DUKE POWER COMPANY

CATAWBA NUCLEAR STATION

INTERIM MONITORING STUDY

LAKE WYLIE WATER QUALITY MONITORING
INTERIM 1981-1982

ENVIRONMENTAL SERVICES SECTION
STEAM PRODUCTION DEPARTMENT
DUKE POWER COMPANY

July 1982

INTRODUCTION

Lake Wylie, located in North and South Carolina, is the third largest of eleven reservoirs impounding the Catawba River by Duke Power Company. This reservoir extends north 45 km from the Wylie Dam up to the Mountain Island Dam. At full pond elevation (181.7 m above MSL) Lake Wylie has a surface area of approximately 5000 ha, and contains a total volume of approximately 3.46×10^8 m^3 with a mean depth of approximately 7 meters (Industrial Bio-Test Laboratories 1974; USEPA 1975). Lake Wylie has a drainage basin of 7821 km^2 (Duke Power Company Data Manual 1980c) with 1632 km^2 drained by the South Fork Catawba River (Industrial Bio-Test Laboratories 1974). The lake receives 50% of its water from the Catawba River via Mountain Island reservoir, 25% from the South Fork River, and 25% from local tributary input and runoff (Industrial Bio-Test Laboratories 1974). Based on an average flow of 125 cms through Wylie Dam, the average theoretical retention time of the reservoir is 32 days (Industrial Bio-Test Laboratories 1974).

The reservoir serves the Wylie Hydroelectric Station (60 megawatts) which has an average generating discharge of 116 cms. During operation, water is withdrawn from a depth of 6 to 18 m and discharged downstream. The lake also serves as a cooling water source for Plant Allen Steam Station, a 1155 megawatt fossil fueled steam generating station. Plant Allen, located on the northern portion of Lake Wylie between the Catawba River and the South Fork River, draws cooling water from the Catawba River at a maximum rate of 38 cms. This water is used for once through condenser cooling and discharged into the South Fork River.

In addition, Lake Wylie will supply makeup water at an average flow of 10 cms for the Catawba Nuclear Station (CNS). The Catawba Nuclear Station

is located in York County, South Carolina. The site is located near the center of a peninsula lying between Beaver Dam Creek on the north, Big Allison Creek on the south, and the main body of Lake Wylie on the east (Figure 1). The cooling water will be withdrawn from the main body of the lake and will pass through a maximum of 10 cycles of concentration in mechanical draft cooling towers with the blowdown to be discharged at a rate of 0.15 cms into the Big Allison Creek arm of Lake Wylie.

In August 1974, Duke Power Company, Environmental Services Section began a sampling program on Lake Wylie. This program constitutes the interim monitoring program for Catawba Nuclear Station. The interim study conforms to the 1977 through 1979 interim program stated in the Catawba Nuclear Station Environmental Report (CNSER Section 6.1.1.1.2 - Table 6.1.14). Data for the period 1974 through 1981 have been reported by Duke Power Company (1977a, 1978, 1979, 1980a, 1981). The data contained in this report cover the period July 1981 through June 1982. The objectives of the interim study for Catawba Nuclear Station are to:

(1) document any long-term trends in the temporal variability of Lake Wylie water quality and,

(2) compare long-term trends in the water quality data immediately above and below the CNS site.

MATERIALS AND METHODS

Sampling locations were monitored from July 1981 through June 1982 (Figure 1; Table 1). The sampling regime is listed in Table 2. A Hydrolab Model 6D water quality surveyor was used for all in-situ measurements. Water samples were collected with a diaphragm pump. The analytical methods for chemical and physical constituents measured on Lake Wylie are listed in Table 3. Quality assurance practices adhered to USEPA (1979).

Data Analysis

Daily precipitation totals at Charlotte Douglas International Airport, Charlotte, North Carolina were plotted for the period July 1981 through May 1982 (National Oceanic and Atmospheric Administration 1981-1982) (Figure 2). Also, daily Lake Wylie forebay surface elevations were plotted to indicate lake levels for the period. Mean daily discharge at Wylie Hydroelectric Station and at Mountain Island Hydroelectric Station were plotted to indicate daily discharges (Figure 2).

The water quality data were subjected to descriptive statistics (means, standard deviation, maximum and minimum values) as outlined in Barr et al. (1976). Also, the data were subjected to Pearson's correlation analysis (Helwig and Council 1979). Only results with $p \geq 0.05$ were considered statistically significant. Standard deviation is denoted by "s". For statistical calculations, all analytical determinations recorded as less than the detection limit were assumed to be equal to the detection limit as listed in Table 3. Bicarbonate values were calculated from alkalinity values using factors found in Hem (1970).

As previously reported, to summarize the large amount of data collected from July 1981 through June 1982 the following locations were grouped into specific regions: Catawba River region (Locations 250.0 and 260.0), South Fork Catawba River region (Locations 240.0 and 249.0), Catawba Nuclear Intake region (Locations 220.0 and 225.0) and Catawba Nuclear Station Discharge region (Locations 210.0 and 215.0). These groupings were based primarily on the geographic proximity of each location. In discussing seasonal variability among quarterly data the following monthly divisions were made: summer (August), fall (October), winter (January) and spring (May). Data for certain variables are presented

graphically for the period January 1976 through July 1982. Comparisons in this report generally are made with data obtained during the 1979, 1980, and 1981 reporting periods.

The physicochemical data collected on Lake Wylie during the 1981 through 1982 interim period are presented in Appendices 1 through 5.

SUMMARY AND CONCLUSIONS

In-situ profile data were collected monthly and water samples for laboratory analyses were collected quarterly during the period July 1981 through June 1982. As noted in previous reports, local hydrology and meteorology exerted the primary influence upon the variability of the chemical and physical parameters.

The South Fork Catawba River continued to be strongly influenced by surface runoff, municipal and industrial discharges, and thermal discharges from Plant Allen Steam Station. Due to the influence of discharge from Mountain Island Lake, the Catawba River continued to exhibit trends of a well-mixed riverine system. The region of Lake Wylie immediately above and below Catawba Nuclear Station displayed characteristics of a warm monomictic lake (Hutchinson 1957).

As observed in previous study periods, water temperatures throughout Lake Wylie generally followed typical seasonal variations. Temperature profiles in the South Fork region displayed stratification induced by heated discharge water from Plant Allen. The maximum water temperature was measured in the South Fork Catawba River region which is influenced by thermal discharge from Plant Allen. Throughout the study period, temperatures in the Catawba River region indicated well mixed conditions. Thermal stratification was apparent in the regions immediately above and below CNS during the spring and summer. Isothermal conditions were generally observed in the regions immediately above and below CNS from October through March.

Dissolved oxygen (DO) concentrations generally reflected the relationship between oxygen solubility and water temperature. Lowest DO concentrations generally occurred from July through October. The maximum DO concentrations were generally observed during January and February.

Due to below normal precipitation levels during the period ending June 1982, turbidity values were generally less than 15 NTU. Lake Wylie is a soft water lake, exhibiting a hardness value of 18 mg-$CaCO_3 \cdot \ell^{-1}$.

Nutrient and mineral concentrations in Lake Wylie continued to exhibit trends similar to those observed during previous reporting periods. The nutrient concentrations in the South Fork Catawba River region were generally higher than any of the other regions of the lake. Total phosphorus concentrations were greatest in the South Fork Catawba River region. Total phosphorus concentrations in the downlake regions during January and May were higher than total phosphorus concentrations observed in the 1980-1981 reporting period. Total phosphorus concentrations were generally lower in the Catawba River region during January and May than in the lower lake regions. Total phosphorus concentrations in the South Fork River region were at or above the rest of the lake regions during January and May.

Analyses of cadmium, copper, and lead indicated that the trace metal concentrations and spatial variability were similar to previous years (Duke Power Company 1977a, 1978, 1979, 1980a, 1981). As observed in previous reporting periods, trace metal concentrations were higher in the South Fork Catawba River region.

The physiochemical constituents measured on Lake Wylie continued to exhibit trends

similar to those observed during previous reporting periods. No significant changes were observed from the previous year interim period.

RESULTS AND DISCUSSION

Physical Variables (Temperature, Dissolved Oxygen, Turbidity)

Lake Wylie temperatures ranged from 2.0°C during January (Location 249.0) to 35.0°C during July (Location 240.0). Maximum temperatures were observed during the warmest months July (35.0°C) and August (34.0°C). The maximum temperature each month was measured in the South Fork Catawba River region, and was attributed to thermal discharges from Plant Allen Steam Station (Figure 3). Minimum temperatures were recorded in the lake region during December (5.0°C, Location 225.0) and January (2.0°C, Location 249.0). Temperatures in the down lake regions continued to display patterns similar to past reporting periods (Figure 4). Thermal stratification was apparent from May (1982) through August (1981). As observed in past studies, the South Fork Catawba River region was stratified each month (Industrial Bio-Test Laboratories 1974; Duke Power Company 1977a, 1978, 1979, 1980a, 1981). Due to thermal discharge from Plant Allen, a surface plume of heated water frequently extends upstream and downstream, approximately 1.5 miles in both directions, from the point of discharge (Industrial Bio-Test 1974). As indicated by the consistently small difference between maximum and minimum water temperatures in the water column, the Catawba River region is a well-mixed riverine system. Surface to bottom temperature values at CNS intake and discharge exhibited little vertical difference from July 1981 through June 1982 (Figures 5-6). The maximum difference in vertical temperature values was observed at CNS intake and discharge during July 1981 ($\Delta T = 6.9°C$) and May 1982 ($\Delta T = 6.3°C$) (Figures 5-6). Due to the shallowness of the intake and discharge regions and the low retention time of Lake Wylie, stratification patterns were not well defined (Figures 5-6). Previous studies

reported temperature trends similar to those observed during this period (Duke Power Company 1977a, 1978, 1979, 1980a, 1981).

Following seasonal patterns typical of other Piedmont Carolina reservoirs (Duke Power Company 1977; Industrial Bio-Test Laboratories 1974), dissolved oxygen (DO) concentrations in Lake Wylie ranged from 0.0 $mg \cdot \ell^{-1}$ during July and August to 14.4 $mg \cdot \ell^{-1}$ during May. The overall highest concentrations generally occurred in January and the lowest DO concentrations generally occurred from July through October (Figures 3 through 6). The elevated DO concentrations in May were associated with elevated pH indicative of photosynthetic activity. Dissolved oxygen concentrations in the water column began to decline in April with the bottom waters being less than 5.0 $mg \cdot \ell^{-1}$ from July through September 1981 and May through June 1982. Surface DO concentrations were always above 5.0 $mg \cdot \ell^{-1}$. These DO trends were similar to those observed in previous reports (Duke Power Company 1977a, 1978, 1979, 1980a, 1981).

Turbidity, ranged from 4 to 52 NTU ($\bar{x}$ = 16.0 NTU, s = 13). Highest turbidity values were generally recorded in the Catawba River region and the South Fork Catawba River region during August (Figure 7) and were similar to spatial trends observed in previous reports (Duke Power Company 1980a, 1981). Winter turbidity values were higher (9.6% increase) in the downlake locations immediately above and below the Catawba Nuclear Station than those values reported in the 1981 reporting period (Duke Power Company 1981) (Figure 7).

Alkalinity and pH

Alkalinity values exemplified a soft water lake (Wetzel 1975). Monthly values ranged from 10 to 40 $mg\text{-}CaCO_3 \cdot \ell^{-1}$ ($\bar{x}$ = 15 $mg\text{-}CaCO_3 \cdot \ell^{-1}$, s = 5). Lake Wylie was slightly acidic with 70% of the pH values less than 7.0 pH units. During this interim period, pH values ranged from 6.0 (CNS discharge region; July 1981)

(Location 200.0; October) to 9.5 (Location 215.0; May 1982) ($\bar{x}$ = 6.8, s = 0.6). The higher summer pH values observed in the surface waters were attributed to photosynthetic activity. The seasonal pH trends were similar to those previously reported.

Specific Conductance and Hardness

Specific conductance values ranged from 54 to 410 $\mu mho \cdot cm^{-1}$ ($\bar{x}$ = 104 $\mu mho \cdot cm^{-1}$, s = 36) throughout the study area. As observed in past years, specific conductance values were higher in the South Fork Catawba River region than in either the Catawba River region or the downlake regions in the vicinity of CNS. Generally conductance values observed during this monitoring period were slightly higher than those observed in the 1980-1981 reporting period (range of 42 to 296 $\mu mho \cdot cm^{-1}$ during 1980 through 1981). The conductivities of the lake regions immediately above and below CNS were similar. Lake Wylie waters, exhibiting a hardness value of 18 $mg\text{-}CaCO_3 \cdot \ell^{-1}$, exemplified a soft water lake (Wetzel 1975).

Mineral Composition

No substantial monthly or yearly variability was observed in mineral concentrations (Figure 8). Sodium and bicarbonate were the major ions in Lake Wylie. Calcium, chloride, magnesium, silica, and potassium were also important constituents in Lake Wylie (Figure 8). Minor mineral constituents included aluminum, iron, and manganese (Figure 8).

Aquatic Nutrients (Nitrogen and Phosphorus)

The mean nitrate plus nitrite concentration was 0.20 $mg\text{-}N \cdot \ell^{-1}$ (s = 0.20), with concentrations ranging from less than 0.010 $mg\text{-}N \cdot \ell^{1}$ (August 1981) to 0.89 $mg\text{-}N \cdot \ell^{-1}$ (October 1981). The trends observed during the 1980-1981 reporting period continued through the 1981-1982 period (Figure 9). Maximum concentrations of nitrate plus nitrite generally occurred in winter. The lower nitrate plus nitrite

concentrations occurred during periods of low DO concentrations in Lake Wylie bottom waters. Upstream loading along the South Fork River (Industrial Bio-Test Laboratories 1974) resulted in higher nitrate plus nitrite concentrations in the South Fork Catawba River region than any of the other three regions (Figure 9). The lake regions immediately above and below CNS continued to display previously observed seasonal patterns.

The mean ammonia concentration for the study was 0.11 mg-N·ℓ^{-1} (s = 0.08), with concentrations ranging from less than 0.005 mg-N·ℓ^{-1} (August 1981) to 0.57 mg-N·ℓ^{-1} (May 1982). During the 1981-1982 reporting period ammonia concentrations were generally more consistent in the down lake regions than in the river regions (Figure 10).

The temporal trends of total phosphorus and orthophosphate were similar. Orthophosphate concentrations ranged from less than 0.005 mg-P·ℓ^{-1} to 0.44 mg-P·ℓ^{-1} ($\bar{x}$ = 0.035 mg-P·ℓ^{-1}, s = 0.06). Orthophosphate concentrations were higher in the deeper water regions immediately above and below CNS during the winter and may have been due to surface runoff. Orthophosphate concentrations in the South Fork Catawba River region were considerably higher than the concentrations in the Catawba River region. Previous studies reported orthophosphate trends similar to those observed during this period (Duke Power Company 1977a, 1978, 1979, 1980a, 1981).

During the study period, total phosphorus concentrations ranged from 0.016 to 0.65 mg-P·ℓ^{-1} ($\bar{x}$ = 0.067 mg-P·ℓ^{-1}, s = 0.07). Total phosphorus concentrations generally decreased with distance, during August and October, downstream from the South Fork Catawba River region. Higher total phosphorus concentrations were observed in the downlake regions during January and May than observed in the 1890-1981 reporting period (Figure 11).

Heavy Metals (cadmium, copper, lead, and zinc)

Analyses of cadmium, copper, lead, and zinc indicated concentrations and spatial variability similar to previous years (Duke Power Company 1977a, 1978, 1979, 1980a, 1981). Cadmium levels ranged from less than 0.1 to 4.5 $\mu g \cdot \ell^{-1}$. Generally, lowest values were observed during January (80% less than 0.1 $\mu g \cdot \ell^{-1}$) and August (90% less than 0.1 $\mu g \cdot \ell^{-1}$). Copper concentrations ranged from less than 1.0 to 280 $\mu g \cdot \ell^{-1}$. The higher copper concentrations were observed at Location 249.0 on two occasions (October 1981, 280.0 $\mu g \cdot \ell^{-1}$ and January 1982, 260 $\mu g \cdot \ell^{-1}$) indicating input to the South Fork River from an apparent upstream point source. Ninety two percent of lead concentrations were less than 1.0 $\mu g \cdot \ell^{-1}$. Zinc concentrations ranged from 5.0 to 300 $\mu g \cdot \ell^{-1}$. The higher zinc concentrations was generally observed in the South Fork Catawba River regions.

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Table 1. Lake Wylie water quality monitoring locations and depths (Duke Power Company 1980b).

Sampling Location	Location Depth (m)	Description
260.0	6-8	Catawba River at Rt. 29-74 bridge, mid-channel
250.0	5	Catawba River, 25 m from Allen Steam Station intake screen
249.0	3-4	South Fork Catawba River at Upper Armstrong Bridge, mid-channel
240.0	11-12	South Fork Catawba River at Lower Armstrong Bridge, mid-channel
225.0	14-15	Lake Wylie at Route 49 Bridge, mid-channel
220.0	15	Lake Wylie near mouth of embayment near proposed intake to CNS, mid-channel
210.0	16-17	Lake Wylie near mouth of Big Allison Creek and Catawba River, due east of Goat Island, mid-channel
215.0	9-10	Big Allison Creek, near bridge over proposed discharge for CNS, mid-channel

Table 2. Lake Wylie Interim Monitoring Program

Location	210.0	215.0	220.0	225.0	240.0	249.0	250.0	260.0
In-situ Analyses								
Temperature Dissolved oxygen pH Specific conductance	In-situ parameters are acquired monthly using the In-situ Water Quality Analyzer at all locatons at 1 m intervals from the surface (0.3 m) to 1 m above the bottom.							
Laboratory Analyses								
Alkalinity	Q/T,B/2	Q/T,B/2	Q/T,B/2	Q/T,B/1	Q/T,B/1	Q/T/1	Q/T,B/1	Q/T/1
Turbidity	Q/T,B/2	Q/T,B/2	Q/T,B/2	Q/T,B/1	Q/T,B/1	Q/T/1	Q/T,B/1	Q/T/1
Ammonia†	Q/T,B/2	Q/T,B/2	Q/T,B/2	Q/T,B/1	Q/T,B/1	Q/T/1	Q/T,B/1	Q/T/1
Nitrate-Nitrite	Q/T,B/2	Q/T,B/2	Q/T,B/2	Q/T,B/1	Q/T,B/1	Q/T/1	Q/T,B/1	Q/T/1
Orthophosphate	Q/T,B/2	Q/T,B/2	Q/T,B/2	Q/T,B/1	Q/T,B/1	Q/T/1	Q/T,B/1	Q/T/1
Total phosphorus	Q/T,B/2	Q/T,B/2	Q/T,B/2	Q/T,B/1	Q/T,B/1	Q/T/1	Q/T,B/1	Q/T/1
Chloride	Q/T,B/2	Q/T,B/2	Q/T,B/2	Q/T,B/1	Q/T,B/1	Q/T/1	Q/T,B/1	Q/T/1
Silica	Q/T,B/2	Q/T,B/2	Q/T,B/2	Q/T,B/1	Q/T,B/1	Q/T/1	Q/T,B/1	Q/T/1
Iron	Q/T,B/1	Q/T,B/1	Q/T,B/1		Q/T,B/1		Q/T,B/1	Q/T/1
Manganese	Q/T,B/1	Q/T,B/1	Q/T,B/1		Q/T,B/1		Q/T,B/1	Q/T/1
Magnesium	Q/T,B/1	Q/T,B/1	Q/T,B/1		Q/T,B/1		Q/T,B/1	Q/T/1
Calcium	Q/T,B/1	Q/T,B/1	Q/T,B/1		Q/T,B/1		Q/T,B/1	Q/T/1
Sodium†	Q/T,B/1	Q/T,B/1	Q/T,B/1		Q/T,B/1		Q/T,B/1	Q/T/1
Potassium	Q/T,B/1	Q/T,B/1	Q/T,B/1		Q/T,B/1		Q/T,B/1	Q/T/1
Aluminum	Q/T,B/1	Q/T,B/1	Q/T,B/1		Q/T,B/1		Q/T,B/1	Q/T/1
Cadmium	Q/T,B/1	Q/T,B/1	Q/T,B/1		Q/T,B/1		Q/T,B/1	Q/T/1
Copper	Q/T,B/1	Q/T,B/1	Q/T,B/1		Q/T,B/1		Q/T,B/1	Q/T/1
Lead	Q/T,B/1	Q/T,B/1	Q/T,B/1		Q/T,B/1		Q/T,B/1	Q/T/1
Zinc	Q/T,B/1	Q/T,B/1	Q/T,B/1		Q/T,B/1		Q/T,B/1	Q/T/1

Codes

Frequency of Sampling / Depth Interyals / Number of Replicates

Frequency of Sampling:

M - Monthly
Q - Quarterly (Jan-Feb, April-May, Aug, Oct-Nov)

Depth Intervals:

T - Surface (0.3 m)
B - Bottom (1 m above bottom)

Number of Replicates:

1 (only a surface and a bottom sample)
2 (two surface and two bottom samples)

Table 3. Analytical methods for chemical and physical constituents measured on Lake Wylie.

Variables	Method	Preservation	Detection limit†	Limit of Determination†
Alkalinity, total	Electrometric titration to a pH of 5.1[1]	4°C	1 mg-$CaCO_3 \cdot l^{-1}$*	
Aluminum	Atomic absorption/DA[1]	0.5% HNO_3	0.2 mg$\cdot l^{-1}$	0.6 mg$\cdot l^{-1}$
Ammonia	Automated phenate[1]	4°C	0.006 mg-N$\cdot l^{-1}$	0.009 mg-N$\cdot l^{-1}$
Cadmium	Atomic absorption/HGA[1]	0.5% HNO_3	0.11 µg$\cdot l^{-1}$	0.17 µg$\cdot l^{-1}$
Calcium	Atomic absorption/DA[1]	0.5% HNO_3	0.06 mg$\cdot l^{-1}$	0.08 mg$\cdot l^{-1}$
Chloride	Automated ferricyanide[1]	4°C	0.2 mg$\cdot l^{-1}$	0.3 mg$\cdot l^{-1}$
Conductance, specific	Temperature compensated nickel electrode[1]	In-situ	1 µmho/cm^{-1}*	
Copper	Atomic absorption/HGA[1]	0.5% HNO_3	0.7 µg$\cdot l^{-1}$	1.0 µg$\cdot l^{-1}$
Hardness (Ca, Mg)	Calculation[2]			0.1 mg-$CaCO_3 \cdot l^{-1}$
Iron, total	Atomic absorption/DA[1]	0.5%HNO_3	0.1 mg$\cdot l^{-1}$	0.2 mg$\cdot l^{-1}$
Lead	Atomic absorption/HGA[1]	0.5% HNO_3	2 µg$\cdot l^{-1}$	3.2 µg$\cdot l^{-1}$
Magnesium	Atomic absorption/DA[1]	0.5% HNO_3	0.007 mg$\cdot l^{-1}$	0.01 mg$\cdot l^{-1}$
Manganese	Atomic absorption/DA[1]	0.5% HNO_3	0.02 mg$\cdot l^{-1}$	0.06 mg$\cdot l^{-1}$
Nitrate + Nitrite	Automated cadmium reduction[1]	4°C	0.005 mg-N$\cdot l^{-1}$	0.008 mg-N$\cdot l^{-1}$
Orthophosphate	Automated ascorbic acid reduction[1]	4°C	0.005 mg-P$\cdot l^{-1}$	0.008 mg-P$\cdot l^{-1}$
Oxygen, dissolved	Temperature compensated polarographic cell[1]	In-situ	0.1 mg$\cdot l^{-1}$*	
pH	Temperature compensated glass electrode[1]	In-situ	0.1*	
Phosphorus, total	Persulfate digestion followed by automated ascorbic acid reduction[1]	4°C	0.004 mg-P$\cdot l^{-1}$	0.006 mg-P$\cdot l^{-1}$
Potassium	Atomic absorption/DA[1]	0.5% HNO_3	0.03 mg$\cdot l^{-1}$	0.006 mg-P$\cdot l^{-1}$
Silica	Automated molydosilicate[1]	4°C	0.2 mg-Si$\cdot l^{-1}$	0.3 mg-Si$\cdot l^{-1}$
Sodium	Atomic absorption/DA[1]	0.5% HNO_3	0.03 mg$\cdot l^{-1}$	0.06 mg$\cdot l^{-1}$
Temperature	Thermistor thermometer[1]	In-situ	0.1°C*	
Turbidity	Nephelometric turbidity[1]	4°C	1 NTU*	
Zinc	Atomic absorption/DA[1]	0.5% HNO_3	4 µg$\cdot l^{-1}$	7 µg$\cdot l^{-1}$

† = The detection limit is defined as: DL = $\bar{X}$ + 2(s), where $\bar{X}$ = mean and s = standard deviation of a selected number of blanks. The limit of determination is defined as: LD = $\bar{X}$ + 5(s).[3]
* = Detection limit and limit of determination were not determined on these variables; instead instrument sensitivity is given.
ND = Not determined.

[1]USEPA 1979 [2]APHA 1976 [3]Currie 1968

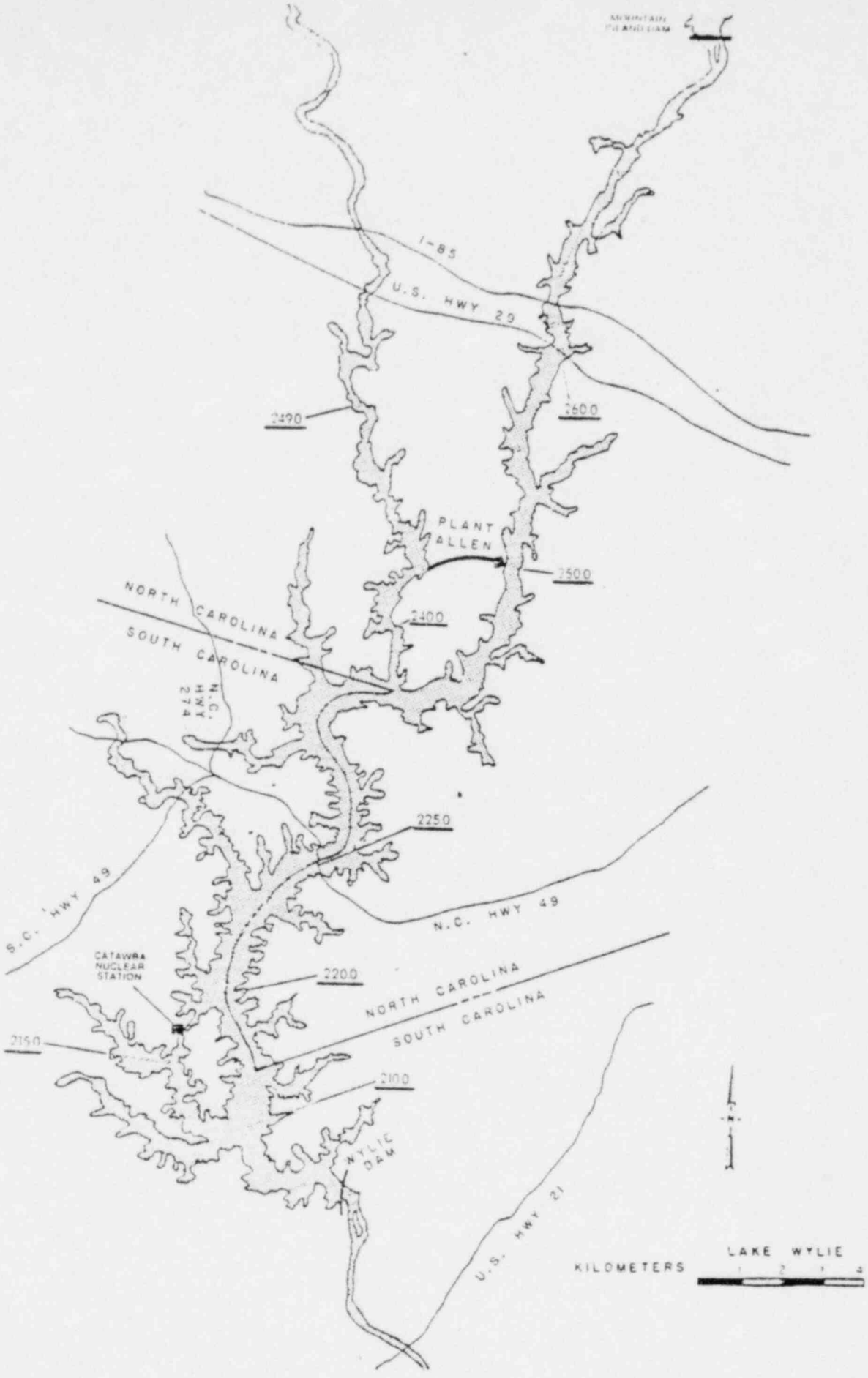
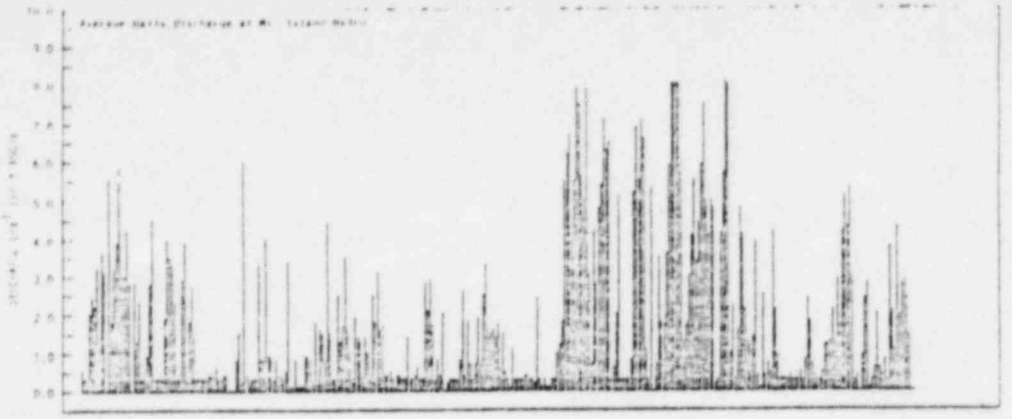
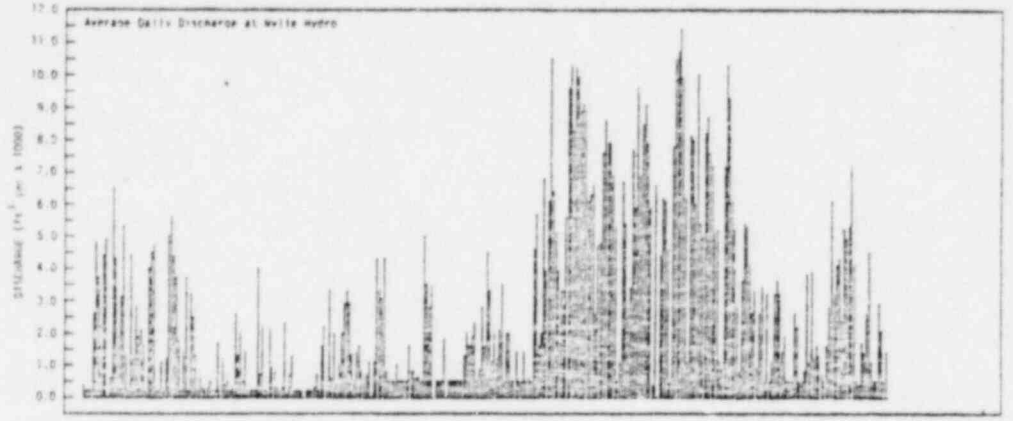
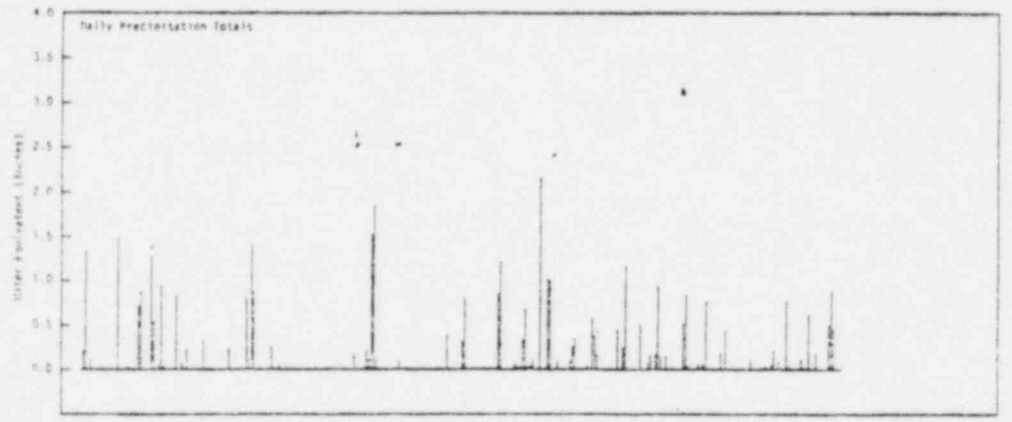


Figure 1. Sampling locations for Catawba Nuclear Station Interim Monitoring.







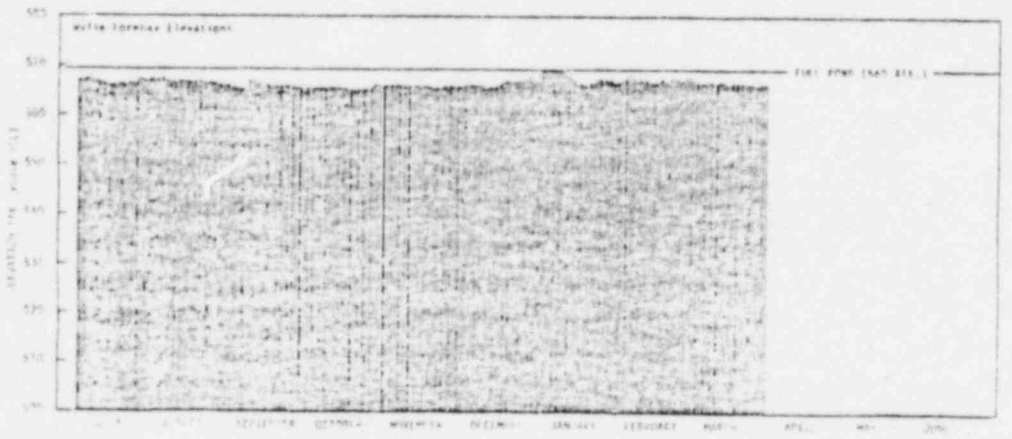


Figure 2. Summary of available hydrologic data for Lake Wylie for the period July 1971 - 1982

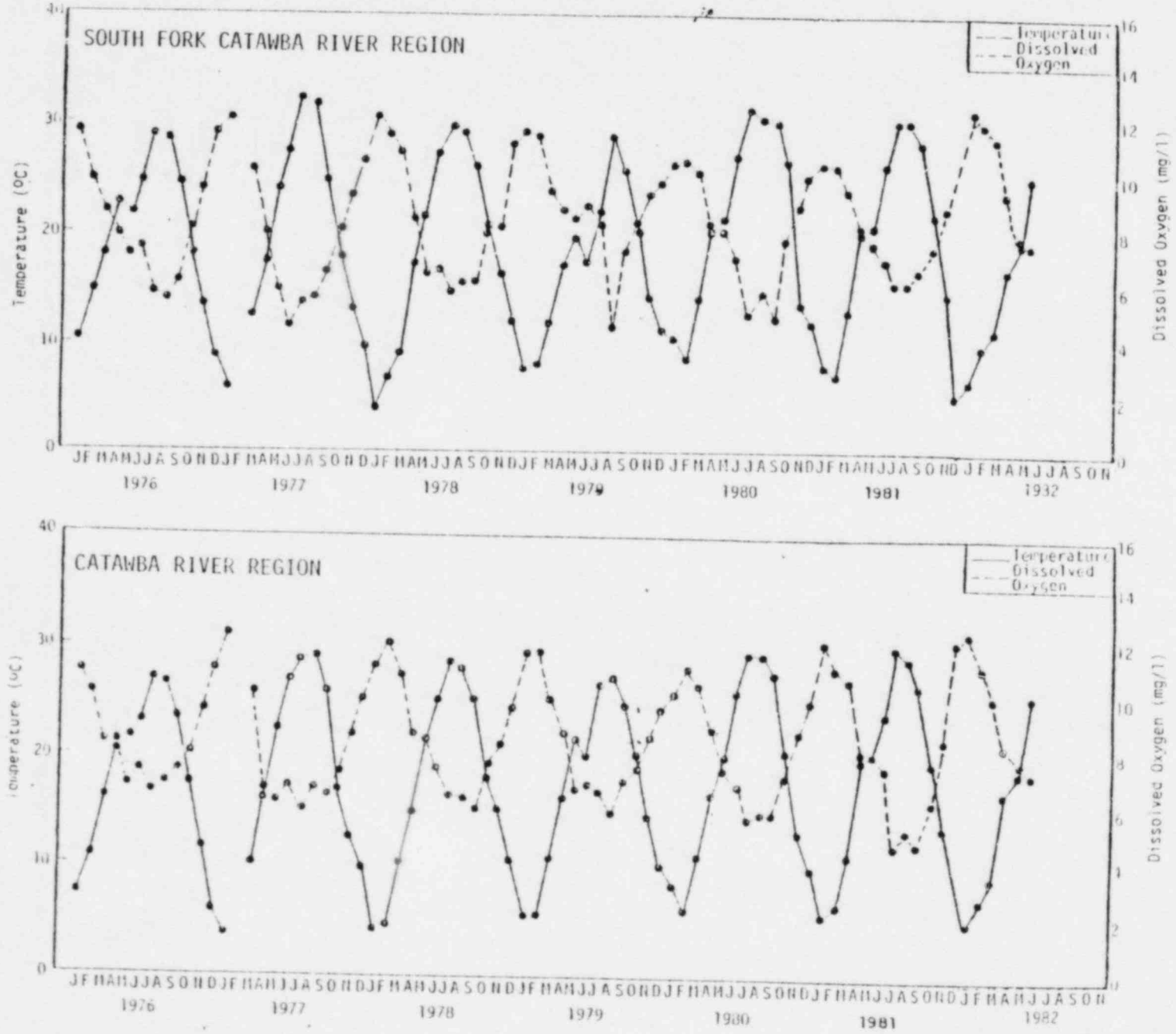


Figure 3. Monthly variations of mean temperature and dissolved oxygen for the South Fork Catawba River and the Catawba River regions of Lake [illegible], 1976-1982.

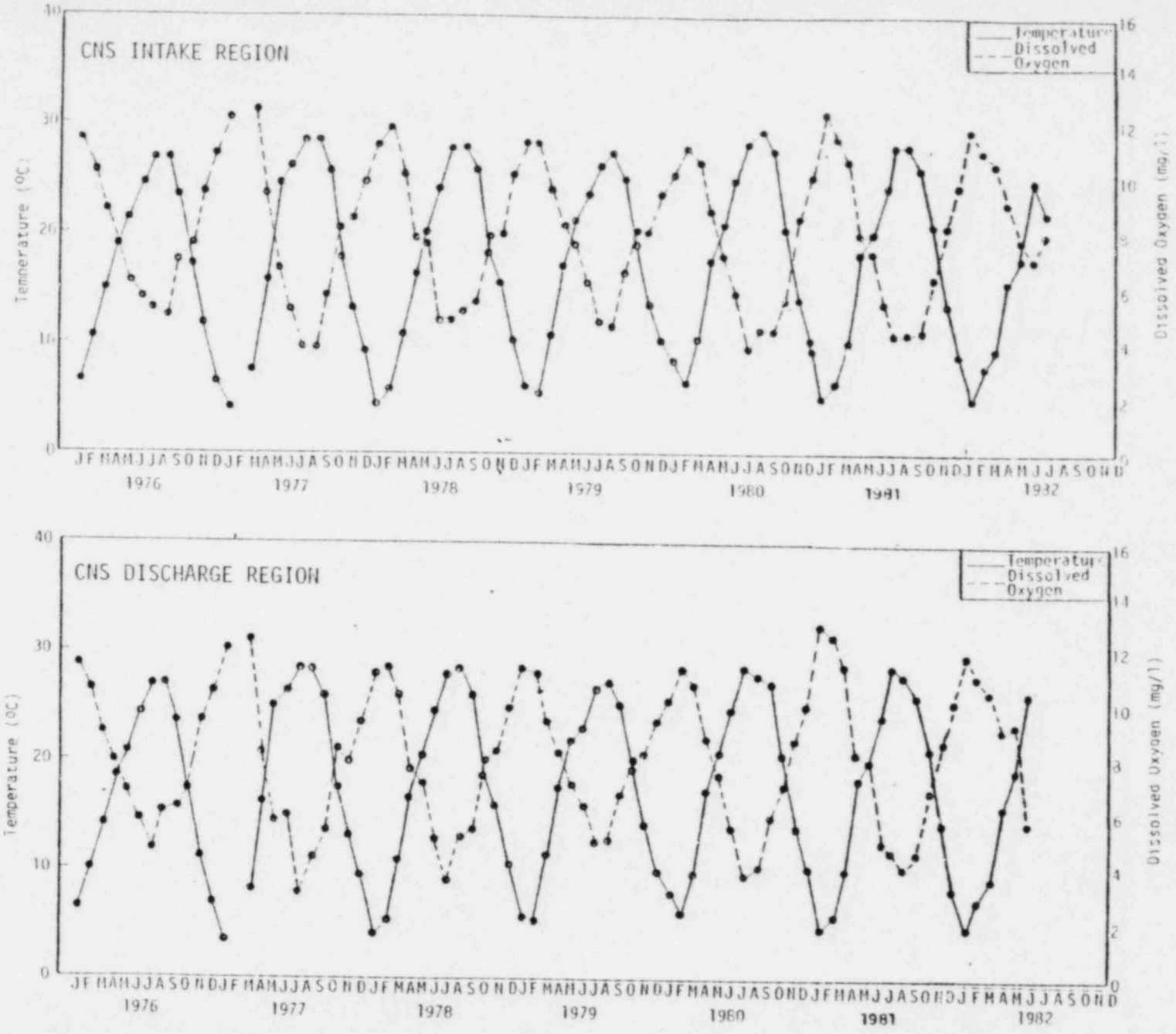


Figure 4. Monthly variations of mean temperature and dissolved oxygen for the CNS Intake and the CNS Discharge regions of [illegible] 1976 [illegible]

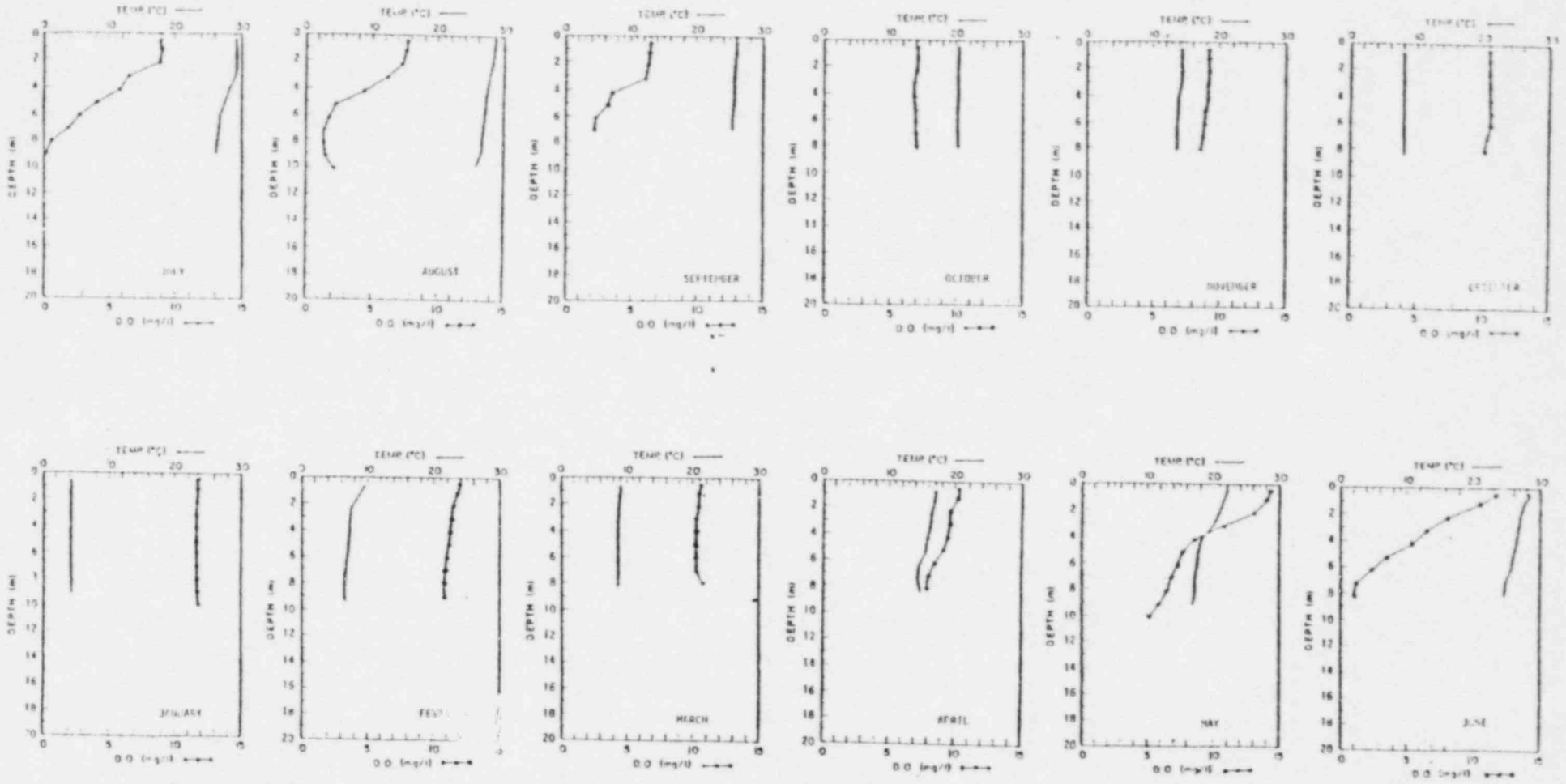


Figure 5. Monthly variations in thermal regimes (°C) and DO concentrations (mg/l) at CNS Intake (Location 220.0) July 1981 through June 1982.

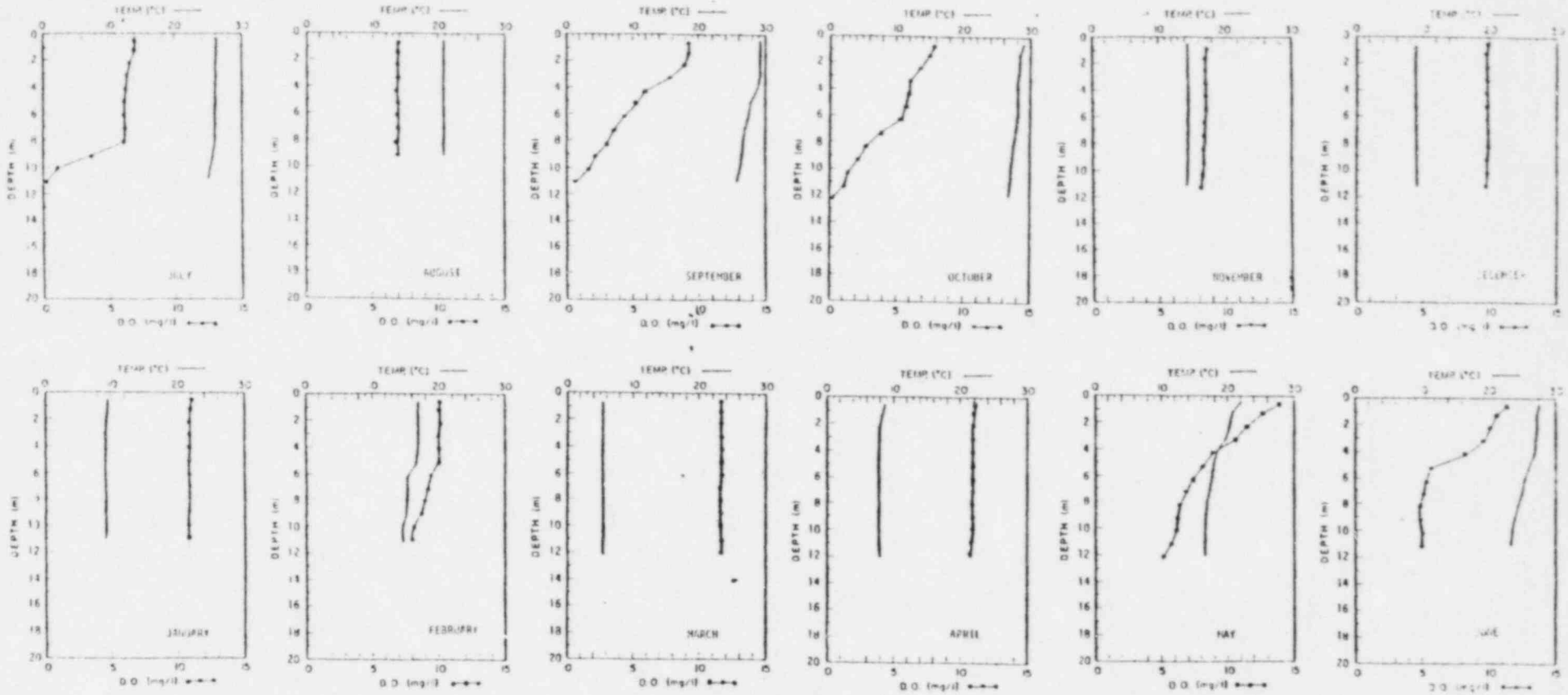


Figure 6. Monthly variations in thermal regimes (°C) and DO concentrations (mg/l) at CNS Discharge (Location 215.0) July 1981 through June 1982.

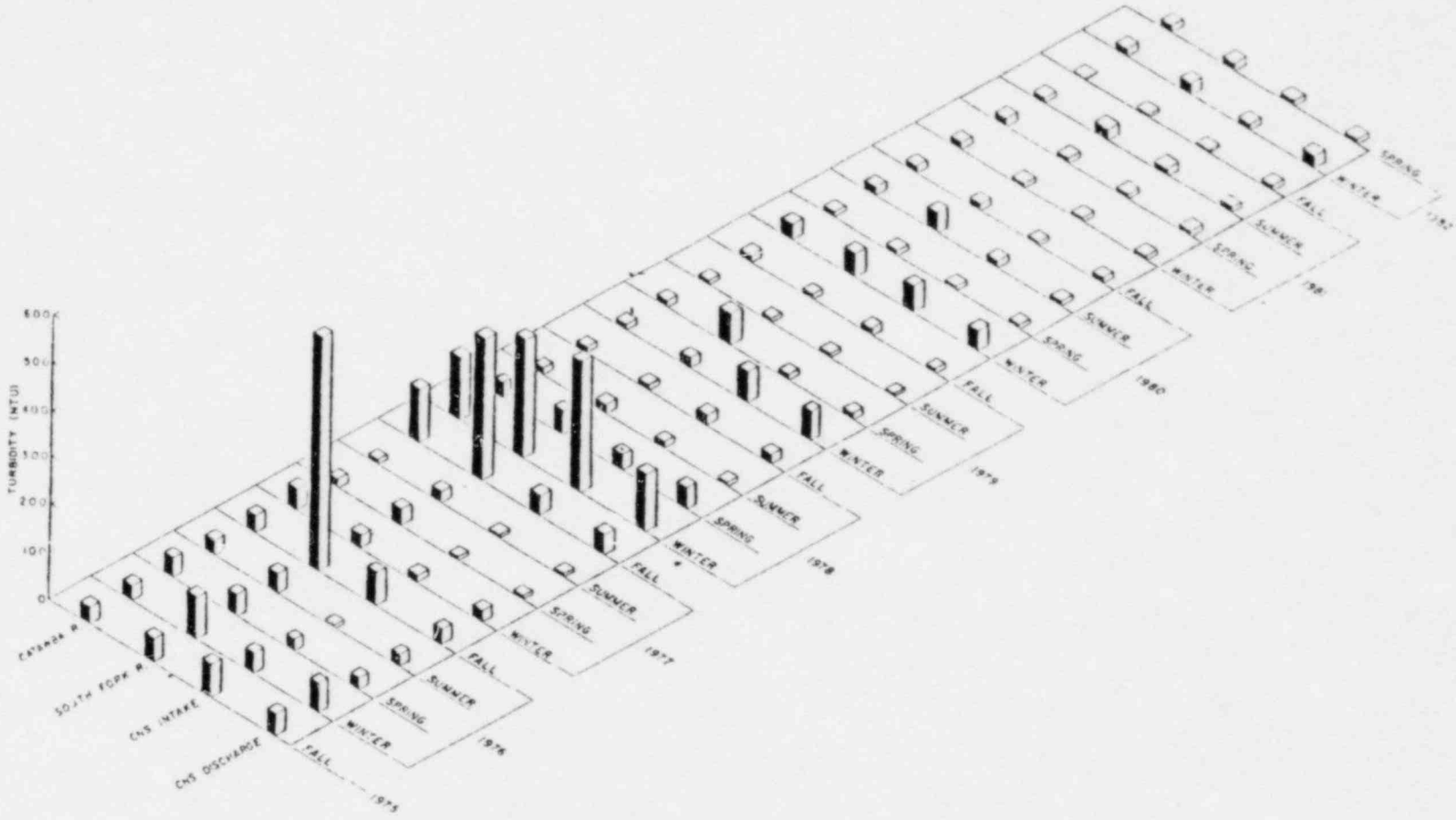


Figure 7. Seasonal variations of mean turbidity for Lake Wylie, 1975-1982.

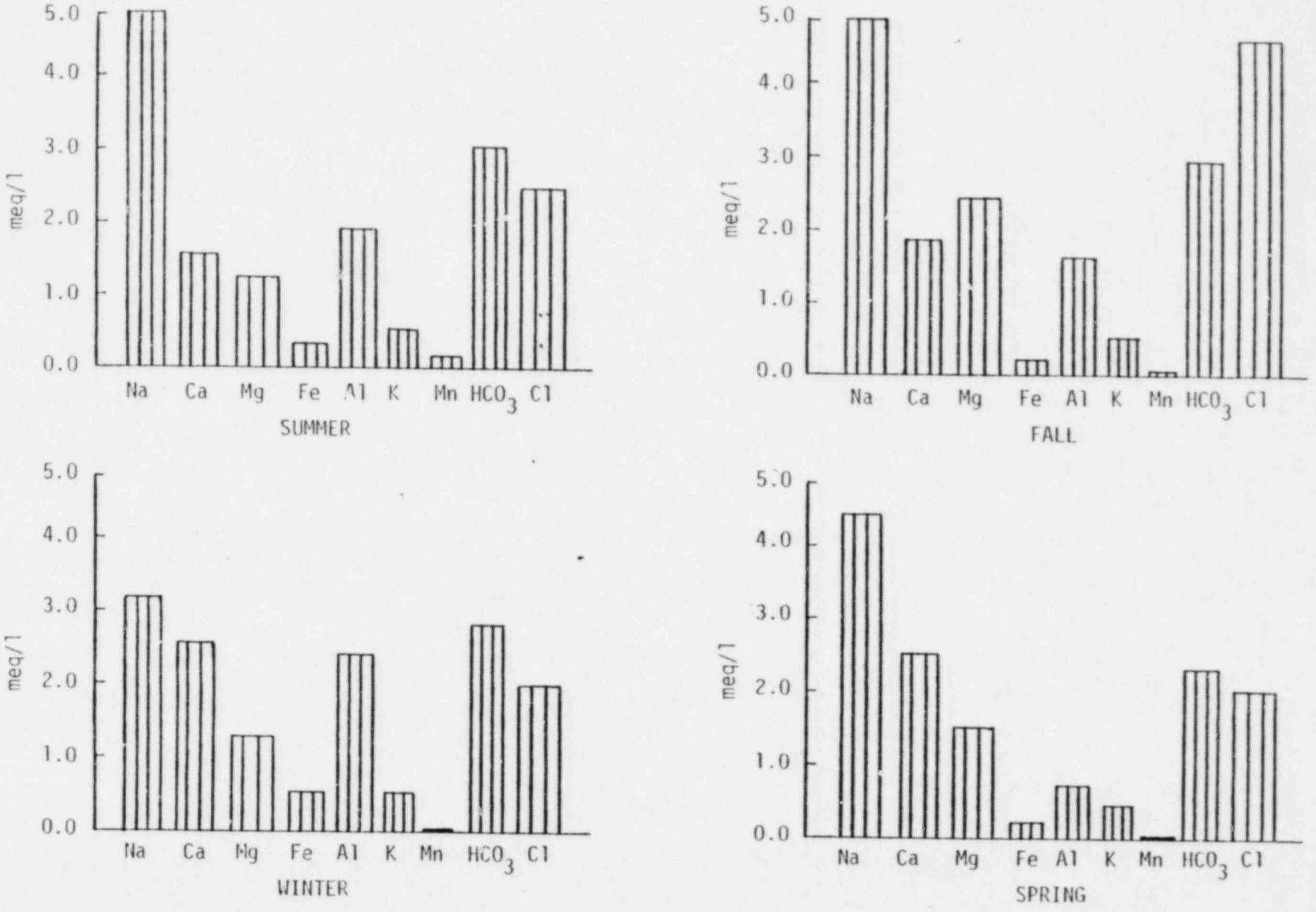


Figure 8. Variations (meq/l) in mineral compositions for Lake Wylie, July 1981 through June 1982.

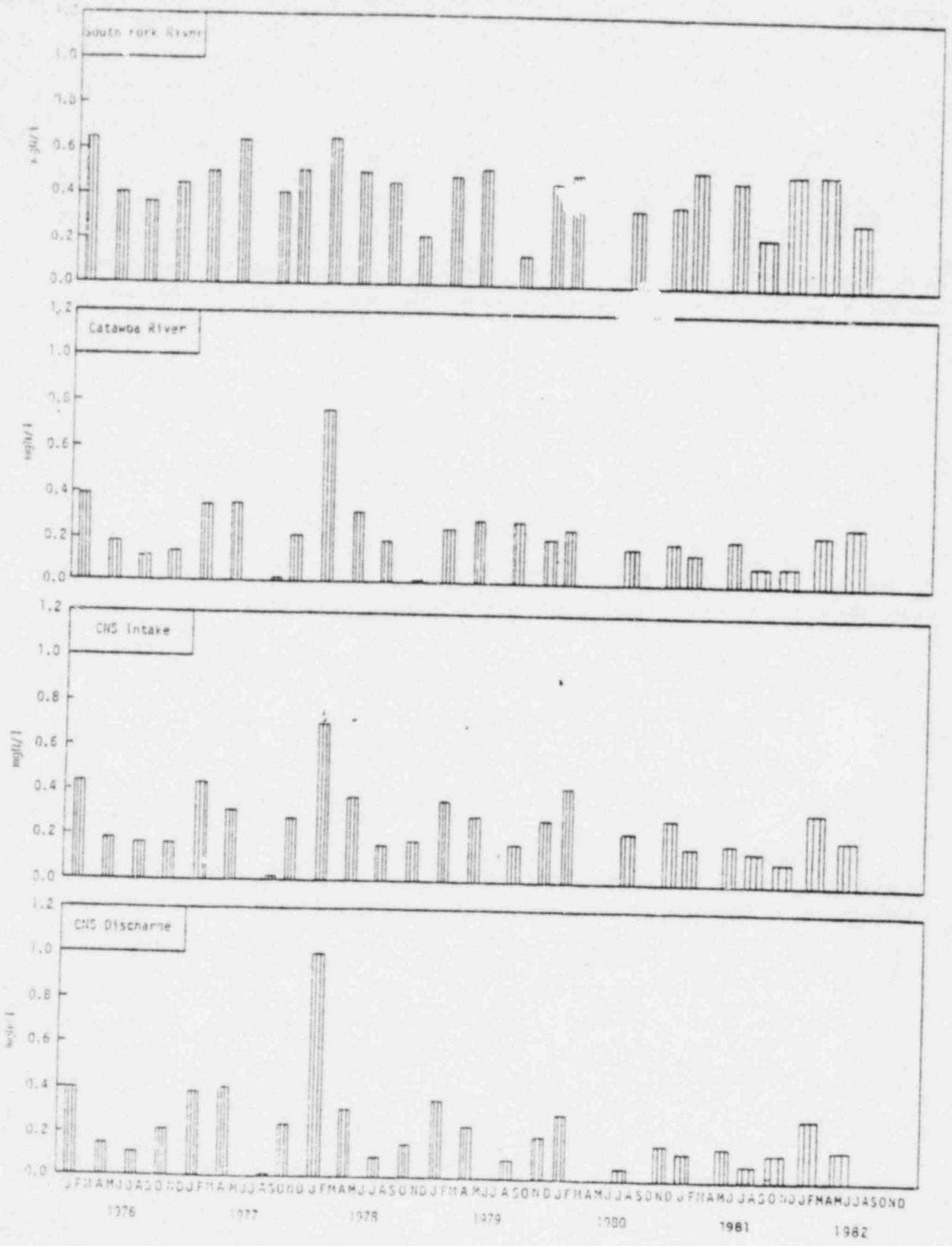


Figure 9. Variations of nitrate + nitrite concentrations for Lake Wylie, 1976-1982.

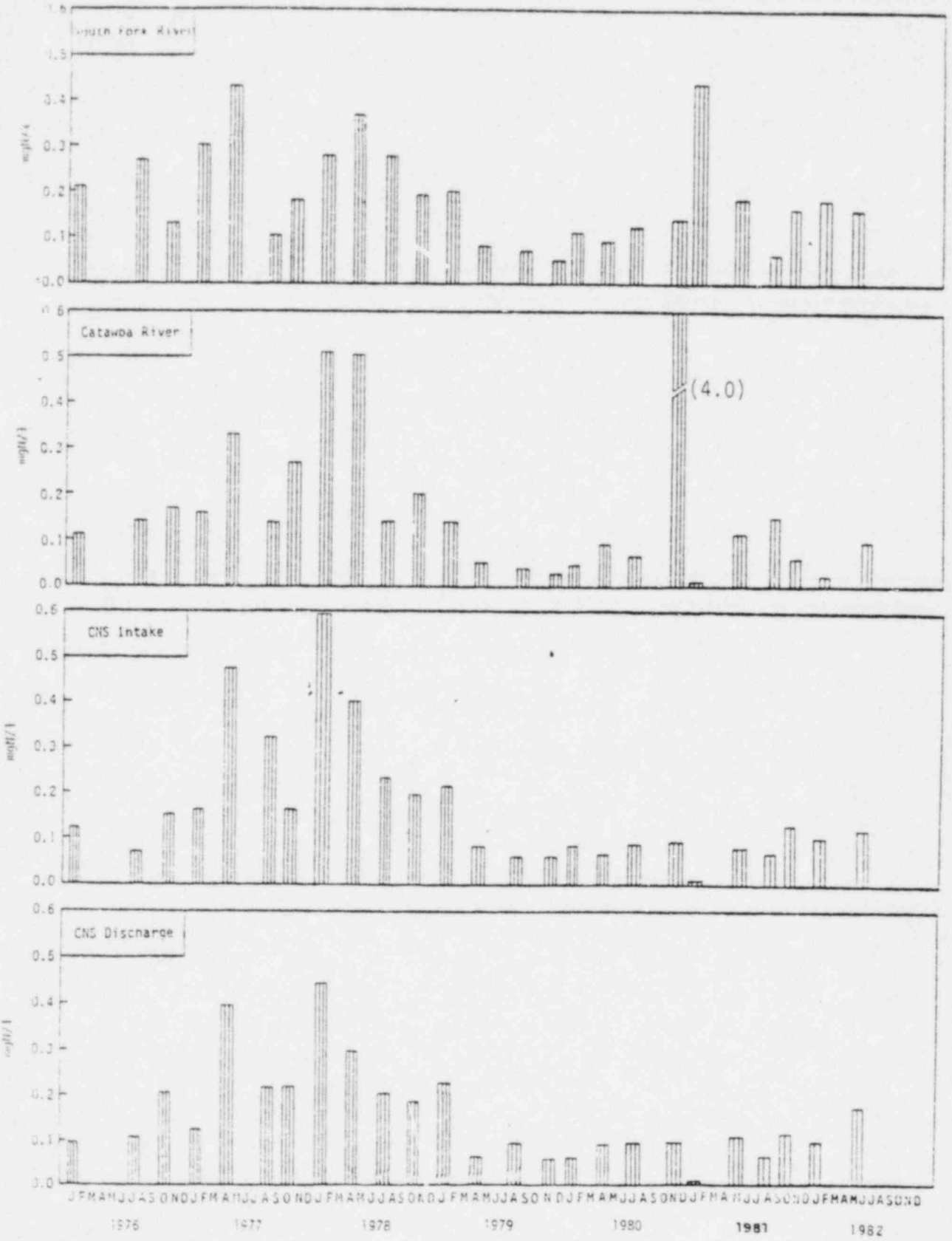


Figure 10. Variations of ammonia concentrations for Lake Wylie, 1976-1982.

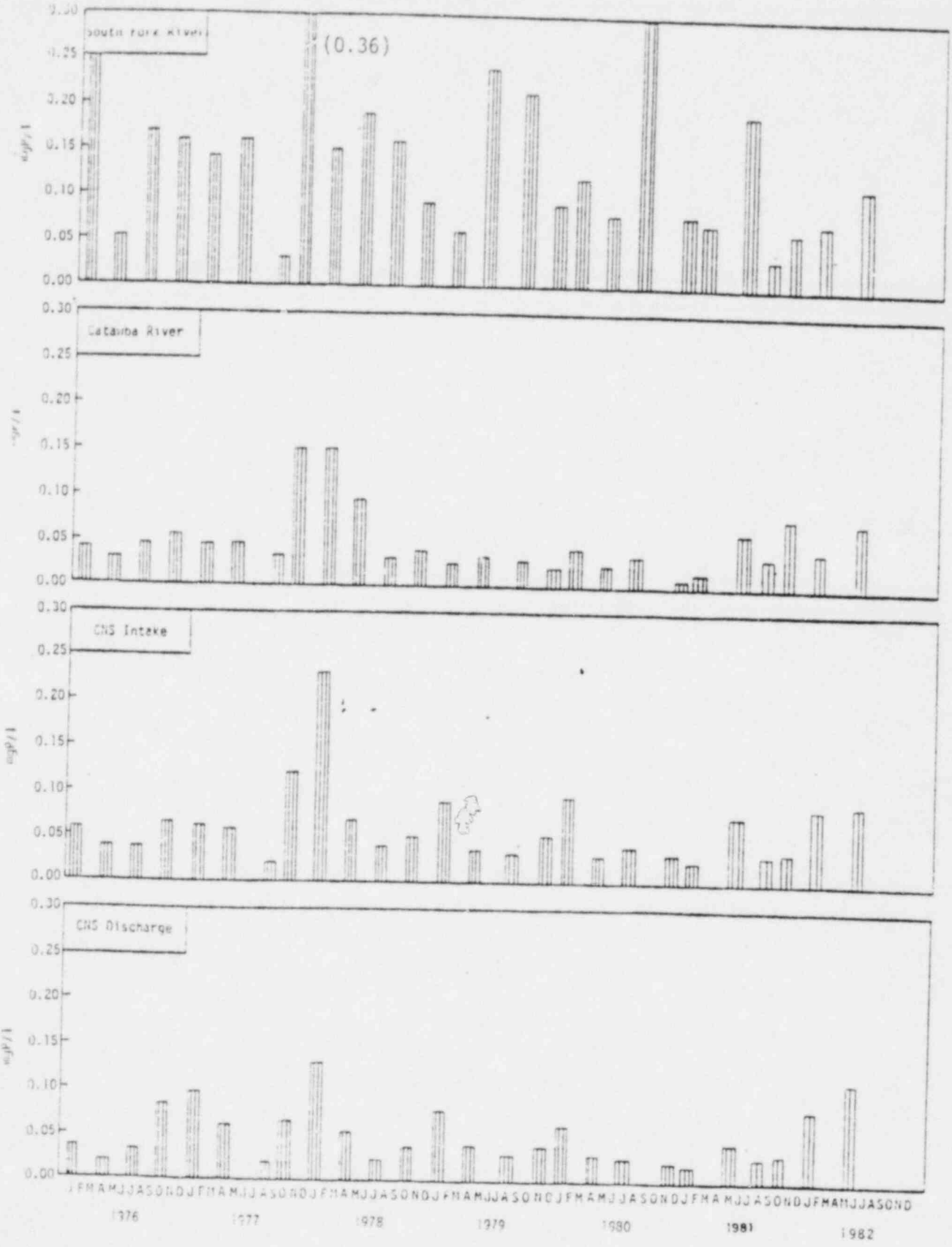


Figure 11. Variations of total phosphorus concentrations for Lake Wylie, 1976-1982.

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WATER QUALITY DATA
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LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TEMP C	CODE	DO MG/L	DO SAT %	CODE	SPEC COND UMHOS	CODE	PH	CODE	ORP MV	CODE	TURB NTU	CODE	ALK MG/L	CODE	SUR LIGHT LY/MIN	CODE	EUPH DEPTH METERS
210.0	1/28/82	1145	.3	1		4.8		11.9	92	F	67		7.1				18		14				
			.3	2		4.8		11.9	92	F	66		7.1				19		14				
			1.0			4.8		11.9	92	A			7.1										
210.0	1/28/82	1145	2.0			4.8		11.9	92	A			7.0										
			3.0			4.8		11.9	92	A			7.0										
			4.0			4.7		11.9	92	A			7.0										
			5.0			4.7		11.9	92	A			7.0										
			6.0			4.7		11.9	92	A			7.0										
			7.0			4.7		11.9	92	A			7.0										
			8.0			4.7		11.9	92	A			7.0										
			9.0			4.7		11.8	91	A			7.0										
			10.0			4.7		11.8	91	A			7.0										
			11.0	1		4.6		11.8	91	F	66		7.0				22		14				
			11.0	2		4.5		11.8	91	F	68		7.0				23		14				
			12.0			4.6		11.9	92	A			7.0										
210.0	2/12/82	1210	.3			8.7		11.0	94	F	70		6.8										
			1.0			7.9		11.0	92	A			6.9										
			2.0			7.5		11.0	91	A			6.9										
			3.0			7.5		11.0	91	A			6.9										
			4.0			7.5		11.0	91	A			6.9										
			5.0			7.5		11.0	91	A			6.9										
			6.0			7.5		11.0	91	A			6.9										
			7.0			7.5		11.0	91	A			6.9										
			8.0			7.5		11.0	91	A			6.8										
			9.0			7.4		11.0	91	A			6.9										
			10.0			7.0		11.0	90	F	70		6.9										
			11.0			6.5		11.1	90	A			6.9										
210.0	3/08/82	1200	.3			9.2		10.9	94		74		6.9										
			1.0			9.1		10.7	92		74		6.9										
			2.0			9.0		10.7	92		72		6.9										
			3.0			8.9		10.6	91		72		6.9										
			4.0			8.8		10.6	91		72		6.9										
			5.0			8.8		10.6	91		72		6.8										
			6.0			8.8		10.6	91		72		6.9										
			7.0			8.8		10.6	91		72		6.9										
			8.0			8.8		10.6	91		72		6.9										
			9.0			8.8		10.6	91		72		6.9										
			10.0			8.8		10.6	91		72		6.9										
			11.0			8.8		10.4	89		72		6.9										

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LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TEMP C	CODE	DO MG/L	DO SAT %	CODE	SPEC COND UMHOS	CODE	PH	CODE	ORP MV	CODE	TURB NTU	CODE	ALK MG/L	CODE	SUR LIGHT LY/MIN	CODE	EUPH DEPTH METERS
210.0	4/20/82	1120	.3			16.5		10.4	106		88		7.5										
			1.0			16.5		10.4	106		88		7.4										
			2.0			16.5		10.3	105		88		7.4										
			3.0			16.5		10.2	104		88		7.4										
			4.0			16.3		9.9	101		88		7.4										
			5.0			16.0		9.6	97		90		7.1										
			6.0			15.1		9.2	91		88		6.9										
			7.0			14.7		8.6	84		82		6.9										
			8.0			14.4		8.2	80		82		6.9										
			9.0			14.0		7.8	75		78		6.8										
			10.0			14.0		7.6	73		78		6.8										
			11.0			13.9		7.2	69		78		6.8										
210.0	5/05/82	1250	.3	1		21.9		13.0	149		122		9.2				5		18				
			.3	2		21.2		13.3	150		122		9.3				4		18				
			1.0			20.3		12.3	136		124		9.3										
			2.0			20.1		11.8	130		120		8.9										
			3.0			19.5		10.9	119		120		8.5										
			4.0			18.5		10.1	108		116		7.8										
			5.0			17.8		8.6	90		102		7.3										
			6.0			17.4		8.0	83		110		7.3										
			7.0			16.8		7.5	77		110		7.3										
			8.0			16.4		7.1	72		110		7.2										
			9.0			16.3		6.8	69		110		7.2										
			10.0	1		16.3		6.5	66		98		7.3				12		17				
			10.0	2		16.0		6.1	62		98		7.3				12		17				
			11.0			16.0		5.8	58		90		7.4										
210.0	6/09/82	1140	.3			28.3		12.5	162		110		8.5										
			1.0			27.8		11.5	148		110		8.7										
			2.0			27.0		9.7	123		108		7.5										
			3.0			26.7		7.9	99		108		7.0										
			4.0			26.3		6.2	77		110		6.6										
			5.0			25.5		5.1	62		104		6.4										
			6.0			25.1		5.1	62		102		6.4										
			7.0			24.9		5.0	60		102		6.4										
			8.0			24.6		4.4	53		102		6.4										
			9.0			23.8		2.9	34		108		6.4										

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LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TEMP C	CODE	DO MG/L	DO SAT %	CODE	SPEC COND UMHOS	CODE	PH	CODE	ORP MV	CODE	TURB NTU	CODE	ALK MG/L	CODE	SUR LIGHT LY/MIN	CODE	EUPH DEPTH METERS
210.0	6/09/82	1140	10.0			23.4		2.6	30		108		6.4										
			11.0			23.1		1.7	19		110		5.4										
			12.0			22.8		0.6	7		112		6.4										
210.0	7/13/81	1145	.3			31.7		8.8	122		84		8.0										
			1.0			30.9		9.1	124		84		8.1										
			2.0			30.4		9.0	122		84		8.0										
			3.0			29.4		8.2	109		85		6.8										
			4.0			28.3		6.3	81		85		6.3										
			5.0			27.7		5.0	64		86		6.2										
			6.0			27.4		4.3	54		86		6.2										
			7.0			27.0		3.7	46		86		6.1										
			8.0			26.7		3.0	37		87		6.1										
			9.0			26.5		2.3	28		90		6.1										
			10.0			26.3		0.9	11		95		6.0										
			11.0			25.8		0.5	6		96		6.1										
210.0	8/10/81	1125	.3	1		28.8		7.9	103		75		6.9				5		11				
			.3	2		28.9		7.9	104		75		6.8				5		11				
			1.0			28.7		7.8	102		75		6.6										
			2.0			28.1		6.7	86		75		6.1										
			3.0			28.0		4.7	60		77		5.9										
			4.0			27.8		4.3	55		77		5.9										
			5.0			27.8		4.7	60		76		5.9										
			6.0			27.7		4.5	57		76		5.8						1				
			7.0			27.6		3.6	46		76		5.7										
			8.0			27.4		2.4	30		77		5.7										
			9.0			27.3		1.6	20		76		5.6										
			10.0			27.2		1.2	15		76		5.6										
			11.0	1		27.1		1.0	12		76		5.6				18		14				
			11.0	2		27.0		1.0	12		74		5.6				18		13				
			12.0			26.9		1.0	12		73		5.6										
210.0	9/17/81	1155	.3			26.2		6.4	79		95		6.5										
			1.0			26.2		6.4	79		95		6.5										
			2.0			26.1		6.3	78		95		6.4										
			3.0			26.0		6.1	75		95		6.4										
			4.0			26.0		6.0	74		95		6.4										
			5.0			26.0		6.0	74		94		6.4										

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LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TEMP C	CODE	DO MG/L	DO SAT %	CODE	SPEC COND UMHOS	CODE	PH	CODE	ORP MV	CODE	TURB NTU	CODE	ALK MG/L	CODE	SUR LIGHT LY/MIN	CODE	EUPH DEPTH METERS
210.0	9/17/81	1155	6.0			26.0		6.0	74		94		6.4										
			7.0			25.9		5.9	73		94		5.3										
			8.0			25.9		5.4	67		94		6.2										
			9.0			25.2		1.0	12		88		5.9										
			10.0			24.7		0.1	1		89		6.0										
			11.0			24.6		0.1	1		89		6.0										
210.0	10/12/81	1110	.3	1		21.0		6.8	76		114		6.8				6		12				
			.3	2		21.0		6.8	76		114		6.8				5		12				
			1.0			21.0		6.8	76		114		6.7										
			2.0			21.0		6.7	75		114		6.7										
			3.0			21.0		6.7	75		114		6.7										
			4.0			21.0		6.7	75		114		6.7										
			5.0			20.9		6.7	75		114		6.7										
			6.0			20.9		6.7	75		114		6.7										
			7.0			20.9		6.7	75		114		6.7										
			8.0			20.9		6.7	75		114		6.7										
			9.0			20.9		6.7	75		112		6.7										
			10.0			20.9		6.6	74		114		6.8										
			11.0	1		20.8		6.6	74		114		6.8				24		11				
			11.0	2		20.8		6.6	74		114		6.8				27		12				
			12.0			20.8		6.6	74		114		6.8										
210.0	11/17/81	1135	.3			14.6		8.5	83		138	A											
			1.0			14.6		8.5	83		138	A											
			2.0			14.6		8.5	83		138	A											
			3.0			14.6		8.5	83		138	A											
			4.0			14.6		8.5	83		138	A											
			5.0			14.6		8.5	83		138	A											
			6.0			14.6		8.4	82		138	A											
			7.0			14.6		8.4	82		138	A											
			8.0			14.5		8.3	81		136	A											
			9.0			14.4		8.3	81		134	A											
			10.0			14.4		8.2	80		134	A											
			11.0			14.4		8.3	81		134	A											
			12.0			14.2		8.3	81		126	A											
210.0	12/17/81	1120	.3			8.5		9.8	83		130		6.9										
			1.0			8.5		9.8	83		130		6.9										

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TYPE A

LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TEMP C	CODE	DO MG/L	DO SAT %	CODE	SPEC COND UMHOS	CODE	PH	CODE	ORP MV	CODE	TURB NTU	CODE	ALK MG/L	CODE	SUR LIGHT LY/MIN	CODE	EUPH DEPTH METERS
210.0	12/17/81	1120	2.0			8.5		9.8	83		130		6.9										
			3.0			8.5		9.8	83		130		5.9										
			4.0			8.5		9.8	83		130		6.9										
			5.0			8.5		9.8	83		130		6.9										
			6.0			8.5		9.8	83		130		6.9										
			7.0			8.5		9.7	82		130		6.9										
			8.0			8.5		9.7	82		130		6.9										
			9.0			8.5		9.7	82		130		6.9										
			10.0			8.5		9.7	82		130		6.9										
			11.0			8.5		9.6	82		130		6.9										
215.0	1/28/82	1200	.3	1		4.0		11.8	89	F	72		6.8				52		14				
			.3	2		4.0		11.8	89	F	71		6.8				52		13				
			1.0			3.9		11.8	89	A			6.8										
			2.0			3.9		11.7	88	A			6.8										
			3.0			3.9		11.7	88	A			6.8										
			4.0			3.9		11.7	88	A			6.7										
			5.0			3.9		11.7	88	A			6.7										
			6.0			3.9		11.7	88	A			6.7										
			7.0			3.9		11.7	88	A			6.6										
			8.0	1		3.9		11.7	88	F	71		6.6				51		14				
			8.0	2		3.9		11.7	88	F	70		6.7				47		14				
			9.0			3.9		11.8	89	A			6.7										
215.0	2/12/82	1220	.3			9.3		12.1	105	F	78		7.0										
			1.0			8.4		11.9	101	A			6.9										
			2.0			7.2		11.5	95	A			6.9										
			3.0			7.0		11.4	93	A			6.9										
			4.0			6.9		11.3	92	A			6.9										
			5.0			6.7		11.2	91	A			6.9										
			6.0			6.5		11.0	89	A			6.8										
			7.0			6.2		10.9	87	A			6.8										
			8.0			6.1		10.8	86	F	70		6.8										
			9.0			6.1		10.9	87	A			7.0										
215.0	3/08/82	1215	.3			9.1		10.7	92		72		6.8										
			1.0			8.9		10.5	90		72		6.8										
			2.0			8.7		10.5	90		68		6.8										
			3.0			8.6		10.3	88		68		6.8										

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DUKE POWER COMPANY
WATER QUALITY DATA
TYPE A

LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE TEMP C	CODE DO MG/L	DO SAT %	CODE SPEC COND UMHOS	CODE PH	CODE ORP MV	CODE TURB NTU	CODE ALK MG/L	CODE SUR LIGHT LY/MIN	CODE EUPH DEPTH METERS
215.0	3/08/82	1215	4.0		8.6	10.3	88	68	6.8					
			5.0		8.6	10.3	88	68	6.8					
			6.0		8.6	10.3	88	68	6.7					
			7.0		8.6	10.3	88	68	6.8					
			8.0		8.5	10.8	92	68	6.8					
215.0	4/20/82	1130	.3		17.2	10.3	107	90	7.3					
			1.0		17.0	10.2	105	88	7.2					
			2.0		16.5	9.6	98	84	7.0					
			3.0		16.3	9.6	98	84	6.9					
			4.0		15.8	9.4	95	84	6.9					
			5.0		15.5	9.1	91	82	6.9					
			6.0		14.5	8.4	82	80	6.8					
			7.0		14.2	7.9	77	78	6.8					
			8.0		14.6	7.7	75	78	6.8					
215.0	5/05/82	1300	.3	1	22.3	14.3	165	118	9.5		5	16		
			.3	2	22.1	14.4	165	116	9.5		4	16		
			1.0		21.6	14.2	162	114	9.4					
			2.0		20.9	13.1	147	110	9.3					
			3.0		19.9	10.8	119	112	8.5					
			4.0		18.2	8.6	91	114	7.2					
			5.0		17.7	7.7	81	96	7.2					
			6.0		17.5	7.3	76	96	7.2					
			7.0		17.1	6.8	70	94	7.2					
			8.0	1	17.1	6.5	67	90	7.3		18	18		
			8.0	2	17.0	5.9	61	90	7.3		14	18		
			9.0		16.7	5.1	52	88	7.4					
215.0	6/09/82	1210	.3		28.5	11.6	151	108	8.2					
			1.0		27.6	10.5	134	108	8.6					
			2.0		27.0	8.1	102	108	6.8					
			3.0		26.7	6.5	81	110	6.5					
			4.0		26.4	5.4	67	110	6.5					
			5.0		25.9	3.4	42	116	6.4					
			6.0		25.6	2.3	28	112	6.3					
			7.0		24.7	1.1	13	112	6.4					
			8.0		24.5	0.9	10	112	6.4					
215.0	7/13/81	1155	.3		31.6	8.9	123	82	8.1					

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DUKE POWER COMPANY
WATER QUALITY DATA
TYPE A

LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TEMP C	CODE	DO MG/L	DO SAT %	CODE	SPEC COND UMHOS	CODE	PH	CODE	ORP MV	CODE	TURB NTU	CODE	ALK MG/L	CODE	SUR LIGHT LY/MIN	CODE	EUPH DEPTH METERS
215.0	7/13/81	1155	1.0			31.3		9.0	124		82		8.1										
			2.0			30.8		8.8	120		84		7.6										
			3.0			29.4		6.4	85		84		6.3										
			4.0			28.4		5.7	74		82		6.2										
			5.0			27.7		3.9	50		82		6.1										
			6.0			27.0		2.6	32		84		6.0										
			7.0			26.8		1.8	22		86		6.0										
			8.0			26.5		0.5	6		88		6.1										
			9.0			26.3		0.0			90		6.1										
215.0	8/10/81	1134	.3	1		29.2		7.8	103		72		6.5				6		10				
			.3	2		29.1		7.8	103		72		6.5				6		10				
			1.0			29.0		7.7	101		72		6.4										
			2.0			28.8		7.4	97		72		6.2										
			3.0			28.3		6.2	80		73		5.9										
			4.0			27.9		4.4	56		73		5.7										
			5.0			27.6		2.2	28		74		5.6										
			6.0			27.4		1.7	21		74		5.6										
			7.0			27.2		1.3	16		75		5.6										
			8.0	1		26.9		1.3	16		71		5.6				40		12				
			8.0	2		26.8		1.4	17		70		5.6				35		14				
			9.0			26.0		2.0	24		58		5.6										
215.0	9/17/81	1205	.3			26.2		6.4	79		96		6.4										
			1.0			26.1		6.3	78		96		6.3										
			2.0			25.9		6.2	76		89		6.3										
			3.0			25.8		6.0	74		86		6.2										
			4.0			25.8		3.4	42		88		6.0										
			5.0			25.7		3.0	37		90		6.0										
			6.0			25.4		2.1	25		84		6.0										
			7.0			25.4		2.0	24		84		6.0										
215.0	10/12/81	1125	.3	1		20.5		7.1	79		100		6.7				6		10				
			.3	2		20.5		7.1	79		100		6.7				6		10				
			1.0			20.4		7.1	79		100		6.7										
			2.0			20.4		7.0	77		100		6.6										
			3.0			20.4		6.8	75		100		6.7										
			4.0			20.4		6.8	75		100		6.7										
			5.0			20.3		6.9	76		100		6.7										

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WATER QUALITY DATA
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LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TEMP C	CODE	DO MG/L	DO SAT %	CODE	SPEC COND UMHOS	CODE	PH	CODE	ORP MV	CODE	TURB NTU	CODE	ALK MG/L	CODE	SUR LIGHT LY/MIN	CODE	EUPH DEPTH METERS
215.0	10/12/81	1125	6.0			20.3		6.9	76		100		6.7		880								
			7.0	1		20.3		6.9	76		100		5.7				5		10				
			7.0	2		20.3		6.9	76		100		6.8				6		10				
			8.0			20.2		7.0	77		104		6.8										
215.0	11/17/81	1145	.3			14.3		9.2	90		134	A											
			1.0			14.3		9.2	90		134	A											
			2.0			14.3		9.2	90		132	A											
			3.0			14.2		9.1	88		130	A											
			4.0			13.7		9.0	86		120	A											
			5.0			13.7		8.9	86		120	A											
			6.0			13.5		8.8	84		118	A											
			7.0			13.5		8.7	83		116	A											
			8.0			13.4		8.5	81		114	A											
215.0	12/17/81	1129	.3			7.9		10.6	89		119		6.9										
			1.0			7.9		10.6	89		119		6.9										
			2.0			7.9		10.6	89		119		6.9										
			3.0			7.9		10.6	89		118		6.9										
			4.0			7.9		10.6	89		118		6.9										
			5.0			7.9		10.6	89		117		6.9										
			6.0			7.9		10.6	89		120		6.9										
			7.0			7.9		10.3	86		123		6.9										
			8.0			7.9		10.1	85		123		6.9										
220.0	1/28/82	1210	.3	1		5.3		11.7	92	F	73		7.0				18		15				
			.3	2		5.3		11.7	92	F	74		7.1				19		15				
			1.0			5.3		11.7	92	A			7.0										
			2.0			5.3		11.7	92	A			7.0										
			3.0			5.3		11.7	92	A			7.0										
			4.0			5.3		11.7	92	A			7.1										
			5.0			5.3		11.7	92	A			7.0										
			6.0			5.3		11.7	92	A			7.0										
			7.0			5.3		11.6	91	A			7.0										
			8.0			5.3		11.6	91	A			7.0										
			9.0			5.3		11.6	91	A			7.0										
			10.0			5.3		11.6	91	A			7.0										
			11.0	1		5.2		11.6	91	F	75		7.0				19		14				
			11.0	2		5.2		11.7	92	F	74		7.0				19		14				

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LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TEMP C	CODE	DO MG/L	DO SAT %	CODE	SPEC COND UMHOS	CODE	PH	CODE	ORP MV	CODE	TURB NTU	CODE	ALK MG/L	CODE	SUR LIGHT LY/MIN	CODE	EUPH DEPTH METERS
220.0	1/28/82	1210	12.0			5.2		11.7	92	A			7.0										
220.0	2/12/82	1235	.3			8.4		11.1	94	F	60		6.8										
			1.0			8.0		11.0	92	A			6.8										
			2.0			7.6		10.9	91	A			6.8										
			3.0			7.6		10.9	91	A			6.8										
			4.0			7.5		10.9	90	A			6.8										
			5.0			7.5		10.9	90	A			6.8										
			6.0			7.5		10.9	90	A			6.8										
			7.0			7.5		10.9	90	A			6.8										
			8.0			7.5		10.9	90	A			6.8										
			9.0			7.5		10.9	90	A			6.9										
			10.0			7.5		10.9	90	A			6.9										
			11.0			7.5		10.8	90	F	69		6.9										
			12.0			7.6		10.7	89	A			6.9										
220.0	3/08/82	1230	.3			9.5		11.1	97		74		6.9										
			1.0			9.4		10.9	95		76		6.9										
			2.0			9.2		10.9	94		76		6.9										
			3.0			9.1		10.9	94		76		7.0										
			4.0			9.1		10.9	94		76		7.0										
			5.0			9.0		10.8	9[illegible]		76		6.9										
			6.0			9.0		10.8	93		74		6.9										
			7.0			9.0		10.9	94		74		6.9										
			8.0			9.0		10.8	93		74		6.9										
			9.0			8.9		10.7	92		74		6.9										
			10.0			9.0		10.7	92		74		6.9										
			11.0			8.9		10.7	92		74		6.9										
220.0	4/20/82	1145	.3			16.8		10.1	104		98		7.1										
			1.0			16.8		10.1	104		98		7.1										
			2.0			16.8		10.1	104		98		7.1										
			3.0			16.8		10.0	103		98		7.1										
			4.0			16.6		10.0	102		96		7.0										
			5.0			16.4		10.0	102		96		7.0										
			6.0			15.0		9.4	93		90		6.9										
			7.0			15.0		9.1	90		88		6.9										
			8.0			14.9		8.9	88		88		6.9										
			9.0			14.8		8.6	85		88		6.9										

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WATER QUALITY DATA
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LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TEMP C	CODE	DO MG/L	DO SAT %	CODE	SPEC COND UMHOS	CODE	PH	CODE	ORP MV	CODE	TURB NTU	CODE	ALK MG/L	CODE	SUR LIGHT LY/MIN	CODE	EUPH DEPTH METERS
220.0	4/20/82	1145	10.0			14.2		8.0	78		84		6.8										
			11.0			14.3		7.8	76		84		6.8										
220.0	5/05/82	1325	.3	1		22.1		13.8	159		122		9.3				5		18				
			.3	2		21.6		14.0	159		122		9.2				6		18				
			1.0			20.5		12.6	140		118		9.2										
			2.0			20.0		11.4	125		118		8.7										
			3.0			19.4		10.5	114		120		8.3										
			4.0			18.0		8.7	92		122		7.3										
			5.0			17.5		8.0	83		118		7.2										
			6.0			17.2		7.2	75		116		7.2										
			7.0			16.8		6.7	69		122		7.1										
			8.0			16.4		6.2	63		122		7.1										
			9.0			16.2		6.0	61		118		7.1										
			10.0			16.1		5.9	60		116		7.2										
			11.0	1		16.1		5.6	57		112		7.2				9		18				
			11.0	2		16.1		5.3	53		112		7.3				10		19				
			12.0			16.1		4.9	49		112		7.4										
220.0	6/09/82	1230	.3			27.5		11.4	146		102		8.6										
			1.0			27.1		10.6	134		102		8.4										
			2.0			27.1		10.1	128		100		8.2										
			3.0			26.9		9.6	121		100		7.9										
			4.0			26.7		8.2	103		102		7.0										
			5.0			25.8		5.6	69		104		6.5										
			6.0			25.1		5.2	63		102		6.4										
			7.0			24.7		5.0	60		100		6.4										
			8.0			24.1		4.7	56		100		6.4										
			9.0			23.6		4.7	55		98		6.5										
			10.0			23.2		4.9	57		94		6.5										
			11.0			23.0		4.7	55		90		6.5										
220.0	7/13/81	1215	.3			31.2		9.2	126		82		8.2										
			1.0			30.8		9.2	125		82		8.2										
			2.0			30.4		8.8	119		81		7.8										
			3.0			29.9		7.7	103		81		6.8										
			4.0			29.0		5.8	76		80		6.3										
			5.0			28.0		5.2	67		80		6.2										
			6.0			27.7		4.2	54		80		6.2										

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WATER QUALITY DATA
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LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE TEMP C	CODE DO MG/L	DO SAT %	CODE SPEC COND UMHOS	CODE PH	CODE ORP MV	CODE TURB NTU	CODE ALK MG/L	CODE SUR LIGHT LY/MIN	CODE EUPH DEPTH METERS
220.0	7/13/81	1215	7.0		27.1	3.4	43	82	6.2					
			8.0		26.8	2.9	36	86	6.2					
			9.0		26.6	2.0	25	84	6.2					
			10.0		26.3	1.5	18	90	6.2					
			11.0		25.8	0.4	4	96	6.2					
220.0	8/10/81	1155	.3	1	29.2	7.9	104	74	7.0		5	11		
			.3	2	29.1	7.8	103	74	6.8		5	10		
			1.0		28.7	7.5	98	74	6.5					
			2.0		28.6	6.8	89	76	6.3					
			3.0		28.3	6.0	78	78	6.2					
			4.0		28.3	5.9	76	78	6.1					
			5.0		28.3	5.6	72	79	6.0					
			6.0		28.2	5.3	68	78	6.0					
			7.0		27.9	3.7	47	81	5.8					
			8.0		27.6	2.6	33	81	5.8					
			9.0		27.4	2.0	25	86	5.8					
			10.0		27.1	1.2	15	91	5.8					
			11.0	1	27.0	0.9	11	93	5.9		25	17		
			11.0	2	27.0	0.8	10	93	5.9		25	17		
			12.0		26.8	0.0		96	5.9					
220.0	9/17/81	1215	.3		26.4	7.0	87	104	6.7					
			1.0		26.3	7.0	87	104	6.7					
			2.0		26.2	6.6	82	106	6.5					
			3.0		26.2	6.4	79	104	6.5					
			4.0		26.1	6.3	78	106	6.5					
			5.0		26.1	6.2	77	104	6.5					
			6.0		26.0	6.2	77	101	6.5					
			7.0		26.0	6.2	77	100	6.5					
			8.0		26.0	6.2	77	100	6.4					
			9.0		25.7	3.7	45	100	6.2					
			10.0		25.3	1.1	13	105	6.2					
			11.0		24.9	0.2	2	116	6.2					
220.0	10/12/81	1140	.3	1	20.9	6.8	76	122	6.8		5	14		
			.3	2	20.9	6.8	76	122	6.8		5	14		
			1.0		20.9	6.8	76	122	6.8					
			2.0		20.9	6.8	76	122	6.9					

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WATER QUALITY DATA
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LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TEMP C	CODE	DO MG/L	DO SAT %	CODE	SPEC COND UMHOS	CODE	PH	CODE	ORP MV	CODE	TURB NTU	CODE	ALK MG/L	CODE	SUR LIGHT LY/MIN	CODE	EUPH DEPTH METERS
220.0	10/12/81	1140	3.0			20.8		6.8	76		122		6.9										
			4.0			20.8		6.7	75		122		6.8										
			5.0			20.8		6.8	76		122		6.8										
			6.0			20.8		6.8	76		122		6.8										
			7.0			20.8		6.8	76		122		6.8										
			8.0	1		20.7		6.7	75		122		6.8				5		14				
			8.0	2		20.7		6.7	75		122		6.8				5		14				
			9.0			20.7		6.8	76		122		6.7										
220.0	11/17/81	1200	.3			14.3		8.6	84		144	A											
			1.0			14.3		8.5	83		144	A											
			2.0			14.3		8.5	83		144	A											
			3.0			14.3		8.5	83		144	A											
			4.0			14.3		8.5	83		144	A											
			5.0			14.3		8.5	83		144	A											
			6.0			14.2		8.4	82		144	A											
			7.0			14.2		8.4	82		144	A											
			8.0			14.2		8.3	81		142	A											
			9.0			14.2		8.3	81		142	A											
			10.0			14.1		8.2	79		142	A											
			11.0			14.0		8.1	78		140	A											
220.0	12/17/81	1142	.3			8.5		9.8	83		128		6.9										
			1.0			8.4		9.7	82		128		6.9										
			2.0			8.4		9.7	82		127		6.9										
			3.0			8.4		9.7	82		127		6.9										
			4.0			8.4		9.7	82		127		6.9										
			5.0			8.4		9.7	82		127		6.9										
			6.0			8.4		9.7	82		127		6.9										
			7.0			8.4		9.7	82		127		6.9										
			8.0			8.4		9.7	82		127		6.9										
			9.0			8.4		9.6	81		127		6.9										
			10.0			8.4		9.6	81		127		6.9										
			11.0			8.4		9.5	81		127		6.9										
225.0	1/28/82	1220	.3			5.2		11.9	93	F	73		7.0				28		15				
			1.0			5.2		11.9	93	A			7.0										
			2.0			5.2		11.9	93	A			7.0										
			3.0			5.2		11.9	93	A			7.0										

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LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TEMP C	CODE	DO MG/L	DO SAT %	CODE	SPEC COND UMHOS	CODE	PH	CODE	ORP MV	CODE	TURB NTU	CODE	ALK MG/L	CODE	SUR LIGHT LY/MIN	CODE	EUPH DEPTH METERS
225.0	1/28/82	1220	4.0			5.2		11.9	93	A			7.0										
			5.0			5.1		11.9	93	A			7.0										
			6.0			5.1		11.9	93	A			7.0										
			7.0			5.1		11.9	93	A			7.0										
			8.0			5.1		11.9	93	A			7.0										
			9.0			5.1		11.9	93	A			7.0										
			10.0			5.1		11.9	93	A			7.0										
			11.0			5.1		11.8	92	A			6.9										
			12.0			5.1		11.9	93	F	74		6.9										
			13.0			5.0		11.8	92	A			6.9				28		14				
225.0	2/12/82	1250	.3			8.2		11.1	94	F	67		6.9										
			1.0			8.0		11.1	93	A			6.9										
			2.0			8.0		11.1	93	A			6.8										
			3.0			8.0		11.1	93	A			6.8										
			4.0			8.0		11.1	93	A			6.3										
			5.0			8.0		11.0	92	A			6.8										
			6.0			7.9		11.0	92	A			6.8										
			7.0			7.8		11.0	92	A			6.8										
			8.0			7.8		11.0	92	A			6.8										
			9.0			7.8		11.0	92	A			6.8										
			10.0			7.6		10.9	91	A			6.8										
			11.0			7.6		10.9	91	A			6.9										
			12.0			7.5		10.8	90	F	71		6.9										
			13.0			7.5		10.8	90	A			7.0										
225.0	3/08/82	1248	.3			9.8		10.2	90		74		6.9										
			1.0			9.7		10.3	90		74		6.9										
			2.0			9.6		10.4	91		74		6.9										
			3.0			9.5		10.5	92		74		6.9										
			4.0			9.5		10.4	91		74		6.9										
			5.0			9.5		10.2	89		74		6.9										
			6.0			9.4		10.4	90		74		6.9										
			7.0			9.4		10.2	89		74		6.9										
			8.0			9.4		10.2	89		74		6.9										
			9.0			9.4		10.2	89		74		6.9										
			10.0			9.4		10.1	88		72		6.9										
			11.0			9.4		10.2	89		72		6.9										

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LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TEMP C	CODE	DO MG/L	DO SAT %	CODE	SPEC COND UMHOS	CODE	PH	CODE	ORP MV	CODE	TURB NTU	CODE	ALK MG/L	CODE	SUR LIGHT LY/MIN	CODE	EUPH DEPTH METERS
225.0	3/08/82	1248	12.0			9.4		10.1	88		74		6.9										
			13.0			9.4		10.1	88		74		6.9										
225.0	4/20/82	1200	.3			17.7		10.3	108		106		7.4										
			1.0			17.6		10.3	108		106		7.1										
			2.0			17.6		10.2	107		106		7.1										
			3.0			17.4		10.2	106		106		7.0										
			4.0			16.7		10.1	104		100		6.9										
			5.0			15.6		9.3	93		96		6.9										
			6.0			14.6		8.8	86		98		6.9										
			7.0			14.7		8.7	85		98		6.9										
			8.0			14.4		8.5	83		98		6.9										
			9.0			14.4		8.5	83		98		6.9										
			10.0			14.3		8.3	81		98		6.9										
			11.0			14.2		8.3	81		96		6.8										
			12.0			14.1		8.1	78		94		6.8										
			13.0			14.2		7.8	76		94		6.8										
225.0	5/05/82	1430	.3			21.6		12.9	147		116		8.9				10		16				
			1.0			20.6		11.4	127		116		8.8										
			2.0			19.4		9.3	101		116		8.1										
			3.0			19.0		8.3	89		116		7.2										
			4.0			18.1		7.5	79		118		7.1										
			5.0			17.7		6.9	72		114		7.1										
			6.0			17.3		6.6	68		118		7.1										
			7.0			16.7		5.9	60		120		7.1										
			8.0			16.5		5.6	57		120		7.1										
			9.0			16.5		5.5	56		120		7.1										
			10.0			16.3		5.3	54		120		7.1										
			11.0			16.		5.1	51		118		7.1										
			12.0			16.0		4.8	48		116		7.2										
			13.0			16.2		4.6	46		114		7.2				10		19				
225.0	6/09/82	1235	.3			28.4		12.6	164		98		9.0										
			1.0			27.4		10.2	130		96		8.7										
			2.0			26.5		8.1	101		98		6.9										
			3.0			26.0		7.8	97		90		6.7										
			4.0			25.9		7.6	94		90		6.6										
			5.0			25.2		7.2	88		88		6.5										

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LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TEMP C	CODE	DO MG/L	DO SAT %	CODE	SPEC COND UMHOS	CODE	PH	CODE	ORP MV	CODE	TURB NTU	CODE	ALK MG/L	CODE	SUR LIGHT LY/MIN	CODE	EUPH DEPTH METERS
225.0	6/09/81	1235	6.0			24.7		7.2	87		88		6.5										
			7.0			24.3		6.9	83		88		6.5										
			8.0			24.2		6.8	81		88		6.5										
			9.0			24.0		6.9	82		88		6.5										
			10.0			22.7		6.7	78		80		6.5										
			11.0			22.4		6.5	75		76		6.5										
			12.0			22.3		6.3	72		74		6.5										
			13.0			22.4		6.1	70		74		6.5										
225.0	7/13/81	1230	.3			31.7		8.9	124		82		8.0										
			1.0			31.2		8.9	122		82		7.8										
			2.0			30.7		8.5	116		81		7.5										
			3.0			30.3		7.7	104		82		6.7										
			4.0			29.4		6.3	83		84		6.4										
			5.0			28.6		5.3	69		84		6.3										
			6.0			27.7		3.8	48		85		6.2										
			7.0			27.3		2.9	37		88		6.2										
			8.0			26.6		2.0	25		95		6.3										
			9.0			26.5		1.8	22		96		6.3										
			10.0			26.4		1.5	18		96		6.3										
			11.0			26.0		1.2	14		100		6.3										
			12.0			25.6		0.4	4		104		6.4										
			13.0			25.3		[illegible]			104		6.4										
			14.0			25.[illegible]		0.0			104		6.4										
			15.0			24.[illegible]		0.0			104		6.4										
225.0	8/10/81	1220	.3			30.1		8.4	113		80		7.7				4		12				
			1.0			29.2		8.0	105		79		6.9										
			2.0			29.0		6.9	91		80		6.4										
			3.0			28.9		6.5	85		80		6.3										
			4.0			28.7		5.9	77		80		6.2										
			5.0			28.6		5.7	74		80		6.1										
			6.0			28.5		5.1	66		80		6.0										
			7.0			28.4		4.3	56		81		6.0										
			8.0			28.2		3.6	46		83		5.9										
			9.0			28.0		3.0	38		86		5.9										
			10.0			27.6		2.0	25		92		5.9										
			11.0			27.3		1.7	21		94		5.9										

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LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TEMP C	CODE	DO MG/L	DO SAT %	CODE	SPEC COND UMHOS	CODE	PH	CODE	ORP MV	CODE	TURB NTU	CODE	ALK MG/L	CODE	SUR LIGHT LY/MIN	CODE	EUPH DEPTH METERS
225.0	8/10/81	1220	12.0			27.1		1.6	20		96		5.9										
			13.0			26.8		1.0	12		102		5.9				23		17				
225.0	9/17/81	1335	.3			26.7		7.0	88		126		6.9										
			1.0			26.7		7.0	88		126		6.8										
			2.0			26.6		6.7	84		125		6.7										
			3.0			26.5		6.6	82		124		6.7										
			4.0			26.5		6.5	81		124		6.6										
			5.0			26.4		5.8	72		124		6.4										
			6.0			26.1		4.0	49		122		6.3										
			7.0			25.8		2.7	33		124		6.3										
			8.0			25.7		2.3	28		124		6.3										
			9.0			25.5		1.6	19		130		6.2										
			10.0			25.2		1.2	14		126		6.2										
			11.0			25.0		0.9	10		124		6.3										
			12.0			24.5		0.3	3		122		6.3										
			13.0			24.2		0.1	1		120		6.3										
225.0	10/12/81	1155	.3			21.3		6.4	72		149		6.9				6		17				
			1.0			21.2		6.4	72		149		6.9										
			2.0			21.2		6.4	72		149		6.9										
			3.0			21.2		6.3	71		149		6.9										
			4.0			21.2		6.3	71		149		5.9										
			5.0			21.2		6.4	72		149		6.9										
			6.0			21.2		6.4	72		149		6.9										
			7.0			21.2		6.3	71		149		6.9										
			8.0			21.2		6.3	71		150		6.9										
			9.0			21.2		6.3	71		150		6.9										
			10.0			21.2		6.3	71		150		6.9										
			11.0			21.2		6.3	71		150		6.9										
			12.0			21.1		6.3	71		150		6.9										
			13.0			21.1		6.3	71		150		6.9										
225.0	11/17/81	1210	.3			14.6		8.3	81		138	A					5		16				
			1.0			14.6		8.3	81		138	A											
			2.0			14.6		8.3	81		138	A											
			3.0			14.6		8.3	81		138	A											
			4.0			14.6		8.3	81		138	A											
			5.0			14.6		8.3	81		138	A											

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LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TEMP C	CODE	DO MG/L	DO SAT %	CODE	SPEC COND UMHOS	CODE	PH	CODE	ORP MV	CODE	TURB NTU	CODE	ALK MG/L	CODE	SUR LIGHT LY/MIN	CODE	EUPH DEPTH METERS
225.0	11/17/81	1210	6.0			14.6		8.3	81		138	A											
			7.0			14.6		8.3	81		138	A											
			8.0			14.6		8.3	81		138	A											
			9.0			14.6		8.2	80		138	A											
			10.0			14.6		8.2	80		138	A											
			11.0			14.6		8.2	80		138	A											
			12.0			14.5		8.1	79		138	A											
			13.0			14.5		8.2	80		138	A											
225.0	12/17/81	1155	.3			9.1		9.9	85		104		6.9										
			1.0			9.1		9.9	85		104		6.9										
			2.0			9.1		9.9	85		104		6.9										
			3.0			9.0		9.8	84		104		6.9										
			4.0			8.9		9.8	84		106		6.9										
			5.0			8.9		9.8	84		107		6.9										
			6.0			8.8		9.7	83		108		6.9										
			7.0			8.8		9.7	83		109		6.9										
			8.0			8.8		9.6	82		109		6.9										
			9.0			8.7		9.6	82		110		6.9										
			10.0			8.7		9.6	82		111		6.9										
			11.0			8.6		9.6	82		111		6.9										
			12.0			8.6		9.5	81		113		6.9										
			13.0			8.6		9.4	80		114		6.9										
240.0	1/28/82	1350	.3			7.8		12.0	100	F	75		7.1				42		15				
			1.0			7.6		12.1	101	A			7.1										
			2.0			7.3		12.3	102	A			7.1										
			3.0			5.9		12.2	97	A			7.0										
			4.0			6.5		12.5	101	A			7.1										
			5.0			5.6		12.5	99	A			7.1										
			6.0			5.6		12.5	99	A			7.1										
			7.0			5.6		12.5	99	A			7.1										
			8.0			5.6		12.5	99	A			7.0										
			9.0			5.7		12.5	99	F	64		7.0				17		13				
			10.0			5.7		12.5	99	A			7.0										
240.0	2/12/82	1410	.3			12.0		11.0	102	F	69		6.9										
			1.0			11.9		11.1	102	A			6.9										
			2.0			11.5		11.2	102	A			7.0										
			3.0			11.1		11.3	102	A			6.9										
			4.0			10.2		11.3	100	A			6.9										
			5.0			9.3		11.2	97	A			6.9										
			6.0			8.6		11.2	96	A			6.9										
			7.0			8.3		11.2	95	A			6.9										
			8.0			8.0		11.2	94	A			7.0										
			9.0			7.8		11.2	94	F	94		7.0										
			10.0			7.8		11.2	94	A			7.0										
240.0	3/08/82	1415	.3			14.4		10.7	105		82		6.9										
			1.0			14.0		10.6	103		82		6.9										

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LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TEMP C	CODE	DO MG/L	DO SAT %	CODE	SPEC COND UMHOS	CODE	PH	CODE	ORP MV	CODE	TURB NTU	CODE	ALK MG/L	CODE	SUR LIGHT LY/MIN	CODE	EUPH DEPTH METERS
240.0	3/03/82	1415	2.0			13.1		10.4	99		82		6.9										
			3.0			10.8		10.2	92		90		6.9										
			4.0			10.2		10.0	89		108		6.9										
			5.0			10.1		9.9	88		108		6.9										
			6.0			10.0		10.0	88		108		6.9										
			7.0			10.0		9.8	86		108		6.9										
			8.0			9.9		9.8	86		108		6.9										
			9.0			9.9		9.7	85		106		6.8										
			10.0			9.8		9.7	85		106		6.8										
210.0	4/20/82	1347	.3			20.9		10.0	112		120		6.9										
			1.0			20.8		10.2	114		122		6.9										
			2.0			19.2		10.0	108		122		6.9										
			3.0			17.6		9.1	95		136		6.8										
			4.0			16.8		8.3	85		144		6.8										
			5.0			16.4		8.1	83		141		6.8										
			6.0			15.6		7.8	78		126		6.8										
			7.0			15.4		7.6	76		118		6.8										
			8.0			15.2		7.4	73		118		6.8										
			9.0			15.3		7.4	74		118		6.8										
			10.0			15.3		7.4	74		118		6.8										
240.0	5/05/82	1500	.3			24.0		14.1	168		98		9.0				10		15				
			1.0			21.1		9.5	107		98		7.1										
			2.0			19.5		8.6	94		116		7.1										
			3.0			19.0		8.2	88		118		7.1										
			4.0			18.5		8.0	85		118		7.1										
			5.0			17.8		7.3	77		120		7.1										
			6.0			17.6		6.9	72		116		7.0										
			7.0			17.3		6.5	67		112		7.0										
			8.0			17.2		5.8	60		106		7.0										
			9.0			17.2		5.4	56		104		7.2										
			10.0			17.4		5.1	53		104		7.2				46		17				
240.0	6/09/82	1445	.3			30.4		10.0	135		84		7.1										
			1.0			28.1		8.7	112		86		6.6										
			2.0			27.9		8.4	108		86		6.5										
			3.0			26.1		8.1	100		90		6.5										
			4.0			25.4		8.0	98		88		6.5										

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LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TEMP C	CODE	DO MG/L	DO SAT %	CODE	SPEC COND UMHOS	CODE	PH	CODE	ORP MV	CODE	TURB NTU	CODE	ALK MG/L	CODE	SUR LIGHT LY/MIN	CODE	EUPH DEPTH METERS
240.0	9/17/81	1400	8.0			26.0		2.3	28		160		6.4										
240.0	10/12/81	1325	.3			23.8		6.8	81		136		7.0				8		19				
			1.0			23.8		6.8	81		136		6.9										
			2.0			23.7		6.7	79		138		6.8										
			3.0			22.4		5.8	67		150		6.8										
			4.0			22.0		5.8	66		142		6.8										
			5.0			21.0		5.8	65		140		6.8										
			6.0			21.6		5.8	66		200		6.9										
			7.0			21.3		5.9	66		240		7.1										
			8.0			20.2		6.2	68		380		7.2										
			9.0			20.1		6.2	68		388		7.2										
			10.0			20.0		6.1	67		388		7.1										
240.0	11/17/81	1350	.3			17.9		8.8	93		150			A			16		38				
			1.0			17.9		8.8	93		150			A									
			2.0			17.6		8.7	91		154			A									
			3.0			16.6		8.3	85		164			A									
			4.0			15.6		8.0	80		172			A									
			5.0			14.7		7.8	77		184			A									
			6.0			14.4		8.0	78		196			A									
			7.0			13.9		8.3	80		208			A									
			8.0			13.4		8.8	84		214			A									
			9.0			12.8		9.1	86		222			A									
			10.0			12.5		9.1	85		226			A									
240.0	12/17/81		.3		A		A			A				A									
			1.0		A		A			A				A									
			2.0		A		A			A				A									
			3.0		A		A			A				A									
			4.0		A		A			A				A									
			5.0		A		A			A				A									
			6.0		A		A			A				A									
			7.0		A		A			A				A									
			8.0		A		A			A				A									
	12/17/81		9.0		A		A			A				A									
			10.0		A		A			A				A									
249.0	1/28/82	0945	.3			2.0		13.5	97	F	97		6.8				28		18				
249.0	2/12/82	0910	.3			6.6		12.1	98	F	97		6.9										
249.0	3/08/82	0945	.3			8.4		11.1	94		112		6.3										
249.0	4/20/82	0930	.3			15.9		9.1	92		168		6.9										
249.0	5/05/82	1100	.3			18.4		8.7	93		132		6.1				19		21				
249.0	6/09/82	0940	.3			22.0		8.0	92		198		6.2										
249.0	7/13/81	1000	.3			28.7		6.7	87		196		6.5										
249.0	8/10/81	0930	.3			26.9		6.9	87		200		6.6				28		24				
249.0	9/17/81	1535	.3			23.7		7.0	83		244		7.6										
249.0	10/12/81	0940	.3			25.5		8.7	103		410		7.5				13		40				
249.0	11/17/81	1035	.3			9.2		11.2	97		266			A									
249.0	12/17/81	0930	.3			5.0		12.3	96		127		6.6										
250.0	1/28/82	1415	.3			5.2		12.4	97	F	60		7.2				10		13				

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WATER QUALITY DATA
TYPE A

LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TEMP C	CODE	DO MG/L	DO SAT %	CODE	SPEC COND UMHOS	CODE	PH	CODE	ORP MV	CODE	TURB NTU	CODE	ALK MG/L	CODE	SUR LIGHT LY/MIN	CODE	EUPH DEPTH METERS
240.0	6/09/82	1445	5.0			23.1		7.1	83		92		6.6										
			6.0			23.0		6.7	78		94		6.5										
			7.0			22.5		6.8	78		88		6.7										
			8.0			22.5		6.6	76		98		6.8										
			9.0			22.5		6.2	72		98		6.7										
			10.0			22.6		5.7	66		98		6.7										
240.0	7/13/81	1355	.3			34.8		9.9	147		74		8.4										
			1.0			34.7		9.8	145		74		8.4										
			2.0			33.4		8.5	122		78		7.2										
			3.0			29.5		4.5	59		84		6.3										
			4.0			28.7		4.2	55		84		6.3										
			5.0			28.4		4.3	56		80		6.3										
			6.0			28.0		3.8	49		80		6.3										
			7.0			27.4		2.5	31		92		6.3										
			8.0			27.2		2.4	30		92		6.3										
			9.0			27.2		0.5	6		106		6.3										
			10.0			26.6		0.0			108		6.3										
240.0	8/10/81	1332	.3			34.0		8.8	128		87		7.7				8		15				
			1.0			32.8		7.3	104		82		6.5										
			2.0			32.6		7.3	103		81		6.2										
			3.0			31.4		4.7	65		104		5.8										
			4.0			29.5		4.5	59		90		5.8										
			5.0			29.1		3.9	51		117		5.9										
			6.0			28.8		3.9	51		151		5.9										
			7.0			28.7		3.7	48		154		6.0										
			8.0			28.5		3.9	50		161		6.0										
			9.0			28.2		4.2	54		170		6.0										
			10.0			28.0		4.3	55		177		6.1				30		27				
240.0	9/17/81	1400	.3			30.8		7.0	95		122		6.9										
			1.0			30.7		7.0	95		124		6.8										
			2.0			29.3		6.2	82		130		6.6										
			3.0			27.3		5.0	63		140		6.5										
			4.0			27.1		4.1	52		142		6.4										
			5.0			26.6		3.7	46		140		6.4										
			6.0			26.5		3.4	42		142		6.4										
			7.0			26.3		2.9	36		150		6.5										

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WATER QUALITY DATA
TYPE A

LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TEMP C	CODE	DO MG/L	DO SAT %	CODE	SPEC COND UMHOS	CODE	PH	CODE	ORP MV	CODE	TURB NTU	CODE	ALK MG/L	CODE	SUR LIGHT LY/MIN	CODE	EUPH DEPTH METERS
250.0	1/28/82	1415	1.0			5.1		12.4	97	A			7.2										
			2.0			5.1		12.4	97	A			7.2										
			3.0			5.1		12.4	97	A			7.2										
			4.0			5.1		12.4	97	A			7.2										
			5.0			5.1		12.4	97	A			7.2										
			6.0			5.1		12.4	97	F	61		7.1				10		13				
			7.0			5.1		12.4	97	A			7.1										
250.0	2/12/82	1435	.3			7.3		11.9	98	F	61		7.1										
			1.0			7.2		11.9	98	A			7.1										
			2.0			7.2		11.9	98	A			7.1										
			3.0			7.0		11.9	98	A			7.1										
			4.0			7.0		11.9	98	A			7.1										
			5.0			6.9		11.9	97	A			7.1										
			6.0			6.9		11.9	97	F	60		7.1										
			7.0			6.9		11.8	96	A			7.1										
250.0	3/05/82	1350	.3			9.2		11.3	98		57		7.1										
			1.0			9.1		11.3	98		57		7.1										
			2.0			8.7		11.2	96		57		7.1										
			3.0			8.6		11.2	96		56		7.1										
			4.0			8.6		11.1	95		56		7.1										
			5.0			8.6		11.1	95		56		7.1										
			6.0			8.6		11.0	94		56		7.1										
			7.0			8.6		10.9	93		56		7.1										
250.0	4/07/82	1415	.3			17.3		9.7	101		102		7.0										
			1.0			17.3		9.5	99		102		7.0										
			2.0			17.2		9.4	98		104		7.0										
			3.0			17.2		9.3	96		102		7.0										
			4.0			17.2		9.2	95		102		6.9										
			5.0			17.1		9.1	94		102		6.9										
			6.0			17.1		9.1	94		102		6.9										
			7.0			17.2		9.2	95		102		6.9										
250.0	5/05/82	1530	.3			20.4		9.1	101		76		7.2				7		14				
			1.0			20.0		8.9	98		76		7.2										
			2.0			19.4		8.5	92		76		7.2										
			3.0			19.1		8.2	88		74		7.3										
			4.0			19.0		7.8	84		74		7.2										

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DUKE POWER COMPANY
WATER QUALITY DATA
TYPE A

LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TEMP C	CODE	DO MG/L	DO SAT %	CODE	SPEC COND UMHOS	CODE	PH	CODE	ORP MV	CODE	TURB NTU	CODE	ALK MG/L	CODE	SUR LIGHT LY/MIN	CODE	EUPH DEPTH METERS
250.0	5/05/82	1530	5.0			19.0		7.6	82		74		7.2										
			6.0			19.0		7.1	76		74		7.2				16		14				
			7.0			19.2		5.7	61		74		7.2										
250.0	6/09/82	1510	.3			25.9		9.0	111		78		6.8										
			1.0			25.7		8.2	101		78		6.8										
			2.0			25.5		8.1	99		78		6.7										
			3.0			25.3		7.8	95		78		6.7										
			4.0			25.2		7.5	91		76		6.7										
			5.0			25.2		7.3	89		76		6.7										
			6.0			25.2		7.1	86		76		6.7										
			7.0			25.3		7.0	85		76		6.7										
			8.0			25.3		6.6	80		75		6.7										
250.0	7/13/81	1430	.3			30.6		8.9	121		64		7.6										
			1.0			30.3		8.8	119		64		7.3										
			2.0			29.8		8.0	107		64		6.7										
			3.0			28.8		6.5	85		64		6.4										
			4.0			28.3		5.1	66		65		6.3										
			5.0			28.2		4.8	62		65		6.3										
			6.0			28.2		4.7	61		65		6.3										
			7.0			28.2		4.7	61		65		6.3										
			8.0			28.2		4.6	59		65		6.3										
250.0	8/10/81	1431	.3			30.7		8.9	121		72		8.2				6		12				
			1.0			30.2		8.8	118		73		8.0										
			2.0			29.5		7.8	103		70		6.7										
			3.0			29.2		7.2	95		69		6.3										
			4.0			28.7		5.6	73		67		6.1										
			5.0			28.4		5.3	69		66		6.0										
			6.0			28.4		5.0	65		67		6.0										
			7.0			28.4		4.9	63		67		6.0										
			8.0			28.2		4.7	61		66		5.9										
			9.0			28.2		4.5	58		68		6.3										
250.0	9/17/81	1425	.3			27.0		7.1	90		132		6.9				25		14				
			1.0			27.0		7.1	90		132		6.9										
			2.0			26.6		7.4	93		110		6.8										
			3.0			26.5		6.7	84		104		6.7										
			4.0			26.5		6.7	84		104		6.7										

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WATER QUALITY DATA
TYPE A

LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TEMP C	CODE	DO MG/L	DO SAT %	CODE	SPEC COND UMHOS	CODE	PH	CODE	ORP MV	CODE	TURB NTU	CODE	ALK MG/L	CODE	SUR LIGHT LY/MIN	CODE	EUPH DEPTH METERS
250.0	9/17/81	1425	5.0			26.4		6.6	82		102		6.7										
			6.0			26.4		6.3	78		108		6.7										
			7.0			26.4		6.2	77		108		6.7										
250.0	10/12/81	1345	.3			19.6		7.4	81		92		6.9				6		12				
			1.0			19.6		7.4	81		92		6.9										
			2.0			19.6		7.2	78		92		6.9										
			3.0			19.4		7.2	78		90		6.9										
			4.0			19.4		7.1	77		90		6.9										
			5.0			19.4		7.1	77		90		6.9										
			6.0			19.4		7.1	77		92		6.9										
			7.0			19.4		7.0	76		92		6.9										
250.0	11/17/81	1405	.3			13.2		9.1	86		120	A					5		13				
			1.0			13.2		9.1	86		120	A											
			2.0			13.2		9.1	86		118	A											
			3.0			13.2		9.1	86		118	A											
			4.0			13.2		9.0	86		118	A											
			5.0			13.2		9.0	86		116	A											
			6.0			13.2		9.0	86		116	A											
			7.0			13.2		8.9	85		116	A											
250.0	12/17/81		.3		A		A			A		A											
			1.0		A		A			A		A											
			2.0		A		A			A		A											
			3.0		A		A			A		A											
			4.0		A		A			A		A											
			5.0		A		A			A		A											
			6.0		A		A			A		A											
			7.0		A		A			A		A											
260.0	1/28/82	1435	.3			5.4		12.5	98	F	57		7.2				8		13				
260.0	2/12/82	1355	.3			7.4		12.0	99	F	57		7.1										
260.0	3/08/82	1500	.3			9.1		11.4	98		54		7.0										
260.0	4/07/82	1525	.3			15.3		8.9	89		61		6.9										
260.0	5/05/82	1545	.3			19.6		6.9	75		68		7.3				8		14				
260.0	6/10/82	1420	.3			26.6		7.4	93		84		6.8										
260.0	7/13/81	1445	.3			29.2		6.3	83		60		6.4										
260.0	8/10/81	1400	.3			29.1		6.0	79		69		6.3				10		15				
260.0	9/17/81	1510	.3			26.4		6.0	75		92		6.7										

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TYPE A

LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TEMP C	CODE	DO MG/L	DO SAT %	CODE	SPEC COND UMHOS	CODE	PH	CODE	ORP MV	CODE	TURB NTU	CODE	ALK MG/L	CODE	SUR LIGHT LY/MIN	CODE	EUPH DEPTH METERS
250.0	10/13/81	1400	.3			21.0		7.5	84		64		7.0				8		13				
250.0	11/17/81	1440	.3			14.8		8.7	86		66	A											
250.0	12/17/81		.3		A		A			A		A											

CODES

A- INSTRUMENT OR EQUIPMENT MALFUNCTION
B- NOT SAMPLED
C- NOT ANALYZED
D- CONTAMINATED
E- NOT SAMPLED DUE TO WEATHER
F- IN-SITU ANALYSES RUN IN LAB
G- DATA OUT OF CONTROL

APPENDIX 2

Water Quality Data

Variables:

Nitrate plus Nitrite

Ammonia

Orthophosphate

Total Phosphorus

Silica

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WATER QUALITY DATA
TYPE B NUTRIENTS

LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE NO3-NO2-N MGN/L	CODE NH3 MGN/L	CODE SOL. KJEL-N MGN/L	CODE TOTAL KJEL-N MGN/L	CODE ORTHO-PHOS MGP/L	CODE TOTSOL PHOS MGP/L	CODE TOTAL PHOS MGP/L	CODE SCL SIO2 MGSI/L
210.0	1/28/82	1145	.3	1	0.26	0.084			0.023		0.059	4.7
			.3	2	0.26	0.080			0.022		0.062	4.7
			11.0	1	0.27	0.085			0.022		0.066	4.7
			11.0	2	0.27	0.091			0.024		0.064	4.7
210.0	5/05/82	1250	.3	1	0.099	0.053			0.018		0.070	5.2
			.3	2	0.10	0.055			0.018		0.063	5.3
			10.0	1	0.22	0.57			0.057		0.085	6.2
			10.0	2	0.20	0.20			0.051		0.085	6.3
210.0	8/10/81	1125	.3	1	0.092	0.018			0.004		0.024	3.6
			.3	2	0.095	0.011			0.002		0.020	3.6
			11.0	1	0.068	0.099			0.010		0.025	4.2
			11.0	2	0.075	0.068			0.006		0.029	4.2
210.0	10/12/81	1110	.3	1	0.12	0.12			< 0.005		0.022	4.2
			.3	2	0.12	0.11			0.014		0.028	4.2
			11.0	1	0.13	0.12			0.009		0.041	4.2
			11.0	2	0.13	0.12			0.007		0.055	4.2
215.0	1/28/82	1200	.3	1	0.28	0.10			0.036		0.092	5.6
			.3	2	0.28	0.091			0.034		0.093	5.6
			8.0	1	0.28	0.098			0.035		0.090	5.6
			8.0	2	0.29	0.086			0.034		0.083	5.3
215.0	5/05/82	1300	.3	1	0.037	0.099			0.041		0.115	5.0
			.3	2	0.023	0.068			0.044		0.115	5.1
			8.0	1	0.18	0.137			0.15		0.170	6.7
215.0	8/10/81	1134	.3	1	0.057	0.026			0.002		0.018	3.7
			.3	2	0.066	0.009			0.001		0.019	3.6
			8.0	1	0.055	0.13			0.011		0.036	4.8
			8.0	2	0.048	0.069			0.009		0.035	4.7
215.0	10/12/81	1125	.3	1	0.085	0.094			0.005		0.025	4.4
			.3	2	0.085	0.090			0.005		0.027	4.4
			7.0	1	0.11	0.094			0.005		0.026	4.4

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TYPE B NUTRIENTS

LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE NO3-NO2-N MGN/L	CODE NH3 MGN/L	CODE SOL. KJEL-N MGN/L	CODE TOTAL KJEL-N MGN/L	CODE ORTHO-PHOS MGP/L	CODE TOTSOL PHOS MGP/L	CODE TOTAL PHOS MGP/L	CODE SOL SIO2 MGSI/L
215.0	10/12/81	1125	7.0	2	0.12	0.10			< 0.005		0.027	4.4
220.0	1/28/82	1210	.3	1	0.30	0.11			0.032		0.084	5.1
			.3	2	0.31	0.11			0.032		0.086	5.0
			11.0	1	0.32	0.12			0.032		0.087	5.0
			11.0	2	0.32	0.11			0.035		0.075	5.1
220.0	5/05/82	1325	.3	1	0.066	0.065			0.021		0.085	5.4
			.3	2	0.062	0.051			0.018		0.090	5.2
			11.0	1	0.30	0.18			0.034		0.080	5.9
			11.0	2	0.31	0.17			0.037		0.080	5.9
220.0	8/10/81	1155	.3	1	0.095	0.011			0.002		0.018	3.7
			.3	2	0.070	0.02			0.002		0.016	3.8
			11.0	1	0.18	0.14			0.019		0.037	4.5
			11.0	2	0.19	0.14			0.018		0.037	4.5
220.0	10/12/81	1140	.3	1	0.12	0.14			0.007		0.029	4.3
			.3	2	0.11	0.12			0.006		0.029	4.2
			8.0	1	0.10	0.12			0.006		0.028	4.2
			8.0	2	0.11	0.12			0.006		0.029	4.2
225.0	1/28/82	1220	.3		0.33	0.086			0.029		0.087	4.9
			12.0		0.35	0.083			0.035		0.084	4.8
225.0	5/05/82	1430	.3		0.14	0.055			0.020		0.095	6.3
			12.0		0.35	0.17			0.046		0.065	5.9
225.0	8/10/81	1220	.3		0.068	0.009			0.004		0.028	3.8
			13.0		0.22	0.11			0.021		0.039	4.6
225.0	10/12/81	1155	.3		0.074	0.15			0.015		0.046	4.1
			13.0		0.079	0.11			0.011		0.042	4.1
240.0	1/28/82	1350	.3		0.56	0.16			0.042		0.12	5.5
			9.0		0.26	0.041			0.015		0.056	4.7
240.0	5/05/82	1500	.3		0.20	0.058			0.025		0.100	5.8
			9.0		0.40	0.26			0.074		0.12	6.2
240.0	8/10/81	1332	.3		0.059	0.009			0.010		0.038	4.1
			10.0		0.39	0.12			0.006		0.024	5.7
240.0	10/12/81	1325	.3		0.15	0.11			0.039		0.077	4.0

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DUKE POWER COMPANY
WATER QUALITY DATA
TYPE B NUTRIENTS

LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE NO3-NO2-N MGN/L	CODE NH3 MGN/L	CODE SOL. KJEL-N MGN/L	CODE TOTAL KJEL-N MGN/L	CODE ORTHO-PHOS MGP/L	CODE TOTSOL PHOS MGP/L	CODE TOTAL PHOS MGP/L	CODE SOL SIO2 MGSI/L
240.0	10/12/81	1325	10.0		0.49	0.18			0.18		0.027	5.4
249.0	1/28/82	0945	.3		0.61	0.34			0.10		0.044	6.9
249.0	5/05/82	1030	.3	C	C	C			C	C	C	C
249.0	8/10/81	0930	.3		0.85	0.069			0.20		0.057	6.6
249.0	10/12/81	0940	.3		0.89	0.19			0.44		0.65	7.1
250.0	1/28/82	1415	.3		0.22	0.025			0.010		0.038	4.2
			6.0		0.22	0.022			0.010		0.036	4.3
250.0	5/05/82	1530	.3		0.24	0.097			0.017		0.060	4.5
			6.0		0.24	0.11			0.019		0.065	4.4
250.0	8/10/81	1434	.3		0.010	0.005			0.005		0.027	3.4
			9.0		0.083	0.37			0.027		0.042	3.2
250.0	10/12/81	1345	.3		0.089	0.077			0.053		0.089	3.3
			7.0		0.085	0.065			0.052		0.11	3.3
260.0	1/28/82	1435	.3		0.23	0.017			0.093		0.041	4.2
260.0	5/05/82	1545	.3		0.27	0.082			0.008		0.045	4.5
260.0	8/10/81	1400	.3		0.12	0.078			0.008		0.020	4.0
260.0	10/12/81	1400	.3		0.055	0.032			0.009		0.029	3.2

CODES

A- INSTRUMENT OR EQUIPMENT MALFUNCTION

B- NOT SAMPLED

C- NOT ANALYZED

D- CONTAMINATED

E- NOT SAMPLED DUE TO WEATHER

F- IN-SITU ANALYSES RUN IN LAB

G- DATA OUT OF CONTROL

APPENDIX 3

Water Quality Data

Variables:

Iron

Manganese

Calcium

Magnesium

Hardness

Sodium

Potassium

Aluminum

PRINT DATE
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DUKE POWER COMPANY
WATER QUALITY DATA
TYPE D TOTAL MINERALS

LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TOT FE MG/L	CODE	TOT MN MG/L	CODE	TOT CA MG/L	CODE	TOT MG MG/L	CODE	TOT HARD-NESS MG/L	CODE	TOT NA MG/L	CODE	TOT K MG/L	CODE	TOT AL MG/L
210.0	1/28/82	1145	.3			0.8		0.09		4.5		1.4		16.9		7.0		2.0		1.1
			11.0			1.0		0.09		4.4		1.4		16.7		6.9		2.0		1.3
210.0	5/05/82	1250	.3			0.2		0.09		4.9		1.7		19.2		13.		2.2		0.2
			10.0			0.7		0.09		4.7		1.8		19.1		8.7		2.0		0.4
210.0	8/10/81	1125	.3	1		0.4		0.16		2.2		1.3		10.8		10.		2.4		0.8
			11.0	1		1.0		0.30		2.4		1.4		11.7		10.		2.3		1.7
210.0	10/12/81	1110	.3			0.8		0.06		2.3		2.		17.2		11.		2.4		0.6
			11.0			0.7		0.06		2.3		2.		16.4		10.		2.4		1.4
215.0	1/28/82	1200	.3			4.3		0.10		5.0		1.5		18.6		7.1		2.4		4.5
			8.0			2.3		0.11		5.0		1.5		18.6		7.0		2.4		7.2
215.0	5/05/82	1300	.3			0.2		0.10		4.3		1.6		17.3		12.		2.2		0.3
			8.0			0.9		0.10		4.8		1.9		19.7		8.5		2.0		1.3
215.0	8/10/81	1134	.3	1		0.4		0.14		1.9		1.3		10.0		10.		2.3		1.1
			8.0	1		1.9		0.25		2.6		1.5		12.6		9.3		2.3		2.8
215.0	10/12/81	1125	.3			0.4		0.04		1.6		2.7		15.0		9.		2.3		1.0
			7.0			0.4		0.05		1.8		2.7		15.5		10.		2.3		2.6
220.0	1/28/82	1210	.3			0.9		0.10		4.7		1.5		17.9		7.9		2.0		0.9
			11.0			0.9		0.12		4.6		1.5		17.6		8.3		2.1		1.2
220.0	5/05/82	1325	.3			0.3		0.11		4.9		1.7		19.2		12.		2.2		0.4
			11.0			0.6		0.12		5.5		1.9		21.5		11.		2.2		0.8
220.0	8/10/81	1155	.3	1		0.4		0.17		2.2		1.3		10.8		11.		2.3		1.0
			11.0	1		1.0		0.52		3.6		1.5		15.1		12.		2.6		2.0
220.0	10/12/81	1140	.3			0.3		0.07		3.6		3.1		21.7		11.		2.2		0.8
			8.0			0.4		0.09		3.6		2.9		20.8		12.		2.6		2.0
240.0	1/28/82	1350	.3			2.1		0.12		4.8		1.5		18.1		7.4		2.4		3.2
			9.0			0.8		0.14		4.9		1.6		18.8		7.5		2.4		4.0
240.0	5/05/82	1500	.3			0.6		0.12		4.4		1.5		17.1		12.		2.0		0.3
			9.0			2.4		0.13		4.5		1.5		17.4		9.2		2.4		2.8
240.0	8/10/81	1332	.3			0.5		0.18		3.5		1.3		14.0		11.		2.2		1.1
			10.0			1.5		0.32		5.4		1.6		20.0		27.		3.6		2.6

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DUKE POWER COMPANY
WATER QUALITY DATA
TYPE D TOTAL MINERALS

LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TOT FE MG/L	CODE	TOT MN MG/L	CODE	TOT CA MG/L	CODE	TOT MG MG/L	CODE	TOT HARDNESS MG/L	CODE	TOT NA MG/L	CODE	TOT K MG/L	CODE	TOT AL MG/L
210.0	10/12/81	1325	.3			0.7		0.12		6.1		2.7		26.3		12.		2.3		1.0
			10.0			1.0		0.20		7.9		3.4		33.6		28.		3.3		2.5
249.0	1/28/82	0945	.3			1.3		0.58		5.3		1.6		19.8		12.		2.6		1.5
249.0	5/05/82	1030	.3		C		C		C		C		C		C		C		C	
249.0	8/10/81	0930	.3			1.8		1.60		3.0		2.0		15.7		32.		4.5		2.3
249.0	10/12/81	0940	.3			1.3		1.5		8.5		3.8		36.8		21.		4.4		0.8
250.0	1/28/82	1415	.3			0.5		0.11		4.1		1.4		15.9		6.2		1.8		0.4
			6.0			0.5		0.12		4.1		1.4		15.9		6.0		1.8		0.2
250.0	5/05/82	1530	.3			0.4		0.12		4.4		1.5		17.1		6.9		1.8		0.5
			6.0			0.8		0.13		4.3		1.5		16.9		6.7		1.8		0.4
250.0	8/10/81	1434	.3			0.4		0.14		3.1		1.2		12.6		9.0		2.1		1.0
			9.0			0.7		0.20		3.4		1.3		13.8		10.		1.9		1.5
250.0	10/12/81	1345	.3			0.5		0.11		5.3		2.3		22.6		10.		2.2		1.1
			7.0			1.7		0.47		5.2		2.3		22.4		10.		2.2		1.5
260.0	1/26/82	1435	.3			0.4		0.12		7.2		1.3		23.3		5.5		1.8		0.3
260.0	5/05/82	154	.3			0.4		0.12		4.0		1.4		15.7		6.3		1.8		0.5
260.0	8/10/81	1400	.3			0.6		0.15		1.8		1.4		10.2		7.7		2.0		1.4
260.0	10/12/81	1400	.3			0.7		0.15		4.6		2.2		20.5		9.		1.9		1.1

CODES

A- INSTRUMENT OR EQUIPMENT MALFUNCTION

B- NOT SAMPLED

C- NOT ANALYZED

D- CONTAMINATED

E- NOT SAMPLED DUE TO WEATHER

F- IN-SITU ANALYSES RUN IN LAB

G- DATA OUT OF CONTROL

APPENDIX 4

Water Quality Data

Variables:

Chloride

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DUKE POWER COMPANY
WATER QUALITY DATA
TYPE E MINERALS

LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	CL MG/L	CODE	SO4 MG/L	CODE	F MG/L	CODE	TOTAL SOLIDS MG/L	CODE	TSS MG/L	CODE	TDS MG/L	CODE	SETTABLE SOLIDS MG/L
210.0	1/28/82	1145	.3	1		7.0												
			.3	2		5.9												
			11.0	1		7.1												
			11.0	2		7.0												
210.0	5/05/82	1250	.3	1		7.1												
			.3	2		7.2												
			10.0	1		7.3												
			10.0	2		7.2												
210.0	8/10/81	1125	.3	1		8.6												
			.3	2		8.8												
			11.0	1		8.1												
			11.0	2		8.1												
210.0	10/12/81	0940	.3	1		12.												
			.3	2		13.												
			11.0	1		13.												
			11.0	2		13.												
215.0	1/28/82	1200	.3	1		6.9												
			.3	2		6.8												
			8.0	1		7.1												
			8.0	2		6.8												
215.0	5/05/82	1300	.3	1		7.0												
			.3	2		6.9												
			8.0	1		7.2												
			8.0	2		6.9												
215.0	8/10/81	1134	.3	1		8.6												
			.3	2		8.1												
			8.0	1		7.3												
			8.0	2		7.1												
215.0	10/12/81	1125	.3	1		11.												
			.3	2		11.												

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DUKE POWER COMPANY
WATER QUALITY DATA
TYPE E MINERALS

LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	CL MG/L	CODE	SO4 MG/L	CODE	F MG/L	CODE	TOTAL SOLIDS MG/L	CODE	TSS MG/L	CODE	TDS MG/L	CODE	SETTABLE SOLIDS MG/L
215.0	10/12/81	1125	7.0	1		11.												
			7.0	2		11.												
220.0	1/28/82	1210	.3	1		8.1												
			.3	2		8.2												
			11.0	1		8.2												
			11.0	2		8.2												
220.0	5/05/82	1325	.3	1		8.2												
			.3	2		8.4												
			11.0	1		8.3												
			11.0	2		8.3												
220.0	8/10/81	1155	.3	1		8.1												
			.3	2		7.9												
			11.0	1		9.9												
			11.0	2		9.6												
220.0	10/12/81	1140	.3	1		14.												
			.3	2		14.												
			8.0	1		14.												
			8.0	2		14.												
225.0	1/28/82	1220	.3			8.0												
			12.0			7.8												
225.0	5/05/82	1430	.3			8.1												
			12.0			7.9												
225.0	8/10/81	1220	.3			9.1												
			13.0			10.												
225.0	10/12/81	1155	.3			15.												
			13.0			15.												
240.0	1/28/82	1350	.3			8.7												
			9.0			6.5												
240.0	5/05/82	1500	.3			8.8												
			9.0			6.8												
240.0	8/10/81	1332	.3			8.6												
			10.0			17.												

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DUKE POWER COMPANY
WATER QUALITY DATA
TYPE E MINERALS

LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	CL MG/L	CODE	SO4 MG/L	CODE	F MG/L	CODE	TOTAL SOLIDS MG/L	CODE	TSS MG/L	CODE	TDS MG/L	CODE	SETTABLE SOLIDS MG/L
210.0	10/12/81	1325	.3			16.												
			10.0			43.												
249.0	1/28/82	0945	.3			12.												
249.0	5/05/82	1030	.3		C													
249.0	8/10/81	0930	.3			22.												
249.0	10/12/81	0930	.3			66.												
250.0	1/28/82	1415	.3			6.3												
			6.0			6.3												
250.0	5/05/82	1530	.3			6.5												
			6.0			6.3												
250.0	8/10/81	1434	.3			6.5												
			9.0			7.9												
250.0	10/12/81	1345	.3			11.												
			7.0			10.												
260.0	1/28/82	1415	.3			5.8												
260.0	5/05/82	1545	.3			5.9												
260.0	8/10/81	1400	.3			5.5												
260.0	10/12/81	1345	.3			5.6												

CODES

A- INSTRUMENT OR EQUIPMENT MALFUNCTION

B- NOT SAMPLED

C- NOT ANALYZED

D- CONTAMINATED

E- NOT SAMPLED DUE TO WEATHER

F- IN-SITU ANALYSES RUN IN LAB

G- DATA OUT OF CONTROL

APPENDIX 5

Water Quality Data

Variables:

Cadmium

Copper

Lead

Zinc

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DUKE POWER COMPANY
WATER QUALITY DATA
TYPE G TOTAL METALS

LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TOTAL AS UG/L	CODE	TOTAL CD UG/L	CODE	TOTAL CR UG/L	CODE	TOTAL CU UG/L	CODE	TOTAL PB UG/L	CODE	TOTAL HG UG/L	CODE	TOTAL NI UG/L	CODE	TOTAL SE UG/L	CODE	TOTAL ZINC UG/L
210.0	1/28/82	1145	.3				<	0.1				4.6	<	1.0								13.
			11.0				<	0.1				4.9	<	1.0								13.
210.0	5/05/82	1250	.3					0.2				2.5	<	1.0							<	10.
			10.0					0.1				4.0	<	1.0							<	10.
210.0	8/10/81	1125	.3	1			<	0.1				2.0	<	1.0								24.
			11.0	1			<	0.1				1.3		1.0								28.
210.0	10/12/81	1110	.3				<	0.1				7.1	<	1.0								31.
			11.0					0.1				5.9	<	1.0								29.
215.0	1/28/82	1200	.3				<	0.1				4.9		1.0								14.
			8.0				<	0.1				5.6		1.0								11.
215.0	5/03/82	1300	.3				<	0.1				1.9	<	1.0							<	10.
			8.0					0.1				2.8	<	1.0							<	10.
215.0	8/10/81	1134	.3	1			<	0.1				1.8	<	1.0								15.
			8.0	1			<	0.1				1.0		1.0								10.
215.0	10/12/81	1125	.3				<	0.1				5.0	<	1.0								11.
			7.0					0.2				5.2	<	1.0								18.
220.0	1/28/82	1210	.3				<	0.1				4.3		1.0								6.0
			11.0				<	0.1				4.0	<	1.0								11.
220.0	5/05/82	1325	.3					0.1				2.4	<	1.0							<	10.
			11.0					0.1				4.2	<	1.0							<	10.
220.0	8/10/81	1155	.3	1			<	0.1				17.	<	1.0								19.
			11.0	1			<	0.1				1.9		1.0								19.
220.0	10/12/81	1140	.3				<	0.1				6.0	<	1.0								15.
			8.0				<	0.1				6.4	<	1.0								19.
240.0	1/28/82	1350	.3					0.1				6.1	<	1.0								9.0
			9.0				<	0.1				6.1		1.0								7.0
240.0	5/05/82	1500	.3					0.1				4.9	<	1.0							<	10.
			9.0					0.1				3.0	<	1.0								10.
240.0	8/10/81	1332	.3					0.4				7.8	<	1.0								10.
			10.0				<	0.1				4.7		1.2								25.

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DUKE POWER COMPANY
WATER QUALITY DATA
TYPE G TOTAL METALS

LOCATION	DATE MODAYR	TIME HRS	DEPTH METERS	REP	CODE	TOTAL AS UG/L	CODE	TOTAL CD UG/L	CODE	TOTAL CR UG/L	CODE	TOTAL CU UG/L	CODE	TOTAL PB UG/L	CODE	TOTAL HG UG/L	CODE	TOTAL NI UG/L	CODE	TOTAL SE UG/L	CODE	TOTAL ZINC UG/L
230.0	10/12/81	1325	3				<	0.1				8.6	<	1.0								25.
			10.0				<	0.1				11.		1.3								41.
219.0	1/20/82	0945	3					0.7				260.		90.								90.
249.0	5/05/82	1030	3				C				C		<	1.0							C	
249.0	10/12/81	0940	3					0.7				280.		60.								100.
250.0	1/28/82	1415	3				<	0.1				2.9		1.0								7.0
			6.0				<	0.1				6.9	<	1.0								5.0
250.0	5/05/82	1530	3				<	0.1				1.5	<	1.0							<	10.
			6.0				<	0.1				2.1	<	1.0								10.
250.0	8/10/81	1434	3				<	0.1				2.8	<	1.0								15.
			9.0				<	0.1				1.8	<	1.0								14.
250.0	10/12/81	1345	3				<	0.1				3.6	<	1.0							<	10.
			7.0				<	0.1				4.1	<	1.0								14.
260.0	1/28/82	1435	3				<	0.1				3.2	<	1.0								6.0
260.0	5/05/82	1545	3					0.1				1.9		11.							<	10.
260.0	8/10/81	1400	3				<	0.1			<	1.0	<	1.0								18.
260.0	10/12/81	1400	3				<	0.1				3.3	<	1.0							<	10.

CODES

A- INSTRUMENT OR EQUIPMENT MALFUNCTION
B- NOT SAMPLED
C- NOT ANALYZED
D- CONTAMINATED
E- NOT SAMPLED DUE TO WEATHER
F- IN-SITU ANALYSES RUN IN LAB
G- DATA OUT OF CONTROL