TENNESSEE VALLEY AUTHORITY
DIVISION OF WATER RESOURCES

WATER QUALITY AND BIOLOGICAL CONDITIONS IN WHEELER RESERVOIR DURING OPERATION OF BROWNS FERRY NUCLEAR PLANT JANUARY 1, 1979 – DECEMBER 31, 1979

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WATER QUALITY AND BIOLOGICAL CONDITIONS IN WHEELER RESERVOIR DURING OPERATION OF BROWNS FERRY NUCLEAR PLANT JANUARY 1, 1979 - DECEMBER 31, 1979

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Muscle Shoals, Alabama
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I. INTRODUCTION

The Tennessee Valley Authority (TVA), by law a resource development agency, generates electricity as a part of its responsibility for the physical, social, and economic development of the Tennessee Valley region and as a part of national defense. The TVA system supplies the power requirements of an area of approximately 80,000 square miles containing about 6.7 million people and interconnects at 29 points with neighboring utility systems. The addition of Browns Ferry Nuclear Plant (BFNP) to TVA's existing power system is a key element to provide the increasing supply of electricity needed for the Tennessee Valley region.

Browns Ferry Nuclear Plant is located in Limestone County in northern Alabama on the north bank of Wheeler Reservoir at Tennessee River mile (TRM) 294 (figure 1). It is about 10 air miles northwest of Decatur, Alabama, and 10 miles southwest of Athens, Alabama. The plant occupies an 840-acre tract and consists of 3 separate units with electrical nameplate ratings of 1152 megawatts each. It has the following physical structures: reactor containment buildings, turbine building, radwaste building, service building, transformer yard, 161-kV and 500-kV switchyards, stack, sewage treatment plant, and mechanical draft cooling towers.

This report is submitted in conformance with Section 5.6.1 of the Environmental Technical Specifications for the Browns Ferry Nuclear Plant; Unit 3 (July 2, 1976) Docket No. 50-296 and Units 1 and 2 (August 20, 1976) Docket Nos. 50-259 and 50-260. It covers the reporting period from January 1, 1979, to December 31, 1979, and is the fourth annual report; five semi-annual reports and three annual reports have been submitted previously. Quarterly monitoring periods are defined as follow:

First - January 1 through March 31 (Winter)

Second - April 1 through June 30 (Spring)

Third - July 1 through September 30 (Summer)

Fourth - October 1 through December 31 (Fall)

Unit 1 was placed in commercial operation on August 1, 1974, unit 2, March 1, 1975, and unit 3 began operation September 12, 1976. Reactor Thermal power levels for this reporting are shown in figure 2.

Unit 3 was licensed to operate by the NRC on July 2, 1976. Relicensing for units 1 and 2 was effective on August 20, 1976. Since units 1, 2, and 3 operate as an integrated system, technical specification requirements for units 1 and 2 are retroactive to July 2, 1976, to correspond with the effective date of technical specifications for unit 3 for reporting purposes. The original specifications, bases, and methodology may be found in "Water Quality and Biological Conditions in Wheeler Reservoir During Operation of Browns Ferry Nuclear Plant (unit 1), August 17, 1973-February 17, 1974," TVA, Division of Environmental Planning, April 1, 1974. Current specifications and bases are in Appendix B of the facility operating license for units 1, 2, and 3 of the technical specifications. The specific reporting requirements for the technical specifications are complied as follows: Sec. 2.0, Appendix B (Limited Conditions for Operation are addressed in Cp. 2); Sec. 4.1.1, Appendix B (Abiotic Surveillance is addressed in Cp. 3); Sec. 4.1.2, Appendix B (Biotic Surveillance is addressed in Cp's. 4 and 5); and Sec. 3.2.2, Appendix B (Transmission Line Right-of Way Maintenance is addressed in Cp. 6). Analytical methodologies are in table 1 of this report.

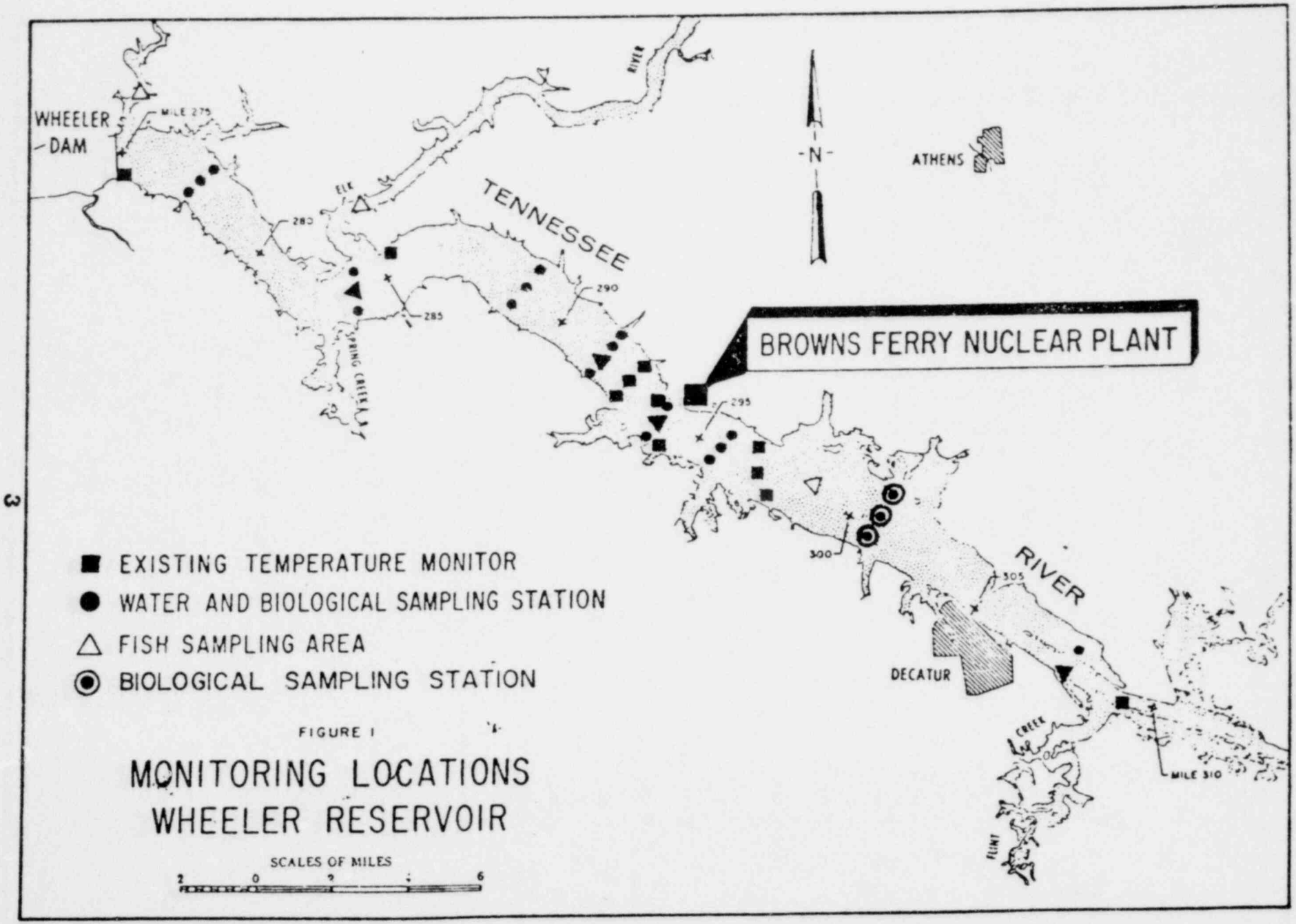


FIGURE 1

MONITORING LOCATIONS WHEELER RESERVOIR

II. PLANT OPERATION DURING THE REPORTING PERIOD

Makeup Water Treatment Plant

(Spent Demineralizer Regenerants)

January was the only month during the reporting period when spent demineralizer regenerant was discharged to the river. During this month 7.35 E + 05 gallons were discharged from the unlined pond. The pH of releases was maintained within the technical specification limit of 6.0-9.0.

Thermal Discharge

Environmental Technical Specifications require a 15-minute 2-hour moving average of three monitors at TRM 292.5 for thermal compliance and plant operation. The computed maximum temperature using this averaging technique did not exceed 90^{o} F (Appendix A).

Average daily temperature differentials for the 5-foot depth at control monitoring stations are summarized in figure 3: Temperature differentials in this figure were computed by subtracting the temperature of upstream control monitors from the average temperature of three downstream monitors. Therefore, a positive temperature differential indicates temperature downstream of BFNP was higher than upstream.

Chlorine

The raw water chlorination system was operated on 45 days during the reporting period. Residual chlorine did not exceed 0.05 mg/l in the system. Chlorine use was as follows:

TABLE 1

ANALYTICAL METHODS OF CHEMICAL PARAMETERS

MEASURED IN WHEELER RESERVOIR

Reporting Period: January 1, 1979-December 31, 1979

Parameter	Method and Reference[a]	Preservation Techniques	Detection Limits
Temperature	Thermister-Thermometer	In situ	0.1 C^{o}
Dissolved oxygen	Membrane EPA, 1974, p. 56 Titration-Winkler, EPA, 1974, p. 51	In situ Determine immediately	0.1 mg/l
BOD	5-day, 20°C incubation DO depletion measured with YSI (model 54RC) membrane or Titration-Winkler EPA, 1974, p. 11; Standard Methods 14th ed., p. 543	Iced	1 mg/l
COD	Titrimetric-$K_2Cr_2O_7$ reflux EPA, 1974, p. 20	Sulfuric acid (1 + 4)	1 mg/l
pH	Potentionmetric EPA, 1974, p. 239	In situ or Determine immediately	Not applicable
Total Alkalinity	Potentiometric Titration Standard Methods 14th ed., p. 278	Determine immediately	1 mg/l
Specific Conductance	Self-contained meter EPA, 1974, p. 275	None	0.5 µmho/cm
Sodium	Atomic absorption EPA, 1974, p. 147	None	0.1 mg/l
Sulfate	Turbidimetric EPA, 1974, p. 277	None	1 mg/l
Chlorides	Titrimetric EPA, 1974, p. 29	None	1 mg/l
NH_3-N	Colorimetric EPA, 1974, p. 168	Sulfuric acid (1 + 4) 1 ml/8 oz.	0.01 mg/l
NO_2 + NO_3-N	Colorimetric EPA, 1974, p. 207	Sulfuric acid (1 + 4) 1 ml/8 oz.	0.01 mg/l
Organic-N	Colormetric EPA, 1974, p. 182	Sulfuric acid (1 + 4) 1 ml/8 oz.	0.01 mg/l
Filterable residue	Gravimetric EPA, 1974, p. 266	None	10 mg/l
Nonfilterable residue	Gravimetric EPA, 1974, p. 268	None	1 mg/l
Total residue	Gravimetric or sum of filterable plus nonfilterable residues EPA, 1974, p. 270	None	10 mg/l

a. Methods for Chemical Analysis of Water and Wastes, EPA-625-/6-74-003, 1974. Standard Methods for the Examination of Water and Wastewater, 14th Edition, 1975.

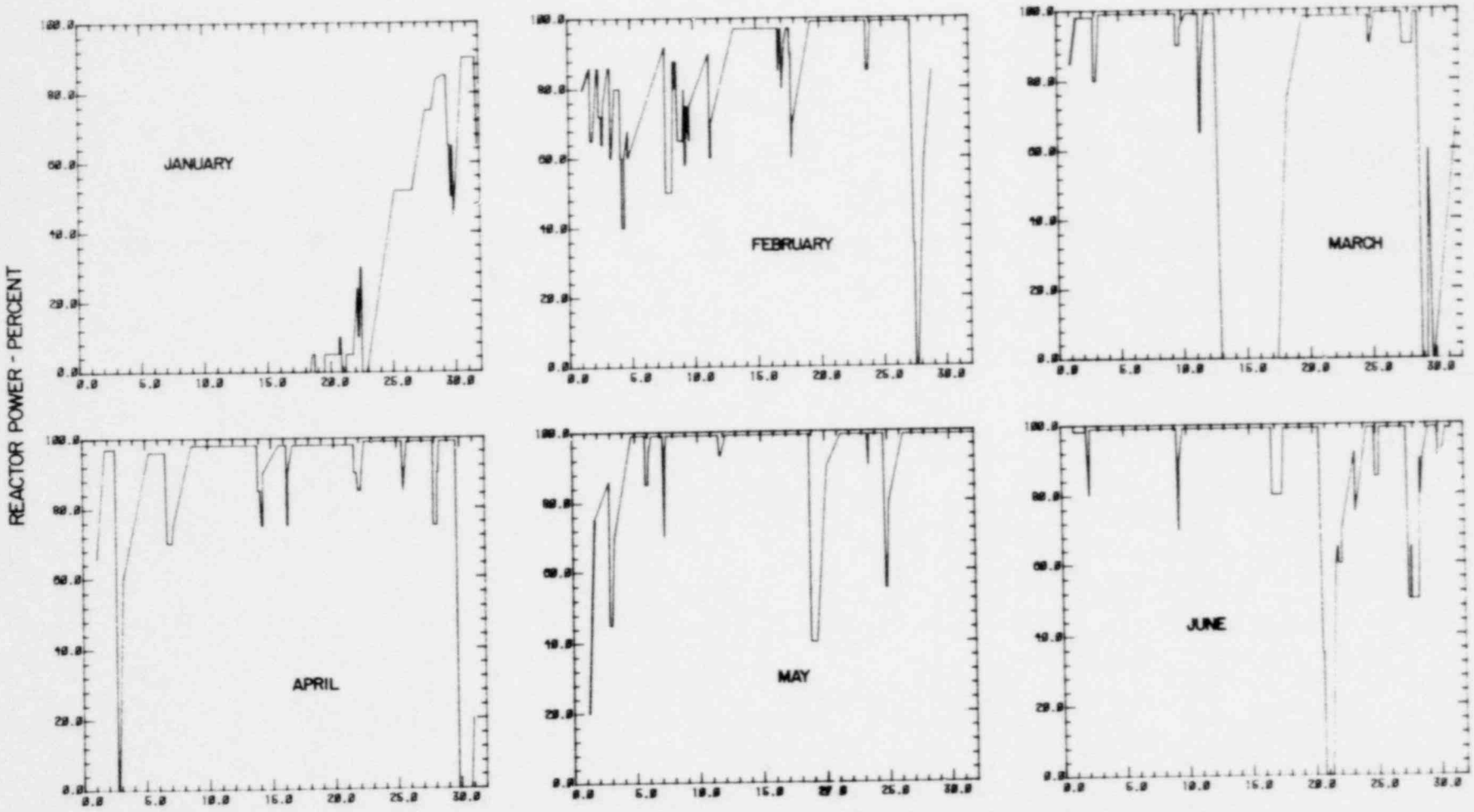


FIGURE 2. UNIT 1 REACTOR POWER DURING JANUARY 1979 THROUGH DECEMBER 1979.

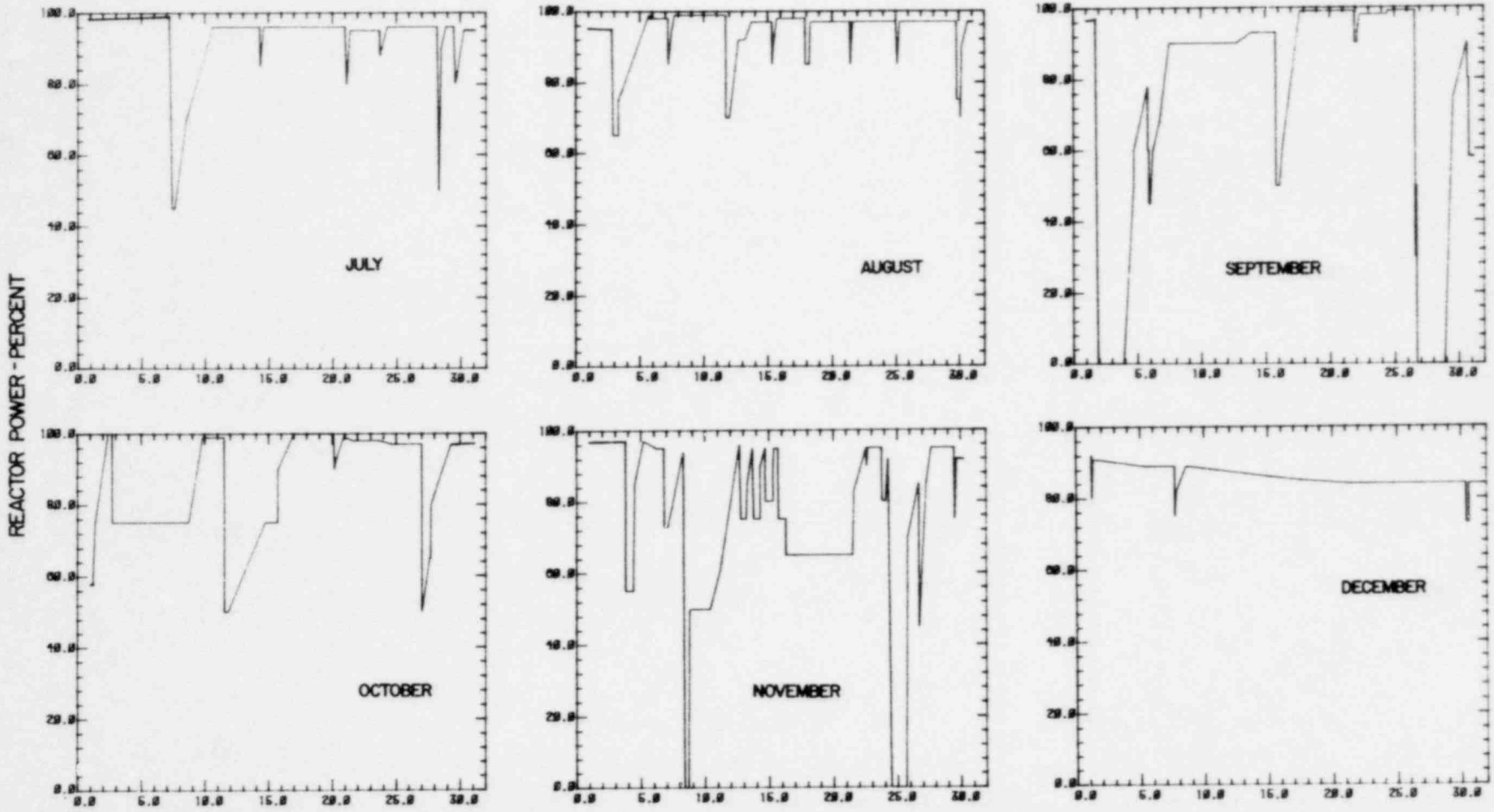


FIGURE 2. UNIT I (CONTINUED)

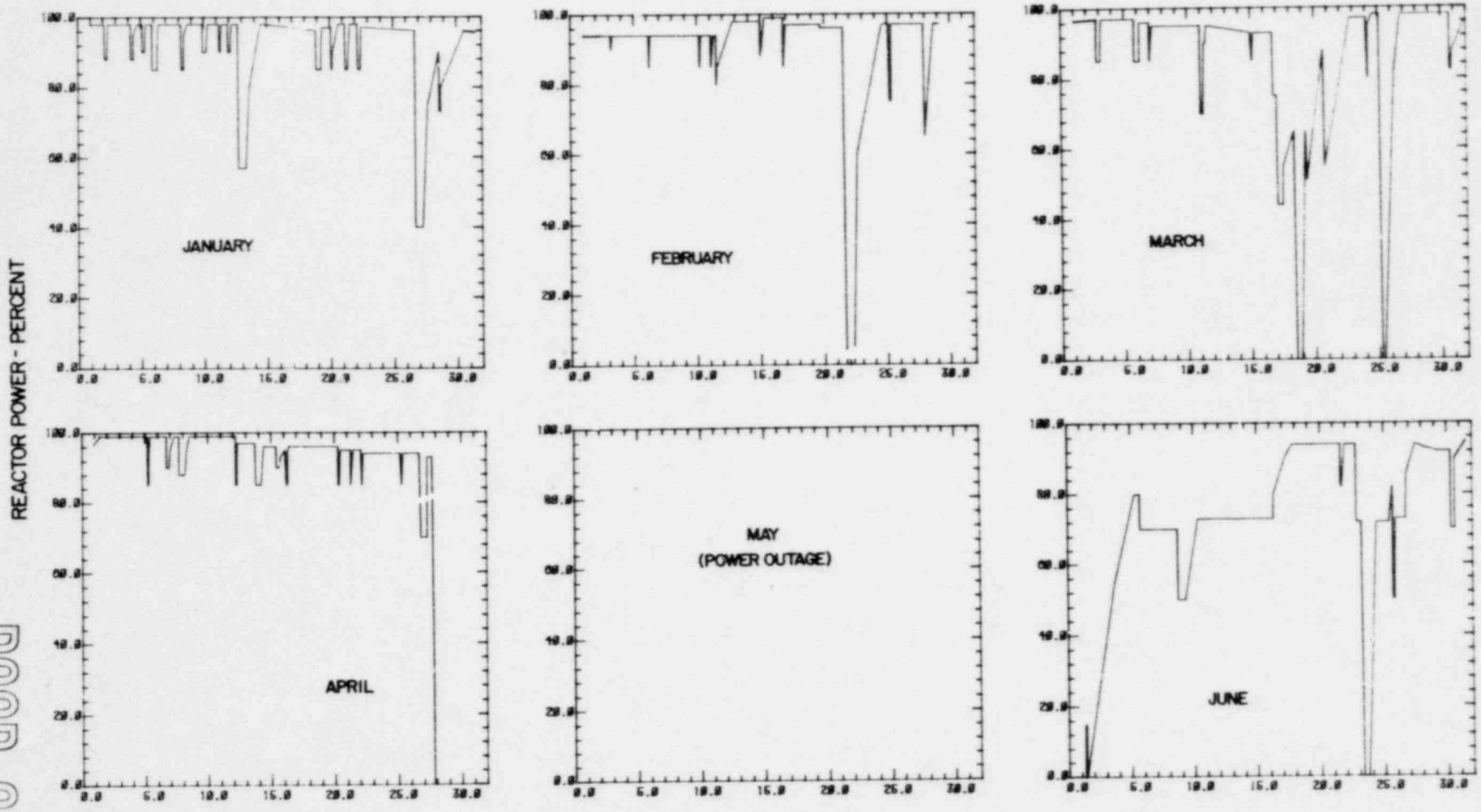


FIGURE 2. UNIT 2 (CONTINUED)

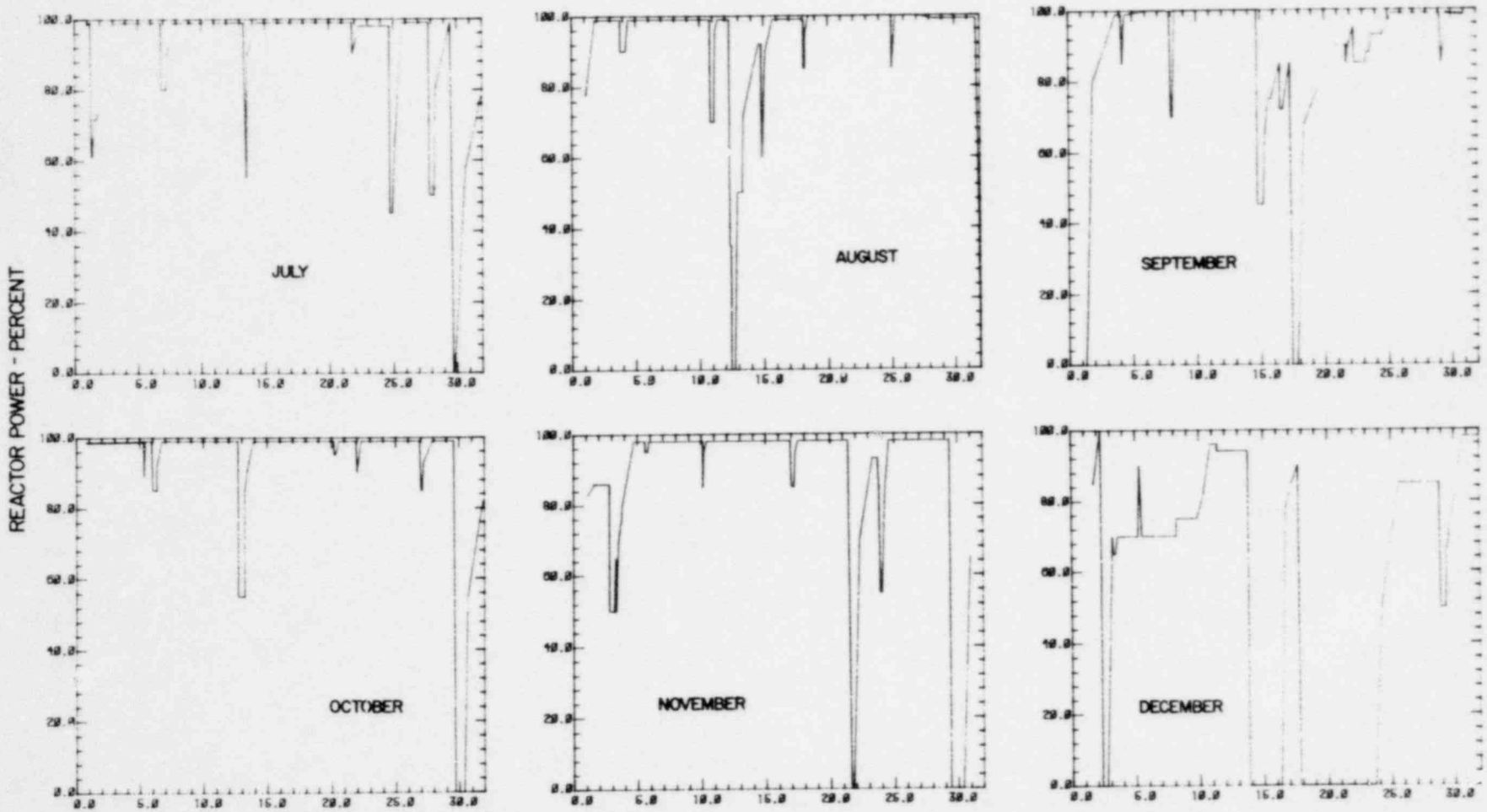


FIGURE 2. UNIT 2 (CONTINUED)

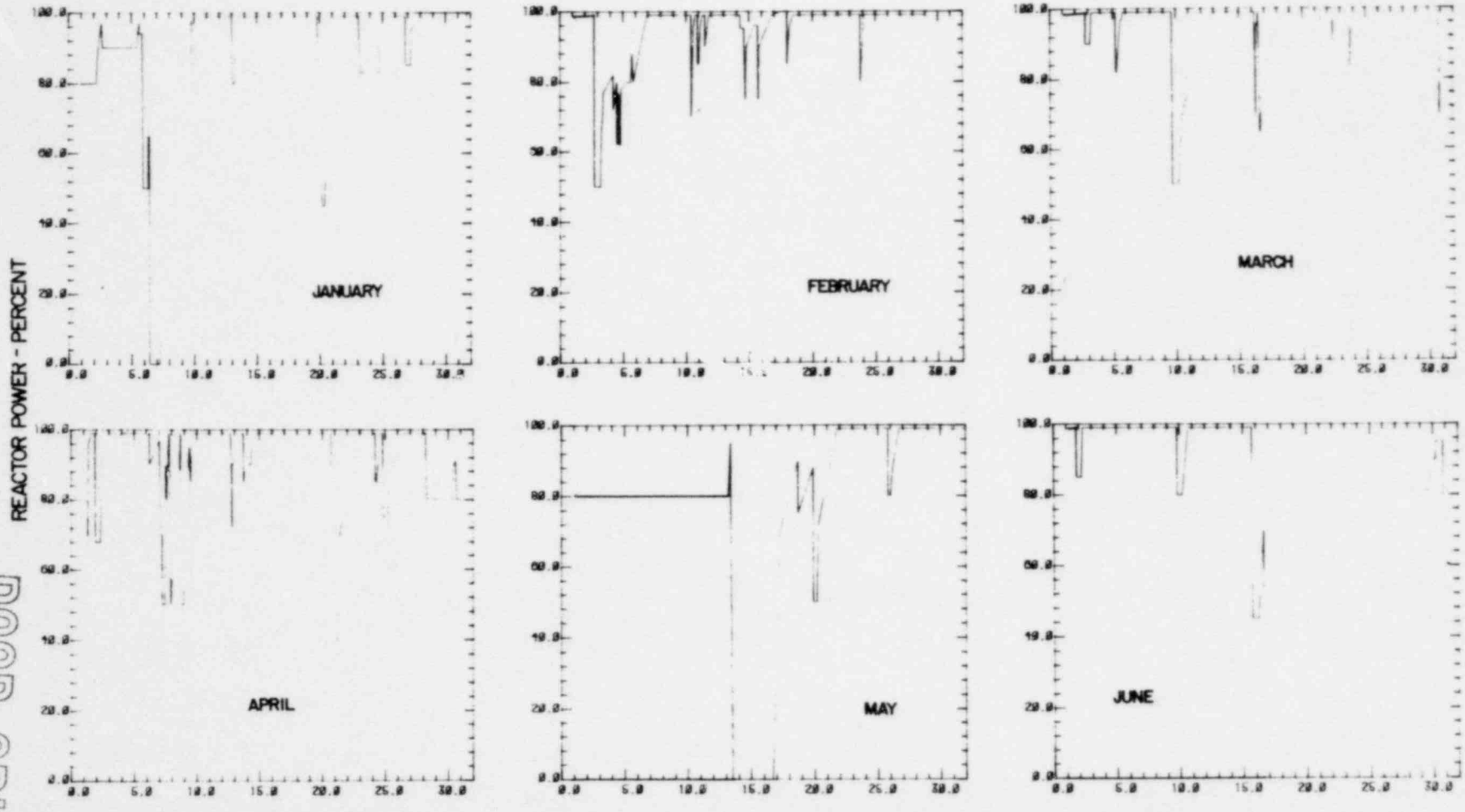


FIGURE 2. UNIT 3 (CONTINUED)

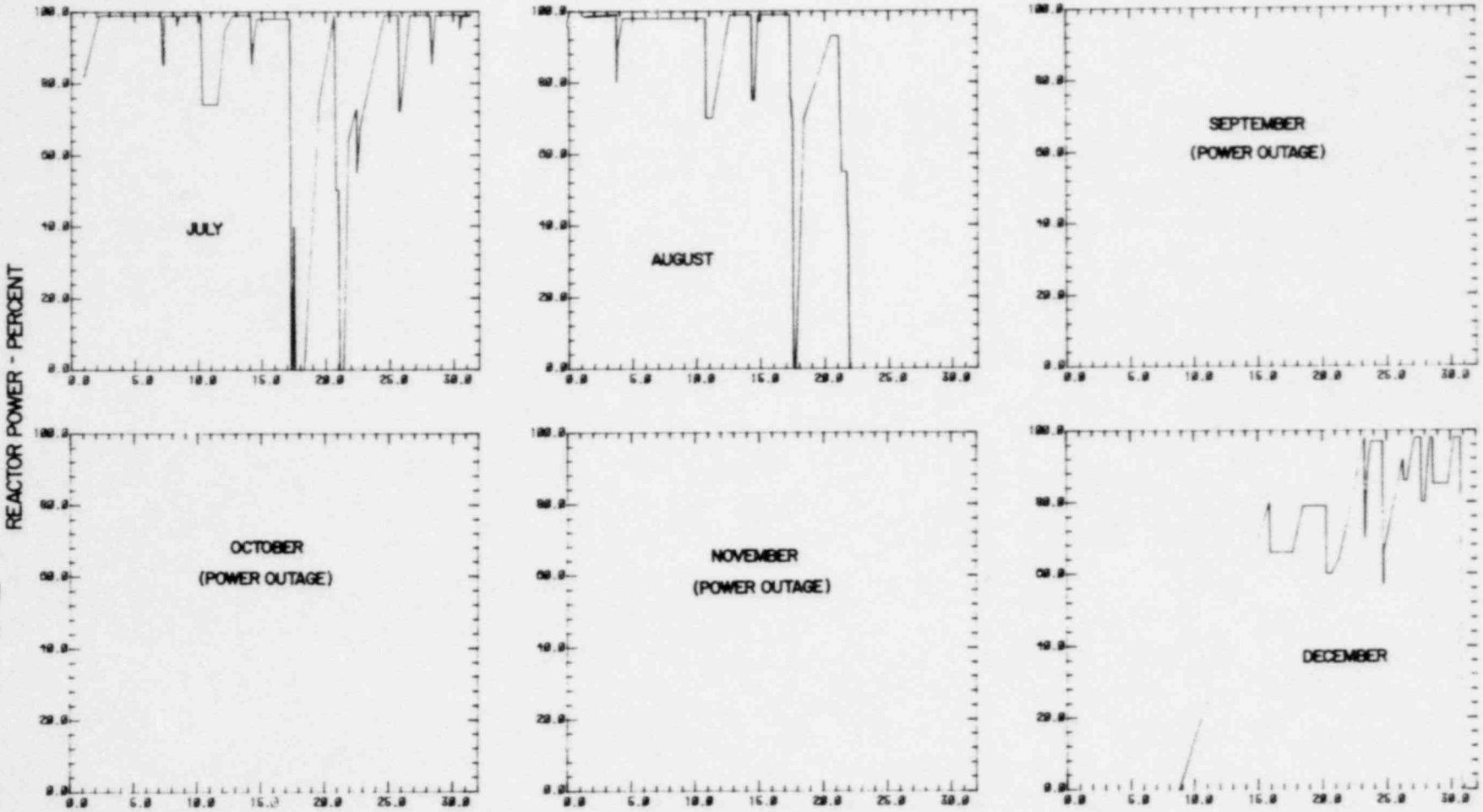


FIGURE 2. UNIT 3 (CONTINUED)

Month	Number days	Quantity
May	1	400 lb Cl_2
June	17	1.5 ton Cl_2 + 10,700 gal 10% NaOCl
July	2	2000 gal 10% NaOCl
October	7	3500 gal 10% NaOCl
November	18	7000 gal 10% NaOCl

Chemical Usage

Table 2 shows water treatment chemical usage for BFNP during the reporting period.

Potential Environmental Stress From Condenser Cooling Water Discharge

In addition to the four instream thermal monitors used for plant control, a series of fixed temperature monitors is located in Wheeler Reservoir above and below BFNP. A summary of the temperature differential between the upstream control monitor (TRM 297.6) and monitors located at three stations downstream from BFNP (TRM 292.5, 286.4, and 275.0) is shown in figure 4.

Figure 5 shows percent of time a given temperature difference was within the specified range during the reporting period as determined from the upstream temperature station and the average of the three downstream stations. Figure 6 shows mean daily streamflows in the vicinity of the plant during the reporting period. These data are based on actual mean daily discharges from Guntersville and Wheeler Dam and computed mean daily streamflows at BFNP.

A summary of hourly temperature data by month is in Appendix A. Detailed hourly data are too voluminous for inclusion in this report but are on file in the office of the Western Area Office, Division of Water Resources, EDB, Muscle Shoals, Alabama.

TABLE 2

BROWNS FERRY NUCLEAR PLANT WATER TREATMENT CHEMICAL USAGE 1979

Chemical	Description Grade, Concentration, etc.	Amount Used Per Quarter 1/1-3/31	4/1-6/30	7/1-9/30	10/1-12/31
Aluminum Sulfate	Commercial	3000 lbs	-	2000 lbs	1600 lbs
Ammonium Hydroxide	Reagent	5 gal	3 gal	3 gal	4 gal
Coagulation Aids	Wisprofloc 20	100 lbs	-	-	250 lbs
	Magnifloc 575 C	0 lbs	-	500 lbs	500 lbs
Hydrazine	35%	7 gal	3 gal	3 gal	5 gal
Soda Ash	58%	-	100 lbs	-	200 lbs
Sodium Hydroxide	50%	11.4 tons	11.8 tons	15.7 tons	17.3 tons
Sodium Hypochlorite	10%	305 gal	350 gal	190 gal	300 gal
Sulfuric Acid	93%	14.6 tons	13.7 tons	16.7 tons	22.2 tons

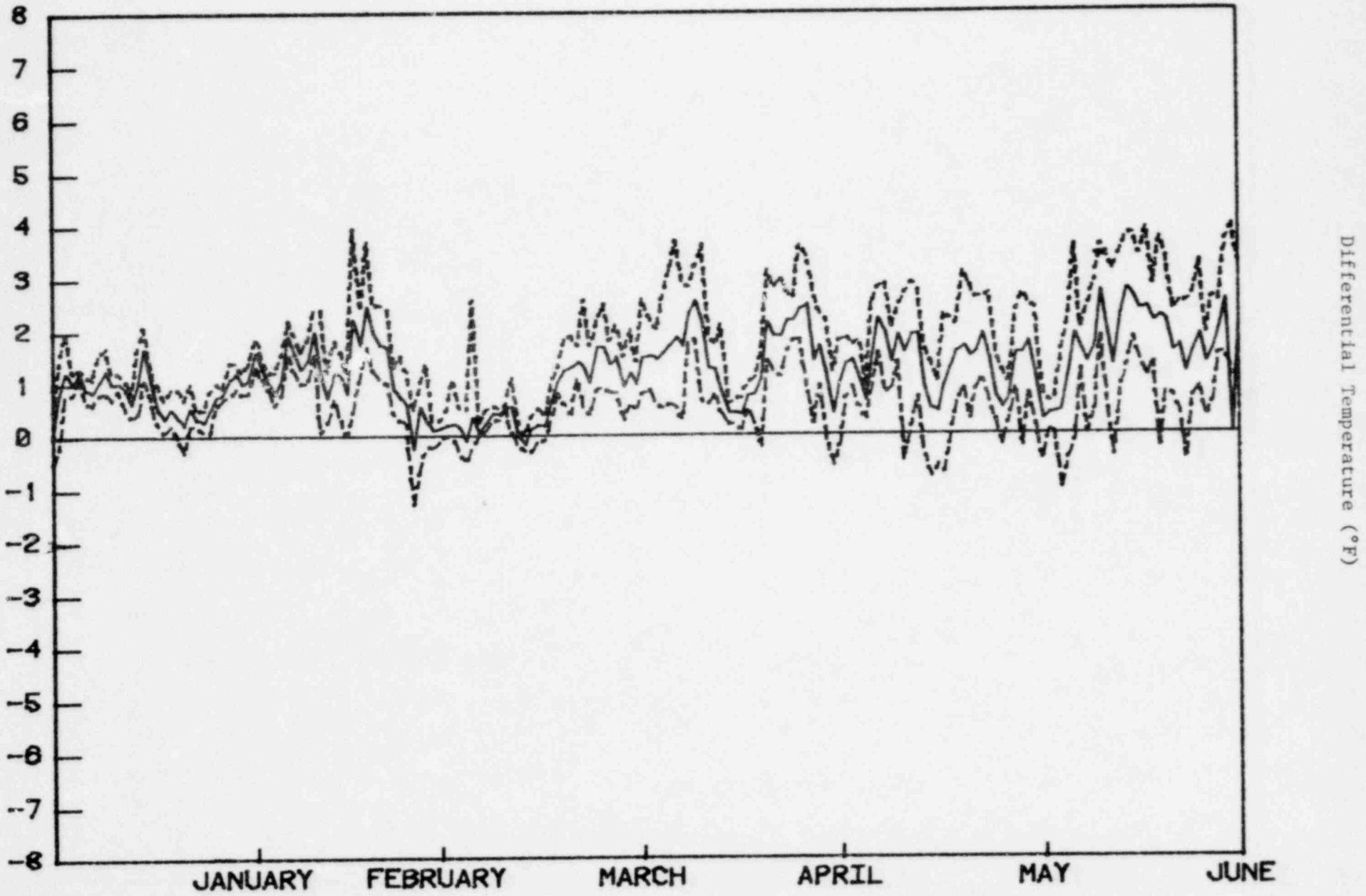


Figure 3. Temperature differential between thermal control monitors at primary upstream control station (TRM 297.6) and the average downstream control station (TRM 292.6 LMP) for the 5' depth, based on 15-minute interval-2-hour moving averages.

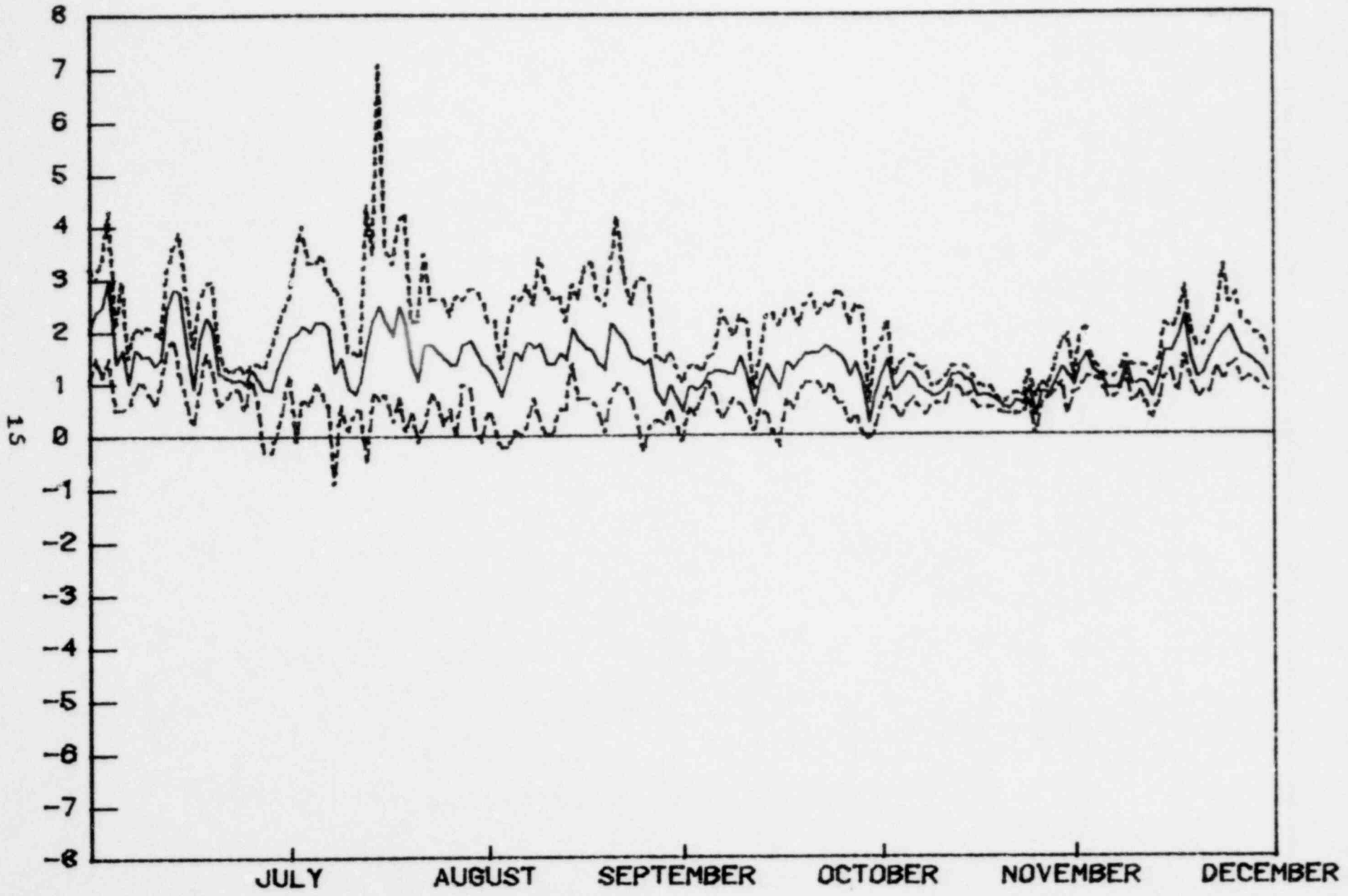


Figure 3 (Cont.) Temperature differential between thermal control monitors at primary upstream control station (TRM 297.6) and the average downstream control station (TRM 292.6 LMP) for the 5' depth, based on 15-minute interval-2-hour moving averages.

III. RESULTS OF OFFSITE WATER QUALITY SURVEYS

Water quality data for winter, spring, summer, and fall quarters of 1979 from stations both upstream and downstream of BFNP are in Appendix B. They include maximum, minimum, mean, and standard deviation of horizontal and vertical observations at each station. Table 3 is a summary table of "t" statistic comparisons of means for chemical parameters measured at each station during this reporting period. The hypothesis tested was that samples were taken from the same population, more specifically that the mean value for one station was not statistically different from the mean value at other station.

Table 3 shows a difference in various chemical parameters that is inconsistent with respect to station and parameter. These differences which led to the rejection of the null hypothesis were attributed to limnological features such as thermal stratification, seasonal biological activity, geological considerations, and influence of tributaries and not power plant operation.

During the period covered by this report, available data indicate no adverse alteration of water quality (established water quality standards were not exceeded) in Wheeler Reservoir due to the operation of Browns Ferry Nuclear Plant.

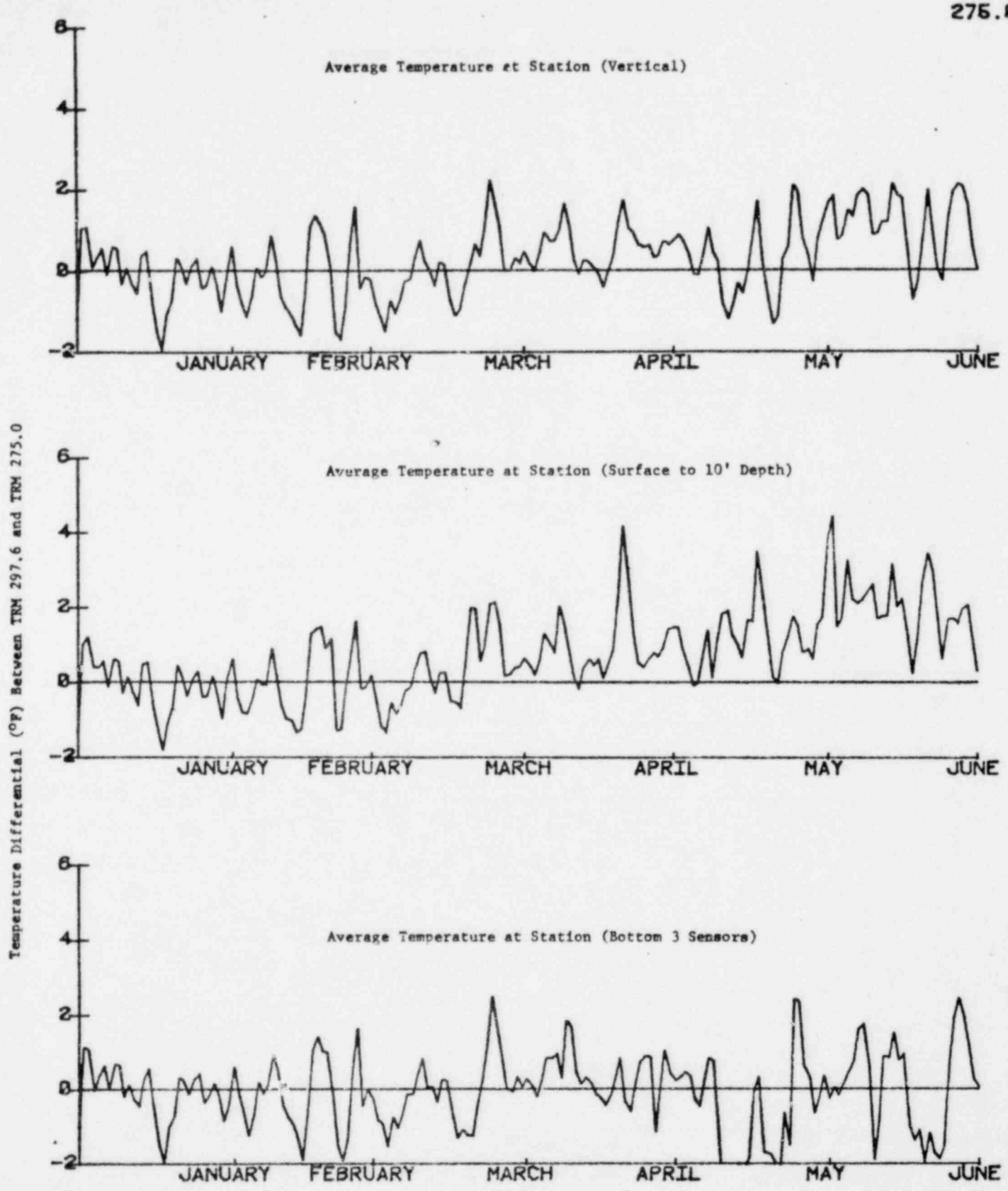
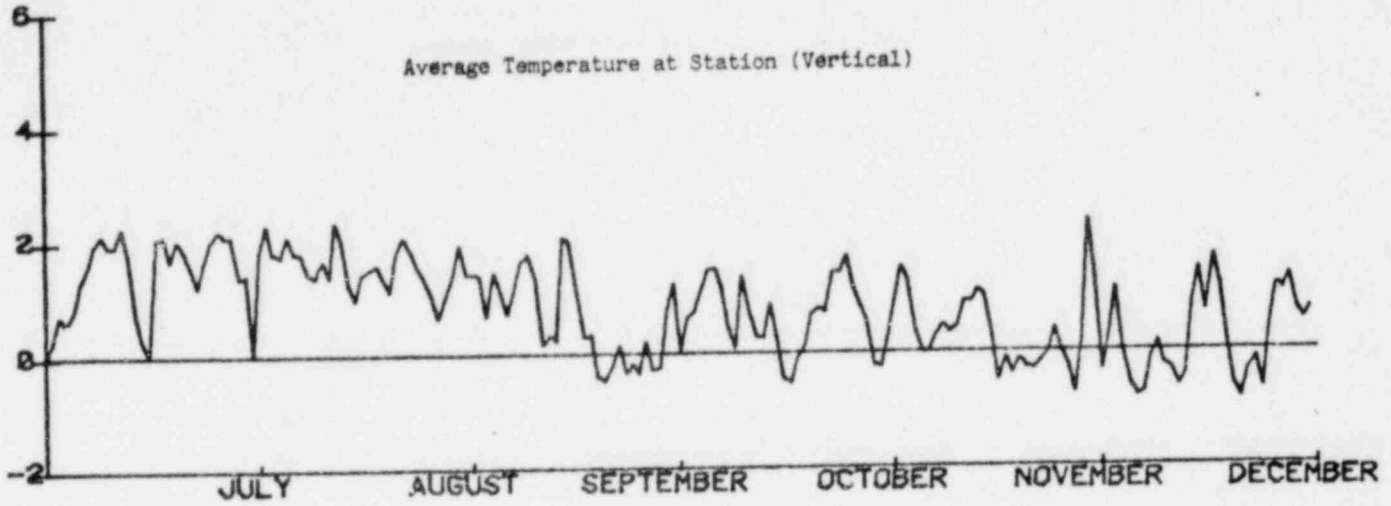
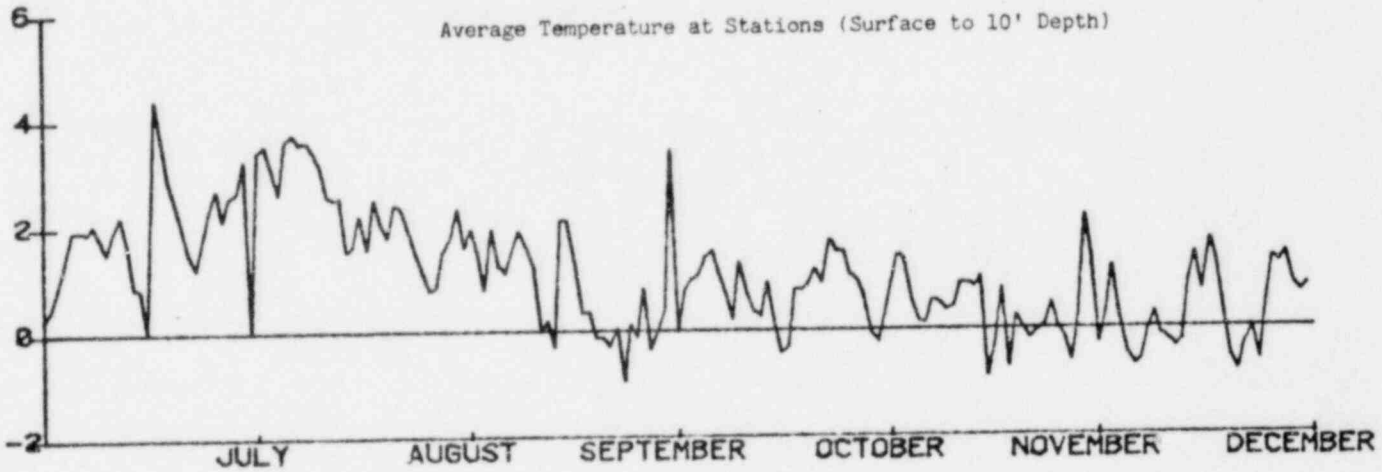
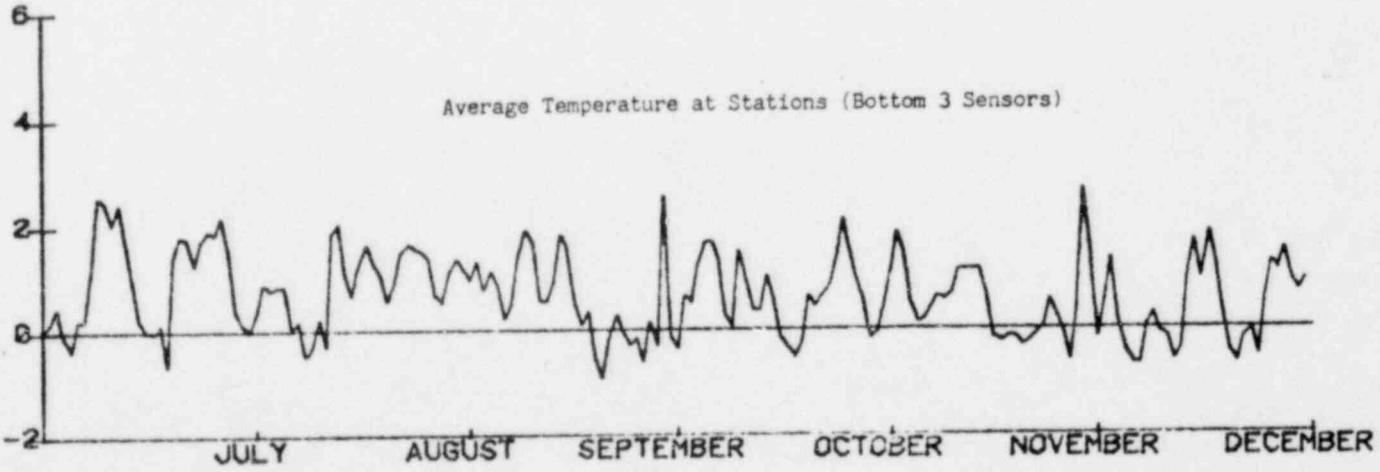


Figure 4. Average daily temperature differentials between an upstream control station (TRM 297.6) and selected downstream stations.







Temperature Differential (^{0}F) BEtween TRM 297.6 and TRM 275.0

Figure 4. (Continued)

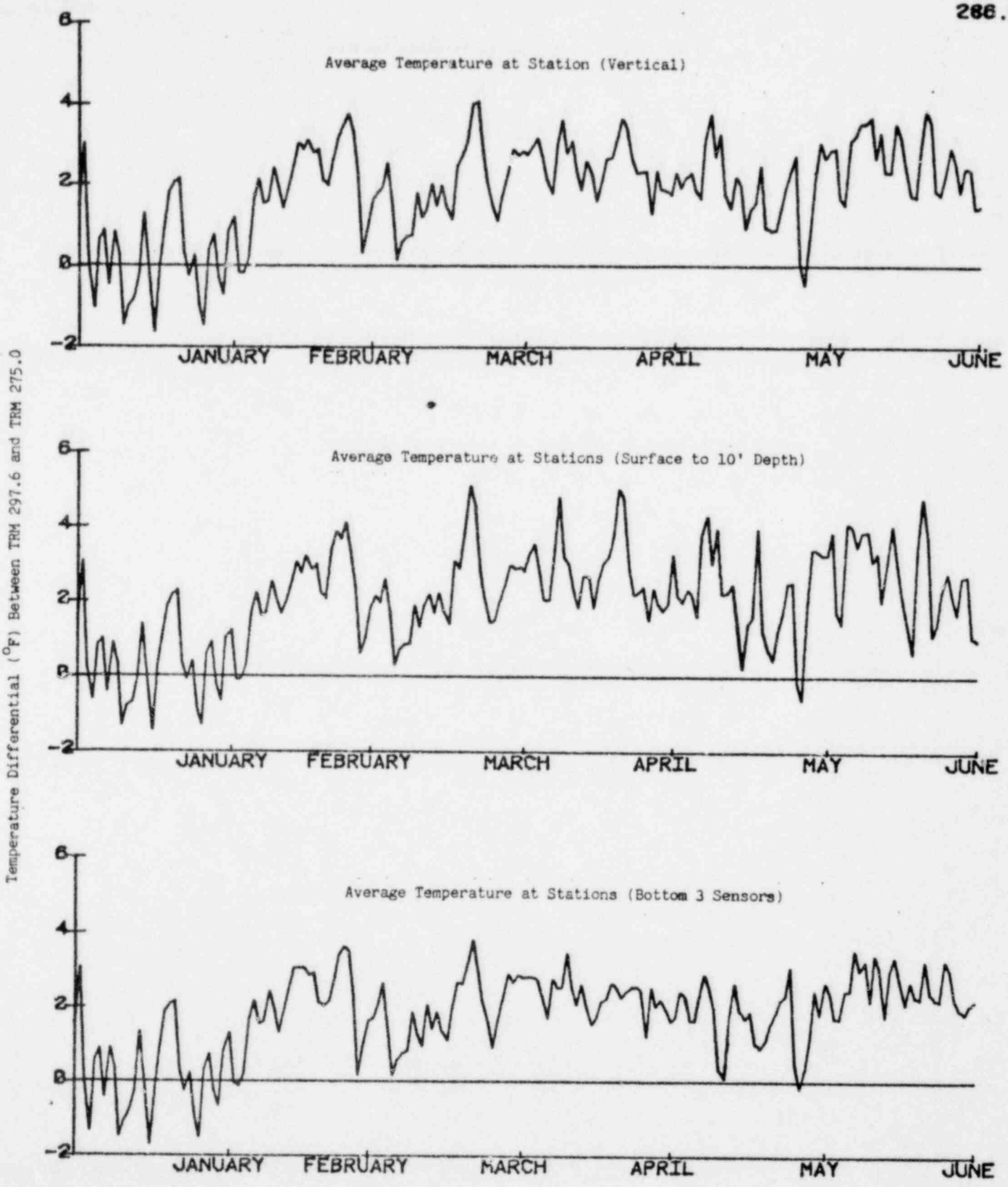
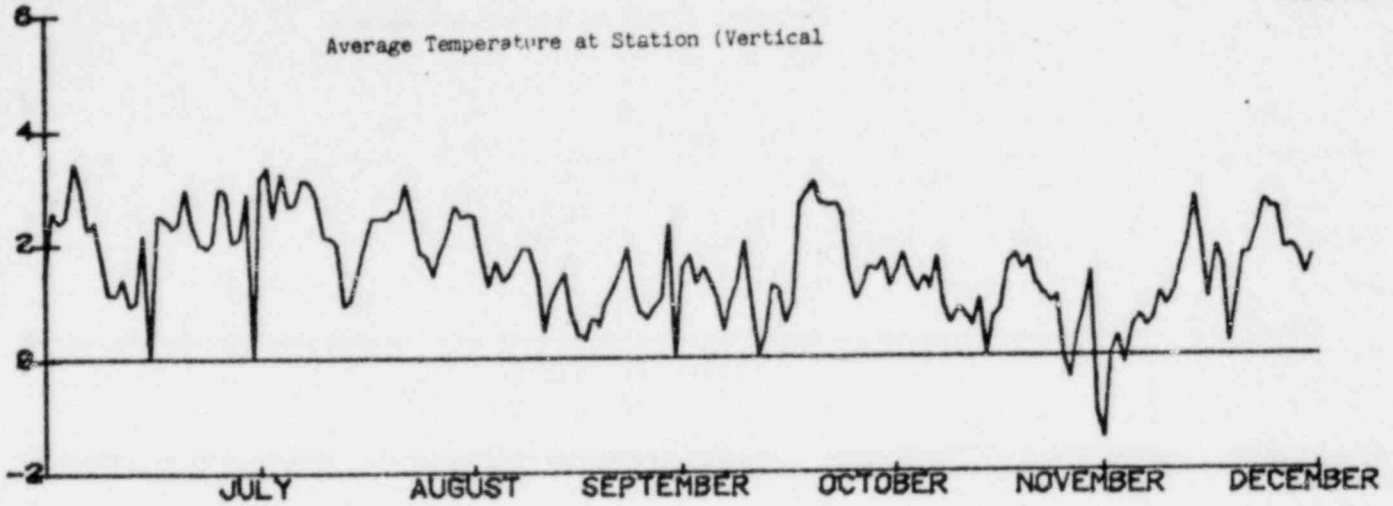
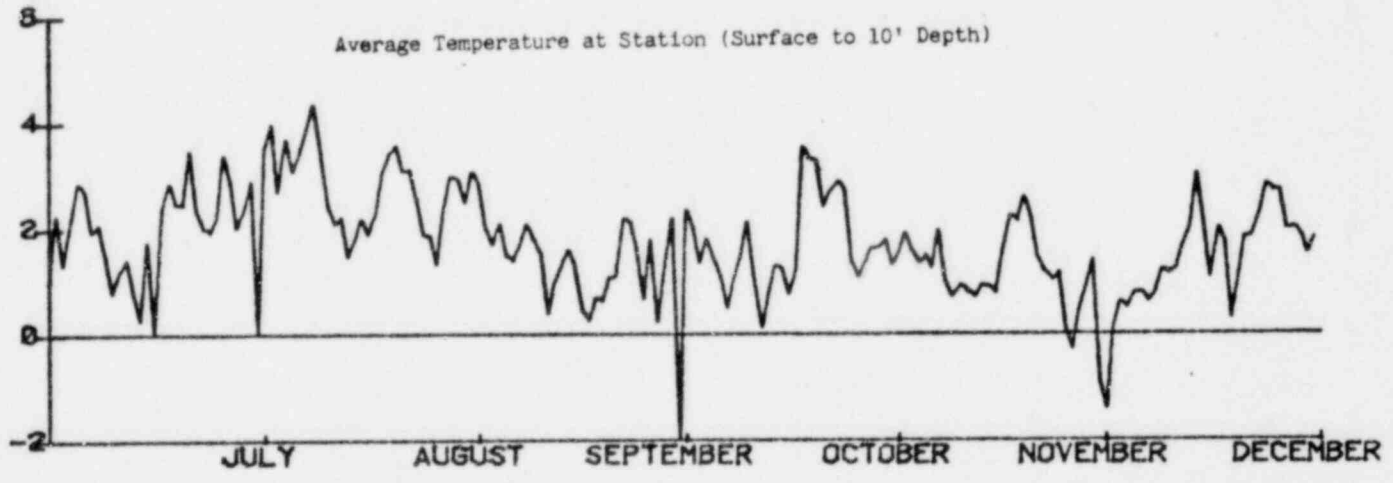


Figure 4 (Continued)





Temperature Differentials (°F) Between 297.6 and 286.04

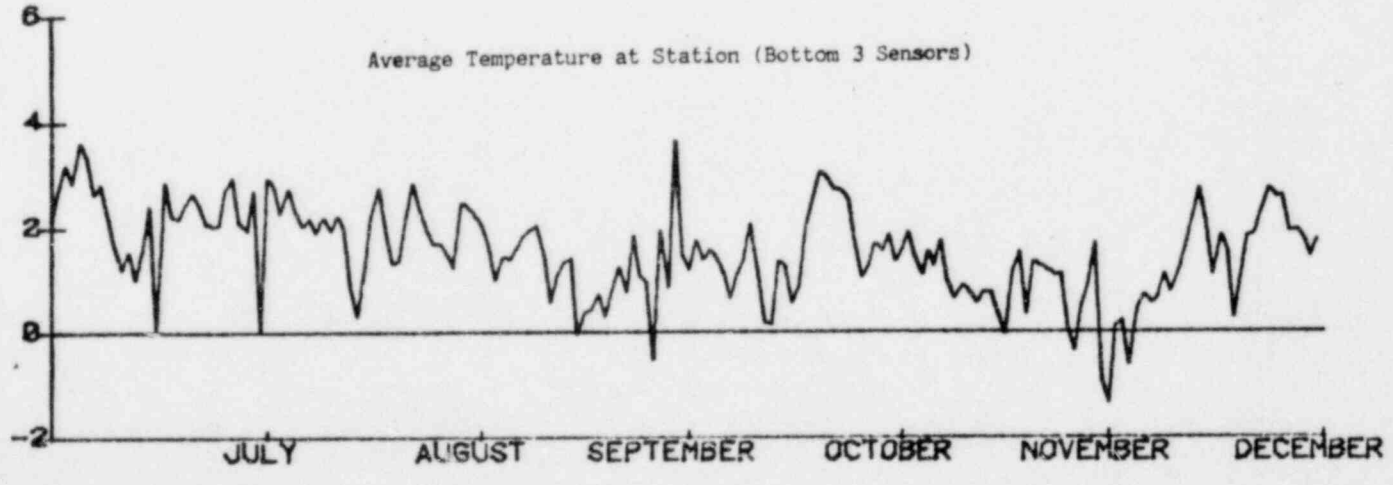


Figure 4 (Continued)

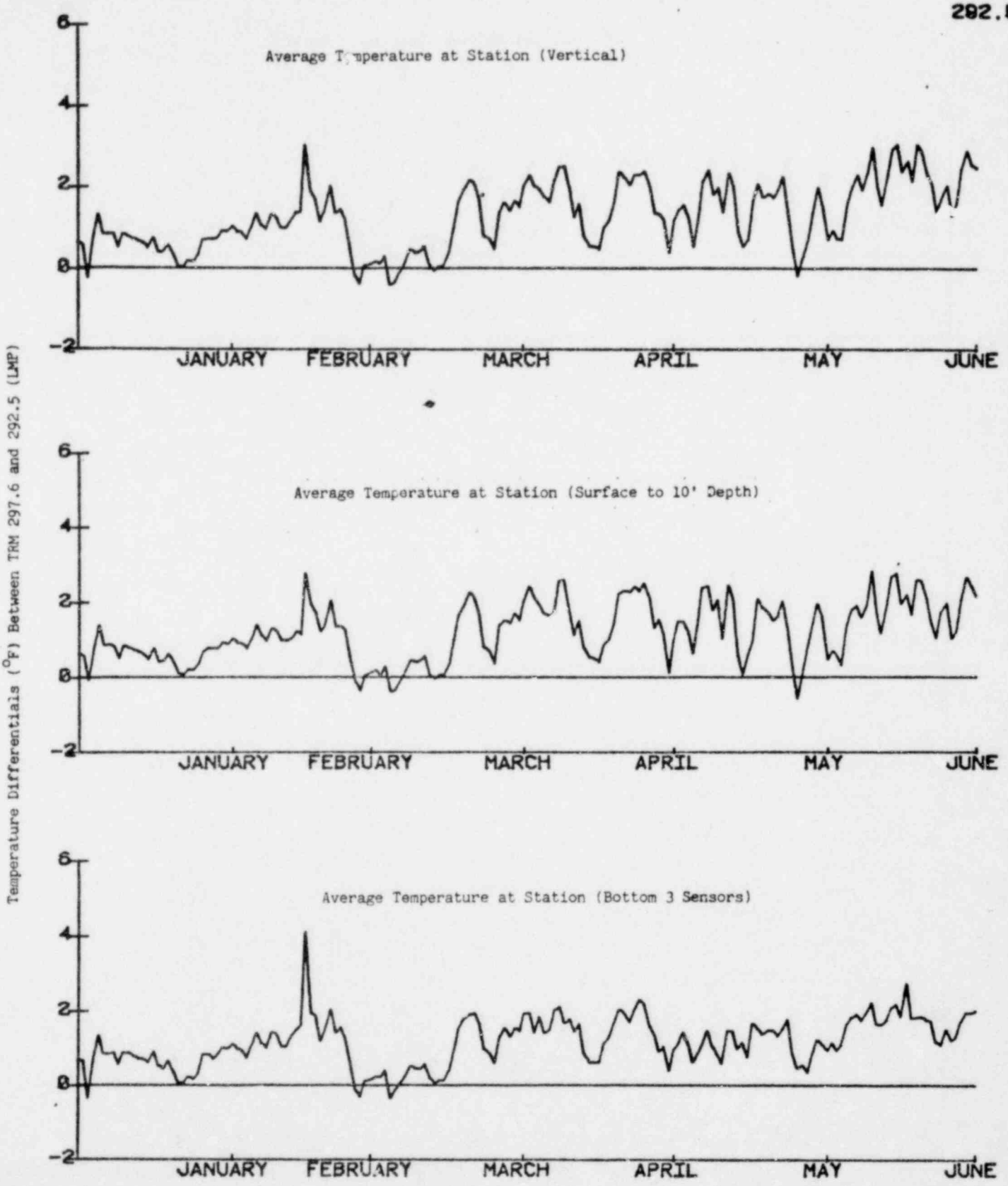
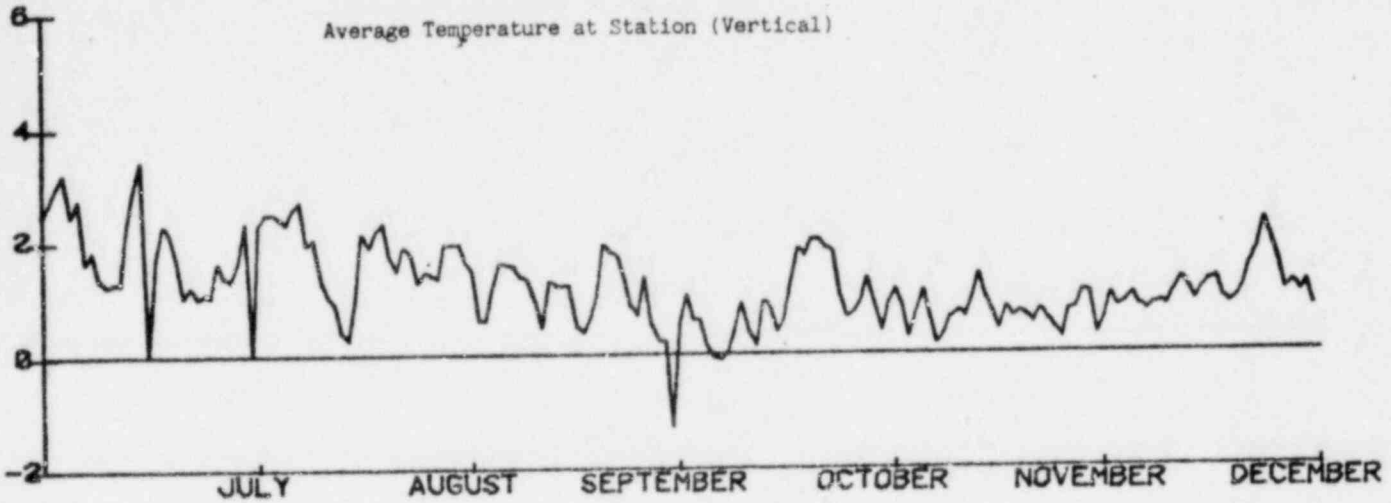
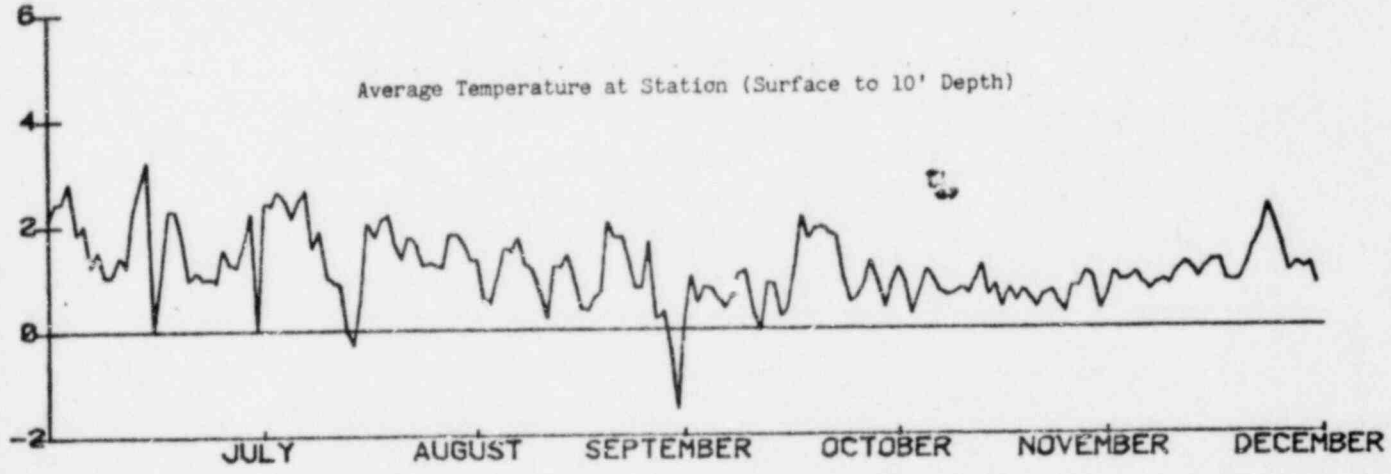
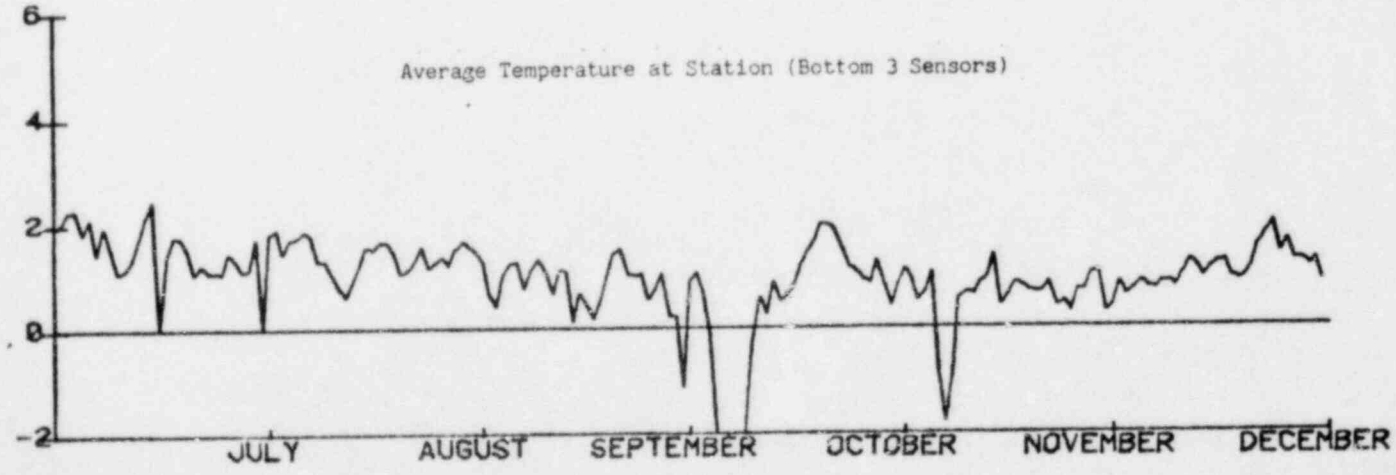


Figure 4 (Continued)







Temperature Differentials (^{o}F) Between TRM 297.6 and 292.5 (LMP)

Figure 4 (Continued)

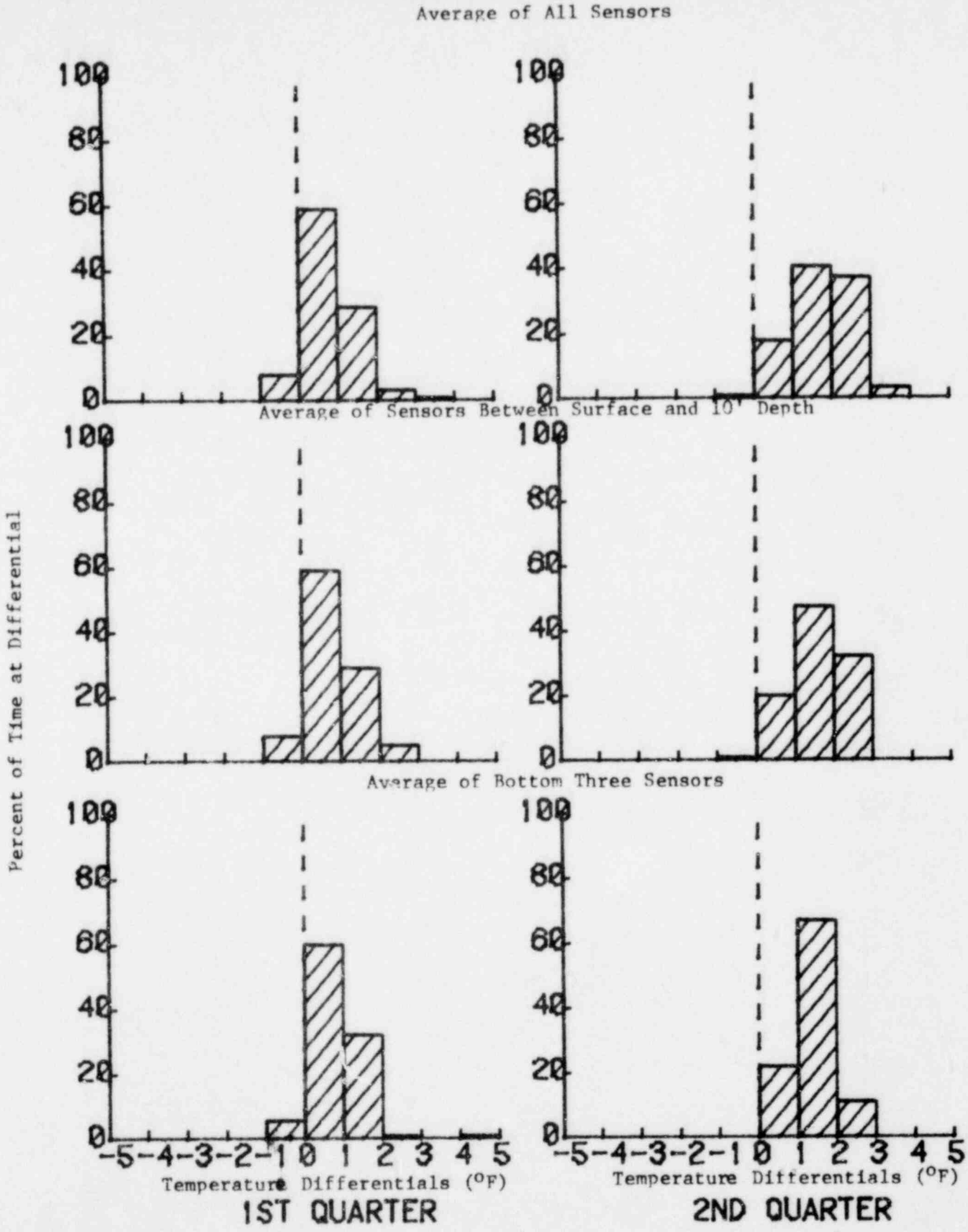


Figure 5. Temperature differential between TRM 297.6 and TRM 292.5 (LMP) for 1979. Expressed as percentage of time at the given differential

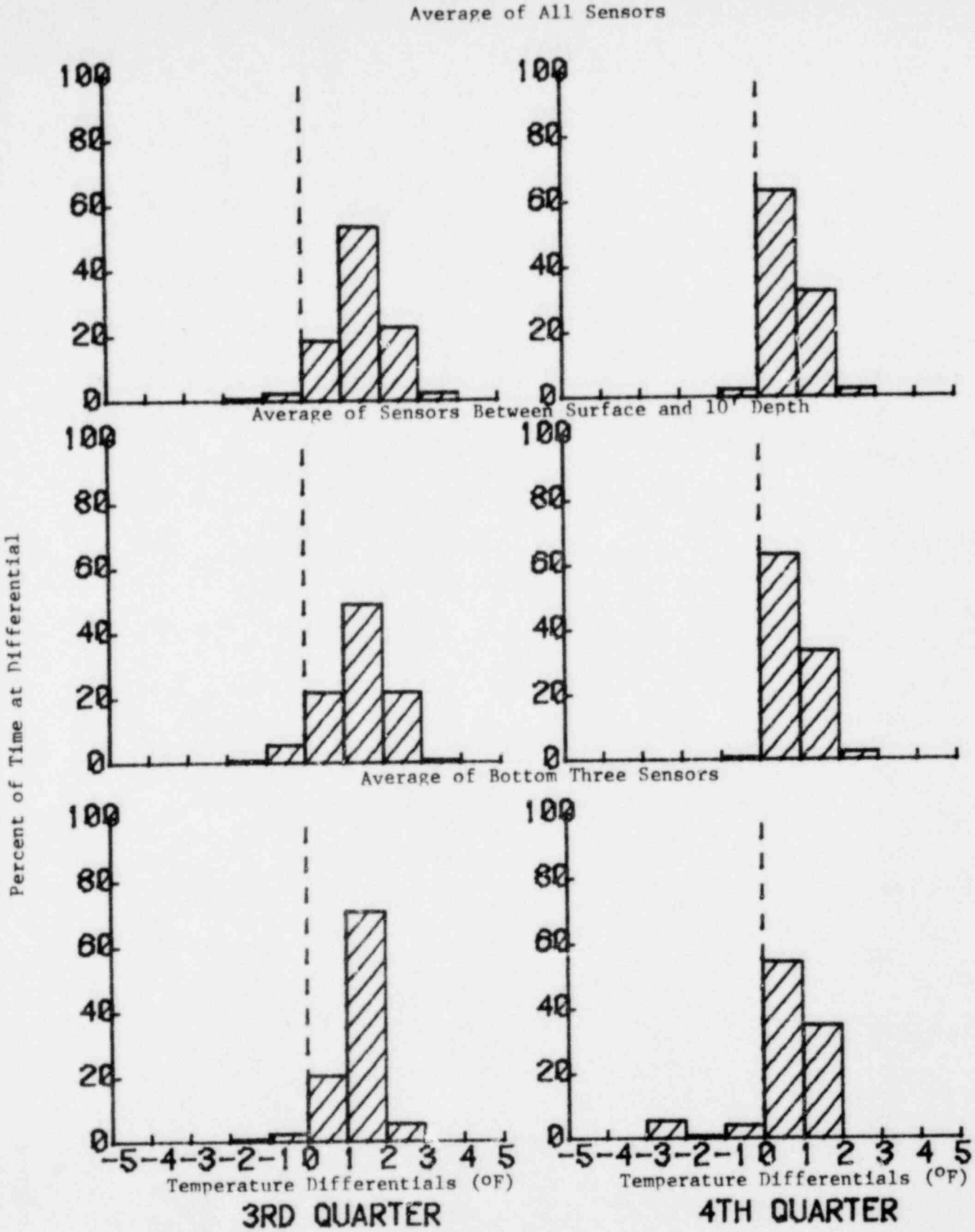


Figure 5 (Continued)

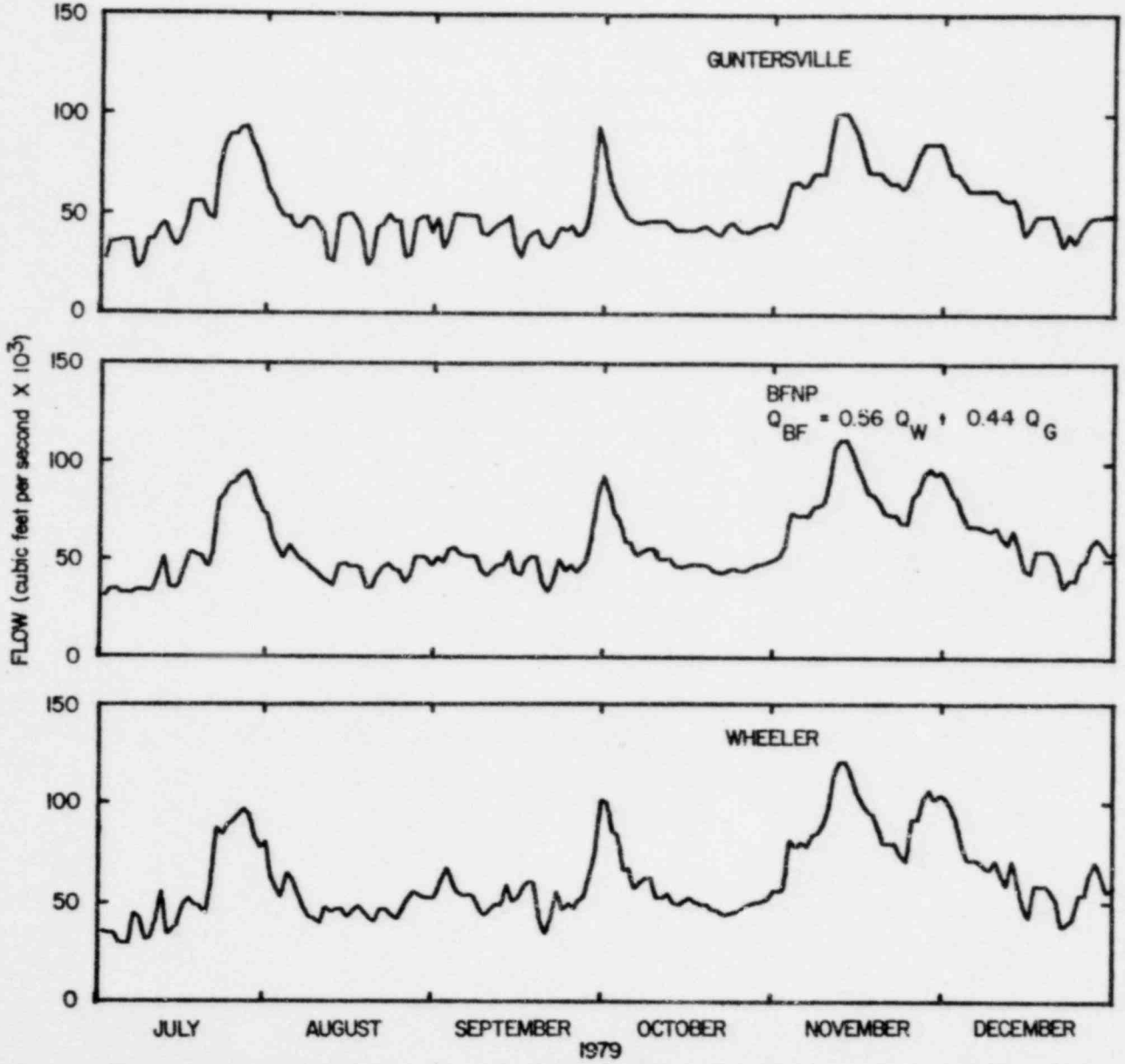


Figure 6. Daily average discharge from Guntersville and Wheeler Dams and the calculated daily average flow past Browns Ferry Nuclear Plant.

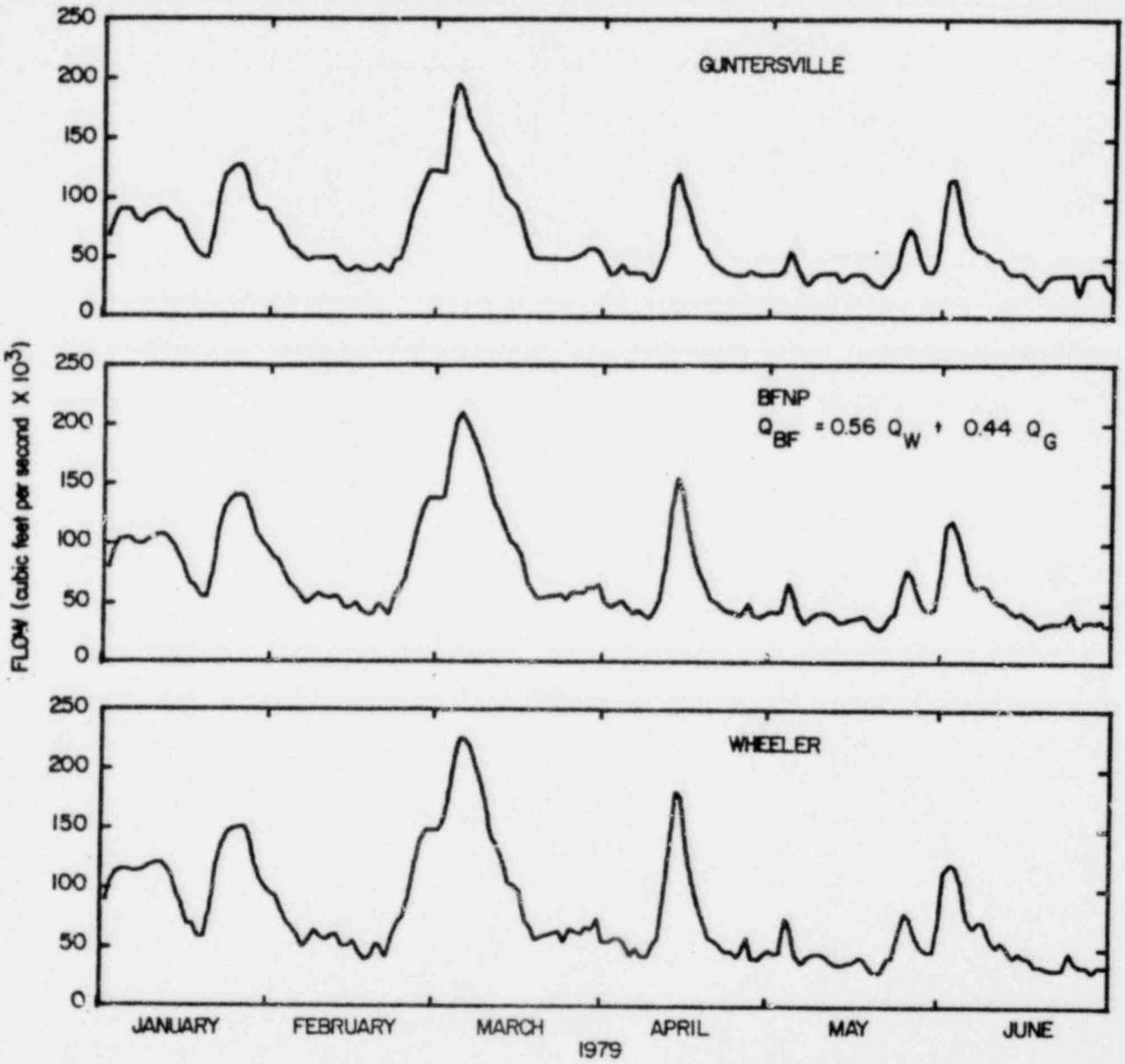


Figure 6 continued. Daily average discharge from Guntersville and Wheeler Dams and the calculated daily average flow past Browns Ferry Nuclear Plant.

TABLE 3

SUMMARY TABLE FOR "t" STATISTIC

FOR OPERATIONAL WATER QUALITY DATA

(Continued)

DO	BOD 5-day	COD	pH	Total Alkalinity	Conductivity	Sodium	Sulfate	Chloride	NH_3-N	(NO_2+NO_3)-N	Org-N	Dissolved Solids	Non-Filterable Solids
					Third Quarter 1979								
					Tennessee River Mile 283.94 vs. Tennessee River Mile 295.87								
1.44	1.47	1.23	3.53**	1.71	-0.34	1.13	-1.16	-2.33	-0.30	-4.38**	3.91**	0.16	0.00
					Tennessee River Mile 283.94 vs. Tennessee River Mile 291.76								
-0.21	-0.55	0.40	1.44	1.17	1.88	0.45	-0.99	[a]	0.63	-3.22**	0.39	2.09	-2.90*
					Tennessee River Mile 291.76 vs. Tennessee River Mile 295.87								
3.19**	0.68	1.60	2.86**	2.38	-3.85***	2.19	-0.52	-1.63	-0.99	-1.95	2.37	-1.63	2.58
					Tennessee River Mile 277.98 vs. Tennessee River Mile 288.78								
-1.58			-1.08		4.43***								
					Tennessee River Mile 277.98 vs. Tennessee River Mile 293.70								
-0.65			1.63		23.45***								
					Tennessee River Mile 277.98 vs. Tennessee River Mile 307.52								
3.88**			3.87**		33.02***								
					Fourth Quarter 1979								
					Tennessee River Mile 283.94 vs. Tennessee River Mile 295.87								
-1.63	2.30	-1.49	-2.38*	0.25	-0.95	-2.44*	0.50	[a]	-0.67	0.34	0.85	0.67	-0.47
					Tennessee River Mile 283.94 vs. Tennessee River Mile 291.76								
-1.00	1.94	1.08	2.03	-0.12	-0.12	-0.28	0.28	[a]	0.35	0.53	-0.70	-1.00	-2.95*
					Tennessee River Mile 291.76 vs. Tennessee River Mile 295.87								
-1.15	0.26	-3.60*	-4.52***	0.25	-0.77	-4.28*	0.15	[a]	-1.13	-7.75***	1.30	1.74	1.56
					Tennessee River Mile 277.98 vs. Tennessee River Mile 288.78								
0.66			[a]		2.01								
					Tennessee River Mile 277.98 vs. Tennessee River Mile 293.70								
2.44*			2.64*		2.44*								
					Tennessee River Mile 277.98 vs. Tennessee River Mile 307.52								
4.19***			[a]		2.78*								

*Significant at the 0.05 level.
**Significant at the 0.01 level.
***Significant at the 0.001 level (i.e., the difference between the means is greater than could be expected by chance 1 time in 1,000).

a. All sample values were equal.
b. Undefined.

TABLE 3

SUMMARY TABLE FOR "t" STATISTIC

FOR OPERATIONAL WATER QUALITY DATA

DO	BOD 5-day	COD	pH	Total Alkalinity	Conductivity	Sodium	Sulfate	Chloride	NH_3-N	(NO_2+NO_3)-N	Org-N	Dissolved Solids	Non-Filterable Solids
					First Quarter 1979								
				Tennessee River Mile 283.94 vs. Tennessee River Mile 295.87									
1.65	-0.10	1.97	1.73	0.69	-0.53	-1.05	-1.07	-1.06	0.53	1.63	1.04	1.04	0.75
				Tennessee River Mile 283.94 vs. Tennessee River Mile 291.76									
0.99	1.33	1.12	0.12	0.48	-0.85	-1.80	-1.92	-1.73	0.49	2.00	1.78	2.16	1.31
				Tennessee River Mile 291.76 vs. Tennessee River Mile 295.87									
1.41	-1.23	1.04	1.52	0.98	0.26	0.61	1.15	0.52	0.19	1.22	-0.38	-0.52	-1.12
				Tennessee River Mile 277.98 vs. Tennessee River Mile 288.78									
-3.11**			-0.98		3.76**								
				Tennessee River Mile 277.98 vs. Tennessee River Mile 293.70									
-3.73**			-2.44*		-2.87**								
				Tennessee River Mile 277.98 vs. Tennessee River Mile 307.52									
-4.58***			-0.61		-1.11								
					Second Quarter 1979								
				Tennessee River Mile 283.94 vs. Tennessee River Mile 295.87									
-2.63*	0.69	0.69	-0.04	2.21	2.81**	-2.93*	-1.04	-1.08	1.53	-0.75	-0.86	0.98	2.96*
				Tennessee River Mile 283.94 vs. Tennessee River Mile 291.76									
-2.28*	-0.18	0.14	0.34	1.67	1.67	-2.06	0.72	-1.57	0.79	0.20	-2.60*	0.73	-2.99*
				Tennessee River Mile 291.76 vs. Tennessee River Mile 295.87									
-0.82	0.62	1.22	-0.24	2.74*	1.37	-1.14	-1.55	[a]	0.72	-2.76*	1.52	0.67	3.17*
				Tennessee River Mile 277.98 vs. Tennessee River Mile 288.78									
-0.08			0.26		4.27***								
				Tennessee River Mile 277.98 vs. Tennessee River Mile 293.70									
-4.53***			-0.98		-0.98								
				Tennessee River Mile 277.98 vs. Tennessee River Mile 307.52									
-3.41**			-3.21**		6.04***								

*Significant at the 0.05 level.
**Significant at the 0.01 level.
***Significant at the 0.001 level (i.e., the difference between the means is greater than could be expected by chance 1 time in 1,000).

a. All sample values were equal.
b. Undefined.

IV. RESULTS OF AQUATIC BIOLOGICAL MONITORING

Introduction

Aquatic biological indicators have been selected for detecting biological changes in Wheeler Reservoir attributable to the operation of BFNP. Sampling for phytoplankton, zooplankton, and benthos has been conducted quarterly since January 1969, usually during January, April, July, and October, at eight stations. These stations are shown in figure 1 and are as follows:

	Tennessee River Mile
Controls	307.52
	301.06
	295.87
Below BFNP	293.70
	291.76
	288.78
	283.94
	277.98

Benthic samples were collected randomly as near as possible to each station. Plankton samples were collected at specific depths in the river channel near each station. Although BFNP was not operational during portions of this period of monitoring due to repairs, the biological monitoring continued as planned.

This is the ninth report summarizing water quality and biological conditions in Wheeler Reservoir since BFNP began operation and includes data for winter, spring, summer, and fall of 1979. Some biological data from the previous reports are included where necessary. These data are compared with data collected before operation began. Specifically

data are examined from five downstream and compared to three upstream stations to determine whether changes have occurred in aquatic biological communities as a result of operating BFNP.

Standard operating procedures for all sample collection and laboratory methods are on file in TVA's Division of Water Resources, Western Area Office, Muscle Shoals, Alabama. Specifications and bases (i.e., reasons for monitoring) concerning the biological monitoring program can be found in the Environmental Technical Specifications for BFNP.

Phytoplankton

Abundance -- The frequency of occurrence of phytoplankton densities in increments of 10^5 cells/liter at both upstream and downstream stations before and during operation of BFNP is shown in figure 7. These results are also shown in increments of 500,000 cells/liter in table 4.

Winter, spring, summer, and fall samples are used in table 4 and figure 7 to establish a frequency range for the entire preoperational monitoring phase. Operational data for fall of 1973 and all seasons during 1974 through 1979 are combined for the same reason. At this time, 148 preoperational averaged observations are compared with 200 operational averaged observations. Table 4 and figure 7 show that the most frequently occurring increment for the preoperational phase (above and below BFNP) and the operational phase (above BFNP) is the 0 to 5 x 10^5 cells/l increment. Below BFNP in the operational sampling, the majority of cell densities fall into the greater than 2,700,000 cells/l

TABLE 4

TOTAL PHYTOPLANKTON NUMBERS FREQUENCY OF OCCURRENCE

IN INCREMENTS OF 500,000 CELLS/LITER

(Data Taken From Figure 7)

	Range Groups (Cells/1) x 10^5					
	0-5	5-10	10-15	15-20	20-27	>27
	Percentage Occurrence					
Preoperational - Control	48	26	9	6	6	5
Preoperational - Below BFNP	30	30	10	5	15	10
Operational Control	31	28	11	5	9	20
Operational Below BFNP	26	8	10	6	12	41

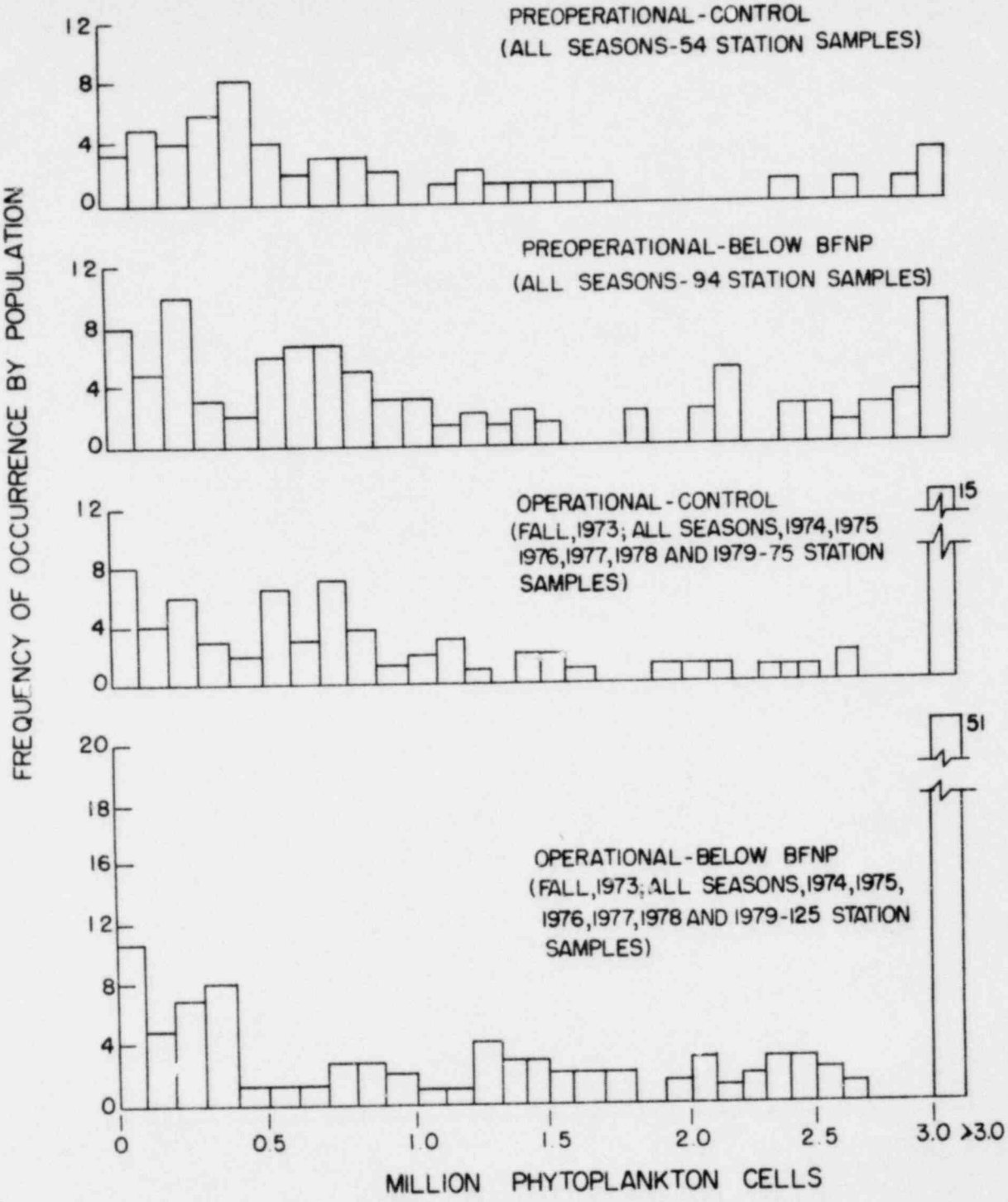


FIGURE 7 FREQUENCY OF PHYTOPLANKTON ABUNDANCE ABOVE AND BELOW BROWNS FERRY NUCLEAR PLANT BEFORE AND DURING OPERATION

category due to high counts in recent summer months (1977, 1978, and 1979). The next highest category for operational sampling below BFNP is the less than 500,000 cells/l group.

Winter and spring phytoplankton standing crops have been similar through the entire monitoring period at areas both upstream and downstream of BFNP because the water is homogenously mixed by seasonal flow regulations and lack of temperature stratification. The winter phytoplankton counts during 1979 above and below BFNP were the highest (2.4 million cells/l) since 1969. Relatively high counts also occurred during 1970 and 1977. Cell counts during 1978 were low and were comparable to those during 1976 above and below BFNP during the winter months. Nutrient concentrations were not unusually high during any of these years and the water was extremely cold (approximately 42° F in 1976, 40° F in 1977, 41° F in 1978 and 1979) during the winters. Secchi disc measurements were over 1 meter in most locations in 1977 thus allowing for excellent light penetration but less than 1 meter in 1976, 1978, and 1979.

The spring phytoplankton samples of 1969, 1970, 1972, 1976, 1977, 1978, and 1979 tend to reflect summer conditions because of unusually high ambient water temperatures during these years compared to other years. Surface temperatures of approximately 58° F in 1974 and 54° F in 1975 were less than 64° F in 1976, 69° F in 1977, 63° F in 1978, and 65° F in 1979 in the control area as well as below BFNP. These temperatures were probably due to meteorological and hydrological conditions during and preceeding the sampling period of 1977 through 1979. Spring phytoplankton counts during 1979 were the largest recorded

above and below BFNP. These results are tabularized in Appendix C (winter and spring phytoplankton tables). Although annual and seasonal fluctuations have occurred, these have been similar to both downstream and upstream stations; hence, it is concluded that total phytoplankton numbers were not affected by the operation of BFNP during the winter and spring of 1979.

Phytoplankton samples collected throughout summer and fall monitoring periods of 1969-1979 have shown a larger standing crop of phytoplankton below BFNP than in the control area except during the summer of 1978. The other two control stations were less than the stations below BFNP. Phytoplankton abundance in Wheeler Reservoir during the summer of 1978 was over seven times greater than any summer from 1969-1976 and over 60 percent greater than 1977 samples. This increased abundance was likely due to extreme summer water temperatures and other factors such as meteorological and hydrological factors causing ideal growing conditions especially, for cyanophytes. Water temperatures were highest in July 1977 and 1978 since sampling began in 1969. Temperatures averaged over 6^{o} F warmer than the normal July temperature for the past 9 years. These were naturally occurring water temperatures since they were observed throughout Wheeler Reservoir. On July 12, 1977, the water temperature at the time of sample collection was higher above BFNP than below at certain locations. Temperatures were similar above and below BFNP during July 1978. Nutrient values (N&P) during July 1977 and 1978 were also low indicating uptake by the abundant phytoplankton. The surface water temperatures were approximately 4-5^{o} F cooler on July 5, 1979, than they were during 1977 and 1978. Total phytoplankton numbers during the summer of 1979 increased over the previous years below

BFNP. The pattern shows an increase from control at TRM 307.52 to the reservoir area below BFNP. Since 1979 was a cool wet year, reservoir water temperatures were relatively low and flows relatively high. At least two reasons for the downstream increases exist: (1) increases due to plant operation or (2) high flows produced velocities in the upstream reach too great for large crops of phytoplankton to develop; however, decreased velocities in the lacustrine portion of Wheeler Reservoir provided favorable conditions and phytoplankton numbers increased substantially at stations in this reach. Because of the numerous interacting factors, delineation of the exact cause is not possible. Phytoplankton abundance in Wheeler Reservoir during the fall of 1979 did not indicate any extreme variation from other fall samples. From these results it is concluded that total phytoplankton numbers were not affected by the operation of BFNP during the fall of 1979. The results are tabularized in Appendix C (summer and fall phytoplankton tables).

Composition -- Figure 8 shows percentages of Chrysophyta, Chlorophyta, and Cyanophyta in the total phytoplankton community for winter and spring of each year and the differences between control stations and stations below BFNP. Larger than usual blue-green algae percentages (36 percent above and 12 percent below BFNP) were found during the spring of 1977. The percentages of blue-greens above and below BFNP were again normal for the spring seasons of 1978 and 1979. Additional data concerning each station are tabularized in Appendix C (winter and spring percentage tables).

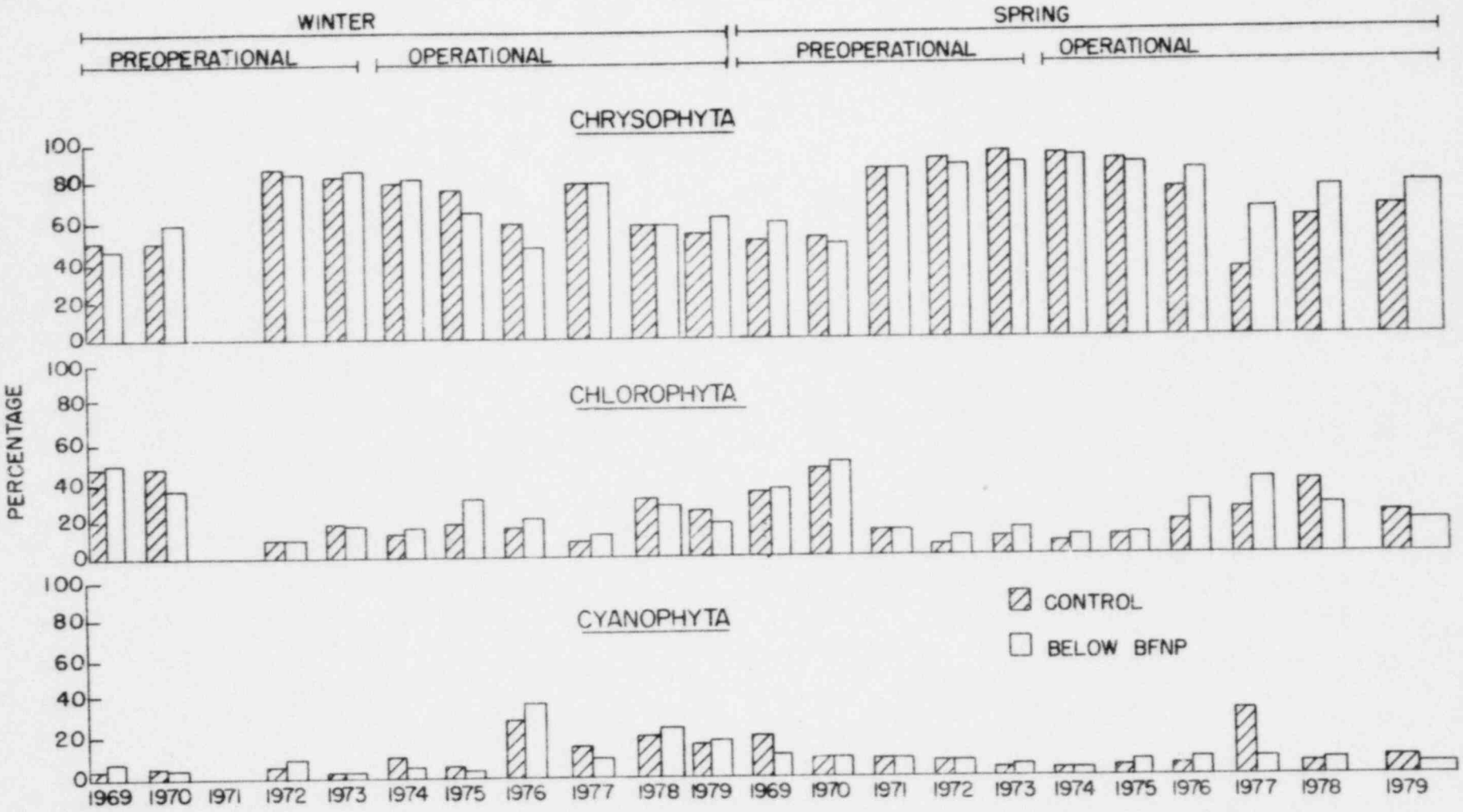


FIGURE 8. PERCENTAGES OF MAJOR GROUPS OF PHYTOPLANKTON DURING THE WINTER AND SPRING OF ALL YEARS SAMPLED SHOWING PREOPERATIONAL VERSUS OPERATIONAL AND CONTROL VERSUS BELOW BFNP

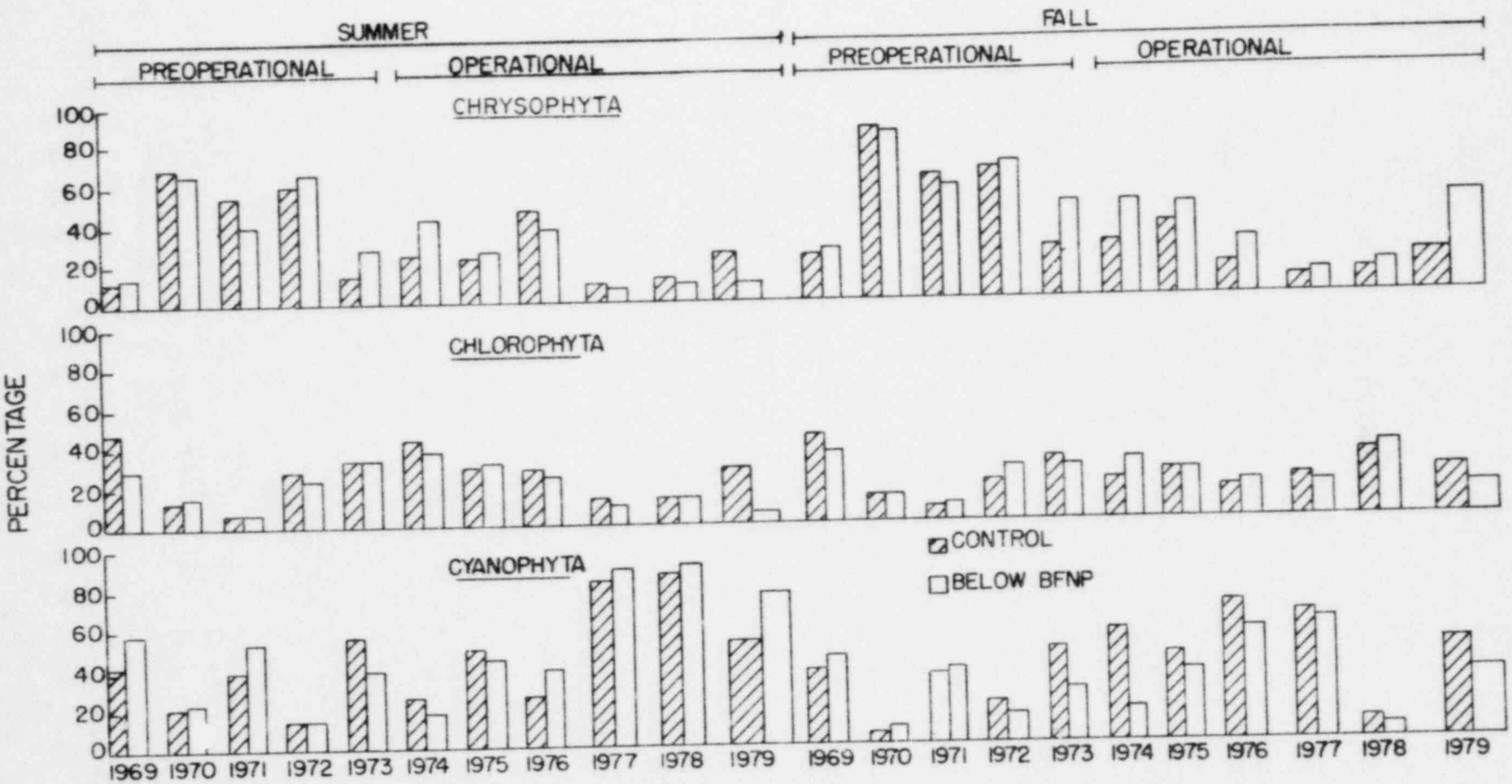


FIGURE 9. PERCENTAGES OF MAJOR GROUPS OF PHYTOPLANKTON DURING THE SUMMER AND FALL SHOWING PREOPERATIONAL VERSUS OPERATIONAL AND CONTROL VERSUS BELOW BFNP

Figure 9 shows percentages of Chrysophyta, Chlorophyta, and Cyanophyta in the total phytoplankton community during summer and fall each year as well as differences between control stations and stations below BFNP. Largest blue-green algae percentages (81 percent above and 85 percent below, 1977; and 82 percent above and 83 percent below, 1978) existed in the summers of 1977 and 1978. The percentages decreased somewhat in 1979 to 54 percent above and 79 percent below BFNP. These changes were not due to the operation of BFNP because changes were similar above and below BFNP. Additional data concerning each station are tabularized in Appendix C (summer and fall percentage tables).

Diversity -- Chrysophyta (diatoms), Chlorophyta (green algae), and Cyanophyta (blue-green algae) are the major groups of phytoplankton examined for diversity. An index of change based on presence/absence of genera was established within each group for the winter, spring, summer, and fall. The purpose of this index is to determine whether the genera present and number of genera present for each group (Chrysophyta, Chlorophyta, and Cyanophyta) have changed because of operation of BFNP.

The index of change formulas and definitions are described by Taylor (1975). Figures 10 (winter), 11 (spring), 12 (summer), and 13 (fall) show plotted values above and below BFNP for each major group of phytoplankton. Conclusions from the results of these values are described below in categories a through e:

a. If the plotted value is normal or above, the index of change is the same or greater than before operation of BFNP.

b. If the plotted value below BFNP is below normal, the index is less than before operation of BFNP (see c or d for final consideration).

c. If the plotted value below BFNP is below normal and the plotted value for control is below normal and similar to the plotted value below BFNP (<1), the decrease in the index is not caused by operation of BFNP.

d. If the plotted value below BFNP is below normal and the plotted value for control is above normal and greatly different (>1), the index decrease may be because of operation of BFNP and needs to be investigated more thoroughly.

e. Whenever the plotted value for control is >1 over the plotted value below BFNP whether above or below normal, the investigator assumes the index below BFNP may be changed because of operation of BFNP and needs to be investigated more thoroughly.

Data plotted in figures 10 through 13 are taken from Appendix C (Genera Diversity by Station for each season). Only in two cases did the results fall in category e. For the summer results (figure 12) the plotted value for Cyanophyta in the control area is 1.7 and 0.6 below BFNP. This is due to three new genera appearing at TRM 301.06 in the control area (Anabaena, Aphanothece, and Eucapsis), whereas other stations had only one new genus, except TRM 277.98 and 283.94 which had none. These three genera had already been found at the other stations, therefore, this is not due to the operation of BFNP. Figure 13 shows that the plotted value for Chrysophyta in the control area is 1.7 and

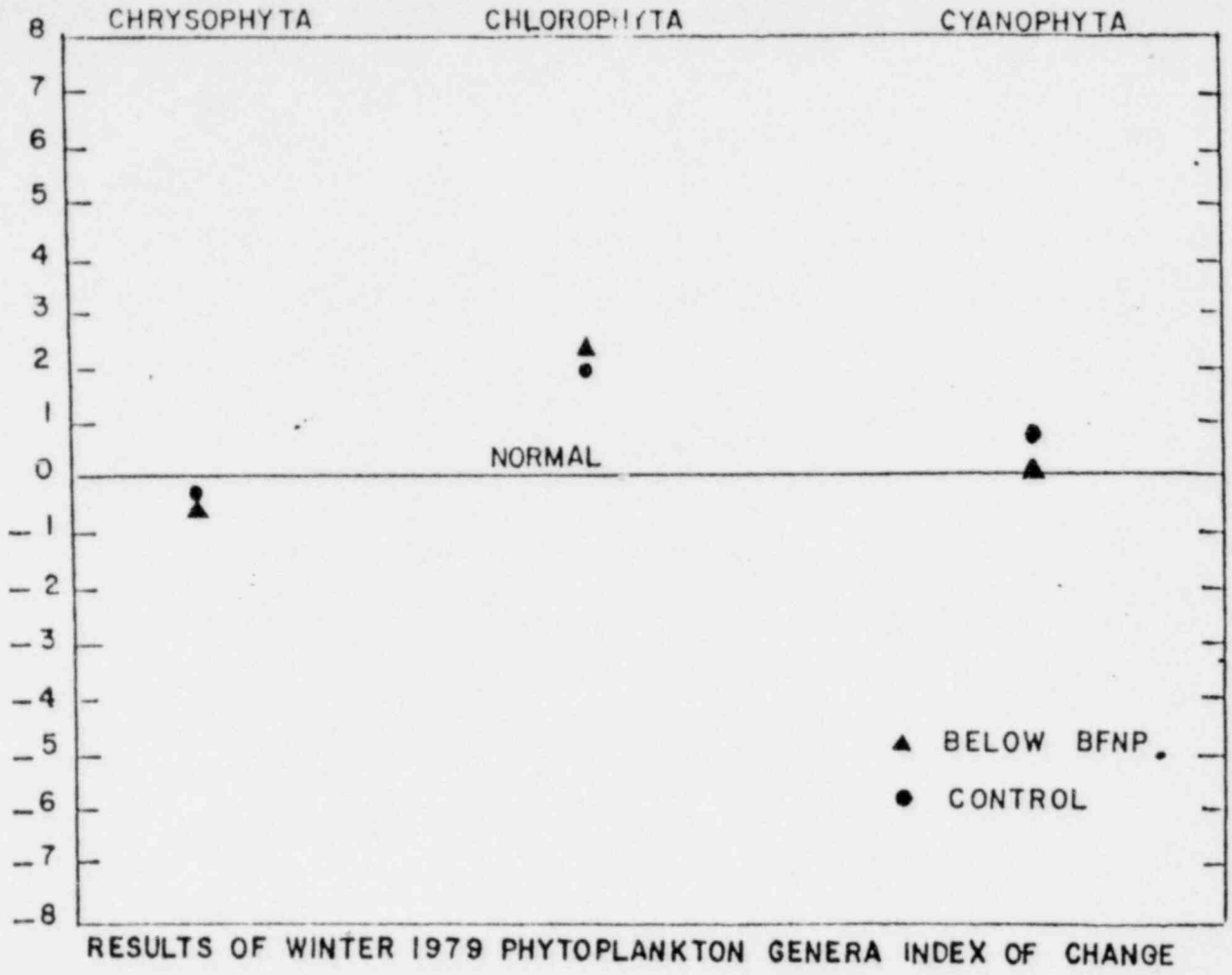

CHRYSOPHYTA
CHLOROPHYTA
CYANOPHYTA
8
7
6
5
4
3
2
1
0
-1
-2
-3
-4
-5
-6
-7
-8
NORMAL
BELOW BFNP
CONTROL
RESULTS OF WINTER 1979 PHYTOPLANKTON GENERA INDEX OF CHANGE

FIGURE 10

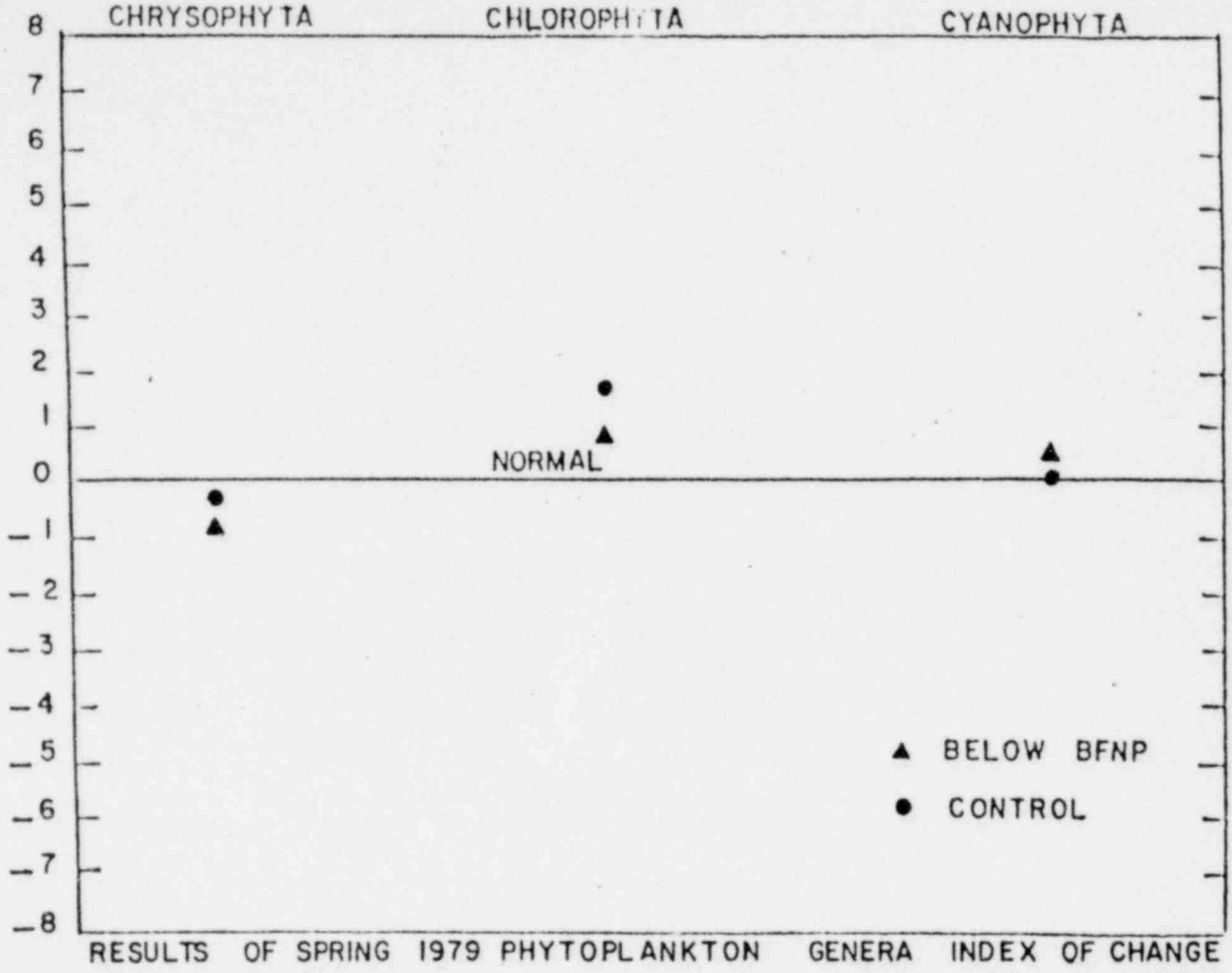
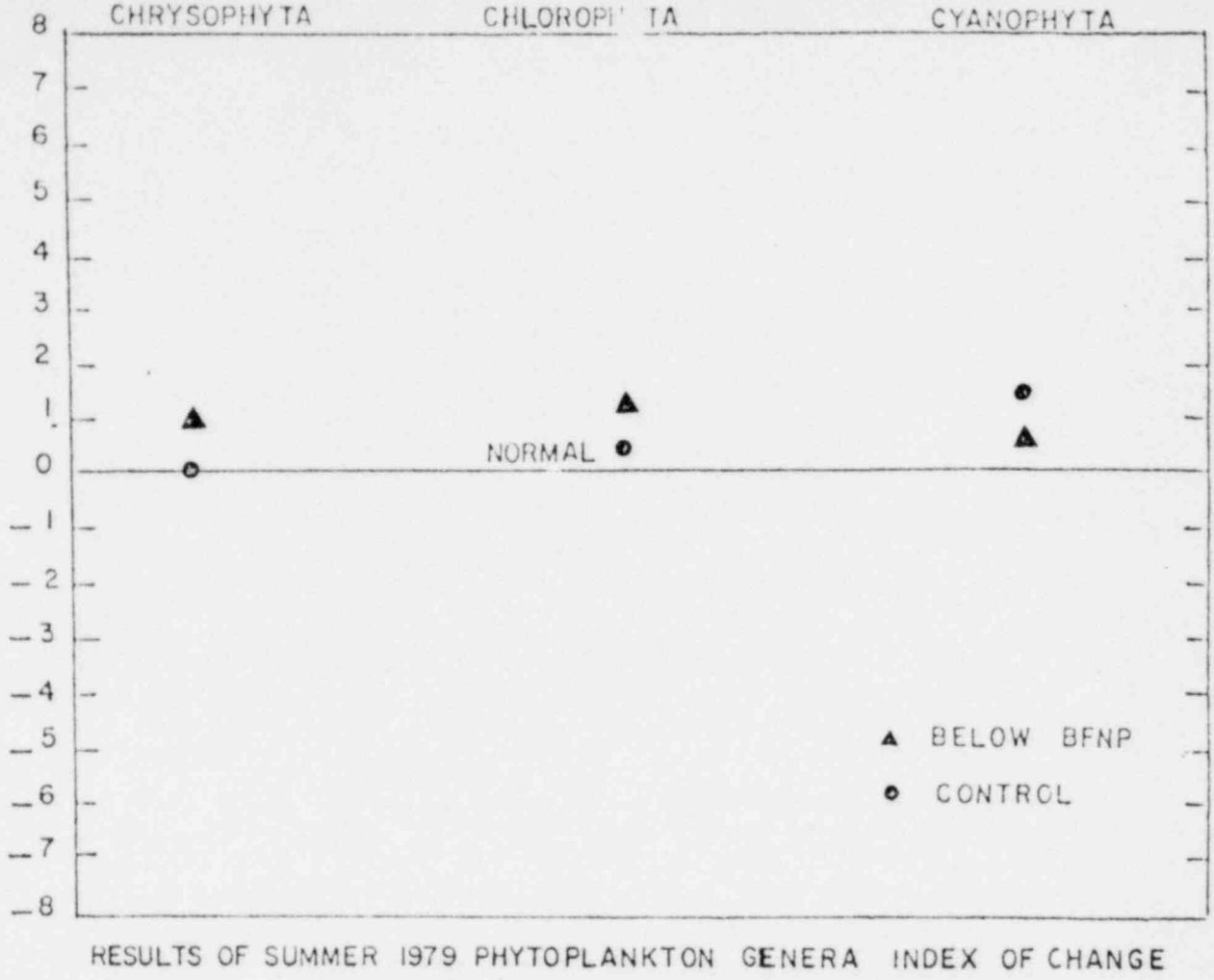

CHRYSOPHYTA
CHLOROPHYTA
CYANOPHYTA
8
7
6
5
4
3
2
1
0
−1
−2
−3
−4
−5
−6
−7
−8
NORMAL
BELOW BFNP
CONTROL
RESULTS OF SPRING 1979 PHYTOPLANKTON GENERA INDEX OF CHANGE

FIGURE 11



RESULTS OF SUMMER 1979 PHYTOPLANKTON GENERA INDEX OF CHANGE

FIGURE 12

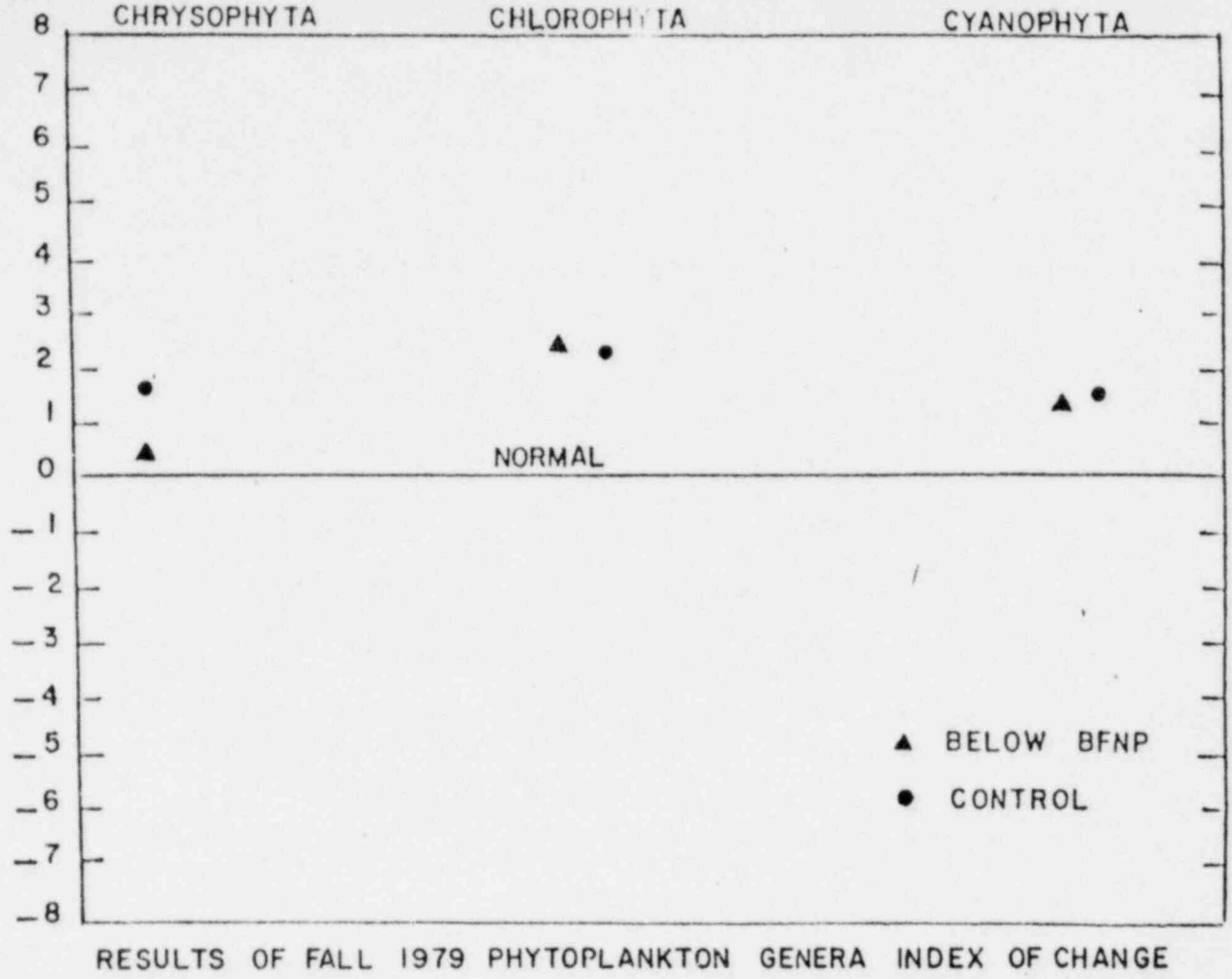

CHRYSOPHYTA
CHLOROPHYTA
CYANOPHYTA
8
7
6
5
4
3
2
1
0
NORMAL
−1
−2
−3
−4
−5
−6
−7
−8
BELOW BFNP
CONTROL
RESULTS OF FALL 1979 PHYTOPLANKTON GENERA INDEX OF CHANGE

FIGURE 13

0.2 for below BFNP. The reason for this difference is that five new genera were found in the control area, whereas only three new genera were found below BFNP, therefore this is not due to the operation of BFNP.

From these analyses, it is concluded that the genera index of change was not affected by the operation of BFNP during 1979.

Biomass -- Biomass or weight was calculated from chlorophyll a extraction and is another means of expressing standing crop in a unit volume at a given time. Figure 14 shows biomass comparisons for the winter and spring each year as well as differences between values for control stations and stations below BFNP. Additional chlorophyll a data are shown in Appendix C (winter and spring chlorophyll data). Phytoplankton biomass during the winter of 1979 was similar above BFNP and below BFNP. The relationship between data for control stations and stations below BFNP remains similar due to the normal homogeniety expressed in previous paragraphs (water homogeneously mixed by seasonal flow regulations and lack of temperature stratification). The spring seasons of 1976 through 1979 showed higher chlorophyll a concentrations below BFNP than above with similar patterns occurring at both above and downstream stations. These results are also reflected in the phytoplankton productivity studies.

Figure 15 shows biomass comparisons for the summer and fall each year as well as differences between values for control stations and stations below BFNP. The 1978 and 1979 summer seasons are not represented on the figure because these samples were improperly analyzed. The fall

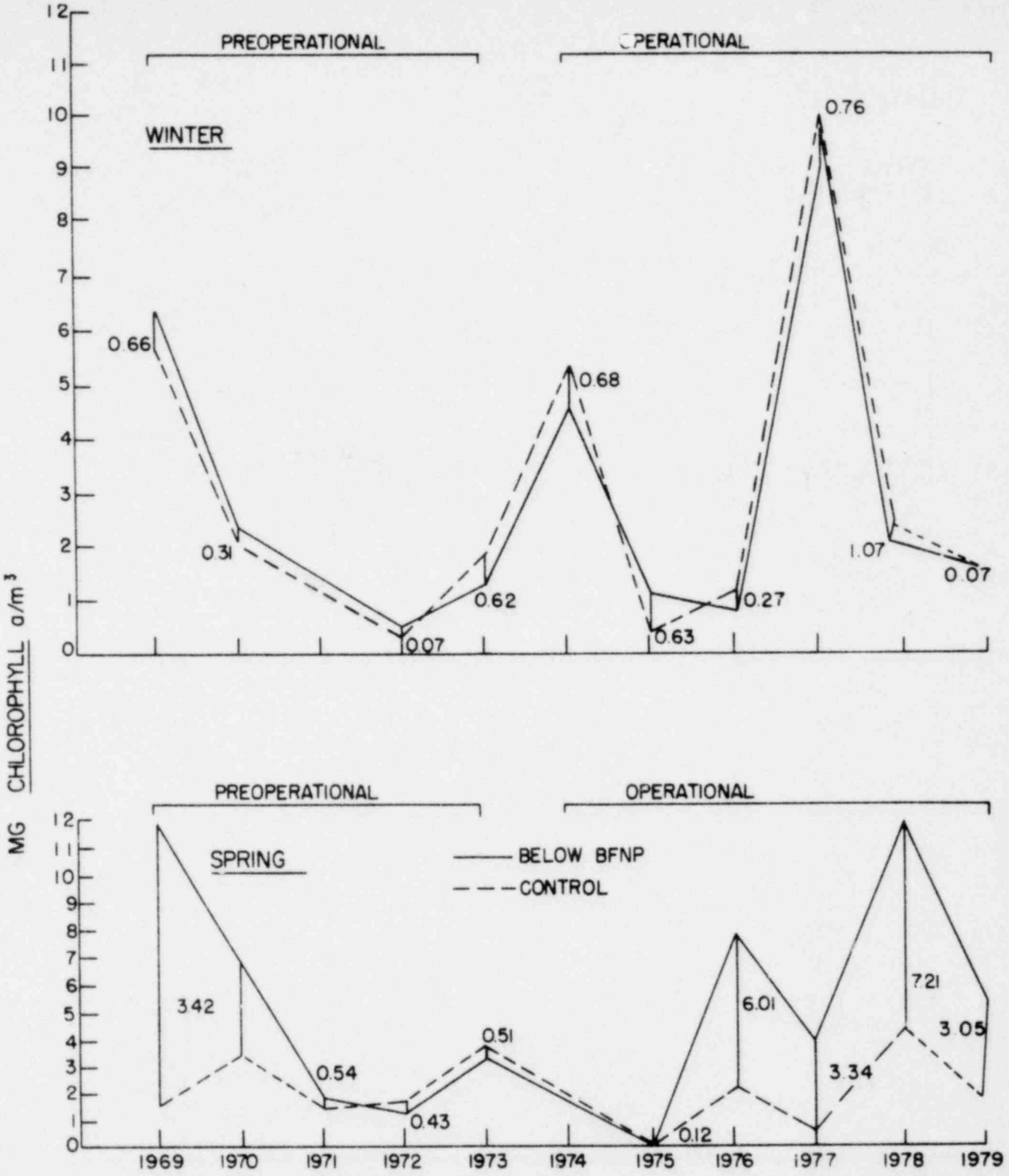


FIGURE 14 CHLOROPHYLL a COMPARISON BY YEARS BETWEEN CONTROL AND BELOW BFNP FOR WINTER AND SPRING 1969 - 1979

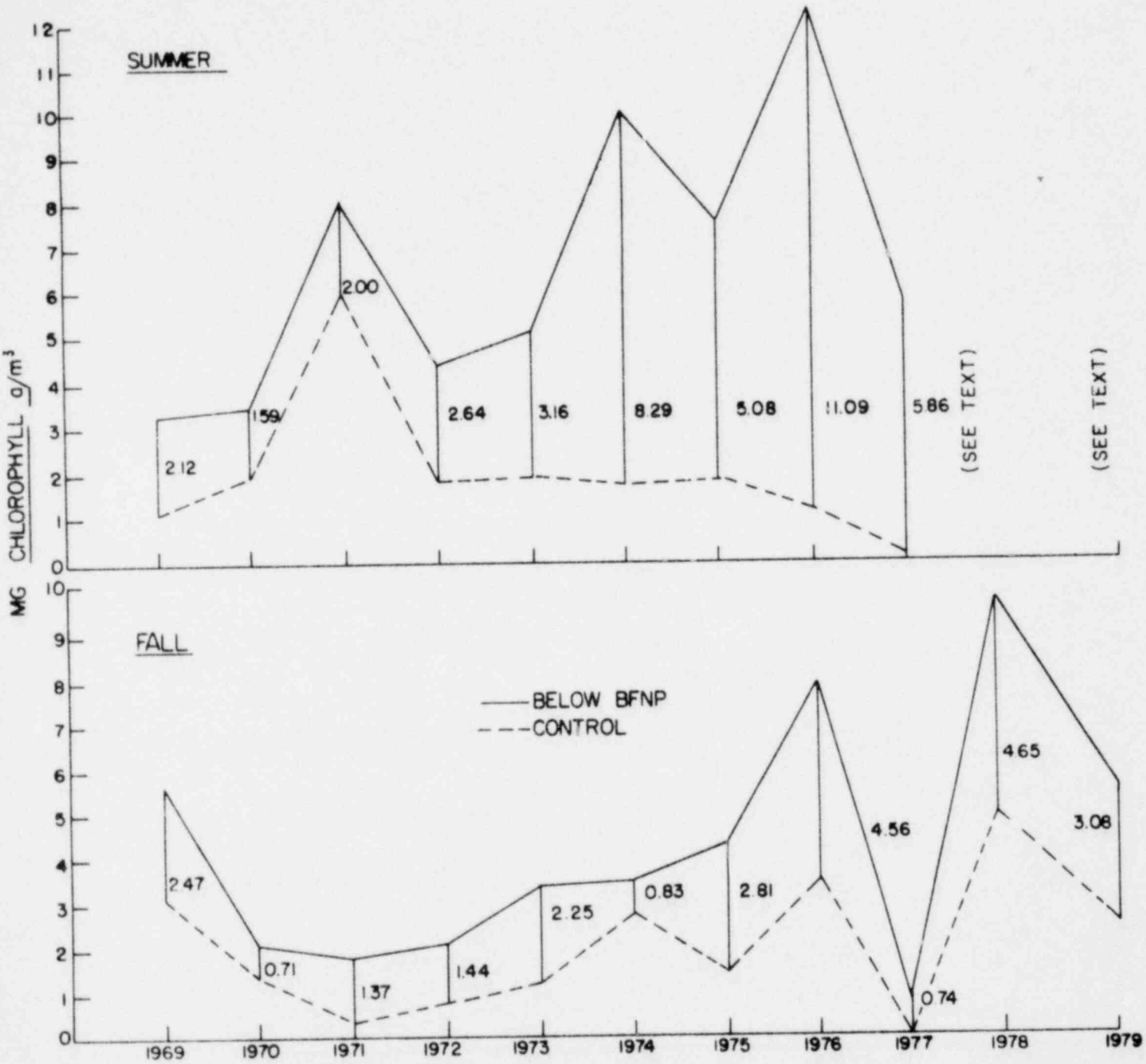


FIGURE 15 CHLOROPHYLL a COMPARISONS BY YEARS BETWEEN CONTROL AND BELOW BFNP FOR SUMMER AND FALL 1969 - 1979.

1979 chlorophyll samples below BFNP showed a 131 percent increase over samples in the control area which was normal since fall chlorophyll samples are typically larger below BFNP than above. These results are also reflected in the phytoplankton productivity studies. Additional chlorophyll a data are tabularized in Appendix C (summer and fall chlorophyll data).

Productivity -- Productivity is the rate of accumulation of new organic matter or stored energy; that is, productivity is the observed change in biomass plus all losses, except respiration, divided by the time interval as determined by the carbon-14 method. Figures 16 and 17 show phytoplankton productivity comparisons for preoperational versus operational and control versus below BFNP. Additional pertinent data are tabularized in Appendix C (productivity data).

Data expressed as milligrams of carbon per square meter per day are available only from winter 1972 to the present; before 1972, solar radiation data were not available for daily calculations of phytoplankton productivity. The homogeniety of the water mass and the lower productivity values during the winter and spring months are expressed clearly in figure 16. High summer values reflect the abundance of phytoplankton typically found in the reservoir forebay area.

Zooplankton

Resident Species--The common species found during preoperational and operational sampling are as follows: 4 cladocerans (Bosmina longirostris, Daphnia retrocurva, Diaphanosoma leuchtenbergianum, and Leptodora kindtii); 5 copepods (Cyclops bicuspidatus, Cyclops vernalis, Diaptomus pallidus,

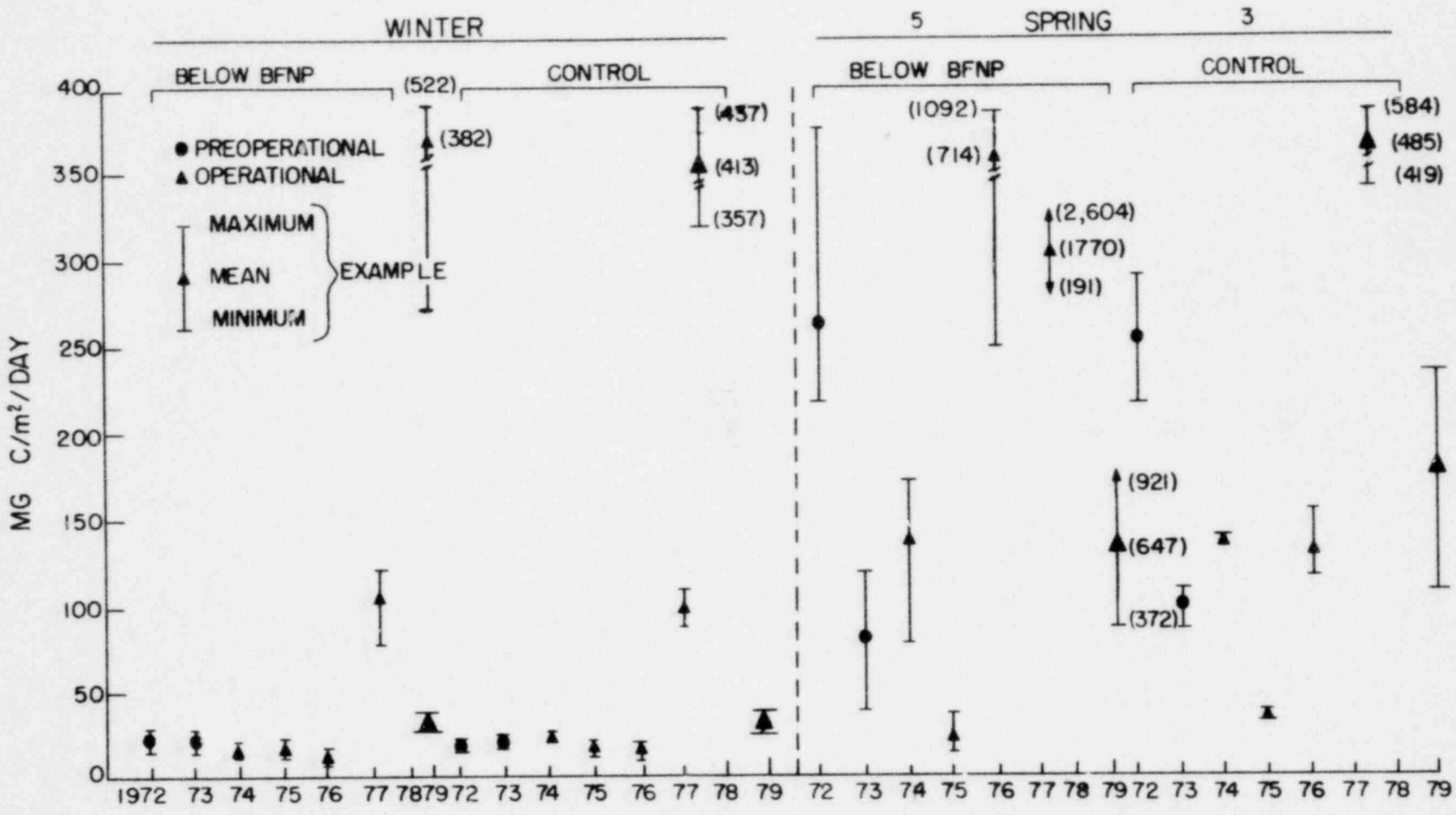


FIGURE 16 PHYTOPLANKTON PRODUCTIVITY DURING THE WINTER AND SPRING SEASONS SHOWING PREOPERATIONAL VERSUS OPERATIONAL AND CONTROL VERSUS BELOW BFNP

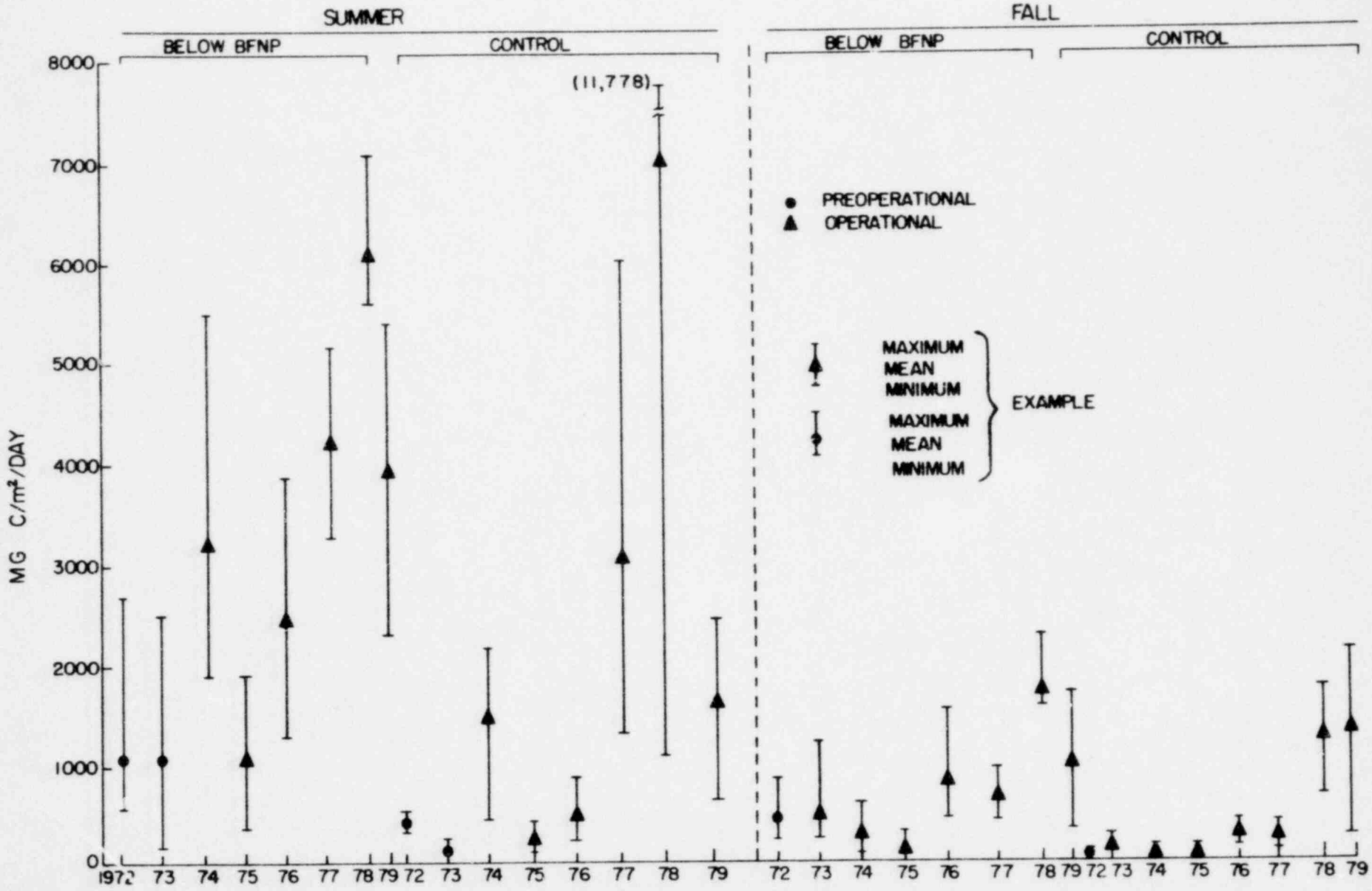


FIGURE 17 PHYTOPLANKTON PRODUCTIVITY DURING THE SUMMER AND FALL SEASONS SHOWING PREOPERATIONAL VERSUS OPERATIONAL AND CONTROL VERSUS BELOW BFNP.

Diaptomus reighardi, and Eucyclops agilis); and 7 rotifers (Branchionus caudatus, Conochilus unicornis, Keratella cochlearis, Keratella crassa, Brachionus argularis, Brachionus budapestinensis, and Brachionus calyciflorus).

Species List--As shown in the zooplankton species identification list table 10, (Appendix C), 37 cladoceran, 29 copepod, and 57 rotifer species or genera (not including immatures) have been identified in Wheeler Reservoir. Table 11, Appendix C, compares the number of species by major groups (Cladocera, Copepoda, and Rotifera) for preoperational versus operational and control versus below BFNP. Table 11, Appendix C indicates that comparable numbers of different species have been found upstream and downstream of BFNP during the operational period of the plant.

Enumeration--Table 12, Appendix C, shows total zooplankton per cubic meter during the 28 sampling periods from the winter of 1973 through the fall of 1979. In 1979, zooplankton densities were lowest during winter and spring. Compared to 1978, zooplankton counts were less during all seasons above and below BFNP. The zooplankton community was not affected by the operation of BFNP during any of the four seasons in 1979.

Benthic Macroinvertebrates

Corbicula manilensis (Asiatic clam), Hexagenia bilineata (mayfly), Chironomidae (midges), and Oligochaeta (aquatic worms) are the principal components of the benthos community in Wheeler Reservoir. Since these organisms spend most of their life cycle in a localized area

they are considered to be excellent biological indicators of environmental stress.

Corbicula manilensis--Corbicula has a semiplanktonic larval stage followed by a benthic adult stage of about seven years. Corbicula is motile but has a very localized habitat range. Figures 18, 19, 20, and 21 show Corbicula densities by years and stations and compare control versus below BFNP as well as preoperational versus operational. These data are tabularized in Appendix C. Corbicula densities in the winter of 1978 and 1979 were less than all other winter densities above and below BFNP except in 1971 when the densities below BFNP were lower. Densities in spring of 1979 were also lower above and below BFNP than any other year. Summer and fall densities in 1979 are also low compared to previous years both above and below BFNP. Corbicula densities have generally declined since 1976 (figures 18 and 20), but since this trend is apparent both above and below BFNP, it is concluded that the operation of the plant has not affected the Corbicula population in Wheeler Reservoir.

Hexagenia bilineata--Extreme seasonal variability is expected in Hexagenia populations because, each summer, nymphs emerge from the water to become adults and lay eggs, and a new crop of nymphs hatches and becomes established in late summer or early fall.

Figures 22, 23, 24, and 25 show the Hexagenia densities by years and river miles and distinguish between control versus below BFNP and preoperational versus operational. Additional Hexagenia data are tabularized in Appendix C. Since 1969, Hexagenia densities peaked in Wheeler Reservoir during 1975 and 1976 and have generally declined since

that time. The Hexagenia hatch during the summer of 1976 was the largest in Wheeler Reservoir since sampling began in 1969. The 1980 hatch may be the largest since 1976 as indicated by an increase in the fall 1979 densities. Hexagenia densities were not affected by BFNP during 1979 as densities found below BFNP were similar to preoperational densities (excluding peak in 1975-1978).

Chironomidae--Genera common in Wheeler Reservoir benthos include: Ablabesmyia, Coelotanypus, Procladius, Chironomus, Cryptochironomus Xenochironomus, Parachironomus, Epoicocladius, and Glyptotendipes. Figures 26, 27, 28, and 29 indicate the Chironomidae densities by years and stations and distinguish between control versus below BFNP and preoperational versus operational data. Chironomid densities although large during 1979, were lower than densities during 1978 both above and below BFNP during the winter and spring seasons. The largest populations below BFNP during the summer and fall since 1969 were observed during 1978 and in the fall of 1979. These data are tabularized in Appendix C (chironomid data). Chironomidae densities were not affected by the operation of BFNP during 1979, as indicated by large numbers found below BFNP during operation as shown in figures 26, 27, 28, and 29. Chironomid densities are consistently greater below BFNP (figures 27 and 29) compared to low densities observed at stations above BFNP.

Oligochaeta--Aquatic earthworms are abundant in Wheeler Reservoir and occur in clumped distributions wherever silty substrate and organic detritus are available. Mixed populations of Limnodrilus claparedianus

and Branchiura sowerbyi are normally collected in the same samples, and these two species are combined as an oligochaete indicator. If new species are collected in the future, they will be noted and evaluated.

Figures 30, 31, 32, and 33 show the seasonal Oligochaeta densities by year and station and compare control versus below BFNP and preoperational versus operational. From 1972 through 1976 Oligochaeta densities were greater than had been recorded during the first three years (1969-1972) of this monitoring program. During 1977 these levels declined both above and below BFNP to the levels observed prior to 1972. The 1978 and 1979 samples were similar and indicated an increase over the 1977 densities.

Oligochaetes were not affected by operation of BFNP during 1979 as indicated by similar densities observed below and above BFNP. Densities of oligochaetes in 1979 (all seasons) were also similar to densities observed in 1969-1970 prior to fluctuations in abundance observed between 1972 and 1976.

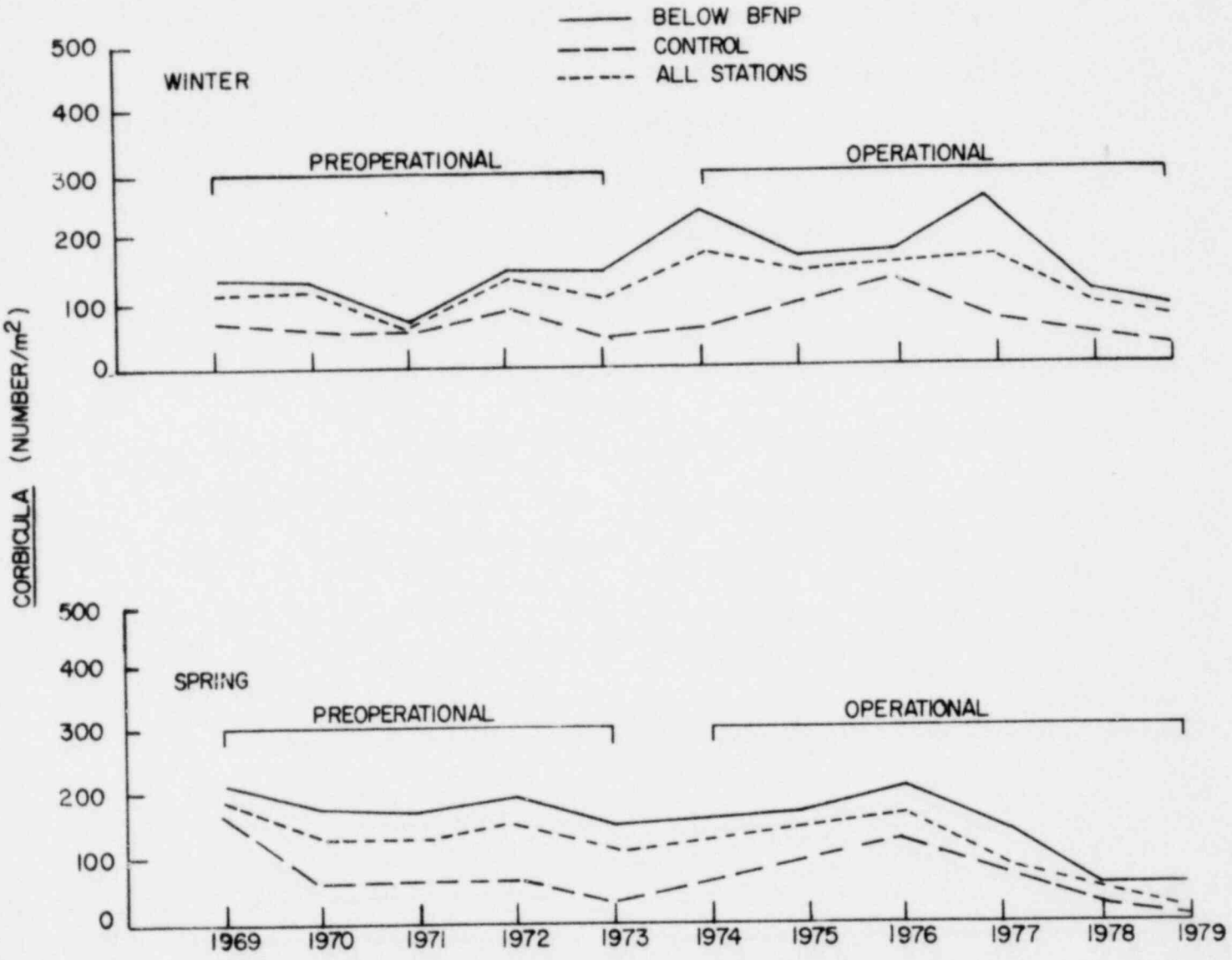


FIGURE 18 CORBICULA DENSITIES (NUMBER/m^2) BY YEAR FOR WINTER AND SPRING SAMPLE

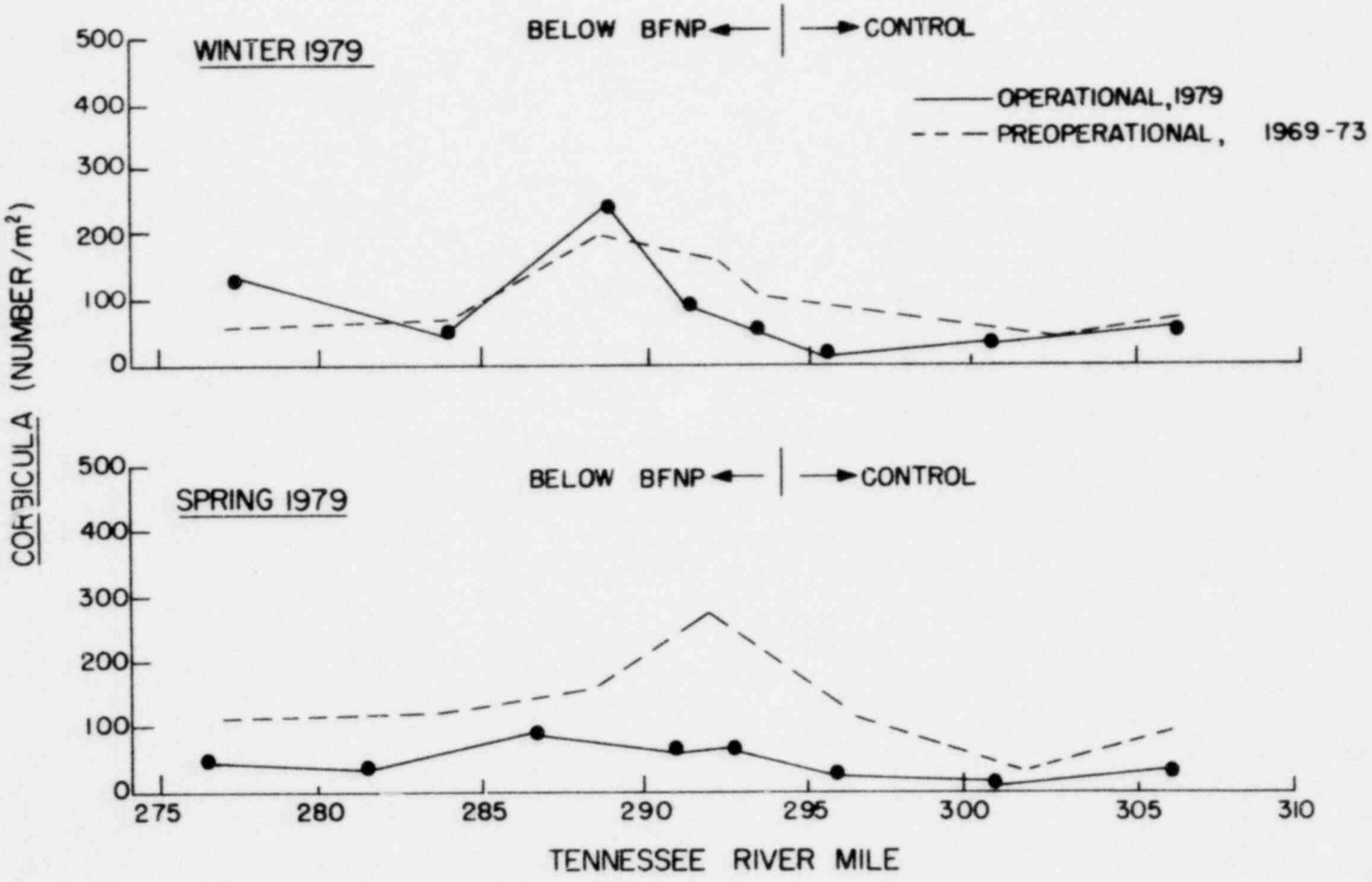


FIGURE 19 CORBICULA (NUMBER/m²) BY STATION FOR PREOPERATIONAL AND OPERATIONAL SAMPLES.

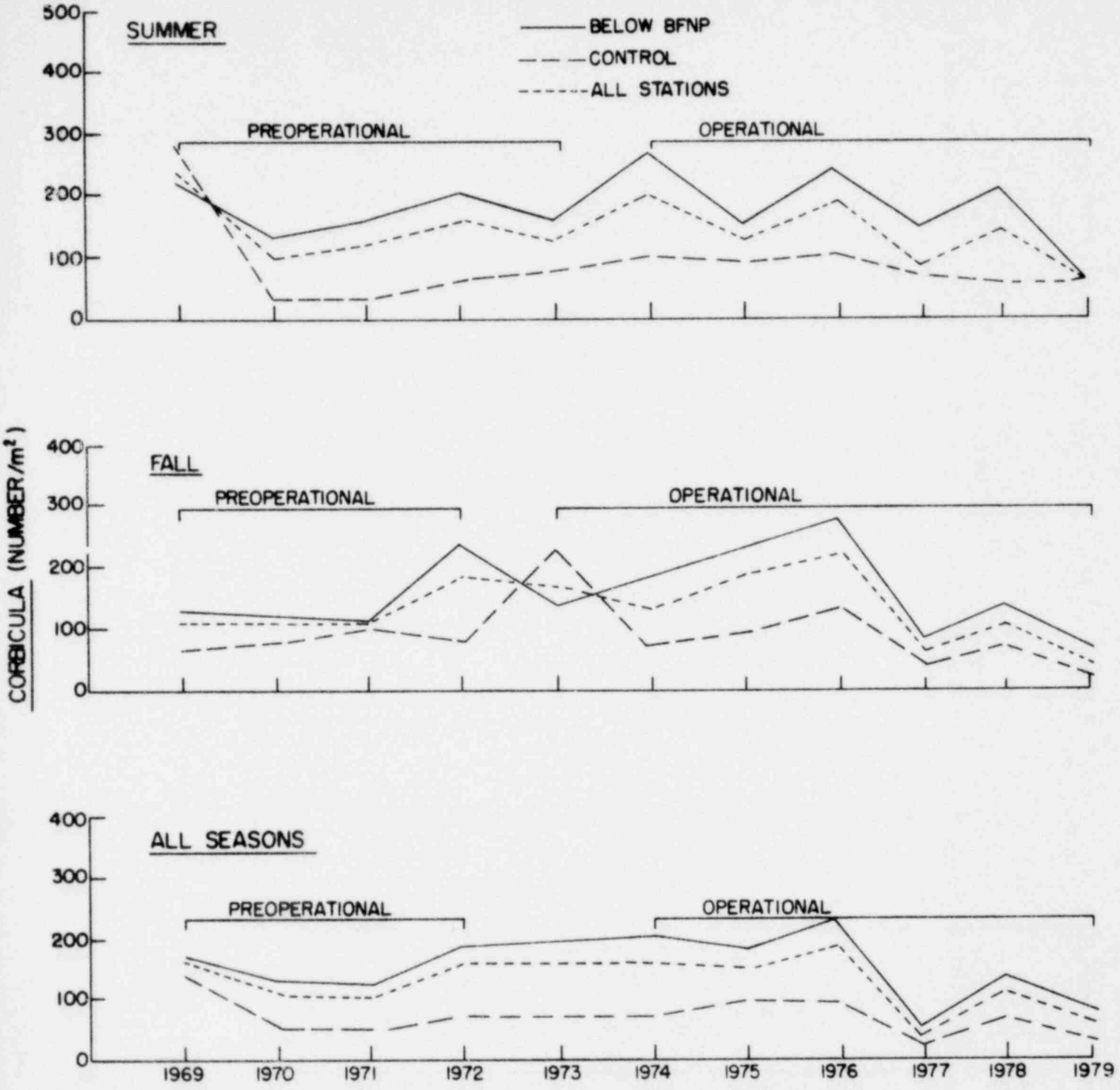


FIGURE 20 CORBICULA (NUMBER/m²) BY YEAR FOR SUMMER, FALL, AND ALL SEASONS SAMPLES.

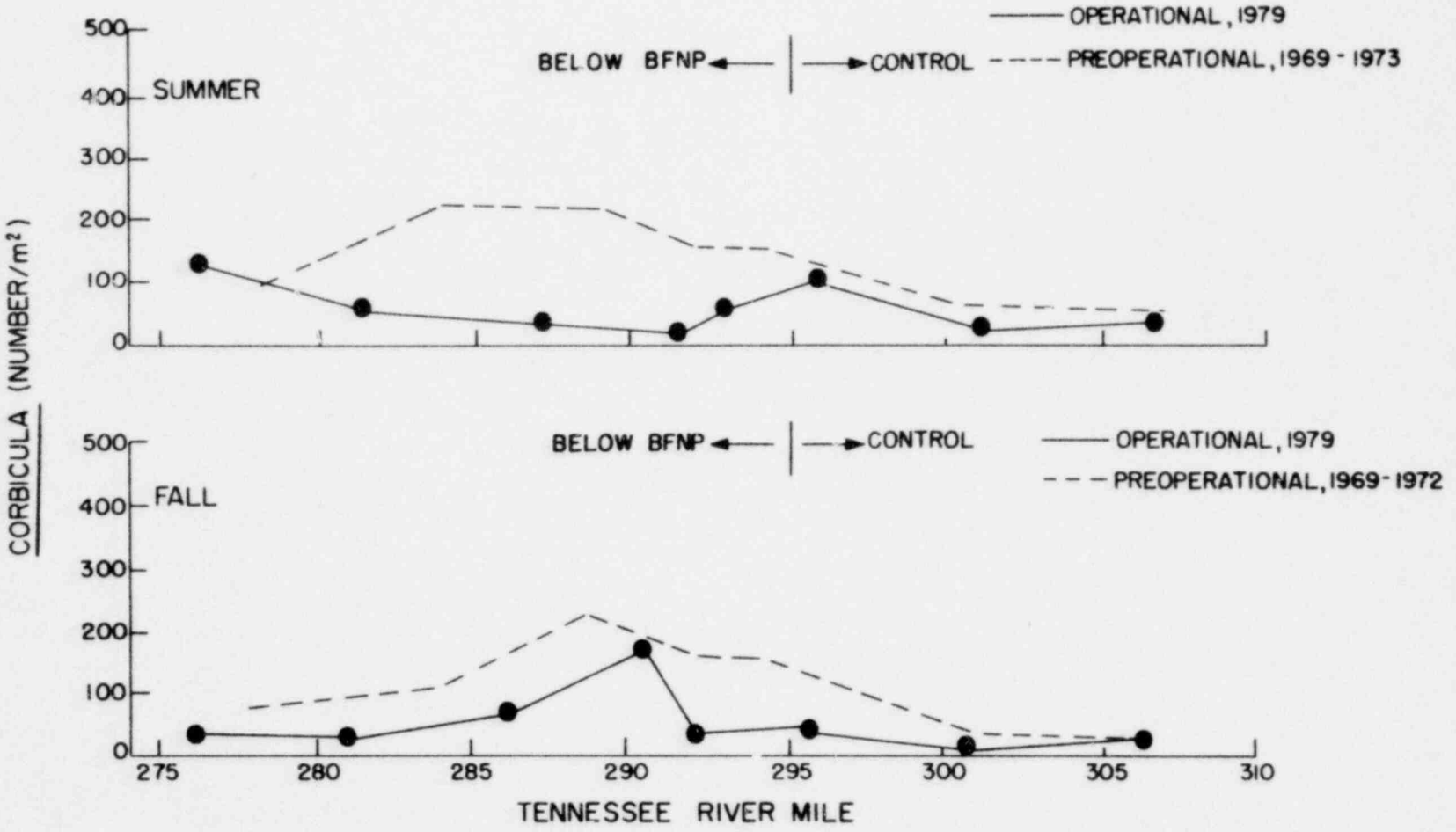


FIGURE 21 CORBICULA (NUMBER/m²) BY STATION FOR PREOPERATIONAL AND OPERATIONAL SAMPLES.

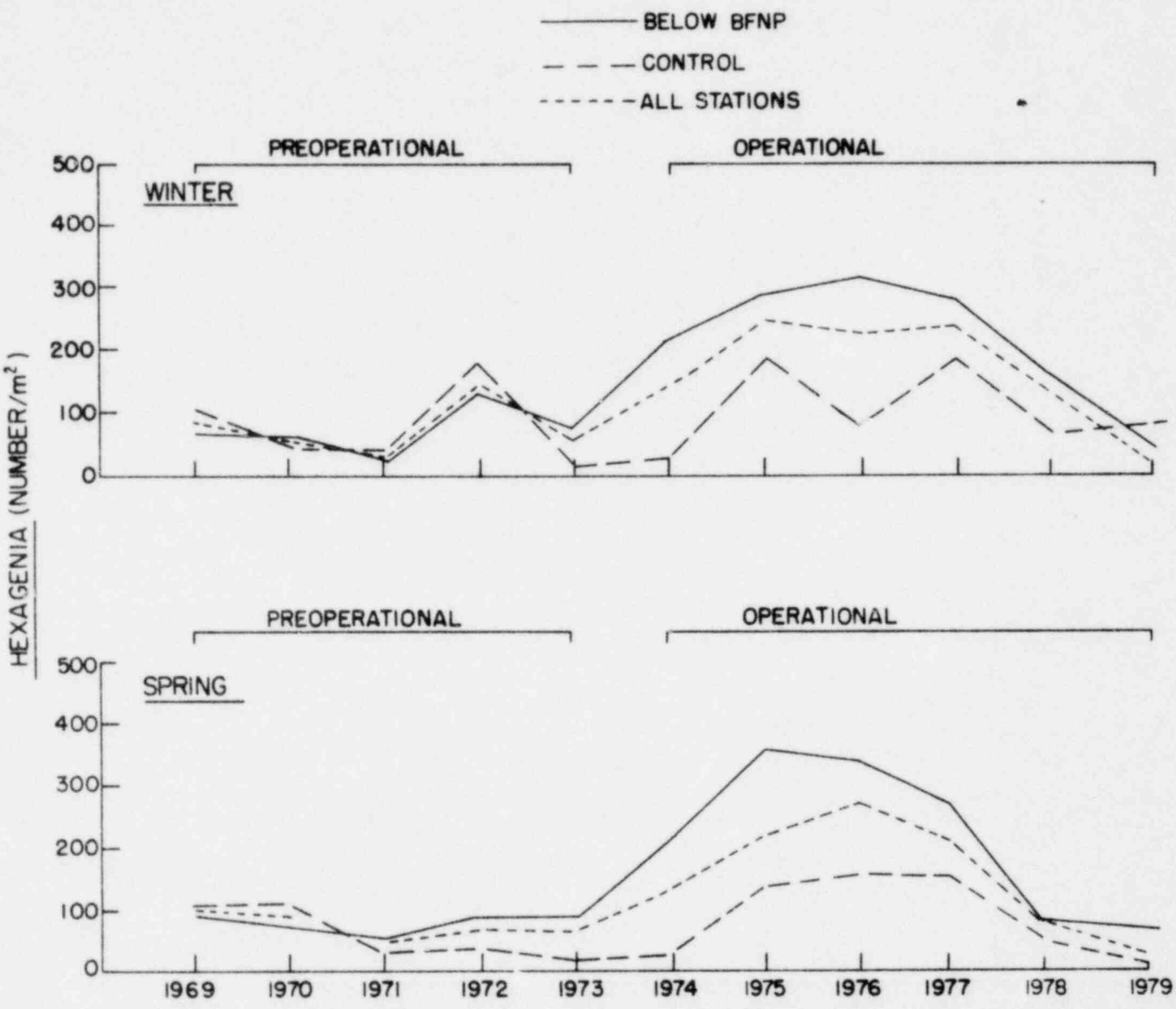


FIGURE 22 HEXAGENIA DENSITIES (NUMBER/m²) BY YEAR FOR WINTER AND SPRING 1969 - 1979.

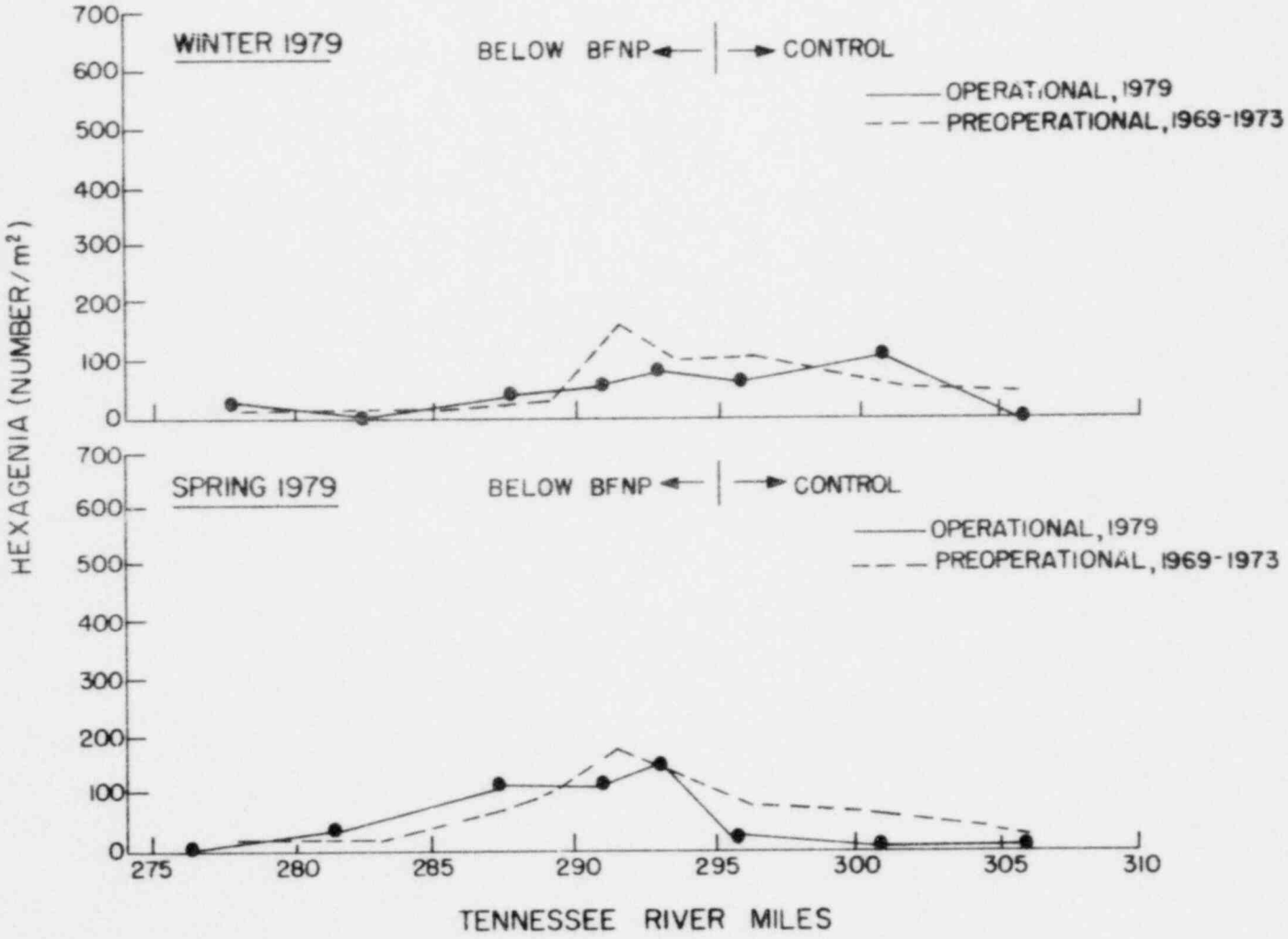


FIGURE 23 HEXAGENIA (NUMBER/m²) BY STATION FOR PREOPERATIONAL AND OPERATIONAL SAMPLES

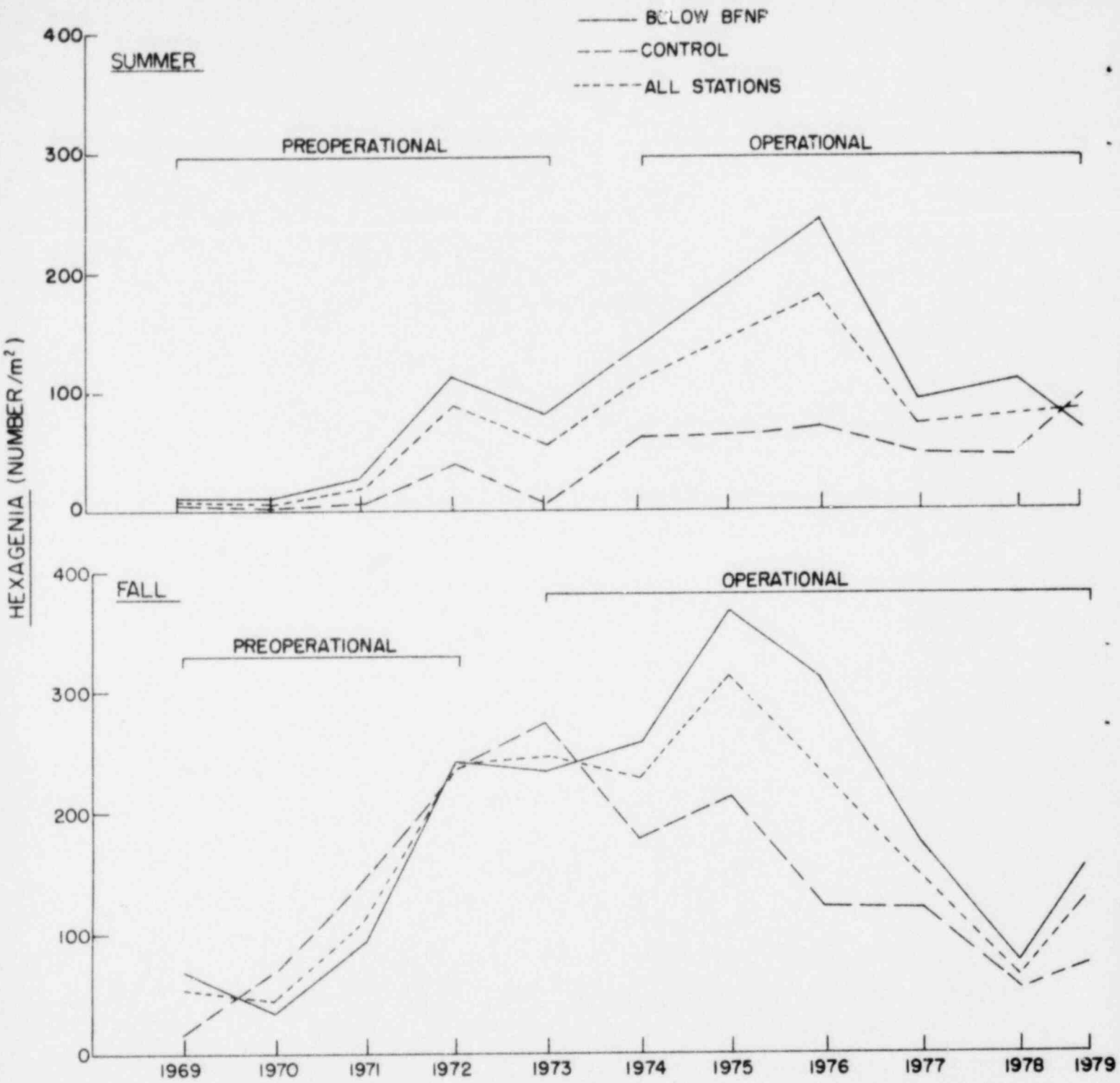


FIGURE 24 HEXAGENIA (NUMBER/m²) BY YEAR FOR SUMMER AND FALL 1969-1979.

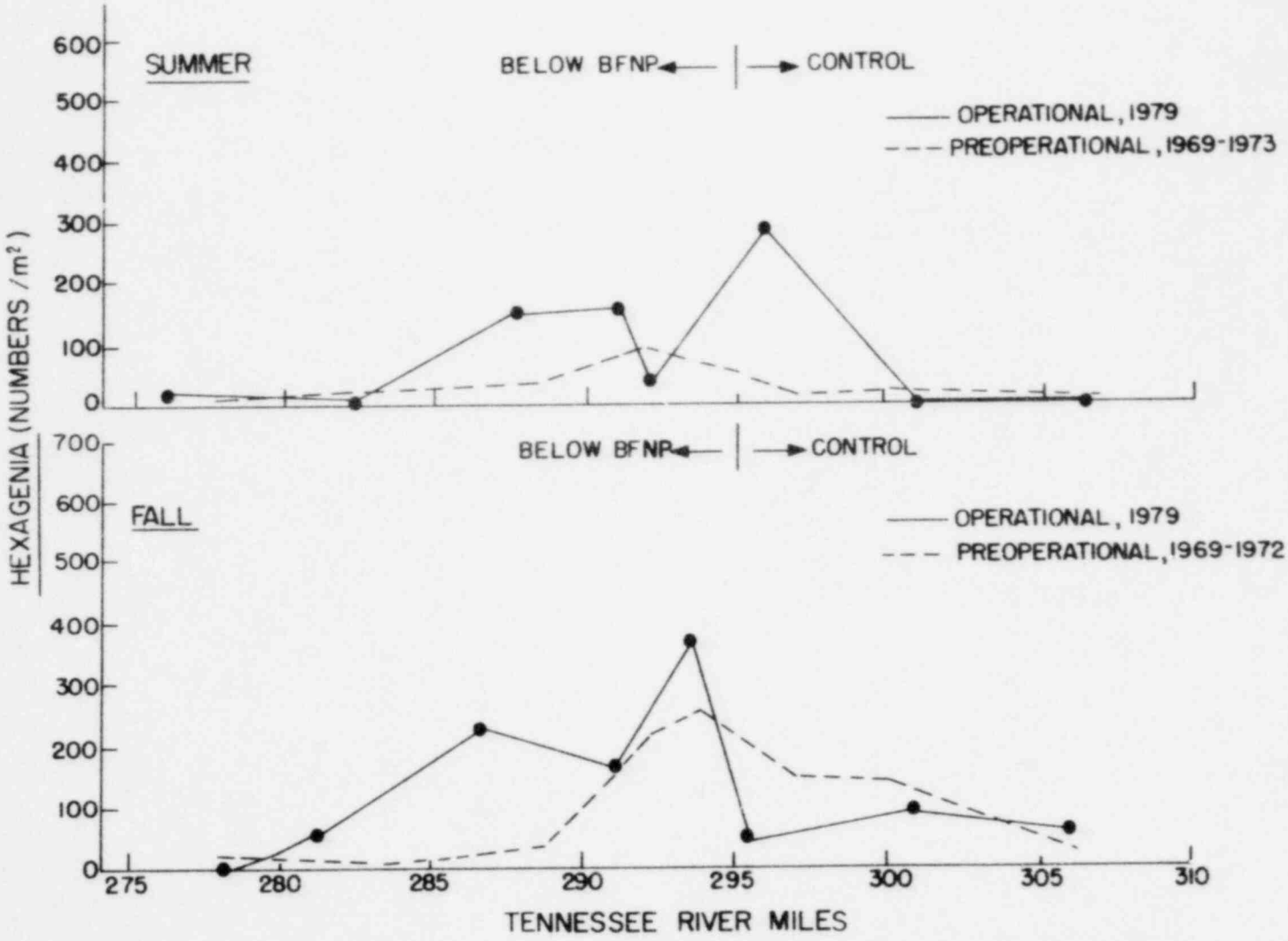


FIGURE 25 HEXAGENIA DENSITIES (NUMBER/m²) BY STATION PREOPERATIONAL AND OPERATIONAL SAMPLES.

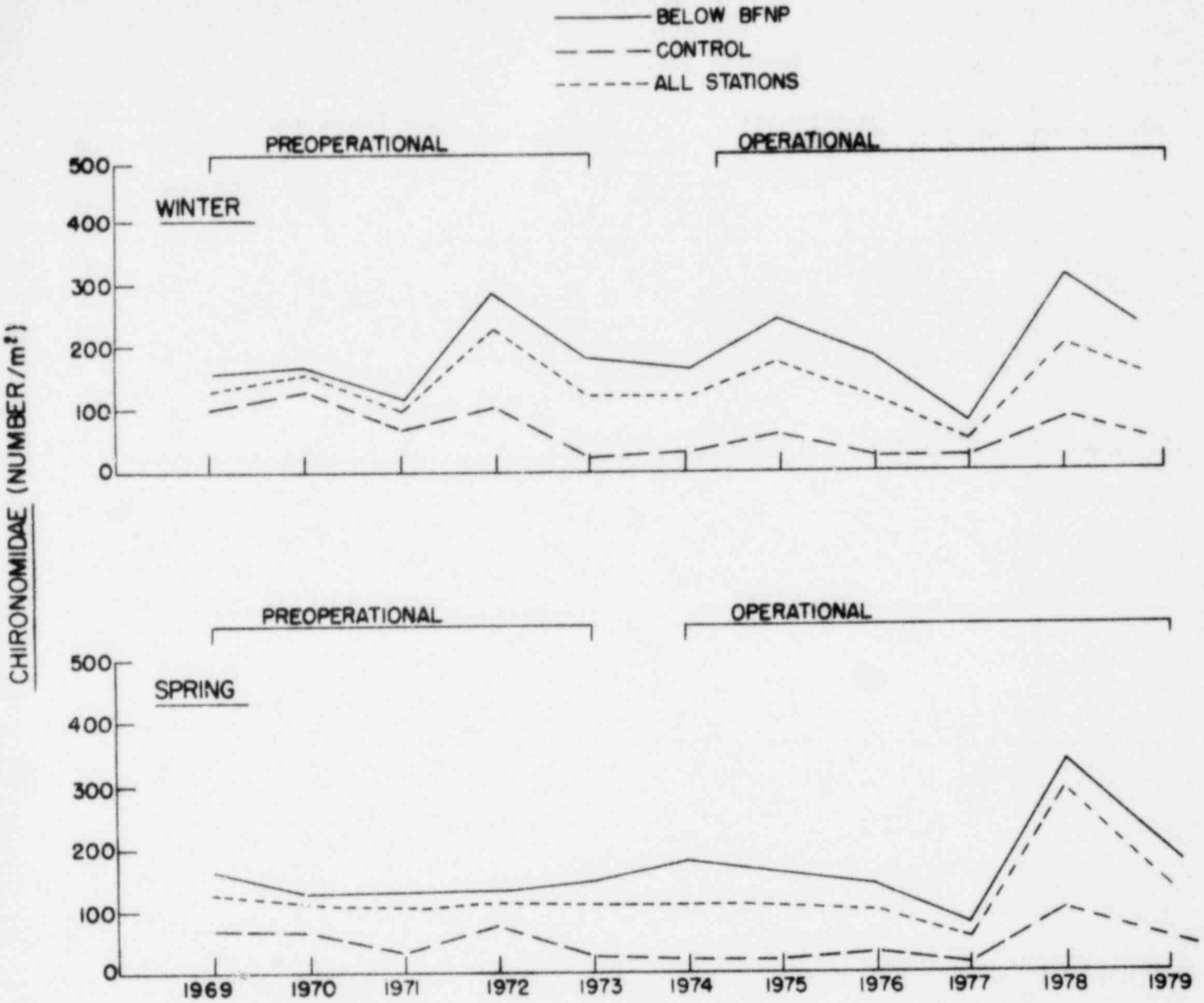


FIGURE 26 CHIRONOMIDAE DENSITIES (NUMBER/m^2) BY YEAR FOR WINTER AND SPRING SAMPLES (WINTER 1969 THROUGH SPRING 1979).

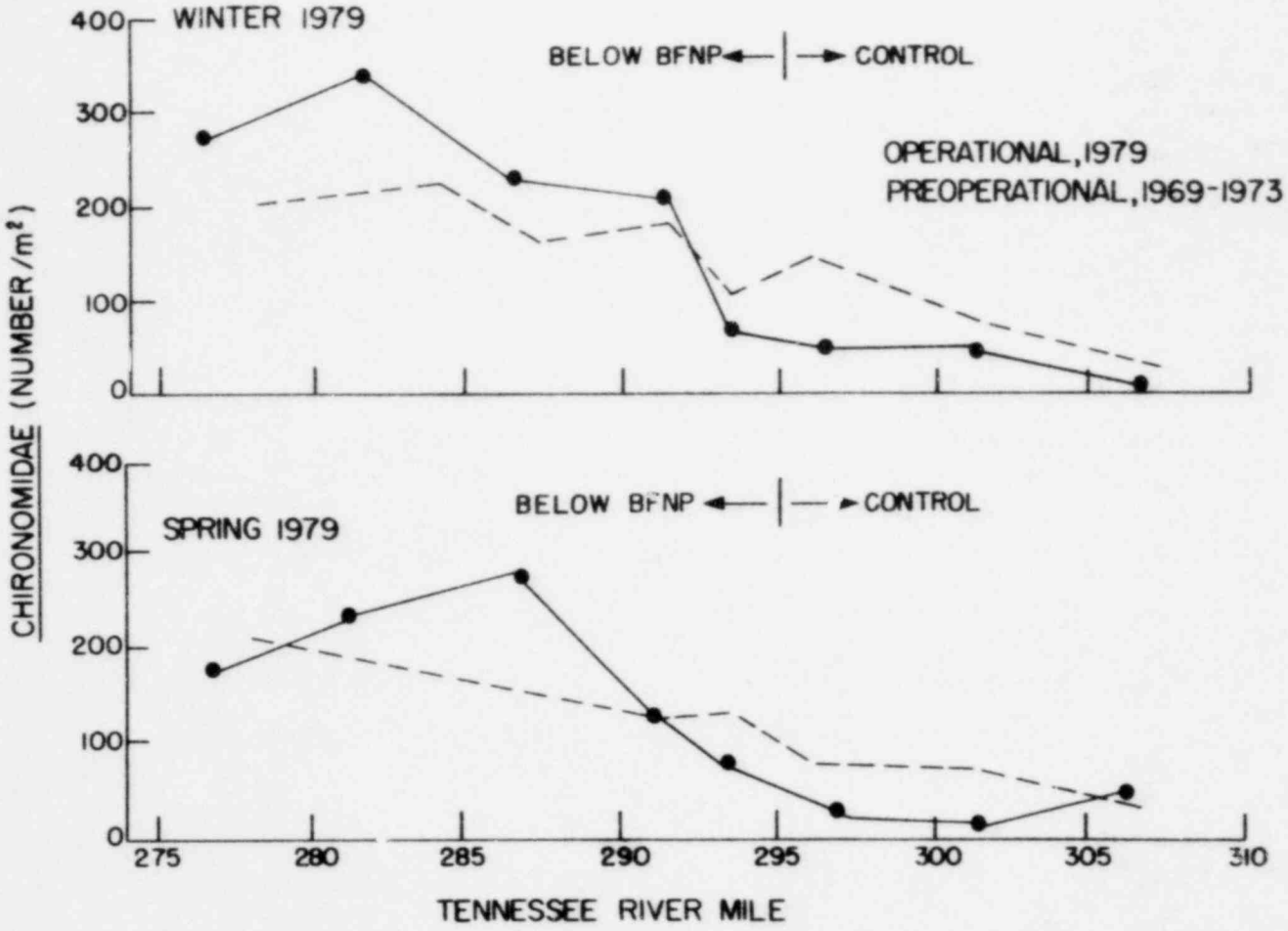


FIGURE 27 CHIRONOMIDAE DENSITIES (NUMBER/m^2) BY STATION FOR PREOPERATIONAL AND OPERATIONAL SAMPLES.

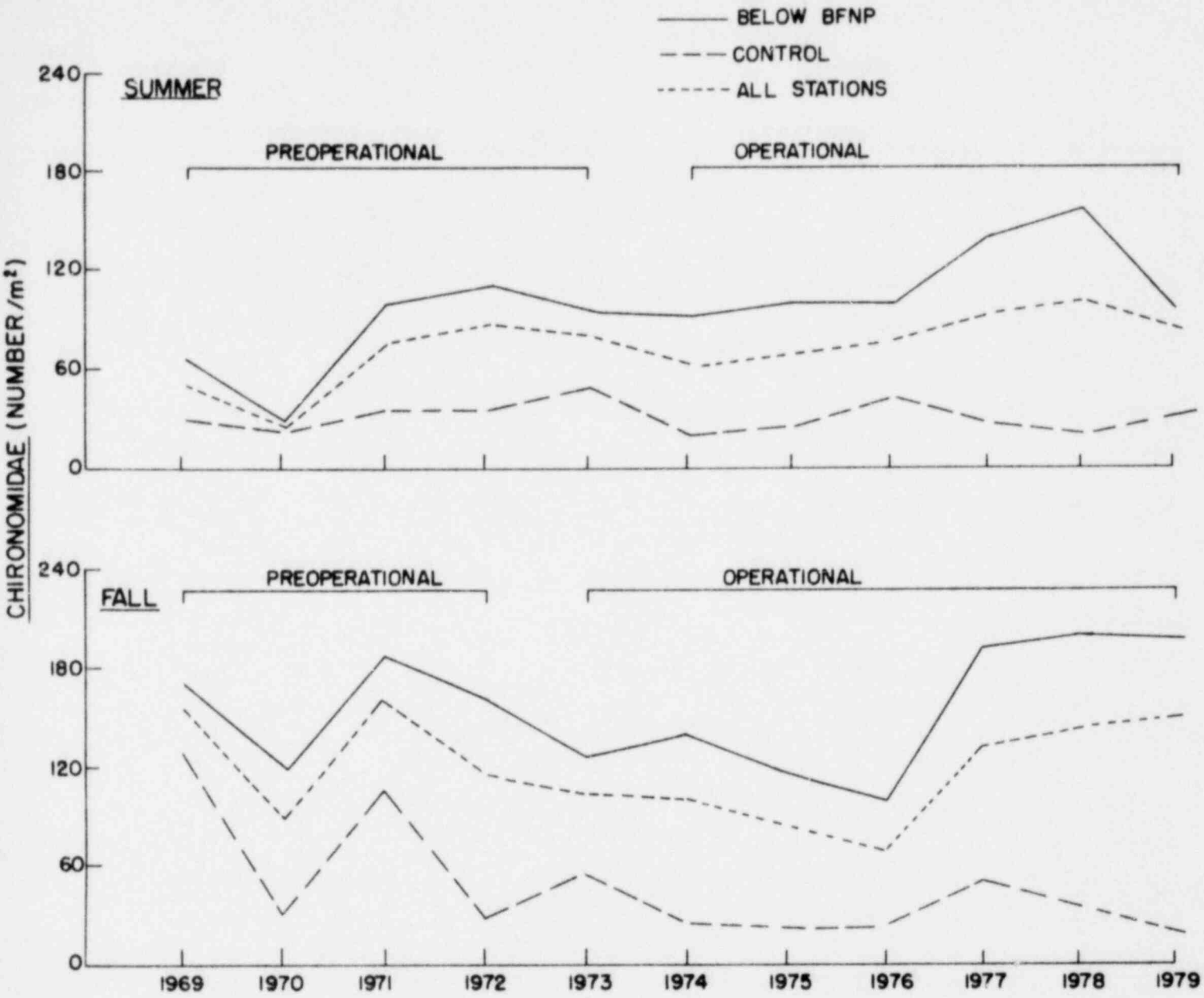


FIGURE 28 CHIRONOMIDAE DENSITIES (NUMBER/m^2) BY YEAR FOR SUMMER AND FALL.

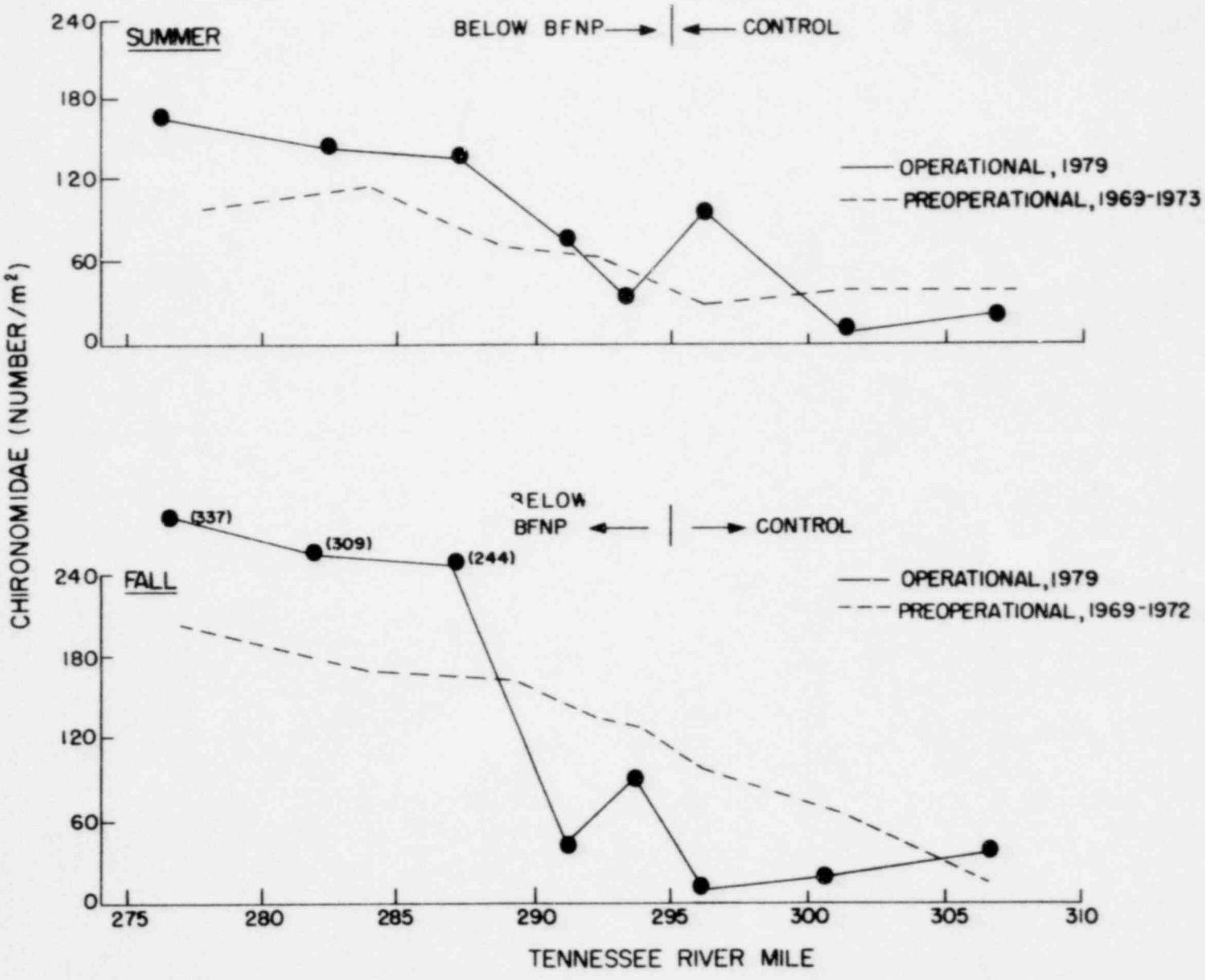


FIGURE 29 CHIRONOMIDAE DENSITIES (NUMBER/m²) BY STATION FOR PREOPERATIONAL AND OPERATIONAL SAMPLES.

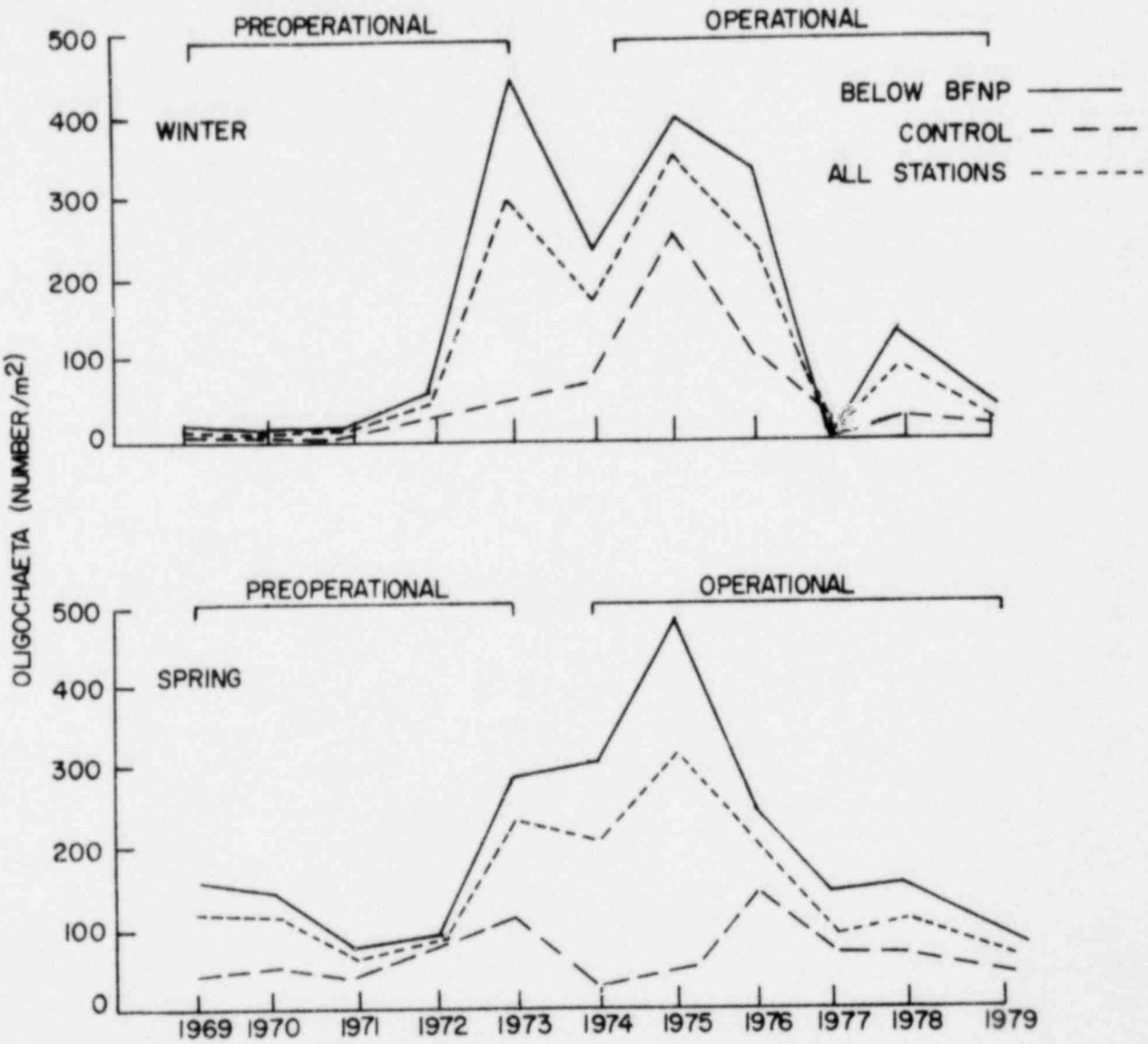


FIGURE 30 OLIGOCHAETA DENSITIES (NUMBER/m^2) BY YEAR FOR WINTER AND SPRING (WINTER 1969 THROUGH SPRING).

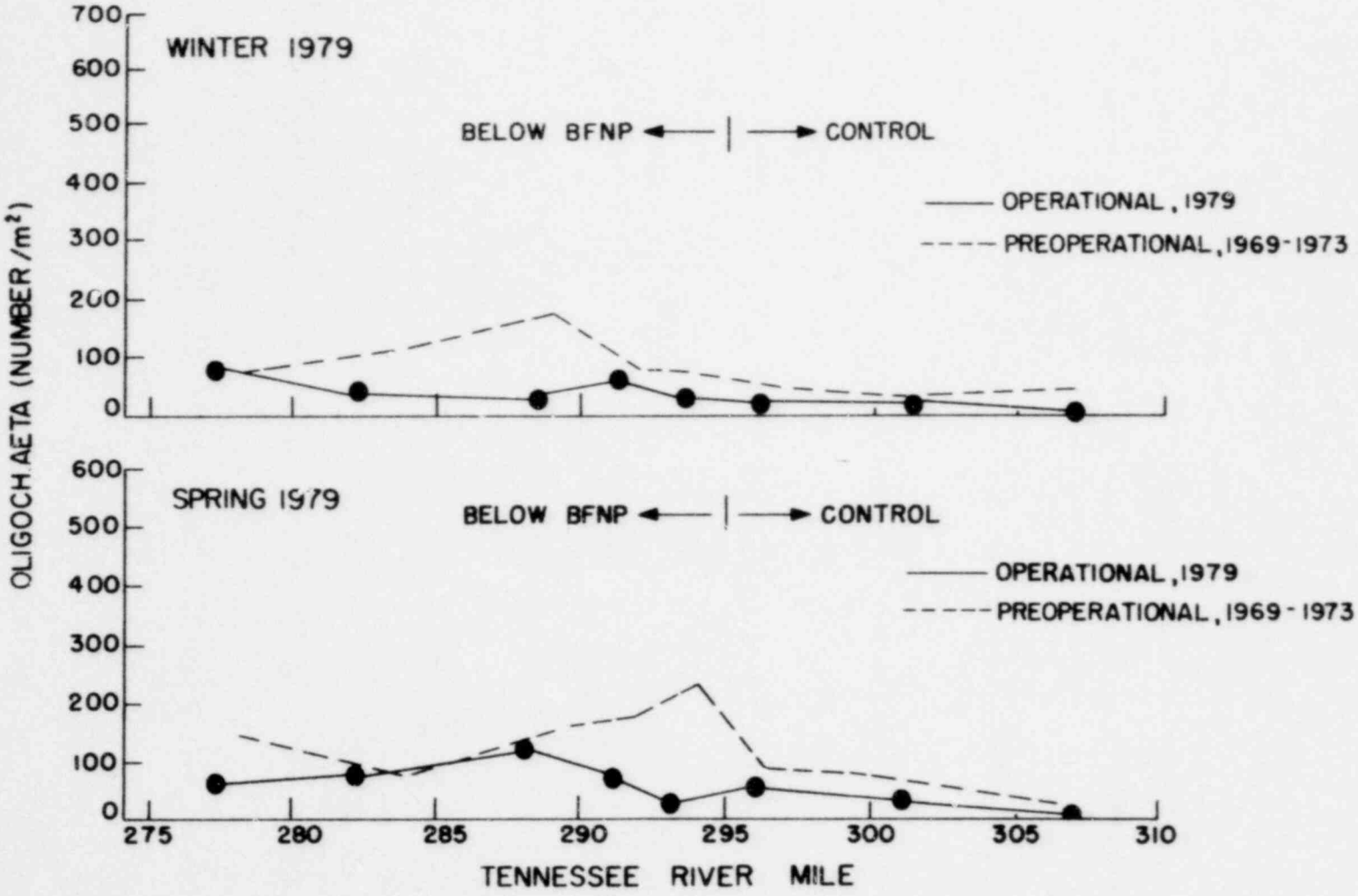


FIGURE 31 OLIGOCHAETA DENSITIES (NUMBER/m^2) BY STATION FOR PREOPERATIONAL AND OPERATIONAL SAMPLES.

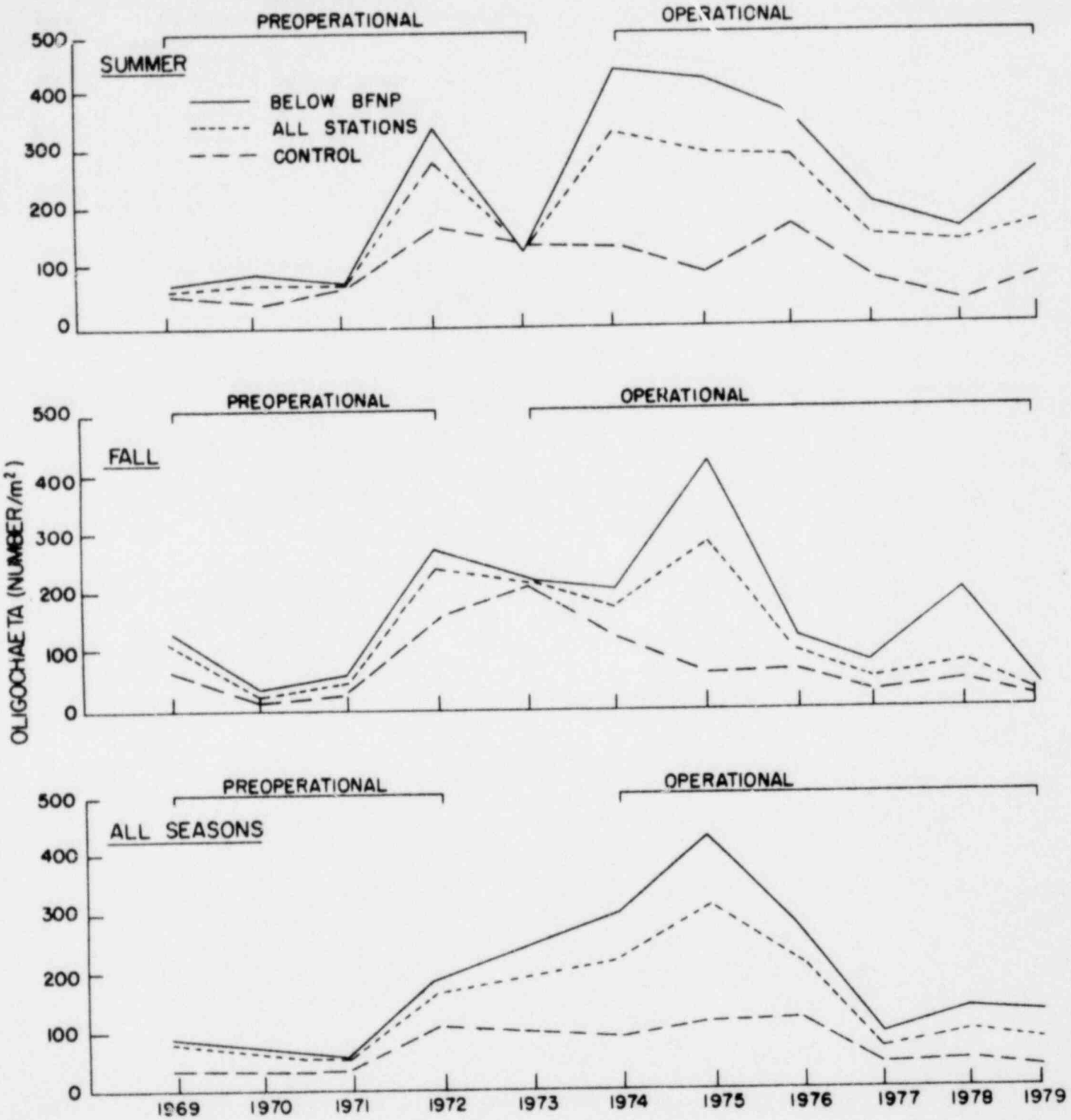


FIGURE 32 OLIGOCHAETA DENSITIES (NUMBER/m^2) BY YEAR FOR SUMMER, FALL, AND ALL SEASONS.

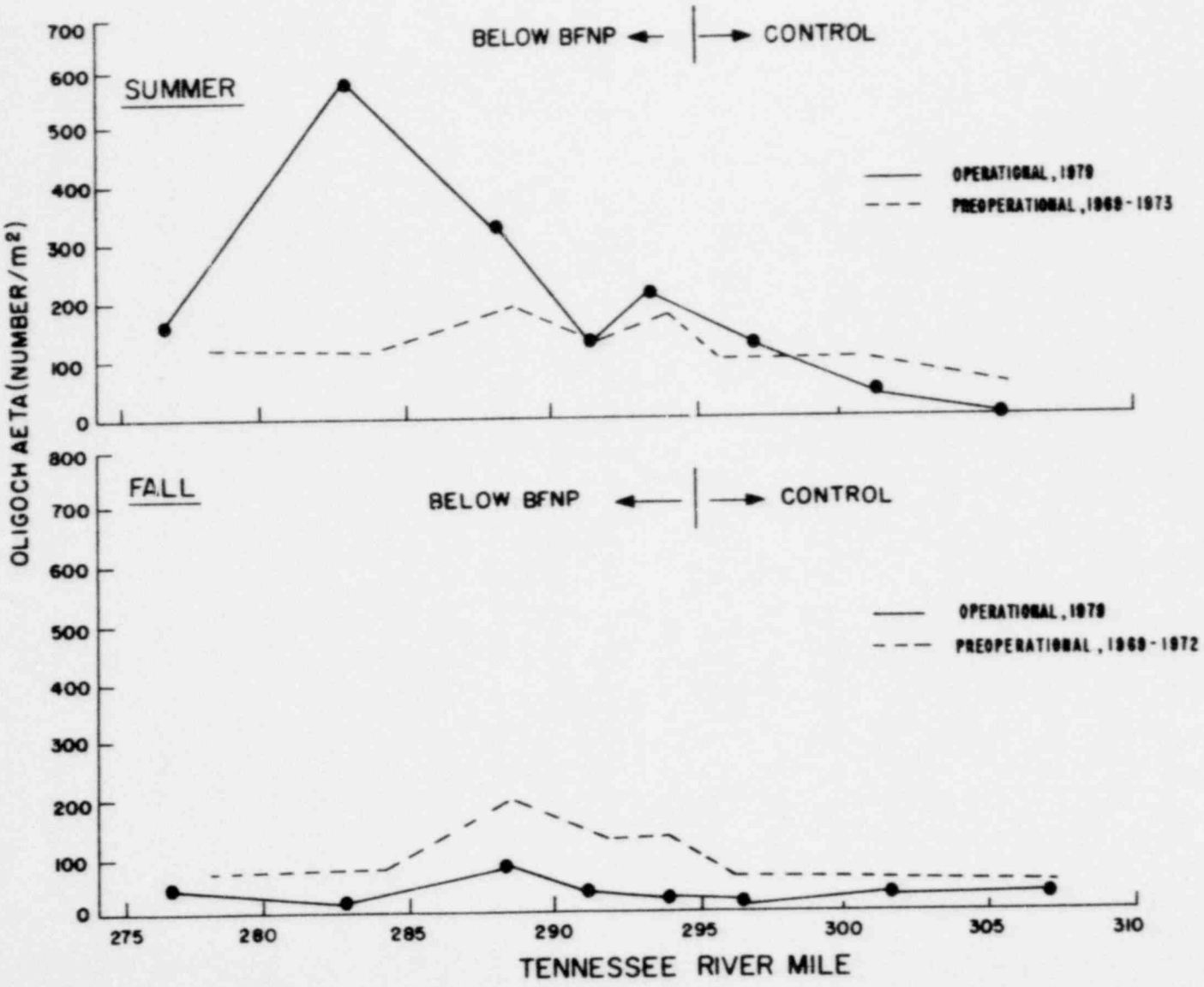


FIGURE 33 OLIGOCHAETA DENSITIES (NUMBER/m^2) BY STATION FOR PREOPERATIONAL AND OPERATIONAL SAMPLES.

V. RESULTS OF FISHERIES MONITORING

Introduction

These investigations were designed and initiated to assess possible plant impacts on movement, distribution, relative abundance, creel harvest, species composition, and survival of fish in Wheeler Reservoir. Fisheries monitoring was conducted by Western Area Field Operations, Fisheries Unit using standard sampling and evaluation procedures. Specific descriptions of sampling gear, stations, and procedures are outlined in the Browns Ferry Preoperational Report (May 1978), available from the Fisheries and Aquatic Ecology Branch, Norris, Tennessee.

Quarterly gill net samples were collected at four locations in the vicinity of Browns Ferry Nuclear Plant. Trap nets were fished at three stations during winter, spring, and fall quarters. Catches from both gear types provided data for species composition and relative abundance. Selected species from trap net catches were tagged and released to determine movement patterns in the reservoir. Cove rotenone samples conducted during late August and early September of each year serve as a basis for determining standing stocks, species composition, and reproductive success. A weekly creel census was conducted to establish catch rates, species composition, biomass and hours of fishing pressure in six designated areas in Wheeler Reservoir. Data from all sources were collected to assess plant impacts on the sport fishery in Wheeler Reservoir.

Ichthyoplankton data were collected weekly during the period March-August from two reservoir transects and the intake basin. Information on species composition and distribution of fish eggs and larvae in the reservoir was compared to data collected prior to plant operation to define normal yearly variation and to assess effects of plant operation. This was the third year in which 3-unit plant operation was maintained for the majority of the period when larval fish and eggs are present in the reservoir.

Weekly counts of all fish impinged on each intake screen during a 24-hour period were made. Estimation of the total number of impinged fish on the intake screens will permit an assessment of fish losses from normal plant operation.

Gill Net Results

A total of 4,622 fish weighing 1,725.42 kg encompassing 23 taxa was collected in gill nets from four sample stations during 1979. Total catch for each quarterly sample at all stations was:

Winter - 722 fish weighing 227.55 kg

Spring - 1,871 fish weighing 701.59 kg

Summer - 1,189 fish weighing 428.88 kg

Fall - 834 fish weighing 367.40 kg

Gizzard shad and channel catfish were dominant in samples at all stations during all quarters. Sauger and skipjack herring were prominent in the winter and fall samples, whereas golden redhorse were prominent in spring and summer samples.

Catch rates were generally low at stations 2 and 3 during all quarters in 1979. Because both station 2 (TRM 299.0), the designated control station, and station 3 (TRM 294.0 overbank) are located outside the zone of thermal influence, lower catch per effort (C/E) can be attributed to factors other than plant induced effects. The C/E at station 3 during 1979 ranged from 40 percent to 83 percent lower than in 1978. At station 1 (TRM 292.5), C/E was lower during spring and summer quarters of 1979 than during these same periods in 1978. Fall and winter quarter data at this station were similar between 1978 and 1979. Catches at station 4 (TRM 294.0), the diffuser discharge station, continued to show an increase during the summer quarter of 1979 than during the summer quarter of previous years. High catches observed at station 4 may be attributable to attraction of fish to the diffuser discharge structure. The C/E values at this station during spring, fall and winter quarters of 1979 were very similar to 1978 catches.

Low temperatures, low reservoir elevation accompanied by high flow conditions, and dense algal concentrations may have resulted in the generally low catch rates observed in 1979. Low water temperatures affect metabolic rates of fish and often result in reduced movement of fish. Since gill nets are passive sampling gear (i.e., gill nets capture only fish that swim into the net) reduced fish movement often results in low catches. During times when low reservoir elevation, high flows, and algal blooms coincided, the effectiveness of gill net sampling was hindered. Dense algal and periphyton concentrations cause excessive clogging of net, and in some cases, this additional weight caused nets to collapse.

Quarterly gill net data for 1979 are shown in tables 5 through 20. Tables 21 through 24 are comparisons of preoperational and operational gill net catches summarized by quarter at stations 1 through 4.

TABLE 5

GILL NET CATCH, STATION I, TRM 293.0

WINTER QUARTER, FEBRUARY 6-9, 1979

40 NET NIGHTS

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Lepisosteus oculatus	1	0.02	0.70	0.02
Dorosoma cepedianum	235	5.88	41.13	1.03
Alosa chrysochloris	31	0.78	14.05	0.35
Hiodon tergisus	2	0.05	0.59	0.01
Minytrema melanops	41	1.02	14.52	0.36
Ictiobus bubalus	2	0.05	0.36	0.01
Moxostoma erythrurum	4	0.10	1.15	0.03
Morone chrysops	80	2.00	17.24	0.43
Morone mississippiensis	14	0.35	2.50	0.06
Lepomis microlophus	3	0.08	0.073	0.02
Micropterus punctulatus	2	0.05	0.86	0.02
Pomoxis annularis	4	0.10	1.13	0.03
Stizostedion canadense	1	0.02	0.60	0.01
Total	420	10.50	95.56	2.38

TABLE 6

GILL NET CATCH, STATION II, TRM 299.0

WINTER QUARTER, JANUARY 23-26, 1979

36 NET NIGHTS

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Dorosoma cepedianum	21	0.58	5.09	0.14
Hiodon tergisus	2	0.06	0.80	0.02
Minytrema melanops	1	0.03	0.41	0.01
Aplodinotus grunniens	9	0.25	3.16	0.09
Morone chrysops	8	0.22	3.55	0.10
Stizostedion canadense	37	1.03	19.11	0.53
Total	78	2.17	32.12	0.89

TABLE 7

GILL NET CATCH, STATION III, TRM 294.0

WINTER QUARTER, JANUARY 31-FEBRUARY 2, 1979

37 NET NIGHTS

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Dorosoma cepedianum	1	0.03	0.23	0.01
Minytrema melanops	1	0.03	0.54	0.01
Moxostoma erythrurum	3	0.08	2.63	0.07
Aplodinotus grunniens	1	0.03	0.20	0.01
Morone chrysops	1	0.03	0.20	0.01
Morone mississippiensis	2	0.05	0.41	0.01
Pomoxis annularis	1	0.03	0.23	0.01
Stizostedion canadense	3	0.08	1.27	0.03
Total	13	0.36	5.71	0.16

TABLE 8

GILL NET CATCH, STATION IV, TRM 294.0

(MID-CHANNEL, HEATED DISCHARGE)

WINTER QUARTER, FEBRUARY 6-9, 1979

16 NET NIGHTS

(TABLE 2)

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Dorsoma cepedianum	21	1.31	4.70	0.29
Alosa chrysochloris	130	8.13	63.04	3.94
Minytrema melanops	1	0.06	0.41	0.03
Ictalurus furcatus	9	0.56	3.24	0.20
Morone chrysops	1	0.06	0.64	0.04
Stizostedion canadense	49	3.06	22.13	1.38
Total	211	13.18	94.16	5.88

TABLE 9

GILL NET CATCH, STATION I TRM 293.0

SPRING QUARTER, MAY 15-18, 1979

40 NET NIGHTS

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Lepisosteus osseus	4	0.10	5.15	0.13
Lepisosteus oculatus	6	0.15	5.00	0.12
Dorosoma cepedianum	96	2.40	16.09	0.40
Alosa chrysochloris	9	0.22	3.60	0.09
Hiodon tergisus	8	0.20	1.95	0.05
Minytrema melanops	9	0.22	3.29	0.08
Ictiobus bubalus	4	0.10	0.88	0.02
Moxostoma erythrurum	84	2.10	45.63	1.14
Ictalurus furcatus	9	0.22	7.26	0.18
Ictalurus punctatus	258	6.45	159.70	3.99
Pylodictis olivaris	4	0.10	2.10	0.05
Aplodinotus grunniens	54	1.35	10.45	0.26
Morone chrysops	5	0.12	1.06	0.03
Morone mississippiensis	9	0.22	1.66	0.04
Lepomis macrochirus	6	0.15	0.70	0.02
Lepomis microlophus	36	0.90	5.44	0.14
Micropterus salmoides	2	0.05	0.57	0.01
Pomoxis annularis	9	0.22	2.61	0.07
Stizostedion canadense	16	0.40	7.89	0.20
Total	628	15.67	281.03	7.02

TABLE 10

GILL NET CATCH, STATION II, TRM 299.0

SPRING QUARTER, MAY 1-4, 1979

37 NET NIGHTS

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Lepisosteus osseus	4	0.11	5.15	0.14
Lepisosteus oculatus	1	0.03	0.80	0.02
Dorosoma cepedianum	117	3.16	21.40	0.58
Alosa chrysochloris	6	0.16	2.94	0.08
Minytrema melanops	5	0.14	1.91	0.05
Moxostoma erythrurum	105	2.84	56.56	1.53
Ictalurus furcatus	1	0.03	3.00	0.08
Ictalurus punctatus	11	0.30	5.99	0.16
Aplodinotus grunniens	3	0.08	0.67	0.02
Morone chrysops	1	0.03	0.45	0.01
Morone mississippiensis	6	0.16	1.30	0.04
Lepomis microlophus	2	0.05	0.27	0.01
Stizostedion canadense	5	0.14	3.74	0.07
Total	267	7.23	103.18	2.79

TABLE 11

GILL NET CATCH, STATION III, TRM 294.0

SPRING QUARTER, MAY 8-11, 1979

40 NET NIGHTS

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Lepisosteus oculatus	8	0.20	7.25	0.18
Dorosoma cepedianum	489	12.22	89.28	2.23
Alosa chrysochloris	25	0.62	15.22	0.38
Hiodon tergisus	6	0.15	1.33	0.03
Minytrema melanops	58	1.45	23.22	0.58
Ictiobus bubalus	1	0.02	0.45	0.01
Moxostoma anisurum	10	0.25	4.94	0.12
Moxostoma erythrurum	139	3.48	85.41	2.14
Ictalurus furcatus	7	0.18	4.28	0.11
Ictalurus punctatus	42	1.05	23.62	0.59
Pylodictis olivaris	1	0.02	0.80	0.02
Aplodinotus grunniens	20	0.50	4.95	0.12
Morone chrysops	15	0.38	3.44	0.09
Morone mississippiensis	9	0.22	1.35	0.03
Lepomis macrochirus	3	0.08	0.29	0.01
Lepomis microlophus	11	0.28	1.55	0.04
Pomoxis annularis	1	0.02	0.23	0.01
Stizostedion canadense	11	0.28	5.28	0.13
Total	856	21.40	272.89	6.82

TABLE 12

GILL NET CATCH, STATION IV, TRM 294.0

(MID-CHANNEL, HEATED DISCHARGE)

SPRING QUARTER, MAY 15-18, 1979

17 NET NIGHTS

(TABLE 2)

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Dorosoma cepedianum	66	3.88	10.98	0.65
Minytrema melanops	1	0.06	0.41	0.02
Moxostoma erythrurum	11	0.65	6.48	0.38
Ictalurus furcatus	3	0.18	3.30	0.19
Ictalurus punctatus	17	1.00	11.26	0.66
Aplodinotus grunniens	7	0.41	4.85	0.29
Stizostedion canadense	15	0.88	7.21	0.42
Total	120	7.06	44.49	2.61

TABLE 13

GILL NET CATCH, STATION I, TRM 293.0

SUMMER QUARTER, JULY 10-13, 1979

40 NET NIGHTS

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Lepisosteus oculatus	4	0.10	4.81	0.12
Dorosoma cepedianum	83	2.08	17.32	0.43
Alosa chrysochloris	17	0.42	8.16	0.20
Hiodon tergisus	9	0.22	2.65	0.07
Minytrema melanops	15	0.38	5.62	0.14
Moxostoma erythrurum	12	0.30	6.14	0.15
Ictalurus furcatus	8	0.20	4.06	0.10
Ictalurus punctatus	86	2.15	43.46	1.09
Pylodictis olivaris	1	0.02	0.48	0.01
Aplodinotus grunniens	30	0.75	7.07	0.18
Morone chrysops	4	0.10	1.18	0.03
Morone mississippiensis	2	0.05	0.41	0.01
Lepomis macrochirus	8	0.20	0.89	0.02
Lepomis microlophus	19	0.48	2.58	0.06
Pomoxis annularis	2	0.05	0.42	0.01
Stizostedion canadense	5	0.12	2.46	0.06
Total	305	7.62	107.71	2.68

TABLE 14

GILL NET CATCH, STATION II, TRM 299.0

SUMMER QUARTER, JULY 3-6, 1979

(32 NET NIGHTS)

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Lepisosteus osseus	2	0.06	6.65	0.21
Dorosoma cepedianum	149	4.66	31.39	0.98
Alosa chrysochloris	13	0.41	6.10	0.19
Minytrema melanops	8	0.25	3.13	0.10
Moxostoma erythrurum	28	0.88	13.97	0.44
Ictalurus furcatus	9	0.28	4.71	0.15
Ictalurus punctatus	31	0.97	17.82	0.56
Aplodinotus grunniens	30	0.94	7.51	0.23
Morone chrysops	10	0.31	2.84	0.09
Lepomis macrochirus	4	0.12	0.45	0.01
Lepomis microlophus	17	0.53	2.59	0.08
Stizostedion canadense	4	0.12	1.95	0.06
Totals	305	9.53	99.11	3.10

TABLE 15

GILL NET CATCH, STATION III, TRM 294.0

SUMMER QUARTER, JUNE 26-29, 1979

40 NET NIGHTS

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Lepisosteus osseus	1	0.02	4.72	0.12
Lepisosteus oculatus	11	0.28	9.51	0.24
Dorosoma cepedianum	132	3.30	23.32	0.58
Alosa chrysochloris	21	0.52	10.77	0.27
Hiodon tergisus	5	0.12	1.46	0.04
Minytrema melanops	16	0.40	6.73	0.17
Ictiobus bubalus	1	0.02	1.56	0.04
Ictiobus cyprinellus	3	0.078	1.42	0.04
Moxostoma anisurum	7	0.18	4.75	0.12
Moxostoma erythrurum	41	1.02	25.14	0.63
Ictalurus furcatus	27	0.70	16.94	0.42
Ictalurus punctatus	58	1.45	35.80	0.90
Aplodinotus grunniens	70	1.75	14.46	0.36
Morone chrysops	2	0.05	0.53	0.01
Morone mississippiensis	1	0.02	0.35	0.01
Lepomis microlophus	2	0.05	0.28	0.01
Pomoxis annularis	1	0.02	0.20	0.00
Stizostedion canadense	6	0.15	3.16	0.08
Total	405	10.13	160.98	4.04

TABLE 16

GILL NET CATCH, STATION IV, TRM 294.0

(MID-CHANNEL, HEATED DISCHARGE)

SUMMER QUARTER, JULY 10-13, 1979

16 NET NIGHTS

(TABLE 2)

Species	No.	C/E (fish)	Wt. (kg.)	C/E/ (wt.)
Dorosoma cepedianum	41	2.56	8.83	0.55
Alosa chrysochloris	2	0.12	0.70	0.04
Minytrema melanops	1	0.06	0.42	0.03
Moxostoma erythrurum	5	0.31	2.75	0.17
Ictalurus furcatus	46	2.88	17.67	1.10
Ictalurus punctatus	10	0.62	4.41	0.28
Aplodinotus grunniens	35	2.19	10.70	0.67
Morone chrysops	3	0.19	1.02	0.06
Morone mississippiensis	1	0.06	0.23	0.01
Stizostedion canadense	30	1.88	14.35	0.90
Total	174	10.87	61.08	3.81

TABLE 17

GILL NET CATCH, STATION I, TRM 293.0

FALL QUARTER, NOVEMBER 13-16, 1979

39 NET NIGHTS

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Lepisosteus osseus	1	0.03	0.82	0.02
Lepisosteus oculatus	1	0.03	0.82	0.02
Dorosoma cepedianum	47	1.20	9.53	0.24
Alosa chrysochloris	80	2.05	31.44	0.81
Hiodon tergisus	4	0.10	1.04	0.03
Minytrema melanops	12	0.31	5.96	0.15
Moxostoma erythrurum	10	0.26	7.87	0.20
Ictalurus furcatus	4	0.10	1.31	0.03
Ictalurus punctatus	4	0.10	1.08	0.03
Pylodictis olivaris	1	0.03	0.23	0.01
Aplodinotus grunniens	6	0.15	1.31	0.03
Morone chrysops	13	0.33	4.29	0.11
Morone mississippiensis	1	0.03	0.20	0.01
Lepomis macrochirus	1	0.03	0.10	0.00
Lepomis microlophus	10	0.26	1.16	0.03
Micropterus salmoides	13	0.33	8.67	0.22
Pomoxis annularis	8	0.20	1.48	0.04
Pomoxis nigromaculatus	1	0.03	0.10	0.00
Stizostedion canadense	33	0.85	19.39	0.50
Total	250	6.42	96.80	2.48

TABLE 18

GILL NET CATCH, STATION II, TRM 299.0

FALL QUARTER, OCTOBER 24-26, 1979

21 NET NIGHTS

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Lepisosteus oculatus	5	0.24	4.30	0.20
Dorosoma cepedianum	42	2.00	7.95	0.38
Alosa chrysochloris	6	0.29	2.75	0.13
Hiodon tergisus	4	0.19	1.00	0.05
Minytrema melanops	1	0.05	0.45	0.02
Ictiobus bubalus	1	0.05	3.90	0.19
Moxostoma erythrurum	16	0.77	8.82	0.42
Ictalurus furcatus	2	0.10	1.75	0.08
Ictalurus punctatus	37	1.76	21.43	1.02
Aplodinotus grunniens	1	0.05	0.20	0.01
Morone chrysops	1	0.05	0.55	0.03
Lepomis gulosus	1	0.05	0.20	0.01
Lepomis macrochirus	1	0.05	0.10	0.00
Lepomis microlophus	5	0.24	0.53	0.03
Stizostedion canadense	6	0.29	3.71	0.18
Total	129	6.18	57.64	2.75

TABLE 19

GILL NET CATCH, STATION III, TRM 294.0

FALL QUARTER, NOVEMBER 6-9, 1979

40 NET NIGHTS

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Dorosoma cepedianum	34	0.85	6.93	0.17
Alosa chrysochloris	52	1.30	24.66	0.62
Hiodon tergisus	2	0.05	0.52	0.01
Minytrema melanops	8	0.20	4.29	0.11
Ictiobus bubalus	1	0.02	1.80	0.04
Moxostoma erythrurum	12	0.30	12.00	0.30
Ictalurus furcatus	15	0.38	4.33	0.11
Ictalurus punctatus	12	0.30	9.04	0.23
Pylodictis olivaris	1	0.02	0.36	0.01
Aplodinotus grunniens	11	0.28	2.70	0.07
Morone chrysops	16	0.40	4.80	0.12
Lepomis microlophus	7	0.18	0.80	0.02
Micropterus salmoides	1	0.02	0.45	0.01
Pomoxis annularis	11	0.28	2.58	0.06
Stizostedion canadense	80	2.00	51.75	1.29
Total	263	6.58	127.01	3.17

TABLE 20

GILL NET CATCH, STATION IV, TRM 294.0

(MID-CHANNEL, HEATED DISCHARGE)

FALL QUARTER, NOVEMBER 6-9, 1979

18 NET NIGHTS

(TABLE 2)

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Lepisosteus osseus	1	0.06	1.26	0.07
Dorosoma cepedianum	1	0.06	0.20	0.01
Alosa chrysochloris	52	2.89	20.35	1.13
Hiodon tergisus	2	0.11	0.49	0.03
Ictalurus furcatus	31	1.72	9.25	0.51
Ictalurus punctatus	2	0.11	0.68	0.04
Aplodinotus grunniens	2	0.11	0.40	0.02
Morone chrysops	1	0.06	0.27	0.01
Pomoxis annularis	1	0.06	0.13	0.01
Stizostedion canadense	99	5.50	52.92	2.94
Total	192	10.68	85.95	4.77

TABLE 21

SUMMARY OF WINTER QUARTER GILL NET SAMPLING; PREOPERATIONAL (1969-1973) AND OPERATIONAL (1974-1979)

Preoperational (values = $\bar{x}$ for 1969-1973)					Operational					
Station	$\bar{x}$N	SE C/E	$\bar{x}$ kg	SE	Station	Year	N	C/E	Wt. (kg)	C/E
I	10.05	4.63	3.50	1.91	I	1974	418	10.45	165.53	4.14
						1975	308	8.10	137.46	3.62
						1976	253	6.32	90.09	2.26
						1977	594	14.85	185.74	19.49
						1978	416	10.40	93.75	2.34
						1979	420	10.50	95.56	2.39
II	10.09	1.17	3.84	0.61	II	1974	231	6.42	96.03	2.67
						1975	NO SAMPLE			
						1976	433	10.82	134.62	3.36
						1977	39	1.39	12.19	0.44
						1978	45	1.61	14.44	0.52
						1979	78	2.17	32.12	0.89
III	8.14	4.06	3.09	1.55	III	1974	292	7.30	124.41	3.11
						1975	414	10.61	161.95	4.15
						1976	151	3.77	47.15	1.18
						1977	40	1.67	12.78	0.65
						1978	22	1.22	7.87	0.43
						1979	13	0.35	5.71	1.54
					IV	1975	38	1.90	13.09	0.65
						1976	160	8.00	55.24	2.76
						1977	406	25.37	147.02	9.19
						1978	239	11.95	117.05	5.85
						1979	211	13.19	94.16	5.89

TABLE 22

SUMMARY OF SPRING QUARTER GILL NET SAMPLING; PREOPERATIONAL (1969-1973) AND OPERATIONAL (1974-1979)

Preoperational (values = $\bar{x}$ for 1969-1973)					Operational					
Station	$\bar{x}$N	SE C/E	$\bar{x}$ kg	SE	Station	Year	N	C/E	wt. (kg)	C/E
I	18.83	3.92	6.05	0.80	I	1974	985	24.62	269.18	6.73
						1975	997	26.24	285.57	7.51
						1976	1,344	33.60	435.75	10.89
						1977	376	9.40	140.26	3.51
						1978	932	23.90	360.97	9.26
						1979	628	15.70	281.03	7.03
II	11.81	3.81	3.61	0.98	II	1974	164	4.10	92.37	2.31
						1975	405	10.12	87.35	2.18
						1976	835	20.87	312.82	7.82
						1977	324	8.53	146.00	3.84
						1978	343	8.57	186.90	4.67
						1979	267	7.22	103.18	2.79
III	22.98	16.52	5.88	3.44	III	1974	686	22.87	158.61	5.29
						1975	423	10.57	96.33	2.41
						1976	829	10.72	254.16	6.35
						1977	546	13.65	185.22	4.63
						1978	1,787	44.67	470.74	11.27
						1979	856	21.40	272.89	6.82
					IV	1975	180	10.59	54.99	3.23
						1976	538	26.90	159.46	7.97
						1977	204	12.00	87.86	5.17
						1978	469	23.45	150.23	7.51
						1979	120	7.06	44.49	2.62

TABLE 23

SUMMARY OF SUMMER QUARTER GILL NET SAMPLING; PREOPERATIONAL (1969-1973) AND OPERATIONAL (1974-1979)

Preoperational (values = $\bar{x}$ for 1969-1973)					Operational					
Station	$\bar{x}$N	SE C/E	$\bar{x}$ kg	SE	Station	Year	N	C/E	wt. (kg)	C/E
I	29.42	6.34	8.29	1.90	I	1974	316	7.90	101.75	2.54
						1975	735	19.34	164.56	4.33
						1976	897	22.43	240.70	6.02
						1977	823	21.10	300.94	7.72
						1978	735	18.38	270.56	6.76
						1979	305	7.62	107.71	2.69
II	23.18	14.64	3.44	1.27	II	1974	85	2.83	64.82	[illegible]
						1975	114	2.85	45.46	
						1976	179	5.42	82.26	2.4[illegible]
						1977	167	4.39	87.42	2.30
						1978	345	10.15	167.53	4.19
						1979	305	9.53	99.11	3.10
III	41.90	11.15	9.77	3.25	III	1974	643	16.08	174.92	4.37
						1975	1,111	27.78	178.01	4.45
						1976	990	24.75	272.47	6.81
						1977	2,346	58.65	703.40	16.59
						1978	2,367	59.18	597.00	14.93
						1979	405	10.12	160.98	4.02
					IV	1975	99	5.82	36.18	2.13
						1976	246	12.30	103.84	5.19
						1977	307	17.06	137.99	7.67
						1978	91	8.27	37.85	3.44
						1979	174	10.88	61.08	3.82

TABLE 24

SUMMARY OF FALL QUARTER GILL NET SAMPLING; PREOPERATIONAL (1969-1972) AND OPERATIONAL (1973-1979)

Preoperational (values = $\bar{x}$ for 1969-1973)					Operational					
Station	$\bar{x}N$	SE C/E	$\bar{x}$ kg	SE	Station	Year	N	C/E	wt. (kg)	C/E
I	9.88	1.53	2.80	0.37	I	1973	476	11.90	166.22	4.16
						1974	252	8.55	138.97	3.47
						1975	252	6.70	94.28	2.38
						1976	486	12.15	178.74	4.47
						1977	464	11.60	215.74	5.39
						1978	305	7.63	145.71	3.64
						1979	250	6.41	96.80	2.48
II	7.98	1.87	3.16	0.64	II	1973	169	4.23	96.72	2.42
						1974	129	3.23	43.62	1.09
						1975	237	5.93	89.55	2.24
						1976	323	8.08	126.07	3.15
						1977	547	15.63	231.00	6.60
						1978	485	12.13	209.04	5.33
						1979	129	6.14	57.64	2.74
III	8.10	9.73	7.01	2.37	III	1973	304	7.60	117.60	2.90
						1974	822	20.55	246.78	6.17
						1975	475	11.86	159.73	3.99
						1976	610	15.25	253.58	6.34
						1977	742	18.55	335.36	8.38
						1978	897	22.43	355.78	8.89
						1979	263	6.57	127.01	3.17
					IV	1974	156	9.75	49.94	3.12
						1975	183	10.17	77.22	4.29
						1976	320	16.00	143.58	7.18
						1977	198	9.90	91.68	4.58
						1978	218	12.82	103.43	6.08
						1979	192	10.67	85.95	4.78

Trap net observations

The primary purpose of the trap netting survey was to obtain fish for tagging and movement investigations. Water temperature is the criterion used to determine when quarterly samples will be collected. Spring quarter samples are collected when the reservoir surface temperature reaches 15° C (59° F), however no samples are taken when water temperatures exceed 24° C (75° F). Wheeler Reservoir water temperatures normally approach 75° F in late spring and remain above 75° F until mid October; consequently, no summer quarter samples are taken. The rationale for establishing temperature criteria was based on low survival rates of tagged fishes. At temperatures greater than 75° F tagged fish are highly susceptible to fungal infection. Since this condition was observed in the vicinity of BFNP, fish tagging during summer quarters was omitted.

Winter quarter catches were dominated by freshwater drum which comprised 67 percent of the total number and 38 percent of the total weight. Spring catches were dominated by gizzard shad which comprised 75 percent of the number and 63 percent of the total weights. Fall catches were dominated by white crappie (39 percent of total number and 33 percent of the total weight) along with redear sunfish (18 percent of total number and 23 percent of total weight) and bluegill (18 percent of total number and 9 percent of total weight).

TABLE 25

TRAP NET CATCH, STATION A, TRM 283.0

WINTER QUARTER, MARCH 7-9, 1979

NET i2 (2 LIFTS)

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Aplodinotus grunniens	49	24.50	3.63	1.81
Pomoxis annularis	10	5.00	0.81	0.40
Stizostedion canadense	2	1.00	0.68	0.34
Total	61	30.50	5.12	2.55

TABLE 26

TRAP NET CATCH, STATION B, TRM 293.0

WINTER QUARTER, MARCH 7-9, 1979

NET 21 (2 LIFTS)

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Dorosoma cepedianum	10	5.00	1.27	0.63
Hiodon tergisus	2	1.00	0.36	0.18
Minytrema melanops	1	0.50	0.36	0.18
Moxostoma erythrurum	1	0.50	0.41	0.20
Ictalurus furcatus	2	1.00	1.09	0.54
Ictalurus punctulatus	12	6.00	6.98	3.49
Pylodictis olivaris	7	3.50	11.43	5.71
Aplodinotus grunniens	36	18.00	13.93	6.97
Lepomis macrochirus	4	2.00	0.59	0.30
Pomoxis annularis	17	8.50	9.85	4.92
Total	92	46.00	46.27	23.12

TABLE 27

TRAP NET CATCH, STATION B, TRM 287.0

WINTER QUARTER, MARCH 7-9, 1979

NET 22 (2 LIFTS)

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Ictalurus furcatus	1	0.50	0.36	0.18
Ictalurus punctatus	12	6.00	9.35	4.68
Pylodictis olivaris	1	0.50	1.36	0.68
Aplodinotus grunniens	133	66.50	17.63	8.81
Morone mississippiensis	1	0.50	0.19	0.10
Lepomis microlophus	1	0.50	0.20	0.10
Pomoxis annularis	24	12.00	9.94	4.97
Total	173	86.50	39.03	19.52

TABLE 28

TRAP NET CATCH, STATION A, TRM 283.0

SPRING QUARTER, APRIL 17-20, 1979

NET 12 (4 LIFTS)

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Dorosoma cepedianum	11	2.75	2.41	0.60
Minytrema melanops	1	0.25	0.27	0.07
Ictalurus furcatus	1	0.25	0.36	0.09
Ictalurus punctatus	3	0.75	1.67	0.42
Pylodictis olivaris	1	0.25	0.64	0.16
Aplodinotus grunniens	5	1.25	0.68	0.17
Pomoxis annularis	9	2.25	0.63	0.16
Total	31	7.75	6.66	1.67

TABLE 29

TRAP NET CATCH, STATION B, TRM 293.0

SPRING QUARTER, APRIL 17-20, 1979

NET 21 (4 LIFTS)

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Lepisosteus oculatus	1	0.25	1.95	0.49
Dorosoma cepedianum	169	42.25	20.69	5.17
Minytrema melanops	1	0.25	0.45	0.11
Ictalurus punctatus	2	0.50	0.82	0.20
Aplodinotus grunniens	11	2.75	3.63	0.91
Morone mississippiensis	2	0.50	0.27	0.07
Lepomis macrochirus	2	0.50	0.18	0.04
Lepomis microlophus	12	3.00	2.62	0.66
Pomoxis annularis	12	3.00	1.09	0.28
Total	212	53.000	31.70	7.93

TABLE 30

TRAP NET CATCH, STATION B, TRM 287.0

SPRING QUARTER, APRIL 17-20, 1979

NET 22 (4 LIFTS)

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Dorosoma cepedianum	118	29.50	14.97	3.74
Ictalurus furcatus	1	0.25	0.59	0.15
Ictalurus punctatus	1	0.25	1.86	0.47
Aplodinotus grunniens	26	6.50	3.36	0.84
Morone mississippiensis	2	0.50	0.37	0.09
Lepomis microlophus	1	0.25	0.09	0.02
Pomoxis annularis	7	1.75	0.55	0.14
Total	156	39.00	21.79	5.45

TABLE 31

TRAP NET CATCH, STATION A, TRM 283.0

FALL QUARTER, DECEMBER 4-7, 1979

NET 12 (4 LIFTS)

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Dorosoma cepedianum	12	3.00	1.81	0.46
Alosa chrysochloris	1	0.25	0.30	0.07
Minytrema melanops	5	1.25	2.75	0.69
Ictiobus bubalus	4	1.00	10.25	2.56
Moxostoma erythrurum	7	1.75	6.83	1.71
Aplodinotus grunniens	2	0.50	0.35	0.09
Morone chrysops	5	1.25	1.18	0.30
Morone mississippiensis	3	0.75	0.42	0.10
Lepomis macrochirus	29	7.25	2.70	0.68
Lepomis microlophus	26	6.50	6.31	1.58
Pomoxis annularis	131	32.75	15.64	3.91
Pomoxis nigromaculatus	1	0.25	0.15	0.04
Total	226	56.50	48.69	12.19

TABLF 32

TRAP NET CATCH, STATION B, TRM 292.0

FALL QUARTER, DECEMBER 4-7, 1979

NET 21 (4 LIFTS)

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Dorosoma cepedianum	84	21.00	8.62	2.16
Alosa chrysochloris	5	1.25	1.28	0.32
Hiodon tergisus	11	2.75	2.47	0.62
Ictiobus bubalus	4	1.00	3.05	0.76
Moxostoma erythrurum	2	0.50	1.36	0.34
Pylodictis olivaris	2	0.50	4.45	1.11
Aplodinotus grunniens	17	4.25	8.37	2.09
Morone chrysops	2	0.50	0.45	0.11
Morone mississippiensis	3	0.75	0.65	0.16
Lepomis macrochirus	24	6.00	2.43	0.61
Lepomis microlophus	46	11.50	10.97	2.74
Pomoxis annularis	66	16.50	12.02	3.00
Pomoxis nigromaculatus	7	1.75	0.67	0.17
Total	273	68.25	56.79	14.19

TABLE 33

TRAP NET CATCH, STATION B, TRM 287.0

FALL QUARTER, DECEMBER 4-7, 1979

NET 22 (4 LIFTS)

Species	No.	C/E (fish)	Wt. (kg.)	C/E (wt.)
Dorosoma cepedianum	23	5.75	3.01	0.75
Hiodon tergisus	1	0.25	0.10	0.02
Minytrema melanops	2	0.50	1.15	0.29
Ictiobus bubalus	3	0.75	1.41	0.35
Ictalurus punctatus	1	0.25	0.30	0.07
Aplodinotus grunniens	38	9.50	3.43	0.86
Morone chrysops	21	5.25	5.85	1.46
Morone mississippiensis	1	0.25	0.10	0.02
Lepomis macrochirus	151	37.75	12.27	3.07
Lepomis megalotis	1	0.25	0.08	0.02
Lepomis microlophus	127	31.75	29.47	7.37
Pomoxis annularis	243	60.75	38.38	9.59
Pomoxis nigromaculatus	11	2.75	1.53	0.38
Total	623	155.75	97.08	24.25

Tagging and movement results

Tagging operations were initiated at BFNP in 1969. Originally 17 species of fish were collected for tagging purposes. In 1974 the number of species tagged was reduced to six. These species are white crappie, white bass, smallmouth buffalo, channel catfish, blue catfish and flathead catfish.

A total of 176 fish were tagged in 1979. White crappie comprised 74 percent of the total tagged fish. Three specimens, one channel catfish and two white crappie, were recaptured in 1979. The channel catfish was tagged and released at TRM 293.0 on November 20, 1979, and was recaptured at the diffuser discharge gill net station at TRM 294.0 on December 3, 1979. One white crappie was tagged and released near the mouth of Goldfield Creek (TRM 284.0) on November 20, 1979, and was recaptured at Elk River Mile (ERM) 7.0 on December 3, 1979. The other white crappie was tagged and released at TRM 287.0 on November 30, 1979, and recaptured at TRM 283 on December 29, 1979.

The cummulative total number of fish tagged from the BFNP tagging operations is 10,814. Recaptures and returns from fishermen accounted for 366 fish or 3.4 percent of the total number tagged.

Due to the low percentage of returns and recaptures, movement patterns were not well defined in the vicinity of BFNP.

Table 34

Summary of tagging operations to date, Wheeler Reservoir, 1979.

Species	Total tagged this year	Total tagged	Total returns	Percent returns
Paddlefish	0	25	0	0.00
Smallmouth buffalo	6	1,461	14	0.96
Bigmouth buffalo	0	42	0	0.00
Blue catfish	2	8,004	19	2.37
Channel catfish	26	2,985	51	1.71
Flathead catfish	7	862	70	8.19
White bass	4	1,674	55	3.29
Bluegill	0	15	0	0.00
Redear sunfish	0	57	0	0.00
Spotted bass	0	8	1	12.50
Largemouth bass	0	29	0	0.00
Smallmouth bass	0	4	0	0.00
White crappie	131	2,173	130	5.98
Black crappie	0	18	3	16.67
Sauger	0	174	16	9.19
Walleye	0	1	0	0.00
Freshwater drum	0	482	7	1.44
Totals	176	10,814	366	3.38

Rotenone

In the continued assessment of fish populations in Wheeler Reservoir, three cove rotenone samples were made in the summer of 1979 (one less than previous years). Results showed a typical warm water fish assemblage composed of 42 species (table 35). Numbers of game, commercial, and prey fish species in 1979 samples were similar to those in previous studies (table 36). The average number of fish collected per hectare decreased more than 16 percent from 1978. However, this decrease was attributed mainly to elimination of the cove at TRM 280.1 which, in 1978, contained higher numbers than the other three coves. Biomass determinations from each cove were higher in 1979 than in 1978. This resulted in an overall increase of 36 percent greater biomass than found in 1978, but these levels were still lower than those of 1977.

Numbers and biomass per hectare of young-of-year, intermediate, and harvestable fish of each species are reported in table 37. Numbers and biomass of young-of-year were less than half that collected in 1978. However, intermediate and harvestable groups increased greatly in number and biomass in 1979. In 1976 threadfin shad comprised over 56 percent of young-of-year fish numbers in rotenone samples from Wheeler Reservoir. Following the severe winter of 1977 threadfin shad stocks were reduced to less than 0.05 percent of the total number of young-of-year fish in rotenone samples. In 1978 threadfin shad stocks recovered to comprise approximately 32 percent of the total number of young-of-year, and over 25 percent in 1979. Conversely, gizzard shad increased from 0.19 percent of the total young-of-year in the 1976 samples to over 64 percent in 1977. In 1978, 55 percent of the young-of-year fish were

TABLE 35

COMMON AND SCIENTIFIC NAMES OF FISH IN ROTENONE SAMPLES
WHEELER RESERVOIR, 1979

COMMON NAME	SCIENTIFIC NAME
GAME	
White Bass	Morone chrysops
Yellow Bass	Morone mississippiensis
Warmouth	Lepomis gulosus
Green Sunfish	Lepomis cyanellus
Bluegill	Lepomis macrochirus
Longear Sunfish	Lepomis megalotis
Redear Sunfish	Lepomis microlophus
Smallmouth Bass	Micropterus dolomieui
Spotted Bass	Micropterus punctulatus
Largemouth Bass	Micropterus salmoides
White Crappie	Pomoxis annularis
Black Crappie	Pomoxis nigromaculatus
Yellow Perch	Perca flavescens
Sauger	Stizostedion canadense
COMMERCIAL	
Spotted Gar	Lepisosteus oculatus
Longnose Gar	Lepisosteus osseus
Skipjack Herring	Alosa chrysochloris
Carp	Cyprinus carpio
Smallmouth Buffalo	Ictiobus bubalus
Bigmouth Buffalo	Ictiobus cyprinellus
Spotted Sucker	Minytrema melanops
Silver Redhorse	Moxostoma anisurum
Golden Redhorse	Moxostoma erythrurum
Channel Catfish	Ictalurus punctatus
Flathead Catfish	Pylodictis olivaris
Freshwater Drum	Aplodinotus grunniens

TABLE 35 (CONT.)

COMMON AND SCIENTIFIC NAMES OF FISH IN ROTENONE SAMPLES
WHEELER RESERVOIR, 1979

COMMON NAME	SCIENTIFIC NAME
PREY	
Gizzard Shad	Dorosoma cepedianum
Threadfin Shad	Dorosoma petenense
Stoneroller	Campostoma anomalum
Silver Chub	Hybopsis storeriana
Golden Shiner	Notemigonus crysoleucas
Emerald Shiner	Notropis atherinoides
Bullhead Minnow	Pimephales vigilax
Tadpole Madtom	Noturus gyrinus
Blackspotted Topminnow	Fundulus olivaceus
Mosquitofish	Gambusia affinis
Orangespotted Sunfish	Lepomis humilis
Fantail Darter	Etheostoma flabellare
Stripetail Darter	Etheostoma kennicotti
Logperch	Percina caprodes
River Darter	Percina shumardi
Brook Silverside	Labidesthes sicculus

TABLE 36

AREA POPULATIONS FOR MAJOR FISH GROUPS, WHEELER RESERVOIR, 1979

Sample Area	Fish Group	Number of Species	Number of Fish		Weight of Fish	
			Hectare	Acre	Kg/ha	Lbs/ac
Second Creek	Game	13	9,045.0	3,660.4	111.7	105.0
	Commercial	10	400.0	161.9	155.9	139.1
	Prey	12	13,874.0	5,614.7	239.4	213.6
Total		35	23,319.0	9,437.0	513.0	457.7
Elk River	Game	10	13,498.3	5,462.6	236.8	211.3
	Commercial	8	445.0	180.1	169.0	150.8
	Prey	10	9,505.0	3,846.6	190.9	170.4
Total		28	23,448.3	9,489.3	596.7	532.4
Lawrence County Park	Game	12	2,857.9	1,156.5	57.7	51.5
	Commercial	11	435.0	176.0	184.6	164.7
	Prey	14	13,487.1	5,458.1	296.3	264.3
Total		37	16,780.0	6,790.7	538.6	480.5
All Areas	Game	14	8,467.1	3,426.5	137.4	122.6
	Commercial	12	426.7	172.7	169.8	151.5
	Prey	16	12,288.7	4,973.1	549.4	216.1
Total		42	21,182.4	8,572.3	549.4	490.2

TABLE 37

SIZE DISTRIBUTION PER HECTARE BY SPECIES FROM COVE ROTENONE SAMPLES
WHEELER RESERVOIR, 1979

SPECIES	YOUNG-OF-YEAR NUMBER	YOUNG-OF-YEAR WEIGHT(Kg)	INTERMEDIATE NUMBER	INTERMEDIATE WEIGHT(Kg)	HARVESTABLE NUMBER	HARVESTABLE WEIGHT(Kg)	TOTAL NUMBER	TOTAL WEIGHT(Kg)
GIZZARD SHAD	315.11	2.71	0.00	-	7357.03	217.09	7672.14	219.79
THREADFIN SHAD	4329.97	20.63	0.00	-	0.00	-	4329.97	20.63
BLUEGILL	2392.83	7.84	1807.51	31.40	484.60	30.67	4684.94	69.91
LONGEAR SUNFISH	1193.94	4.02	1206.76	21.64	56.00	2.64	2456.70	28.30
REDEAR SUNFISH	214.41	1.01	80.00	1.35	82.33	11.25	376.75	13.61
GREEN SUNFISH	174.84	0.55	89.84	1.53	16.22	0.88	280.90	2.95
WARMOUTH	183.59	0.66	73.16	1.22	17.02	1.30	273.76	3.18
FRESHWATER DRUM	60.95	0.61	76.08	3.34	66.27	23.30	203.30	27.25
LARGEMOUTH BASS	74.65	0.50	82.10	2.33	21.37	10.39	178.11	13.22
LOGPERCH	132.27	1.01	0.00	-	0.00	-	132.27	1.01
SPOTTED SUCKER	0.00	-	3.16	0.39	84.49	34.36	87.65	34.76
YELLOW BASS	66.33	0.24	0.33	0.02	0.00	-	66.67	0.26
BULLHEAD MINNOW	64.22	0.13	0.00	-	0.00	-	64.22	0.13
SPOTTED BASS	40.22	0.24	13.22	0.24	2.46	0.47	55.90	0.95
SMALLMOUTH BASS	24.57	0.17	15.24	0.37	4.90	0.84	44.71	1.38
SMALLMOUTH BUFFALO	0.00	-	1.76	0.67	42.62	57.30	44.38	57.96
GOLDEN REDHORSE	0.00	-	0.79	0.12	38.70	20.31	39.49	20.43
BLACKSPOTTED TOPMINNOW	25.84	0.06	0.00	-	0.00	-	25.84	0.06
ORANGESPOTTED SUNFISH	0.24	T	22.71	0.09	1.35	0.01	24.30	0.10
WHITE CRAPPIE	0.00	-	8.70	0.44	15.51	2.26	24.21	2.70
WHITE BASS	14.62	0.26	2.24	0.12	0.00	-	16.86	0.37
FLATHEAD CATFISH	3.33	0.02	6.86	0.52	5.49	3.34	15.68	3.89
GOLDEN SHINER	13.05	0.42	0.00	-	0.00	-	13.05	0.42
EMERALD SHINER	11.05	0.02	0.00	-	0.00	-	11.05	0.02
SPOTTED GAR	2.25	0.15	0.67	0.18	5.68	4.69	8.60	5.02
CHANNEL CATFISH	1.00	0.01	0.00	-	7.56	4.49	8.56	4.51
SILVER REDHORSE	0.00	-	0.00	-	7.86	5.45	7.86	5.45
BROOK SILVERSIDE	7.32	0.01	0.00	-	0.00	-	7.32	0.01
SAUGER	3.43	0.08	1.90	0.20	1.00	0.20	6.33	0.48
SKIPJACK HERRING	0.71	0.01	5.29	0.26	0.24	0.04	6.24	0.32
SILVER CHUB	2.81	0.02	0.00	-	0.00	-	2.81	0.02

TABLE 37 (CONT.)

SIZE DISTRIBUTION PER HECTARE BY SPECIES FROM COVE ROTENONE SAMPLES
WHEELER RESERVOIR, 1979

SPECIES	YOUNG-OF-YEAR NUMBER	YOUNG-OF-YEAR WEIGHT(Kg)	INTERMEDIATE NUMBER	INTERMEDIATE WEIGHT(Kg)	HARVESTABLE NUMBER	HARVESTABLE WEIGHT(Kg)	TOTAL NUMBER	TOTAL WEIGHT(Kg)
BIGMOUTH BUFFALO	0.00	-	0.00	-	2.71	5.06	2.71	5.06
STRIPETAIL DARTER	2.56	T	0.00	-	0.00	-	2.56	T
MOSQUITOFISH	1.67	T	0.00	-	0.00	-	1.67	T
CARP	0.00	-	0.00	-	1.19	4.10	1.19	4.10
LONGNOSE GAR	0.00	-	0.67	0.10	0.33	0.99	1.00	1.09
FANTAIL DARTER	0.71	T	0.00	-	0.00	-	0.71	T
BLACK CRAPPIE	0.00	-	0.00	-	0.67	0.11	0.67	0.11
YELLOW PERCH	0.00	-	0.56	T	0.00	-	0.56	T
TADPOLE MADTOM	0.33	T	0.00	-	0.00	-	0.33	T
STONEROLLER	0.24	T	0.00	-	0.00	-	0.24	T
RIVER DARTER	0.24	T	0.00	-	0.00	-	0.24	T
TOTALS	9359.30	41.38	3499.55	66.53	8323.60	441.54	21182.45	549.45

T = Less Than 0.01 Per Hectare

gizzard shad. Gizzard shad numbers decreased to comprise approximately 3 percent of the young-of-year in 1979. Percent composition, by number, of major groups remained relatively constant over the past two years (table 38). However, commercial and game fish biomass decreased while prey species biomass increased.

A comparison through time of the numbers and biomass per hectare for the three sites indicated that, in 1979, numbers in the Elk River cove continued a three-year decline while biomass increased (table 39). The sample from Second Creek showed a modest increase in both parameters while at the Lawrence County Park Cove only in biomass increased. Table 39 indicates that, while there is much variability in the year-to-year samples, the fish community in Wheeler Reservoir remains relatively stable.

Impingement

A list of fish species impinged on intake screens at Browns Ferry Nuclear Plant in 1979 is presented in table 40. The percent composition of impinged fish showed a considerable decrease of freshwater drum and increases for Lepomis sp. and shad (table 41) from 1978. As in previous years, shad and skipjack herring comprised a greater percentage of the total number of impinged fish than all 11 other families combined.

TABLE 38

SIZE DISTRIBUTION OF MAJOR FISH GROUPS
WHEELER RESERVOIR, 1979

	******** PERCENT BY NUMBER *******				******** PERCENT BY WEIGHT *******			
FISH GROUP	YOUNG OF YEAR	INTER-MEDIATE	HARVEST-ABLE	TOTAL	YOUNG OF YEAR	INTER-MEDIATE	HARVEST-ABLE	TOTAL
GAME	20.7	16.0	3.3	40.0	2.8	11.1	11.1	25.0
COMMERCIAL	0.3	0.4	1.2	2.0	0.1	1.0	29.7	30.9
PREY	23.2	0.1	34.7	58.0	4.6	0.0	39.5	44.1
TOTAL	44.2	16.5	39.3	100.0	7.5	12.1	80.4	100.0

TABLE 39

COMPARISON OF ROTENONE SURVEY RESULTS IN THREE COVES OF WHEELER RESERVOIR, 1961-1979

COVE	YEAR	SAMPLE AREA SIZE(ACRES)	NO. FISH PER ACRE	POUNDS FISH PER ACRE
LAWRENCE COUNTY PARK	1968	3.70	2,175	190.0
	1969	2.94	4,917	491.0
	1970	3.54	5,724	684.0
	1971	3.54	21,836	472.0
	1972	3.54	5,444	508.0
	1973	3.54	4,347	267.0
	1974	1.96	5,300	417.0
	1975	3.54	10,516	256.0
	1976	2.94	24,177	1,459.3
	1977	3.50	6,751	432.0
	1978	3.50	6,809	321.7
	1979	3.50	6,791	480.5
SECOND CREEK	1961	1.65	2,988	168.0
	1969	2.36	37,345	965.0
	1970	2.75	6,518	985.0
	1971	2.75	5,440	657.9
	1972	2.75	6,024	854.0
	1973	2.75	9,782	252.0
	1974	2.75	2,584	192.0
	1975	2.75	3,198	236.0
	1976	2.37	9,448	410.3
	1977	2.50	6,848	683.3
	1978	2.70	5,365	398.6
	1979	2.50	9,437	457.7
ELK RIVER	1961	1.25	5,520	370.0
	1969	1.55	28,804	1,033.0
	1970	1.60	8,123	429.0
	1971	1.60	10,398	453.1
	1972	1.60	15,399	400.0
	1973	1.60	19,331	333.0
	1974	1.60	8,722	393.0
	1975	1.58	10,174	358.0
	1976	1.56	13,891	406.9
	1977	1.50	23,055	1,027.5
	1978	1.60	13,067	326.5
	1979	1.50	9,489	532.4

TABLE 40

TAXONOMIC LIST OF FISH SPECIES IMPINGED AT
BROWNS FERRY NUCLEAR PLANT

JANUARY-DECEMBER, 1979

Scientific Name	Common Name
Polyodontidae	
Polyodon spathula	Paddlefish
Lepisosteidae	
Lepisosteus oculatus	Spotted gar
Lepisosteus osseus	Longnose gar
Lepisosteus platostomus	Shortnose gar
Clupeidae	
Alosa chrysochloris	Skipjack herring
Dorosoma cepedianum	Gizzard shad
Dorosoma petenense	Threadfin shad
Hiodontidae	
Hiodon tergisus	Mooneye
Salmonidae	
Salmo gairdneri	Rainbow trout
Cyprinidae	
Notemigonus crysoleucas	Golden shiner
Notropis volucellus	Mimic shiner
Notropis atherinoides	Emerald shiner
Pimephales vigilax	Bullhead minnow
Carassius auratus	Goldfish
Hybopsis storeriana	Silver chub
Cyprinus carpio	Carp
Catostomidae	
Minytrema melanops	Spotted sucker
Ictiobus bubalus	Smallmouth buffalo
Ictiobus cyprinellus	Bigmouth buffalo
Moxostoma duquesnei	Black redhorse
Moxostoma erythrurum	Golden redhorse
Moxostoma anisurum	Silver redhorse
Ictaluridae	
Ictalurus furcatus	Blue catfish
Ictalurus nebulosus	Brown bullhead
Ictalurus punctatus	Channel catfish
Ictalurus melas	Black bullhead
Ictalurus natalis	Yellow bullhead
Pylodictis olivaris	Flathead catfish

TABLE 40 (CONT.)

Scientific Name	Common Name
Percichthyidae	
Morone chrysops	White bass
Morone mississippiensis	Yellow bass
Centrarchidae	
Lepomis cyanellus	Green sunfish
Lepomis macrochirus	Bluegill
Lepomis megalotis	Longear
Lepomis microlophus	Redear
Pomoxis annularis	White crappie
Pomoxis nigromaculatus	Black crappie
Micropterus salmoides	Largemouth bass
Micropterus dolomieui	Smallmouth bass
Micropterus punctulatus	Spotted bass
Percidae	
Percina caprodes	Logperch
Stizostedion canadense	Sauger
Sciaenidae	
Aplodinotus grunniens	Freshwater drum

TABLE 41

Species and Species Groups Percent Composition of Impinged Fish at Browns Ferry Nuclear Plant January-December, 1979

SPECIES OR GROUP	PERCENT
Dorosoma, Alosa	87.5
Ictaluridae	0.45
Micropterus salmoides	TR.
M. dolomieui	TR.
M. punctulatus	TR.
Pomoxis sp.	2.4
Lepomis sp.	2.2
Aplodinotus grunniens	4.8
Other	2.7

Results of Creel Survey

Creel census data from Wheeler Reservoir during 1979 are summarized in tables 42-50. Total estimated fishing pressure has followed a cyclic pattern since 1974. In 1979 fishing pressure was 26 percent lower than in 1977. Fishing pressure fluctuated considerably throughout 1979 (table 51). Minimum pressure efforts occurred in January, February and December. Estimated success rate was 0.6 fish per hour and 0.27 kg per hour. White crappie was the dominant species harvested in terms of number and biomass. Channel catfish, smallmouth bass, and largemouth bass were also prominent species frequently encountered in census surveys.

Due to the randomness incorporated in the design of the creel census surveys, localized plant related effects on the Wheeler Reservoir fishery were not detected.

TABLE 42

ESTIMATED QUARTERLY FISHING PRESSURE
WHEELER RESERVOIR, ALABAMA

JULY 1, 1970-DECEMBER 30, 1979

	Calendar Year								
	1970	1971	1972	1973	1974	1975	1976	1977	1978-1979
Winter (Jan.-Mar.)		40,606	155,221	135.016	22.077	68,386	19,988	57,761	53,132
Spring (Apr.-June)		247,771	152,658	238,257*	89,653	229,070	85,405	189,829	145,584
Summer (July-Sept.)	102,864	113,477	71,549	105,883	43,570	76,532	52,393	91,844	57,018
Fall (Oct.-Dec.)	47,577	31,946	36,412	19,601	22,934	24,164	12,118	68,523	43,464
Total	150,441	433,800	415,840	498,757	178,234	389,152	169,904	407,957	299,198

*Beginning of creel survey procedures as described by the Institute of Statistics, North Carolina State University, Raleigh, North Carolina.

TABLE 43

FISHING PRESSURE ESTIMATES BY PERIOD
WHEELER RESERVOIR, ALABAMA

JANUARY 1, 1978-DECEMBER 30, 1979

Period	Inclusive Dates	Fishing Pressure (hrs)
1	Jan. 1 - Jan. 31	4,116
2	Feb. 1 - Feb. 29	4,599
3	Mar. 1 - Mar. 31	44,417
4	Apr. 1 - Apr. 28	75,675
5	May 1 - May 31	40,754
6	June 2 - June 30	29,155
7	July 1 - July 31	15,868
8	Aug. 1 - Aug. 30	20,004
9	Sept. 1 - Sept. 30	21,146
10	Oct. 1 - Oct. 31	16,773
11	Nov. 1 - Nov. 29	21,697
12	Dec. 1 - Dec. 30	4,994

TABLE 44

SEASONAL FISHING PRESSURE PER HECTARE FOR EACH SAMPLING AREA
WHEELER RESERVOIR, ALABAMA

JANUARY 1, 1978-DECEMBER 30, 1979

	Hours of Pressure Per Hectare					
	Sample Area					
Season	1-1 & 1-2	2-1	3-1	3-2	4-1	Entire Reservoir
Winter	3.22	1.22	1.21	2.02	7.28	2.68
Spring	1.77	10.68	6.88	10.00	20.91	7.34
Summer	0.34	3.00	3.29	3.76	10.81	2.87
Fall	0.67	2.15	1.91	1.41	12.18	2.19

TABLE 45

PERCENT OF TOTAL ESTIMATED FISHING PRESSURE FOR
EACH SAMPLING AREA BY SEASON
WHEELER RESERVOIR, ALABAMA

JANUARY 1, 1978-DECEMBER 30, 1979

Season	Sample Area				
	1-1 & 1-2	2-1	3-1	3-2	4-1
Winter	47.8	6.2	10.7	15.2	20.0
Spring	9.6	19.8	22.1	27.5	21.0
Summer	4.7	14.2	27.1	26.3	27.7
Fall	12.1	13.3	20.6	13.0	40.9

TABLE 46

ESTIMATED TOTAL SPORT FISHING CATCH BY SPECIES
WHEELER RESERVOIR, ALABAMA

JANUARY 1, 1979-DECEMBER 31, 1979

Species	Number	Biomass (kg)	Percent by Number	Percent by Biomass	Rank by Number	Rank by Biomass
Blue catfish	4,832	2,928	2.82	3.62	6	5
Channel catfish	34,114	21,553	19.90	26.63	2	2
Flathead catfish	114	26	0.07	0.03	12	12
White and Yellow bass	6,681	2,200	3.90	2.72	5	6
Bluegill sunfish	4,370	826	2.55	1.02	7	8
Other sunfish	33	4	0.02	Tr.	13	13
Smallmouth bass	10,890	6,917	6.35	8.55	3	3
Spotted bass	194	48	.11	0.06	11	11
Largemouth bass	7,554	5,011	4.41	6.19	4	4
White crappie	98,350	39,455	57.38	48.76	1	1
Black crappie	3,397	1,510	1.98	1.87	8	7
Sauger	414	91	0.24	0.11	10	10
Drum	467	346	0.27	0.43	9	9
Totals	171,410	80,925				

TABLE 47

ESTIMATED SPORT FISH HARVEST PER HOUR AND PER HECTARE
WHEELER RESERVOIR, ALABAMA

JANUARY 1, 1979-DECEMBER 31, 1979

Species	Catch per Hour		Catch per Hectare	
	Number	Biomass	Number	Biomass
Blue catfish	0.016	0.010	0.244	0.148
Channel catfish	0.114	0.072	1.719	1.086
Flathead catfish	TR.	TR.	0.006	0.001
White and Yellow bass	0.022	0.007	0.337	0.111
Bluegill sunfish	0.015	0.003	0.220	0.042
Other sunfish	TR.	TR.	0.002	TR.
Smallmouth bass	0.036	0.023	0.549	0.349
Spotted bass	0.001	TR.	0.010	0.002
Largemouth bass	0.025	0.017	0.381	0.253
White crappie	0.329	0.132	4.957	1.989
Black crappie	0.011	0.005	0.171	0.076
Sauger	0.001	TR.	0.021	0.005
Drum	0.002	0.001	0.024	0.017
Total	0.573	0.270	8.640	4.079

TABLE 48

ESTIMATED TOTAL SPORT FISHING CATCH FROM EACH SAMPLE AREA BY SPECIES
WHEELER RESERVOIR, ALABAMA

JANUARY 1, 1979-DECEMBER 31, 1979

Species	NUMBERS Areas 1-1	2-1	3-1	3-2	4-1	BIOMASS Areas 1-1	2-1	3-1	3-2	4-1
Blue catfish	84	2,142	647	100	1,859	66.8	1,662.3	359.5	135	704.1
Channel catfish	3,447	15,613	8,270	3,517	3,267	1,866.4	10,244.5	5,275	1,982.3	2,184.5
Flathead catfish	17	97	0	0	0	3.6	22.3	0	0	0
White and Yellow bass	813	1,087	1,009	1,163	2,609	163.6	192.7	627.3	515.9	710.9
Bluegill sunfish	615	3,014	647	94	0	85.5	601.4	117.7	21.4	0
Other sunfish*	33	0	0	0	0	3.6	0	0	0	0
Smallmouth bass	414	659	2,166	2,879	4,772	269.5	480.5	1,632.7	2,136.8	2,398.2
Spotted bass	0	194	0	0	0	0	48.6	0	0	0
Largemouth bass	237	2,415	1,720	466	2,716	151.4	1,434.5	1,135.5	575.9	1,713.6
White crappie	30,946	5,097	14,130	16,245	31,932	12,646.8	1,993.6	6,156.4	6,040.9	12,617.7
Black crappie	231	0	1,108	214	1,844	68.2	0	412.3	97.3	932.7
Sauger	103	0	0	0	311	43.6	0	0	0	47.3
Drum	102	97	0	164	104	58.6	20.5	0	149.1	117.7
Totals	37,042	30,415	29,697	24,842	49,414	15,428	16,701	15,716	11,655	21,427

*Includes longear, greenspotted and orangespotted sunfish, warmouth, etc.

TABLE 49

ESTIMATED NUMBER AND BIOMASS OF SPORTFISH HARVEST PER HECTARE BY SPECIES
WHEELER RESERVOIR, ALABAMA

JANUARY 1, 1979-DECEMBER 31, 1979

Species	Number/ha. Areas 1-1	2-1	3-1	3-2	4-1	Biomass (Kg.)/ha. Areas 1-1	2-1	3-1	3-2	4-1
Blue catfish	TR.	0.11	0.03	0.01	0.09	0.01	0.21	0.05	0.02	0.09
Channel catfish	0.17	0.79	0.42	0.18	0.16	0.24	1.30	0.67	0.25	0.28
Flathead catfish	TR.	TR.	0.00	0.00	0.00	TR.	TR.	0.00	0.00	0.00
White & Yellow bass	0.04	0.05	0.05	0.05	0.13	0.02	0.02	0.08	0.07	0.09
Bluegill sunfish	0.03	0.15	0.03	TR.	0.00	0.01	0.08	0.01	TR.	0.00
Other sunfish	TR.	0.00	0.00	0.00	0.00	TR.	0.00	0.00	0.00	0.00
Smallmouth bass	0.02	0.03	0.11	0.15	0.24	0.03	0.06	0.21	0.27	0.30
Spotted bass	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Largemouth bass	0.01	0.12	0.09	0.02	0.14	0.02	0.18	0.14	0.07	0.22
White crappie	1.56	0.26	0.71	0.82	1.61	1.60	0.25	0.78	0.77	1.60
Black crappie	0.01	0.00	0.06	0.01	0.09	0.01	0.00	0.05	0.01	0.12
Sauger	0.01	0.00	0.00	0.00	0.02	TR.	0.00	0.00	0.00	0.01
Drum	0.01	TR.	0.00	0.01	0.01	0.01	TR.	0.00	0.02	0.01
Totals	1.87	1.53	1.50	1.25	2.49	1.95	2.12	1.99	1.48	2.72

TABLE 50

ESTIMATED HARVEST RATE OF SPORT FISH FROM EACH SAMPLING AREA
WHEELER RESERVOIR, ALABAMA

JANUARY 1, 1978-DECEMBER 30, 1979

Sampling Area	Harvest	
	Number/Hour	Kilogram/Hour
1-1 & 1-2	0.78	0.33
2-1	0.66	0.36
3-1	0.48	0.25
3-2	0.36	0.17
4-1	0.66	0.29
All areas combined	0.57	0.27

TABLE 51

FISHING PRESSURE ESTIMATES BY PERIOD
WHEELER RESERVOIR, ALABAMA

JANUARY 1, 1978-DECEMBER 30, 1979

Period	Inclusive Dates	Fishing Pressure (hrs)
1	Jan. 1 - Jan. 31	4,116
2	Feb. 1 - Feb. 29	,599
3	Mar. 1 - Mar. 31	44,417
4	Apr. 1 - Apr. 28	75,675
5	May 1 - May 31	40,754
6	June 2 - June 30	29,155
7	July 1 - July 31	15,868
8	Aug. 1 - Aug. 30	20,004
9	Sept. 1 - Sept. 30	21,146
10	Oct. 1 - Oct. 31	16,773
11	Nov. 1 - Nov. 29	21,697
12	Dec. 1 - Dec. 30	4,994

Entrainment

Methods for estimating transport and entrainment of ichthyoplankton at BFNP as modified in 1978 (TVA 1979) were continued in 1979. Weighting factors employed to estimate egg and larval transport were refined in 1979 to incorporate varying current velocities recorded across the sample transect. This methodology is described by Buchanan and Barr (1980). Hydraulic entrainment by BFNP in 1979 averaged 9.0 percent throughout the period sampled.

Eggs -- The number of fish eggs transported past BFNP in 1979 was estimated to be 2.30×10^9 with 8.2 percent of these estimated to be entrained (table 52). This is more than twice the entrainment estimate in 1978 (3.7 percent). Greater densities of freshwater drum eggs were recorded from samples at the plant transect (TRM 294.5) which is used to estimate transported eggs and larvae. This indicates considerable freshwater drum spawning is occurring adjacent to BFNP but not as much spawning occurs upstream at the TRM 294.5 transect. This condition artifically inflates the entrainment percentage by virtue of lower estimates of transported eggs from samples at TRM 294.5. Additional discussion of this subject is presented in Buchanan and Barr (1980).

Larvae - Entrainment of fish larvae, unlike that observed for eggs, has shown a decreasing trend for three-unit operation at BFNP (1977-1979). Total transport of larval fish in 1979 was 2.97×10^{10} with 4.5 percent estimated to be entrained (table 52). This is a decrease from 5.4 percent in 1978. Hydraulic entrainment also decreased in 1979 (9.0 percent) from an average of 13.3 percent in 1978. The estimate of total larvae entrained in 1979 (1.34×10^9) was less than one-half the number estimated to have been entrained in 1978.

TABLE 52

ESTIMATED ENTRAINMENT AT BROWNS FERRY NUCLEAR PLANT, 1979

FISH EGGS

1. Entrained	1. 1.88 E8
2. Transported	2. 2.30 E9
3. Percent Entrained	3. 8.2

FISH LARVAE

1. Entrained	1. 1.34 E9
2. Transported	2. 2.97 E10
3. Percent Entrained	3. 4.5

Entrainment of clupeids (the dominant taxa) was estimated to be 4.4 percent (table 53). With the exception of Cyprinodontidae (topminnows) for which only two specimens were collected, Percidae (13.9 percent) and Sciaenidae (8.6 percent) had the highest estimated entrainment.

TABLE 53

NUMBERS AND PERCENT ENTRAINED BY FAMILY OF LARVAL FISH
COLLECTED DURING 1979

Family	Total No.	Percent Entrained
Unidentifiable fish larvae	1484242	5.5
Petromyzontidae	7416	-
Clupeidae	1185224570	4.4
Hiodontidae	260808	4.6
Cyprinidae	22640663	7.9
Catostomidae	16867534	3.1
Ictaluridae	1121914	6.4
Cyprinodontidae	23865	26.0
Percichthyidae	50641411	5.3
Centrarchidae	7647604	3.7
Percidae	5608511	13.9
Sciaenidae	57114978	8.6
Atherinidae	11046	-

REFERENCES

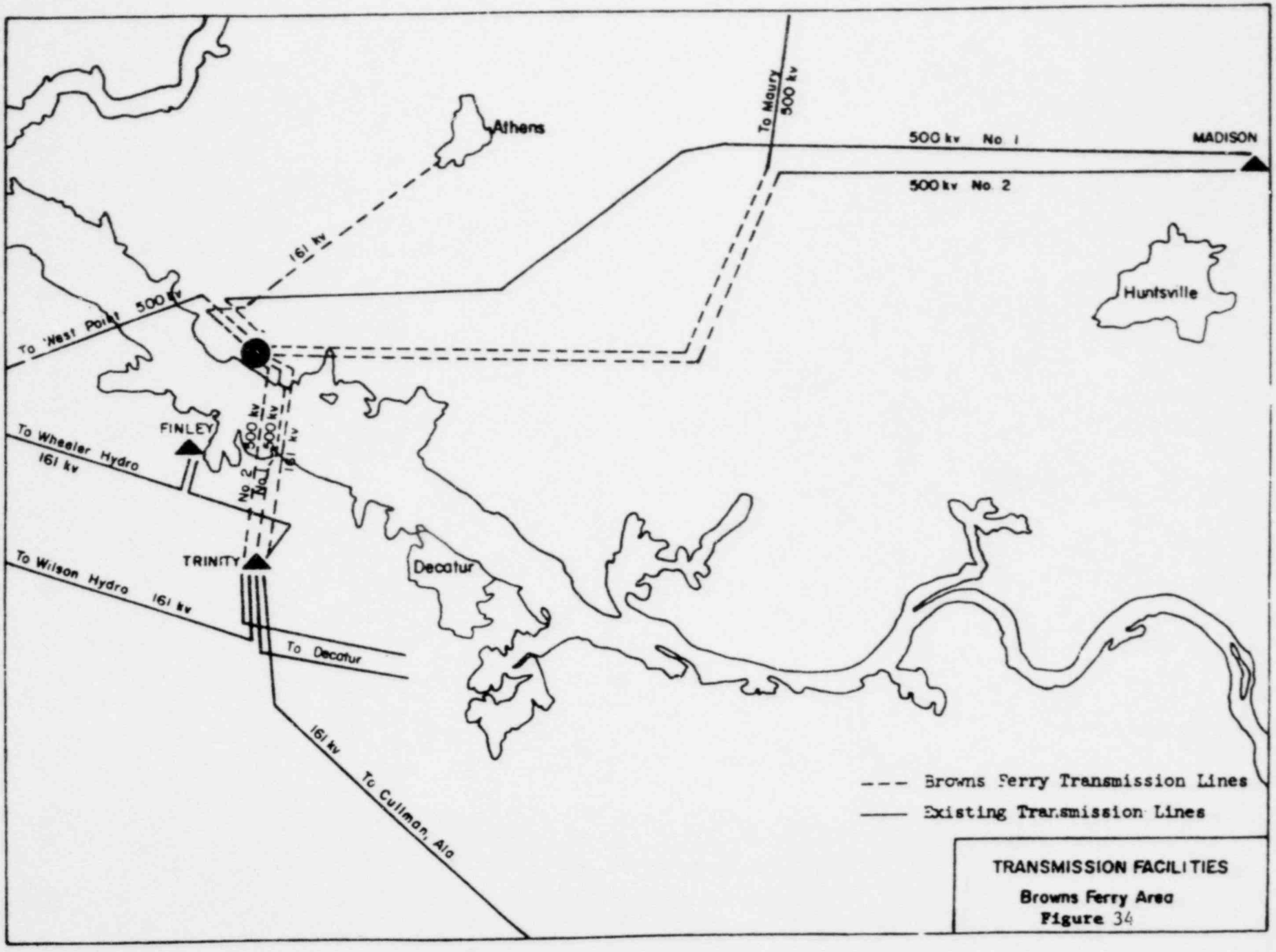
Buchanan, J. P. and W. C. Barr. 1980. Fish Entrainment and Impingement at Browns Ferry Nuclear Plant, Wheeler Reservoir, Alabama, for the years 1978 and 1979. Supplement to: Effects of the Browns Ferry Nuclear Plant Cooling Water Intake on the Fish Populations of Wheeler Reservoir. Volume 4 of Biological Effects of Intake, Browns Ferry Nuclear Plant, January 1978.

Taylor, M. P. 1975. "A Method for Monitoring Power Plant Effects On Phytoplankton by an Genera Index of Change." Am. Soc. Limrol. Oceanogr. 38th An. Meeting. (Abstract Publish.)

Tennessee Valley Authority. 1979. Water Quality and Biological Conditions in Wheeler Reservoir During Operation of Browns Ferry Nuclear Plant, January 1, 1978-December 31, 1979. Muscle Shoals, Alabama: Division of Water Resources, Water Quality and Ecology Branch.

VI. TRANSMISSION LINE RIGHT-OF-WAY MAINTENANCE

The transmission lines connected to Browns Ferry Nuclear Plant are indicated in figure 34. Since herbicides were not applied on these transmission line rights-of-way during the reporting period, this section is inapplicable.


Athens
To Maury 500 kv
500 kv No 1
MADISON
500 kv No 2
161 kv
Huntsville
To West Point 500 kv
FINLEY
To Wheeler Hydro 161 kv
161 kv No 1
161 kv No 2
TRINITY
Decatur
To Wilson Hydro 161 kv
To Decatur
161 kv To Cullman, Ala
--- Browns Ferry Transmission Lines
—— Existing Transmission Lines
TRANSMISSION FACILITIES
Browns Ferry Area
Figure 34

APPENDIX A

SUMMARY OF RESULTS OF TEMPERATURE ANALYSIS FOR EVALUATION OF THERMAL STRESSES DURING THE REPORTING PERIOD

JANUARY 1, 1979, THROUGH DECEMBER 31, 1979

BROWNS FERRY NUCLEAR PLANT AVERAGE WATER TEMPERATURE JAN 1, 1979 THRU JAN 31, 1979

STATION NUMBER:		AVG	13	10	11	4	14	3	5	1	8	7
STATION CODE:		AVG	33	30	31	24	34	23	25	21	28	27
RIVER MILE:		292.5	292.5P	292.5L	292.5M	297.6	296.0	275.0	286.04	293.6	294.5	295.7
MONTH	MAXIMUM	49.33	51.10	49.00	49.70	49.10	48.80	47.70	50.30	51.00	48.40	51.50
	MINIMUM	38.50	37.80	38.30	37.40	38.00	38.60	37.80	37.10	37.60	38.10	34.30
	AVERAGE	42.27	42.55	41.84	42.44	41.68	41.94	41.53	41.94	42.36	41.84	40.98
	DT (- 297.6)	.59	.87	.16	.76		.26	.15-	.25	.68	.16	.70-
	DT (- 296.0)	.33	.61	.10-	.50	.26-		.41-		.42	.10-	.96-
A	SURF TO 10 FT	42.28	42.56	41.78	42.51	41.67	41.94	41.56	42.05	42.51	41.82	40.96
	DT (- 297.6)	.61	.89	.11	.84		.27	.11-	.38	.84	.15	.71-
	DT (- 296.0)	.34	.62	.16-	.57	.27-		.38-	.11	.57	.12-	.98-
	BOTTOM THREE	42.26	42.49	41.96	42.33	41.63	41.95	41.52	41.87	42.26	41.87	41.03
01	DT (- 297.6)	.63	.86	.33	.70		.32	.11-	.24	.63	.24	.60-
	DT (- 296.0)	.31	.54	.01	.38	.32-		.43-	.09-	.31	.08-	.92-

Number of days the temperature differential fell within the specified range

- 297.6 < -6											
- 297.6 -6-(-5)											
- 297.6 -5-(-4)											1.00
- 297.6 -4-(-3)											1.00
- 297.6 -3-(-2)											1.00
- 297.6 -2-(-1)		1.00					4.00	4.00			6.00
- 297.6 -1-0	1.00	2.00	10.00	2.00		10.00	12.00	10.00	3.00	9.00	13.00
- 297.6 0-1	29.00	12.00	21.00	17.00	31.00	19.00	13.00	11.00	22.00	22.00	7.00
- 297.6 1-2	1.00	16.00		12.00		2.00	2.00	3.00	6.00		1.00
- 297.6 2-3								2.00			
- 297.6 3-4								1.00			
- 297.6 4-5											
- 297.6 5-6											
- 297.6 >6											

BROWNS FERRY NUCLEAR PLANT AVERAGE WATER TEMPERATURE FEB 1, 1978 THRU FEB 28, 1979

STATION NUMBER:	AVG	13	10	11	4	14	3	5	1	8	7
STATION CODE:	AVG	33	30	31	24	34	23	25	21	28	27
RIVER MILE:	292.5A	292.5P	292.5L	292.5M	287.6	296.0	275.2	286.04	293.6	294.5	295.7
MONTH MAXIMUM	62.83	61.60	48.10	48.60	46.50	46.33	45.80	55.70	53.50	46.70	51.80
MINIMUM	37.73	38.15	36.20	38.50	37.10	37.70	37.40	37.60	38.50	36.90	34.40
AVERAGE	42.59	43.50	41.35	42.88	41.45	41.04	41.28	43.48	43.21	41.30	41.20
DT (- 297.6)	1.14	2.05	.06-	1.43		.41-	.19-	2.03	1.76	.15-	.25-
DT (- 296.0)	1.55	2.46	.35	1.84	.41		.22	2.44	2.17	.26	.16
SURF TO 10 FT	42.59	43.47	41.36	42.56	41.45	41.05	41.45	43.65	43.56	41.26	41.18
DT (- 297.6)	1.10	1.98	.13-	1.47		.44-	.04-	2.16	2.07	.23-	.31-
DT (- 296.0)	1.54	2.42	.31	1.91	.44		.40	2.60	2.51	.21	.13
BOTTOM THREE	42.59	43.56	41.45	42.76	41.36	41.05	41.15	43.35	42.90	41.33	41.26
DT (- 297.6)	1.23	2.20	.09	1.43		.31-	.21-	1.99	1.54	.03-	.10-
DT (- 296.0)	1.54	2.51	.40	1.71	.31		.10	2.30	1.85	.28	.21

Number of days the temperature differential fell within the specified range

- 297.6 < -6											
- 297.6 -6-(-5)											
- 297.6 -5-(-4)											
- 297.6 -4-(-3)											
- 297.6 -3-(-2)											4.00
- 297.6 -2-(-1)						6.00	6.00				5.00
- 297.6 -1-0	2.00	2.00	18.00	2.00		13.00	11.00	2.00	1.00	20.00	8.00
- 297.6 0-1	8.00	1.00	9.00	3.00	28.00	9.00	7.00	3.00	4.00	8.00	4.00
- 297.6 1-2	16.00	10.00	1.00	18.00			4.00	8.00	10.00		4.00
- 297.6 2-3	1.00	13.00		5.00				9.00	10.00		3.00
- 297.6 3-4	1.00	1.00						6.00	3.00		
- 297.6 4-5											
- 297.6 5-6		1.00									
- 297.6 >6											

BROWNS FERRY NUCLEAR PLANT AVERAGE WATER TEMPERATURE MAR 1, 1979 THRU MAR 31, 1979

STATION NUMBER:		AVG	13	10	11	4	14	3	5	1	8	7
STATION CODE:		AVG	33	30	31	24	34	23	25	21	28	27
RIVER MILE:		292.5A	292.5P	292.5L	292.5M	297.6	296.0	275.0	286.04	293.6	294.5	295.7
MONTH	MAXIMUM	61.10	62.10	60.10	61.10	57.90	58.30	60.40	64.00	63.50	50.30	60.20
	MINIMUM	45.06	45.70	44.70	44.80	44.80	44.30	45.00	46.30	45.30	4[illegible].80	40.00
	AVERAGE	52.70	53.30	51.98	52.82	51.95	51.58	51.93	53.91	53.29	47.65	52.07
	DT (- 297.6)	.75	1.35	.03	.87		.37-	.02-	1.98	1.34	4.30-	.12
	DT (- 296.0)	1.12	1.72	.40	1.24	.37		.35	2.33	1.71	3.93-	.49
>	SURF TO 10 FT	52.75	53.38	51.98	52.91	52.01	51.68	52.28	54.20	53.83	47.59	52.09
	DT (- 297.6)	.74	1.37	.03-	.93		.33-	.27	2.19	1.82	4.42-	.08
	DT (- 296.0)	1.07	1.70	.30	1.23	.33		.60	2.52	2.15	4.09-	.41
	BOTTOM THREE	50.81	53.22	46.55	52.67	51.82	51.53	51.68	53.68	52.80	47.71	52.04
ω	DT (- 297.6)	1.00-	1.40	5.27-	.85		.29-	.14-	1.86	.98	4.11-	.22
ω	DT (- 296.0)	.71-	1.69	4.98-	1.14	.29		.15	2.15	1.27	3.82-	.51

Number of days the temperature differential fell within the specified range

- 297.6 < -6											
- 297.6 -6-(-5)											
- 297.6 -5-(-4)											1.00
- 297.6 -4-(-3)											1.00
- 297.6 -3-(-2)											1.00
- 297.6 -2-(-1)						2.00	4.00			1.00	1.00
- 297.6 -1-0	4.00	1.00	19.00	8.00		26.00	12.00		2.00	4.00	10.00
- 297.6 0-1	16.00	13.00	11.00	.00	31.00	3.00	12.00	4.00	14.00		8.00
- 297.6 1-2	9.00	8.00		5.00			2.00	13.00	4.00		6.00
- 297.6 2-3	2.00	9.00		7.00			1.00	11.00	8.00		3.00
- 297.6 3-4								1.00	3.00		
- 297.6 4-5								2.00			
- 297.6 5-6											
- 297.6 >6											

BROWNS FERRY NUCLEAR PLANT AVERAGE WATER TEMPERATURE APR 1, 1979 THRU APR 30, 1979

STATION NUMBER:	AVG	13	10	11	4	14	3	5	1	8	7
STATION CODE:	AVG	33	30	31	24	34	23	25	21	28	27
RIVER MILE:	292.5A	292.5P	292.5L	292.5M	297.6	296.0	275.0	286.04	293.6	294.5	295.7
MONTH MAXIMUM	73.16	74.40	72.10	73.00	72.40	72.90	73.50	76.30	71.40		72.50
MINIMUM	52.20	58.20	40.93	57.50	55.60	55.80	55.10	58.40	55.80		56.50
AVERAGE	63.22	63.80	62.15	63.72	61.55	61.29	62.11	64.05	63.88		62.05
DT (- 297.6)	1.67	2.25	.60	2.17		.26-	.56	2.53	2.33		.50
DT (- 296.0)	1.93	2.51	.86	2.43	.26		.82	2.76	2.59		.76
SURF TO 10 FT	63.51	64.28	62.37	63.88	61.88	61.49	62.83	64.67	64.98		62.13
DT (- 297.6)	1.63	2.40	.49	2.00		.39-	.95	2.79	3.10		.25
DT (- 296.0)	2.02	2.79	.88	2.39	.39		1.34	3.18	3.49		.64
BOTTOM THREE	42.29	63.38		63.46	61.18	61.13	61.51	63.52	62.92		61.85
DT (- 297.6)	1.49	2.20		2.28		.05-	.33	2.34	1.74		.67
DT (- 296.0)	1.52	2.25		2.33	.05		.38	2.39	1.79		.72

Number of days the temperature differential fell within the specified range

- 297.6 < -6										
- 297.6 -6-(-5)										
- 297.6 -5-(-4)										
- 297.6 -4-(-3)										
- 297.6 -3-(-2)										
- 297.6 -2-(-1)										
- 297.6 -1-0			6.00			28.00	4.00			10.00
- 297.6 0-1	5.00	1.00	18.00	4.00	30.00	2.00	20.00		1.00	12.00
- 297.6 1-2	12.00	10.00	5.00	8.00			6.00	7.00	8.00	7.00
- 297.6 2-3	13.00	14.00	1.00	13.00				16.00	15.00	1.00
- 297.6 3-4		5.00		5.00				7.00	6.00	
- 297.6 4-5										
- 297.6 5-6										
- 297.6 >6										

BROWNS FERRY NUCLEAR PLANT AVERAGE WATER TEMPERATURE — MAY 1, 1979 THRU MAY 31, 1979

STATION NUMBER:	AVG	13	10	11	4	14	3	5	1	8	7
STATION CODE:	AVG	33	30	31	24	34	23	25	21	28	27
RIVER MILE:	292.5A	292.5P	292.5L	292.5M	297.6	296.0	275.0	286.04	293.6	294.5	295.7
MONTH MAXIMUM	82.43	86.70	80.00	80.60	79.80	75.80	79.10	82.00	80.40		80.20
MINIMUM	62.50	64.60	57.40	65.50	63.50	63.90	63.60	65.50	65.10		65.20
AVERAGE	71.67	71.94	70.93	72.15	70.23	70.10	70.51	72.12	72.14		70.57
> DT (- 297.6)	1.44	1.71	.70	1.92		.13-	.28	1.89	1.91		.34
DT (- 296.0)	1.57	1.84	.83	2.05	.13		.41	2.02	2.04		.47
SURF TO 10 FT	72.23	73.05	71.25	72.40	70.91	70.55	72.06	73.02	73.95		70.69
O DT (- 297.6)	1.32	2.14	.34	1.49		.36-	1.15	2.11	3.04		.22-
DT (- 296.0)	1.68	2.50	.70	1.85	.36		1.51	2.47	3.40		.14
BOTTOM THREE	72.45	70.54	75.10	71.72	69.52	69.67	68.82	71.15	70.82		70.26
DT (- 297.6)	2.93	1.02	5.58	2.20		.15	.70-	1.64	1.30		.74
DT (- 296.0)	2.78	.87	5.43	2.05	.15-		.85-	1.49	1.15		.59

Number of days the temperature differential fell within the specified range

- 297.6 < -6										3.00
- 297.6 -6-(-5)										1.00
- 297.6 -5-(-4)										6.00
- 297.6 -4-(-3)										13.00
- 297.6 -3-(-2)							3.00			7.00
- 297.6 -2-(-1)						23.00	8.00	1.00		1.00
- 297.6 -1-0	1.00		4.00							
- 297.6 0-1	7.00	6.00	16.00	6.00	31.00	8.00	15.00	6.00	4.00	
- 297.6 1-2	17.00	11.00	11.00	9.00			4.00	9.00	12.00	
- 297.6 2-3	6.00	13.00		13.00			1.00	11.00	14.00	
- 297.6 3-4		1.00		3.00				4.00	1.00	
- 297.6 4-5										
- 297.6 5-6										
- 297.6 >6										

BROWNS FERRY NUCLEAR PLANT AVERAGE WATER TEMPERATURE JUNE 1, 1979 THRU JUNE 30, 1979

STATION NUMBER:		AVG	13	10	11	4	14	3	5	1	8	7
STATION CODE:		AVG	33	30	31	24	34	23	25	21	28	27
RIVER MILE:		292.5A	292.5P	292.5L	292.5M	297.6	296.0	275.0	286.04	293.6	294.5	295.7
MONTH	MAXIMUM	87.80	89.30	87.10	87.00	85.60	96.80	87.50	90.50	88.90		89.30
	MINIMUM	63.00	71.30	76.20	71.50	70.60	70.30	69.50	73.30	72.30		71.70
	AVERAGE	78.34	78.80	77.47	78.76	78.30	76.35	77.51	78.93	78.70		77.06
	DT (- 297.6)	2.04	2.50	1.17	2.46		.05	1.21	2.63	2.40		.76
>	DT (- 296.0)	1.99	2.45	1.12	2.41	.05-		1.16	2.58	2.35		.71
	SURF TO 10 FT	78.89	79.71	77.95	79.02	77.19	76.50	79.29	79.91	80.40		77.28
	DT (- 297.6)	1.70	2.52	.76	1.83		.69-	2.10	2.72	3.21		.09
O	DT (- 296.0)	2.39	3.21	1.45	2.52	.69		2.79	3.41	3.90		.78
O	BOTTOM FREE	51.91	77.42		78.33	75.43	75.60	75.56	77.95	77.38		76.51
	DT (- 297.6)	1.63	1.99		2.90		.17	.13	2.52	1.95		1.08
	DT (- 296.0)	1.51	1.82		2.73	.17-		.04-	2.35	1.78		.91

Number of days the temperature differential fell within the specified range

- 297.6 < -6											
- 297.6 -6-(-5)											
- 297.6 -5-(-4)											
- 297.6 -4-(-3)											
- 297.6 -3-(-2)											
- 297.6 -2-(-1)							21.00	3.00			3.00
- 297.6 -1-0			4.00				4.00	9.00			16.00
- 297.6 0-1	4.00		8.00	1.00	30.00		4.00	14.00	8.00	9.00	10.00
- 297.6 1-2	8.00	9.00	12.00	7.00			1.00	4.00	12.00	16.00	
- 297.6 2-3	15.00	14.00	5.00	16.00					10.00	5.00	
- 297.6 3-4	3.00	7.00		5.00							
- 297.6 4-5				1.00							
- 297.6 5-6											
- 297.6 >6											

BROWNS FERRY NUCLEAR PLANT AVERAGE WATER TEMPERATURE JULY 1, 1979 THRU JULY 31, 1979

STATION NUMBER:		AVG	13	10	11	4	14	3	5	1	8	7
STATION CODE:		AVG	33	30	31	24	34	23	25	21	28	27
RIVER MILE:		292.5A	292.5P	292.5L	292.5M	297.6	296.0	275.0	286.04	293.6	294.5	295.7
MONTH	MAXIMUM	89.00	89.30	89.00	88.70	85.60	84.80	87.80	87.20	87.10		86.00
	MINIMUM	77.36	78.10	76.10	77.90	47.90	76.20	76.90	77.40	77.60		75.60
	AVERAGE	81.52	82.01	80.57	81.99	79.56	79.45	81.01	81.77	81.98		79.91
	DT (- 297.6)	1.96	2.45	1.01	2.43		.11-	1.45	2.21	2.42		.35
	DT (- 296.0)	2.07	2.56	1.12	2.54	.11		1.56	2.32	2.53		.46
	SURF TO 10 FT	81.87	82.60	80.87	82.14	80.12	79.81	82.03	82.20	83.44		80.06
	DT (- 297.6)	1.75	2.48	.75	2.02		.31-	1.91	2.08	3.32		.06-
	DT (- 296.0)	2.06	2.79	1.06	2.33	.31		2.22	2.39	3.63		.25
	BOTTOM THREE	54.30	81.18		81.72	79.04	79.15	79.99	81.39	80.85		79.54
	DT (- 297.6)	1.60	2.14		2.68		.11	.95	2.35	1.81		.50
	DT (- 296.0)	1.53	2.03		2.57	.11-		.84	2.24	1.70		.39

Number of days the temperature differential fell within the specified range

- 297.6 < -6											
- 297.6 -6-(-5)											
- 297.6 -5-(-4)											
- 297.6 -4-(-3)											
- 297.6 -3-(-2)											3.00
- 297.6 -2-(-1)				3.00			20.00				9.00
- 297.6 -1-0				13.00		29.00	9.00	7.00	1.00		9.00
- 297.6 0-1				8.00	12.00			13.00	8.00	11.00	7.00
- 297.6 1-2	17.00	9.00	5.00	9.00				9.00	18.00	12.00	1.00
- 297.6 2-3	10.00	15.00		8.00					2.00	6.00	
- 297.6 3-4	2.00	5.00									
- 297.6 4-5											
- 297.6 5-6											
- 297.6 >6											

BROWNS FERRY NUCLEAR PLANT AVERAGE WATER TEMPERATURE AUG 1, 1979 THRU AUG 31, 1979

STATION NUMBER:	AVG	13	10	11	4	14	3	5	1	8	7
STATION CODE:	AVG	33	30	31	24	34	23	25	21	28	27
RIVER MILE:	292.5A	292.5P	292.5L	292.5M	297.6	296.0	275.0	286.04	293.6	294.5	295.7

MONTH											
	MAXIMUM	90.86	91.30	90.80	90.50	90.50	89.10	91.30	91.20	90.20	90.30
	MINIMUM	64.43	82.20	79.80	81.30	78.90	79.30	79.80	80.90	80.50	56.00
	AVERAGE	83.30	83.58	82.47	83.85	81.55	81.60	83.12	83.91	83.84	81.80
>	DT (- 297.6)	1.75	2.03	.92	2.30		.05	1.57	2.36	2.29	.25
	DT (- 296.0)	1.70	1.98	.87	2.25	.05-		1.52	2.31	2.24	.20
	SURFACE TO 10 FT	83.67	84.13	82.82	84.06	82.07	81.92	84.39	84.84	85.35	82.01
O	DT (- 297.6)	1.60	2.06	.75	1.99		.15-	2.32	2.77	3.28	.06-
α	DT (- 296.0)	1.75	2.21	.93	2.14	.15		2.47	2.92	3.43	.09
	BOTTOM TO E	55.44	83.02		83.32	81.09	81.36	81.97	83.06	82.69	81.26
	DT (- 297.6)	1.38	1.93		2.23		.27	.88	1.97	1.60	.17
	DT (- 296.0)	1.20	1.66		1.96	.27-		.61	1.70	1.3	.10-

Number of days the temperature differential fell within the specified range

- 297.6 < -6										
- 297.6 -6-(-5)										
- 297.6 -5-(-4)										
- 297.6 -4-(-3)										2.00
- 297.6 -3-(-2)										1.00
- 297.6 -2-(-1)		1.00								8.00
- 297.6 -1-0		2.00				12.00				13.00
- 297.6 0-1	5.00		17.00	2.00	31.00	19.00	3.00	1.00		7.00
- 297.6 1-2	15.00	8.00	14.00	7.00			24.00	8.00	9.00	
- 297.6 2-3	11.00	14.00		19.00			4.00	16.00	20.00	
- 297.6 3-4		5.00		3.00				6.00	2.00	
- 297.6 4-5										
- 297.6 5-6										
- 297.6 >6										

BROWNS FERRY NUCLEAR PLANT AVERAGE WATER TEMPERATURE SEPT 1, 1979 THRU SEPT 30, 1979

STATION NUMBER:		AVG	13	10	11	4	14	3	5	1	8	7
STATION CODE:		AVG	33	3C	31	24	34	23	25	21	28	27
RIVER MILE:		292.5A	292.5P	292.5L	292.5M	297.6	296.0	275.C	286.04	293.6	294.5	295.7
MONTH	MAXIMUM	85.76	85.70	86.00	85.60	84.40	84.60	84.90	87.20	85.40		83.70
	MINIMUM											
	AVERAGE	77.42	77.76	76.70	77.81	76.44	76.25	77.08	77.67	77.98		75.74
	DT (- 297.6)	.98	1.32	.26	1.37		.19-	.64	1.23	1.54		.70-
>	DT (- 296.0)	1.17	1.51	.45	1.56	.19		.83	1.42	1.73		.51-
	SURF TO 10 FT	77.59	77.91	76.89	77.99	76.70	76.48	77.48	77.98	78.83		75.78
	DT (- 297.6)	.89	1.21	.19	1.29		.22-	.78	1.28	2.13		.92-
	DT (- 296.0)	1.11	1.43	.41	1.51	.22		1.00	1.50	2.35		.70-
50	BOTTOM THREE	51.51	77.21		77.34	76.12	76.16	76.68	77.33	77.31		75.65
	DT (- 297.6)	.77	1.09		1.22		.04	.56	1.21	1.19		.47-
	DT (- 296.0)	.74	1.05		1.18	.04-		.52	1.17	1.15		.51-

Number of days the temperature differential fell within the specified range

- 297.6 < -6											
- 297.6 -6-(-5)											
- 297.6 -5-(-4)											
- 297.6 -4-(-3)											
- 297.6 -3-(-2)		1.00	1.00			1.00					2.00
- 297.6 -2-(-1)	1.00										11.00
- 297.6 -1-0			11.00			18.00	8.00				9.00
- 297.6 0-1	12.00	7.00	13.00	9.00	30.00	11.00	10.00	11.00	5.00		8.00
- 297.6 1-2	17.00	17.00	5.00	19.00			11.00	17.00	21.00		
- 297.6 2-3		5.00		2.00			1.00	2.00	3.00		
- 297.6 3-4									1.00		
- 297.6 4-5											
- 297.6 5-6											
- 297.6 >6											

BROWNS FERRY NUCLEAR PLANT AVERAGE WATER TEMPERATURE OCT 1, 1979 THRU OCT 31, 1979

STATION NUMBER:		AVG	13	10	11	4	14	3	5	1	8	7
STATION CODE:		AVG	33	30	31	24	34	23	25	21	28	27
RIVER MILE:		292.5A	292.5P	292.5L	292.5M	297.6	296.0	275.C	286.04	293.6	294.5	295.7
MONTH	MAXIMUM	75.56	76.50	74.60	75.60	75.8C	75.70	77.00	78.60	75.80		76.00
	MINIMUM				64.10					63.90		58.90
	AVERAGE	67.98	68.23	67.14	68.58	67.12	67.07	67.74	68.67	68.68		66.31
A	DT (- 297.6)	.86	1.11	.C2	1.46		.05-	.62	1.55	1.56		.81-
	DT (- 296.0)	.91	1.16	.C7	1.51	.C5		.67	1.60	1.61		.76-
	SURF TO 10 FT	68.15	68.63	67.15	68.69	67.24	67.24	67.56	68.93	69.47		66.30
	DT (- 297.6)	.91	1.39	.C9-	1.45			.72	1.69	2.23		.94-
OT	DT (- 296.0)	.91	1.39	.09-	1.45			.72	1.69	2.23		.94-
	BOTTOM THREE	45.03	66.81		68.29	66.91	66.86	67.54	68.45	68.02		66.34
	DT (- 297.6)	.42	.10-		1.38		.05-	.63	1.54	1.11		.57-
	DT (- 296.0)	.46	.05-		1.43	.05		.68	1.59	1.16		.52-

Number of days the temperature differential fell within the specified range

- 297.6 < -6											1.00
- 297.6 -6-(-5)											6.00
- 297.6 -5-(-4)											6.00
- 297.6 -4-(-3)											8.00
- 297.6 -3-(-2)											6.00
- 297.6 -2-(-1)											4.00
- 297.6 -1-0	2.00	5.00	16.00			22.00	5.00				
- 297.6 0-1	20.00	8.00	14.00	7.00	31.00	9.00	17.00	6.00	7.00		
- 297.6 1-2	8.00	12.00	1.00	19.00			9.00	17.00	17.00		
- 297.6 2-3	1.00	6.00		5.00				7.00	7.00		
- 297.6 3-4								1.00			
- 297.6 4-5											
- 297.6 5-6											
- 297.6 >6											

BROWNS FERRY NUCLEAR PLANT AVERAGE WATER TEMPERATURE NOV 1, 1979 THRU NOV 30, 1979

STATION NUMBER:		AVG	13	10	11	4	14	3	5	1	8	7
STATION CODE:		AVG	33	30	31	24	34	23	25	21	28	27
RIVER MILE:		292.5A	292.5P	292.5L	292.5M	297.6	296.0	275.0	286.04	293.6	294.5	295.7
MONTH	MAXIMUM	67.20	67.50	66.60	67.50	64.90	64.70	65.50	66.40	69.80		66.10
	MINIMUM											56.65
	AVERAGE	58.34	57.95	57.48	58.71	57.34	57.76	57.72	58.30	58.35		.69-
	DT (- 297.6)	.70	.61	.14	1.37		.42	.38	.96	1.01		1.11-
	DT (- 296.0)	.28	.19	.28-	.95	.42-		.04-	.54	.59		56.88
	SURF TO 10 FT	58.10	58.03	57.48	58.81	57.39	57.83	57.80	58.56	59.02		.51-
	DT (- 297.6)	.71	.64	.09	1.42		.44	.41	1.17	1.63		.95-
	DT (- 296.0)	.27	.20	.35-	.98	.44-		.03-	.73	1.19		56.23
	BOTTOM THREE	38.67	57.53		58.49	57.20	57.69	57.73	58.09	58.70		.97-
	DT (- 297.6)	.54	.33		1.29		.49	.53	.89	.50		1.46-
	DT (- 296.0)	.21	.16-		.80	.49-		.04	.40	.01		

Number of days the temperature differential fell within the specified range

- 297.6 < -6									1.00
- 297.6 -6-(-5)									4.00
- 297.6 -5-(-4)									3.00
- 297.6 -4-(-3)									13.00
- 297.6 -3-(-2)									9.00
- 297.6 -2-(-1)						6.00	12.00	3.00	1.00
- 297.6 -1-0		4.00	5.00			20.00	13.00	11.00	13.00
- 297.6 0-1	25.00	19.00	25.00	5.00	30.00	4.00	4.00	16.00	16.00
- 297.6 1-2	5.00	7.00		23.00			1.00		
- 297.6 2-3				2.00					
- 297.6 3-4									
- 297.6 4-5									
- 297.6 5-6									
- 297.6 >6									

BROWNS FERRY NUCLEAR PLANT AVERAGE WATER TEMPERATURE DEC 1, 1979 THRU DEC 31, 1979

STATION NUMBER:		AVG	13	10	11	4	14	3	5	1	8	7
STATION CODE:		AVG	33	30	31	24	34	23	25	21	28	27
RIVER MILE:		292.5A	292.5P	292.5L	292.5M	297.6	296.0	275.0	286.04	293.6	294.5	295.7
MONTH	MAXIMUM	53.70	53.80	53.20	54.10	52.30	53.30	52.50	53.10	56.60		52.50
	MINIMUM	45.96	45.90	45.00	47.00	45.00	46.00	46.00	42.20	46.20		40.30
>	AVERAGE	49.39	49.81	48.41	49.97	48.28	48.52	48.50	49.61	49.83		47.51
	DT (- 297.6)	1.11	1.53	.13	1.69		.24	.22	1.33	1.55		.77-
	DT (- 296.0)	.87	1.29	.11-	1.45	.24-		.02-	1.09	1.31		1.01-
	SURF TO 10 FT	49.42	49.81	48.41	50.05	48.31	48.52	48.62	49.75	50.40		47.41
N	DT (- 297.6)	1.11	1.50	.10	1.74		.21	.31	1.44	2.09		.90-
	DT (- 296.0)	.90	1.29	.11-	1.53	.21-		.10	1.23	1.88		1.11-
	BOTTOM THREE	33.17	49.74		49.78	48.16	48.55	48.52	49.47	49.19		47.76
	DT (- 297.6)	1.06	1.58		1.62		.39	.36	1.31	1.03		.40-
	DT (- 296.0)	.80	1.19		1.23	.39-		.03-	.92	.64		.79-

Number of days the temperature differential fell within the specified range

- 297.6 < -6											
- 297.6 -6-(-5)											1.00
- 297.6 -5-(-4)											
- 297.6 -4-(-3)											3.00
- 297.6 -3-(-2)									1.00		7.00
- 297.6 -2-(-1)							9.00	14.00	1.00		15.00
- 297.6 -1-0			12.00			31.00	18.00	10.00	9.00	7.00	3.00
- 297.6 0-1	13.00	11.00	17.00	26.00			3.00	7.00	13.00	19.00	2.00
- 297.6 1-2	17.00	12.00	2.00	5.00			1.00		7.00	4.00	
- 297.6 2-3	1.00	7.00								1.00	
- 297.6 3-4		1.00									
- 297.6 4-5											
- 297.6 5-6											
- 297.6 >6											1.00

APPENDIX B

LISTING OF WATFR QUALITY DATA AND SUMMARIES

JANUARY 1, 1979, THROUGH DECEMBER 31, 1979

FIRST QUARTER

017003 0594
34 47 35.0 087 20 10.0 2
WHEELER RESERVOIR
01077 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 277.98
131 VAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00400 PH SU	00095 CNDUCTVY AT 25C MICROMHO
79/01/10	1256	0001	83.0000	6.00000	11.8000	94.4000	7.50000	150.000
79/01/10	1258	0003	83.0000	6.00000	11.4000	91.2000	7.40000	150.000
79/01/10	1300	0005	83.0000	6.00000	11.4000	91.2000	7.40000	150.000
79/01/10	1305	0010	83.0000	5.50000	11.4000	91.2000	7.40000	150.000
79/01/10	1310	0016	83.0000	5.50000	11.4000	91.2000	7.40000	150.000
79/01/10	1312	0023	83.0000	5.50000	11.4000	91.2000	7.40000	150.000
79/01/10	1314	0030	83.0000	5.50000	11.0000	88.0000	7.40000	150.000
79/01/10	1316	0036	83.0000	5.50000	11.0000	88.0000	7.30000	150.000
79/01/10	1318	0043	83.0000	5.50000	10.9000	87.2000	7.30000	140.000
79/01/01								
QUARTER	NUMBER			9.00000	9.00000	9.00000	9.00000	9.00000
	MAXIMUM			6.00000	11.8000	94.4000	7.50000	150.000
	MINIMUM			5.50000	10.9000	87.2000	7.30000	140.000
	SUM			51.0000	101.700	813.600	66.4999	1340.00
	SUM-SQUAR			289.500	1149.85	73590.3	491.389	199600
	MEAN			5.66667	11.3000	90.3999	7.38888	148.889
	VARIANCE			.0625305	.0801086	5.12500	.0036316	11.1172
	STAND DEV			.250061	.283035	2.26385	.0602627	3.33424
	COEF VAR			.0441284	.0250473	.0250426	.0081559	.0223942
	STAND ERR			.0833536	.0943448	.754615	.0200875	1.11141
79/04/00								

/TYPA/AMBNT/STREAM

D17005 0600
34 44 59.0 087 16 10.0 2
WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 283.94
131TVAC
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 %SAMPLOC FROM RT BANK	00929 SODIUM NA,TOT MG/L	00945 SULFATE SO4-TOT MG/L	00940 CHLORIDE CL MG/L	00610 NH3+NH4- N TOTAL MG/L	00630 NO2&NO3 N-TOTAL MG/L	00605 ORG N N MG/L	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L
79/01/10	1030	0001	16.0000								
79/01/10	1032	0003	16.0000	5.80000	18.0000	8.00000	.170000	.590000	.130000	100.000	15.0000
79/01/10	1034	0005	16.0000								
79/01/10	1036	0010	16.0000								
79/01/10	1040	0016	16.0000	5.80000	18.0000	8.00000	.110000	.590000	.190000	100.000	15.0000
79/01/10	1042	0023	16.0000								
79/01/10	1044	0030	16.0000								
79/01/10	1050	0001	40.0000								
79/01/10	1052	0003	40.0000	6.70000	18.0000	7.00000	.0799999	.570000	.160000	90.0000	14.0000
79/01/10	1055	0005	40.0000								
79/01/10	1100	0010	40.0000				.0600000	.590000	.140000		
79/01/10	1105	0015	40.0000	5.90000	18.0000	7.00000	.0500000	.600000	.150000	100.000	9.00000
79/01/10	1107	0023	40.0000								
79/01/10	1109	0030	40.0000								
79/01/10	1111	0033	40.0000								
79/01/10	1118	0001	78.0000								
79/01/10	1120	0003	78.0000	2.20000	13.0000	3.00000	.170000	.960000	.0699999	110.000	54.0000
79/01/10	1122	0005	78.0000								
79/01/10	1125	0010	78.0000								
79/01/10	1130	0015	78.0000	2.40000	14.0000	3.00000	.0799999	.950000	.180000	100.000	55.0000
79/01/10	1132	0023	78.0000								
79/01/10	1135	0030	78.0000								
79/01/10	1140	0033	78.0000	2.20000	13.0000	3.00000	.0500000	.970000	.150000	100.000	54.0000
79/01/01											
QUARTER	NUMBER			7.00000	7.00000	7.00000	8.00000	8.00000	8.00000	7.00000	7.00000
	MAXIMUM			5.90000	18.0000	8.00000	.170000	.970000	.190000	110.000	55.0000
	MINIMUM			2.20000	13.0000	3.00000	.0500000	.570000	.0699999	90.0000	9.00000
	SUM			34.0000	112.000	39.0000	.770000	5.82000	1.17000	700.000	216.000
	SUM-SQUAR			200.420	1830.00	253.000	.0912998	4.49420	.180500	70200.0	9584.00
	MEAN			4.85714	16.0000	5.57143	.0962499	.727499	.146250	100.000	30.8571
	VARIANCE			5.87957	6.33333	5.95240	.0024554	.0371648	.0013411	33.3333	486.477
	STAND DEV			2.42478	2.51661	2.43975	.0495516	.192782	.0366207	5.77350	22.0562
	COEF VAR			.499221	.157288	.437904	.514822	.264992	.250398	.0577350	.714785
	STAND ERR			.916482	.951190	.922140	.0175191	.0681586	.0129474	2.18218	8.33647
79/04/00											

017005 0600
34 44 59.0 087 16 10.0 2
WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 283.9
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00310 BOD 5 DAY MG/L	00335 COD LOWLEVEL MG/L	00400 PH SU	00410 T ALK CACO3 MG/L	00095 CNDUCTVY AT 25C MICROMHO
79/01/10	1030	0001	16.0000	5.50000	12.4000	99.2000			8.10000		170.000
79/01/10	1032	0003	16.0000	5.50000	12.4000	99.2000	1.90000	8.00000	8.30000	42.0000	170.000
79/01/10	1034	0005	16.0000	5.00000	12.4000	96.8750			8.40000		170.000
79/01/10	1036	0010	16.0000	5.00000	12.6000	98.4375			8.40000		170.000
79/01/10	1040	0016	16.0000	5.00000	12.8000	100.0000	1.90000	8.00000	8.50000	38.0000	160.000
79/01/10	1042	0023	16.0000	5.00000	12.9000	100.781			8.60000		160.000
79/01/10	1044	0030	16.0000	5.00000	12.8000	100.0000			8.60000		170.000
79/01/10	1050	0001	40.0000	6.00000	12.4000	99.2000			7.50000		140.000
79/01/10	1052	0003	40.0000	6.00000	11.6000	92.8000	1.50000	7.00000	7.40000	44.0000	140.000
79/01/10	1055	0005	40.0000	5.50000	11.6000	92.8000			7.40000		140.000
79/01/10	1100	0010	40.0000	5.50000	11.4000	91.2000			7.40000	45.0000	140.000
79/01/10	1105	0016	40.0000	5.50000	11.4000	91.2000	1.40000	8.00000	7.40000	43.0000	140.000
79/01/10	1107	0023	40.0000	5.00000	11.4000	89.0625			7.40000		130.000
79/01/10	1109	0030	40.0000	5.00000	11.4000	89.0625			7.40000		130.000
79/01/10	1111	0033	40.0000	5.00000	11.4000	89.0625			7.40000		130.000
79/01/10	1118	0001	78.0000	5.00000	11.8000	92.1875			7.90000		160.000
79/01/10	1120	0003	78.0000	5.00000	11.8000	92.1875	1.70000	9.00000	8.20000	51.0000	160.000
79/01/10	1122	0005	78.0000	5.00000	11.8000	92.1875			8.20000		160.000
79/01/10	1125	0010	78.0000	5.00000	11.9000	92.9687			8.40000		160.000
79/01/10	1130	0016	78.0000	5.00000	12.0000	93.7500	1.60000	10.0000	8.40000	54.0000	160.000
79/01/10	1132	0023	78.0000	5.00000	12.2000	95.3125			8.50000		170.000
79/01/10	1135	0030	78.0000	5.00000	12.4000	96.8750			8.40000		170.000
79/01/10	1140	0033	78.0000	5.00000	12.5000	97.6562	1.80000	9.00000	8.40000	56.0000	170.000
79/01/01											
QUARTER	NUMBER			23.0000	23.0000	23.0000	7.00000	7.00000	23.0000	8.00000	23.0000
	MAXIMUM			6.00000	12.9000	100.781	1.90000	10.0000	8.60000	56.0000	170.000
	MINIMUM			5.00000	11.4000	89.0625	1.40000	7.00000	7.40000	38.0000	130.000
	SUM			119.500	277.300	2182.00	11.8000	59.0000	184.600	373.000	3570.00
	SUM-SQUAR			623.250	3348.99	207342	20.1200	503.000	1486.74	17671.0	559100
	MEAN			5.19565	12.0565	94.8697	1.68571	8.42857	8.02608	46.6250	155.217
	VARIANCE			.107721	.260054	15.2727	.0380961	.952433	.232910	39.9821	226.094
	STAND DEV			.328209	.509955	3.90803	.195182	.975927	.482608	6.32314	15.0364
	COEF VAR			.0631700	.0422971	.0411937	.115786	.115788	.0601299	.135617	.0968732
	STAND ERR			.0684363	.106333	.814881	.0737719	.368866	.100631	2.23557	3.13531
79/04/00											

017006 0609
34 44 48.0 087 11 17.0 2
WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 04089C
TENNESSEE RIVER 288.78
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00400 PH SU	00095 CNDUCTVY AT 25C MICROMHO
79/01/10	1152	0001	41.0000	6.00000	12.0000	96.0000	7.50000	140.000
79/01/10	1155	0003	41.0000	5.00000	11.8000	94.4000	7.40000	140.000
79/01/10	1157	0005	41.0000	6.00000	11.6000	92.8000	7.40000	150.000
79/01/10	1200	0010	41.0000	5.50000	11.6000	92.8000	7.40000	140.000
79/01/10	1205	0015	41.0000	5.50000	11.6000	92.8000	7.40000	140.000
79/01/10	1208	0020	41.0000	5.50000	11.6000	92.8000	7.40000	140.000
79/01/01								
QUARTER	NUMBER			5.00000	6.00000	6.00000	6.00000	6.00000
	MAXIMUM			5.00000	12.0000	96.0000	7.50000	150.000
	MINIMUM			5.50000	11.6000	92.8000	7.40000	140.000
	SUM			34.5000	70.1999	561.599	44.5000	850.000
	SUM-SQUAR			198.750	821.479	52574.7	330.050	120500
	MEAN			5.75000	11.7000	93.5999	7.41666	141.667
	VARIANCE			.0749999	.0280762	1.81484	.0017090	16.6875
	STAND DEV			.273861	.167559	1.34716	.0413399	4.08503
	COEF VAR			.0476280	.0143213	.0143928	.0055739	.0288355
	STAND ERR			.111803	.0684058	.549976	.0168769	1.66771
79/04/00								

017007 C615
34 43 27.0 087 08 58.0 2
WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 291.76
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 %SAMPLOC FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00310 BOD 5 DAY MG/L	00335 COD LOWLEVEL MG/L	00400 PH SU	00410 T ALK CACO3 MG/L	00095 CNDUCTVY AT 25C MICROMHO
79/01/10	1122	0001	36.0000	6.00000	11.8000	94.4000	1.80000	8.00000	7.50000		150.000
79/01/10	1125	0003	36.0000	6.00000	11.8000	94.4000	1.50000	7.00000	7.50000	45.0000	150.000
79/01/10	1127	0005	36.0000	6.00000	11.8000	94.4000			7.40000		140.000
79/01/10	1130	0010	36.0000	6.00000	11.6000	92.8000			7.40000	43.0000	140.000
79/01/10	1135	0016	36.0000	6.00000	11.6000	92.8000	1.40000	9.00000	7.30000	44.0000	140.000
79/01/10	1137	0020	36.0000	6.00000	11.6000	92.8000			7.40000		140.000
79/01/10	1140	0001	60.0000	6.00000	11.9000	95.2000			8.50000		170.000
79/01/10	1142	0003	60.0000	6.00000	12.0000	96.0000			8.50000		170.000
79/01/10	1144	0005	60.0000	6.00000	12.0000	96.0000			8.40000		170.000
79/01/10	1146	0007	60.0000	6.00000	12.0000	96.0000			8.50000		
79/01/10	1148	0010	60.0000	6.00000	12.0000	96.0000			8.50000		170.000
79/01/10	1150	0001	84.0000	6.00000	12.0000	96.0000			7.90000		170.000
79/01/10	1152	0003	84.0000	6.00000	12.0000	96.0000			8.20000	48.0000	170.000
79/01/10	1154	0005	84.0000	6.00000	12.0000	96.0000			8.30000		170.000
79/01/10	1156	0010	84.0000	6.00000	12.2000	97.6000			8.40000		170.000
79/01/10	1200	0017	84.0000	6.00000	12.4000	99.2000	1.40000	7.00000	8.40000	46.0000	170.000
79/01/01											
QUARTER	NUMBER			16.0000	16.0000	16.0000	4.00000	4.00000	16.0000	5.00000	15.0000
	MAXIMUM			6.00000	12.4000	99.2000	1.80000	9.00000	8.50000	48.0000	170.000
	MINIMUM			6.00000	11.6000	92.8000	1.40000	7.00000	7.30000	43.0000	140.000
	SUM			96.0000	190.700	1525.60	6.10000	31.0000	128.100	226.000	2390.00
	SUM-SQUAR			576.000	2273.61	145511	9.40999	243.000	1029.29	10230.0	383500
	MEAN			6.00000	11.9187	95.3499	1.52500	7.75000	8.00625	45.2000	159.333
	VARIANCE			.0000000	.0469564	3.01667	.0358327	.916667	.245963	3.70117	192.388
	STAND DEV			.0000000	.216694	1.73666	.189295	.957427	.495947	1.92384	13.8704
	COEF VAR			.0000000	.0181810	.0182156	.124128	.123539	.0619450	.0425629	.0870527
	STAND ERR			.0000000	.0541736	.434214	.0946476	.478713	.123987	.860369	3.58133
79/04/00											

017007 0615
34 43 27.0 087 08 58.0 2
WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 291.76
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00929 SODIUM NA,TOT MG/L	00945 SULFATE SO4-TOT MG/L	00940 CHLORIDE CL MG/L	00610 NH3+NH4- N TOTAL MG/L	00630 NO2&NO3 N-TOTAL MG/L	00605 ORG N N MG/L	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L
79/01/10	1122	0001	36.0000	5.40000	19.0000	7.00000	.100000	.570000	.0799999	90.0000	13.0000
79/01/10	1125	0003	36.0000	7.40000	18.0000	8.00000	.0699999	.540000	.150000	90.0000	19.0000
79/01/10	1127	0005	36.0000								
79/01/10	1130	0010	36.0000				.0600000	.540000	.120000		
79/01/10	1135	0016	36.0000	5.50000	19.0000	8.00000	.130000	.540000	.0699999	90.0000	18.0000
79/01/10	1137	0020	36.0000								
79/01/10	1140	0001	60.0000								
79/01/10	1142	0003	60.0000								
79/01/10	1144	0005	60.0000								
79/01/10	1146	0007	60.0000								
79/01/10	1148	0010	60.0000								
79/01/10	1150	0001	84.0000								
79/01/10	1152	0003	84.0000								
79/01/10	1154	0005	84.0000								
79/01/10	1156	0010	84.0000								
79/01/10	1200	0015	84.0000	8.40000	18.0000	8.00000	.0600000	.570000	.130000	100.000	14.0000
79/01/01											
QUARTER	NUMBER			4.00000	4.00000	4.00000	5.00000	5.00000	5.00000	4.00000	4.00000
	MAXIMUM			8.40000	19.0000	8.00000	.130000	.570000	.150000	100.000	19.0000
	MINIMUM			5.40000	18.0000	7.00000	.0600000	.540000	.0699999	90.0000	13.0000
	SUM			28.7000	74.0000	31.0000	.420000	2.76000	.550000	370.000	64.0000
	SUM-SQUAR			208.530	1370.00	241.000	.0390000	1.52460	.0650999	34300.0	1050.00
	MEAN			7.17500	18.5000	7.75000	.0839999	.552000	.110000	92.5000	16.0000
	VARIANCE			.869242	.333333	.250000	.0009300	.0002704	.0011500	25.0000	8.66667
	STAND DEV			.932332	.577350	.500000	.0304961	.0164428	.0339117	5.00000	2.94392
	COEF VAR			.129942	.0312081	.0645161	.363043	.0297877	.308288	.0540541	.183995
	STAND ERR			.466166	.288675	.250000	.0136382	.0073535	.0151658	2.50000	1.47196
79/04/00											

017009 C624
34 42 10.0 087 07 39.0 2
WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 293.70
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00400 PH SU	00095 CNDUCTVY AT 25C MICROMHO
79/01/10	0930	0001	65.0000	6.00000	11.2000	89.6000	8.40000	170.000
79/01/10	0932	0003	65.0000	6.00000	11.4000	91.2000	8.30000	170.000
79/01/10	0934	0005	65.0000	6.00000	11.7000	93.6000	8.30000	170.000
79/01/10	0936	0010	65.0000	6.00000	12.0000	96.0000	8.40000	170.000
79/01/10	0938	0016	65.0000	6.00000	12.0000	96.0000	8.50000	170.000
79/01/10	0940	0023	65.0000	6.00000	12.0000	96.0000	8.60000	170.000
79/01/10	1058	0001	88.0000	6.00000	11.8000	94.4000	7.30000	150.000
79/01/10	1100	0003	88.0000	6.00000	11.8000	94.4000	7.30000	150.000
79/01/10	1102	0005	88.0000	6.00000	11.8000	94.4000	7.30000	150.000
79/01/10	1105	0010	88.0000	6.00000	11.8000	94.4000	7.40000	150.000
79/01/10	1110	0016	88.0000	6.00000	11.6000	92.8000	7.40000	150.000
79/01/10	1112	0023	88.0000	6.00000	11.6000	92.8000	7.40000	150.000
79/01/10	1114	0030	88.0000	6.00000	11.6000	92.8000	7.40000	150.000
79/01/01								
QUARTER	NUMBER			13.0000	13.0000	13.0000	13.0000	13.0000
	MAXIMUM			6.00000	12.0000	96.0000	8.60000	170.000
	MINIMUM			6.00000	11.2000	89.6000	7.30000	150.000
	SUM			78.0000	152.300	1218.40	102.000	2070.00
	SUM-SQUAR			468.000	1784.93	114235	804.018	330900
	MEAN			6.00000	11.7154	93.7230	7.84615	159.231
	VARIANCE			.0000000	.0564372	3.61458	.309367	107.598
	STAND DEV			.0000000	.237565	1.90121	.556208	10.3778
	COEF VAR			.0000000	.0202781	.0202854	.0708892	.0651743
	STAND ERR			.0000000	.0658886	.527300	.154264	2.87827
79/04/00								

017009 0636
34 41 06.0 087 05 55.0 2
WHEELER RESERVOIR
01083 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 295.87
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 SAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00310 BOD 5 DAY MG/L	00335 COD LOWLEVEL MG/L	00400 PH SU	00410 T ALK CACO3 MG/L	00095 CNDUCTVY AT 25C MICROMHO
79/01/10	1025	0001	44.0000	6.00000	12.2000	97.6000			7.50000		150.000
79/01/10	1030	0003	44.0000	6.00000	12.0000	96.0000	1.70000	7.00000	7.50000	43.0000	150.000
79/01/10	1032	0005	44.0000	6.00000	11.8000	94.4000			7.50000		150.000
79/01/10	1035	0010	44.0000	6.00000	11.8000	94.4000			7.40000	44.0000	150.000
79/01/10	1040	0016	44.0000	6.00000	11.8000	94.4000	1.70000	7.00000	7.40000	45.0000	150.000
79/01/10	1042	0023	44.0000	6.00000	11.8000	94.4000			7.40000		150.000
79/01/10	1048	0001	82.0000	5.50000	10.8000	86.4000			8.10000		170.000
79/01/10	1050	0003	82.0000	5.50000	11.6000	92.8000			8.10000		170.000
79/01/10	1052	0005	82.0000	5.50000	11.9000	95.2000			8.10000		170.000
79/01/10	1054	0010	82.0000	5.50000	11.9000	95.2000			8.30000		170.000
79/01/01											
QUARTER	NUMBER			10.0000	10.0000	10.0000	2.00000	2.00000	10.0000	3.00000	10.0000
	MAXIMUM			6.00000	12.2000	97.6000	1.70000	7.00000	8.30000	45.0000	170.000
	MINIMUM			5.50000	10.8000	86.4000	1.70000	7.00000	7.40000	43.0000	150.000
	SUM			58.0000	117.600	940.799	3.40000	14.0000	77.2999	132.000	1580.00
	SUM-SQUAR			337.000	1384.22	88589.9	5.78000	98.0000	598.749	5810.00	250600
	MEAN			5.80000	11.7600	94.0799	1.70000	7.00000	7.72999	44.0000	158.000
	VARIANCE			.0667046	.138292	8.85417	.0000000	.0000000	.135688	1.00000	106.667
	STAND DEV			.258272	.371876	2.97560	.0000000	.0000000	.368358	1.00000	10.3280
	COEF VAR			.0445297	.0316222	.0316284	.0000000	.0000000	.0476531	.0227273	.0653668
	STAND ERR			.0816729	.117598	.940966	.0000000	.0000000	.116485	.577350	3.26599
79/04/00											

017009 0636
34 41 06.0 087 05 55.0 2
WHEELER RESERVOIR
01083 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 295.87
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00929 SODIUM NA,TOT MG/L	00945 SULFATE SO4-TOT MG/L	00940 CHLORIDE CL MG/L	00610 NH3+NH4- N TOTAL MG/L	00630 NO2&NO3 N-TOTAL MG/L	00605 ORG N N MG/L	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L
79/01/10	1025	0001	44.0000								
79/01/10	1030	0003	44.0000	5.70000	18.0000	7.00000	.110000	.540000	.0799999	100.000	19.0000
79/01/10	1032	0005	44.0000								
79/01/10	1035	0010	44.0000				.0600000	.540000	.160000		
79/01/10	1040	0016	44.0000	5.80000	18.0000	8.00000	.0699999	.540000	.120000	90.0000	18.0000
79/01/10	1042	0023	44.0000								
79/01/10	1048	0001	82.0000								
79/01/10	1050	0003	82.0000								
79/01/10	1052	0005	82.0000								
79/01/10	1054	0010	82.0000								
79/01/01											
QUARTER	NUMBER			2.00000	2.00000	2.00000	3.00000	3.00000	3.00000	2.00000	2.00000
	MAXIMUM			5.80000	18.0000	8.00000	.110000	.540000	.160000	100.000	19.0000
	MINIMUM			5.70000	18.0000	7.00000	.0600000	.540000	.0799999	90.0000	18.0000
	SUM			13.5000	36.0000	15.0000	.240000	1.62000	.360000	190.000	37.0000
	SUM-SQUAR			91.1300	648.000	113.000	.0206000	.874800	.0464000	18100.0	685.000
	MEAN			5.75000	18.0000	7.50000	.0799999	.540000	.120000	95.0000	18.5000
	VARIANCE			.0049896	.0000000	.500000	.0007000	.0000000	.0016000	50.0000	.500000
	STAND DEV			.0706372	.0000000	.707107	.0264577	.0000000	.0400001	7.07107	.707107
	COEF VAR			.0104648	.0000000	.0942808	.330722	.0000000	.333334	.0744322	.0382220
	STAND ERR			.0499481	.0000000	.500000	.0152754	.0000000	.0230940	5.00000	.500000
79/04/00											

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                                                    017012              0717
                                                    34 53 58.0 088 06 30.0 2
                                                    WHEELER RESERVOIR
                                                    01       ALABAMA
                                                    TENNESSEE RIVER BASIN      040890
                                                    TENNESSEE RIVER 307.52
                                                    131TVAC
                                                     0000 FEET  DEPTH  CLASS 00
/TYPA/AMBNT/STREAM
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DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00400 PH SU	00095 CNDUCTVY AT 25C MICROMHO
79/01/10	0900	0001	24.0000	6.00000	11.9000	95.2000	7.40000	150.000
79/01/10	0902	0003	24.0000	6.00000	11.9000	95.2000	7.40000	150.000
79/01/10	0904	0005	24.0000	6.00000	11.9000	95.2000	7.40000	150.000
79/01/10	0906	0010	24.0000	6.00000	11.9000	95.2000	7.40000	150.000
79/01/10	0910	0016	24.0000	5.00000	11.6000	92.8000	7.40000	150.000
79/01/10	0912	0023	24.0000	5.50000	11.6000	92.8000	7.40000	150.000
79/01/10	0917	0001	37.0000	6.00000	11.6000	92.8000	7.40000	150.000
79/01/10	0919	0003	37.0000	6.00000	11.6000	92.8000	7.40000	150.000
79/01/10	0921	0005	37.0000	5.00000	11.6000	92.8000	7.40000	150.000
79/01/10	0923	0010	37.0000	6.00000	11.8000	94.4000	7.40000	150.000
79/01/10	0925	0016	37.0000	6.00000	11.8000	94.4000	7.40000	150.000
79/01/01								
QUARTER	NUMBER			11.0000	11.0000	11.0000	11.0000	11.0000
	MAXIMUM			6.00000	11.9000	95.2000	7.40000	150.000
	MINIMUM			5.50000	11.6000	92.8000	7.40000	150.000
	SUM			65.5000	129.200	1033.60	81.3999	1650.00
	SUM-SQUAR			390.250	1517.72	97133.8	602.358	247500
	MEAN			5.95454	11.7454	93.9635	7.39999	150.000
	VARIANCE			.0227539	.0208252	1.33750	.0000000	.0000000
	STAND DEV			.150844	.144309	1.15650	.0000000	.0000000
	COEF VAR			.0253326	.0122864	.0123080	.0000000	.0000000
	STAND ERR			.0454812	.0435109	.348699	.0000000	.0000000
79/04/00								

SECOND QUARTER

017003 0594
34 47 35.0 087 20 10.0 2
WHEELER RESERVOIR
01077 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 277.98
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00400 PH SU	00095 CNDUCTVY AT 25C MICROMHO
79/04/10	1250	0001	83.0000	16.0000	8.70000	87.0000	7.40000	130.000
79/04/10	1255	0003	83.0000	16.0000	8.70000	87.0000	7.40000	130.000
79/04/10	1257	0005	83.0000	16.0000	8.70000	87.0000	7.40000	140.000
79/04/10	1300	0010	83.0000	16.0000	8.70000	87.0000	7.30000	140.000
79/04/10	1305	0016	83.0000	16.0000	8.60000	86.0000	7.20000	140.000
79/04/10	1307	0023	83.0000	16.0000	8.40000	84.0000	7.20000	140.000
79/04/10	1309	0030	83.0000	15.5000	8.40000	84.0000	7.20000	140.000
79/04/10	1311	0036	83.0000	15.5000	8.40000	84.0000	7.20000	140.000
79/04/10	1313	0043	83.0000	15.5000	8.30000	83.0000	7.20000	140.000
79/04/01								
QUARTER	NUMBER			9.00000	9.00000	9.00000	9.00000	9.00000
	MAXIMUM			16.0000	8.70000	87.0000	7.40000	140.000
	MINIMUM			15.5000	8.30000	83.0000	7.20000	130.000
	SUM			142.500	76.8999	768.998	65.5000	1240.00
	SUM-SQUAR			2256.75	657.289	65728.8	476.769	171000
	MEAN			15.8333	8.54444	85.4442	7.27777	137.778
	VARIANCE			.0625610	.0278015	2.80469	.0094299	19.4531
	STAND DEV			.250122	.166738	1.67472	.0971078	4.41057
	COEF VAR			.0157972	.0195142	.0196001	.0133431	.0320122
	STAND ERR			.0833740	.0555793	.558240	.0323693	1.47019
79/07/00								

017005 0600
34 44 59.0 087 16 10.0 2
WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 283.94
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00310 BOD 5 DAY MG/L	00335 COD LOWLEVEL MG/L	00400 PH SU	00410 T ALK CACO3 MG/L	00095 CNDUCTVY AT 25C MICROMHO
79/04/10	0945	0001	16.0000	15.4000	9.20000	90.1960			7.50000		160.000
79/04/10	0950	0003	16.0000	15.4000	9.20000	90.1960	1.30000	32.0000	7.50000	47.0000	160.000
79/04/10	0952	0005	16.0000	15.2000	9.10000	89.2156			7.50000		160.000
79/04/10	0955	0010	16.0000	15.0000	9.10000	89.2156			7.50000		160.000
79/04/10	1000	0016	16.0000	15.0000	9.00000	88.2353	1.40000	9.00000	7.40000	48.0000	160.000
79/04/10	1005	0023	16.0000	15.0000	9.00000	88.2353			7.40000		160.000
79/04/10	1010	0030	16.0000	15.0000	8.90000	87.2549			7.40000		160.000
79/04/10	1030	0001	40.0000	16.0000	8.60000	86.0000			7.40000		130.000
79/04/10	1035	0003	40.0000	16.0000	8.60000	86.0000	1.20000	6.00000	7.40000	48.0000	130.000
79/04/10	1037	0005	40.0000	16.0000	8.60000	86.0000			7.40000		130.000
79/04/10	1040	0010	40.0000	16.0000	8.60000	86.0000			7.30000	49.0000	130.000
79/04/10	1045	0016	40.0000	16.0000	8.50000	85.0000	1.10000	6.00000	7.30000	49.0000	140.000
79/04/10	1047	0023	40.0000	15.5000	8.40000	84.0000			7.20000		140.000
79/04/10	1050	0030	40.0000	15.0000	8.30000	81.3725			7.20000		180.000
79/04/10	1052	0033	40.0000	15.0000	8.20000	80.3921			7.30000		170.000
79/04/10	1100	0001	78.0000	15.5000	9.10000	91.0000			7.50000		180.000
79/04/10	1105	0003	78.0000	15.5000	9.10000	91.0000	1.40000	6.00000	7.50000	52.0000	180.000
79/04/10	1107	0005	78.0000	15.0000	9.10000	89.2156			7.50000		180.000
79/04/10	1110	0010	78.0000	15.4000	9.10000	89.2156			7.50000		180.000
79/04/10	1115	0016	78.0000	15.3000	9.00000	88.2353	1.20000	5.00000	7.50000	53.0000	180.000
79/04/10	1117	0023	78.0000	15.1000	9.00000	88.2353			7.50000		180.000
79/04/10	1120	0030	78.0000	15.0000	8.90000	87.2549			7.50000		180.000
79/04/10	1125	0033	78.0000	15.0000	8.90000	87.2549	1.40000	6.00000	7.40000	53.0000	180.000
79/04/01											
QUARTER	NUMBER			23.0000	23.0000	23.0000	7.00000	7.00000	23.0000	8.00000	23.0000
	MAXIMUM			16.0000	9.20000	91.0000	1.40000	32.0000	7.50000	53.0000	180.000
	MINIMUM			15.0000	8.20000	80.3921	1.10000	5.00000	7.20000	47.0000	130.000
	SUM			353.299	203.500	2008.72	9.00000	70.0000	170.600	399.000	3710.00
	SUM-SQUAR			5430.36	1802.55	175601	11.6600	1274.00	1265.62	19941.0	606500
	MEAN			15.3608	8.84782	87.3357	1.28571	10.0000	7.41739	49.8750	161.304
	VARIANCE			.154119	.0917746	7.64204	.0147632	95.6667	.0096436	5.83928	366.409
	STAND DEV			.392580	.302943	2.76443	.121504	9.78093	.0982016	2.41646	19.1418
	COEF VAR			.0255572	.0342393	.0316529	.0945031	.978093	.0132394	.0484503	.118669
	STAND ERR			.0818586	.0631679	.576422	.0459242	3.69684	.0204765	.854348	3.99134
79/07/00											

017005 0600
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WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 283.94
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 %SAMPLOC FROM RT BANK	00929 SODIUM NA,TOT MG/L	00945 SULFATE SO4-TOT MG/L	00940 CHLORIDE CL MG/L	00610 NH3+NH4- N TOTAL MG/L	00630 NO2&NO3 N-TOTAL MG/L	00605 ORG N N MG/L	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L
79/04/10	0945	0001	16.0000								
79/04/10	0950	0003	16.0000	5.60000	12.0000	5.00000	.110000	.590000	.0699999	90.0000	7.00000
79/04/10	0952	0005	16.0000								
79/04/10	0955	0010	16.0000								
79/04/10	1000	0016	16.0000	5.60000	12.0000	5.00000	.150000	.580000	.0899999	90.0000	8.00000
79/04/10	1005	0023	16.0000								
79/04/10	1010	0030	16.0000								
79/04/10	1030	0001	40.0000								
79/04/10	1035	0003	40.0000	5.20000	13.0000	5.00000	.200000	.570000	.0300000	90.0000	8.00000
79/04/10	1037	0005	40.0000								
79/04/10	1040	0010	40.0000				.110000	.580000	.0699999		
79/04/10	1045	0016	40.0000	6.00000	12.0000	5.00000	.120000	.590000	.0600000	90.0000	8.00000
79/04/10	1047	0023	40.0000								
79/04/10	1050	0030	40.0000								
79/04/10	1052	0033	40.0000								
79/04/10	1100	0001	78.0000								
79/04/10	1105	0003	78.0000	5.30000	12.0000	4.00000	.0899999	.650000	.0699999	110.000	9.00000
79/04/10	1107	0005	78.0000								
79/04/10	1110	0010	78.0000								
79/04/10	1115	0016	78.0000	5.30000	11.0000	4.00000	.100000	.630000	.0500000	100.000	8.00000
79/04/10	1117	0023	78.0000								
79/04/10	1120	0030	78.0000								
79/04/10	1125	0033	78.0000	5.10000	12.0000	4.00000	.0899999	.650000	.130000	100.000	9.00000
79/04/01											
QUARTER	NUMBER			7.00000	7.00000	7.00000	8.00000	8.00000	8.00000	7.00000	7.00000
	MAXIMUM			6.00000	13.0000	5.00000	.200000	.650000	.130000	110.000	9.00000
	MINIMUM			5.10000	11.0000	4.00000	.0899999	.570000	.0300000	90.0000	7.00000
	SUM			38.1000	84.0000	32.0000	.970000	4.84000	.570000	670.000	57.0000
	SUM-SQUAR			207.950	1010.00	148.000	.127300	2.93580	.0467000	64500.0	467.000
	MEAN			5.44285	12.0000	4.57143	.121250	.605000	.0712499	95.7143	8.14286
	VARIANCE			.3962651	.333333	.285728	.0013839	.0010860	.0008696	61.9095	.476237
	STAND DEV			.310266	.577350	.534536	.0372012	.0329539	.0294897	7.86826	.690099
	COEF VAR			.0570044	.0481125	.116930	.306814	.0544594	.413891	.0822056	.0847489
	STAND ERR			.117270	.218218	.202036	.0131526	.0116510	.0104262	2.97392	.260833
79/07/00											

017006 0609
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WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 288.78
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00400 PH SU	00095 CNDUCTVY AT 25C MICROMHO
79/04/10	1132	0001	41.0000	16.0000	8.60000	86.0000	7.30000	130.000
79/04/10	1135	0003	41.0000	16.0000	8.60000	86.0000	7.30000	130.000
79/04/10	1137	0005	41.0000	16.0000	8.60000	86.0000	7.30000	130.000
79/04/10	1140	0010	41.0000	16.0000	8.60000	86.0000	7.30000	130.000
79/04/10	1145	0016	41.0000	16.0000	8.50000	85.0000	7.20000	130.000
79/04/10	1150	0020	41.0000	15.5000	8.40000	84.0000	7.20000	130.000
79/04/01								
QUARTER	NUMBER			6.00000	6.00000	6.00000	6.00000	6.00000
	MAXIMUM			16.0000	8.60000	86.0000	7.30000	130.000
	MINIMUM			15.5000	8.40000	84.0000	7.20000	130.000
	SUM			95.5000	51.3000	512.999	43.6000	780.000
	SUM-SQUAR			1520.25	438.650	43865.0	316.840	101400
	MEAN			15.9167	8.55000	85.4999	7.26665	130.000
	VARIANCE			.0417480	.0070312	.717969	.0026855	.0000000
	STAND DEV			.204323	.0838525	.847330	.0518223	.0000000
	COEF VAR			.0128371	.0098073	.0099103	.0071315	.0000000
	STAND ERR			.0834146	.0342327	.345921	.0211563	.0000000
79/07/00								

017007 0615
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WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 291.76
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00310 BOD 5 DAY MG/L	00335 COD LOWLEVEL MG/L	00400 PH SU	00410 T ALK CACO3 MG/L	00095 CNDUCTVY AT 25C MICROMHO
79/04/10	0908	0001	36.0000	17.0000	8.90000	91.7525			7.40000		130.000
79/04/10	0910	0003	36.0000	17.0000	8.90000	91.7525	1.20000	16.0000	7.30000	47.0000	130.000
79/04/10	0912	0005	36.0000	17.0000	8.80000	90.7216			7.40000		130.000
79/04/10	0915	0010	36.0000	17.0000	8.80000	90.7216			7.30000	48.0000	130.000
79/04/10	0920	0016	36.0000	16.5000	8.60000	88.6598	1.20000	8.00000	7.20000	48.0000	130.000
79/04/10	0922	0020	36.0000	16.5000	8.60000	88.6598			7.20000		130.000
79/04/10	0925	0001	60.0000	16.1000	9.40000	94.0000			7.50000		170.000
79/04/10	0926	0003	60.0000	16.1000	9.30000	93.0000			7.50000		170.000
79/04/10	0927	0005	60.0000	16.0000	9.30000	93.0000			7.50000		170.000
79/04/10	0928	0007	60.0000	16.0000	9.30000	93.0000			7.50000		170.000
79/04/10	0935	0001	84.0000	15.9000	9.30000	93.0000			7.50000		160.000
79/04/10	0940	0003	84.0000	15.6000	9.30000	93.0000	1.50000	7.00000	7.50000	49.0000	160.000
79/04/10	0942	0005	84.0000	15.6000	9.30000	93.0000			7.50000		160.000
79/04/10	0945	0010	84.0000	15.5000	9.10000	91.0000			7.40000		160.000
79/04/10	0950	0016	84.0000	15.5000	9.10000	91.0000	1.30000	6.00000	7.40000	48.0000	160.000
79/04/10	0952	0023	84.0000	15.4000	9.00000	88.2353			7.40000		160.000
79/04/01											
QUARTER	NUMBER			16.0000	16.0000	16.0000	4.00000	4.00000	16.0000	5.00000	16.0000
	MAXIMUM			17.0000	9.40000	94.0000	1.50000	16.0000	7.50000	49.0000	170.000
	MINIMUM			15.4000	8.60000	88.2353	1.20000	6.00000	7.20000	47.0000	130.000
	SUM			258.700	145.000	1464.50	5.20000	37.0000	118.500	240.000	2420.00
	SUM-SQUAR			4188.10	1315.14	134096	6.81999	405.000	877.809	11522.0	370600
	MEAN			16.1687	9.06249	91.5313	1.30000	9.25000	7.40625	48.0000	151.250
	VARIANCE			.350260	.0718749	3.22917	.0200011	20.9167	.0112630	.500000	305.000
	STAND DEV			.591828	.268095	1.79699	.141425	4.57347	.106127	.707107	17.4642
	COEF VAR			.0366032	.0295829	.0196325	.108789	.494429	.0143294	.0147314	.115466
	STAND ERR			.147957	.0670237	.449247	.0707125	2.28674	.0265318	.316228	4.36606
79/07/00											

017007 0615
34 43 27.0 087 08 58.0 2
WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 291.76
131[illegible]AC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00929 SODIUM NA,TOT MG/L	00945 SULFATE SO4-TOT MG/L	00940 CHLORIDE CL MG/L	00610 NH3+NH4- N TOTAL MG/L	00630 NO2&NO3 N-TOTAL MG/L	00605 ORG N N MG/L	70300 RESIDUE DISS-180 (MG/L	00530 RESIDUE TOT NFLT MG/L
79/04/10	0908	0001	36.0000								
79/04/10	0910	0003	36.0000	6.20000	12.0000	5.00000	.170000	.590000	.110000	90.0000	9.00000
79/04/10	0912	0005	36.0000								
79/04/10	0915	0010	36.0000				.110000	.600000	.170000		
79/04/10	0920	0016	36.0000	6.20000	12.0000	5.00000	.0899999	.610000	.110000	100.000	12.0000
79/04/10	0922	0020	36.0000								
79/04/10	0925	0001	60.0000								
79/04/10	0926	0003	60.0000								
79/04/10	0927	0005	60.0000								
79/04/10	0928	0007	60.0000								
79/04/10	0935	0001	84.0000								
79/04/10	0940	0003	84.0000	5.50000	11.0000	5.00000	.0799999	.610000	.100000	90.0000	9.00000
79/04/10	0942	0005	84.0000								
79/04/10	0945	0010	84.0000								
79/04/10	0950	0016	84.0000	5.60000	12.0000	5.00000	.0699999	.600000	.0899999	90.0000	10.0000
79/04/10	0952	0023	84.0000								
79/04/01											
QUARTER	NUMBER			4.00000	4.00000	4.00000	5.00000	5.00000	5.00000	4.00000	4.00000
	MAXIMUM			6.20000	12.0000	5.00000	.170000	.610000	.170000	100.000	12.0000
	MINIMUM			5.50000	11.0000	5.00000	.0699999	.590000	.0899999	90.0000	9.00000
	SUM			23.5000	47.0000	20.0000	.520000	3.01000	.580000	370.000	40.0000
	SUM-SQUAR			138.490	553.000	100.000	.0604000	1.81230	.0711998	34300.0	406.000
	MEAN			5.87500	11.7500	5.00000	.104000	.602000	.116000	92.5000	10.0000
	VARIANCE			.142548	.250000	.0000000	.0015800	.0000706	.0009800	25.0000	2.00000
	STAND DEV			.377555	.500000	.0000000	.0397492	.0084007	.0313050	5.00000	1.41421
	COEF VAR			.0642646	.0425532	.0000000	.382204	.0139547	.269871	.0540541	.141421
	STAND ERR			.188777	.250000	.0000000	.0177764	.0037569	.0140000	2.50000	.707107
79/07/00											

017008 0624
34 42 10.0 087 07 39.0 2
WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 293.70
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00400 PH SU	00095 CNDUCTVY AT 25C MICROMHO
79/04/10	0847	0001	65.0000	16.1000	9.30000	93.0000	7.50000	170.000
79/04/10	0849	0003	65.0000	15.2000	9.20000	90.1960	7.50000	170.000
79/04/10	0851	0005	65.0000	15.0000	9.20000	90.1960	7.50000	170.000
79/04/10	0853	0007	65.0000	14.5000	9.20000	90.1960	7.50000	170.000
79/04/10	1031	0001	88.0000	16.0000	8.90000	89.0000	7.40000	130.000
79/04/10	1035	0003	88.0000	16.5000	8.90000	91.7525	7.40000	130.000
79/04/10	1037	0005	88.0000	16.5000	8.80000	90.7216	7.20000	130.000
79/04/10	1040	0010	88.0000	16.0000	8.80000	88.0000	7.20000	130.000
79/04/10	1045	0016	88.0000	16.0000	8.80000	88.0000	7.10000	130.000
79/04/10	1047	0023	88.0000	15.5000	8.70000	87.0000	7.20000	130.000
79/04/10	1050	0030	88.0000	15.5000	8.70000	87.0000	7.20000	130.000
79/04/01								
QUARTER	NUMBER			11.0000	11.0000	11.0000	11.0000	11.0000
	MAXIMUM			16.5000	9.30000	93.0000	7.50000	170.000
	MINIMUM			14.5000	8.70000	87.0000	7.10000	130.000
	SUM			172.800	98.4999	985.061	80.7000	1590.00
	SUM-SQUAR			2718.50	882.530	88250.7	592.289	233900
	MEAN			15.7091	8.95454	89.5509	7.33636	144.545
	VARIANCE			.396924	.0508545	3.76875	.0245117	407.281
	STAND DEV			.630019	.225509	1.94133	.156562	20.1812
	COEF VAR			.0401054	.0251838	.0216785	.0213406	.139618
	STAND ERR			.189958	.0679936	.585332	.0472053	6.08486
79/07/00								

017009 0636
34 41 06.0 087 05 55.0 2
WHEELER RESERVOIR
01083 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 295.87
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00310 BOD 5 DAY MG/L	00335 COD LOWLEVEL MG/L	00400 PH SU	00410 T ALK CACO3 MG/L	00095 CNDUCTVY AT 25C MICROMHO
79/04/10	1002	0001	44.0000	14.5000	8.90000	87.2549			7.30000		130.000
79/04/10	1005	0003	44.0000	14.5000	8.90000	87.2549	1.00000	4.00000	7.30000	46.0000	130.000
79/04/10	1007	0005	44.0000	14.5000	8.90000	87.2549			7.30000		130.000
79/04/10	1010	0010	44.0000	14.5000	8.90000	87.2549			7.30000	47.0000	130.000
79/04/10	1015	0016	44.0000	14.5000	8.90000	87.2549	1.40000	6.00000	7.30000	47.0000	130.000
79/04/10	1017	0023	44.0000	14.5000	8.90000	87.2549			7.20000		130.000
79/04/10	1025	0001	82.0000	13.8000	9.60000	92.3077			7.70000		160.000
79/04/10	1027	0003	82.0000	13.8000	9.60000	92.3077			7.60000		160.000
79/04/10	1029	0005	82.0000	13.8000	9.50000	91.3461			7.60000		160.000
79/04/10	1031	0008	82.0000	13.8000	9.50000	91.3461			7.60000		160.000
79/04/01											
QUARTER	NUMBER			10.0000	10.0000	10.0000	2.00000	2.00000	10.0000	3.00000	10.0000
	MAXIMUM			14.5000	9.60000	92.3077	1.40000	6.00000	7.70000	47.0000	160.000
	MINIMUM			13.8000	8.90000	87.2549	1.00000	4.00000	7.20000	46.0000	130.000
	SUM			142.200	91.5999	890.835	2.40000	10.0000	74.1999	140.000	1420.00
	SUM-SQUAR			2023.26	840.080	79410.0	2.96000	52.0000	550.859	6534.00	203800
	MEAN			14.2200	9.15999	89.0835	1.20000	5.00000	7.41999	46.6667	142.000
	VARIANCE			.130832	.113878	5.69444	.0799999	2.00000	.0328776	.335937	240.000
	STAND DEV			.361707	.337458	2.38630	.282843	1.41421	.181322	.579601	15.4919
	COEF VAR			.0254365	.0368404	.0267872	.235702	.282843	.0244369	.0124200	.109098
	STAND ERR			.114382	.106714	.754615	.200000	1.00000	.0573390	.334633	4.89898
79/07/00											

017009 0636
34 41 06.0 087 05 55.0 2
WHEELER RESERVOIR
01083 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 295.87
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00929 SODIUM NA,TOT MG/L	00945 SULFATE SO4-TOT MG/L	00940 CHLORIDE CL MG/L	00610 NH3+NH4-N TOTAL MG/L	00630 NO2&NO3 N-TOTAL MG/L	00605 ORG N N MG/L	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L
79/04/10	1002	0001	44.0000								
79/04/10	1005	0003	44.0000	6.70000	13.0000	5.00000	.0799999	.630000	.100000	90.0000	6.00000
79/04/10	1007	0005	44.0000								
79/04/10	1010	0010	44.0000				.0799999	.620000	.0799999		
79/04/10	1015	0016	44.0000	5.90000	12.0000	5.00000	.100000	.610000	.0799999	90.0000	7.00000
79/04/10	1017	0023	44.0000								
79/04/10	1025	0001	82.0000								
79/04/10	1027	0003	82.0000								
79/04/10	1029	0005	82.0000								
79/04/10	1031	0008	82.0000								
79/04/01											
QUARTER	NUMBER			2.00000	2.00000	2.00000	3.00000	3.00000	3.00000	2.00000	2.00000
	MAXIMUM			6.70000	13.0000	5.00000	.100000	.630000	.100000	90.0000	7.00000
	MINIMUM			5.90000	12.0000	5.00000	.0799999	.610000	.0799999	90.0000	6.00000
	SUM			12.6000	25.0000	10.0000	.260000	1.86000	.260000	180.000	13.0000
	SUM-SQUAR			79.7000	313.000	50.0000	.0228000	1.15340	.0228000	16200.0	85.0000
	MEAN			6.30000	12.5000	5.00000	.0866666	.620000	.0866666	90.0000	6.50000
	VARIANCE			.319992	.500000	.0000000	.0001333	.0001011	.0001333	.0000000	.500000
	STAND DEV			.565678	.707107	.0000000	.0115469	.0100543	.0115469	.0000000	.707107
	COEF VAR			.0897902	.0565685	.0000000	.133234	.0162167	.133234	.0000000	.108786
	STAND ERR			.399995	.500000	.0000000	.0066666	.0058049	.0066666	.0000000	.500000
79/07/00											

017012 0717
34 53 58.0 088 06 30.0 2
WHEELER RESERVOIR
01 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 307.52
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00400 PH SU	00095 CNDUCTVY AT 25C MICROMHO
79/04/10	0839	0001	24.0000	14.5000	8.80000	86.2745	7.70000	120.000
79/04/10	0840	0003	24.0000	14.5000	8.70000	85.2941	7.70000	120.000
79/04/10	0842	0005	24.0000	14.5000	8.70000	85.2941	7.70000	120.000
79/04/10	0845	0010	24.0000	14.5000	8.70000	85.2941	7.80000	120.000
79/04/10	0850	0016	24.0000	15.0000	8.70000	85.2941	7.60000	120.000
79/04/10	0855	0023	24.0000	15.0000	8.70000	85.2941	7.50000	120.000
79/04/10	0905	0001	37.0000	14.5000	9.10000	89.2156	7.70000	130.000
79/04/10	0907	0003	37.0000	15.0000	8.80000	86.2745	7.30000	130.000
79/04/10	0909	0005	37.0000	14.5000	8.80000	86.2745	7.30000	130.000
79/04/10	0911	0010	37.0000	14.5000	8.70000	85.2941	7.30000	130.000
79/04/10	0913	0016	37.0000	14.5000	8.70000	85.2941	7.20000	130.000
79/04/01								
QUARTER	NUMBER			11.0000	11.0000	11.0000	11.0000	11.0000
	MAXIMUM			15.0000	9.10000	89.2156	7.80000	130.000
	MINIMUM			14.5000	8.70000	85.2941	7.20000	120.000
	SUM			161.000	96.3999	945.097	82.7999	1370.00
	SUM-SQUAR			2357.00	844.959	81214.7	623.719	170900
	MEAN			14.6364	8.76363	85.9179	7.52727	124.545
	VARIANCE			.0545898	.0146240	1.41250	.0461914	27.2812
	STAND DEV			.233645	.120930	1.18849	.214922	5.22315
	COEF VAR			.0159633	.0137991	.0138328	.0285524	.0419377
	STAND ERR			.0704464	.0364617	.358342	.0648013	1.57484
79/07/00								

THIRD QUARTER

017003 0594
34 47 35.0 087 20 10.0 2
WHEELER RESERVOIR
01077 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 277.98
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00400 PH SU	00095 CNDUCTVY AT 25C MICRDMHD
79/07/05	1607	0001	83.0000	28.5000	8.80000	112.820	8.50000	220.000
79/07/05	1610	0003	83.0000	28.5000	8.70000	111.538	8.50000	220.000
79/07/05	1612	0005	83.0000	28.5000	8.70000	111.538	8.50000	220.000
79/07/05	1615	0010	83.0000	28.5000	8.80000	112.820	8.50000	220.000
79/07/05	1620	0015	83.0000	28.0000	7.00000	88.6075	7.80000	220.000
79/07/05	1622	0023	83.0000	27.0000	5.90000	72.8395	7.60000	220.000
79/07/05	1624	0030	83.0000	27.0000	5.20000	64.1975	7.20000	220.000
79/07/05	1626	0036	83.0000	26.5000	4.20000	51.8518	7.20000	220.000
79/07/05	1628	0043	83.0000	26.0000	3.40000	41.4634	7.00000	240.000
79/07/01								
QUARTER	NUMBER			9.00000	9.00000	9.00000	9.00000	9.00000
	MAXIMUM			28.5000	8.80000	112.820	8.50000	240.000
	MINIMUM			26.0000	3.40000	41.4634	7.00000	220.000
	SUM			248.500	60.6999	767.677	70.8000	2000.00
	SUM-SQUAR			6869.25	446.309	72024.5	560.279	444800
	MEAN			27.6111	6.74444	85.2974	7.86666	222.222
	VARIANCE			.987305	4.61526	817.960	.415009	44.4609
	STAND DEV			.993632	2.14832	28.6000	.644212	6.66790
	COEF VAR			.0359867	.318531	.335297	.0818912	.0300056
	STAND ERR			.331211	.716105	9.53333	.214737	2.22263
79/10/00								

/TYPA/AMBNT/STREAM

217005 0600
34 44 59.0 087 16 10.0 2
WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 283.9
131TVAC
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00310 BOD 5 DAY MG/L	00335 COD LOWLEVEL MG/L	00400 PH SU	00410 T ALK CACO3 MG/L	00095 CNDUCTVY AT 25C MICROMHO
79/07/05	1010	0001	16.0000	27.6000	8.80000	111.392			8.60000		150.000
79/07/05	1015	0003	16.0000	27.5000	8.80000	111.392	1.70000	8.00000	8.50000	39.0000	150.000
79/07/05	1017	0005	16.0000	27.5000	8.80000	111.392			8.50000		150.000
79/07/05	1020	0010	16.0000	27.5000	8.60000	108.861			8.50000		150.000
79/07/05	1025	0016	16.0000	27.5000	8.50000	107.595	1.30000	10.0000	8.50000	40.0000	150.000
79/07/05	1027	0020	16.0000	27.5000	8.20000	103.797			8.40000		150.000
79/07/05	1029	0023	16.0000	27.4000	7.20000	88.8889			7.90000		150.000
79/07/05	1031	0026	16.0000	27.4000	6.40000	79.0123			7.70000		150.000
79/07/05	1033	0030	16.0000	26.9000	3.80000	46.9135			7.40000		150.000
79/07/05	1038	0001	40.0000	29.5000	9.40000	123.684			8.60000		230.000
79/07/05	1040	0003	40.0000	29.5000	9.10000	119.737	1.80000	8.00000	8.60000	52.0000	230.000
79/07/05	1042	0005	40.0000	29.5000	9.10000	119.737			8.60000		230.000
79/07/05	1045	0010	40.0000	29.0000	8.90000	114.103			8.50000	52.0000	230.000
79/07/05	1050	0016	40.0000	28.5000	8.40000	107.692	1.70000	10.0000	8.20000	54.0000	230.000
79/07/05	1052	0023	40.0000	28.5000	7.40000	94.8718			8.10000		230.000
79/07/05	1054	0030	40.0000	28.5000	5.60000	71.7948			7.30000		240.000
79/07/05	1056	0033	40.0000	27.0000	5.30000	65.4321			7.30000		240.000
79/07/05	1103	0001	78.0000	28.0000	9.00000	113.924			8.60000		150.000
79/07/05	1105	0003	78.0000	28.0000	9.00000	113.924	1.40000	9.00000	8.60000	40.0000	150.000
79/07/05	1107	0005	78.0000	28.0000	9.00000	113.924			8.60000		150.000
79/07/05	1110	0010	78.0000	27.8000	8.90000	112.658			8.50000		150.000
79/07/05	1115	0016	78.0000	27.6000	8.50000	107.595	1.00000	7.00000	8.40000	41.0000	150.000
79/07/05	1117	0023	78.0000	27.3000	6.70000	82.7160			7.70000		150.000
79/07/05	1119	0026	78.0000	27.2000	5.50000	67.9012			7.50000		160.000
79/07/05	1121	0030	78.0000	27.2000	4.50000	55.5556			7.50000		170.000
79/07/05	1125	0033	78.0000	27.0000	3.80000	46.9135	1.00000	5.00000	7.40000	44.0000	180.000
79/07/01											
QUARTER	NUMBER			26.0000	26.0000	26.0000	7.00000	7.00000	26.0000	8.00000	26.0000
	MAXIMUM			29.5000	9.40000	123.684	1.80000	10.0000	8.60000	54.0000	240.000
∞	MINIMUM			26.9000	3.80000	46.9135	1.00000	5.00000	7.30000	39.0000	150.000
	SUM			724.899	197.200	2501.40	9.90000	57.0000	212.000	362.000	4620.00
	SUM-SQUAR			20226.2	1575.26	254740	14.6700	483.000	1734.78	16662.0	857000
∞	MEAN			27.8807	7.58461	96.2079	1.41428	8.14286	8.15384	45.2500	177.692
∞	VARIANCE			.618594	3.18297	563.410	.111430	3.14290	.246611	40.2143	1442.49
	STAND DEV			.786507	1.78409	23.7362	.333812	1.77282	.496600	6.34147	37.9801
	COEF VAR			.0282097	.235225	.246718	.236029	.217715	.0609038	.140143	.213741
	STAND ERR			.154247	.349888	4.65506	.126169	.670064	.0973911	2.24205	7.44852
79/10/00											

017005 0600
34 44 59.0 087 16 10.0 2
WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 283.94
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM BANK	00929 SODIUM NA,TOT MG/L	00945 SULFATE SO4-TOT MG/L	00940 CHLORIDE CL MG/L	00610 NH3+NH4- N TOTAL MG/L	00630 NO2&NO3 N-TOTAL MG/L	00605 ORG N N MG/L	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L
79/07/05	1010	0001	16.0000								
79/07/05	1015	0003	16.0000	4.90000	10.0000	5.00000	.0300000	.0799999	.170000	90.0000	3.00000
79/07/05	1017	0005	16.0000								
79/07/05	1020	0010	16.0000								
79/07/05	1025	0016	16.0000	4.90000	11.0000	5.00000	.0699999	.0799999	.210000	90.0000	3.00000
79/07/05	1027	0020	16.0000								
79/07/05	1029	0023	16.0000								
79/07/05	1031	0026	16.0000								
79/07/05	1033	0030	16.0000								
79/07/05	1038	0001	40.0000								
79/07/05	1040	0003	40.0000	4.70000	10.0000	5.00000	.0200000	.0699999	.220000	80.0000	2.00000
79/07/05	1042	0005	40.0000								
79/07/05	1045	0010	40.0000				.0400000	.140000	.220000		
79/07/05	1050	0016	40.0000	4.70000	11.0000	5.00000	.0400000	.0600000	.260000	90.0000	3.00000
79/07/05	1052	0023	40.0000								
79/07/05	1054	0030	40.0000								
79/07/05	1056	0033	40.0000								
79/07/05	1103	0001	78.0000								
79/07/05	1105	0003	78.0000	6.10000	12.0000	5.00000	.0200000	.0400000	.210000	80.0000	2.00000
79/07/05	1107	0005	78.0000								
79/07/05	1110	0010	78.0000								
79/07/05	1115	0016	78.0000	4.90000	11.0000	5.00000	.0200000	.0899999	.220000	80.0000	2.00000
79/07/05	1117	0023	78.0000								
79/07/05	1119	0026	78.0000								
79/07/05	1121	0030	78.0000								
79/07/05	1125	0033	78.0000	4.90000	11.0000	5.00000	.110000	.130000	.180000	90.0000	6.00000
79/07/01											
QUARTER	NUMBER			7.00000	7.00000	7.00000	8.00000	8.00000	8.00000	7.00000	7.00000
	MAXIMUM			6.10000	12.0000	5.00000	.110000	.140000	.260000	90.0000	6.00000
	MINIMUM			4.70000	10.0000	5.00000	.0200000	.0400000	.170000	80.0000	2.00000
	SUM			35.1000	76.0000	35.0000	.350000	.690000	1.69000	600.000	21.0000
	SUM-SQUAR			177.430	828.000	175.000	.0223000	.0674999	.362300	51600.0	75.0000
	MEAN			5.01428	10.8571	5.00000	.0437500	.0862499	.211250	85.7143	3.00000
	VARIANCE			.238131	.476237	.0000000	.0009982	.0011411	.0007555	28.5762	2.00000
	STAND DEV			.487987	.690099	.0000000	.0315945	.0337798	.0274869	5.34567	1.41421
	COEF VAR			.0973193	.0635617	.0000000	.722161	.391650	.130116	.0623661	.471404
	STAND ERR			.184442	.260833	.0000000	.0111703	.0119429	.0097181	2.02047	.534522
79/10/00											

D17006 C609
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WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 288.78
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00400 PH SU	00095 CNDUCTVY AT 25C MICROMHO
79/07/05	1503	0001	41.0000	29.5000	9.50000	125.000	8.70000	210.000
79/07/05	1505	0003	41.0000	30.0000	9.60000	126.316	8.60000	210.000
79/07/05	1507	0005	41.0000	29.5000	9.60000	126.315	8.60000	210.000
79/07/05	1510	0010	41.0000	29.5000	8.50000	111.842	8.30000	210.000
79/07/05	1515	0016	41.0000	27.5000	6.50000	82.2785	7.80000	210.000
79/07/05	1517	0020	41.0000	27.5000	6.40000	81.0125	7.30000	210.000
79/07/01								
QUARTER	NUMBER			6.00000	6.00000	6.00000	6.00000	6.00000
	MAXIMUM			30.0000	9.60000	126.316	8.70000	210.000
	MINIMUM			27.5000	6.40000	81.0126	7.30000	210.000
	SUM			173.500	50.1000	652.764	49.2999	1260.00
	SUM-SQUAR			5023.25	430.030	73377.6	406.629	264500
	MEAN			28.9167	8.35000	108.794	8.21666	210.000
	VARIANCE			1.24297	2.33911	472.187	.309766	.0000000
	STAND DEV			1.11489	1.52941	21.7299	.556566	.0000000
	COEF VAR			.0385551	.183164	.199734	.0677362	.0000000
	STAND ERR			.455150	.624381	8.87118	.227217	.0000000
79/10/00								

017007 0615
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WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 291.76
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00310 BOD 5 DAY MG/L	00335 COD LOWLEVEL MG/L	00400 PH SU	00410 T ALK CACO3 MG/L	00095 CNDUCTVY AT 25C MICROMHO
79/07/05	0932	0001	36.0000	29.0000	8.50000	108.974			8.50000		170.000
79/07/05	0935	0003	36.0000	29.0000	8.60000	110.256	3.50000	9.00000	8.50000	41.0000	170.000
79/07/05	0937	0005	36.0000	29.0000	8.70000	111.538			8.40000		170.000
79/07/05	0940	0010	36.0000	27.5000	6.80000	86.0759			8.40000	43.0000	170.000
79/07/05	0945	0016	36.0000	27.5000	7.00000	88.6076	1.20000	7.00000	7.50000	44.0000	170.000
79/07/05	0947	0020	36.0000	27.5000	6.70000	84.8101			7.50000		170.000
79/07/05	0955	0001	60.0000	27.5000	8.30000	105.063			8.10000		160.000
79/07/05	0957	0003	60.0000	27.5000	8.20000	103.797			8.10000		160.000
79/07/05	1000	0005	60.0000	27.4000	8.00000	98.7654			8.00000		160.000
79/07/05	1002	0007	60.0000	27.1000	7.80000	96.2963			8.00000		160.000
79/07/05	1005	0010	60.0000	27.0000	7.50000	92.5926			7.70000		160.000
79/07/05	1013	0001	84.0000	27.5000	8.00000	101.266			8.00000		150.000
79/07/05	1015	0003	84.0000	27.5000	7.90000	100.0000	1.00000	7.00000	7.90000	41.0000	150.000
79/07/05	1017	0005	84.0000	27.5000	7.70000	97.4683			7.80000		150.000
79/07/05	1020	0010	84.0000	27.0000	7.50000	92.5926			7.80000		150.000
79/07/05	1022	0016	84.0000	27.0000	7.00000	86.4197	1.00000	8.00000	7.60000	40.0000	150.000
79/07/05	1024	0023	84.0000	26.5000	6.40000	79.0123			7.40000		150.000
79/07/01											
QUARTER	NUMBER			17.0000	17.0000	17.0000	4.00000	4.00000	17.0000	5.00000	17.0000
	MAXIMUM			29.0000	8.70000	111.538	3.50000	9.00000	8.50000	44.0000	170.000
	MINIMUM			26.5000	6.40000	79.0123	1.00000	7.00000	7.40000	40.0000	150.000
	SUM			469.000	130.600	1643.53	6.70000	31.0000	135.200	209.000	2720.00
	SUM-SQUAR			12947.4	1011.16	160378	15.6900	243.000	1077.24	8747.00	436400
	MEAN			27.5882	7.68235	96.6785	1.67500	7.75000	7.95294	41.8000	160.000
	VARIANCE			.534912	.490326	92.7344	1.48917	.916667	.125153	2.70215	75.0000
	STAND DEV			.731377	.700233	9.62987	1.22031	.957427	.353769	1.64382	8.66025
	COEF VAR			.0265105	.0911482	.0996071	.728547	.123539	.0444828	.0393259	.0541266
	STAND ERR			.177385	.169831	2.33559	.610157	.478713	.0858016	.735139	2.10042
79/10/00											

017007 0615
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WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 291.76
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 % FROM RT BANK	00929 SODIUM NA,TOT MG/L	00945 SULFATE SO4-TOT MG/L	00940 CHLORIDE CL MG/L	00610 NH3+NH4- N TOTAL MG/L	00630 NO2&NO3 N-TOTAL MG/L	00605 ORG N N MG/L	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L
79/07/05	0932	0001	36.0000								
79/07/05	0935	0003	36.0000	4.70000	11.0000	5.00000	.0200000	.110000	.200000	80.0000	4.00000
79/07/05	0937	0005	36.0000								
79/07/05	0940	0010	36.0000				.0200000	.140000	.240000		
79/07/05	0945	0016	36.0000	4.90000	11.0000	5.00000	.0600000	.160000	.160000	80.0000	6.00000
79/07/05	0947	0020	36.0000								
79/07/05	0955	0001	60.0000								
79/07/05	0957	0003	60.0000								
79/07/05	1000	0005	60.0000								
79/07/05	1002	0007	60.0000								
79/07/05	1005	0010	60.0000								
79/07/05	1013	0001	84.0000								
79/07/05	1015	0003	84.0000	5.10000	12.0000	5.00000	.0300000	.130000	.250000	80.0000	5.00000
79/07/05	1017	0005	84.0000								
79/07/05	1020	0010	84.0000								
79/07/05	1022	0016	84.0000	4.90000	11.0000	5.00000	.0400000	.180000	.170000	80.0000	7.00000
79/07/05	1024	0023	84.0000								
79/07/01											
QUARTER	NUMBER			4.00000	4.00000	4.00000	5.00000	5.00000	5.00000	4.00000	4.00000
	MAXIMUM			5.10000	12.0000	5.00000	.0600000	.180000	.250000	80.0000	7.00000
	MINIMUM			4.70000	11.0000	5.00000	.0200000	.110000	.160000	80.0000	4.00000
	SUM			19.6000	45.0000	20.0000	.170000	.720000	1.02000	320.000	22.0000
	SUM-SQUAR			96.1200	507.000	100.000	.0069000	.106600	.214600	25600.0	126.000
	MEAN			4.90000	11.2500	5.00000	.0340000	.144000	.204000	80.0000	5.50000
	VARIANCE			.0266876	.250000	.0000000	.0002800	.0007300	.0016301	.0000000	1.66667
	STAND DEV			.163363	.500000	.0000000	.0167332	.0270184	.0403741	.0000000	1.29099
	COEF VAR			.0333395	.0444444	.0000000	.492153	.187528	.197912	.0000000	.234726
	STAND ERR			.0816817	.250000	.0000000	.0074833	.0120830	.0180558	.0000000	.645497
79/10/00											

017008 0624
34 42 10.0 087 07 39.0 2
WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 293.70
131TVAC
0000 FEET DEPTH CLASS 00

/TYPE/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00400 PH SU	00095 CNDUCTVY AT 25C MICROMHO
79/07/05	0922	0001	65.0000	28.5000	7.50000	96.1539	7.80000	160.000
79/07/05	0924	0003	65.0000	28.5000	7.50000	96.1539	7.80000	160.000
79/07/05	0926	0005	65.0000	28.0000	7.40000	93.6708	7.80000	160.000
79/07/05	0928	0007	65.0000	27.5000	7.30000	92.4050	7.70000	160.000
79/07/05	1200	0001	88.0000	29.0000	7.20000	92.3077	7.40000	160.000
79/07/05	1202	0003	88.0000	29.0000	7.10000	91.0256	7.40000	160.000
79/07/05	1205	0005	88.0000	29.0000	6.90000	88.4615	7.40000	170.000
79/07/05	1210	0010	88.0000	28.5000	6.90000	88.4615	7.40000	170.000
79/07/05	1215	0016	88.0000	28.5000	7.20000	92.3077	7.40000	160.000
79/07/05	1217	0023	88.0000	27.5000	6.90000	87.3417	7.40000	160.000
79/07/05	1220	0030	88.0000	27.5000	6.90000	87.3417	7.40000	170.000
79/07/01								
QUARTER	NUMBER			11.0000	11.0000	11.0000	11.0000	11.0000
	MAXIMUM			29.0000	7.50000	96.1539	7.80000	170.000
	MINIMUM			27.5000	6.90000	87.3417	7.40000	160.000
	SUM			311.500	78.7999	1005.63	82.8999	1790.00
	SUM-SQUAR			8824.75	565.079	92039.0	625.128	291500
	MEAN			28.3182	7.16363	91.4209	7.53636	162.727
	VARIANCE			.364844	.0585693	10.3500	.0364990	21.8250
	STAND DEV			.604023	.242011	3.21714	.191047	4.67172
	COEF VAR			.0213299	.0337833	.0351904	.0253501	.0287089
	STAND ERR			.182120	.0729690	.970005	.0576029	1.40858
79/10/00								

017009 0636
34 41 06.0 087 05 55.0 2
WHEELER RESERVOIR
01083 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 295.87
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00310 BOD 5 DAY MG/L	00335 COD LOWLEVEL MG/L	00400 PH SU	00410 T ALK CACO3 MG/L	00095 CNDUCTVY AT 25C MICROMHO
79/07/05	1128	0001	44.0000	27.0000	7.60000	93.8271			7.90000		200.000
79/07/05	1130	0003	44.0000	27.5000	7.50000	94.9367	1.10000	7.00000	7.80000	37.0000	200.000
79/07/05	1132	0005	44.0000	27.5000	7.30000	92.4050			7.60000		200.000
79/07/05	1135	0010	44.0000	26.5000	6.30000	77.7777			7.50000	38.0000	200.000
79/07/05	1140	0016	44.0000	26.0000	6.20000	75.6097	1.00000	6.00000	7.20000	41.0000	200.000
79/07/05	1142	0023	44.0000	26.0000	6.10000	74.3902			7.20000		200.000
79/07/05	1150	0001	82.0000	27.1000	7.90000	97.5308			8.00000		160.000
79/07/05	1152	0003	82.0000	27.0000	7.60000	93.8271			8.00000		160.000
79/07/05	1154	0005	82.0000	27.0000	6.20000	76.5432			7.50000		160.000
79/07/05	1156	0007	82.0000	27.0000	6.00000	74.0741			7.40000		160.000
79/07/05	1158	0010	82.0000	26.1000	5.80000	70.7317			7.30000		160.000
79/07/01											
QUARTER	NUMBER			11.0000	11.0000	11.0000	2.00000	2.00000	11.0000	3.00000	11.0000
	MAXIMUM			27.5000	7.90000	97.5308	1.10000	7.00000	8.00000	41.0000	200.000
	MINIMUM			26.0000	5.80000	70.7317	1.00000	6.00000	7.20000	37.0000	160.000
	SUM			294.700	74.4999	921.652	2.10000	13.0000	83.4000	116.000	2000.00
	SUM-SQUAR			7898.36	510.889	78319.8	2.21000	85.0000	633.239	4494.00	368000
	MEAN			26.7909	6.77272	83.7865	1.05000	6.50000	7.58181	38.6667	181.818
	VARIANCE			.310937	.632227	109.781	.0050020	.500000	.0916503	4.33594	436.375
	STAND DEV			.557618	.795127	10.4777	.0707249	.707107	.302738	2.08229	20.8896
	COEF VAR			.0208137	.117401	.125052	.0673571	.108786	.0399295	.0538524	.114893
	STAND ERR			.168128	.239740	3.15913	.0500101	.500000	.0912789	1.20221	6.29845
79/10/00											

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WHEELER RESERVOIR
01083 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 295.87
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00929 SODIUM NA,TOT MG/L	00945 SULFATE SO4-TOT MG/L	00940 CHLORIDE CL MG/L	00610 NH3+NH4-N TOTAL MG/L	00630 NO2&NO3 N-TOTAL MG/L	00605 ORG N N MG/L	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L
79/07/05	1128	0001	44.0000								
79/07/05	1130	0003	44.0000	4.50000	12.0000	5.00000	.0200000	.150000	.150000	80.0000	3.00000
79/07/05	1132	0005	44.0000								
79/07/05	1135	0010	44.0000				.0500000	.200000	.150000		
79/07/05	1140	0016	44.0000	4.70000	11.0000	8.00000	.0799999	.200000	.140000	90.0000	3.00000
79/07/05	1142	0023	44.0000								
79/07/05	1150	0001	82.0000								
79/07/05	1152	0003	82.0000								
79/07/05	1154	0005	82.0000								
79/07/05	1156	0007	82.0000								
79/07/05	1158	0010	82.0000								
79/07/01											
QUARTER	NUMBER			2.00000	2.00000	2.00000	3.00000	3.00000	3.00000	2.00000	2.00000
	MAXIMUM			4.70000	12.0000	8.00000	.0799999	.200000	.150000	90.0000	3.00000
	MINIMUM			4.50000	11.0000	5.00000	.0200000	.150000	.140000	80.0000	3.00000
	SUM			9.20000	23.0000	13.0000	.150000	.550000	.440000	170.000	6.00000
	SUM-SQUAR			42.3400	265.000	89.0000	.0093000	.102500	.0645999	14500.0	18.0000
	MEAN			4.60000	11.5000	6.50000	.0500000	.183333	.146667	85.0000	3.00000
	VARIANCE			.2200195	.500000	4.50000	.0009000	.0008334	.0000333	50.0000	.0000000
	STAND DEV			.141490	.707107	2.12132	.0300000	.0288680	.0057723	7.07107	.0000000
	COEF VAR			.0307588	.0614875	.326357	.600000	.157462	.0393563	.0831890	.0000000
	STAND ERR			.100049	.500000	1.50000	.0173205	.0166670	.0033326	5.00000	.0000000
79/10/00											

017012 0717
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WHEELER RESERVOIR
01 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 307.52
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00400 PH SU	00095 CNDUCTVY AT 25C MICROMHO
79/07/05	0852	0001	24.0000	26.5000	4.70000	58.0247	7.10000	130.000
79/07/05	0855	0003	24.0000	26.5000	4.50000	55.5556	7.10000	130.000
79/07/05	0857	0005	24.0000	26.5000	4.40000	54.3209	7.10000	130.000
79/07/05	0900	0010	24.0000	26.5000	4.30000	53.0864	7.10000	130.000
79/07/05	0905	0016	24.0000	26.5000	4.10000	50.6172	7.10000	130.000
79/07/05	0907	0023	24.0000	26.5000	3.90000	48.1481	7.10000	130.000
79/07/05	0915	0001	37.0000	26.5000	4.50000	55.5556	7.20000	140.000
79/07/05	0917	0003	37.0000	26.5000	4.40000	54.3209	7.20000	140.000
79/07/05	0919	0005	37.0000	26.5000	4.00000	49.3827	7.10000	140.000
79/07/05	0921	0010	37.0000	26.5000	3.80000	46.9135	7.10000	140.000
79/07/05	0923	0016	37.0000	26.5000	3.70000	45.6790	7.10000	140.000
79/07/01								
QUARTER	NUMBER			11.0000	11.0000	11.0000	11.0000	11.0000
	MAXIMUM			26.5000	4.70000	58.0247	7.20000	140.000
	MINIMUM			26.5000	3.70000	45.6790	7.10000	130.000
	SUM			291.500	46.3000	571.604	78.2999	1480.00
	SUM-SQUAR			7724.75	195.950	29865.8	557.369	199400
	MEAN			26.5000	4.20909	51.9640	7.11817	134.545
	VARIANCE			.0000000	.106946	16.3035	.0016846	27.2812
	STAND DEV			.0000000	.327026	4.03776	.0410435	5.22315
	COEF VAR			.0000000	.0776951	.0777030	.0057660	.0388207
	STAND ERR			.0000000	.0986018	1.21743	.0123751	1.57484
79/10/00								

FOURTH QUARTER

017003 0594
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WHEELER RESERVOIR
01077 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 277.98
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00400 PH SU	00095 CNDUCTVY AT 25C MICROMHO
79/10/10	1255	0001	83.0000	20.0000	9.90000	107.609	7.60000	180.000
79/10/10	1300	0003	83.0000	20.0000	9.70000	105.435	7.60000	180.000
79/10/10	1302	0005	83.0000	20.0000	9.60000	104.348	7.60000	180.000
79/10/10	1305	0010	83.0000	20.0000	9.50000	103.261	7.60000	180.000
79/10/10	1310	0016	83.0000	20.0000	9.30000	101.087	7.60000	180.000
79/10/10	1312	0023	83.0000	20.0000	9.10000	98.9130	7.60000	180.000
79/10/10	1314	0030	83.0000	20.0000	9.00000	97.8261	7.60000	180.000
79/10/10	1316	0036	83.0000	19.5000	8.90000	96.7391	7.60000	180.000
79/10/10	1318	0043	83.0000	19.5000	8.60000	93.4782	7.60000	240.000
79/10/01								
QUARTER	NUMBER			9.00000	9.00000	9.00000	9.00000	9.00000
	MAXIMUM			20.0000	9.90000	107.609	7.60000	240.000
	MINIMUM			19.5000	8.60000	93.4782	7.60000	180.000
	SUM			179.000	83.5999	908.695	68.3999	1680.00
	SUM-SQUAR			3560.50	777.979	91916.1	519.839	316800
	MEAN			19.8889	9.28888	100.966	7.59999	186.667
	VARIANCE			.0487671	.178680	21.1094	.0000335	400.016
	STAND DEV			.220833	.422706	4.59449	.0055243	20.0004
	COEF VAR			.0111033	.0455067	.0455053	.0007269	.107145
	STAND ERR			.0736109	.140902	1.53150	.0018414	6.66680
80/01/00								

017005 0600
34 44 59.0 087 16 10.0 2
WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 283.94
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00310 BOD 5 DAY MG/L	00335 COD LOWLEVEL MG/L	00400 PH SU	00410 T ALK CACO3 MG/L	00095 CNDUCTVY AT 25C MICROMHO
79/10/10	1008	0001	16.0000	19.9000	8.10000	88.0434			7.50000		160.000
79/10/10	1010	0003	16.0000	19.9000	8.10000	88.0434	1.60000	7.00000	7.50000	30.0000	160.000
79/10/10	1012	0005	16.0000	19.9000	8.00000	86.9565			7.50000		160.000
79/10/10	1014	0010	16.0000	19.9000	8.00000	86.9565			7.50000		160.000
79/10/10	1016	0016	16.0000	19.9000	8.00000	86.9565	1.60000	6.00000	7.50000	29.0000	160.000
79/10/10	1018	0020	16.0000	19.9000	8.00000	86.9565			7.50000		160.000
79/10/10	1020	0023	16.0000	19.9000	8.00000	86.9565			7.50000		160.000
79/10/10	1022	0026	16.0000	19.9000	8.00000	86.9565			7.50000		160.000
79/10/10	1028	0001	40.0000	19.5000	10.0000	108.696			7.60000		170.000
79/10/10	1030	0003	40.0000	20.5000	9.80000	108.889	1.80000	5.00000	7.60000	28.0000	170.000
79/10/10	1032	0005	40.0000	20.5000	9.80000	108.889			7.60000		170.000
79/10/10	1035	0010	40.0000	20.5000	9.70000	107.778			7.60000	29.0000	170.000
79/10/10	1040	0016	40.0000	20.0000	9.20000	100.0000	1.60000	6.00000	7.60000	28.0000	170.000
79/10/10	1042	0023	40.0000	20.0000	9.10000	98.9130			7.60000		170.000
79/10/10	1044	0030	40.0000	20.0000	9.10000	98.9130			7.60000		170.000
79/10/10	1046	0033	40.0000	20.0000	9.10000	98.9130			7.60000		170.000
79/10/10	1058	0001	78.0000	20.2000	7.60000	82.6087			7.60000		160.000
79/10/10	1100	0003	78.0000	20.2000	7.60000	82.6087	1.80000	6.00000	7.60000	30.0000	160.000
79/10/10	1102	0005	78.0000	20.2000	7.60000	82.6087			7.60000		160.000
79/10/10	1104	0010	78.0000	20.2000	7.60000	82.6087			7.60000		160.000
79/10/10	1108	0016	78.0000	20.2000	7.50000	81.5217	1.80000	13.0000	7.60000	30.0000	160.000
79/10/10	1110	0023	78.0000	20.2000	7.50000	81.5217			7.60000		160.000
79/10/10	1112	0030	78.0000	20.2000	7.50000	81.5217			7.60000		160.000
79/10/10	1115	0033	78.0000	20.2000	7.40000	80.4347	1.60000	9.00000	7.60000	29.0000	160.000
79/10/01											
QUARTER	NUMBER			24.0000	24.0000	24.0000	7.00000	7.00000	24.0000	8.00000	24.0000
	MAXIMUM			20.5000	10.0000	108.889	1.80000	13.0000	7.60000	30.0000	170.000
	MINIMUM			19.5000	7.40000	80.4347	1.60000	5.00000	7.50000	28.0000	160.000
	SUM			481.800	200.300	2184.25	11.8000	52.0000	181.600	233.000	3920.00
	SUM-SQUAR			9673.39	1689.01	201071	19.9600	432.000	1374.16	6791.00	640800
	MEAN			20.0750	8.34583	91.0103	1.68571	7.42857	7.56666	29.1250	163.333
	VARIANCE			.0551970	.753874	99.2174	.0114314	7.61910	.0022716	.696429	23.1929
	STAND DEV			.234940	.868259	9.96079	.106918	2.76027	.0476610	.834523	4.81590
	COEF VAR			.0117031	.104035	.109447	.0634257	.371575	.0062988	.0286531	.0294851
	STAND ERR			.0479570	.177233	2.03324	.0404111	1.04328	.0097288	.295048	.983042
80/01/00											

017005 0600
36 44 59.0 087 16 10.0 2
WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 283.94
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00929 SODIUM NA,TOT MG/L	00945 SULFATE SO4-TOT MG/L	00940 CHLORIDE CL MG/L	00610 NH3+NH4- N TOTAL MG/L	00630 NO2&NO3 N-TOTAL MG/L	00605 ORG N N MG/L	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L
79/10/10	1008	0001	16.0000								
79/10/10	1010	0003	16.0000	5.40000	16.0000	6.00000	.0899999	.340000	.170000	100.000	7.00000
79/10/10	1012	0005	16.0000								
79/10/10	1014	0010	16.0000								
79/10/10	1016	0016	16.0000	5.30000	14.0000	6.00000	.0799999	.340000	.160000	100.000	11.0000
79/10/10	1018	0020	16.0000								
79/10/10	1020	0023	16.0000								
79/10/10	1022	0026	16.0000								
79/10/10	1028	0001	40.0000								
79/10/10	1030	0003	40.0000	4.90000	13.0000	6.00000	.0500000	.950000	.170000	100.000	2.00000
79/10/10	1032	0005	40.0000								
79/10/10	1035	0010	40.0000				.0400000	.660000	.140000		
79/10/10	1040	0016	40.0000	4.80000	13.0000	6.00000	.0600000	1.00000	.160000	100.000	4.00000
79/10/10	1042	0023	40.0000								
79/10/10	1044	0030	40.0000								
79/10/10	1045	0033	40.0000								
79/10/10	1058	0001	78.0000								
79/10/10	1100	0003	78.0000	4.90000	14.0000	6.00000	.100000	.450000	.190000	100.000	9.00000
79/10/10	1102	0005	78.0000								
79/10/10	1104	0010	78.0000								
79/10/10	1108	0016	78.0000	4.80000	17.0000	6.00000	.0600000	.370000	.160000	100.000	7.00000
79/10/10	1110	0023	78.0000								
79/10/10	1112	0030	78.0000								
79/10/10	1115	0033	78.0000	4.80000	15.0000	6.00000	.150000	.340000	.180000	70.0000	5.00000
79/10/01											
QUARTER	NUMBER			7.00000	7.00000	7.00000	8.00000	8.00000	8.00000	7.00000	7.00000
	MAXIMUM			5.40000	17.0000	6.00000	.150000	1.00000	.190000	100.000	11.0000
	MINIMUM			4.80000	13.0000	6.00000	.0400000	.340000	.140000	70.0000	2.00000
	SUM			34.9000	102.000	42.0000	.630000	4.45000	1.33000	670.000	45.0000
	SUM-SQUAR			174.390	1500.00	252.000	.0583000	3.02430	.222700	64900.0	345.000
	MEAN			4.98571	14.5714	6.00000	.0787499	.556250	.166250	95.7143	6.42857
	VARIANCE			.0548244	2.28577	.0000000	.0012411	.0784268	.0002268	128.576	9.28577
	STAND DEV			.234606	1.51187	.0000000	.0352289	.280048	.0150600	11.3391	3.04726
	COEF VAR			.0510672	.103756	.0000000	.447351	.503457	.0905866	.118469	.474018
	STAND ERR			.0962321	.571435	.0000000	.0124553	.0990118	.0053245	4.28579	1.15175
80/01/00											

017006 0609
34 44 48.0 087 11 17.0 2
WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 288.78
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00400 PH SU	00095 CNDUCTVY AT 25C MICROMHO
79/10/10	1147	0001	41.0000	20.0000	9.40000	102.174	7.60000	170.000
79/10/10	1150	0003	41.0000	20.0000	9.30000	101.087	7.60000	170.000
79/10/10	1152	0005	41.0000	20.0000	9.20000	100.000	7.60000	170.000
79/10/10	1155	0010	41.0000	20.0000	9.10000	98.9130	7.60000	170.000
79/10/10	1200	0015	41.0000	20.0000	9.00000	97.8261	7.60000	170.000
79/10/10	1203	0020	41.0000	20.0000	9.00000	97.8261	7.60000	170.000
79/10/01								
QUARTER	NUMBER			6.00000	6.00000	6.00000	6.00000	6.00000
	MAXIMUM			20.0000	9.40000	102.174	7.60000	170.000
	MINIMUM			20.0000	9.00000	97.8261	7.60000	170.000
	SUM			120.000	55.0000	597.825	45.6000	1020.00
	SUM-SQUAR			2400.00	504.300	59581.7	346.560	173400
	MEAN			20.0000	9.16666	99.6376	7.59999	170.000
	VARIANCE			.0000000	.0266602	3.16953	.0000977	.0000000
	STAND DEV			.0000000	.163279	1.78032	.0098821	.0000000
	COEF VAR			.0000000	.0178123	.0178679	.0013003	.0000000
	STAND ERR			.0000000	.0666584	.726812	.0040344	.0000000
80/01/00								

01700[illegible] 0615
34 43 27.0 087 08 58.0 2
WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 291.76
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 %SAMPLOC FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00310 BOD 5 DAY MG/L	00335 COD LOWLEVEL MG/L	00400 PH SU	00410 T ALK CACO3 MG/L	00095 CNDUCTVY AT 25C MICROMHO
79/10/1[illegible]	0922	0001	36.0000	20.0000	9.60000	104.348			7.60000		170.000
79/10/10	0925	0003	36.0000	20.0000	9.40000	102.174	1.30000	6.00000	7.60000	28.0000	170.000
79/10/10	0927	0005	36.0000	20.5000	9.20000	102.222			7.60000		170.000
79/10/10	0930	0010	36.0000	20.0000	9.10000	98.9130			7.60000	28.0000	170.000
79/10/10	0935	0016	36.0000	20.0000	9.00000	97.8261	1.40000	[illegible].00000	7.60000	29.0000	170.000
79/10/10	0937	0020	36.0000	20.0000	9.00000	97.8261			7.60000		170.000
79/10/10	0945	0001	60.0000	20.1000	8.30000	90.2174			7.50000		160.000
79/10/10	0947	0003	60.0000	20.5000	8.20000	91.1111			7.50000		160.000
79/10/10	0949	0005	60.0000	20.5000	8.20000	91.1111			7.50000		160.000
79/10/10	0951	0007	60.0000	20.5000	8.20000	91.1111			7.50000		160.000
79/10/10	0953	0010	60.0000	20.5000	8.20000	91.1111			7.50000		160.000
79/10/10	1000	0002	84.0000	20.4000	8.30000	90.2174			7.50000		160.000
79/10/10	1005	0003	84.0000	20.4000	8.30000	90.2174	1.80000	4.00000	7.50000	31.0000	160.000
79/[illegible]/10	1007	0005	84.0000	20.4000	8.30000	90.2174			7.50000		160.000
79/10/10	1010	0010	84.0000	20.4000	8.20000	89.1304			7.50000		160.000
79/10/10	1015	0016	84.0000	20.4000	8.20000	89.1304	1.50000	5.00000	7.50000	30.0000	160.000
79/10/10	1017	0023	84.0000	20.4000	8.20000	89.1304			7.50000		160.000
79/10/01											
QUARTER	NUMBER			17.0000	17.0000	17.0000	4.00000	4.00000	17.0000	5.00000	17.0000
	MAXIMUM			20.5000	9.60000	104.348	1.80000	8.00000	7.60000	31.0000	170.000
	MINIMUM			20.0000	8.20000	89.1304	1.30000	4.00000	7.50000	28.0000	160.000
	SUM			345.000	145.900	1596.01	6.00000	23.0000	128.100	146.000	2780.00
	SUM-SQUAR			7002.19	1256.21	150295	9.13999	141.060	965.310	4270.00	455000
	MEAN			20.2941	8.58235	93.8831	1.50000	5.75000	7.53529	29.2000	163.529
	VARIANCE			.0471191	.252869	28.5156	.0466681	2.91667	.0024567	1.70117	24.2695
	STAND DEV			.217069	.502860	5.34000	.216028	1.70782	.0495648	1.30429	4.92641
	COEF VAR			.0106962	.0585924	.0568793	.144019	.297013	.0065777	.0446675	.0301255
	STAND ERR			.0526471	.121962	1.29514	.108014	.853912	.0120212	.583296	1.19483
80/01/00											

017007 0615
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WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 291.76
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC # FROM RT BANK	00929 SODIUM NA,TOT MG/L	00945 SULFATE SO4-TOT MG/L	00940 CHLORIDE CL MG/L	00610 NH3+NH4- N TOTAL MG/L	00630 NO2&NO3 N-TOTAL MG/L	00605 ORG N N MG/L	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L
79/10/10	0922	0001	36.0000								
79/10/10	0925	0003	36.0000	5.00000	13.0000	6.00000	.0500000	.630000	.180000	90.0000	6.00000
79/10/10	0927	0005	36.0000								
79/10/10	0930	0010	36.0000				.0799999	.900000	.180000		
79/10/10	0935	0016	36.0000	5.20000	12.0000	6.00000	.0500000	.630000	.180000	100.000	18.0000
79/10/10	0937	0020	36.0000								
79/10/10	0945	0001	60.0000								
79/10/10	0947	0003	60.0000								
79/10/10	0949	0005	60.0000								
79/10/10	0951	0007	60.0000								
79/10/10	0953	0010	60.0000								
79/10/10	1000	0001	84.0000								
79/10/10	1005	0003	84.0000	4.90000	15.0000	6.00000	.0600000	.390000	.150000	110.000	16.0000
79/10/10	1007	0005	84.0000								
79/10/10	1010	0010	84.0000								
79/10/10	1015	0016	84.0000	5.00000	17.0000	6.00000	.120000	.370000	.170000	110.000	15.0000
79/10/10	1017	0023	84.0000								
79/10/01											
QUARTER	NUMBER			4.00000	4.00000	4.00000	5.00000	5.00000	5.00000	4.00000	4.00000
	MAXIMUM			5.20000	17.0000	6.00000	.120000	.630000	.180000	110.000	18.0000
	MINIMUM			4.90000	12.0000	6.00000	.0500000	.370000	.150000	90.0000	6.00000
	SUM			20.1000	57.0000	24.0000	.360000	2.42000	.860000	410.000	55.0000
	SUM-SQUAR			101.050	827.000	144.000	.0294000	1.24280	.148600	42300.0	841.000
	MEAN			5.02500	14.2500	6.00000	.0719999	.484000	.172000	102.500	13.7500
	VARIANCE			.0158641	4.91667	.0000000	.0008700	.0178307	.0001700	91.6667	28.2500
	STAND DEV			.125953	2.21736	.0000000	.0294959	.133719	.0130381	9.57427	5.31507
	COEF VAR			.0250652	.155604	.0000000	.409666	.276278	.0758029	.0934075	.386551
	STAND ERR			.0629763	1.10868	.0000000	.0131910	.0598008	.0058308	4.78713	2.65754
80/01/00											

017008 0624
34 42 10.0 087 07 39.0 2
WHEELER RESERVOIR
01079 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 293.70
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00400 PH SU	00095 CNDUCTVY AT 25C MICROMHO
79/10/10	0907	0001	65.0000	20.6000	8.40000	93.3333	7.50000	160.000
79/10/10	0909	0003	65.0000	20.5000	8.30000	92.2222	7.50000	160.000
79/10/10	0911	0005	65.0000	20.5000	8.20000	91.1111	7.50000	160.000
79/10/10	0913	0007	65.0000	20.4000	8.20000	89.1304	7.50000	160.000
79/10/10	0915	0010	65.0000	20.4000	8.20000	89.1304	7.50000	160.000
79/10/10	0917	0013	65.0000	20.1000	8.10000	88.0434	7.50000	160.000
79/10/10	1028	0001	88.0000	21.5000	9.40000	106.818	7.60000	180.000
79/10/10	1030	0003	88.0000	21.5000	9.40000	106.818	7.60000	180.000
79/10/10	1032	0005	88.0000	21.5000	9.30000	105.682	7.60000	180.000
79/10/10	1035	0010	88.0000	20.5000	9.20000	102.222	7.60000	180.000
79/10/10	1040	0016	88.0000	20.0000	9.10000	98.9130	7.60000	180.000
79/10/10	1042	0023	88.0000	19.5000	9.10000	98.9130	7.60000	180.000
79/10/10	1045	0030	88.0000	19.5000	9.10000	98.9130	7.60000	180.000
79/10/01								
QUARTER	NUMBER			13.0000	13.0000	13.0000	13.0000	13.0000
	MAXIMUM			21.5000	9.40000	106.818	7.60000	180.000
	MINIMUM			19.5000	8.10000	88.0434	7.50000	160.000
	SUM			266.500	114.000	1261.25	98.1999	2220.00
	SUM-SQUAR			5468.69	1003.06	122947	741.818	380400
	MEAN			20.5000	8.76922	97.0191	7.55384	170.769
	VARIANCE			.456753	.280660	48.4583	.0026652	107.598
	STAND DEV			.674353	.529774	6.96120	.0516256	10.3778
	COEF VAR			.0328953	.0604128	.0717507	.0068343	.0607707
	STAND ERR			.187032	.146933	1.93069	.0143184	2.87827
80/01/00								

017009 0636
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WHEELER RESERVOIR
01083 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 295.87
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00062 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00310 BOD 5 DAY MG/L	00335 COD LOWLEVEL MG/L	00400 PH SU	00410 T ALK CACO3 MG/L	00095 CNDUCTVY AT 25C MICROMHO
79/10/10	0940	0001	82.0000	18.5000	8.60000	91.4893			7.60000		160.000
79/10/10	0942	0003	82.0000	18.5000	8.50000	90.4255			7.60000		160.000
79/10/10	0944	0005	82.0000	18.5000	8.50000	90.4255			7.60000		160.000
79/10/10	0946	0007	82.0000	18.5000	8.50000	90.4255			7.60000		160.000
79/10/10	0948	0010	82.0000	18.5000	8.50000	90.4255			7.60000		160.000
79/10/10	0950	0013	82.0000	18.5000	8.50000	90.4255			7.60000		160.000
79/10/10	0958	0001	44.0000	19.5000	9.10000	98.9130			7.60000		170.000
79/10/10	1000	0003	44.0000	19.5000	9.00000	97.8261	1.60000	10.0000	7.60000	29.0000	170.000
79/10/10	1002	0005	44.0000	19.5000	9.00000	97.8261			7.60000		170.000
79/10/10	1005	0010	44.0000	19.5000	9.00000	97.8261			7.60000	29.0000	170.000
79/10/10	1010	0016	44.0000	19.5000	9.00000	97.8261	1.30000	11.0000	7.60000	29.0000	170.000
79/10/10	1012	0023	44.0000	19.5000	9.00000	97.8261			7.60000		170.000
79/10/01											
QUARTER	NUMBER			12.0000	12.0000	12.0000	2.00000	2.00000	12.0000	3.00000	12.0000
	MAXIMUM			19.5000	9.10000	98.9130	1.60000	11.0000	7.60000	29.0000	170.000
	MINIMUM			18.5000	8.50000	90.4255	1.30000	10.0000	7.60000	29.0000	160.000
	SUM			228.000	105.200	1131.66	2.90000	21.0000	91.1999	87.0000	1980.00
	SUM-SQUAR			4335.00	923.020	106888	4.25000	221.000	693.118	2523.00	327000
	MEAN			19.0000	8.76666	94.3049	1.45000	10.5000	7.59999	29.0000	165.000
	VARIANCE			.272727	.0697354	15.1591	.0450020	.500000	.0000000	.0000000	27.2727
	STAND DEV			.522233	.264075	3.89347	.212137	.707107	.0000000	.0000000	5.22233
	COEF VAR			.0274859	.0301226	.0412860	.146301	.0673434	.0000000	.0000000	.0316505
	STAND ERR			.150756	.0762317	1.12395	.150003	.500000	.0000000	.0000000	1.50756
80/01/00											

017009 0636
34 41 06.0 087 05 55.0 2
WHEELER RESERVOIR
01083 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 295.87
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00929 SODIUM NA,TOT MG/L	00945 SULFATE SO4-TOT MG/L	00940 CHLORIDE CL MG/L	00610 NH3+NH4- N TOTAL MG/L	00630 NO2&NO3 N-TOTAL MG/L	00605 ORG N N MG/L	70300 RESIDUE DISS-180 C MG/L	00530 RESIDUE TOT NFLT MG/L
79/10/10	0940	0001	82.0000								
79/10/10	0942	0003	82.0000								
79/10/10	0944	0005	82.0000								
79/10/10	0946	0007	82.0000								
79/10/10	0948	0010	82.0000								
79/10/10	0950	0013	82.0000								
79/10/10	0958	0001	44.0000								
79/10/10	1000	0003	44.0000	5.50000	14.0000	6.00000	.0799999	.370000	.180000	90.0000	8.00000
79/10/10	1002	0005	44.0000								
79/10/10	1005	0010	44.0000				.110000	.370000	.150000		
79/10/10	1010	0018	44.0000	5.40000	14.0000	6.00000	.0899999	.740000	.140000	90.0000	7.00000
79/10/10	1012	0023	44.0000								
79/10/01											
QUARTER	NUMBER			2.00000	2.00000	2.00000	3.00000	3.00000	3.00000	2.00000	2.00000
	MAXIMUM			5.50000	14.0000	6.00000	.110000	.740000	.180000	90.0000	8.00000
	MINIMUM			5.40000	14.0000	6.00000	.0799999	.370000	.140000	90.0000	7.00000
	SUM			10.9000	28.0000	12.0000	.280000	1.48000	.470000	180.000	15.0000
	SUM-SQUAR			59.4100	392.000	72.0000	.0266000	.821400	.0744999	16200.0	113.000
	MEAN			5.45000	14.0000	6.00000	.0933333	.493333	.156667	90.0000	7.50000
	VARIANCE			.0050049	.0000000	.0000000	.0002333	.0456337	.0004333	.0000000	.500000
	STAND DEV			.0707451	.0000000	.0000000	.0152752	.213621	.0208165	.0000000	.707107
	COEF VAR			.0129808	.0000000	.0000000	.163663	.433015	.132871	.0000000	.0942808
	STAND ERR			.0500244	.0000000	.0000000	.0088191	.123334	.0120184	.0000000	.500000
80/01/00											

017012 0717
34 53 58.0 088 06 30.0 2
WHEELER RESERVOIR
01 ALABAMA
TENNESSEE RIVER BASIN 040890
TENNESSEE RIVER 307.52
131TVAC
0000 FEET DEPTH CLASS 00

/TYPA/AMBNT/STREAM

DATE FROM TO	TIME OF DAY	DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00300 DO MG/L	00301 DO SATUR PERCENT	00400 PH SU	00095 CNDUCTVY AT 25C MICROMHO
79/10/10	0832	0001	24.0000	20.0000	8.80000	95.6521	7.60000	170.000
79/10/10	0834	0003	24.0000	20.0000	8.80000	95.6521	7.60000	170.000
79/10/10	0835	0005	24.0000	20.0000	8.70000	94.5652	7.60000	170.000
79/10/10	0837	0010	24.0000	20.0000	8.70000	94.5652	7.60000	170.000
79/10/10	0840	0016	24.0000	20.0000	8.70000	94.5652	7.60000	170.000
79/10/10	0842	0023	24.0000	20.0000	8.60000	93.4782	7.60000	170.000
79/10/10	0900	0001	37.0000	19.5000	8.90000	96.7391	7.60000	170.000
79/10/10	0902	0003	37.0000	20.0000	8.80000	95.6521	7.60000	170.000
79/10/10	0904	0005	37.0000	20.0000	8.80000	95.6521	7.60000	170.000
79/10/10	0906	0010	37.0000	20.0000	8.70000	94.5652	7.60000	170.000
79/10/10	0908	0016	37.0000	20.0000	8.70000	94.5652	7.60000	170.000
79/10/01								
QUARTER	NUMBER			11.0000	11.0000	11.0000	11.0000	11.0000
	MAXIMUM			20.0000	8.90000	96.7391	7.60000	170.000
	MINIMUM			19.5000	8.60000	93.4782	7.60000	170.000
	SUM			219.500	96.1999	1045.65	83.5999	1870.00
	SUM-SQUAR			4380.25	841.379	99406.7	635.358	317900
	MEAN			19.9545	8.74545	95.0592	7.59999	170.000
	VARIANCE			.0230469	.0068115	.800000	.0000000	.0000000
	STAND DEV			.151812	.0825319	.894427	.0000000	.0000000
	COEF VAR			.0076079	.0094371	.0094092	.0000000	.0000000
	STAND ERR			.0457730	.0248843	.269680	.0000000	.0000000
80/01/00								

APPENDIX C

BIOLOGICAL DATA, BROWNS FERRY NUCLEAR PLANT

APPENDIX C

BIOLOGICAL DATA, BROWNS FERRY NUCLEAR PLANT

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Table 1

PHYTOPLANKTON POPULATIONS BY YEAR (WINTER - 1969-1979)

BROWNS FERRY NUCLEAR PLANT

Year	Phytoplankters/1 (mean values) All Stations[a]	Control (Above BFNP)[b]	Below BFNP[c]	Percentage Increase Below or Above BFNP
		Preoperational		
1969	2,560,437	2,632,750	2,517,050	5 - Above
1970	1,704,644	1,503,867	1,825,110	21 - Below
1971	213,313	N/A	N/A	
1972	222,376	192,135	240,251	25 - Below
1973	92,233	120,419	75,322	60 - Above
		Operational		
1974	70,494	81,315	64,002	27 - Above
1975	41,841	35,792	45,470	27 - Below
1976	366,451	308,039	401,497	30 - Below
1977	1,459,633	1,399,532	1,495,695	7 - Below
1978	500,030	585,611	448,681	31 - Above
1979	2,453,063	2,510,690	2,418,486	4 - Above

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.97, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70

Table 2

PHYTOPLANKTON POPULATIONS BY STATION - 1969-1979 (WINTER)

BROWNS FERRY NUCLEAR PLANT

TRM	Phytoplankters/l (mean values) Preoperational (1969-1973)	Operational 1974	1975	1976	1977	1978	1979
277.98	894,130	31,247	55,469	433,374	1,115,115	412,354	2,395,435
283.94	1,060,138	51,394	31,637	366,012	1,322,196	401,241	2,454,620
288.78	938,537	53,175	35,061	447,521	1,751,971	492,125	2,791,040
291.76	1,052,257	93,192	44,922	388,336	1,836,337	465,138	1,918,840
293.70	1,104,488	91,000	60,262	372,242	1,452,854	472,546	2,532,495
295.87[a]	1,068,223	67,428	30,678	292,291	1,016,779	447,146	2,629,060
301.06[a]	1,075,956	76,198	41,635	329,152	1,553,655	666,221	2,158,695
307.52[a]	1,192,699	100,320	35,061	302,674	1,628,161	643,467	2,744,315

a. Control stations

Table 3

DIVERSITY OF PHYTOPLANKTON GENERA, BROWNS FERRY NUCLEAR PLANT (WINTER)

TRM	Phytoplankton Genera Collected During Every Preoperational Sampling Period (69, 70, 72, 73)		Phytoplankton Genera Collected During Every Preoperational Sampling Period, But Not Found In Winter, 1979		Phytoplankton Genera Found For First Time During Winter Operational Sampling, 1979		
	CHRYSOPHYTA	CHLOROPHYTA	CHRYSOPHYTA	CHLOROPHYTA	CHRYSOPHYTA	CHLOROPHYTA	CYANOPHYTA
277.98	Melosira Navicula Synedra					Eudorina Oocystis Pyramimonas Tetrastrum	
283.94	Cyclotella Melosira Navicula Synedra		Cyclotella		Rhoicosphenia	Dactylococcus Pyramimonas	
288.78	Cyclotella Melosira Navicula Synedra		Cyclotella			Kirchneriella Pyramimonas	
291.76	Cyclotella Melosira Navicula Synedra	Scenedesmus				Quadrigula Franceia	
293.70	Cyclotella Melosira Navicula Synedra		Cyclotella			Pyramimonas	
295.87	Cyclotella Melosira Navicula Synedra	Cosmarium Scenedesmus	Cyclotella	Cosmarium		Tetrastrum	Lyngbya
301.06	Cyclotella Melosira Navicula Synedra		Cyclotella		Nitzschia	Carteria Polyedriopsis Quadrigula Utothrix	
307.52	Melosira Navicula Synedra Cyclotella		Cyclotella		Synura	Arthrodesmus Stigeoclonium	Lyngbya

Table 4

MAJOR GROUPS OF PHYTOPLANKTON POPULATIONS BY YEAR - 1969-1979 (WINTER)

BROWNS FERRY NUCLEAR PLANT

		Percentage Phytoplankton Population by Major Groups								
		Chrysophyta			Chlorophyta			Cyanophyta		
	Year	All Stations[a]	Above[b]	Below[c]	All Stations[a]	Above[b]	Below[c]	All Stations[a]	Above[b]	Below[c]
Preoperational	1969	47	49	45	47	46	48	6	4	7
	1970	55	49	59	41	46	37	4	5	4
	1971	64[d]	M	N/A[e]	29[d]	M	N/A[e]	6[d]	M	N/A[e]
	1972	84	86	83	9	9	9	7	5	8
	1973	82	82	83	15	16	15	2	3	2
Operational	1974	78	78	79	12	11	14	7	9	5
	1975	69	75	65	24	16	29	4	5	3
	1976	50	59	45	17	13	19	32	28	35
	1977	79	79	79	10	8	11	11	14	9
	1978	58	58	58	26	27	26	15	14	15
	1979	61	59	63	19	22	18	19	18	19

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70
d. TRM 277.98, 283.94, 288.78, 291.76 only
e. Not applicable because data are available for only four stations below BFNP and these data are shown as indicated by "d."

Note: M - Sample missing

Table 5

PERCENTAGE DIVERSITY FOR MAJOR GROUPS OF PHYTOPLANKTON

BY RIVER MILE AND YEAR - 1969-1979 (WINTER)

BROWNS FERRY NUCLEAR PLANT

		Major Group Percentage Present												
		Preoperational						Operational						
TRM	Major Groups	1969	1970	1971	1972	1973	X	1974	1975	1976	1977	1978	1979	X
277.98	Chrysophyta	50	63	60	68	86	65	83	65	39	89	56	60	65
	Chlorophyta	44	34	32	11	9	26	11	30	12	2	24	18	16
	Cyanophyta	6	4	8	21	[illegible]	9	3	2	48	4	19	22	16
283.94	Chrysophyta	42	54	68	88	96	70	73	75	44	80	52	70	66
	Chlorophyta	43	43	27	8	4	25	21	17	18	12	26	17	19
	Cyanophyta	15	3	5	4	0	5	5	4	36	8	20	13	14
288.78	Chrysophyta	43	53	65	88	80	66	87	64	49	78	58	67	67
	Chlorophyta	52	42	28	4	20	29	9	28	19	11	32	18	20
	Cyanophyta	5	5	7	8	0	5	3	5	31	11	9	15	12
291.76	Chrysophyta	43	56	64	88	75	65	79	64	48	77	62	71	67
	Chlorophyta	54	41	30	9	23	31	11	31	24	15	24	17	20
	Cyanophyta	3	3	6	3	2	3	5	3	27	7	13	11	11
293.70	Chrysophyta	48	69	M	82	78	69	72	57	45	73	61	46	59
	Chlorophyta	47	27	M	12	21	27	16	38	21	11	25	17	21
	Cyanophyta	5	4	M	6	1	4	11	2	33	16	14	36	19
295.87	Chrysophyta	50	50	M	82	82	66	75	78	63	84	68	48	69
	Chlorophyta	46	46	M	8	16	29	14	11	11	6	24	22	15
	Cyanophyta	4	4	M	10	2	5	7	9	25	9	8	29	15
301.06	Chrysophyta	49	51	M	92	83	69	85	72	53	70	53	64	66
	Chlorophyta	46	43	M	6	16	28	6	14	13	11	30	21	16
	Cyanophyta	5	6	M	2	1	3	5	7	33	19	16	13	16

Table 5
(continued)

PERCENTAGE DIVERSITY FOR MAJOR GROUPS OF PHYTOPLANKTON

BY RIVER MILE AND YEAR - 1969-1979 (WINTER)

BROWNS FERRY NUCLEAR PLANT

		Major Group Percentage Present												
		Preoperational						Operational						
TRM	Major Groups	1969	1970	1971	1972	1973	X	1974	1975	1976	1977	1978	1979	X
307.52	Chrysophyta	49	46	M	84	80	65	72	75	60	81	54	64	68
	Chlorophyta	47	49	M	12	15	31	12	23	14	6	26	22	17
	Cyanophyta	4	5	M	4	5	4	13	0	25	13	17	13	14

Note: M = Sample missing

Table 6

NUMERICAL GENERA DIVERSITY FOR MAJOR GROUPS OF PHYTOPLANKTON

BY RIVER MILE - 1969-1979 (WINTER)

BROWNS FERRY NUCLEAR PLANT

TRM	Major Groups	Number of Genera									
		Preoperational				Operational					
		1969	1970	1972	1973	1974	1975	1976	1977	1978	1979
277.98	Chrysophyta	10	7	12	7	5	6	12	9	9	11
	Chlorophyta	7	5	3	2	2	7	14	13	15	19
	Cyanophyta	1	1	1	1	1	2	4	2	5	4
	Total	18	13	16	10	8	15	30	24	29	34
283.94	Chrysophyta	7	6	12	5	7	8	13	9	9	12
	Chlorophyta	5	6	2	1	3	3	15	9	14	14
	Cyanophyta	1	1	3	0	1	1	5	4	6	3
	Total	13	13	17	6	11	12	33	22	29	29
288.78	Chrysophyta	7	6	12	10	5	5	15	11	8	12
	Chlorophyta	5	6	2	4	2	6	14	12	14	14
	Cyanophyta	1	2	1	0	1	1	4	4	4	4
	Total	13	14	15	14	8	12	33	27	26	28
291.76	Chrysophyta	9	5	13	10	6	5	13	11	8	11
	Chlorophyta	7	6	2	3	4	6	13	12	16	15
	Cyanophyta	1	2	2	1	1	1	5	3	4	3
	Total	17	13	17	14	11	12	31	26	27	29
293.70	Chrysophyta	9	6	10	9	5	5	13	10	8	10
	Chlorophyta	5	6	6	5	4	5	10	13	16	13
	Cyanophyta	1	2	2	1	2	1	4	3	5	3
	Total	15	14	18	15	11	11	27	26	29	26
295.87	Chrysophyta	10	7	15	5	8	5	11	8	10	12
	Chlorophyta	8	7	4	3	3	2	10	8	14	15
	Cyanophyta	2	2	2	1	2	1	4	3	5	5
	Total	20	16	21	9	13	8	25	19	29	32
301.06	Chrysophyta	8	4	8	10	6	5	14	11	10	9
	Chlorophyta	3	4	2	4	3	3	13	11	17	18
	Cyanophyta	1	1	1	1	2	1	4	3	5	4
	Total	12	9	11	15	11	9	31	25	32	31
307.52	Chrysophyta	8	6	11	10	7	4	15	10	10	13
	Chlorophyta	5	5	2	2	2	4	10	14	18	17
	Cyanophyta	2	2	1	1	2	0	4	5	5	6
	Total	15	13	14	13	11	8	29	29	33	36

Table 7

CHLOROPHYLL CONCENTRATIONS BY YEAR (WINTER)

BROWNS FERRY NUCLEAR PLANT

		Surface Phytoplankton Chlorophyll[a] (mg Chl a/m^3) (mean values)			
	Year	All Stations[a]	Control (Above BFNP)[b]	Below BFNP[c]	Percentage Increase Above or Below BFNP
Preoperational	1969	6.14	5.71	6.37	12 - Below
	1970	2.25	2.04	2.35	15 - Below
	1971	2.23	N/A	N/A	N/A
	1972	0.49	0.44	0.51	16 - Below
	1973	1.56	1.94	1.32	47 - Above
Operational	1974	4.84	5.27	4.59	15 - Above
	1975	0.87	0.47	1.10	134 - Below
	1976	1.00	1.17	0.90	30 - Above
	1977	10.70	11.18	10.42	7 - Above
	1978	2.36	3.03	1.96	55 - Above
	1979	1.56	1.65	1.58	4 - Above

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70

C C

Table 8

CHLOROPHYLL CONCENTRATIONS - 1969-1979 (WINTER)

BROWNS FERRY NUCLEAR PLANT

	Surface Phytoplankton Chlorophyll[a] (mg Chl a/m^3) (mean values)						
	Preoperational	Operational					
TRM	(1969-1973)	1974	1975	1976	1977	1978	1979
277.98	2.93	4.63	0.42	0.81	8.39	1.61	1.72
283.94	2.47	4.75	2.37	0.81	8.39	1.80	1.54
288.78	2.79	4.11	0.98	0.94	12.09	2.28	1.30
291.76	2.31	5.36	1.03	0.96	12.13	1.65	1.50
293.70	2.71	4.08	0.72	0.98	11.09	2.46	1.80
295.87[a]	2.83	4.80	0.35	1.12	10.66	2.72	1.72
301.06[a]	2.48	4.93	0.35	1.26	11.78	2.58	1.37
307.52[a]	2.34	6.06	0.70	1.13	11.09	3.78	1.85

a. Control station

Table 9

SUMMARY - DAILY PRIMARY PRODUCTIVITY

BROWNS FERRY CARBON-14 PROGRAM

mg C/m^2/day

	Preoperational								Operational							
	1972				1973				1974				1975			
TRM	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall
277.98	27	280	2,202	896	27	40	1,899	279	16	177	3,784	407	20	22	1,661	356
283.94	21	300	2,720	682	25	74	2,539	1,251	16	155	5,496	632	15	16	1,935	338
288.78	17	223	1,167	240	17	123	452	831	20	145	2,957	353	17	20	887	159
291.76	19	378	1,143	400	23	87	227	254	20	153	2,491	175	19	40	691	53
293.70	30	220	587	236	26	95	157	356	18	82	1,872	253	24	30	374	90
295.87	19	282	511	157	24	102	220	244	20	135	2,129	109	16	38	419	29
301.06	18	270	445	134	25	111	52	143	23	137	1,789	94	20	33	294	102
307.52	18	217	350	61	19	87	89	301	23	142	425	56	22	37	127	16
Mean	22	271	1,141	351	23	90	704	432	19	141	2,618	260	19	30	798	144

Table 9
(continued)

SUMMARY - DAILY PRIMARY PRODUCTIVITY

BROWNS FERRY CARBON-14 PROGRAM

mg C/m^2/day

Operational

	1976				1977				1978				1979			
TRM	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall
277.98	16	1,092	2,072	1,506	115	986	5,092	959	304	2,604	5,728	1,613	26	921	2,716	415
283.94	11	708	2,705	1,225	79	874	3,393	793	263	2,580	7,020	1,553	25	494	3,545	530
288.78	10	471	3,803	562	102	839	4,545	844	422	2,300	7,076	1,754	30	469	5,307	1,666
291.76	16	251	1,271	442	123	563	3,309	521	401	191	7,116	2,257	30	596	4,333	972
293.70	17	1,048	1,926	435	116	1,355	4,779	571	522	1,176	5,571	1,510	32	372	2,373	275
295.87	15	157	888	314	108	445	6,126	325	437	584	11,778	1,679	34	209	2,350	2,013
301.06	16	117	515	251	103	474	1,991	417	357	451	8,390	1,254	36	229	797	1,314
307.52	20	125	156	121	88	524	1,358	225	446	419	1,059	608	36	108	546	66
Mean	15	496	1,668	607	104	758	3,825	582	394	1,288	6,717	1,529	31	425	2,746	906

Table 10

OCCURRENCE OF ZOOPLANKTON SPECIES, BROWNS FERRY NUCLEAR PLANT

	Tennessee River Mile							
	278	284	289	292	294	296	301	308
Cladocera								
Acroperus harpae	0	0	0	3	0	0	0	0
Alona sp.	1	1	0	3	3	0	0	0
Alona costata Sars	3	0	0	3	3	3	0	0
Alona gutta	3	0	3	0	3	0	0	0
Alona intermedia	3	0	0	0	0	0	0	0
Alona quadrangularis Leydig	2	0	1	1	3	2	1	2
Alona rectangula	0	3	3	3	3	3	0	0
Alonella sp.	0	0	3	3	3	0	0	3
Bosmina longirostris (O.F. Muller)	1	1	1	1	1	1	1	1
Camptocercus rectirostris Schodler	0	0	3	0	3	0	2	1
Ceriodaphnia lacustris Birge	1	1	3	3	1	3	3	3
Ceriodaphnia quadrangula (O.F. Muller)	0	1	1	1	3	3	3	3
Ceriodaphnia reticulata	3	0	0	3	0	0	0	0
Chydorus sp.	3	1	3	1	1	1	1	1
Daphnia ambigua	3	3	3	3	0	0	0	0
Daphnia laevis	0	0	3	0	3	0	0	0
Daphnia parvula Fordyce	1	1	1	3	1	3	3	3
Daphnia pulex Leydia	3	0	3	0	3	3	3	3
Daphnia retrocurva Forbes	1	1	1	1	1	1	1	1
Daphnia galeata (Mendotae)	3	0	3	3	3	3	3	3
Diaphanosoma leuchtenbergianum Fischer	1	1	1	1	1	1	1	1
Eurycercus sp.	3	0	3	3	1	0	3	1
Gastropus sp.	3	0	0	0	3	0	3	3
Holopedium gibberum Zaddach	1	1	1	1	1	1	3	1
Ilyocryptus spinifer Herrick	1	1	1	3	1	1	1	1
Latona setifera	0	0	0	0	3	0	0	0
Leptodora kindtii (Focke)	1	1	1	1	1	1	1	1
Leydigia quandrangularis (Leydia)	3	3	0	1	0	3	3	0
Macrothix	3	0	0	3	3	0	0	0
Moina micrura Kurz	3	3	3	3	3	3	3	1
Moina minuta Hansen	3	3	3	3	3	3	3	0
Pleuroxus denticulatus Birge	3	0	3	1	3	3	0	1
Pleuroxus hamulatis Birge	3	0	0	3	3	3	3	0
Scapholebris kingi Sars	0	3	0	3	3	3	3	1
Sida crystallina (O.F. Muller)	3	3	1	1	1	1	1	1
Simocephalus (immature)	2	1	1	3	1	1	2	1
Simocephalus serrulatus	3	3	3	3	3	3	3	3
Simocephalus vetulus Schodler	0	3	2	0	0	0	3	0
Ceriodaphnia (immature)	3	3	0	3	0	0	0	0
Daphnia (immature)	3	3	3	3	3	3	3	0
Copepoda								
Argulus sp.	3	0	3	3	0	0	0	0
Attheyella illinoisensis (S.A. Forbes)	0	3	3	3	3	3	3	3
Calanoida	3	3	3	3	3	3	3	3
Canthocamptus robertcokeri M.S. Wilson	0	3	3	3	3	3	3	3
Canthocamptus staphylinoides Pearse	2	0	0	0	0	2	0	3
Cyclops bicuspidatus thomasi S.A. Forbes	1	1	1	1	1	1	1	1

Table 10 (Continued)

	Tennessee River Mile							
	278	284	289	292	294	296	301	308
Cyclops varicans rubellus Lilljeborg	3	3	3	0	3	3	3	3
Cyclops vernalis Fischer	1	1	1	1	1	1	1	1
Diaptomus birgei Marsh	2	0	0	0	0	0	0	0
Diaptomus dorsalis	3	3	0	3	0	0	3	0
Diaptomus mississippiensis marsh	0	0	0	0	0	3	3	3
Diaptomus pallidus Herrick	1	1	1	1	1	1	1	1
Diaptomus reighardi Marsh	1	1	1	1	1	1	1	1
Cyclopoda	3	3	3	3	3	3	3	3
Diaptomus sanguineus S.A. Forbes	3	1	0	1	3	3	1	3
Epischura fluviatilis	0	0	0	0	0	0	0	3
Ergasilus sp.	1	1	1	1	1	1	1	1
Elaphoidella biden Coronata	0	3	3	0	0	0	0	0
Eucyclops agilis (Koch)	1	1	1	1	1	1	1	1
Eucyclops prionophorus	0	0	0	0	3	0	0	0
Eucyclops speratus (Lilljeborg)	3	0	3	3	3	3	0	0
Harpacticoida	3	3	0	0	3	0	0	3
Macrocyclops albidus (Jurine)	3	3	3	3	0	3	1	3
Mesocyclops edax (S.A. Forbes)	1	1	1	1	1	1	1	1
Nauplii	3	3	3	3	3	3	3	3
Nitocra lucustris Fischer	3	1	1	1	1	1	1	3
Osphranticum labiorectum	0	3	0	0	0	0	0	0
Paracyclops fimbriatus Fischer	3	3	0	0	0	3	0	0
Paracyclops fimbriatus poppei Rehberg	3	0	3	3	3	1	0	0
Parastenocaris sp.	0	0	0	0	3	0	0	0
Tropocyclops prasinus (Fischer)	1	1	1	3	3	1	1	1
Rotifera								
Asplanchna sp.[a]	1	1	1	1	1	1	1	1
Asplanchna herricki	3	3	3	3	3	3	3	3
Asplanchna priodonta	0	0	0	0	3	3	3	0
Bdelloida	0	3	0	3	3	0	0	0
Branchionus angularis Gosse	1	1	1	1	1	1	1	1
Branchionus bennini (Leisslung)	0	0	0	3	3	3	3	0
Branchionus bidentata Anderson	1	3	1	3	1	1	1	1
Branchionus budapestinensis Daday	1	1	1	1	1	1	1	1
Branchionus calcyciflorus Pallas	1	1	1	1	1	1	1	1
Branchionus caudatus Barrois & Daday	1	1	1	1	1	1	1	1
Branchionus havanensis Rousselet	1	1	3	1	1	3	3	1
Branchionus quadridentatus Herman	3	1	3	3	1	1	3	1
Branchionus rubens Ehrenburg	2	0	0	0	0	0	0	0
Branchionus urceorolaris Muller	3	0	3	0	0	3	3	3
Cephalodella sp.	3	3	3	3	3	1	3	3
Collotheca sp.	3	3	3	3	3	3	3	3
Collotheca pelagica	3	3	3	3	1	3	1	1
Conochiloides sp.	1	1	1	1	1	1	1	1
Conochilus hippocrepis (Schrank)	3	3	3	3	3	3	3	3
Conochilus unicornis Burckhardt	1	1	1	1	1	1	1	1
Contracted Rotifera	3	3	3	3	3	3	3	3
Dissotrocha sp.	0	0	0	0	0	0	0	3
Epiphanes macroura Barrois & Daday	3	3	3	3	3	3	3	3

Table 10 (Continued)

	Tennessee River Mile							
	278	284	289	292	294	296	301	308
Euchlanis sp.	3	1	1	1	3	3	3	1
Filinia sp.	1	3	1	3	3	3	1	1
Filinia longiseta	3	3	3	3	3	3	0	3
Hexarthra sp.	1	1	3	3	1	0	3	3
Kellicottia bostoniensis (Rousselet)	1	1	1	1	3	1	1	1
Kellicottai longispina	0	0	0	3	0	0	0	0
Keratella americana (Ahlstrom)	3	3	0	3	3	0	3	3
Keratella cochlearis (Gosse)	1	1	1	1	1	1	1	1
Keratella crassa Ahlstrom	1	1	1	1	1	1	1	1
Keratella earlinae Ahlstrom	3	3	1	3	1	1	1	1
Keratella quadrata	0	0	0	3	3	3	0	0
Keratella valga (Ehrenberg)	3	3	2	0	0	0	0	3
Lecane sp.	3	3	3	3	3	3	3	3
Lepadella sp.	0	3	0	2	0	3	2	3
Macrochaetus sp.	3	0	0	0	0	3	0	0
Monostyla sp.	3	3	1	3	1	3	1	3
Monostyla crenata Harring	0	0	0	0	0	0	0	3
Monostyla quadridentata Ehrenberg	0	0	0	0	0	0	0	0
Notholoca sp.	3	3	3	3	3	1	3	0
Platyias patulus (Muller)	1	1	3	3	1	3	1	1
Platyias quadricornis (Ehrenberg)	1	0	3	3	3	0	0	0
Ploesoma sp.[f]	1	1	1	1	1	1	3	1
Ploesoma hudsoni	3	3	3	3	3	0	0	0
Ploesoma truncata	3	3	3	3	3	3	3	3
Polyarthra sp.	1	1	1	1	1	1	1	1
Pompholyx sulcata Hudson	0	0	0	0	0	0	0	0
Ptygura sp.	0	3	0	0	0	0	0	0
Rotaria	3	0	0	3	3	0	3	3
Rotaria neptunia	3	3	3	3	3	3	3	3
Synchaeta sp.[g]	1	1	1	1	1	1	1	1
Synchaeta stylata	3	3	3	3	3	3	3	3
Testudinella sp.	0	3	0	3	0	0	0	0
Triochocera sp.	1	1	1	1	1	1	1	1
Triochotria sp.	3	3	3	3	1	3	3	1

0. Organism not identified at TRM indicated.
1. Organism identified at TRM indicated in both preoperational and operational monitoring.
2. Organism identified at TRM indicated in only preoperational monitoring.
3. Organism identified at TRM indicated in only operational monitoring.

a. Includes Asplanchna priodonta Gosse, Asplanchna Amphora Western, and Asplanchna herricki.
b. Includes Filinia major (Celditz) and Filinia longiseta.
c. Includes Hexarthra intermedia Wisniewski, Hexarthra mira (Hudson), and Hexarthra hollis.
d. Formerly Keratella gracilenta Ahlstrom.
e. Includes Lecane leontina and Lecane luna.
f. Includes Ploesoma hudsoni (Imhof) and Ploesoma truncantum (Levander).
g. Includes Synchaeta stylata Wierzejsky.

Table 11

NUMBER OF ZOOPLANKTON SPECIES BY MAJOR GROUPS

BROWNS FERRY NUCLEAR PLANT

ALL SEASONS 1973, 1974, 1975, 1976, 1977, 1978, AND 1979

	Control (Above BFNP)[a]	Below BFNP[b]
Species Collected During Only Preoperational Monitoring (Winter, Spring, Summer 1973)		
Cladocera	0	0
Copepoda	0	2
Rotifera	0	1
Species Collected During Only Operational Monitoring (Fall 1973, All Seasons 1974-1979)		
Cladocera	15	22
Copepoda	12	17
Rotifera	21	25
Species Collected During Pre-operational and Operational Monitoring (All Seasons, 1973-1979)		
Cladocera	15	18
Copepoda	13	10
Rotifera	27	28

a. TRM 296, 301, 308
b. TRM 278, 284, 289, 292, 294

Table 12

ZOOPLANKTON DENSITIES

BROWNS FERRY NUCLEAR PLANT

(Organisms/m^3)

	Preoperational 1973				Operational 1974			
TRM	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall
277.98	1,821	2,155	191,959	23,684	1,506	735	208,372	12,527
283.94	-	2,121	100,572	17,826	1,194	923	203,530	8,780
288.78	4,320	1,866	27,394	8,931	3,067	873	79,827	6,658
291.76	3,389	2,830	11,835	19,962	1,514	662	53,560	5,537
293.70	4,773	1,342	23,499	5,144	1,254	753	39,593	4,891
295.87	4,656	2,029	8,744	2,521	1,727	719	33,335	8,702
301.06	4,526	2,043	5,077	1,624	2,522	607	18,640	3,145
307.52	4,454	1,722	18,029	3,402	3,098	1,010	11,088	6,310
Mean	3,991	2,013	48,389	10,387	1,986	785	80,993	7,069

Table 12
(continued)

ZOOPLANKTON DENSITIES
BROWNS FERRY NUCLEAR PLANT

(Organisms/m^3)

	Operational							
	1975				1976			
TRM	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall
277.98	1,975	1,793	184,544	8,895	2,690	45,323	355,219	95,956
283.94	1,011	2,259	212,561	3,725	2,690	4,541	114,543	46,801
288.78	1,319	1,207	22,530	1,698	2,964	4,093	114,306	29,003
291.76	1,709	1,891	28,829	1,835	2,353	4,464	39,343	7,098
293.70	1,350	1,860	31,711	2,605	1,524	5,756	94,587	5,305
295.87	2,113	2,039	11,842	2,243	2,204	1,158	9,431	2,037
301.06	1,486	941	14,204	1,484	2,300	1,961	8,114	2,136
307.52	1,418	918	12,725	1,773	3,050	1,802	8,309	1,907
Mean	1,548	1,613	64,868	3,032	2,472	8,637	92,988	23,780

Table 12
(continued)

ZOOPLANKTON DENSITIES
BROWNS FERRY NUCLEAR PLANT

(Organisms/m^3)

	Operational							
	1977				1978			
TRM	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall
277.98	34,988	242,928	104,263	11,429	14,249	26,899	352,562	110,568
283.94	68,257	232,123	116,427	6,619	30,666	68,019	410,442	69,074
288.78	75,848	37,586	340,877	9,022	13,224	12,697	832,428	50,396
291.76	65,946	46,140	109,479	3,405	17,470	14,838	184,043	44,193
293.70	70,009	37,726	83,933	3,263	15,297	13,506	163,434	15,087
295.87	55,529	41,864	47,345	2,631	19,238	14,253	51,112	39,407
301.06	54,340	50,934	77,953	1,923	21,852	9,065	41,688	9,229
307.52	37,636	25,018	57,810	2,119	14,038	6,165	17,044	9,326
Mean	57,819	89,290	117,260	5,058	18,254	20,680	256,594	43,410

Table 12
(continued)

ZOOPLANKTON DENSITIES
BROWNS FERRY NUCLEAR PLANT

(Organisms/m^3)

	Operational			
	1979			
TRM	Winter	Spring	Summer	Fall
277.98	6,471	4,473	246,894	61,490
283.94	4,855	1,975	421,236	36,552
288.78	8,577	4,288	290,341	3,856
291.76	5,959	5,683	263,271	8,169
293.70	6,584	2,986	108,403	3,193
295.87	4,444	747	13,779	5,862
301.06	7,694	1,466	8,011	2,668
307.52	5,051	1,672	3,682	1,042
Mean	6,204	2,912	169,452	15,354

Table 13

ANNUAL CORBICULA DENSITIES

BROWNS FERRY NUCLEAR PLANT

Corbicula/m^2 (mean values)

		Winter				All Seasons			
	Year	All Stations[a]	Control[b]	Below BFNP[c]	Percentage Increase Below BFNP	All Stations[a]	Control[b]	Below BFNP[c]	Percentage Increase Below BFNP
Preoperational	1969	111	68	133	96	164	147	172	17
	1970	111	58	132	128	112	57	139	144
	1971	71	60	76	27	103	54	127	135
	1972	128	91	146	60	153	72	192	167
	1973	105	44	142	223	Data included in preoperational and operational			
Operational	1974	161	58	223	284	153	72	202	181
	1975	145	100	173	73	150	97	182	88
	1976	163	136	179	32	180	117	219	87
	1977	183	85	242	185	Same as winter 1977 (only samples taken)			
	1978	95	40	128	220	93	45	122	171
	1979	76	26	106	308	Same as winter 1979 (only samples taken)			

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.78, 288.78, 291.76, 293.70

Table 14

CORBICULA POPULATIONS BY STATIONS (WINTER)

BROWNS FERRY NUCLEAR PLANT

	Corbicula/m^2 (mean values)							
	Preoperational		Operational					
TRM	All Seasons	Winter	1974	1975	1976	1977	1978	1979
277.98	83	57	88	44	81	105	109	118
283.9[illegible]	119	68	241	143	143	210	71	47
288.78	209	196	191	183	262	346	237	237
291.76	187	157	400	283	232	368	142	75
293.70	149	100	191	211	179	183	80	53
295.87[a]	108	85	132	195	216	187	40	9
301.06[a]	46	55	20	80	135	54	34	29
307.52[a]	64	45	22	24	58	15	45	40

a. Control stations

Table 15

HEXAGENIA POPULATIONS BY YEAR (WINTER)

BROWNS FERRY NUCLEAR PLANT

		Hexagenia/m^2 (mean values)		
	Year	All Stations[a]	Control[b]	Below BFNP[c]
Preoperational	1969	80	101	69
	1970	57	49	61
	1971	31	44	24
	1972	146	178	130
	1973	53	14	73
Operational	1974	145	19	220
	1975	248	180	289
	1976	223	79	310
	1977	214	181	234
	1978	101	63	124
	1979	44	70	27

a. TRM 277.98, 283.94, 288.78, 291.76, 243.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70

Table 16

HEXAGENIA POPULATIONS BY STATIONS (WINTER)

BROWNS FERRY NUCLEAR PLANT

TRM	Hexagenia/m^2 (mean values)						
	Preoperational	Operational					
	(1969-1973)	1974	1975	1976	1977	1978	1979
277.98	4	2	2	4	62	0	4
283.94	4	129	86	288	102	16	0
288.78	33	467	388	502	330	29	9
291.76	154	290	582	375	430	198	33
293.70	99	211	388	379	245	375	91
295.87[a]	105	56	467	119	410	43	80
301.06[a]	59	0	68	109	134	78	131
307.52[a]	41	0	6	10	0	67	0

a. Control stations

Table 17

CHIRONOMIDAE POPULATIONS BY YEAR (WINTER)

BROWNS FERRY NUCLEAR PLANT

		Chironomidae/m^2 (mean values)			
	Year	All Stations[a]	Control (Above BFNP)[b]	Below BFNP[c]	Percentage Increase Below BFNP
Preoperational	1969	137	101	155	53
	1970	154	136	166	22
	1971	95	68	109	60
	1972	227	103	288	180
	1973	119	21	178	748
Operational	1974	115	29	167	476
	1975	176	57	247	333
	1976	119	21	178	748
	1977	45	17	62	265
	1978	180	52	257	394
	1979	153	38	223	487

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70

Table 18

CHIRONOMIDAE POPULATIONS BY STATION (WINTER)

BROWNS FERRY NUCLEAR PLANT

	Chironomidae/m^2 (mean values)						
		Operational					
TRM	Preoperational	1974	1975	1976	1977	1978	1979
277.98	204	218	352	260	132	296	283
283.94	213	227	173	209	109	562	321
288.78	156	187	390	256	16	177	207
291.76	168	132	192	103	31	80	205
293.70	100	70	130	62	22	171	98
295.87[a]	130	52	58	34	39	58	51
301.06[a]	89	22	78	14	12	51	51
307.52[a]	26	14	34	16	0	47	11

a. Control stations

Table 19

OLIGOCHAETA POPULATIONS BY YEAR, BROWNS FERRY NUCLEAR PLANT

		Oligochaeta/m^2 (mean values)							
		Winter				All Seasons			
	Year	All Stations[a]	Control[b]	Below BFNP[c]	Percentage Increase Below BFNP	All Stations[a]	Control[b]	Below BFNP[c]	Percentage Increase Below BFNP
Preoperational	1969	15	12	17	42	76	44	93	111
	1970	13	10	14	40	56	28	71	154
	1971	19	12	21	75	51	41	55	34
	1972	47	32	55	72	161	107	186	74
	1973	301	54	449	731	Data included in preoperational and operational			
Operational	1974	182	78	244	213	221	93	298	220
	1975	349	260	402	55	312	118	428	263
	1976	248	116	328	183	207	117	261	123
	1977	13	17	10	70[d]	Same as winter 1977 (only samples taken)			
	1978	86	23	123	435	87	35	139	297
	1979	33	10	46	360	Same as winter 1979 (only samples taken)			

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70
d. Increase above BFNP

Table 20

OLIGOCHAETA POPULATIONS BY STATIONS (WINTER)

BROWNS FERRY NUCLEAR PLANT

	Oligochaeta/m^2 (mean values)							
	Preoperational		Operational					
TRM	All Seasons	Winter	1974	1975	1976	1977	1978	1979
277.98	103	73	86	291	198	13	87	89
283.94	95	101	340	390	623	26	123	45
288.78	174	165	376	418	477	0	221	34
291.76	122	69	138	632	259	2	138	42
293.70	148	61	273	281	84	11	47	20
295.87[a]	74	33	106	428	97	38	29	11
301.06[a]	67	15	93	225	173	9	23	15
307.52[a]	27	20	30	126	78	5	16	4

a. Control stations

Table 21

PHYTOPLANKTON POPULATIONS BY YEAR (SPRING - 1969-1979)

BROWNS FERRY NUCLEAR PLANT

		Phytoplankters/1 (mean values)			
	Year	All Stations[a]	Control (Above BFNP)[b]	Below BFNP[c]	Percentage Increase Below or Above BFNP
Preoperational	1969	1,068,781	599,333	1,350,450	125 - Below
	1970	1,001,493	583,400	1,252,350	115 - Below
	1971	223,109	259,756	201,122	29 - Above
	1972	719,899	814,308	663,254	23 - Above
	1973	78,391	68,524	84,312	23 - Below
Operational	1974	202,008	204,659	200,418	2 - Above
	1975	151,083	164,169	143,231	15 - Above
	1976	2,542,101	845,490	3,560,067	321 - Below
	1977	1,708,778	901.504	1,370,714	52 - Below
	1978	2,377,662	821,443	3,311,393	303 - Below
	1979	5,084,366	3,540,125	6,010,910	70 - Below

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70

Table 22

PHYTOPLANKTON POPULATIONS BY STATION - 1969-1979 (SPRING)

BROWNS FERRY NUCLEAR PLANT

	Phytoplankters/1 (mean values)						
	Preoperational	Operational					
TRM	(1969-1973)	1974	1975	1976	1977	1978	1979
277.98	797,625	210,501	105,595	3,754,986	3,080,736	4,514,056	6,248,400
283.94	1,077,970	217,084	91,214	2,149,698	1,437,962	4,481,116	7,127,875
288.78	536,773	257,651	144,628	2,765,462	1,340,489	3,662,892	5,324,475
291.76	488,709	194,059	173,663	2,925,430	1,087,655	1,689,629	6,556,375
293.70	652,411	122,795	201,055	6,204,760	4,018,869	2,209,271	4,797,425
295.87[a]	573,701	195,157	132,027	897,899	521,935	871,538	4,143,375
301.06[a]	423,322	204,476	153,945	743,410	823,399	942,446	3,711,575
307.52[a]	398,235	214,343	206,533	895,456	1,359,178	650,346	2,765,425

a. Control stations

Table 23

DIVERSITY OF PHYTOPLANKTON GENERA, BROWNS FERRY NUCLEAR PLANT (SPRING)

TRM	Phytoplankton Genera Collected During Every Preoperational Sampling Period (69, 70, 72, 73)		Phytoplankton Genera Collected During Every Preoperational Sampling Period, But Not Found In Winter, 1979		Phytoplankton Genera Found For First Time During Winter Operational Sampling, 1979		
	CHRYSOPHYTA	CHLOROPHYTA	CHRYSOPHYTA	CHLOROPHYTA	CHRYSOPHYTA	CHLOROPHYTA	CYANOPHYTA
277.98	Cyclotella Melosira Navicula Synedra		Cyclotella				Anabaena
283.94	Cyclotella Melosira Synedra	Scenedesmus	Cyclotella				
288.78	Melosira Navicula Synedra	Scenedesmus				Carteria	Merismopedia
291.76	Cyclotella Melosira Navicula Synedra	Scenedesmus	Cyclotella			Carteria	
293.70	Cyclotella Melosira Navicula Synedra		Cyclotella			Crucigenia	
295.87	Cyclotella Melosira Navicula Synedra		Cyclotella			Kirchneriella	
301.06	Cyclotella Melosira Navicula Synedra		Cyclotella		Chaetoceros	Carteria	
307.52	Melosira Navicula						

Table 24

MAJOR GROUPS OF PHYTOPLANKTON POPULATIONS BY YEAR - 1969-1979 (SPRING)

BROWNS FERRY NUCLEAR PLANT

		Percentage Phytoplankton Population by Major Groups								
		Chrysophyta			Chlorophyta			Cyanophyta		
	Year	All Stations[a]	Above[b]	Below[c]	All Stations[a]	Above[b]	Below[c]	All Stations[a]	Above[b]	Below[c]
Preoperational	1969	55	49	58	34	33	34	12	18	9
	1970	47	49	46	45	43	46	8	8	8
	1971	83	83	83	10	10	10	7	7	7
	1972	88	89	87	6	4	7	6	6	6
	1973	88	92	85	9	7	11	3	3	4
Operational	1974	90	91	90	7	6	8	2	2	2
	1975	86	88	86	9	8	9	4	4	5
	1976	71	80	66	21	16	24	6	4	7
	1977	55	38	65	23	25	39	21	36	12
	1978	64	56	68	31	38	26	5	4	5
	1979	72	62	77	19	26	16	4	5	3

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70

Table 25

PERCENTAGE DIVERSITY FOR MAJOR GROUPS OF PHYTOPLANKTON

BY RIVER MILE AND YEAR - 1969-1979 (SPRING)

BROWNS FERRY NUCLEAR PLANT

		Major Group Percentage Present												
		Preoperational						Operational						
TRM	Major Groups	1969	1970	1971	1972	1973	$\bar{x}$	1974	1975	1976	1977	1978	1979	$\bar{x}$
277.98	Chrysophyta	42	49	80	90	85	69	92	87	50	74	73	78	77
	Chlorophyta	52	44	12	5	11	25	6	9	24	14	22	14	15
	Cyanophyta	6	7	8	5	4	6	2	4	11	10	5	5	6
283.94	Chrysophyta	52	30	80	87	89	68	91	84	71	66	69	79	77
	Chlorophyta	42	66	14	7	5	27	8	10	22	21	24	15	17
	Cyanophyta	6	4	6	6	6	6	1	6	6	10	7	2	5
288.78	Chrysophyta	61	55	83	91	82	74	93	87	69	51	71	73	74
	Chlorophyta	25	36	9	3	13	17	6	7	26	33	22	20	19
	Cyanophyta	14	9	8	6	5	8	1	6	5	15	7	4	6
291.76	Chrysophyta	64	51	84	82	83	73	84	93	69	64	65	79	76
	Chlorophyta	28	39	8	12	15	20	13	4	24	21	30	14	18
	Cyanophyta	8	10	8	6	2	7	3	3	7	15	4	3	6
293.70	Chrysophyta	69	47	86	87	88	75	90	78	63	72	64	78	74
	Chlorophyta	22	43	9	8	9	18	6	16	28	16	32	16	19
	Cyanophyta	9	10	5	5	3	6	4	5	9	12	3	2	6
295.87	Chrysophyta	34	59	84	89	91	71	87	89	78	61	49	63	71
	Chlorophyta	39	34	11	4	7	19	9	6	19	25	45	25	22
	Cyanophyta	27	7	5	7	2	10	4	5	4	14	5	5	6
301.06	Chrysophyta	58	47	83	88	95	74	92	91	83	33	47	66	69
	Chlorophyta	25	44	12	4	5	18	5	7	13	32	45	22	21
	Cyanophyta	17	9	5	8	0	8	3	3	5	33	6	5	9

Table 25
(continued)

PERCENTAGE DIVERSITY FOR MAJOR GROUPS OF PHYTOPLANKTON

BY RIVER MILE AND YEAR - 1969-1979 (SPRING)

BROWNS FERRY NUCLEAR PLANT

		Major Group Percentage Present												
		Preoperational						Operational						
TRM	Major Groups	1969	1970	1971	1972	1973	$\bar{x}$	1974	1975	1976	1977	1978	1979	$\bar{x}$
307.52	Chrysophyta	55	41	81	90	90	71	94	84	79	20	71	57	68
	Chlorophyta	36	51	7	4	10	22	5	13	17	18	25	30	18
	Cyanophyta	9	8	12	6	0	7	1	3	4	61	1	5	13

Table 26

NUMERICAL GENERA DIVERSITY FOR MAJOR GROUPS OF PHYTOPLANKTON

BY RIVER MILE - 1969-1979 (SPRING)

BROWNS FERRY NUCLEAR PLANT

		Number of Genera									
		Preoperational				Operational					
TRM	Major Groups	1969	1970	1972	1973	1974	1975	1976	1977	1978	1979
277.98	Chrysophyta	11	7	11	8	5	5	11	9	10	9
	Chlorophyta	8	4	9	3	4	5	11	19	21	10
	Cyanophyta	1	1	2	1	1	1	4	5	5	3
	Total	20	12	22	12	10	11	26	33	36	22
283.94	Chrysophyta	7	7	16	6	5	7	13	13	10	9
	Chlorophyta	4	6	10	2	7	4	13	20	25	14
	Cyanophyta	1	1	2	1	1	1	4	5	6	1
	Total	12	14	28	9	13	12	30	38	41	24
288.78	Chrysophyta	10	5	13	5	7	5	11	8	11	9
	Chlorophyta	5	4	10	3	6	4	13	19	21	11
	Cyanophyta	1	1	2	1	1	1	3	5	5	2
	Total	16	10	25	9	14	10	27	32	37	22
291.76	Chrysophyta	7	6	12	7	8	5	15	11	12	9
	Chlorophyta	5	4	13	5	7	2	12	22	18	12
	Cyanophyta	2	1	3	1	2	1	5	5	4	1
	Total	14	11	28	13	17	8	32	38	34	22
293.70	Chrysophyta	7	6	14	7	5	6	9	16	11	9
	Chlorophyta	9	4	9	3	2	6	15	25	18	12
	Cyanophyta	3	1	2	1	1	2	4	4	4	1
	Total	19	11	25	11	8	14	28	45	33	22
295.87	Chrysophyta	5	6	13	4	6	6	14	14	14	9
	Chlorophyta	6	4	8	2	4	2	10	19	17	11
	Cyanophyta	4	3	3	1	2	1	2	4	3	1
	Total	15	13	24	7	12	9	26	37	34	21
301.06	Chrysophyta	6	6	15	5	4	5	10	10	11	8
	Chlorophyta	4	5	6	1	5	6	3	24	17	11
	Cyanophyta	1	1	2	0	1	1	4	5	4	1
	Total	11	12	23	6	10	12	17	39	32	20
307.52	Chrysophyta	6	6	13	2	5	7	12	10	(	
	Chlorophyta	6	4	4	2	4	7	10	18	10	
	Cyanophyta	1	1	3	0	1	1	2	7	3	1
	Total	13	11	20	4	10	15	24	35	21	19

Euglenophyta and Phyrrophyta not included because of sparse populations.

Table 27

CHLOROPHYLL CONCENTRATIONS BY YEAR (SPRING)

BROWNS FERRY NUCLEAR PLANT

		Surface Phytoplankton Chlorophyll[a] (mg Chl a/m^3, mean values)			
	Year	All Stations[a]	Control (Above BFNP)[b]	Below BFNP[c]	Percentage Increase Above or Below BFNP
Preoperational	1969	8.97	1.47	11.96	714 - Below
	1970	5.62	3.34	6.76	102 - Below
	1971	1.77	1.41	1.95	38 - Below
	1972	1.47	1.75	1.32	33 - Above
	1973	3.49	3.81	3.30	15 - Above
Operational	1974	1.78	1.78	1.78	0
	1975	0.04	0.12	0	12 - Above
	1976	5.57	1.90	7.91	316 - Below
	1977	2.66	0.57	3.91	586 - Below
	1978	8.51	4.00	11.21	180 - Below
	1979	3.88	1.89	4.94	161 - Below

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70

Table 28

CHLOROPHYLL CONCENTRATIONS - 1969-1979 (SPRING)

BROWNS FERRY NUCLEAR PLANT

	Surface Phytoplankton Chlorophyll[a] (mg Chl $\frac{a}{m^3}$) (mean values)						
	Preoperational	Operational					
TRM	(1969-1973)	1974	1975	1976	1977	1978	1979
277.98	5.63	1.22	0.00	8.67	5.74	14.81	6.16
283.94	6.38	1.52	0.00	3.44	5.20	19.91	5.20
288.78	2.82	2.01	0.00	5.37	1.52	8.59	4.51
291.76	3.06	1.68	0.00	2.61	1.67	5.37	5.11
293.70	2.93	2.47	0.00	19.47	5.45	7.37	3.22
295.87[a]	2.25	1.41	0.35	3.02	0.17	4.51	1.95
301.06[a]	2.36	1.95	0.00	0.65	0.00	3.57	2.09
307.52[a]	1.34	1.99	0.35	2.04	1.56	4.29	1.65

a. Control station

Table 29

ANNUAL CORBICULA DENSITIES (SPRING)

BROWNS FERRY NUCLEAR PLANT

Corbicula/m^2 (mean values)

		Spring				All Seasons			
	Year	All Stations[a]	Control[b]	Below BFNP[c]	Percentage Increase Below BFNP	All Stations[a]	Control[b]	Below BFNP[c]	Percentage Increase Below BFNP
Preoperational	1969	191	164	204	24	164	147	172	17
	1970	131	66	164	148	112	57	139	144
	1971	134	76	163	114	103	54	127	135
	1972	151	72	185	157	153	72	192	167
	1973	109	39	144	269	Data included in preoperational and operational			
Operational	1974	122	73	152	108	153	72	202	181
	1975	147	100	175	75	150	97	182	88
	1976	171	121	201	66	167[d]	127[d]	190[d]	48[d]
	1977	106	66	130	97	144	76	186	145
	1978	50	42	55	31				
	1979	35	6	52	767				

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.78, 288.78, 291.76, 293.70
d. Only winter and spring data collected for 1976

Table 30

CORBICULA DENSITIES BY STATION (SPRING)

BROWNS FERRY NUCLEAR PLANT

	Corbicula/m^2 (mean values)							
	Preoperational		Operational					
TRM	All Seasons	Spring	1974	1975	1976	1977	1978	1979
277.98	83	102	64	95	139	76	34	40
283.94	119	109	84	119	149	102	0	34
288.78	209	157	199	187	304	165	20	76
291.76	187	262	272	212	244	131	185	56
293.70	149	218	141	183	167	174	38	56
295.87	108	114	147	133	183	103	40	7
301.06[a]	48	29	40	83	119	63	74	5
307.52[a]	64	114	32	85	60	31	11	7

a. Control stations

Table 31

HEXAGENIA POPULATIONS BY YEAR (SPRING)

BROWNS FERRY NUCLEAR PLANT

		Hexagenia/m^2 (mean values)		
	Year	All Stations[a]	Control[b]	Below BFNP[c]
Preoperational	1969	101	105	99
	1970	93	113	84
	1971	51	41	56
	1972	78	45	94
	1973	72	23	96
Operational	1974	144	41	207
	1975	222	143	355
	1976	275	154	347
	1977	199	122	246
	1978	70	53	80
	1979	38	4	73

a. TRM 277.98, 283.94, 288.78, 291.76, 243.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70

Table 32

HEXAGENIA POPULATIONS BY STATIONS (SPRING)

BROWNS FERRY NUCLEAR PLANT

	Hexagenia/m^2 (mean values)						
	Preoperational	Operational					
TRM	(1969-1973)	1974	1975	1976	1977	1978	1979
277.98	2	28	141	24	13	0	0
283.94	18	6	270	558	176	4	11
288.78	99	523	465	415	385	85	114
291.76	161	427	465	544	310	183	112
293.70	123	50	6	193	344	127	129
295.87[a]	89	114	429	395	366	69	9
301.06[a]	68	8	0	38	2	87	2
307.52[a]	29	0	0	30	0	4	2

a. Control stations

Table 33

CHIRONOMIDAE POPULATIONS BY YEAR (SPRING)

BROWNS FERRY NUCLEAR PLANT

	Year	Chironomidae/m^2 (mean values) All Stations[a]	Control (Above BFNP)[b]	Below BFNP[c]	Percentage Increase Below BFNP
Preoperational	1969	128	64	161	151
	1970	114	63	139	120
	1971	109	38	144	278
	1972	122	77	144	87
	1973	111	29	151	420
Operational	1974	120	15	182	1,113
	1975	111	17	167	882
	1976	103	27	148	448
	1977	57	16	82	413
	1978	230	86	316	267
	1979	128	[illegible]	187	523

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70

Table 34

CHIRONOMIDAE POPULATIONS BY STATION (SPRING)

BROWNS FERRY NUCLEAR PLANT

	Chironomidae/m^2 (mean values)						
		Operational					
TRM	Preoperational	1974	1975	1976	1977	1978	1979
277.98	210	251	257	284	161	364	178
283.94	156	178	165	147	77	749	223
288.78	141	233	245	206	70	266	290
291.76	119	206	147	90	64	158	147
293.70	122	44	20	14	40	45	98
295.87[a]	75	24	40	56	39	230	31
301.06[a]	68	10	4	6	6	20	13
307.52[a]	21	12	8	20	2	9	45

a. Control stations

Table 35

OLIGOCHAETA POPULATIONS BY YEAR, BROWNS FERRY NUCLEAR PLANT

		Oligochaeta/m^2 (mean values)							
		Spring				All Seasons			
	Year	All Stations[a]	Control[b]	Below BFNP[c]	Percentage Increase Below BFNP	All Stations[a]	Control[b]	Below BFNP[c]	Percentage Increase Below BFNP
Preoperational	1969	120	48	156	230	76	44	93	111
	1970	117	55	148	170	56	28	71	154
	1971	64	40	76	90	51	41	55	34
	1972	89	79	93	20	161	107	186	74
	1973	234	119	292	250	Data included in preoperational and operational			
Operational	1974	205	29	310	969	221	93	298	220
	1975	314	53	470	786	312	118	428	263
	1976	201	135	240	78	224[d]	125[d]	306[d]	145[d]
	1977	103	65	127	95	58	41	69	68
	1978	100	45	132	193	87	35	139	297
	1979	54	24	72	200				

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70
d. Only winter and spring data collected for 1976

Table 36

OLIGOCHAETA POPULATIONS BY STATIONS (SPRING)

BROWNS FERRY NUCLEAR PLANT

	Oligochaeta/m^2 (mean values)							
	Preoperational		Operational					
TRM	All Seasons	Spring	1974	1975	1976	1977	1978	1979
277.98	103	151	388	766	280	58	158	54
283.94	95	77	402	584	342	133	114	60
288.78	174	153	172	471	330	201	185	138
291.76	122	161	396	308	147	87	156	73
293.70	148	221	193	223	103	154	47	34
295.87[a]	74	95	86	95	133	90	85	54
301.06[a]	67	76	0	16	177	95	40	14
307.52[a]	27	16	0	48	96	9	11	4

a. Control stations

Table 37

PHYTOPLANKTON POPULATIONS BY YEAR (SUMMER - 1969-1979)

BROWNS FERRY NUCLEAR PLANT

		Phytoplankters/1 (mean values)			
	Year	All Stations[a]	Control (Above BFNP)[b]	Below BFNP[c]	Percentage Increase Below BFNP
Preoperational	1969	3,411,396	3,211,056	3,525,600	10**
	1970	1,658,747	827,083	2,157,745	161**
	1971	784,194	557,951	919,940	65**
	1972	1,162,483	662,164	1,462,675	121**
	1973	3,147,888	1,490,716	4,142,192	178**
Operational	1974	2,305,399	931,503	3,129,736	236**
	1975	2,059,134	798,193	2,815,699	253**
	1976	3,486,475	700,777	5,157,895	636**
	1977	19,160,398	12,332,229	23,257,298	89**
	1978	29,746,733	42,076,863	22,348,655	88**[e]
	1979	16,988,190	3,542,065	25,055,865	607**

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70
d. ** $p > 0.01$ based on results of t-test between two means
e. Increase above BFNP

Table 38

PHYTOPLANKTON POPULATIONS BY STATION - 1969-1979 (SUMMER)

BROWNS FERRY NUCLEAR PLANT

	Phytoplankters/l (mean values)						
		Operational					
TRM	Preoperational	1974	1975	1976	1977	1978	1979
277.98	3,172,660	3,952,326	6,687,402	5,797,035	20,560,903	24,145,081	32,898,557
283.94	2,693,424	4,995,809	3,542,564	7,339,679	12,505,134	25,448,816	21,822,569
288.78	3,073,504	2,990,385	1,490,106	6,363,632	37,146,971	23,651,104	27,203,400
291.76	1,949,574	2,228,399	1,541,603	2,526,607	24,770,292	27,719,679	33,811,104
293.70	1,318,990	1,481,762	816,819	3,762,519	21,303,192	10,778,596	9,543,696
295.87[a]	1,645,121	1,023,477	1,259,469	1,070,213	26,126,546	110,822,846	5,584,296
301.06[a]	1,171,408	1,198,222	825,584	872,150	5,803,371	14,020,800	3,577,696
307.52[a]	1,238,854	572,811	309,525	159,967	5,066,771	1,386,945	1,464,204

a. Control stations

Table 39

DIVERSITY OF PHYTOPLANKTON GENERA - BROWNS FERRY NUCLEAR PLANT

SUMMER - 1979

TRM	Phytoplankton Genera Collected During Every Summer Preoperational Sampling Period (69, 70, 72, 73)			Phytoplankton Genera Collected During Every Summer Preoperational Sampling Period, But Not Found During Summer Operational Sampling (1979)		Phytoplankton Genera Collected For The First Time During The Summer Operational Sampling (1979)		
	CHRYSOPHYTA	CHLOROPHYTA	CYANOPHYTA	CHRYSOPHYTA	CHLOROPHYTA	CHRYSOPHYTA	CHLOROPHYTA	CYANOPHYTA
277.98	Cyclotella Melosira Synedra	Scenedesmus	Merismopedia			Cymbella Calonesis	Bracteacoccus Volvocaceae	
283.94	Cyclotella Melosira Navicula Synedra	Chlorella Scenedesmus Staurastrum		Navicula		Rhoicosphenia	Volvocaceae	
288.78	Cyclotella Melosira Navicula Synedra	Chlorella Staurastrum				Ophiocytium Tabellaria	Euastrum Oedogonium Bracteacoccus	Anabaenopsis
291.76	Cyclotella Melosira Navicula Synedra	Chlorella Scenedesmus Staurastrum	Merismopedia	Navicula		Rhoicosphenia	Bracteacoccus	Aphanothece
293.70	Cyclotella Melosira	Chlorella Scenedesmus Staurastrum Tetraedon	Merismopedia			Diatoma		Aphanothece
295.87	Cyclotella Melosira Navicula Synedra	Chlorella Scenedesmus	Merismpoedia	Navicula		Diatoma Meridion	Ulothrix	Aphanothece
301.06	Melosira Navicula Synedra	Chlorella Cosmarium Scenedesmus		Navicula		Cymatopleura		Anabaena Aphanothece Eucapsis
307.52	Melosira Navicula Synedra	Cosmarium Scenedesmus		Navicula Cosmarium		Chaetoceros		Apanothece

Table 40

MAJOR GROUPS OF PHYTOPLANKTON POPULATIONS BY YEAR - 1969-1979 (SUMMER)

BROWNS FERRY NUCLEAR PLANT

		Percentage Phytoplankton Population by Major Groups								
		Chrysophyta			Chlorophyta			Cyanophyta		
	Year	All Stations[a]	Above[b]	Below[c]	All Stations[a]	Above[b]	Below[c]	All Stations[a]	Above[b]	Below[c]
Preoperational	1969	12	11	13	36	48	29	51	41	58
	1970	66	68	65	14	11	16	20	21	23
	1971	44	54	39	7	7	7	48	39	54
	1972	62	59	64	24	27	22	14	14	14
	1973	22	13	27	32	32	32	45	55	39
Operational	1974	34	24	40	39	42	37	20	26	17
	1975	24	21	25	29	29	30	46	48	44
	1976	41	47	37	25	27	24	34	25	39
	1977	5	5	4	12	14	11	84	81	85
	1978	4	5	4	13	13	13	83	82	83
	1979	15	23	11	14	23	9	70	54	79

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70

Table 41

PERCENTAGE DIVERSITY FOR MAJOR GROUPS OF PHYTOPLANKTON

BY RIVER MILE AND YEAR - 1969-1979 (SUMMER)

BROWNS FERRY NUCLEAR PLANT

		Major Group Percentage Present												
		Preoperational						Operational						
TRM	Major Groups	1969	1970	1971	1972	1973	X	1974	1975	1976	1977	1978	1979	X
277.98	Chrysophyta	14	73	31	61	32	42	32	18	29	3	6	4	15
	Chlorophyta	30	15	9	22	37	23	49	25	26	12	14	8	22
	Cyanophyta	56	12	60	17	31	35	16	56	44	83	80	88	61
283.94	Chrysophyta	12	57	41	64	31	41	30	26	37	5	4	5	18
	Chlorophyta	36	18	10	19	34	23	47	40	24	14	12	10	25
	Cyanophyta	52	25	49	17	35	35	20	34	39	81	82	83	57
288.78	Chrysophyta	8	64	42	71	33	44	43	33	35	3	4	14	22
	Chlorophyta	37	14	6	17	25	20	26	26	18	8	17	12	18
	Cyanophyta	55	22	52	11	32	34	15	39	47	90	79	72	57
291.76	Chrysophyta	10	56	40	68	22	39	53	22	41	4	3	16	23
	Chlorophyta	25	20	6	21	32	21	27	28	21	9	10	6	17
	Cyanophyta	65	24	54	11	46	40	15	49	37	88	87	78	59
293.70	Chrysophyta	20	75	40	55	19	42	44	28	43	4	4	15	23
	Chlorophyta	18	11	6	31	32	20	35	29	27	13	12	9	21
	Cyanophyta	62	14	54	14	49	39	17	41	29	84	84	76	55
295.87	Chrysophyta	8	76	54	51	17	41	30	14	41	3	1	27	19
	Chlorophyta	34	7	7	35	30	23	47	25	18	12	2	18	20
	Cyanophyta	58	17	39	14	53	36	16	60	40	86	97	55	59
301.06	Chrysophyta	14	39	45	58	13	34	30	30	40	7	2	20	22
	Chlorophyta	27	19	6	24	28	21	39	28	28	14	10	17	23
	Cyanophyta	59	42	49	18	59	45	26	40	31	80	88	62	55

Table 41
(continued)

PERCENTAGE DIVERSITY FOR MAJOR GROUPS OF PHYTOPLANKTON

BY RIVER MILE AND YEAR - 1969-1979 (SUMMER)

BROWNS FERRY NUCLEAR PLANT

		Major Group Percentage Present												
		Preoperational						Operational						
TRM	Major Groups	1969	1970	1971	1972	1973	X	1974	1975	1976	1977	1978	1979	X
307.52	Chrysophyta	12	89	63	67	9	48	11	19	59	6	12	21	21
	Chlorophyta	83	6	8	22	37	31	40	35	35	17	26	34	31
	Cyanophyta	5	5	29	11	54	21	37	45	5	78	62	44	45

Table 42

NUMERICAL GENERA DIVERSITY FOR MAJOR GROUPS OF PHYTOPLANKTON

BY RIVER MILE - 1969-1979 (SUMMER)

BROWNS FERRY NUCLEAR PLANT

		Number of Genera									
		Preoperational				Operational					
TRM	Major Groups	1969	1970	1972	1973	1974	1975	1976	1977	1978	1979
277.98	Chrysophyta	10	4	11	5	8	13	11	9	15	14
	Chlorophyta	8	9	17	21	27	30	29	40	41	39
	Cyanophyta	2	4	8	6	5	6	6	11	13	13
	Total	20	17	36	32	40	49	46	60	69	66
283.94	Chrysophyta	10	5	13	8	13	14	12	12	10	12
	Chlorophyta	5	8	18	20	25	24	28	38	39	38
	Cyanophyta	1	4	8	6	4	4	5	11	14	13
	Total	16	17	39	34	42	42	45	61	63	63
288.78	Chrysophyta	4	6	13	7	15	8	7	13	10	16
	Chlorophyta	8	5	16	16	22	16	22	41	35	40
	Cyanophyta	3	0	7	5	4	3	5	11	12	13
	Total	15	11	36	28	41	27	34	65	57	69
291.76	Chrysophyta	6	6	13	10	9	4	11	15	10	15
	Chlorophyta	10	9	13	14	20	17	24	36	35	36
	Cyanophyta	2	5	7	6	4	3	4	10	11	11
	Total	18	20	33	30	33	24	39	61	56	62
293.70	Chrysophyta	4	6	12	8	8	9	13	12	9	11
	Chlorophyta	9	7	17	18	18	13	27	38	32	30
	Cyanophyta	4	3	7	5	4	4	4	10	11	9
	Total	17	16	36	31	30	26	44	60	52	50
295.87	Chrysophyta	6	7	12	11	9	9	12	15	9	13
	Chlorophyta	7	7	14	20	18	18	19	34	30	31
	Cyanophyta	3	5	6	6	4	4	5	12	11	10
	Total	16	19	32	37	31	31	36	61	50	54
301.06	Chrysophyta	5	6	12	5	8	8	9	9	8	13
	Chlorophyta	8	5	14	19	21	16	23	28	31	28
	Cyanophyta	3	3	6	4	5	4	5	9	7	9
	Total	16	14	32	28	34	28	37	46	46	50
307.52	Chrysophyta	5	5	12	5	5	7	8	8	7	9
	Chlorophyta	7	4	13	18	14	12	10	33	22	26
	Cyanophyta	3	3	5	4	6	3	2	10	6	8
	Total	15	12	34	30	25	22	20	51	35	43

Euglenophyta and Pyrrophyta not included because of sparse populations.

Table 43

CHLOROPHYLL CONCENTRATIONS BY YEAR - 1969-1979 (SUMMER)

BROWNS FERRY NUCLEAR PLANT

		Surface Phytoplankton Chlorophyll[a] (mg Chl a/m^3) (mean values)			
	Year	All Stations[a]	Control (Above BFNP)[b]	Below BFNP[c]	Percentage Increase Below BFNP
Preoperational	1969	2.39	1.06	3.18	200 - Below
	1970	2.95	1.89	3.48	84 - Below
	1971	7.33	6.00	8.00	33 - Below
	1972	3.49	1.73	4.37	153 - Below
	1973	3.81	1.84	5.00	172 - Below
Operational	1974	6.81	1.63	9.92	509 - Below
	1975	4.95	1.75	6.83	290 - Below
	1976	8.09	1.16	12.25	956 - Below
	1977	3.68	0.02	5.88	293 - Below
	1978	DATA NONAPPLICABLE (see text)			
	1979	DATA NONAPPLICABLE (see text)			

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70

Table 44

CHLOROPHYLL CONCENTRATIONS - 1969-1979 (SUMMER)

BROWNS FERRY NUCLEAR PLANT

TRM	Surface Phytoplankton Chlorophyll[a] (mg Chl a/m^3) (mean values) Preoperational	Operational 1974	1975	1976	1977	1978	1979
277.98	6.76	16.22	10.56	14.66	11.63	D	D
283.94	5.72	16.08	13.05	15.60	3.32	A T A	A T A
288.78	4.26	9.01	4.85	17.01	8.26		
291.76	4.21	6.59	3.70	5.24	3.62	N O	N O
293.70	4.53	1.68	2.15	8.74	2.34	N A	N A
295.87[a]	3.77	4.04	1.98	0.81	1.71	P P	P P
301.06[a]	2.43	0.43	1.81	1.48	0	L I	L I
307.52[a]	1.88	0.43	1.46	1.09	0	C A B L E (see text)	C A B L E

a. Control stations

Table 45

ANNUAL CORBICULA DENSITIES (SUMMER)

BROWNS FERRY NUCLEAR PLANT

Corbicula/m^2 (mean values)

		Summer				All Seasons			
	Year	All Stations[a]	Control[b]	Below BFNP[c]	Percentage Increase Below BFNP	All Stations[a]	Control[b]	Below BFNP[c]	Percentage Increase Below BFNP
Preoperational	1969	243	288	220	31[d]	164	147	172	17
	1970	99	31	133	329	112	57	139	144
	1971	113	31	154	397	103	54	127	135
	1972	151	54	200	270	153	72	192	167
	1973	119	65	150	131	Data included in preoperational and operational			
Operational	1974	196	95	257	170	153	72	202	180
	1975	127	93	148	59	150	97	182	88
	1976	178	93	229	215				
	1977	77	65	110	69				
	1978	125	48	172	258	93	45	122	171
	1979	50	49	51	4				

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.78, 288.78, 291.76, 293.70
d. Increase above BFNP

Table 46

CORBICULA POPULATIONS BY STATIONS (SUMMER)

BROWNS FERRY NUCLEAR PLANT

	Corbicula/m^2 (mean values)							
	Preoperational		Operational					
TRM	All Seasons	Summer	1974	1975	1976	1977	1978	1979
277.98	83	91	92	173	97	13	138	107
283.94	119	220	133	48	159	178	87	45
288.78	209	224	453	195	387	89	252	22
291.76	187	169	318	139	264	154	247	11
293.70	149	154	288	185	240	117	136	69
295.87	108	136	223	131	153	47	98	110
301.06	46	63	26	97	56	2	18	13
307.52	64	62	36	52	71	16	27	25

Table 47

HEXAGENIA POPULATIONS BY YEAR (SUMMER)

BROWNS FERRY NUCLEAR PLANT

		Hexagenia/m^2 (mean values)			
	Year	All Stations[a]	Control[b]	Below BFNP[c]	Percentage Increase Below BFNP
Preoperational	1969	10	9	11	22
	1970	7	1	10	900
	1971	21	8	27	237
	1972	89	37	116	213
	1973	53	3	78	2,500
Operational	1974	108	62	137	121
	1975	141	64	187	192
	1976	178	67	244	264
	1977	65	42	79	88
	1978	66	17	95	458
	1979	76	91	68	34*

a. TRM 277.98, 283.94, 288.78, 291.76, 243.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70

* Increase above BFNP

Table 48

HEXAGENIA POPULATIONS BY STATIONS (SUMMER)

BROWNS FERRY NUCLEAR PLANT

	Hexagenia/m^2 (mean values)						
		Operational					
TRM	Preoperational	1974	1975	1976	1977	1978	1979
277.98	9	22	121	26	0	0	7
283.94	20	40	83	423	2	0	5
288.78	44	179	300	310	103	152	143
291.76	91	173	266	312	199	241	143
293.70	72	269	167	151	89	83	40
295.87	13	185	183	177	114	31	273
301.06	15	0	4	24	2	16	0
307.52	0	0	4	0	9	5	0

Table 49

CHIRONOMIDAE POPULATIONS BY YEAR (SUMMER)

BROWNS FERRY NUCLEAR PLANT

		Chironomidae/m^2 (mean values)			
	Year	All Stations[a]	Control (Above BFNP)[b]	Below BFNP[c]	Percentage Increase Below BFNP
Preoperational	1969	54	31	68	119
	1970	29	26	30	15
	1971	79	38	100	163
	1972	86	37	112	203
	1973	81	53	95	79
Operational	1974	66	23	91	296
	1975	76	29	103	255
	1976	74	43	93	116
	1977	90	32	137	328
	1978	102	28	146	421
	1979	83	39	110	182

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70

Table 50

CHIRONOMIDAE POPULATIONS BY STATIONS (SUMMER)

BROWNS FERRY NUCLEAR PLANT

	Chironomidae/m^2 (mean values)						
		Operational					
TRM	Preoperational	1974	1975	1976	1977	1978	1979
277.98	97	110	147	83	140	286	172
283.94	116	110	92	70	118	203	133
288.78	75	74	150	90	133	94	128
291.76	68	58	92	121	201	128	76
293.70	52	104	36	102	94	20	40
295.87[a]	34	60	18	80	61	65	88
301.06[a]	44	2	2	36	27	13	9
307.52[a]	43	6	68	12	9	7	20

a. Control stations

Table 51

OLIGOCHAETA POPULATIONS BY YEAR, BROWNS FERRY NUCLEAR PLANT

		Oligochaeta/m^2 (mean values)							
		Summer				All Seasons			
	Year	All Stations[a]	Control[b]	Below BFNP[c]	Percentage Increase Above or Below BFNP	All Stations[a]	Control[b]	Below BFNP[c]	Percentage Increase Below BFNP
Preoperational	1969	62	52	66	27	76	44	93	111
	1970	74	41	90	120	56	28	71	154
	1971	66	61	69	13	51	41	55	34
	1972	273	164	336	105	161	107	186	74
	1973	125	133	122	9[d]	Data included in preoperational and operational			
Operational	1974	327	144	436	203	221	93	298	220
	1975	298	90	421	368	312	118	428	263
	1976	286	154	365	137				
	1977	111	52	146	180				
	1978	97	33	119	261	87	35	139	297
	1979	193	65	269	314				

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 283.94
d. Increase above BFNP
e. Only winter, spring, and summer samples available for 1973 preoperational data

Table 52

OLIGOCHAETA POPULATIONS BY STATION (SUMMER)

BROWNS FERRY NUCLEAR PLANT

	Oligochaeta/m^2 (mean values)						
		Operational					
TRM	Preoperational	1974	1975	1976	1977	1978	1979
277.98	115	346	516	276	28	132	155
283.94	115	320	409	604	205	138	558
288.78	182	545	457	493	159	160	327
291.76	130	442	409	389	162	129	103
293.70	178	527	316	62	175	34	203
295.87[a]	97	233	147	199	131	65	132
301.06[a]	99	134	89	224	6	31	59
307.52[a]	27	66	38	40	18	4	5

a. Control stations

Table 53

PHYTOPLANKTON POPULATIONS BY YEAR (FALL - 1969-1979)

BROWNS FERRY NUCLEAR PLANT

		Phytoplankters/l (mean values)			
	Year	All Stations[a]	Control (Above BFNP)[b]	Below BFNP[c]	Percentage Increase Below BFNP
Preoperational	1969	1,486,396	837,667	1,876,433	124
	1970	582,012	441,800	579,739	31
	1971	470,870	420,756	500,938	19
	1972	605,864	345,360	762,167	121
Operational	1973	977,206	777,701	1,096,910	41
	1974	866,347	547,651	1,057,565	93
	1975	1,156,939	727,340	1,414,698	95
	1976	3,878,108	2,176,616	4,899,003	125
	1977	1,111,481	799,218	1,298,839	63
	1978	6,057,501	4,120,107	7,219,938	75
	1979	2,417,978	1,840,795	2,764,288	50

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70

Table 54

PHYTOPLANKTON POPULATIONS BY STATION - 1969-1979 (FALL)

BROWNS FERRY NUCLEAR PLANT

TRM	Phytoplankters/l (mean values)							
	Preoperational	Operational						
	(1969-1972)	1973	1974	1975	1976	1977	1978	1979
277.98	752,054	1,186,973	844,349	1,658,704	5,818,956	1,352,550	4,631,135	3,377,010
283.94	1,812,004	1,447,525	1,888,381	2,092,176	6,324,829	1,398,059	6,045,826	3,637,757
288.78	962,345	1,559,605	998,153	2,352,944	5,080,028	2,033,323	8,718,021	2,368,021
291.76	615,906	778,981	843,116	422,927	3,645,702	922,338	9,634,695	2,439,459
293.70	506,786	511,464	713,464	546,73[illegible]	3,675,499	787,925	7,070,012	1,999,192
295.87[a]	583,257	738,962	382,388	436,623	1,912,424	547,688	6,106,439	2,428,346
301.06[a]	519,225	821,739	550,025	1,555,298	2,538,936	1,148,821	3,228,178	2,397,125
307.52[a]	431,704	772,403	710,540	190,098	2,078,487	701,146	3,025,704	696,913

a. Control stations

Table 55

DIVERSITY OF PHYTOPLANKTON - 1969-1979 (FALL) - BROWNS FERRY NUCLEAR PLANT

TRM	Phytoplankton Genera Collected During Every Fall Preoperational Sampling Period (1969, 1970, 1972)			Phytoplankton Genera Collected During Every Fall Preoperational Sampling Period, But Not Found During Fall Operational Sampling (1979)		Phytoplankton Genera Collected for the First Time During the Fall Operational Sampling (1979)		
	CHRYSOPHYTA	CHLOROPHYTA	CYANOPHYTA	CHRYSOPHYTA	CHLOROPHYTA	CHRYSOPHYTA	CHLOROPHYTA	CYANOPHYTA
277.98	Melosira Navicula Synedra	Actinastrum Chlorella Cosmarium Scenedesmus Staurastrum	Merismopedia		Staurastrum	Ophiocytium Selenastrum	Chlorogonium	Gloeothece
283.94	Cyclotella Melosira Navicula Synedra	Ankistrodesmus Chlorella Cosmarium Scenedesmus	Merismopedia	Navicula	Cosmarium	Ophiocytium	Acanthosphaera Gonium Selenastrum Spermatozoopsis	Gloeothece
288.78	Cyclotella Melosira Navicula Synedra	Chlorella Scenedesmus Staurastrum	Merismopedia	Cyclotella	Staurastrum	Surirella	Selenastrum	Aphanocapsa
291.76	Cyclotella Melosira Navicula Synedra	Actinastrum Scenedesmus Staurastrum	Merismopedia		Staurastrum		Acanthosphaera Gonium Polyedriopsis Selenastrum Spondylosium Tetrastrum	Gloeothece
293.70	Cyclotella Melosira Navicula Synedra	Chlorella Cosmarium Scenedesmus	Merismpoedia	Cyclotella			Acanthosphaera Closteridium Closterium Spermatozoopsis	Aphanocapsa Gloeothece
295.87	Cyclotella Navicula Melosira Synedra	Actinastrum Chlorella Cosmarium	Merismopedia	Cyclotella	Cosmarium	Dinobryon	Acanthosphaera Botryococcus Carteria Closterium Euastrum Gonium	Gloeothece
301.06	Melosira Navicula Synedra	Cosmarium Scenedesmus	Merismopedia		Cosmarium	Attheya Ophiocytium	Planktosphaeria Spermatozoopsis	Aphanocapsa Gloeothece
307.52	Melosira Navicula Synedra	Cosmarium Scenedesmus	Merismopedia		Cosmarium	Dichotomoccus Ophiocytium Rhoicosphenia	Treubaria	Aphanothece

Table 56

MAJOR GROUPS OF PHYTOPLANKTON POPULATIONS BY YEAR - 1969-1979 (FALL)

BROWNS FERRY NUCLEAR PLANT

		Percentage Phytoplankton Population by Major Groups								
		Chrysophyta			Chlorophyta			Cyanophyta		
	Year	All Stations[a]	Above[b]	Below[c]	All Stations[a]	Above[b]	Below[c]	All Stations[a]	Above[b]	Below[c]
Preoperational	1969	22	20	24	36	42	33	41	37	43
	1970	82	83	82	12	12	12	6	5	6
	1971	58	61	56	7	6	7	35	33	36
	1972	63	63	63	22	18	24	15	19	13
Operational	1973	36	23	44	29	30	28	35	47	27
	1974	42	25	52	25	19	28	31	54	16
	1975	40	34	43	23	23	23	36	41	33
	1976	22	15	26	17	16	18	60	68	56
	1977	8	7	9	22	24	20	68	69	67
	1978	9	8	10	26	26	27	7	8	6
	1979	39	20	51	21	27	17	38	51	31

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70

Table 57

PERCENTAGE DIVERSITY FOR MAJOR GROUPS OF PHYTOPLANKTON

BY RIVER MILE AND YEAR - 1969-1979 (FALL)

BROWNS FERRY NUCLEAR PLANT

		Major Group Percentage Present													
		Preoperational					Operational								
TRM	Major Groups	1969	1970	1971	1972	X	1973	1974	1975	1976	1977	1978	1979	X
277.98	Chrysophyta	47	78	52	61	59	51	49	31	17	12	15	46	32
	Chlorophyta	33	15	9	29	21	29	36	38	18	23	21	19	26
	Cyanophyta	20	7	39	10	19	20	10	30	65	64	61	33	40
283.94	Chrysophyta	7	82	53	61	51	38	47	35	26	9	15	65	34
	Chlorophyta	41	9	6	26	20	31	36	20	20	20	11	15	22
	Cyanophyta	52	9	41	13	29	31	14	45	54	70	74	18	44
288.78	Chrysophyta	26	82	56	61	56	38	56	28	28	9	41	38	34
	Chlorophyta	33	13	8	19	18	26	29	21	14	19	19	16	21
	Cyanophyta	41	5	36	20	25	36	13	50	59	71	40	45	45
291.76	Chrysophyta	18	82	56	57	53	44	49	59	28	8	53	42	40
	Chlorophyta	38	14	9	28	22	27	18	22	19	17	6	20	18
	Cyanophyta	44	4	35	15	24	29	31	17	52	64	31	38	37
293.70	Chrysophyta	21	83	65	73	60	48	60	62	31	9	63	63	48
	Chlorophyta	19	11	5	18	13	30	23	17	18	23	6	17	19
	Cyanophyta	60	6	30	9	26	22	15	20	50	67	31	19	32
295.87	Chrysophyta	14	77	56	61	52	30	39	37	20	9	62	22	31
	Chlorophyta	49	16	5	14	21	25	18	27	15	32	7	27	22
	Cyanophyta	37	7	39	25	27	45	41	34	65	58	31	50	46
301.06	Chrysophyta	20	84	58	70	58	28	27	29	15	6	56	14	25
	Chlorophyta	36	12	7	24	20	18	24	25	16	22	9	19	19
	Cyanophyta	44	4	35	6	22	54	45	45	68	72	35	66	55

Table 57
(continued)

PERCENTAGE DIVERSITY FOR MAJOR GROUPS OF PHYTOPLANKTON

BY RIVER MILE AND YEAR - 1969-1979 (WINTER)

BROWNS FERRY NUCLEAR PLANT

		Major Group Percentage Present												
		Preoperational					Operational							
TRM	Major Groups	1969	1970	1971	1972	X	1973	1974	1975	1976	1977	1978	1979	X
307.52	Chrysophyta	27	88	70	59	61	11	8	35	11	6	29	25	18
	Chlorophyta	42	9	5	17	18	46	14	17	17	17	9	35	22
	Cyanophyta	31	3	25	25	21	43	77	44	71	77	62	38	59

Table 58

NUMERICAL GENERA DIVERSITY FOR MAJOR GROUPS OF PHYTOPLANKTON

BY RIVER MILE - 1969-1979 (FALL)

BROWNS FERRY NUCLEAR PLANT

		Number of Genera									
		Preoperational			Operational						
TRM	Major Groups	1969	1970	1972	1973	1974	1975	1976	1977	1978	1979
277.98	Chrysophyta	6	5	13	7	7	9	7	7	8	26
	Chlorophyta	10	6	15	17	13	19	28	24	26	11
	Cyanophyta	3	3	4	4	5	3	8	10	4	9
	Total	19	14	32	28	25	31	43	31	38	46
283.94	Chrysophyta	5	7	14	8	10	5	10	9	8	30
	Chlorophyta	6	8	14	16	17	25	29	26	27	10
	Cyanophyta	2	3	5	5	4	4	7	6	10	7
	Total	13	18	33	29	31	34	46	41	45	47
288.78	Chrysophyta	6	6	9	7	5	9	11	12	11	22
	Chlorophyta	9	5	10	15	11	17	28	24	24	13
	Cyanophyta	3	2	5	5	3	4	8	7	4	9
	Total	18	13	24	27	19	30	47	43	39	44
291.76	Chrysophyta	6	6	12	6	6	7	13	8	11	28
	Chlorophyta	8	5	14	13	11	9	27	25	29	12
	Cyanophyta	3	3	5	4	4	2	6	9	8	9
	Total	17	14	31	23	21	18	46	52	48	49
293.70	Chrysophyta	5	7	12	7	8	8	13	8	12	27
	Chlorophyta	7	7	11	14	10	10	30	24	27	10
	Cyanophyta	3	2	5	4	4	3	7	7	6	8
	Total	15	16	28	25	22	21	50	39	45	45
295.87	Chrysophyta	5	7	11	4	5	7	14	10	12	28
	Chlorophyta	6	6	10	13	9	13	29	21	23	13
	Cyanophyta	2	2	5	5	4	3	5	8	9	9
	Total	13	15	26	22	18	23	48	39	44	50
301.06	Chrysophyta	6	5	11	6	4	6	10	12	7	26
	Chlorophyta	7	7	8	12	10	18	26	27	27	14
	Cyanophyta	2	3	3	5	4	4	9	8	7	9
	Total	15	15	22	23	18	28	45	47	41	49
307.52	Chrysophyta	8	7	5	4	7	6	13	9	6	23
	Chlorophyta	7	6	8	15	11	5	20	22	27	11
	Cyanophyta	3	3	3	3	4	3	9	6	8	7
	Total	18	16	16	22	22	13	42	37	41	41

Table 59

CHLOROPHYLL CONCENTRATIONS BY YEAR - 1969-1979 (FALL)

BROWNS FERRY NUCLEAR PLANT

		Surface Phytoplankton Chlorophyll[a] (mg Chl $\frac{a}{m^3}$) (mean values)			
	Year	All Stations[a]	Control (Above BFNP)[b]	Below BFNP[c]	Percentage Increase Below BFNP
Preoperational	1969	4.70	3.09	5.56	80
	1970	1.77	1.30	2.01	55
	1971	1.27	0.37	1.74	370
	1972	1.61	0.65	2.09	222
Operational	1973	2.60	1.19	3.44	189
	1974	3.17	2.65	3.48	31
	1975	3.60	1.40	4.21	201
	1976	6.20	3.33	7.92	139
	1977	0.46	0	0.74	74
	1978	7.59	4.69	9.34	99
	1979	4.28	2.35	5.43	131

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70

Table 60

CHLOROPHYLL CONCENTRATIONS - 1969-1979 (FALL)

BROWNS FERRY NUCLEAR PLANT

	Surface Phytoplankton Chlorophyll[a] (mg Chl a/m^3) (mean values)							
TRM	Preoperational (1969-1972)	1973	1974	1975	1976	1977	1978	1979
277.98	4.19	1.02	4.44	7.11	14.00	1.32	7.01	7.78
283.94	3.73	7.37	5.66	6.43	10.50	1.22	11.92	8.57
288.78	2.43	4.39	3.18	3.27	5.86	1.20	9.38	3.71
291.76	1.98	1.39	2.37	1.77	4.28	.40	10.53	3.12
293.70	1.43	3.04	1.77	2.46	4.24	.18	7.86	3.95
295.87[a]	1.75	1.50	2.11	1.20	3.34	0	5.79	2.91
301.06[a]	0.93	0.91	1.78	2.41	3.15	.16	5.33	2.61
307.52[a]	1.13	1.17	4.06	0.59	3.51	0	2.96	1.53

a. Control station

Table 61

ANNUAL CORBICULA DENSITIES (FALL)

BROWNS FERRY NUCLEAR PLANT

		Corbicula/m^2 (mean values)							
		Fall				All Seasons			
	Year	All Stations	Control[b]	Below BFNP[c]	Percentage Increase Below BFNP	All Stations	Control	Below BFNP	Percentage Increase Below BFNP
Preoperational	1969	111	68	132	94	164	147	172	17
	1970	105	75	121	61	112	57	139	144
	1971	104	100	106	6	103	54	127	135
	1972	181	69	237	243	153	72	192	167
Operational	1973	171	224	144	56[d]	Data included in preoperational and operational			
	1974	134	61	178	192	153	72	202	181
	1975	181	94	234	149	150	97	182	88
	1976	210	117	266	127	180	117	219	87
	1977	14	10	16	60	95	46	125	172
	1978	101	51	131	157	93	45	122	171
	1979	39	16	54	238	50	24	66	329

Table 62

CORBICULA DENSITIES BY STATIONS (FALL)

BROWNS FERRY NUCLEAR PLANT

	Corbicula/m^2 (mean values)								
	Preoperational		Operational						
TRM	All Seasons	Fall	1973	1974	1975	1976	1977	1978	1979
277.98	83	73	79	102	66	120	0	7	22
283.94	119	108	44	223	185	170	58	241	16
288.78	209	227	270	201	308	439	2	45	56
291.76	187	168	207	211	294	315	11	207	165
293.70	149	163	101	152	316	384	9	156	9
295.87[a]	108	136	385	132	157	192	15	129	16
301.06[a]	46	44	157	14	68	102	11	16	2
307.52[a]	64	42	81	36	58	56	5	9	29

a. Control stations

Table 63

HEXAGENIA POPULATIONS BY YEAR (FALL)

BROWNS FERRY NUCLEAR PLANT

		Hexagenia/m^2 (mean values)		
	Year	All Stations	Control	Below BFNP
Preoperational	1969	53	18	71
	1970	43	66	31
	1971	111	147	93
	1972	244	242	244
Operational	1973	248	275	234
	1974	227	176	258
	1975	311	214	369
	1976	237	120	306
	1977	150	183	131
	1978	78	64	86
	1979	122	69	154

Table 64

HEXAGENIA POPULATIONS BY STATIONS (FALL)

BROWNS FERRY NUCLEAR PLANT

	Hexagenia/m^2 (mean values)							
		Operational						
TRM	Preoperational	1973	1974	1975	1976	1977	1978	1979
277.98	14	6	10	8	4	0	0	0
283.94	6	4	45	582	49	71	38	34
288.78	78	403	161	457	373	20	9	206
291.76	200	554	584	602	531	41	147	166
293.70	260	95	388	197	575	143	238	362
295.87	156	532	233	626	254	457	109	47
301.06	147	141	290	14	103	82	82	99
307.52	19	90	4	2	4	9	2	60

Table 65

CHIRONOMIDAE POPULATIONS BY YEAR (FALL)

BROWNS FERRY NUCLEAR PLANT

		Chironomidae/m^2 (mean values)			
	Year	All Stations[a]	Control (Above BFNP)[b]	Below BFNP[c]	Percentage Increase Below BFNP
Preoperational	1969	156	127	171	35
	1970	91	32	121	278
	1971	151	109	186	71
	1972	119	32	162	406
Operational	1973	106	56	132	136
	1974	101	27	146	441
	1975	86	25	122	388
	1976	71	23	100	335
	1977	139	54	190	252
	1978	144	35	209	497
	1979	137	24	205	754

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70

Table 66

CHIRONOMIDAE POPULATIONS BY STATIONS (FALL)

BROWNS FERRY NUCLEAR PLANT

	Chironomidae/m^2 (mean values)							
		Operational						
TRM	Preoperational	1973	1974	1975	1976	1977	1978	1979
277.98	206	191	76	157	214	147	203	337
283.94	170	143	128	40	60	425	285	309
288.78	162	133	257	171	19	172	390	244
291.76	138	172	169	163	165	120	98	44
293.70	129	6	98	79	44	85	71	92
295.87[a]	105	44	54	60	35	38	58	14
301.06[a]	72	80	26	8	22	81	29	15
307.52[a]	33	36	2	8	11	43	18	42

a. Control stations

Table 67

OLIGOCHAETA POPULATIONS BY YEAR, BROWNS FERRY NUCLEAR PLANT

		Oligochaeta/m^2 (mean values)							
		Fall				All Seasons			
	Year	All Stations[a]	Control[b]	Below BFNP[c]	Percentage Increase Below BFNP	All Stations[a]	Control[b]	Below BFNP[c]	Percentage Increase Below BFNP
Preoperational	1969	111	68	133	96	76	44	93	111
	1970	23	9	31	244	56	28	71	154
	1971	47	29	56	93	51	41	55	34
	1972	231	152	270	78	161	107	186	74
Operational	1973	210	204	213	4	Data included in preoperational and operational			
	1974	172	123	202	64	221	93	298	220
	1975	288	69	420	509	312	118	428	263
	1976	92	63	110	75	207	117	261	123
	1977	43	23	55	139	67	39	84	115
	1978	66	39	182	110	87	35	139	297
	1979	26	12	35	192	77	28	106	267

a. TRM 277.98, 283.94, 288.78, 291.76, 293.70, 295.87, 301.06, 307.52
b. TRM 295.87, 301.06, 307.52
c. TRM 277.98, 283.94, 288.78, 291.76, 293.70

Table 68

OLIGOCHAETA POPULATIONS BY STATIONS (FALL)

BROWNS FERRY NUCLEAR PLANT

	Oligochaeta/m^2 (mean values)								
	Preoperational		Operational						
TRM	All Seasons	Fall	1973	1974	1975	1976	1977	1978	1979
277.98	103	70	155	90	286	138	33	72	40
283.94	95	71	32	205	108	97	36	29	9
288.78	174	198	455	300	452	155	79	212	83
291.76	122	135	240	245	787	114	38	69	27
293.70	148	133	171	169	466	47	87	27	14
295.87[a]	74	70	387	74	107	130	34	85	8
301.06[a]	67	70	105	179	73	96	18	31	14
307.52[a]	27	50	79	116	26	22	16	2	14

a. Control stations