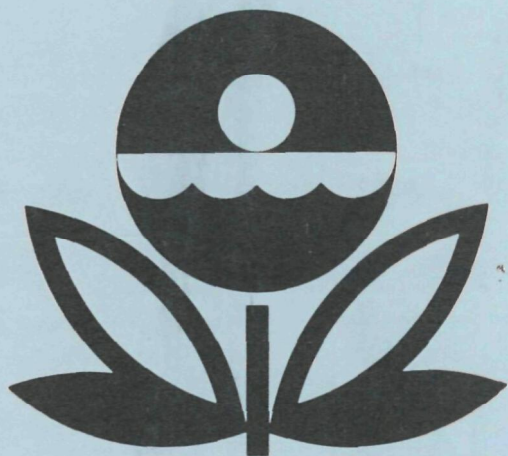


**U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL EUTROPHICATION SURVEY
WORKING PAPER SERIES**



REPORT
ON
NORFORK LAKE
BAXTER AND FULTON COUNTIES, ARKANSAS
OZARK COUNTY, MISSOURI
EPA REGION VI
WORKING PAPER No. 491

**CORVALLIS ENVIRONMENTAL RESEARCH LABORATORY - CORVALLIS, OREGON
and
ENVIRONMENTAL MONITORING & SUPPORT LABORATORY - LAS VEGAS, NEVADA**

REPORT
ON
NORFORK LAKE
BAXTER AND FULTON COUNTIES, ARKANSAS
OZARK COUNTY, MISSOURI
EPA REGION VI
WORKING PAPER No. 491

WITH THE COOPERATION OF THE
ARKANSAS DEPARTMENT OF POLLUTION
CONTROL AND ECOLOGY
AND THE
ARKANSAS NATIONAL GUARD
JANUARY, 1977

REPORT ON NORFORK LAKE
BAXTER AND FULTON COUNTIES, ARKANSAS
OZARK COUNTY, MISSOURI
EPA REGION VI

by

National Eutrophication Survey

Water and Land Monitoring Branch
Monitoring Applications Laboratory
Environmental Monitoring & Support Laboratory
Las Vegas, Nevada

and

Eutrophication Survey Branch
Corvallis Environmental Research Laboratory
Corvallis, Oregon

Working Paper No. 491

OFFICE OF RESEARCH AND DEVELOPMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY

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FOREWORD

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to freshwater lakes and reservoirs.

OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point source discharge reduction and nonpoint source pollution abatement in lake watersheds.

ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

- a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.
- b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.
- c. With such a transformation, an assessment of the potential for eutrophication control can be made.

LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's freshwater lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by the U.S. Environmental Protection Agency and to augment plans implementation by the states.

ACKNOWLEDGMENTS

The staff of the National Eutrophication Survey (Office of Research and Development, U.S. Environmental Protection Agency) expresses sincere appreciation to the Arkansas Department of Pollution Control and Ecology for professional involvement, to the Arkansas National Guard for conducting the tributary sampling phase of the Survey, and to those Arkansas wastewater treatment plant operators who provided effluent samples and flow data.

The staff of the Water Division of the Arkansas Department of Pollution Control and Ecology provided invaluable lake documentation and counsel during the Survey, reviewed the preliminary reports and provided critiques most useful in the preparation of this Working Paper series.

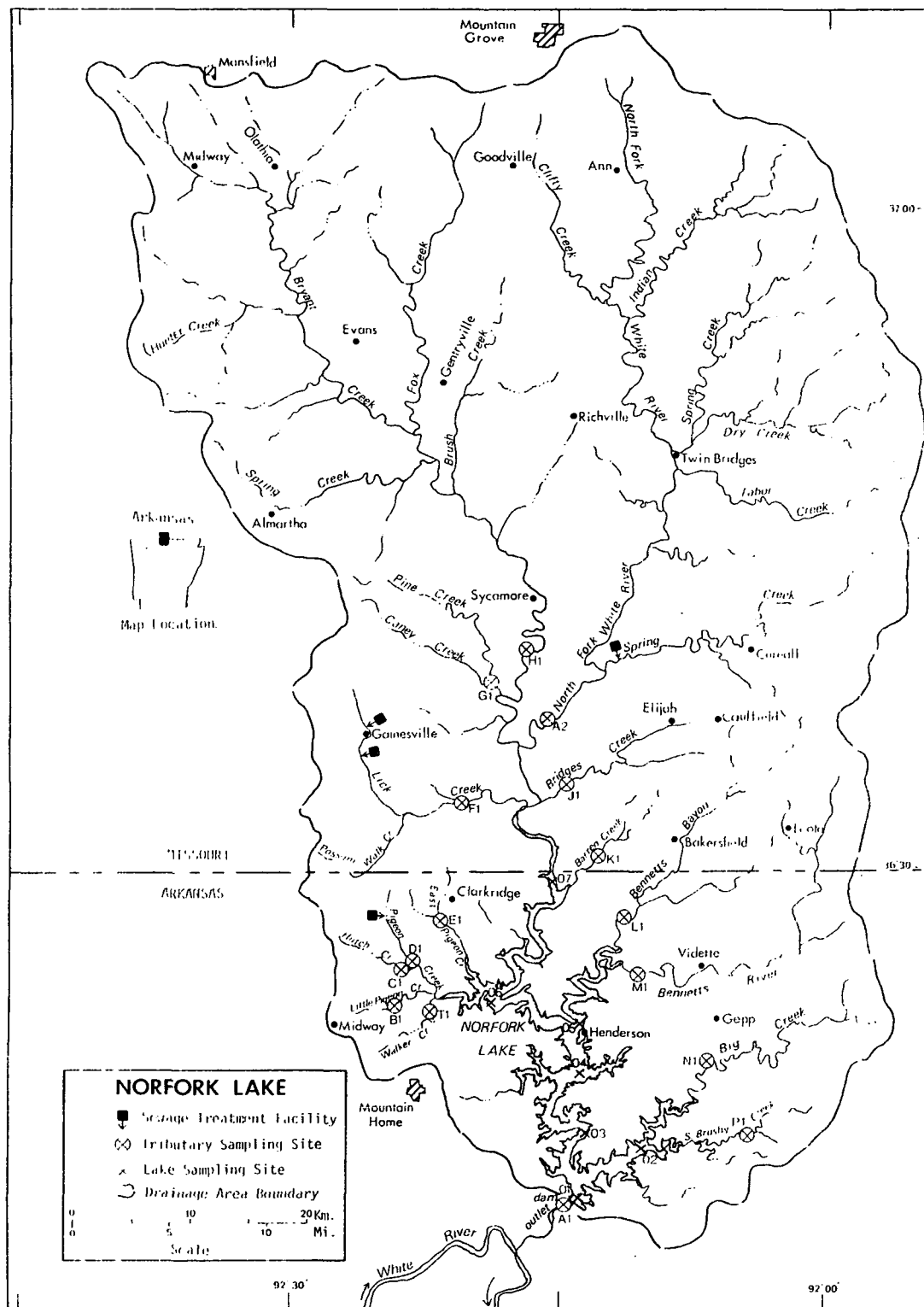
Major General Thomas C. Armstrong, the Adjutant General of Arkansas, and Project Officer Colonel Lavaun M. James, who directed the volunteer efforts of the Arkansas National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

NATIONAL EUTROPHICATION SURVEY

STUDY LAKES

STATE OF ARKANSAS

<u>LAKE NAME</u>	<u>COUNTY</u>
Beaver	Benton, Carroll, Washington
Blackfish	Crittenden, St. Francis
Blue Mountain	Logan, Yell
Bull Shoals	Baxter, Boone, Marion (Taney, Ozark in MO)
Catherine	Garland, Hot Spring
Chicot	Chicot
DeGray	Clark, Hot Spring
Erling	Lafayette
Grand	Chicot
Greer's Ferry	Van Buren, Cleburne
Hamilton	Garland
Millwood	Hempstead, Howard, Little River, Sevier
Nimrod	Perry, Yell
Norfork	Baxter, Fulton (Ozark in MO)
Ouachita	Garland, Montgomery
Table Rock	Boone, Carroll (Barry, Taney in MO)



REPORT ON NORFORK LAKE, ARKANSAS

STORET NO. 0513

I. CONCLUSIONS

A. Trophic Condition:*

Based upon field observations and Survey data, Norfork Lake is considered mesotrophic. Potential for primary production as indicated by algal assay control yield was low. Chlorophyll a values ranged from a low of 0.3 $\mu\text{g/l}$ in the summer to a high of 16.4 $\mu\text{g/l}$ with a mean of 3.4 $\mu\text{g/l}$. The mean Secchi disc reading was 144 cm (57 inches). Of the 16 Arkansas lakes sampled in 1974, 12 had greater median total phosphorus levels, 5 had greater median inorganic nitrogen values, and 12 had greater median dissolved orthophosphorus levels than Norfork Lake.

There was near oxygen depletion in Stations 01 to 06 of the lake during the September and October sampling rounds. Survey limnologists noted hydrogen sulfide in bottom samples at Stations 01, 02, 03, and 06 during these rounds.

B. Rate-Limiting Nutrient:

Algal assay results indicate that Norfork Reservoir is limited by available phosphorus. Spikes with phosphorus alone or nitrogen and phosphorus simultaneously resulted in

*See Appendix E

increased assay yields. The addition of nitrogen alone did not produce a growth response. The ratios of total available nitrogen to orthophosphorus (N/P) in the lake data further substantiate phosphorus limitation.

C. Nutrient Controllability:

1. Point sources -

The mean annual phosphorus load from point sources was estimated to be 3.8% of the total load reaching Norfork Lake. The city of Gainesville contributed 1.6% of the total load. In addition, there are two trout hatcheries, Bryant Springs Trout Farm and Crystal Lake Fisheries that discharge into Bryant and Hunter Creeks, respectively (Missouri Department of Natural Resources, manuscript). Nutrient contributions from these sources are not known.

Loading calculations based upon nutrient concentrations and flow data yield a net export of phosphorus from Norfork Lake, suggesting that sampling was not adequate to depict actual loading and export rates. This export could be attributed to undetected discharges reaching the lake from unknown industrial and municipal sources. Additional sampling and an evaluation of current land use and lakeshore construction are required before a nutrient budget for the lake can be determined.

2. Nonpoint sources -

The total phosphorus load from nonpoint sources accounted for 98.4% of the loading reaching Norfolk Lake. Major tributaries contributed 80.4% for the total while minor tributaries and ungaged drainage areas contributed 10.4%.

Norfolk Lake has localized problem areas related to runoff and seepage from developed areas having inadequate sewage treatment facilities and runoff from agricultural leases (Arkansas Department of Pollution Control and Ecology, 1971). This runoff contributed to high coliform bacterial counts and enrichment around the Pigeon Creek drainage area and Cranfield. The coliform bacteria counts at five of the sampling points of the Pollution Control Survey exceeded the maximum set forth by the Arkansas State Health Department.

II. LAKE AND DRAINAGE BASIN CHARACTERISTICS

Lake and drainage basin characteristics are itemized below. Lake morphometry was provided by the Arkansas Department of Pollution Control and Ecology. Tributary flow data were provided by the Arkansas District Office of the U.S. Geological Survey (USGS). Outlet drainage area includes the lake surface area. Mean hydraulic retention time was obtained by dividing the lake volume by the mean flow of the outlet. Tributary 0513 Q-1 is included in the drainage area and discharge figures for Station 0513 F-1, so has been omitted as an additional input to the lake. Precipitation values are estimated by methods as outlined in National Eutrophication Survey (NES) Working Paper No. 175. A table of metric/English conversions is included as Appendix A.

A. Lake Morphometry:

1. Surface area: 89.03 km².
2. Mean depth: 17.3 meters.
3. Maximum depth: 57.3 meters.
4. Volume: 1,543.096 x 10⁶ m³.
5. Mean hydraulic retention time: 355 days.

B. Tributary and Outlet:
(See Appendix B for flow data)

1. Tributaries -

<u>Name</u>	<u>Drainage area(km²)</u>	<u>Mean flow (m³/sec)</u>
A-2 North Fork White River	1,460.8	19.61
C-1 Hutch Creek	22.8	0.23
D-1 Pigeon Creek	23.1	0.24
E-1 East Pigeon Creek	24.9	0.26
F-1 Lick Creek	255.9	1.52
G-1 Pine Creek (Caney Creek)	106.4	0.78
H-1 Bryant Creek	1,349.4	14.18
J-1 Bridges Creek	75.1	0.55
K-1 Barren Creek	26.9	0.28
L-1 Bennetts Bayou	174.8	1.83
M-1 Bennetts River	176.6	1.85
N-1 Big Creek	136.2	1.42
P-1 Brushy Creek	33.2	0.34
Minor tributaries and immediate drainage -	<u>727.4</u>	<u>7.16</u>
Totals	4,593.5	50.25
2. Outlet - A-1 North Fork White River	4,682.7	50.25

C. Precipitation:

1. Year of sampling: 150.9 cm.
2. Mean annual: 148.8 cm.

III. LAKE WATER QUALITY SUMMARY

Norfolk Lake was sampled four times during the open-water season of 1974 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from seven stations on the lake and from a number of depths at each station (see map, page v). During each visit, depth-integrated samples were collected from each station for chlorophyll a analysis and phytoplankton identification and enumeration. During the first and last visits, 18.9-liter depth-integrated samples were composited for algal assays. Maximum depths sampled were 57.3 meters at Station 01, 33.5 meters at Station 02, 51.8 meters at Station 03, 40.8 meters at Station 04, 31.7 meters at Station 05, 31.4 meters at Station 06, and 13.1 meters at Station 07. For a more detailed explanation of NES methods, see NES Working Paper No. 175.

The results obtained are presented in full in Appendix C and are summarized in III-A for waters at the surface and at the maximum depth for each site. Results of the phytoplankton counts and chlorophyll a determinations are included in III-B. Results of the limiting nutrient study are presented in III-C.

NORFOLK LAKE
STREET CODE 0012

PHYSICAL AND CHEMICAL CHARACTERISTICS

PARAMETER	N	(4/ 5/74)			N	(5/19/74)			N	(9/ 3/74)		
		RANGE	MEDIAN	MAX DEPTH RANGE (METERS)		RANGE	MEDIAN	MAX DEPTH RANGE (METERS)		RANGE	MEDIAN	MAX DEPTH RANGE (METERS)
TEMPERATURE (DEG CENT)												
0.-1.5 M DEPTH	14	10.2- 14.0	11.4	0.0- 1.5	14	21.4- 26.6	25.5	0.0- 1.5	21	14.4- 26.1	20.5	0.0- 1.5
MAX DEPTH**	7	8.0- 13.6	8.9	9.1- 48.8	7	9.8- 19.5	11.8	13.1- 57.3	7	11.1- 19.1	15.5	7.6- 53.3
DISSOLVED OXYGEN (MG/L)												
0.-1.5 M DEPTH	7	9.0- 10.2	10.2	1.5- 1.5	14	8.3- 9.6	8.7	0.0- 1.5	21	5.2- 8.4	6.8	0.0- 1.5
MAX DEPTH**	7	9.2- 10.0	9.2	9.1- 48.8	7	2.2- 6.8	4.0	13.1- 57.3	7	0.2- 7.8	0.4	7.6- 53.3
CONDUCTIVITY (UMHOS)												
0.-1.5 M DEPTH	14	22.- 110.	82.	0.0- 1.5	14	285.- 304.	292.	0.0- 1.5	21	245.- 299.	272.	0.0- 1.5
MAX DEPTH**	7	190.- 240.	215.	9.1- 48.8	7	229.- 298.	245.	13.1- 57.3	7	235.- 294.	269.	7.6- 53.3
PH (STANDARD UNITS)												
0.-1.5 M DEPTH	14	8.0- 8.1	8.0	0.0- 1.5	14	8.4- 8.8	8.5	0.0- 1.5	21	8.0- 8.5	8.2	0.0- 1.5
MAX DEPTH**	7	7.6- 8.0	7.7	9.1- 48.8	7	7.4- 8.2	7.7	13.1- 57.3	7	7.4- 8.4	7.5	7.6- 53.3
TOTAL ALKALINITY (MG/L)												
0.-1.5 M DEPTH	14	143.- 159.	154.	0.0- 1.5	14	143.- 158.	150.	0.0- 1.5	21	151.- 178.	166.	0.0- 1.5
MAX DEPTH**	7	144.- 168.	154.	9.1- 48.8	7	160.- 171.	166.	13.1- 57.3	7	171.- 282.	190.	7.6- 53.3
TOTAL P (MG/L)												
0.-1.5 M DEPTH	14	0.006-0.027	0.016	0.0- 1.5	14	0.008-0.018	0.010	0.0- 1.5	21	0.011-0.0249	0.016	0.0- 1.5
MAX DEPTH**	7	0.018-0.130	0.021	9.1- 48.8	7	0.012-0.029	0.018	13.1- 57.3	7	0.021-0.102	0.051	7.6- 53.3
DISSOLVED ORTHO P (MG/L)												
0.-1.5 M DEPTH	14	0.003-0.012	0.006	0.0- 1.5	14	0.002-0.012	0.002	0.0- 1.5	21	0.003-0.155	0.004	0.0- 1.5
MAX DEPTH**	7	0.004-0.008	0.006	9.1- 48.8	7	0.002-0.010	0.004	13.1- 57.3	7	0.004-0.008	0.006	7.6- 53.3
NO2+NO3 (MG/L)												
0.-1.5 M DEPTH	14	0.260-0.520	0.395	0.0- 1.5	14	0.050-0.250	0.195	0.0- 1.5	20	0.020-0.090	0.030	0.0- 1.5
MAX DEPTH**	7	0.300-0.570	0.440	9.1- 48.8	7	0.350-0.500	0.480	13.1- 57.3	7	0.020-0.050	0.020	7.6- 53.3
AMMONIA (MG/L)												
0.-1.5 M DEPTH	14	0.030-0.060	0.050	0.0- 1.5	14	0.020-0.070	0.040	0.0- 1.5	21	0.020-0.230	0.050	0.0- 1.5
MAX DEPTH**	7	0.040-0.060	0.050	9.1- 48.8	7	0.020-0.080	0.040	13.1- 57.3	7	0.030-0.680	0.480	7.6- 53.3
KJELDAHL N (MG/L)												
0.-1.5 M DEPTH	14	0.200-0.400	0.200	0.0- 1.5	14	0.200-0.500	0.300	0.0- 1.5	21	0.200-1.200	0.300	0.0- 1.5
MAX DEPTH**	7	0.200-0.500	0.200	9.1- 48.8	7	0.200-0.200	0.200	13.1- 57.3	7	0.200-1.000	0.600	7.6- 53.3
SECCHI DISC (METERS)												
	7	1.2- 3.4	2.1		7	3.3- 6.7	5.5		14	1.5- 5.2	3.7	

N = NO. OF SAMPLES

** MAXIMUM DEPTH SAMPLED AT EACH SITE

*** S = NO. OF SITES SAMPLED ON THIS DATE

B. Biological Characteristics:

1. Phytoplankton -

<u>Sampling Date</u>	<u>Dominant Genera</u>	<u>Algal Units per ml</u>
04/05/74	1. <u>Chroomonas</u>	556
	2. <u>Melosira</u>	408
	3. <u>Stipitococcus</u>	148
	4. <u>Centric diatoms</u>	74
	5. <u>Cryptomonas</u>	74
	Other genera	<u>149</u>
	Total	1,409
06/19/74	1. <u>Fragilaria</u>	645
	2. <u>Dinobryon</u>	609
	3. <u>Cryptomonas</u>	179
	4. <u>Ceratium</u>	72
	5. <u>Cyclotella</u>	72
	Other genera	<u>214</u>
	Total	1,791
09/03/74	1. <u>Fragilaria</u>	805
	2. <u>Nitzschia</u>	689
	3. <u>Microcystis</u>	632
	4. <u>Achnanthes</u>	402
	5. <u>Melosira</u>	345
	Other genera	<u>1,323</u>
	Total	4,196
10/10/74	1. <u>Microcystis</u>	603
	2. <u>Flagellates</u>	362
	3. <u>Cryptomonas</u>	322
	4. <u>Dactylococcopsis</u>	241
	5. <u>Mougeotia</u>	201
	Other genera	<u>1,168</u>
	Total	2,897

2. Chlorophyll a -

<u>Sampling Date</u>	<u>Station Number</u>	<u>Chlorophyll a ($\mu\text{g/l}$)</u>
04/05/74	01	3.0
	02	2.4
	03	2.2
	04	2.4
	05	16.4
	06	2.8
	07	0.8
06/19/74	01	0.3
	02	1.3
	03	0.4
	04	1.1
	05	2.1
	06	2.5
	07	3.8
09/03/74	01	3.6
	02	2.7
	03	3.6
	04	3.9
	05	3.3
	06	5.1
	07	7.7
10/10/74	01	2.0
	02	2.9
	03	2.3
	04	3.3
	05	3.5
	06	3.8
	07	7.1

C. Limiting Nutrient Study:

1. Autoclaved, filtered, and nutrient spiked -

a. 04/05/74 - Stations 01-03

<u>Spike(mg/l)</u>	<u>Ortho P Conc.(mg/l)</u>	<u>Inorganic N Conc.(mg/l)</u>	<u>Maximum Yield (mg/l-dry wt.)</u>
Control	0.005	0.275	0.1
0.05 P	0.055	0.275	0.4
0.05 P + 1.0 N	0.055	1.275	12.1
1.00 N	0.005	1.275	0.1

b. 10/09/74 - Stations 01-04

<u>Spike(mg/l)</u>	<u>Ortho P Conc.(mg/l)</u>	<u>Inorganic N Conc.(mg/l)</u>	<u>Maximum Yield (mg/l-dry wt.)</u>
Control	0.010	0.082	0.2
0.05 P	0.060	0.082	1.7
0.05 P + 1.0 N	0.060	1.082	19.8
1.00 N	0.010	1.082	0.2

c. 10/09/74 - Stations 05-07

<u>Spike(mg/l)</u>	<u>Ortho P Conc.(mg/l)</u>	<u>Inorganic N Conc.(mg/l)</u>	<u>Maximum Yield (mg/l-dry wt.)</u>
Control	0.015	0.157	0.5
0.05 P	0.065	0.157	4.5
0.05 P + 1.0 N	0.065	1.157	18.4
1.00 N	0.015	1.157	0.3

2. Discussion -

The control yields of the assay alga, Selenastrum capricornutum, indicate that the potential for primary productivity was low to moderate on Norfork Reservoir during the spring and fall sampling periods. The lake was phosphorus limited at those times as indicated by the increased yield of the test alga in response to an addition of orthophosphorus. Spikes

with nitrogen and phosphorus simultaneously resulted in maximum yield. Spikes with nitrogen alone did not produce a response beyond the control yield.

The spring assay sample for Stations 04 to 07 was broken during shipment, so is not included in this report.

The mean N/P ratios were 77/1 in the spring, 59/1 in the summer, 38/1 in the early fall, and 33/1 in the late fall, further suggesting primary limitation by phosphorus. An N/P ratio of 14/1 or greater generally reflects phosphorus limitation.

IV. NUTRIENT LOADINGS (See Appendix D for data)

For the determination of nutrient loadings, the Arkansas and Missouri National Guards collected monthly near-surface grab samples from each of the tributary sites indicated on the map (page v), except for the high runoff months of March and April when two samples were collected. Sampling was begun in June 1974, and was completed in May 1975.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the Arkansas and Missouri District Offices of the USGS for the tributary sites nearest the lake.

In this report, nutrient loads for sampled tributaries except Lick Creek, Station F-1, were determined by using a modification of a USGS computer program for calculating stream loadings. Nutrient loads indicated for tributaries are those measured minus known point source loads, if any.

Nutrient loadings for F-1, Lick Creek, and unsampled "minor tributaries and immediate drainage" ("ZZ" of USGS) were estimated by using the mean annual nutrient loads, in $\text{kg}/\text{km}^2/\text{yr}$, at Stations C-1, D-1, E-1, G-1, K-1, N-1, and P-1, and multiplying the means by the ZZ area in km^2 .

Nutrient loads for the Gainesville, Ozark County School District, and Rainbow Trout and Game Ranch wastewater treatment plants were estimated at 1.134 kg P and 3.401 kg N/Capita/yr.

A. Waste Sources:

1. Known municipal -

<u>Name</u>	<u>Population Served</u>	<u>Treatment</u>	<u>Mean Flow (m³/d x 10³)</u>	<u>Receiving Water</u>
Gainesville*	300	Stabilization pond	0.114**	Lick Creek
Ozark County School† District R-5 (Gainesville)	240	Stabilization pond	0.091**	Lick Creek
Rainbow Trout and Game Ranch†	185	Stabilization pond	0.070**	Spring Creek

2. Known industrial -

<u>Name</u>	<u>Product</u>	<u>Treatment</u>	<u>Mean Flow (m³/d x 10³)</u>	<u>Receiving Water</u>
Baxter Laboratories***	Pharmaceuticals	Extended Aeration	0.121	Walker Creek to Pigeon Creek

*U.S. EPA, 1971.

**Estimated at 0.3785 m³/capita/day.

***Arkansas Department of Pollution Control and Ecology, 1975.

†Missouri Department of Natural Resources, manuscript.

B. Annual Total Phosphorus Loading - Average Year:

1. Inputs -

<u>Source</u>	<u>kg P/yr</u>	<u>% of total</u>
a. Tributaries (nonpoint load) -		
A-2 North Fork White River	8,830	40.5
C-1 Hutch Creek	80	0.4
D-1 Pigeon Creek	90	0.4
E-1 East Pigeon Creek	30	0.4
F-1 Lick Creek	770	3.5
G-1 Pine Creek (Caney Creek)	265	1.2
H-1 Bryant Creek	4,955	22.7
J-1 Bridges Creek	170	0.8
K-1 Barren Creek	105	0.5
L-1 Bennetts Bayou	575	2.6
M-1 Bennetts River	765	3.5
N-1 Big Creek	415	1.9
P-1 Brushy Creek	115	0.5
b. Minor tributaries and immediate drainage (nonpoint load) -	2,180	10.0
c. Known municipal STP's -		
Gainesville	340	1.6
Ozark School District	270	1.2
Rainbow Trout and Game Ranch	210	1.0
d. Septic tanks* -	30	0.1
e. Known industrial -		
Baxter Laboratories	Unknown	---
f. Direct precipitation** -	<u>1,560</u>	<u>7.2</u>
Totals	21,805	100.0

2. Output - A-1 North Fork White River 27,840

3. Net annual P export*** - 6,035

*Estimate based on 30 lakeside residences, 21 parks, and 1 camp.

**Estimated (see NES Working Paper No. 175).

***Export probably due to unknown sources and/or sampling error.

C. Annual Total Nitrogen Loading - Average Year:

1. Inputs -

<u>Source</u>	<u>kg N/yr</u>	<u>% of total</u>
a. Tributaries (nonpoint load) -		
A-2 North Fork White River	704,060	42.3
C-1 Hutch Creek	5,215	0.3
D-1 Pigeon Creek	5,270	0.3
E-1 East Pigeon Creek	5,725	0.3
F-1 Lick Creek	67,045	4.0
G-1 Pine Creek (Caney Creek)	23,995	1.4
H-1 Bryant Creek	360,365	21.6
J-1 Bridges Creek	16,050	1.0
K-1 Barren Creek	9,150	0.6
L-1 Bennetts Bayou	64,010	3.8
M-1 Bennetts River	65,470	3.9
N-1 Big Creek	37,660	2.3
P-1 Brushy Creek	10,035	0.6
b. Minor tributaries and immediate drainage (nonpoint load) -	190,580	11.5
c. Known municipal STP's -		
Gainesville	1,020	0.1
Ozark School District	815	0.1
Rainbow Trout and Game Ranch	630	<0.1
d. Septic tanks* -	1,130	0.1
e. Known industrial -		
Baxter Laboratories	Unknown	---
f. Direct precipitation** -	<u>96,115</u>	<u>5.8</u>
Totals	1,664,340	100.0

2. Output - A-1 North Fork White River 1,442,945

3. Net annual N accumulation - 221,395

*Estimate based on 30 lakeside residences, 21 parks, and 1 camp.

**Estimated (see NES Working Paper No. 175).

D. Mean Annual Nonpoint Nutrient Export by Subdrainage Area:

<u>Tributary</u>	<u>kg P/km²/yr</u>	<u>kg N/km²/yr</u>
North Fork White River	6	482
Hutch Creek	4	229
Pigeon Creek	4	228
East Pigeon Creek	3	230
Lick Creek	3	262
Pine Creek (Caney Creek)	2	226
Bryant Creek	4	267
Bridges Creek	2	214
Barren Creek	4	340
Bennetts Bayou	3	366
Bennetts River	4	371
Big Creek	3	277
Brushy Creek	3	302

E. Mean Nutrient Concentration in Ungaged Streams:

<u>Tributary</u>	<u>Mean Total P (mg/l)</u>	<u>Mean Total N (mg/l)</u>
B-1 Little Pigeon Creek	0.019	1.430
T-1 Walker Creek	0.016	0.900

The mean nutrient concentrations to the above ungaged streams are in line with the levels in the unimpacted gaged tributaries entering Norfolk Reservoir.

F. Yearly Loadings:

In the following table, the existing phosphorus annual loading is compared to the relationship proposed by Vollenweider (1975). Essentially, his eutrophic loading is that at which the receiving waters would become eutrophic or remain eutrophic; his oligotrophic loading is that which would result in the receiving water remaining oligotrophic or becoming oligotrophic if morphometry permitted. A mesotrophic loading would be considered one between eutrophic and oligotrophic.

Note that Vollenweider's model may not apply to lakes with short hydraulic retention times or in which light penetration is severely restricted by high concentrations of suspended solids in the surface waters.

	Total Yearly Phosphorus Loading (g/m²/yr)
Estimated loading for Norfork Lake	0.24
Vollenweider's eutrophic loading	0.80
Vollenweider's oligotrophic loading	0.40

V. LITERATURE REVIEWED

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Volume 6, Office of Media Programs, Office of Water Programs,
U.S. Government Printing Office, Washington, D.C.

U.S. Environmental Protection Agency. 1975. National Eutro-
phication Survey Methods 1973-1976. Working Paper No. 175.
National Environmental Research Center, Las Vegas, Nevada,
and Pacific Northwest Environmental Research Laboratory,
Corvallis, Oregon.

Vollenweider, R. A. 1975. Input-Output Models With Special
Reference to the Phosphorus Loading Concept in Limnology.
Schweiz. Z. Hydrol. 37:53-84.

VI. APPENDICES

APPENDIX A CONVERSION FACTORS

CONVERSION FACTORS

Hectares x 2.471 = acres

Kilometers x 0.6214 = miles

Meters x 3.281 = feet

Cubic meters x 8.107×10^{-4} = acre/feet

Square kilometers x 0.3861 = square miles

Cubic meters/sec x 35.315 = cubic feet/sec

Centimeters x 0.3937 = inches

Kilograms x 2.205 = pounds

Kilograms/square kilometer x 5.711 = lbs/square mile

APPENDIX B
TRIBUTARY FLOW DATA

TRIBUTARY FLOW INFORMATION FOR ARKANSAS

02/02/77

LAKE CODE 0513 NORFOLK LAKE

TOTAL DRAINAGE AREA OF LAKE(SQ KM) 4682.7

TRIBUTARY	SUB-DRAINAGE AREA(SQ KM)	NORMALIZED FLOWS(CMS)												MEAN
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
0513A1	4682.7	50.12	57.65	56.46	69.63	62.21	57.37	57.96	48.25	38.99	30.78	33.87	40.32	50.25
0513A2	1460.8	20.05	22.71	27.27	33.58	31.35	21.18	16.45	11.95	10.70	11.04	13.79	15.52	19.61
0513C1	22.8	0.278	0.337	0.411	0.416	0.433	0.224	0.159	0.082	0.079	0.082	0.161	0.153	0.234
0513D1	23.1	0.280	0.340	0.416	0.419	0.439	0.227	0.161	0.085	0.079	0.085	0.164	0.153	0.237
0513E1	24.9	0.303	0.368	0.447	0.453	0.473	0.246	0.176	0.091	0.088	0.091	0.178	0.164	0.256
0513F1	207.5	1.81	2.18	2.67	2.71	2.82	1.46	1.04	0.54	0.52	0.54	1.06	0.99	1.52
0513G1	106.4	0.93	1.12	1.37	1.38	1.44	0.75	0.53	0.27	0.27	0.27	0.54	0.50	0.78
0513H1	1349.4	14.70	18.09	21.21	25.74	24.61	15.51	11.41	6.88	6.00	6.82	9.54	10.48	14.18
0513J1	75.1	0.65	0.79	0.96	0.98	1.02	0.53	0.38	0.19	0.19	0.19	0.38	0.36	0.55
0513K1	26.9	0.328	0.396	0.484	0.490	0.510	0.266	0.190	0.096	0.093	0.096	0.193	0.178	0.276
0513L1	174.8	2.17	2.62	3.20	3.26	3.37	1.76	1.25	0.65	0.62	0.65	1.27	1.18	1.83
0513M1	176.6	2.29	2.71	3.23	3.28	3.43	1.78	1.26	0.65	0.63	0.65	1.28	1.19	1.85
0513N1	136.2	1.69	2.04	2.49	2.53	2.62	1.36	0.97	0.50	0.48	0.50	0.99	0.92	1.42
0513P1	33.2	0.40	0.49	0.60	0.60	0.63	0.33	0.23	0.12	0.12	0.12	0.24	0.22	0.34
0513Q1	48.4	0.42	0.51	0.62	0.63	0.65	0.34	0.24	0.12	0.12	0.12	0.25	0.23	0.35
0513Z2	816.4	8.52	10.28	12.57	12.71	13.25	6.88	4.90	2.53	2.44	2.53	4.96	4.64	7.16

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 4682.7
SUM OF SUB-DRAINAGE AREAS = 4682.7

TOTAL FLOW IN = 608.41
TOTAL FLOW OUT = 503.63

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
0513A1	6	74	59.182	22	27.382				
	7	74	106.755	20	113.267				
	8	74	83.818	16	88.915				
	9	74	56.917	21	17.613				
	10	74	34.830	19	2.747				
	11	74	52.669	23	57.483				
	12	74	47.289	22	16.141				
	1	75	102.649	18	122.612				
	2	75	96.844	22	37.945				
	3	75	114.117	8	145.549	22	117.798		
	4	75	132.523	5	146.964	19	149.796		
	5	75	82.968	15	76.455				

TRIBUTARY FLOW INFORMATION FOR ARKANSAS

02/02/77

LAKE CODE 0513 NORFORK LAKE

MEAN MONTHLY FLOWS AND DAILY FLOWS (CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
051342	6	74	44.741	22	30.299				
	7	74	20.020	20	18.519				
	8	74	15.376	17	15.065				
	9	74	14.215	21	14.045				
	10	74	12.686	19	12.884				
	11	74	24.834	23	16.990				
	1	75	36.812	18	31.149				
	2	75	33.980	22	33.980				
	3	75	52.499	8	31.432	22	31.432		
	4	75	35.849	5	25.485	19	25.485		
	5	75	21.521	15	21.436				
	12	75	13.366	22	12.233				
0513C1	6	74	0.705	22	0.164				
	7	74	0.034	20	0.025				
	8	74	0.023	17	0.011				
	9	74	0.068	21	0.110				
	10	74	0.045	19	0.028				
	11	74	0.326	23	0.227				
	12	74	0.085	22	0.059				
	1	75	0.484	18	0.198				
	2	75	0.648	22	0.139				
	3	75	1.042	8	0.147	22	1.076		
	4	75	0.345	5	0.425	19	0.283		
	5	75	0.204	15	0.108				
0513D1	6	74	0.714	22	0.167				
	7	74	0.037	20	0.025				
	8	74	0.023	17	0.011				
	9	74	0.071	21	0.113				
	10	74	0.048	19	0.031				
	11	74	0.328	23	0.229				
	12	74	0.085	22	0.059				
	1	75	0.490	18	0.198				
	2	75	0.657	22	0.142				
	3	75	1.053	8	0.147	22	1.104		
	4	75	0.348	5	0.425	19	0.289		
	5	75	0.207	15	0.110				
0513E1	6	74	0.770	22	0.181				
	7	74	0.040	20	0.028				
	8	74	0.023	17	0.011				
	9	74	0.076	21	0.122				
	10	74	0.051	19	0.031				
	11	74	0.354	23	0.246				
	12	74	0.043	22	0.065				
	1	75	0.527	18	0.215				
	2	75	0.711	22	0.153				
	3	75	1.138	8	0.161	22	1.189		
	4	75	0.377	5	0.451	19	0.311		
	5	75	0.224	15	0.119				

TRIBUTARY FLOW INFORMATION FOR ARKANSAS

02/02/77

LAKE CODE 0513 NORFORK LAKE

MEAN MONTHLY FLOWS AND DAILY FLOWS (CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
0513F1	6	74	6.489	22	1.495				
	7	74	0.320	20	0.232				
	8	74	0.198	17	0.091				
	9	74	0.623	21	1.005				
	10	74	0.428	19	0.269				
	11	74	2.945	23	2.053				
	12	74	0.767	22	0.544				
	1	75	4.389	18	1.790				
	2	75	5.890	22	1.260				
	3	75	9.458	8	1.334	22	9.883		
	4	75	3.115	5	3.908	19	2.582		
	5	75	1.860	15	0.985				
0513G1	6	74	3.285	22	0.767				
	7	74	0.164	20	0.119				
	8	74	0.102	17	0.045				
	9	74	0.320	21	0.515				
	10	74	0.218	19	0.139				
	11	74	1.512	23	1.053				
	12	74	0.394	22	0.278				
	1	75	2.251	18	0.917				
	2	75	3.030	22	0.648				
	3	75	4.842	22	0.685				
	4	75	1.603	5	2.010	19	1.325		
	5	75	0.954	15	0.507				
0513H1	6	74	36.444	22	17.443				
	7	74	8.807	20	7.702				
	8	74	6.173	17	5.890				
	9	74	8.637	21	13.111				
	10	74	6.400	19	7.334				
	11	74	31.771	23	12.488				
	12	74	10.137	22	9.571				
	1	75	26.193	18	20.247				
	2	75	23.390	22	22.597				
	3	75	37.633	8	18.831	22	18.831		
	4	75	23.899	5	16.226	19	16.226		
	5	75	12.176	15	12.148				
0513J1	6	74	2.319	22	0.541				
	7	74	0.116	20	0.085				
	8	74	0.071	17	0.034				
	9	74	0.227	21	0.362				
	10	74	0.156	19	0.096				
	11	74	1.068	23	0.742				
	12	74	0.278	22	0.195				
	1	75	1.589	18	0.648				
	2	75	2.135	22	0.456				
	3	75	3.426	8	0.481	22	3.568		
	4	75	1.130	5	1.416	19	0.934		
	5	75	0.674	15	0.357				

TRIBUTARY FLOW INFORMATION FOR ARKANSAS

02/02/77

LAKE CODE 0513 WOLF CREEK LAKE

MEAN MONTHLY FLOWS AND DAILY FLOWS (CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
0513K1	6	74	0.833	22	0.195				
	7	74	0.042						
	8	74	0.025	17	0.011				
	9	74	0.082	21	0.130				
	10	74	0.057	19	0.034				
	11	74	0.382	23	0.266				
	12	74	0.099	22	0.071				
	1	75	0.569	18	0.232				
	2	75	0.765	22	0.164				
	3	75	1.229	8	0.173	22	1.274		
	4	75	0.405	5	0.510	19	0.334		
	5	75	0.241	15	0.127				
0513L1	6	74	5.409	22	1.260				
	7	74	0.269	20	0.195				
	8	74	0.167	17	0.076				
	9	74	0.527	21	0.847				
	10	74	0.360	19	0.227				
	11	74	2.486	23	1.730				
	12	74	0.648	22	0.459				
	1	75	3.710	18	1.506				
	2	75	4.984	22	1.062				
	3	75	7.957	8	1.124	22	8.325		
	4	75	2.633	5	3.313	19	2.175		
	5	75	1.569	15	0.830				
0513M1	6	74	5.465	22	1.274				
	7	74	0.272	20	0.198				
	8	74	0.167	17	0.076				
	9	74	0.532	21	0.855				
	10	74	0.362	19	0.229				
	11	74	2.512	23	1.747				
	12	74	0.654	22	0.462				
	1	75	3.738	18	1.523				
	2	75	5.012	22	1.073				
	3	75	8.042	8	1.136	22	8.410		
	4	75	2.662	5	3.341	19	2.197		
	5	75	1.583	15	0.838				
0513N1	6	74	4.219	22	0.943				
	7	74	0.210	20	0.153				
	8	74	0.130	17	0.059				
	9	74	0.411	21	0.660				
	10	74	0.280	19	0.178				
	11	74	1.937	23	1.348				
	12	74	0.504	22	0.357				
	1	75	2.888	18	1.175				
	2	75	3.879	22	0.827				
	3	75	6.231	8	0.875	22	6.485		
	4	75	2.053	5	2.577	19	1.646		
	5	75	1.220	15	0.646				

TRIBUTARY FLOW INFORMATION FOR ARKANSAS

02/02/77

LAKE CODE 0513 NORFORK LAKE

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
0513P1	6	74	1.022	22	0.238				
	7	74	0.051	20	0.037				
	8	74	0.031	17	0.014				
	9	74	0.099	21	0.161				
	10	74	0.068	19	0.042				
	11	74	0.470	23	0.328				
	12	74	0.122	22	0.088				
	1	75	0.702	18	0.286				
	2	75	0.943	22	0.201				
	3	75	1.512	8	0.212	22	1.586		
	4	75	0.498	5	0.623	19	0.413		
	5	75	0.297	15	0.159				
051301	6	74	1.495	22	0.348				
	7	74	0.074						
	8	74	0.045	17	0.020				
	9	74	0.144	21	0.235				
	10	74	0.099	19	0.062				
	11	74	0.688	23	0.479				
	12	74	0.178	22	0.127				
	1	75	1.025	18	0.416				
	2	75	1.376	22	0.294				
	3	75	2.265	22	2.294				
	4	75	0.731	5	0.906	19	0.603		
	5	75	0.433	15	0.229				
0513ZZ	6	74	25.202	22	5.890				
	7	74	1.260	20	0.915				
	8	74	0.779	16	0.357	17	0.368		
	9	74	2.458	21	3.964				
	10	74	1.679	19	1.062				
	11	74	11.610	23	8.070				
	12	74	3.030	22	2.135				
	1	75	17.273	18	7.051				
	2	75	23.220	22	4.955				
	3	75	37.237	8	5.239	22	38.794		
	4	75	12.290	5	15.433	19	10.166		
	5	75	7.334	15	3.879				

APPENDIX C
PHYSICAL AND CHEMICAL DATA

STORET RETRIEVAL DATE 77/02/02

051301
36 14 58.0 092 14 14.0 3
NORFOLK LAKE
05005 ARKANSAS

100591

/TYPA/AMBNT/LAKE

11EPALES 04001002
0168 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CONDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
74/04/05	10 00	0000	10.5		120	53	8.00	154	0.060	0.400	0.340	0.012
	10 00	0005	10.5	9.8		83	8.00	153	0.040	0.200	0.340	0.007
	10 00	0015	10.4	10.0		113	8.00	156	0.050	0.200	0.340	0.007
	10 00	0085	10.2	10.2		204	8.00	157	0.060	0.200K	0.350	0.006
	10 00	0160	8.0	9.2		217	7.60	157	0.060	0.200K	0.400	0.007
74/06/19	10 00	0000	24.3	8.6	252	288	8.40	148	0.070	0.400	0.250	0.012
	10 00	0005	23.1	8.8		285	8.40	148	0.050	0.200	0.230	0.008
	10 00	0020	22.5	7.8		278	8.30	149	0.040	0.200	0.270	0.004
	10 00	0037	19.0	5.0		261	7.90	149	0.030	0.200	0.380	0.002K
	10 00	0070	15.0	6.8		249	7.90	156	0.030	0.200K	0.410	0.003
	10 00	0100	12.3	7.4		236	8.00	157	0.040	0.200K	0.430	0.002
	10 00	0130	11.2	6.6		234	7.90	161	0.030	0.200K	0.440	0.006
	10 00	0160	10.3	5.4		234	7.80	160	0.030	0.200K	0.470	0.008
	10 00	0188	9.8	3.4		234	7.60	160	0.050	0.200K	0.490	0.008
74/09/03	14 10	0000	25.9	7.4	156	273	8.30	159	0.040	0.600	0.040	0.005
	14 10	0025	25.8	7.2		274	8.30	157	0.040	0.300	0.030	0.006
	14 10	0040	25.8	7.0		270	8.30	154	0.030	0.200	0.030	0.007
	14 10	0050	25.7	6.8		272	8.20	153	0.020K	0.200K	0.020	0.006
	14 10	0070	18.9	0.4		230	7.70	158	0.040	0.200K	0.330	0.006
	14 10	0120	14.4	2.0		221	7.70	166	0.060	0.200K	0.380	0.007
	14 10	0160	11.6	0.0		226	7.60	185	0.210	0.800	0.270	0.012
74/10/10	10 40	0000	20.4	7.0	204	251	8.00	168	0.230	0.800		0.004
	10 40	0005	20.3	6.4		253	8.00	166	0.050	0.200	0.030	0.010
	10 40	0035	20.3	6.4		253	8.00	165	0.040	0.200K	0.020	0.008
	10 40	0062	20.0	4.8		255	7.90	166	0.050	0.200K	0.030	0.007
	10 40	0073	18.6	1.2		248	7.60	167	0.070	0.200K	0.110	0.007
	10 40	0100	16.6	0.4		232	7.50	165	0.070	0.200K	0.220	0.009
	10 40	0120	15.4	0.4		240	7.50	175	0.170	0.200K	0.140	0.011
	10 40	0150	12.3	0.4		245	7.50	192	0.390	0.400	0.020	0.012
	10 40	0175	11.1	0.4		243	7.50	186	0.620	0.700	0.030	0.008

K VALUE KNOWN TO BE
LESS THAN INDICATED

SECRET RETRIEVAL DATE 77/02/02

051301
36 14 58.0 092 14 14.0 3
NORFOLK L KE
05005 ARKANSAS

100591

/TYPA/AMBN/LAKE

11EPALES 04001002
0168 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L	00031 INCOT LT REMNING PERCENT
74/04/05	10 00	0000	0.017	3.0	
	10 00	0005	0.017		
	10 00	0015	0.019		
	10 00	0085	0.012		
	10 00	0160	0.008		
74/06/19	10 00	0000	0.012	0.3	
	10 00	0005	0.010		50.0
	10 00	0020	0.010		
	10 00	0037	0.008		1.0
	10 00	0070	0.006		
	10 00	0100	0.007		
	10 00	0130	0.012		
	10 00	0160	0.015		
	10 00	0188	0.020		
	10 00	0188	0.020		
74/09/03	14 10	0000	0.014	3.6	
	14 10	0025	0.015		
	14 10	0027			5.0
	14 10	0040	0.015		1.0
	14 10	0050	0.016		
	14 10	0070	0.016		
	14 10	0120	0.017		
	14 10	0160	0.276		
	14 10	0160	0.020		
	14 10	0160	0.013		
74/10/10	10 40	0000	0.020	2.0	
	10 40	0005	0.013		
	10 40	0009			50.0
	10 40	0025			5.0
	10 40	0035	0.013		
	10 40	0038			1.0
	10 40	0062	0.013		
	10 40	0073	0.014		
	10 40	0100	0.017		
	10 40	0120	0.024		
	10 40	0150	0.054		
	10 40	0175	0.102		

STORET RETRIEVAL DATE 77/02/02

051302
 36 17 26.0 092 10 15.0 3
 NO-FOLK LAKE
 05005 ARKANSAS

100591

/TYP/AMNT/LAKE

11EPALES 04001002
 0122 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CONDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
74/04/05	10 40	0000	10.2		132	22	8.10	155	0.060	0.200K	0.290	0.005
	10 40	0005	11.0	10.2		65	8.00	155	0.030	0.200K	0.260	0.003
	10 40	0015	11.0	10.0		136	8.00	153	0.040	0.200K	0.280	0.005
	10 40	0050	10.9	10.0		165	8.00	151	0.040	0.200K	0.270	0.005
	10 40	0085	9.4	9.2		196	7.80	146	0.050	0.200K	0.290	0.005
	10 40	0110	8.9	8.6		215	7.70	144	0.050	0.600	0.300	0.005
74/06/19	10 45	0000	25.8	8.4	216	288	8.50	143	0.050	0.300	0.200	0.004
	10 45	0005	25.6	8.4		287	8.50	146	0.050	0.200K	0.170	0.002
	10 45	0015	23.9	8.8		278	8.40	147	0.050	0.200K	0.190	0.002K
	10 45	0030	20.9	3.8		198	7.60	110	0.050	0.200	0.180	0.002K
	10 45	0045	17.7	4.6		253	7.80	151	0.030	0.200K	0.350	0.002K
	10 45	0075	13.6	5.6		239	7.90	158	0.030	0.200K	0.330	0.002K
	10 45	0105	11.8	4.8		230	7.90	160	0.020	0.200K	0.360	0.002
74/09/03	15 05	0000	26.1	7.0	144	279	8.30	159	0.020K	0.400	0.050	0.003
	15 05	0015	26.0	6.8		274	8.30	145	0.030	0.200K	0.040	0.005
	15 05	0035	25.7	6.4		276	8.20	146	0.040	0.200K	0.020	0.004
	15 05	0040	24.3	0.4		273	7.75	151	0.070	0.200K	0.070	0.004
	15 05	0060	20.7	0.0		229	7.60	140	0.100	0.200	0.030	0.004
	15 05	0080	18.5	0.0		217	7.50	136	0.250	0.400	0.020K	0.003
	15 05	0090	17.7	0.0		222	7.50	144	0.240	0.400	0.020K	0.007
74/10/09	15 00	0000	21.4	6.6	180	253	8.10	154	0.030	0.400	0.030	0.010
	15 00	0005	20.6	6.6		248	8.10	156	0.030	0.200K	0.020	0.005
	15 00	0035	20.3	6.0		247	8.10	157	0.040	0.200K	0.020	0.004
	15 00	0060	20.1	4.8		250	7.90	160	0.040	0.200K	0.020	0.006
	15 00	0075	18.6	0.4		238	7.60	158	0.100	0.200K	0.040	0.006
	15 00	0095	17.0	0.4		232	7.50	161	0.320	0.400	0.020K	0.006
	15 00	0110	15.0	0.4		235	7.50	171	0.410	0.600	0.020K	0.007

K VALUE, KNOWN TO BE
 LESS THAN INDICATED

STORET RETRIEVAL DATE 77/02/02

051302
36 17 26.0 092 10 15.0 3
NORFOLK LINE
05005 ARKANSAS

100541

/TYP/AMBNT/LAKE

11EPALES 04001002
0122 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L	00031 INCDT LT REMNING PERCENT		
74/04/05	10 40	0000	0.006	2.4			
	10 40	0005	0.010				
	10 40	0015	0.008				
	10 40	0050	0.005				
	10 40	0085	0.013				
	10 40	0110	0.130				
74/06/19	10 45	0000	0.010	1.3			
	10 45	0005	0.010		50.0		
	10 45	0015	0.010				
	10 45	0030	0.015		1.0		
	10 45	0045	0.003				
	10 45	0075	0.011				
	10 45	0105	0.012				
	15 05	0000	0.019				
74/09/03	15 05	0015	0.017	2.7			
	15 05	0026			5.0		
	15 05	0035	0.019				
	15 05	0036			1.0		
	15 05	0040	0.022				
	15 05	0060	0.016				
	15 05	0080	0.019				
	15 05	0090	0.021				
	74/10/09	15 00	0000		0.030	2.9	
		15 00	0005		0.012		
15 00		0035	0.012				
15 00		0060	0.011				
15 00		0075	0.011				
15 00		0095	0.028				
15 00		0110	0.042				

STORET RETRIEVAL DATE 77/02/02

051303
36 17 48.0 092 13 48.0 3
NORFOLK LAKE
05005 ARKANSAS

100591

/TYP/AMBN/LAKE

11EPALES 04001002
0147 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CONDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CAC03 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
74/04/05	14 00	0000	10.8		84	90	8.00	153	0.050	0.200	0.360	0.009
	14 00	0005	10.8	10.2		99	8.00	156	0.050	0.200	0.380	0.006
	14 00	0015	10.8	10.2		140	8.00	157	0.050	0.200K	0.370	0.006
	14 00	0030	10.8	10.0		172	8.00	155	0.040	0.200K	0.370	0.005
	14 00	0070	10.8	10.0		209	8.00	154	0.040	0.200K	0.360	0.003
	14 00	0100	8.6	9.0		218	7.80	147	0.030	0.200K	0.350	0.010
	14 00	0130	8.1	9.2		240	7.60	147	0.050	0.200K	0.390	0.005
74/06/19	13 55	0000	26.3	8.3	264	297	8.60	154	0.040	0.300	0.220	0.002K
	13 55	0005	25.5	8.6		294	8.50	156	0.030	0.200K	0.200	0.002K
	13 55	0018	24.5	8.6		288	8.50	154	0.030	0.200K	0.200	0.002K
	13 55	0037	18.8	4.3		260	7.80	156	0.030	0.200K	0.360	0.002K
	13 55	0065	15.3	5.8		244	8.00	156	0.050	0.200K	0.450	0.008
	13 55	0100	12.2	6.8		236	8.00	167	0.040	0.200K	0.480	0.004
	13 55	0135	10.9	5.4		235	7.80	169	0.050	0.200K	0.510	0.008
	13 55	0170	10.0	3.4		229	7.70	169	0.040	0.200	0.500	0.008
74/09/03	15 40	0000	25.9	6.4	145	286	8.30	156	0.050	0.400	0.030	0.004
	15 40	0015	25.9	7.0		287	8.30	156	0.040	0.400	0.040	0.009
	15 40	0037	25.4	4.4		283	8.10	156	0.030	0.400	0.050	0.005
	15 40	0045	22.3	0.4		275	7.80	162	0.030	0.400	0.210	0.004
	15 40	0065	19.2	0.4		236	7.70	152	0.040	0.400	0.370	0.004
	15 40	0090	17.0	1.2		232	7.60	158	0.040	0.300	0.420	0.004
	15 40	0120	14.2	0.4		230	7.60	167	0.060	0.400	0.390	0.005
	15 40	0155	11.9	0.2		241	7.55	191	0.330	0.600	0.100	0.013
74/10/10	11 15	0000	20.4	6.2	204	262	8.05	163	0.040	0.200	0.020	0.004
	11 15	0005	20.4	6.4		261	8.00	166	0.030	0.200K	0.020	0.004
	11 15	0035	20.3	6.4		261	8.00	164	0.040	0.200K	0.020	0.005
	11 15	0060	20.2	6.4		259	7.90	162	0.040	0.200K	0.030	0.005
	11 15	0072	18.8	0.5		259	7.50	169	0.080	0.200K	0.090	0.006
	11 15	0095	17.2	0.4		247	7.45	166	0.120	0.200K	0.120	0.008
	11 15	0120	14.8	0.4		260	7.45	144	0.360	0.400	0.020K	0.004
	11 15	0145	12.4	0.4		256	7.45	195	0.480	0.500	0.020K	0.006

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 77/02/02

051303
36 17 48.0 092 13 49.0 3
NORFOLK L E
05005 ARKANSAS

100591

/TYP/AMBT/LAKE

11EPALES 04001002
0147 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L	00031 INCDT LT REMNING PERCENT
74/04/05	14 00	0000	0.027	2.2	
	14 00	0005	0.018		
	14 00	0015	0.020		
	14 00	0030	0.018		
	14 00	0070	0.020		
	14 00	0100	0.022		
	14 00	0130	0.021		
74/06/19	13 55	0000	0.008	0.4	
	13 55	0005	0.008		50.0
	13 55	0018	0.010		
	13 55	0037	0.009		1.0
	13 55	0065	0.009		
	13 55	0100	0.008		
	13 55	0135	0.015		
	13 55	0170	0.018		
74/09/03	15 40	0000	0.021	3.6	
	15 40	0015	0.015		
	15 40	0037	0.013		
	15 40	0045	0.013		
	15 40	0065	0.011		
	15 40	0090	0.010		
	15 40	0120	0.014		
	15 40	0155	0.056		
74/10/10	11 15	0000	0.014	2.3	
	11 15	0005	0.012		
	11 15	0011			50.0
	11 15	0028			5.0
	11 15	0035	0.013		
	11 15	0041			1.0
	11 15	0060	0.013		
	11 15	0072	0.016		
	11 15	0095	0.019		
	11 15	0120	0.039		
	11 15	0145	0.077		

STORET RETRIEVAL DATE 77/02/02

051304
36 20 42.0 092 14 02.0 3
NORFOLK LAKE
05005 ARKANSAS

100591

/TYPA/AMBNT/LAKE

11EPALES 04001002
0110 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CONDUCTVY FIELD MICROMHO	00400 Ph SU	00410 T ALK CAC03 MG/L	00610 NH3-N TOTAL MG/L	00625 TGT KJEL N MG/L	00630 NO2&N03 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
74/04/05	14 50	0000	11.5		84	69	8.10	152	0.060	0.200K	0.410	0.005
	14 50	0005	11.4	10.2		110	8.10	148	0.050	0.200K	0.380	0.005
	14 50	0015	11.4	9.2		140	8.10	147	0.050	0.200K	0.390	0.005
	14 50	0055	11.3	10.6		191	8.10	147	0.040	0.200K	0.380	0.005
	14 50	0075	8.9			184	7.80	158	0.040	0.200K	0.420	0.005
	14 50	0100	8.9	9.0		225	7.70	161	0.040	0.200K	0.440	0.004
74/06/19	14 35	0000	26.4	8.8	216	301	8.60	158	0.050	0.300	0.210	0.002
	14 35	0005	25.1	9.2		293	8.60	157	0.040	0.200	0.190	0.002
	14 35	0020	22.5	6.8		277	8.40	158	0.050	0.200	0.270	0.002K
	14 35	0033	19.7	4.8		254	7.80	148	0.050	0.400	0.360	0.002
	14 35	0050	18.0	4.6		260	7.70	154	0.020	0.200K	0.450	0.002K
	14 35	0070	14.5	5.4		243	7.80	153	0.020	0.200K	0.430	0.002K
	14 35	0100	12.3	6.0		240	7.80	163	0.020	0.200K	0.460	0.002K
	14 35	0134	11.2	4.0		245	7.70	171	0.040	0.200K	0.480	0.004
74/09/04	10 40	0000	25.0	6.6	168	299	8.20	159	0.060	1.200	0.080	0.011
	10 40	0015	25.0	6.6		305	8.20	160	0.040	0.400	0.040	0.005
	10 40	0036	24.6	4.6		303	8.10	159	0.040	0.300	0.050	0.004
	10 40	0043	21.6	0.2		291	7.70	165	0.040	0.200	0.140	0.004
	10 40	0060	19.3	0.2		257	7.70	155	0.040	0.300	0.310	0.004
	10 40	0075	17.9	0.4		251	7.65	154	0.050	0.200	0.380	0.004
	10 40	0085	16.9	0.4		253	7.60	161	0.080	0.300	0.370	0.005
	10 40	0100	15.7	0.4		255	7.60	165	0.110	0.300	0.240	0.005
	10 40	0112	14.8	0.6		259	7.60	178	0.240	0.500	0.140	0.010
74/10/09	11 50	0000	20.6	6.6	132	272	8.20	176	0.050	0.300	0.030	0.004
	11 50	0005	20.4	6.8		271	8.20	175	0.040	0.200K	0.030	0.004
	11 50	0035	20.4	6.8		271	8.10	177	0.050	0.200K	0.030	0.004
	11 50	0060	20.2	6.6		271	8.10	175	0.040	0.200	0.030	0.004
	11 50	0075	18.6	0.4		270	7.60	181	0.150	0.200	0.060	0.005
	11 50	0095	17.4	0.4		254	7.55	175	0.190	0.300	0.050	0.006
	11 50	0122	15.5	0.2		274	7.45	197	0.610	0.800	0.020K	0.007

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 77/02/02

051304
35 20 42.0 092 14 02.0 3
NORFOLK L/ E
05005 ARKANSAS

100591

/TYPA/AMBNT/LAKE

11EPALES 04001002
0110 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L	00031 INCDT LT REMNING PERCENT
74/04/05	14 50	0000	0.024	2.4	
	14 50	0005	0.011		
	14 50	0015	0.011		
	14 50	0055	0.014		
	14 50	0075	0.013		
	14 50	0100	0.013		
74/06/19	14 35	0000	0.010	1.1	
	14 35	0005	0.009		50.0
	14 35	0020	0.012		
	14 35	0033	0.015		1.0
	14 35	0050	0.015		
	14 35	0070	0.022		
	14 35	0100	0.016		
	14 35	0134	0.018		
74/09/04	10 40	0000	0.029	3.9	
	10 40	0015	0.014		
	10 40	0023			5.0
	10 40	0036	0.012		
	10 40	0037			1.0
	10 40	0043	0.013		
	10 40	0060	0.012		
	10 40	0075	0.012		
	10 40	0085	0.012		
	10 40	0100	0.016		
	10 40	0112	0.026		
74/10/09	11 50	0000	0.013	3.3	
	11 50	0005	0.011		
	11 50	0010			50.0
	11 50	0025			5.0
	11 50	0035	0.011		
	11 50	0037			1.0
	11 50	0060	0.013		
	11 50	0075	0.013		
	11 50	0095	0.018		
	11 50	0122	0.051		

STORET RETRIEVAL DATE 77/02/02

051305
35 23 00.0 092 13 47.0 3
NORFOLK LEE
05005 ARKANSAS

100591

/TYPA/AMBNT/LAKE

11EPALES / 04001002
0092 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CONDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CAC03 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
74/04/05	15 20	0000	11.8		96	101	8.00	148	0.060	0.200	0.420	0.007
	15 20	0005	11.7	10.2		104	8.00	149	0.060	0.200	0.420	0.007
	15 20	0015	11.7	10.6		148	8.00	149	0.040	0.200	0.410	0.012
	15 20	0030	11.7	10.2		166	8.00	149	0.060	0.200	0.420	0.008
	15 20	0060	11.0	9.8		198	7.90	149	0.040	0.200	0.430	0.012
	15 20	0080	8.9	9.2		207	7.80	154	0.050	0.200	0.470	0.007
74/06/20	09 50	0000	25.5	8.6	230	291	8.40	150	0.040	0.300	0.210	0.002
	09 50	0005	25.4	8.6		291	8.40	150	0.040	0.200K	0.160	0.002K
	09 50	0023	22.4	5.2		267	8.10	145	0.040	0.300	0.180	0.002K
	09 50	0032	20.6	2.4		221	7.50	127	0.040	0.400	0.230	0.012
	09 50	0055	17.2	4.4		250	7.80	155	0.030	0.200K	0.410	0.006
	09 50	0080	13.9	5.2		293	7.80	160	0.020	0.200K	0.440	0.003
	09 50	0104	12.3	4.4		298	7.70	166	0.030	0.200K	0.480	0.004
74/09/03	11 05	0000	26.0	6.4	132	293	8.30	164	0.050	0.700	0.040	0.004
	11 05	0015	26.0	6.6		291	8.30	162	0.040	0.400	0.030	0.005
	11 05	0032	24.8	2.4		320	7.90	184	0.040	0.300	0.200	0.008
	11 05	0036	22.5	0.4		321	7.75	193	0.040	0.300	0.200	0.005
	11 05	0050	20.3	0.4		251	7.70	162	0.050	0.200K	0.180	0.005
	11 05	0070	18.3	0.2		247	7.70	164	0.070	0.200K	0.300	0.005
	11 05	0095	16.0	0.2		298	7.60	178	0.270	0.400	0.060	0.005
74/10/09	11 15	0000	20.6	6.6	156	274	8.15	178	0.060	0.400	0.030	0.004
	11 15	0005	20.4	6.8		274	8.15	177	0.050	0.200K	0.030	0.004
	11 15	0035	20.4	6.8		274	8.15	179	0.050	0.200K	0.040	0.004
	11 15	0060	20.3	6.6		275	8.10	177	0.060	0.200K	0.040	0.004
	11 15	0070	19.1	0.4		289	7.65	194	0.210	0.200	0.110	0.004
	11 15	0080	18.4	0.4		286	7.60	193	0.280	0.400	0.050	0.004
	11 15	0088	17.7	0.4		275	7.50	190	0.350	0.500	0.020K	0.004

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 77/02/02

051305
36 23 00.0 092 13 47.0 3
NORFOLK LAKE
05005 ARKANSAS

100591

/TYP/AMBNT/LAKE

11EPALES 04001002
0092 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L	00031 INCDT LT REMNING PERCENT
74/04/05	15 20	0000	0.013	16.4	
	15 20	0005	0.015		
	15 20	0015	0.011		
	15 20	0030	0.012		
	15 20	0060	0.012		
	15 20	0080	0.013		
74/06/20	09 50	0000	0.011	2.1	
	09 50	0003			50.0
	09 50	0005	0.018		
	09 50	0023	0.021		1.0
	09 50	0032	0.024		
	09 50	0055	0.018		
	09 50	0080	0.014		
	09 50	0104	0.014		
74/09/03	11 05	0000	0.021	3.3	
	11 05	0015	0.021		
	11 05	0023			5.0
	11 05	0032	0.017		
	11 05	0035			1.0
	11 05	0036	0.017		
	11 05	0050	0.017		
	11 05	0070	0.016		
	11 05	0095	0.040		
74/10/09	11 15	0000	0.017	3.5	
	11 15	0005	0.012		
	11 15	0007			50.0
	11 15	0028			5.0
	11 15	0035	0.012		
	11 15	0038			1.0
	11 15	0060	0.013		
	11 15	0070	0.018		
	11 15	0080	0.018		
	11 15	0088	0.021		

STORET RETRIEVAL DATE 77/02/02

051306
36 23 56.0 092 18 55.0 3
NO-FOLK L/ E
05005 ARKANSAS

100591

/TYPA/AMNT/LAKE

11EPALES 04001002
0092 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CONDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
74/04/06	10 00	0000	11.7		48	52	8.10	155	0.050	0.300	0.520	0.010
	10 00	0005	11.5	10.2		80	8.10	153	0.030	0.200K	0.470	0.006
	10 00	0015	11.5	10.0		150	8.10	152	0.060	0.200K	0.500	0.003
	10 00	0040	11.4	8.6		163	7.90	152	0.060	0.200K	0.500	0.002
	10 00	0065	9.8	9.4		181	7.90	154	0.060	0.200K	0.530	0.002
	10 00	0080	9.5	8.2		199	7.80	153	0.040	0.200K	0.530	0.005
74/06/20	10 40	0000	25.2	9.4	170	289	8.60	155	0.020	0.300	0.160	0.002K
	10 40	0005	25.6	9.0		292	8.80	153	0.040	0.200	0.120	0.002K
	10 40	0015	24.3	9.2		284	8.80	153	0.030	0.200	0.120	0.002K
	10 40	0027	20.8	5.8		251	7.40	142	0.050	0.300	0.210	0.002K
	10 40	0050	18.5	6.1		245	7.80	141	0.050	0.200	0.390	0.023
	10 40	0075	14.5	4.2		255	7.40	160	0.030	0.200K	0.460	0.009
	10 40	0103	12.5	2.2		264	7.40	168	0.050	0.200	0.500	0.010
74/09/03	10 20	0000	26.0	6.8	96	289	8.30	159	0.040	0.500	0.070	0.004
	10 20	0015	26.1	6.4		286	8.35	159	0.050	0.300	0.040	0.006
	10 20	0030	26.0	6.8		287	8.30	157	0.050	0.300	0.030	0.006
	10 20	0037	22.1	0.6		334	7.90	197	0.070	0.200	0.190	0.005
	10 20	0055	19.3	0.4		264	7.80	168	0.120	0.300	0.190	0.005
	10 20	0075	17.8	0.4		270	7.75	178	0.230	0.400	0.090	0.005
	10 20	0092	16.8	0.2		323	7.65	199	0.600	0.900	0.030	0.002
74/10/09	10 30	0000	20.4	7.2	84	271	8.30	176	0.050	0.200K	0.040	0.004
	10 30	0005	20.3	7.4		272	8.30	178	0.050	0.200K	0.040	0.003
	10 30	0025	20.3	7.2		272	8.30	172	0.050	0.200K	0.040	0.003
	10 30	0055	20.1	6.6		277	8.20	179	0.080	0.200	0.060	0.012
	10 30	0066	18.8	6.0		284	8.00	190	0.120	0.400	0.150	0.006
	10 30	0075	18.5	3.6		292	7.85	194	0.170	0.300	0.170	0.006
	10 30	0086	17.0	0.4		294	7.50	282	0.680	1.000	0.020	0.006

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 77/02/02

051306
36 23 56.0 092 18 55.0 3
NORFOLK LAKE
05005 ARKANSAS

100591

/TYP/AMBN/LAKE

11EPALES 04001002
0092 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L	00031 INCOT LT REMNING PERCENT
74/04/06	10 00	0000	0.015	2.8	
	10 00	0005	0.013		
	10 00	0015	0.014		
	10 00	0040	0.015		
	10 00	0065	0.019		
	10 00	0080	0.044		
74/06/20	10 40	0000	0.011	2.5	
	10 40	0005	0.015		50.0
	10 40	0015	0.017		
	10 40	0027	0.021		1.0
	10 40	0050	0.030		
	10 40	0075	0.017		
	10 40	0103	0.029		
74/09/03	10 20	0000	0.016	5.1	
	10 20	0015	0.023		
	10 20	0017			5.0
	10 20	0028			1.0
	10 20	0030	0.017		
	10 20	0037	0.015		
	10 20	0055	0.014		
	10 20	0075	0.022		
	10 20	0092	0.068		
74/10/09	10 30	0000	0.014	3.8	
	10 30	0004			50.0
	10 30	0005	0.015		
	10 30	0017			5.0
	10 30	0025	0.013		
	10 30	0028			1.0
	10 30	0055	0.019		
	10 30	0066	0.022		
	10 30	0075	0.030		
	10 30	0086	0.058		

STORE RETRIEVAL DATE 77/02/02

051307
36 29 44.0 092 15 40.0 3
NORFOLK LAKE
05005 ARKANSAS

100591

/TYP/AMBNT/LAKE

11EPALES 04001002
0038 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CONDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CAC03 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
74/04/06	10 40	0000	14.0		48	24	8.10	159	0.060	0.200	0.500	0.008
	10 40	0005	13.9	9.0		90	8.10	158	0.050	0.200K	0.490	0.006
	10 40	0015	13.6	9.0		175	8.00	167	0.070	0.200K	0.510	0.010
	10 40	0030	13.6	10.0		190	8.00	168	0.060	0.200K	0.500	0.006
74/06/20	14 00	0000	21.4	9.6	130	304	8.80	149	0.020	0.500	0.080	0.003
	14 00	0005	26.6	9.6		292	8.70	148	0.040	0.300	0.050	0.003
	14 00	0015	25.5	8.8		285	8.70	146	0.040	0.300	0.050	0.004
	14 00	0027	22.9	6.8		288	8.10	159	0.060	0.300	0.220	0.002
	14 00	0043	19.5	6.8		287	8.20	161	0.080	0.200	0.420	0.002
74/09/03	09 50	0000	25.6	7.0	60	277	8.20	151	0.070	0.800	0.090	0.008
	09 50	0015	25.5	6.8		280	8.30	152	0.060	0.300	0.050	0.008
	09 50	0023	25.2	6.4		292	8.20	156	0.070	0.200	0.060	0.007
	09 50	0028	22.4	5.2		341	8.00	199	0.110	0.300	0.300	0.009
	09 50	0035	22.3	5.0		345	8.00	202	0.100	0.300	0.360	0.012
74/10/09	09 50	0000	19.5	8.4	72	259	8.50	172	0.040	0.200K	0.040	0.004
	09 50	0005	19.4	8.4		260	8.50	173	0.030	0.200	0.030	0.004
	09 50	0015	19.4	8.4		261	8.50	173	0.020	0.200K	0.030	0.005
	09 50	0025	19.1	7.8		269	8.40	176	0.030	0.200	0.050	0.006

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 77/02/02

051307
36 29 44.0 092 15 40.0 3
NORFOLK LAKE
05005 ARKANSAS

1005+1

/TYPA/AMBNT/LAKE

11EPALES 04001002
0038 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLORPHYL A UG/L	00031 INCOT LT REMNING PERCENT
74/04/06	10 40	0000	0.017	0.8	
	10 40	0005	0.020		
	10 40	0015	0.024		
	10 40	0030	0.026		
74/06/20	14 00	0000	0.017	3.8	
	14 00	0005	0.016		
	14 00	0008			50.0
	14 00	0015	0.017		
	14 00	0027	0.014		1.0
	14 00	0043	0.017		
74/09/03	09 50	0000	0.036	7.7	
	09 50	0008			5.0
	09 50	0013			1.0
	09 50	0015	0.032		
	09 50	0023	0.027		
	09 50	0028	0.033		
	09 50	0035	0.033		
74/10/09	09 50	0000	0.021	7.1	
	09 50	0002			50.0
	09 50	0005	0.020		
	09 50	0014			5.0
	09 50	0015	0.019		
	09 50	0021			1.0
	09 50	0025	0.026		

APPENDIX D
TRIBUTARY AND WASTEWATER
TREATMENT PLANT DATA

STORED RETRIEVAL DATE 75/11/29
 NATL EUTROPHICATION SURVEY
 EPA- LAS VEGAS

051341
 35 14 55.0 092 14 20.0
 NFORK WHITE RIVER
 05 7.5 NCFORK DM S
 0/NCFORK LAKE
 TURBINE XHAUST BELOW NCFORK DAM POWERHO
 11EPALES 2111204
 4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHOP MG/L P	00665 PHOS-TOT MG/L P
74/06/22	09 40		0.370	0.100K	0.005K	0.005K	0.010
74/07/20	11 30		0.396	1.400	0.025	0.010	0.010
74/08/16	09 00		0.390	0.100	0.010	0.005	0.010
74/09/21	09 10		0.290	0.100	0.020	0.005K	0.005
74/10/19	09 00		0.136	0.700	0.063	0.005	0.010K
74/12/22	09 30		0.208	0.400	0.027	0.005	0.010
75/01/18	09 20		0.192	1.500	0.072	0.015	0.025
75/02/22	10 00		0.184	0.900	0.108	0.032	0.080
75/03/08	10 10		0.168	0.700	0.048	0.016	0.040
75/03/22	08 00		0.180	0.650	0.050	0.010	0.020
75/04/05	08 20		0.185	0.525	0.030	0.010	0.010
75/04/19	08 30			0.700	0.020	0.005	0.010K
75/05/15	12 59		0.960	0.200	0.060	0.010	0.010

— K VALUE KNOWN TO BE LESS THAN —
 INDICATED

STREET RETRIEVAL DATE 75/11/28
 NATL EUTROPHICATION SURVEY
 EPA- LAS VEGAS

051342
 32 37 25.0 092 15 45.0
 N FORK WHITE RIVER
 05 7.5 UDALL MD
 T/NDORFERK LAKE
 MD HWY RP BRDG 2 MI N US HWY 160 JCT
 11EPALES 2111204
 4 0000 FEET DEPTH

DATE	TIME	DEPTH	00630 NO28N03 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
FROM	OF						
TO	DAY	FEET					
74/06/22	14	50	0.540	0.100K	0.005	0.005K	0.007
74/07/20	13	30	0.600	0.400	0.027	0.005	0.010
74/08/17	11	00	0.032	0.200	0.010	0.005K	0.010
74/09/21	12	45	0.680	0.150	0.035	0.005K	0.005
74/10/19	13	15	0.552	2.200	0.070	0.005K	0.010K
74/12/22	14	50	0.600	0.100K	0.010	0.005K	0.010K
75/01/18	13	50	0.704	0.200	0.016	0.010	0.020
75/02/22	13	54	0.660	0.104	0.104	0.032	0.042
75/03/08	11	30	0.576	0.100K	0.016	0.008K	0.010K
75/03/22	10	15	0.860	0.350	0.010	0.005K	0.010K
75/04/05	10	10	0.890	0.650	0.010	0.005	0.020
75/04/19	13	30	1.200	0.350	0.010	0.005	
75/05/15	08	14	1.250	0.300	0.020	0.005	0.020

— K VALUE KNOWN TO BE LESS THAN —
 INDICATED

STORET RETRIEVAL DATE 75/11/28
 NATL EUTROPHICATION SURVEY
 EPA- LAS VEGAS

051331
 36 23 52.0 092 24 15.0
 LITTLE PIGEON CREEK
 05 7.5 MIDWAY
 T/NORFOLK LAKE
 2NDRY SO BRDG 3.5 MI NW AR 201 JCT
 11EPALES 2111204
 4 0000 FEET DEPTH

DATE	TIME	DEPTH	00630	00625	00610	00671	00665
FROM	LF		NO2&NO3	TOT KjEL	NH3-N	PHOS-DIS	PHOS-TOT
TO	DAY	FEET	N-TOTAL	N	TOTAL	ORTHO	
			MG/L	MG/L	MG/L	MG/L P	MG/L P
74/06/22	09	30	0.960	0.100K	0.010	0.005	0.015
74/07/20	08	15	1.040	0.100K	0.040	0.010	0.010
74/08/17	09	00	0.830	0.200	0.010	0.010	0.025
74/09/21	08	30	1.160	0.500	0.010	0.015	0.025
74/10/19	09	45	0.576	0.100K	0.025	0.005	0.010K
74/12/22	11	50	1.200	0.500	0.015	0.005	0.010K
75/01/18	08	15	1.345	0.200	0.016	0.010	0.020
75/02/22	10	00	0.990	0.400	0.032	0.008	0.050
75/03/08	10	20	1.010	1.200	0.040	0.005	0.012
75/03/22	07	45	0.185	0.350	0.010	0.005	0.010K
75/04/05	07	55	0.900	0.600	0.005	0.005	0.010
75/04/19	09	30	1.200	0.050K	0.005	0.005	0.010
75/05/15	10	40	1.200	0.100	0.015	0.010	0.010

— K VALUE KNOWN TO BE LESS THAN —
 INDICATED

STORET RETRIEVAL DATE 75/11/28
 NATL EUTROPHICATION SURVEY
 CPA- LAS VEGAS

051301
 36 25 25.0 092 23 50.0
 HUTCH CREEK
 JS 7.5 MIDWAY
 T/NORRIS LAKE
 UNIMPROVE RD XING 3.8 MI SWAP HWY 201
 11EPALES 2111204
 4 0000 FEET DEPTH

DATE	TIME	DEPTH	00630 NO201-33 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00605 PHOS-TOT MG/L P
FROM	OF						
TO	DAY	FEET					
74/06/22	10	10	0.104	0.100K	0.005	0.005K	0.005K
74/07/20	08	25	0.044	0.100K	0.020	0.005K	0.005
74/09/21	09	00	0.328	0.300	0.005K	0.005K	0.005K
74/10/19	10	00	0.024	0.600	0.045	0.005K	0.005
74/12/22	12	05	0.112	0.500	0.015	0.005K	0.010K
75/01/18	08	00	0.660	0.200	0.008	0.005	0.020
75/02/22	10	30	0.184	0.400	0.024	0.008K	0.040
75/03/08	10	00	0.376	0.275	0.024	0.008	0.010K
75/03/22	08	55	0.175	0.150	0.005K	0.005K	0.010K
75/04/05	08	45	1.000	0.150	0.005K	0.005K	0.010
75/04/19	08	15	0.460	0.400	0.010	0.005K	0.010
75/05/15	10	56	0.900	0.500	0.015	0.005	0.010

— K VALUE KNOWN TO BE LESS THAN —
 INDICATED

STORED RETRIEVAL DATE 75/11/28
 NATL EUTROPHICATION SURVEY
 EPA- LAS VEGAS

051301
 36 25 45 0 092 23 12.0
 PIGEON CREEK
 05 7.5 MIDWAY
 T/ANDERSON LAKE
 UNIMPROVED RD XING 3 MI SW AB HWY 201 JC
 11EPALES 2111204
 4 0000 FEET DEPTH

DATE	TIME	DEPTH	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHOP MG/L P	00665 PHOS-TOT MG/L P
74/06/22	11 10		0.020	0.100K	0.005K	0.005K	0.005K
74/07/20	09 00		0.500	0.100K	0.020		
74/08/17	11 25		0.136	0.700	0.025	0.010	0.015
74/09/21	10 00		0.368	0.300	0.010	0.020	0.025
74/10/19	10 40		0.008	0.100	0.030	0.005K	0.010K
74/12/22	12 15		0.016	0.500	0.015	0.005	0.010K
75/01/18	08 30		0.272	0.100K	0.008	0.010	0.010
75/02/22	10 45		0.064	0.800	0.064	0.008K	
75/03/08	10 40		0.200	0.100K	0.016	0.008	0.010K
75/03/22	07 15		0.180	0.500	0.030	0.005	0.020
75/04/05	07 30		1.000	0.150	0.005K	0.005K	0.010
75/04/19	08 30		0.460	0.400	0.010	0.005K	0.010
75/05/15	10 10		0.900	0.550	0.015	0.005	0.010K

— K VALUE KNOWN TO BE LESS THAN
 INDICATED —

STO-RT RETRIEVAL DATE 75/11/28
 NATL EUTROPHICATION SURVEY
 EPA- LAS VEGAS

0513E1
 36 27 45.0 092 21 40.0
 EAST PIGEON CREEK
 05 7.5 CLARKPIDGE
 T/NORFOLK LAKE
 AR HWY 201 BRDG 1.5 MI SW CLARKPIDGE
 11EPALES 2111204
 + 0000 FEET DEPTH

DATE	TIME	DEPTH	00630 NH3-N N-TOTAL MG/L	00625 TUT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHC MG/L P	00665 PHOS-TOT MG/L P
74/06/22	11	30	0.040	0.100K	0.005K	0.005K	0.005K
74/07/20	10	00	0.104	0.100K	0.010	0.010	0.010
74/08/17	10	30	0.756	0.100K	0.010	0.010	0.010
74/09/21	09	45	0.084	0.100	0.010	0.005K	0.005K
74/10/19	10	50	0.040	0.200	0.020	0.005K	0.010K
74/12/22	12	55	0.040	0.100K	0.005	0.005K	0.010K
75/01/18	09	30	0.088	0.495	0.088	0.005K	0.010K
75/02/22	11	25	0.096	0.700	0.032		
75/03/08	10	55	0.048	0.100K	0.008K	0.008K	0.010K
75/03/22	08	40	0.270	0.650	0.010	0.005K	0.010K
75/04/05	08	30	0.300	1.050	0.015	0.005K	0.020
75/04/19	10	30	1.250	0.550	0.020	0.005K	0.010K
75/05/15	12	00	1.050	1.100	0.020	0.005	0.010K

— K VALUE KNOWN TO BE LESS THAN —
 INDICATED

STORET RETRIEVAL DATE 75/11/28
 NATL EUTROPHICATION SURVEY
 EPA- LAS VEGAS

0513F1
 36 33 00.0 092 20 05.0
 LICK CREEK
 05 7.5 UDALL
 T/NDREPOK LAKE
 BNK 100 YDS E OF LICK CRK BRDG ON HWY J
 11EPALES 2111204
 4 0000 FEET DEPTH

DATE	TIME	DEPTH	00630 NO2&N73 MG/L	00625 TOT KJEL MG/L	00610 NH3-N MG/L	00671 PHOS-DIS MG/L P	00665 PHOS-TOT MG/L P
74/06/22	12	10	0.136	0.100K	0.005	0.005K	0.005K
74/07/20	11	00	0.096	0.100K	0.010	0.005	0.010
74/09/21	10	45	0.390	0.100	0.005K	0.005K	0.005
74/10/19	11	20	0.120	0.200	0.010	0.005K	0.010K
74/12/22	12	25	0.208	0.600	0.020	0.005K	0.010K
75/01/18	11	00	0.384	0.100K	0.016	0.005K	0.010K
75/02/22	12	15	0.320	0.700	0.040	0.051	0.075
75/03/08	11	10	0.240	0.100K	0.012	0.008K	0.010K
75/03/22	10	10	0.090	0.200	0.020		
75/04/05	09	50	0.890	1.250	0.010	0.005K	0.010
75/04/19	11	30	0.810	1.000	0.025	0.005	0.020
75/05/15	13	10	0.870	0.400	0.025	0.005	0.010K

— K VALUE KNOWN TO BE LESS THAN —
 INDICATED

STREET RETRIEVAL DATE 75/11/28
 NATL EUTROPHICATION SURVEY
 EPA- LAS VEGAS

0513G1
 36 38 30.0 092 18 27.0
 PINE CREEK
 05 7.5 SYCAMORE
 T/NORFOLK LAKE
 100 YDS DWNSTRM OF CANEY CRK BRDG HWY FF
 11EPALES 2111204
 4 0000 FEET DEPTH

DATE	TIME	DEPTH	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS DEPTH MG/L P	00665 PHOS-TOT MG/L P
FR IV	OF	FEET					
TO	DAY						
74/06/22	12	00	0.176	0.100K	0.015	0.005K	0.005K
74/07/20	11	30	0.250	0.100K	0.005	0.010	0.035
74/08/17	11	00	0.264	0.100	0.010		
74/09/21	13	10	0.216	0.100K	0.010	0.005K	0.005
74/10/19	12	25	0.176	0.100K	0.015	0.005K	0.010K
74/12/22	14	10	0.192	0.800	0.015	0.005K	0.010K
75/01/18	13	00	0.280	0.100	0.024	0.005	0.010K
75/02/22	13	15	0.640	1.000	0.048		
75/03/22	09	55	0.260	0.650	0.015	0.005	0.010K
75/04/05	09	30	0.280	1.400	0.020	0.005K	0.010
75/04/19	12	30	1.050	0.300	0.015	0.005K	0.010K
75/05/15	12	20	0.890	0.050K	0.015	0.005	0.010K

— K VALUE KNOWN TO BE LESS THAN —
 INDICATED

STOPPED RETRIEVAL DATE 75/11/28
 NATL EUTROPHICATION SURVEY
 FPA- LAS VEGAS

051341
 36 40 07 0 092 16 52.0
 BRYANT CREEK
 05 7.5 SYCAMORE
 T/ANDREWS LAKE
 2NDRY RD BRDG 2.5 MI SE MO HWY FF JCT
 11EPALES 2111204
 4 0100 FEET DEPTH

DATE	TIME	DEPTH	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJFL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
74/06/22	14 25		0.384	0.100K	0.005K	0.005K	0.005K
74/07/20	13 30		0.470	0.400	0.015	0.005	0.010
74/08/17	12 00		0.140	0.100	0.010	0.005K	0.010
74/09/21			0.416	0.300	0.037	0.005K	0.010
74/10/19	12 45		0.384	0.200	0.050	0.005K	0.010K
74/12/22	14 30		0.480	0.300	0.015	0.005K	0.010K
75/01/18	12 30		0.640	0.300	0.016	0.005K	0.020
75/02/22	13 30		0.528	0.100K	0.048	0.008	0.010K
75/03/08	11 20		0.260	0.300	0.040	0.008K	0.010K
75/03/22	09 55		0.180	0.350	0.030	0.005	0.020
75/04/05	09 40		0.980	0.200	0.010	0.005K	0.010
75/04/19	09 00		0.440	0.600	0.020	0.005K	0.010K
75/05/15	09 00		1.200	0.600	0.020	0.005	0.010K

— K VALUE KNOWN TO BE LESS THAN —
 INDICATED

STREET RETRIEVAL DATE 75/11/28
 NATL EUTROPHICATION SURVEY
 EPA- LAS VEGAS

0513J1
 36 33 45.0 092 14 50.0
 BRIDGES CREEK
 05 7.5 BAKERSFIELD
 T/ANDREWS LAKE
 2NDRY D BRDG 3 MI S US HWY 160 JCT
 11EPALES 2111204
 4 0000 FEET DEPTH

DATE	TIME	DEPTH	00630	00625	00610	00671	00665
FROM	OF		NH3-N	TUT KJEL	NH3-N	PHOS-DIS	PHOS-TOT
TO	DAY	FEET	N-TOTAL	N	TOTAL	ORTHG	
			MG/L	MG/L	MG/L	MG/L P	MG/L P
74/06/22	13	25	0.216	0.100K	0.005	0.005K	0.005K
74/07/20	15	30	0.216	2.500	0.065	0.005	0.010
74/08/17	12	30	0.176	0.300	0.005	0.005	0.005
74/09/21	12	15	0.256	0.250	0.015	0.005K	0.005K
	13	00	0.256	0.100K	0.020	0.005K	0.005K
74/10/19	14	20	0.152	0.100K	0.017	0.005K	0.010K
74/12/22	19	30	0.240	0.400	0.007	0.005	0.010K
75/01/18	12	20	0.504	0.700	0.016	0.010	0.010
	14	15	0.480	0.100K	0.008K	0.005K	0.020
75/02/22	12	30	0.296	0.600	0.024	0.008K	0.030
75/03/08	13	40	0.272	0.200	0.024	0.008K	0.010K
75/03/22	13	10	0.095	0.400	0.025		
75/04/05	13	00	1.150	0.050K	0.005K	0.005K	0.010
75/04/19	13	00	0.800	0.800	0.020	0.005K	0.010K
75/05/15			0.990	0.200	0.015	0.005	0.010K

— K VALUE KNOWN TO BE LESS THAN —
 INDICATED

STOP/CT RETRIEVAL DATE 75/11/23
 NATL EUTROPHICATION SURVEY
 EPA- LAS VEGAS

0513K1
 36 30 30.0 092 13 00.0
 BARREN CREEK
 05 OZARK COUNTY
 T/NDREORK LAKE
 MO HWY EE BRDG 1.7 MI NW MO HWY 101 JCT
 11EPALES 2111204
 4 0000 FEET DEPTH

DATE	TIME	DEPTH	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJFL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
74/06/22	13	50	0.288	0.100K	0.005	0.005K	0.005K
74/09/21	12	45	0.504	0.100K	0.010	0.005	0.005
74/10/19	14	40	0.336	0.300	0.020	0.005K	0.010K
74/12/22	19	30	0.660	0.400	0.005	0.008	0.010K
75/01/18	12	15	0.736	0.700	0.032	0.005K	0.010
75/02/22	12	45	0.192	1.300	0.072		
75/03/08	14	00	0.528	0.200	0.008	0.008K	0.010K
75/03/22	09	17	1.150	0.050	0.010	0.010	0.010
75/04/05	09	10	0.880	0.400	0.010	0.005K	0.010
75/04/19	14	00	0.800	0.400	0.015	0.010	0.020
75/05/15	14	00	0.840	0.250	0.015	0.005	0.040

— K VALUE KNOWN TO BE LESS THAN —
 INDICATED

STREET RETRIEVAL DATE 75/11/23
 NATL EUTROPHICATION SURVEY
 EPA- LAS VEGAS

0513L1
 36 23 05.0 092 10 45.0
 BENNET : RAYCU
 05 7.5 GAMALIEL
 T/NDREPPK LAKE
 UNIMPROVED RD XING 4.5 MI NE OF GAMALIEL
 11EPALES 2111204
 4 0000 FEET DEPTH

DATE	TIME	DEPTH	00630 NH ₃ -N TOTAL MG/L	00625 TDT-KJEL N MG/L	00610 NH ₃ -N TOTAL MG/L	00671 PHOS-DIS METHOD MG/L P	00665 PHOS-TOT MG/L P
FROM	OF						
TO	DAY	FEET					
74/06/22	14	20	0.352	0.100K	0.005	0.005K	0.005K
74/07/20	14	40	0.384	0.800	0.190	0.005	0.010
74/08/17	12	00	0.300	0.100K	0.005K	0.005	0.005
74/09/21	11	35	0.464	0.200	0.010	0.005K	0.005K
74/10/19	13	51	0.280	0.500K	0.010	0.005K	0.020
74/12/22	11	45	0.480	0.700	0.005	0.005	0.010K
75/01/18	11	05	0.660	0.356	0.024	0.005K	0.020
75/02/22	11	50	0.224	1.300	0.056		
75/03/08	12	50	0.540	0.100K	0.008	0.008K	0.010K
75/03/22	08	54	0.270	0.500	0.010	0.005K	0.010K
75/04/05	09	00	0.890	0.950	0.015	0.005K	0.010
75/04/19	14	00	1.500	0.850	0.020	0.005K	0.010
75/05/15	14	30	0.850	0.150	0.010	0.005	0.010K

— K VALUE KNOWN TO BE LESS THAN —
 INDICATED

STORED RETRIEVAL DATE 75/11/28
 NATL EUTROPHICATION SURVEY
 EPA- LAS VEGAS

051341
 36 25 '5.0 092 07 07.0
 BENNETTS RIVER
 05 7.5 GEEP
 T/NORRISK LAKE
 BRDG 0.4 MI S OF VIRETTE
 11EPALES 2111204
 4 0000 FEET DEPTH

DATE	TIME	DEPTH	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
FROM	OF						
TO	DAY	FEET					
74/06/22	15	10	0.270	0.100K	0.005K	0.005K	0.005K
74/07/20	14	10	0.192	0.400	0.025	0.005	0.015
74/08/17	11	00	0.128	0.400	0.010	0.010	0.010
74/09/21	11	00	0.320	0.200	0.015	0.005	0.015
74/10/19	13	00	0.080	0.100K	0.010	0.005K	0.010K
74/12/22	16	30	0.280	0.400	0.005	0.005K	0.010K
75/01/18	10	45	0.464	0.600	0.016	0.005K	0.010
75/02/22	11	25	0.432	0.800	0.048	0.028	0.045
75/03/08	12	20	0.472	0.200	0.010	0.008K	0.020
75/03/22	11	10	0.095	1.450	0.030		
75/04/05	11	00	1.150	0.150	0.015	0.005K	0.010
75/04/19			1.350	0.200	0.015	0.005K	0.010K
75/05/15	15	00	0.840	0.100	0.010	0.005	0.010K

— K VALUE KNOWN TO BE LESS THAN
 INDICATED —

STOPPED RETRIEVAL DATE 75/11/28
 NATL EUTROPHICATION SURVEY
 CPA- LAS VEGAS

051341
 36 21 27.0 792 06 50.0
 BIG CREEK
 05 7.5 ELIZABETH
 T/ANDREWS LAKE
 2NDRY RD RDG 3 MI S HWY 62 JCT
 11EPALES 2111204
 0000 FEET DEPTH

DATE	TIME	DEPTH	00630 NH3-N N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS OPHOS MG/L P	00655 PHOS-TOT MG/L P
74/06/22	11 45		0.052	0.100K	0.010	0.005K	0.005K
74/07/20	12 30		0.024	1.400	0.020	0.005	0.015
74/08/17	10 30		0.024	0.100K	0.005K	0.005K	0.005K
74/09/21	10 20		0.200	0.500	0.015	0.005	0.050
74/10/19	10 00		0.016	0.100K	0.015	0.005K	0.010K
74/12/22	11 15		0.136	0.600	0.005	0.005K	0.010K
75/01/18	10 30		0.272	0.250	0.008	0.005K	0.010K
75/02/22	11 15		0.200	0.800	0.024		
75/03/08	11 40		0.200	0.150	0.016	0.008K	0.010
75/03/22	14 10		0.175	0.200	0.010	0.010	0.010
75/04/05	14 25		1.150	0.050K	0.005K	0.005K	0.010
75/04/19	10 00		1.300	1.100	0.020	0.005K	0.010K
75/05/15	11 21		0.970	0.500	0.015	0.005	0.010K

— K VALUE KNOWN TO BE LESS THAN —
 INDICATED

STORET RETRIEVAL DATE 75/11/28
 NATL EUTROPHICATION SURVEY
 EPA- LAS VEGAS

0513P1
 36 17 52.0 092 04 25.0
 BRUSHY CREEK
 05 7.5 ELIZABETH
 T/NDRECRK LAKE
 2NDRY RD BRDG 3.5 MI SE OF ELIZABETH
 11EPALES 2111204
 4 0000 FEET DEPTH

DATE	TIME	DEPTH	00630 NO26NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS METHOD MG/L P	00665 PHOS-TOT MG/L P
74/06/22	11 15		0.104	0.100K	0.005	0.005K	0.005K
74/07/20	12 15		0.192	0.150	0.025	0.005	0.015
74/08/17	10 00		0.270	0.400	0.025	0.005K	0.005K
74/09/21	10 05		0.168	0.800	0.050	0.005	
74/10/19	09 15		0.152	0.400	0.025	0.005K	0.020
74/12/22	11 00		0.232	0.500	0.015	0.005K	0.010K
75/01/18	10 10		0.200	0.550	0.016	0.005K	0.010
75/03/08	11 20		0.160	0.700	0.025	0.005	0.010K
75/03/22	13 50		0.175	0.800	0.010	0.015	0.015
75/04/05	13 15		0.990	0.050	0.005	0.005K	0.010
75/04/19	12 00		1.300	0.950	0.015	0.005K	0.010
75/05/15	11 05		0.970	0.350	0.015	0.005	0.010K

— K VALUE KNOWN TO BE LESS THAN
 INDICATED —

STOPPED RETRIEVAL DATE 75/11/23
 NATL EUTRIFICATION SURVEY
 EPA- LAS VEGAS

051391
 36 32 20.0 092 23 55.0
 POSSUM WALK CREEK
 05 7.5 GAINESVILLE
 T/NOBFOCK LAKE
 MD HWY 7 BRDG JUST NE OF MAMMOTH
 11EPALES 2111204
 4 0000 FEET DEPTH

DATE	TIME	DEPTH	00630 NO26N03 N-TOTAL MG/L	00625 TOT KjEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
74/09/21	13 20		0.416	0.200	0.020	0.005K	0.005
75/01/18	10 00		0.248	0.100	0.008K	0.005K	0.010
75/03/22	11 05		0.175	0.650	0.010	0.005	0.010
75/04/05	10 50		1.050	0.200	0.005	0.005K	0.020
75/04/19	11 00		1.450	0.850	0.015	0.005K	0.010K
75/05/15	12 50		0.840	0.500	0.030	0.015	0.015

— K VALUE KNOWN TO BE LESS THAN
 INDICATED —

STREET DATA REVAL DATE 75/11/73
 NATL. INTERPOLATION SURVEY
 EPA- LAS VEGAS

0513T1
 36 23 17.0 092 22 23.0
 WALKER CREEK
 05 7.5 CLARK RIDGE
 T/NOREFIRE LAKE
 BANK 100 YDS W OFT RD 4 MI N OF MT HOME
 11EPALES 2111204
 + 0000 FEET DEPTH

DATE	TIME	DEPTH	00630 NO2-N	00625 TOT KJEL N	00610 NH3-N TOTAL	00671 PHOS-DIS ORTHO	00665 PHOS-TOT
FROM	TO	FEET	MG/L	MG/L	MG/L	MG/L P	MG/L P
74/06/22	09 10		0.300	0.100K	0.005K	0.005	0.010
74/07/20	09 15		0.218	0.100K	0.010	0.005	0.010
74/09/21	09 20		0.232	0.300	0.025		
74/10/19	15 30		0.112	0.300	0.025	0.020	0.020
74/12/22	15 35		0.176	0.500	0.015	0.008	0.010K
75/01/18	14 30		0.480	0.100K	0.008K	0.015	0.015
75/03/22	09 45		0.260	0.200	0.005K	0.005K	0.010K
75/04/05	09 55		1.150	0.050K	0.005K	0.005K	0.020
75/04/19	10 00		0.470	0.800	0.020		0.010K
75/05/15	07 10		1.200	0.850	0.040	0.020	0.020

— K VALUE KNOWN TO BE LESS THAN
 INDICATED —

APPENDIX E
PARAMETRIC RANKINGS OF LAKES
SAMPLED BY NES IN 1974
STATE OF ALABAMA

LAKE DATA TO BE USED IN RANKINGS

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORGAN	500- MEAN SEC	MEAN CHLORA	15- MIN DO	MEDIAN DISS ORTHO P
0501	BEAVER LAKE	0.022	0.330	415.667	3.421	14.900	0.006
0502	BLACKFISH LAKE	0.424	1.470	496.125	19.775	12.000	0.040
0503	BLUE MOUNTAIN LAKE	0.054	0.160	444.000	8.983	14.600	0.010
0504	BULL SHOALS LAKE	0.015	0.389	343.969	3.995	15.000	0.004
0505	LAKE CATHERINE	0.029	0.180	451.667	14.042	11.800	0.006
0506	LAKE CHICOT	0.162	0.450	486.000	13.722	14.800	0.089
0507	DEGPAY RESERVOIR	0.019	0.130	419.050	12.300	15.000	0.004
0508	LAKE ERLING	0.054	0.120	454.667	13.389	14.600	0.020
0509	GRAND LAKE	0.101	0.090	479.667	62.867	8.400	0.021
0510	LAKE HAMILTON	0.024	0.130	428.111	10.889	14.400	0.006
0511	MILLWOOD LAKE	0.040	0.120	466.776	14.967	9.800	0.008
0512	NIMROD LAKE	0.039	0.160	469.000	15.833	8.800	0.006
0513	NORFOLK LAKE	0.015	0.320	356.321	3.441	15.000	0.005
0514	LAKE OUACHITA	0.015	0.155	389.144	4.344	15.000	0.006
0515	TABLE ROCK LAKE	0.022	0.350	410.778	9.103	15.000	0.007
0516	GREER'S LAKE	0.012	0.140	370.875	3.762	15.000	0.004

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORGAN	500- MEAN SEC	MEAN CHLOROP	15- MIN DO	MEDIAN DISS ORTHO P
0501	HEAVER LAKE	63 (4)	27 (4)	57 (10)	87 (13)	40 (6)	63 (8)
0502	BLACKFISH LAKE	0 (0)	0 (0)	0 (0)	7 (1)	73 (11)	0 (0)
0503	BLUE MOUNTAIN LAKE	20 (3)	47 (7)	13 (2)	67 (10)	57 (8)	27 (4)
0504	HULL SHOALS LAKE	90 (13)	13 (2)	100 (15)	80 (12)	17 (0)	93 (13)
0505	LAKE CATHERINE	47 (7)	40 (6)	47 (7)	27 (4)	80 (12)	63 (8)
0506	LAKE CHICOT	7 (1)	7 (1)	7 (1)	33 (5)	47 (7)	7 (1)
0507	DEGRAY RESERVOIR	73 (11)	77 (11)	60 (9)	47 (7)	17 (0)	93 (13)
0508	LAKE ERLING	27 (4)	90 (13)	40 (6)	40 (6)	57 (8)	20 (3)
0509	GRAND LAKE	13 (2)	100 (15)	20 (3)	0 (0)	100 (15)	13 (2)
0510	LAKE HAMILTON	53 (8)	77 (11)	53 (8)	53 (8)	67 (10)	63 (8)
0511	MILLWOOD LAKE	33 (5)	90 (13)	33 (5)	20 (3)	87 (13)	33 (5)
0512	NIMROD LAKE	40 (6)	53 (8)	27 (4)	13 (2)	93 (14)	47 (7)
0513	NORFOLK LAKE	80 (12)	33 (5)	93 (14)	100 (15)	17 (0)	80 (12)
0514	LAKE OUACHITA	90 (13)	60 (9)	80 (12)	73 (11)	17 (0)	63 (8)
0515	TABLE ROCK LAKE	63 (8)	20 (3)	73 (11)	60 (9)	17 (0)	40 (6)
0516	GREER'S LAKE	100 (15)	67 (10)	87 (13)	93 (14)	17 (0)	93 (13)