68	15	58	1	12
Fish Kept	22	12	42	-	4
Hours Fished	4.50	10.25	21.50	1.50	14.50
Catch/Effort(h)	15.11	1.46	2.70	0.67	0.83
Day Totals:					
Anglers	24	27	34	17	
Fish Caught	132	52	143	28	
Fish Kept	37	34	98	5	
Hours Fished	47.00	56.00	90.00	29.00	
Catch/Effort(h)	2.81	0.93	1.59	0.97	
Common carp	-	2K	-	-	2K
Channel catfish	17K25R	-	41K10R	3R	4R
Rock bass	3K2R	2K	2K1R	4K	62R
Redbreast sunfish	1K	2K	1K	-	12R
Bluegill	-	2K	1K	-	21
Sunfishes	-	2K	-	1R	1R
(Lepomis spp.)*	-	-	1R	-	3K
Smallmouth bass	1K18R	2K2R	2R	1R	4
Black crappie	-	-	1R	3R	61
Crappies	-	-	-	-	5
(Pomoxis spp.)*	-	-	-	-	-
Walleye	1R	1R	1R	-	2K
* General Identification					3K
K Kept					1R
R Released					42R