OVERHOLSER RESERVOIR

PHASE I DIAGNOSTIC/FEASIBILITY STUDY

by

Herbert J. Grimshaw, Ph.D.

Principal Investigator

and

Gary L. Shapiro

Project Limnologist

Project Officer: Ann Hartley

U.S. Environmental Protection Agency

Dallas, Texas 75270

Grant No. S-006294-01-0

U.S. Environmental Protection Agency

Washington, D.C. 20460

TABLE OF CONTENTS

SECTION I

INTRODUCTION

This report was prepared in response to Section 314(a) of the Clean Water Act (P.L. 92-500) of 1977 which, upon election to participate, requires each state to trophically classify, diagnose, and restore their publicly owned freshwater lakes. The initial step in this process, the classification study, culminated in the publication in December 1980, of the "Classification of Oklahoma Reservoirs Using LANDSAT Multispectial Scanner Data." This document, the diagnostic-feasibility study of Lake Overholser, constitutes one result of compliance with the second step of this process. An application for the participation of Overholser Reservoir in the third or restoration phase of the process will be submitted in the near future.

LIST OF FIGURES

LIST OF FIGURES

LIST OF FIGURES

LIST OF FIGURES

LIST OF TABLES

LIST OF TABLES

ACKNOWLEDGEMENTS

Completion of this project was made possible by the cooperation of a number of individuals. Bob Lynch, Dan Butler, Sylvia Ritzky, Donita Moore, and Charlie Marshall were very helpful, both in the environmental chemistry laboratory and in the field. Dr. J. Roger McHenry provided assistance with Cesium analysis, while Dr. Sterling Burks performed herbicide and pesticide analyses. James Leewright, Gladys Haywood, Gary Glover, and Mike McGaugh provided professional assistance in drafting. Laura McMahon and Jann Hook assisted in computer processing. Fruitful discussion, procedural, and logistical assistance was provided by James Adams and Dr. Main Hutcheson. Tom Lay provided legal assistance, while Elveda Schaub, Paul Ricciotti, and Karen Recer were extremely helpful in guiding us through fiscal procedures. Felicia Thomas and Sheila Hand typed and edited the manuscript.

Special thanks are extended to James R. Barnett, Executive Director of the Oklahoma Water Resources Board; Ron Jarman, Chief of the Water Quality Division of the Oklahoma Water Resources Board; Ann Hartley, our Environmental Protection Agency Project Officer; and David Harkness, Environmental Planner with the Department of Pollution Control. The administrative and procedural guidance which they furnished was critical to the successful completion of this project.

June 1983

Herbert J. Grimshaw

Gary L. Shapiro

SECTION II

GENERAL SUMMARY

The study was designed to identify the cause or causes of the persistent pollution problem occurring in Overholser Reservoir. Results from the analysis of field and laboratory data indicated there were three main sources of pollution entering the reservoir.

They are as follows:

(1) leakage of low flows containing high nutrient concentrations over the rollover inlet structure into the northeast corner of the reservoir;

(2) possible leakage of low flows containing high nutrient concentrations from the bypass canal through the causeway into the southeast corner of the reservoir; and

(3) large amounts of suspended sediment entering the reservoir when it is being filled.

These pollution sources can be controlled by renovation of the reservoir's sedimentation basin and by maintenance of its inlet structure and bypass causeway.

SECTION III

CONCLUSIONS

(1) Bathymetric mapping of Overholser Reservoir in 1982 indicated that the reseroir's original volume capacity of 19,600 acre-feet has been reduced 24% due to sedimentation of materials washed into the reservoir.

(2) The marsh which is located north of the reservoir and Route 66 is acting as an effective natural sedimentation and nutrient filter for water flowing in the North Canadian River prior to its entry into Overholser Reservoir.

(3) The present geometry of the intake channel into Overholser Reservoir functions to increase the mean inflow velocity of its water in comparison to the concurrent average flow velocity of water in the North Canadian River. This velocity increase permits the inflow water to carry sediment into the reservoir and accelerates the rate of loss in volume capacity of the reservoir.

(4) Serial chlorophyll mapping of Overholser Reservoir in 1982 indicated the persistent occurrence of water with unusually high chlorophyll a content in the northeast corner of the reservoir. This could have been due to leakage of nutrient rich, low flow waters from the North Canadian River into the reservoir through spaces between the rollover dam's tilt blocks (concrete structures

that rest upon the rollover dam itself). Statistical analyses of nutrient concentrations in low flow waters of the North Canadian River confirm their elevated total phosphorus and total nitrogen concentrations in comparison to the concentration of these elements in the reservoir's water.

(5) Serial chlorophyll mapping also indicated the persistent occurrence of water with unusually high chlorophyll a content in the south-eastern corner of Overholser Reservoir approximately 2600 feet north of the concrete dam. This phenomenon could be due either to a wind induced upwelling or to leakage of water into the reservoir from the bypass canal.

(6) Statistical analysis of data from four seepage meters in Overholser Reservoir indicated that the bed seepage rate into the lake measured by one of the four meters was significantly different from the rate measured by the other three meters. Mean monthly data from the four meters indicated a significant decline in seepage rate into the lake in the month of November compared to the proceeding month. The mean seepage rate per square meter based upon all the seepage data collected was .018 liters/hour, and the seepage water exhibiting an asymptotic total nitrogen concentration of 11 mg/L. If we assume (a) the seepage rate determined from the seepage meter data reflects groundwater seepage rates, (b) the mean seepage rate determined in this study is representative of the mean annual seepage rate, (c) this rate does not vary significantly from the depths of 0.5 to 3.5 feet, (d) the total nitrogen concentration

measured in this study is representative of the mean annual total nitrogen concentration in groundwater, and (e) all the groundwater seepage entering the reservoir occurs within this bottom area, then, the groundwater seepage contribution into Overholser Reservoir is 107 acre-feet per year and carries an estimated total nitrogen load of 1400 kilograms. Consequently, attempts to further reduce Overholser Reservoir total nitrogen loading below this amount would be difficult.

(7) Motor vehicle traffic on unpaved roads in the immediate vicinity of the reservoir's bank kills vegetation, increases the rate of erosion from the land which lies adjacent to the reservoir, increases turbidity levels in and nutrient loadings to the reservoir, and decreases the reservoir's aesthetic quality.

SECTION IV

RECOMMENDATIONS

(1) The marsh located north of Overholser Reservoir and Route 66 should be recognized as an important natural area and protected as a wildlife preserve.

(2) The sedimentation basin located between Overholser Reservoir's inlet structure and south of Route 66 bridge should be renovated or a new sedimentation basin should be constructed.

(3) Action should be taken to insure there is no low flow leakage over, around, or through the reservoir's rollover inlet structure.

(4) The ability to predict the time of occurrence and the area of initiation of algal blooms in Overholser Reservoir would result in a considerable reduction in water treatment chemical costs as well as reduce the cost of water quality monitoring. If algacide applications were necessary, information concerning the location and areal extent of reservoir areas which stimulate algal bloom development would: (1) reduce the amount of algacide necesary for treatment, (2) reduce the areal extent of the area of application, and (3) reduce man power costs. Consequently, a study should be conducted to determine the cause of the persistent occurrence of water with high chlorophyll <u>a</u> content in the southeastern corner of Overholser Reservoir.

(5) Water quality data should be gathered just prior to and during high flows in the North Canadian River and scientifically analyzed to permit a determination to be made of the qualitatively and quantitatively most efficient use of this stormwater. Additionally, a routine watershed monitoring of possible pollution sources should be conducted annually.

(6) Motor vehicle traffic should be confined to planned hard surface roads and parking areas adjacent to the reservoir.

(7) Oklahoma City should expand the recreational facilities around Overholser Reservoir by acquiring land on the west side for construction of a public park. Additionally, Overholser Reservoir should be considered for inclusion in the "String of Pearls" project. This would capitalize on the aesthetic nature of the land-water interface.

(8) Consideration should be given to the initiation of the serial chlorophyll mapping method developed during this study on other Oklahoma City reservoirs. This would permit the identification and control of pollution sources impacting these reservoirs.

(9) It is recommended the City should more intensively investigate and evaluate the recreational potential of Overholser Reservoir, including fish and wildlife populations sustained by the reservoir.

SECTION V

BACKGROUND INFORMATION (TASK 1-9)

BASIN DESCRIPTION (TASK 1):

Lake Overholser is a publicly owned reservoir operated by the City of Oklahoma City. It is located in central Oklahoma, to the west of Oklahoma City, one mile west of Bethany, in Canadian and Oklahoma counties. The approximate center of the lake is found at latitude 35° 29' 11", longitude 97° 39' 56", Township 12N, Range 5W.

Lake Overholser was built in 1919, by impounding a portion of the North Canadian River. At normal pool elevation the lake has a maximum depth of 5.5 meters with a mean depth of 3 meters. The lake shoreline length is 11.3 km and the surface area and volume are 680 hectares and 2,109,285 m^3, respectively. Main outflows are from the gated spillway and two butterfly valves. Figure 1.1 shows the relationship of Lake Overholser to its upstream and downstream waters in planning basin five.

Water quality standards for the lake are contained in Table 1.1.

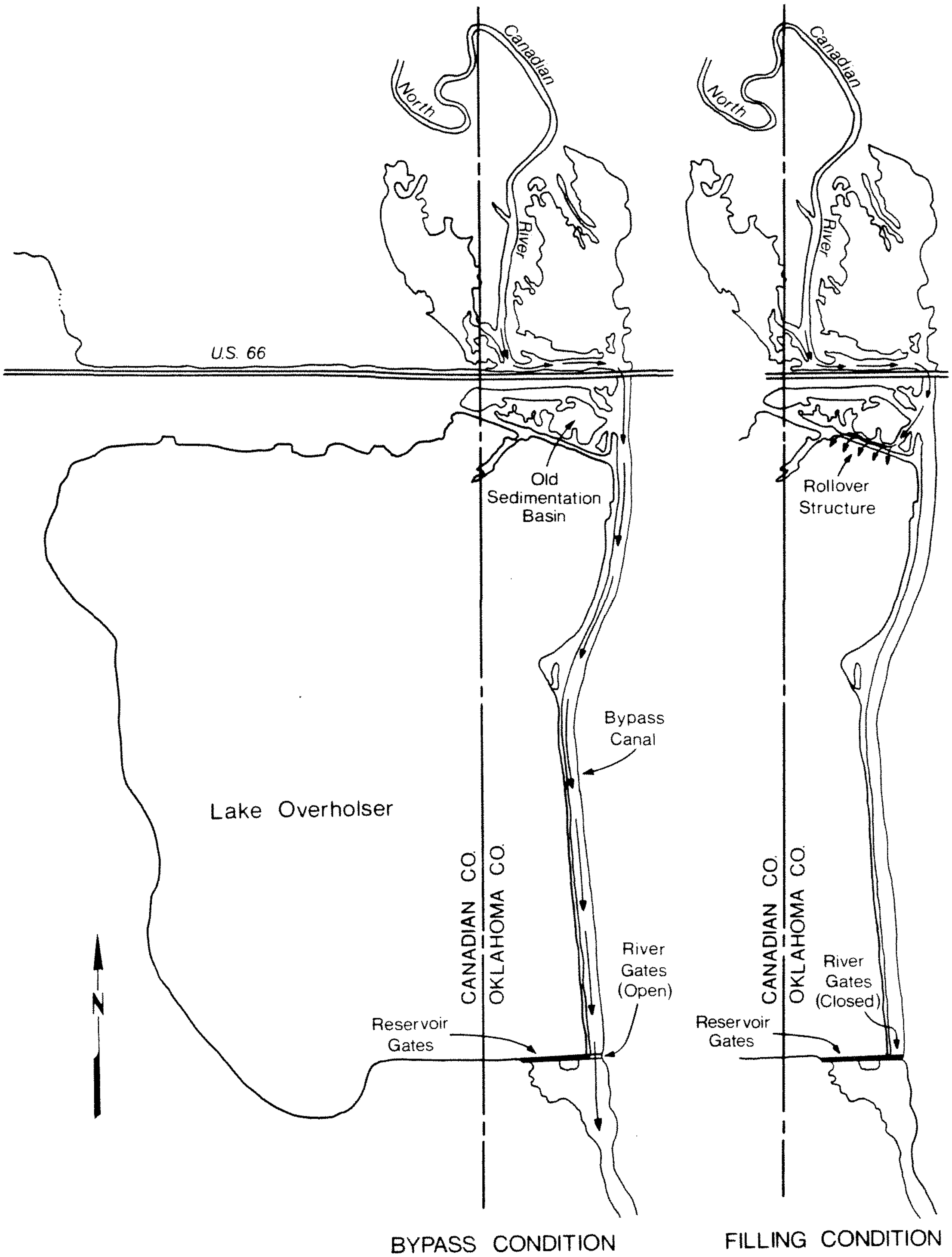


Figure 1.1. Map of Overholser Reservoir

Table 1.1. State Water Quality Standards applied to Overholser Reservoir.

PARAMETER	LIMIT
Physical:	
Color	75 color units
Odor	None detectable by human senses
Temperature	Can be raised no more than 3° above original
Turbidity	25 NTU
Microbiological:	
Coliform organisms	200/100 ml (monthly geometric mean)
Inorganic Elements (mg/liter):	
Arsenic	0.05
Barium	1.0
Cadmium	0.01
Chromium	0.05
Copper	1.0
Fluoride (at 95°F)	1.6
Lead	0.05
Mercury	0.002
Nitrates (as N)	10
Oxygen	Greater than 5.0
pH	6.5 to 8.5
Selenium	0.01
Silver	0.05
Zinc	5.0
Radioactive Elements (picocuries/liter):	
Radium - 226 and 228	5
Strontium - 90	8
Gross alpha particles (excluding radom and uranium)	15
Gross beta particles	50
Organic Chemicals:	
Cyanide	0.2
Detergents (total)	0.2
Methylene blue active substances	0.5
Oil and Grease	None visible
Phthalate esters	0.003
Polychlorinated biphenyls	0.0003
Pesticides (mg/liter):	
Aldrin/dieldrin	1.0
Endrin	1.0
Benzidine	1.0
Toxaphene	1.0
DDT	0.2
2,4-D	100
2,4,5-T	50

GEOLOGY AND SOILS (TASK 2):

Lake Overholser lies mainly within the western sand dune belts geomorphic province which is characterized by sand, silt, clay, and gravel in the flood plain and terrace deposits of the North Canadian River. Part of the western portion of the reservoir lies within the Central Redbed Plains geomorphic province which is characterized by Red Permian (Hennessey) shales. The major soil series are Renfrow (approximately 50%) and Vernon (approximately 50%). Both soil series have a high clay content.

PUBLIC ACCESS AND TRANSPORTATION TO THE LAKE (TASK 3):

The public has easy access to virtually every foot of shoreline of Lake Overholser. Highway 66, which runs east and west, north of Bethany, provides access to the north side of the lake. Overholser Drive encircles the reservoir and Northwest 36th, 29th, 23rd, and 16th provide access to the east and west sides.

Traditionally, Lake Overholser's recreational uses include fishing, boating, and hunting. Picnicking and family gatherings are also popular, especially during holiday celebrations. There are six developed public use areas located around the lake. Fishing. hunting, and boating require a City permit.

According to records from the Oklahoma City Water Department approximately 100,000 people visited Lake Overholser in fiscal year 1979-1980 (July 1, 1969-June 30, 1980). Approximately 49,000 permits were issued for fishing, 400 permits were issued for hunting, and 4,200 permits were issued for boating.

POPULATION (TASK 4):

Lake Overholser is surrounded by six census tracts. Beginning in the northeast corner of the lake proceeding clockwise around the lake these included tracts 1067.04, 1069.03, 1069.10, 1069.09, 1069.11, and 3009, and constitutes a total population of 14,116 based on 1980 data. The economic structure (Table 4.1) and occupational distribution of persons over eighteen years of age (Table 4.2) are presented on the following pages.

Table 4.1. Size and economic structure of the population residing near Lake Overholser.

CHARACTERISTICS	CENSUS TRACT 1067.04	1069.03	1069.10	1069.09	1069.11	3009
Population	2,602	6,434	701	1,949	2,397	33
Households	1,012	2,359	262	704	905	18
Average Income	19,236	22,684	21,050	24,525	22,230	12,377
Houses	1,056	2,442	285	730	923	18
Business	48	67	4	29	13	0

Table 4.2. Occupational distribution of the population residing near Lake Overholser.

CHARACTERISTICS	CENSUS TRACT 1067.04	1069.03	1069.10	1069.09	1069.11	3009
Households	1,012	241	262	704	905	18
Professional Managerial	232	78	79	226	315	0
Professional Technical	93	36	41	76	91	0
Physicians & Dentist	3	2	2	8	11	0
Lawyers & Judges	2	1	7	1	9	0
Scientist & Engineers	16	12	8	18	16	0
Teachers & Librarians	26	5	5	16	20	0
Other Professionals	46	16	19	33	35	0
Managers	78	19	21	89	144	0
Proprietors	61	23	17	61	80	0
Sales Workers	42	22	9	37	52	0
Clerical, Etc.	60	7	10	24	35	1

HISTORY OF LAKE USES (TASKS 5 AND 6):

Lake Overholser, built in 1919 as a water supply reservoir, is located on the North Canadian River one mile west of Bethany and south of U.S. Highway 66 in Canadian and Oklahoma Counties. Swimming has never been permitted in the lake due to its primary function as a water supply reservoir. Boating and fishing are permitted, however, and fishermen can be seen along the shoreline almost any day of the week. Boaters utilize the lake extensively. Pleasure boating is permitted seven days a week, while boat races are held every other weekend during the summer. No changes have occurred in the lake's beneficial use categories since its construction.

The primary recreational beneficial uses of Lake Overholser, based on comments received at public meetings, are fishing and boating. Boaters are directly affected by the shallow nature of the lake. This shallowness has resulted from sedimentation which has substantially decreased the reservoir's volume capacity and mean depth.

LAKE USES COMPARED TO OTHER LAKES (Task 7):

Lake Overholser and Lake Thunderbird constitute the two most heavily visited reservoirs in the Oklahoma City area. Lake Thunderbird is the most popular with over 3,000,000 visitors in 1980. Lake attendance data presented in this task were compiled by a variety of methods since the lake operators use different methods for each lake. Lake Thunderbird data was compiled by the Oklahoma Department of Tourism and Recreation, which derives its estimate by expanding upon a car count at access points. Other lake operators make use of permit data to derive annual attendance figures. The operator of both Shawnee Lakes is the City of Shawnee which apparently did not separate attendance by lake as they reported the same figure for each lake. Data is presented is Table 7.1.

Table 7.1. Reservoirs within an eighty kilometer radius of Overholser Reservoir.

LAKE	1980 ATTENDANCE
1) Springlake	N/A**
2) Hefner	91,900
3) Stanley Draper	98,800
4) Thunderbird	3,251,798
5) Fort Cobb	160,891
6) Chickasha	40,378
7) Shawnee North	21,727 combined
8) Shawnee South	21,727 combined
9) Carl Blackwell	27,835*
10) McMurtry	12,000
11) Liberty	2,937
12) Guthrie	3,505
13) Aluma	N/A**
14) Northeast	No data available

* 1979 data
** Privately owned lakes, data not available

RESERVOIRS WITHIN THE
OKLAHOMA CITY CORPORATE LIMITS

1) Hefner
2) Springlake
3) Stanley Draper
4) Aluma
5) Northeast
6) Overholser

KNOWN POINT SOURCE POLLUTION (Task 8):

All known point sources of pollution are divided into two categories: industrial and municipal. Known sources are listed along with their state and federal wastewater discharge permit requirements. Less than half of the point sources are known to be discharging wastewater into the lake watershed.

Industrial Sources:

Five industrial point sources are known to exist in the Lake Overholser basin. Two have permits to discharge into the lake basin while the other three are reported to be total retention (Table 8.1). The principal types of discharges are detergents, solvents, and oil and grease. Of the two industrial sources that are permitted to discharge, only one is presently doing so. Information contained in the files of the permitted industries indicates little or no discharge is going into the lake watershed.

Municipal Sources:

Seven municipal sources of wastewater are known to exist within the lake watershed; however, only two of them are known to discharge into the North Canadian River (Tables 8.2a-8.2h; information provided by Oklahoma State Department of Health).

Table 8.1. Summary of known point sources of pollution for North Canadian River from Canton Lake to Lake Overholser.

Identification		Location		Permit Status				Allowable Discharge		Comments
Name	Permit* Number	County	Legal Discription	Active/ Inactive	Date Iss.	Date Exp.	Type Waste	Parameters	MAC	
Beacon Well Services, Inc. →O.O.B.	WD-75-012 No	Blaine Active	S1, T13N, R11WIM, Geary North permit	Active	12/12/78	12/11/83	Wastewater from washing of frac trucks.	Oil & Grease TSS Phosphous pH No floating solids Haul away controlled industrial waste Est. discharge point	15 mg/L 45 mg/L 1.0 mg/L not < 6.5 or > 10.0	
Chicago Rock Island and Pacific R.R	WD-75-084 Inactive, exp'd	Canadian	S4, T12N, R7WIM, El Reno	Active	6/14/77	6/15/82	Oil, grease & solids. Have grease traps & settling lagoon.	TSS Oil & Grease No floating solids or visible foam	45 mg/L 15 mg/L	
D and D Processing	WD-79-046 Active N.D.A	Blaine	S36, T16N, R12WIM, Watonga	Active	4/8/80	4/7/85	Wastewater from meat processing p	Blood separated & hauled away, other		No discharge

Table 8.2a. Municipal and institutional pollution source inventory.

FACILITY: Calumet

NPDES #: No Data

MAP LOCATION: SW, SE, S13, T14N, R9W, Canadian County

CURRENT TREATMENT PROCESS: Lagoons

AVERAGE DAILY FLOW (MGD): PRESENT: No Data DESIGN: No Data

RECEIVING STREAM (7 day 2 yr. low flow-MGD): No Data

DMA: No Data

DMA STATUS: No Data

WASTELOAD ALLOCATION: No Data

RECOMMENDATIONS: No Data

DIRECT DISCHARGE INTO N. CANADIAN RIVER: No

MAX. PERMITTED TO DISCHARGE: BOD: N/A SS: N/A

SAMPLE MEASUREMENT: LOADING: No Data
CONCENTRATION: No Data

PERMIT MEASUREMENT: LOADING: No Data
CONCENTRATION: No Data

Table 8.2b. Municipal and institutional pollution source inventory.

FACILITY: Canton

NPDES #: OK0027324

MAP LOCATION: NW, SW, SW, S10, T18N, R13W, Blaine County

CURRENT TREATMENT PROCESS: Lagoon and Irrigate

AVERAGE DAILY FLOW (MGD): PRESENT: 00.067 DESIGN: 00.145

RECEIVING STREAM (7 day 2 yr. low flow-MGD): Minnehah Creek

DMA: City of Canton

DMA STATUS: Approved

WASTELOAD ALLOCATION: Secondary

RECOMMENDATIONS: Upgrade

DIRECT DISCHARGE INTO N. CANADIAN RIVER: No

MAX. PERMITTED TO DISCHARGE: BOD: N/A SS: N/A

SAMPLE MEASUREMENT: LOADING: No Data
CONCENTRATION: No Data

PERMIT MEASUREMENT: LOADING: No Data
CONCENTRATION: No Data

Table 8.2c. Municipal and institutional pollution source inventory.

FACILITY: El Reno

NPDES #: No Data

MAP LOCATION: Less than one location, Canadian County

CURRENT TREATMENT PROCESS: Lagoon and Land Application

AVERAGE DAILY FLOW (MGD): PRESENT: No Data DESIGN: No Data

RECEIVING STREAM (7 day 2 yr. low flow-MGD): No Data

DMA: No Data

DMA STATUS: No Data

WASTELOAD ALLOCATION: No Data

RECOMMENDATIONS: No Data

DIRECT DISCHARGE INTO N. CANADIAN RIVER: No

MAX. PERMITTED TO DISCHARGE: BOD: N/A SS: N/A

SAMPLE MEASUREMENT: LOADING: No Data
CONCENTRATION: No Data

PERMIT MEASUREMENT: LOADING: No Data
CONCENTRATION: No Data

Table 8.2d. Municipal and institutional pollution source inventory.

FACILITY: Geary

NPDES #: OK0027545

MAP LOCATION: SW, SE, SW, S13, T14N, R10W, Blaine County

CURRENT TREATMENT PROCESS: Trickling Filter

AVERAGE DAILY FLOW (MGD): PRESENT: 00.140 DESIGN: 16.0

RECEIVING STREAM (7 day 2 yr. low flow-MGD): Tributary of N. Canadian R.

DMA: City of Geary

DMA STATUS: No Response

WASTELOAD ALLOCATION: Secondary

RECOMMENDATIONS: New Treatment Facility

DIRECT DISCHARGE INTO N. CANADIAN RIVER: No

MAX. PERMITTED TO DISCHARGE: BOD: N/A SS: N/A

SAMPLE MEASUREMENT: LOADING: BOD% = 26.5 kg/day
CONCENTRATION: BOD% = 12.0/45.0 mg/L
TSS = T
F. Coli.* = 2.4 X 105
= 3.4 X 105
pH = 6.9 Min.
= 7.2 Av.
= 7.9 Max.

PERMIT MEASUREMENT: LOADING: BOD% = 26.5 kg/day
CONCENTRATION: BOD% = 50 mg/L Av.
= 75 mg/L Max.
TSS = 50 mg/L Av.
= 75 mg/L Max.
F. Coli.* = 1 X 106
pH = 6.0 Min.
= 9.0 Max.

---

* Expressed in # colonies/100 ml

Table 8.2e. Municipal and institutional pollution source inventory.

FACILITY: Greenfield

NPDES #: OK00None

MAP LOCATION: SW, SE, SW, S34, T15N, R11W, Blaine County

CURRENT TREATMENT PROCESS: Lagoon

AVERAGE DAILY FLOW (MGD): PRESNET: 00.010 DESIGN: 00.030

RECEIVING STREAM (7 day 2 yr. low flow-MGD): N. Canadian River-1.58

DMA: Town of Greenfield

DMA STATUS: No Response

WASTELOAD ALLOCATION: Secondary

RECOMMENDATIONS: New Treatment Facility

DIRECT DISCHARGE INTO N. CANADIAN RIVER: No

MAX. PERMITTED TO DISCHARGE: BOD: N/A SS: N/A

SAMPLE MEASUREMENT: LOADING: No Data
CONCENTRATION: No Data

PERMIT MEASUREMENT: LOADING: No Data
CONCENTRATION: No Data

Table 8.2f. Municipal and institutional pollution source inventory.

FACILITY: Watonga

NPDES #: OK0021911

MAP LOCATION: NE, NE, NW, S36, T16N, R12W, Blaine County

CURRENT TREATMENT PROCESS: Trickling Filter

AVERAGE DAILY FLOW (MGD): PRESENT: 00.447 DESIGN: 00.520

RECEIVING STREAM (7 day 2 yr. low flow-MGD): N. Canadian River-1.58

DMA: City of Watonga

DMA STATUS: No Response

WASTELOAD ALLOCATION: Secondary

RECOMMENDATIONS: Total Retention

DIRECT DISCHARGE INTO N. CANADIAN RIVER: Yes

MAX. PERMITTED TO DISCHARGE: BOD: 20 SS: 30

SAMPLE MEASUREMENT: LOADING: TSS = 75.7 kg/day Av.
= 75.7 kg/day max.
CONCENTRATION: BOD% = 18/22 mg/L Min.
= 16/24 mg/L Av.
= 28/36 mg/L Max.
TSS = 14/20 mg/L Min.
= .02/26 mg/L Av.
= .05/36 mg/L Max.
pH = 7.0 Min.
= 7.2 Av.
= 7.6 Max.
S.S. = .03 Av.
= .05 Max.

PERMIT MEASUREMENT: LOADING: BOD% = 75.7 kg/day Av.
CONCENTRATION: BOD% = 40 mg/L Av.
TSS = 40 mg/L Av.
pH = 6.0 Min.
= 9.0 Max.

Table 8.2g. Municipal and institutional pollution source inventory.

FACILITY: Yukon

NPDES #: No Data

MAP LOCATION: SW, NE, S8, T12N, R5W

CURRENT TREATMENT PROCESS: Extended Air

AVERAGE DAILY FLOW (MGD): PRESENT: 2.0 DESIGN: 3.0

RECEIVING STREAM (7 day 2 yr. low flow-MGD): N/A

DMA: No Data

DMA STATUS: No Data

WASTELOAD ALLOCATION: Secondary

RECOMMENDATIONS: No Data

DIRECT DISCHARGE INTO N. CANADIAN RIVER: Yes

MAX. PERMITTED TO DISCHARGE: BOD: 20 SS: 30

SAMPLE MEASUREMENT:	LOADING:	BOD%	= 92/105.7 kg/day Av.
			= 145 kg/day Max.
		TSS	= 47/107 kg/day Av.
			= 183.9 kg/day Max.
	CONCENTRATION:	BOD%	= 11.7/15.4 mg/L Av.
			= 16/19.5 mg/L Max.
		TSS	= 7/14.9 mg/L Av.
			= 16/19 mg/L Max.
		F. Coli.*	= 110/145 Av.
			= 100/164 Max.
		pH	= 7.0/7.4 Min.
			= 7.5/7.7 Max.
PERMIT MEASUREMENT:	LOADING:	BOD%	= 500 kg/day Av.
		TSS	= 751 kg/day Av.
	CONCENTRATION:	BOD%	= 20 mg/L Av.
			= 30 mg/L Max.
		TSS	= 30 mg/L Av.
			= 45 mg/L Max.
		F. Coli.*	= 200 Av.
			= 400 Max.
		pH	= 6.5 Min.
			= 8.5 Max.

---

* Expressed in # colonies/100 ml

Table 8.2h. Municipal and institutional pollution source inventory.

FACILITY: El Reno Federal Reformatory

NPDES #:

MAP LOCATION:

CURRENT TREATMENT PROCESS:

AVERAGE DAILY FLOW (MGD):

RECEIVING STREAM (7 day 2 yr. low flow-MGD):

DMA:

DMA STATUS:

WASTELOAD ALLOCATION:

RECOMMENDATIONS:

DIRECT DISCHARGE INTO N. CANADIAN RIVER:

MAX. PERMITTED TO DISCHARGE: BOD: SS:

SAMPLE MEASUREMENT: LOADING:
CONCENTRATION:
PERMIT MEASUREMENT: LOADING:

---

* Expressed in # colonies/100 ml

Watonga is reported to be discharging 0.447 MGD on an average daily flow basis. Yukons' average daily flow of wastewater is reported to be 2.0 MGD. Thus, 2.447 MGD of municipal wastewater is estimated to be discharged into the Lake Overholser watershed. The maximum BOD and suspended solids values for both municipalities are 20 and 30 mg/L, respectively. Wastewater from the other five municipalities are held in total retention sewage lagoons.

Other Miscellaneous Sources:

Other potential sources of pollution in the Lake Overholser watershed are divided into two categories: 1) municipal wastewater lift stations, and 2) mobile home parks and rest homes (extended care facilities). Three municipal lift stations have been identified in and around Lake Overholser. Similarly, four sewage lagoons that serve mobile home parks and rest homes have also been identified.

LAND USE (TASK 9):

Land Use:

The primary land use in the Lake Overholser watershed consists of cropland and rangeland which comprise an estimated 417.68 Mi^2 and 136.33 Mi^2, respectively (Table 9.1). Together these two types of land covers comprise 554.01 Mi^2 or 82.21% of the total estimated watershed area of 673.908 Mi^2.

Although these data appear to be reasonably accurate, the source was LANDSAT data which dates back to the early 1970's. Moreover, estimates of various classes of land cover were made from county land use maps after the watershed was drawn. For these reasons, and perhaps others, the calculated total area of the watershed varies by a little more than four percent from the area calculated from topographic maps (USGS, 7.5 min. Series). The number of square miles calculated from county land use maps* and topographic maps was 674 and 705, respectively. The difference of 31 Mi^2 is attributed to the differences in the two types of maps used and the fact that one calculation was made with the use of a planimeter while the other one was derived from summing the number of square miles of each land cover category which was based on a manual count of the 40 acre cells of the county land use maps. Under such circumstances a difference of four to five percent is acceptable.

Table 9.1. Land usage in the Lake Overholser watershed.

Class of Land Cover	Number of Sq. Miles	Percent
Croplands	418	62
Range	136	20
Forest	47	7
Pastureland	48	7
Water	3	0.4
Urban	23	3.4
TOTAL	675	100

Nonpoint Source Pollutants:

Some of the more important nonpoint source pollutants that were identified in the Lake Overholser watershed consisted of runoff, primarily from agricultural pursuits, such as crops and feed lot operations. Three known feedlot operations exist in the Lake Overholser watershed. Two, located north of El Reno and Fort Reno, are rather large and quite active, while the one north of Yukon appears to be inactive. Aerial and ground observation at the feedlot north of Yukon indicates solid waste may have been improperly disposed of on that site.

Although not a constant source of pollution, oil drilling operations are an ever present potential source of pollution. Waste from such operations are occasionally spilled or disposed of in such a way that they may enter the North Canadian River. Also, several oil rigs and disposal pits have been identified in close proximity to the North Canadian River.

Other potential nonpoint sources are illegal solid and hazardous waste disposal locations in or near the North Canadian River.

SECTION VI

LIMNOLOGICAL ANALYSIS (TASK 10):

The trophic state of Overholser Reservoir was determined using a serial chlorophyll mapping technique (Grimshaw, et al., in prep.) developed during the course of this study. These data (Figure 10.1) indicated that a mean summer maximum in chlorophyll a content of 44 $mg.m^{-3}$ occurred on July 6, 1982. Calculations utilizing Carlson's chlorophyll a based trophic state index reveal that Overholser Reservoir has a TSI value of 68 indicating that it is a eutrophic reservoir. Figure 10.1 also illustrates the development of and rather rapid die-off of an algal bloom which occurred in Overholser Reservoir as well as indicates the relative rapidity with which change occurs at the first trophic level.

Morphometric Characteristics:

Overholser Reservoir is a roughly rectangular shaped (Figure 10.2) off-channel reservoir 670 hectares in surface area. The reservoir, which has a volume capacity of approximately 1.9×10^7 m^3, was constructed in an ox-bow meander region of the North Canadian River and lies predominantly upon alluvial sand. The mean and maximum depth are 2.85 and 5.18 meters, respectively; and the reservoir exhibits a hydraulic residence time of 0.72 years based upon hydrologic budget data provided by the Oklahoma City Water Resources Department. The net contributing drainage basin area is 21,091 square kilometers and is large relative to the surface area of the reservoir.

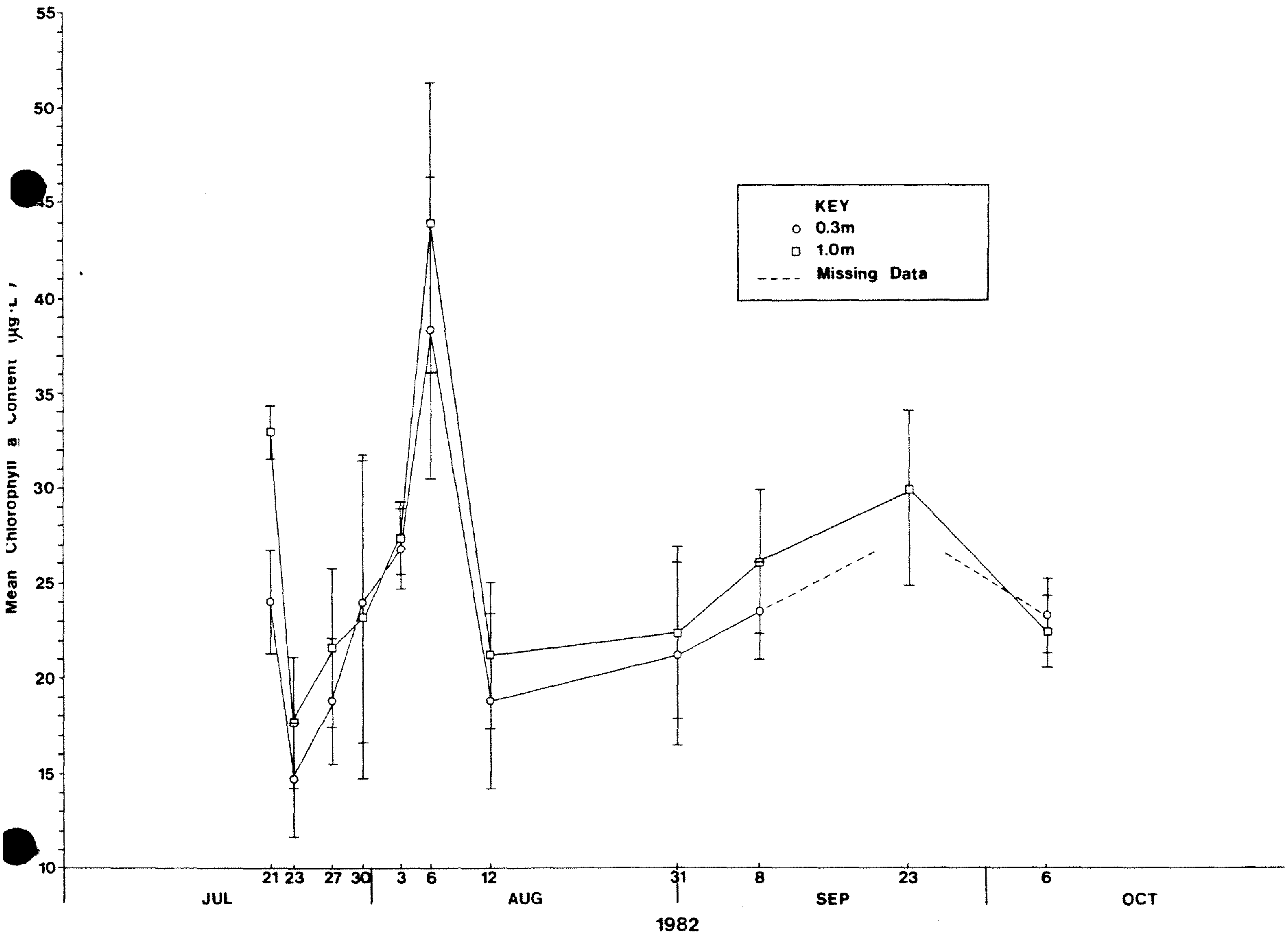


Figure 10.1. Temporal fluctuations in chlorophyll a content of Overholser Reservoir at two depths.

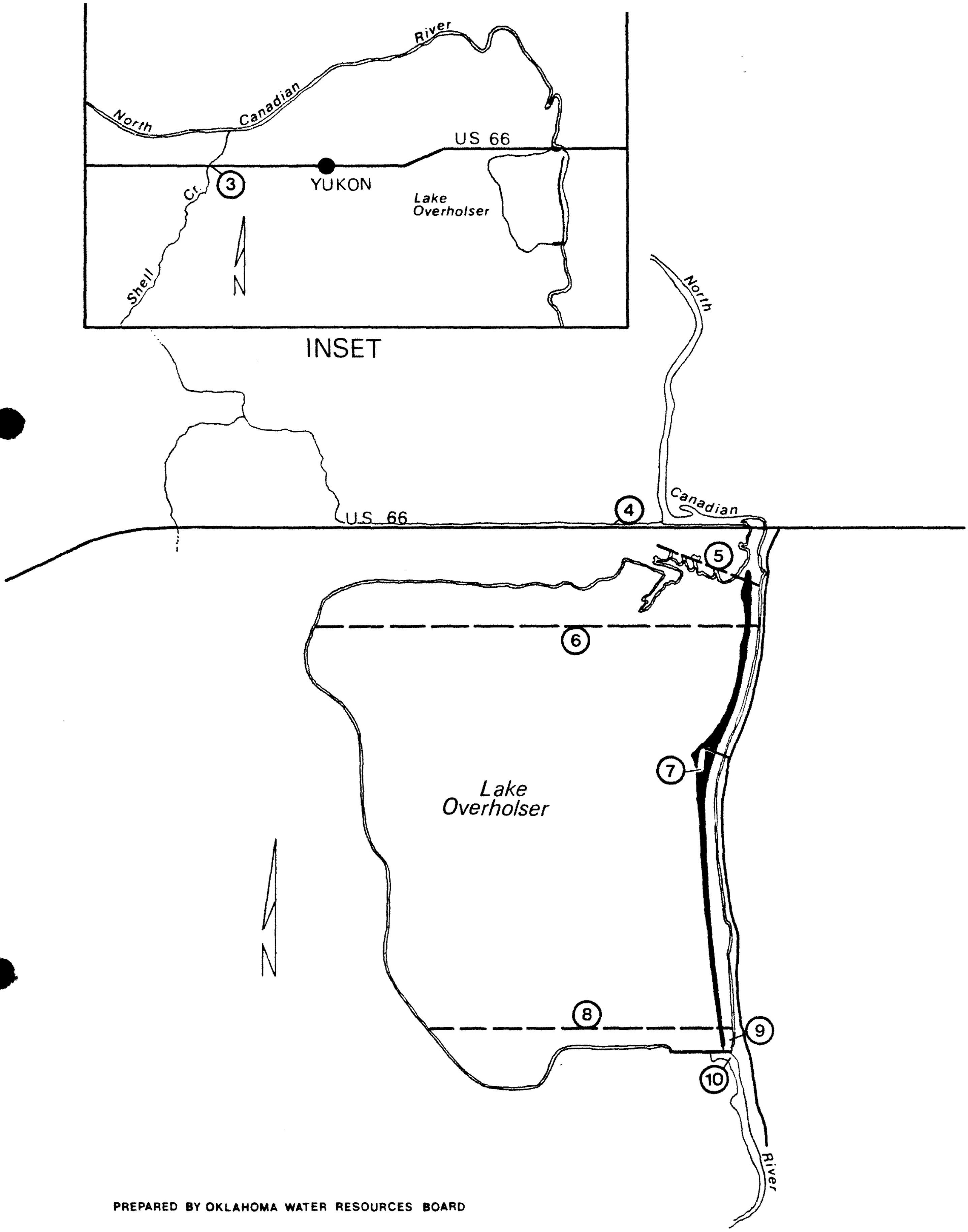


Figure 10.2. Morphometry and sampling locations on Overholser Reservoir.

Physical, Chemical, and Biological Quality of Overholser Reservoir:

Physical:

Figure 1.1 indicates the location of sampling stations and transects utilized in this study. Analysis of temperature (Figure 10.3) and other data obtained from these sites indicates the majority of Overholser Reservoir is largely polymictic, however, the shallower northern end of the lake rarely stratified due to wind action (Figure 10.3).

In addition to wind effects on thermal stratification, sustained southerly winds (Figure 10.4) may be involved in inducing a channel bound underflow which may be responsible for the occurrence of a region of unusually high chlorophyll a content in the southeastern corner of the reservoir (Figure 10.5).

Figure 10.6 indicates under certain conditions, density currents underflow the reservoir when the lake is filling with river water. The enhanced density of river water, due to its lower temperature and greater sediment load compared to the temperature and sediment load of reservoir water, explains the occurrence of these underflows at the north end of the lake.

Chemical:

Inspection of Overholser reservoir's water chemistry data (Figures 10.7a, 10.7b, 10.8, 10.9, 10.10, 10.11a, 10.11b, and 10.12) indicates

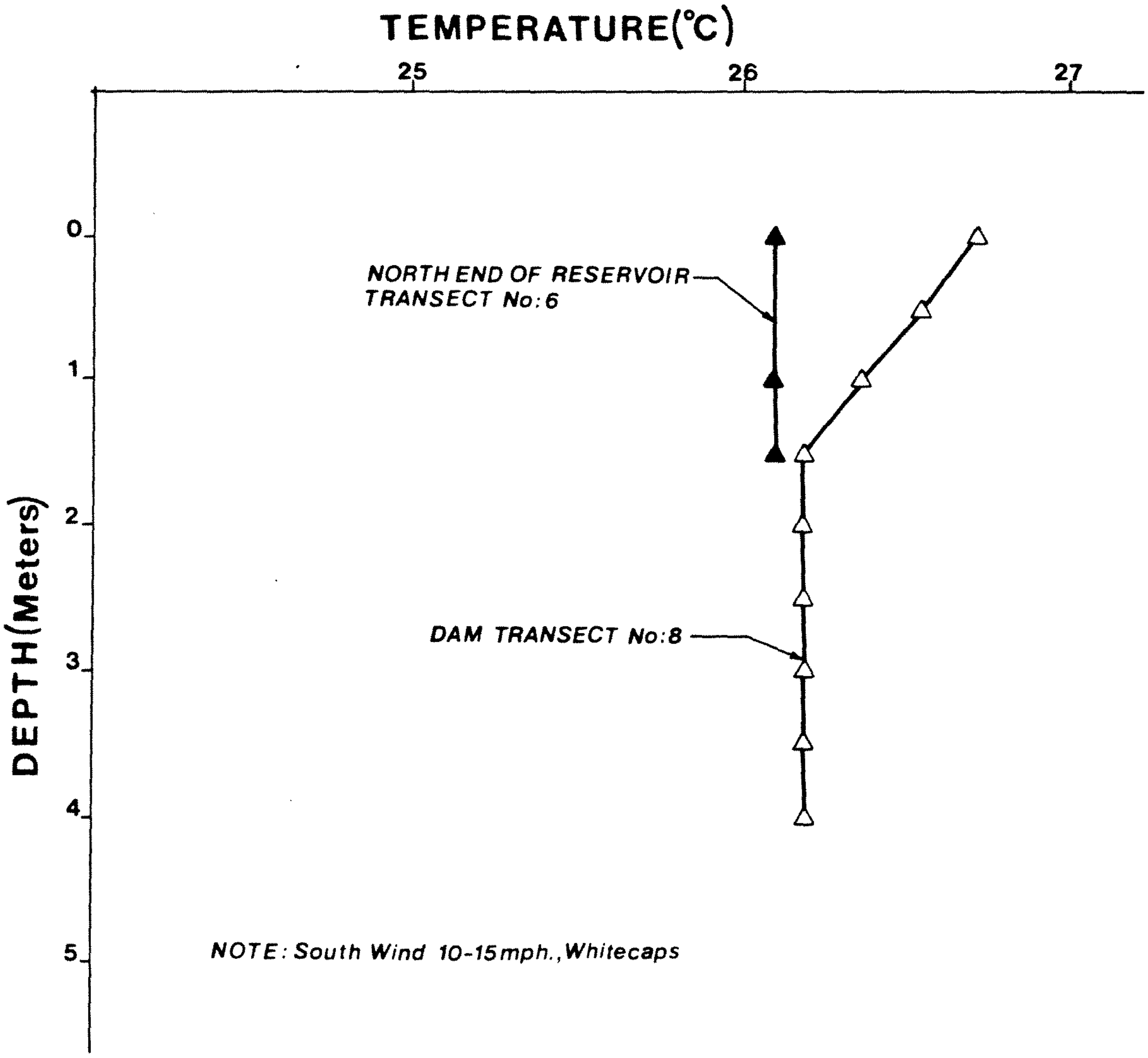


Figure 10.3. Vertical temperature profile taken in Overholser Reservoir, July 30, 1981.

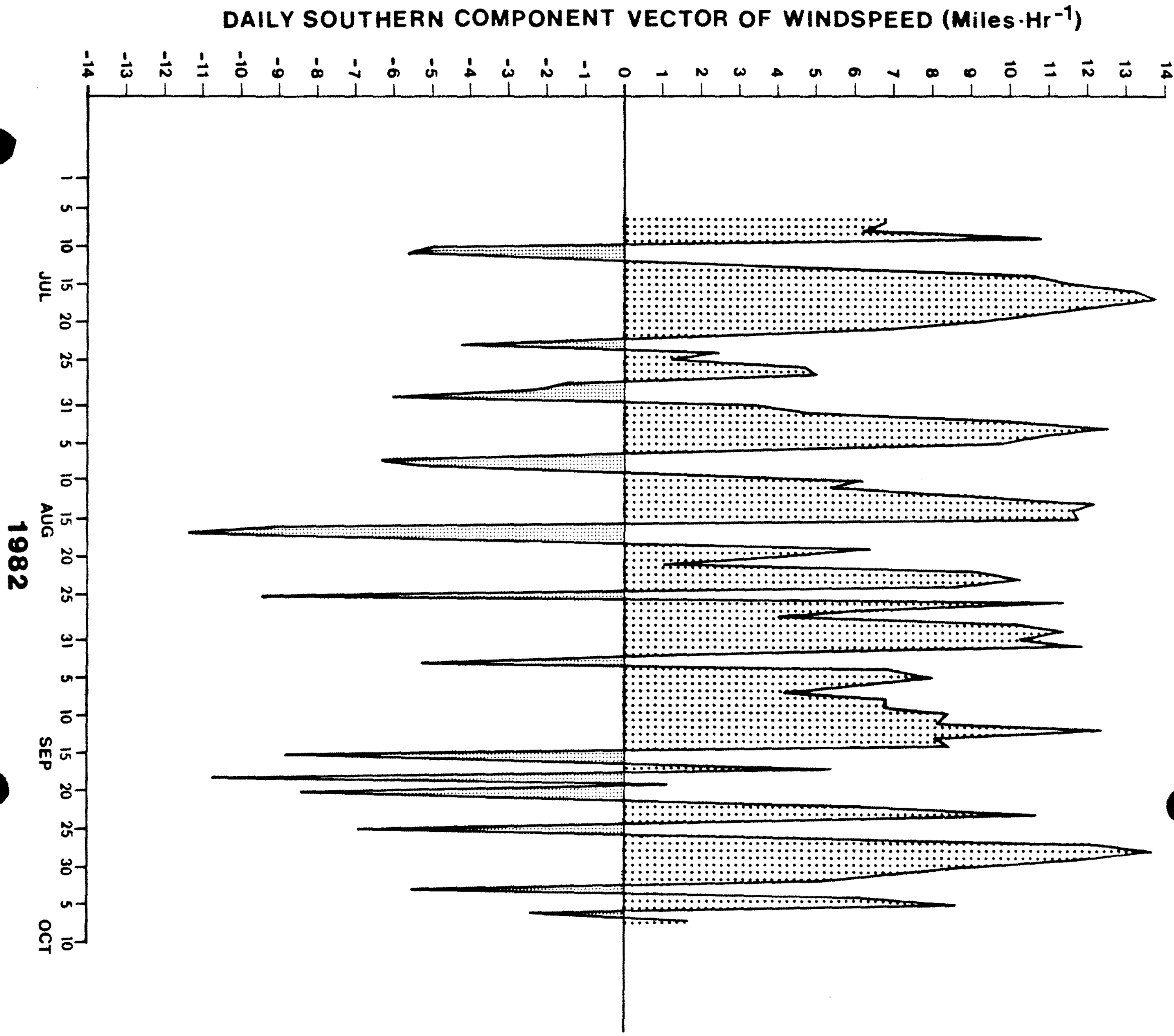


Figure 10.4. Temporal persistence and magnitude of southerly winds on Overholser Reservoir.

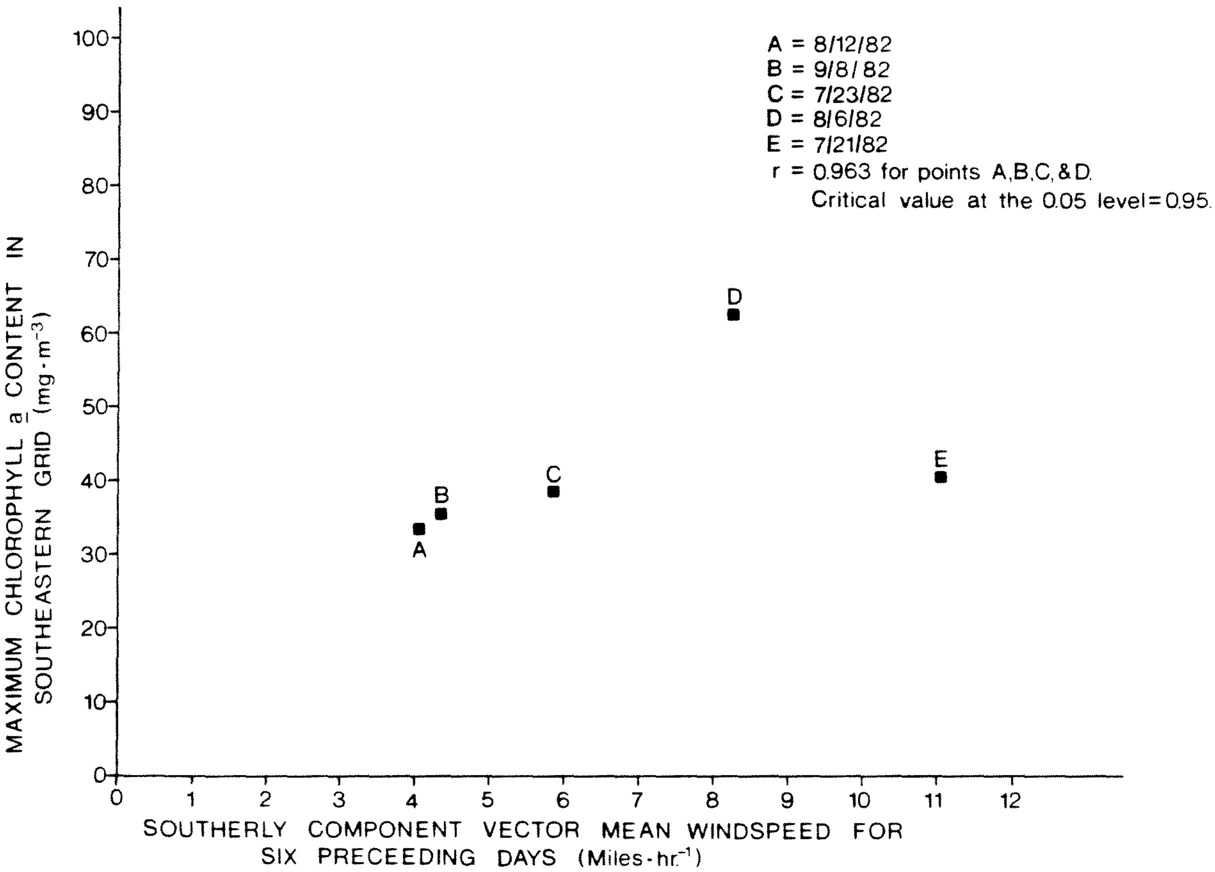


Figure 10.5. Relationship between wind speed and chlorophyll a content in Overholser Reservoir.

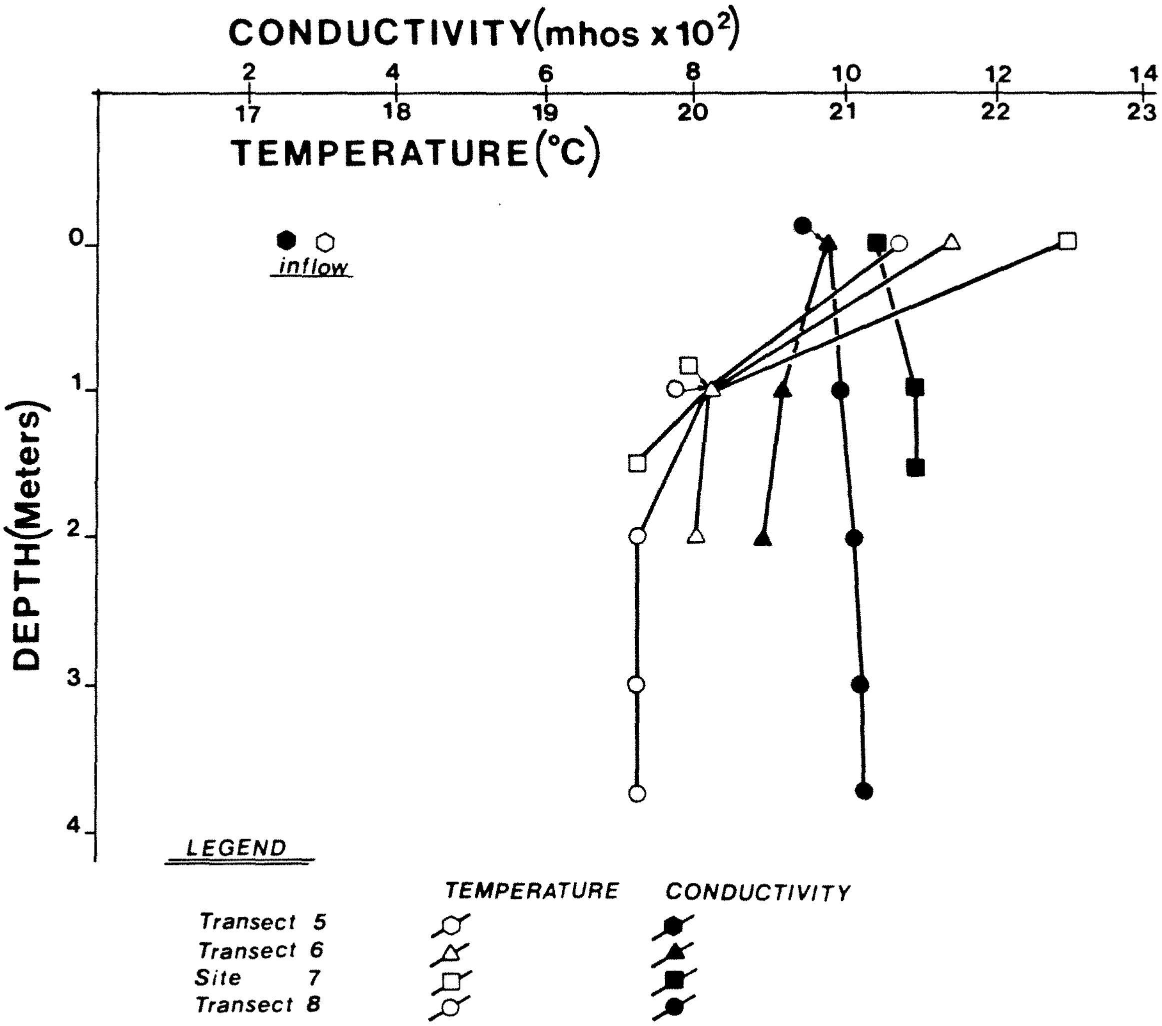


Figure 10.6. Horizontal and vertical temperature and conductivity profile on May 17, 1982 in Overholser Reservoir.

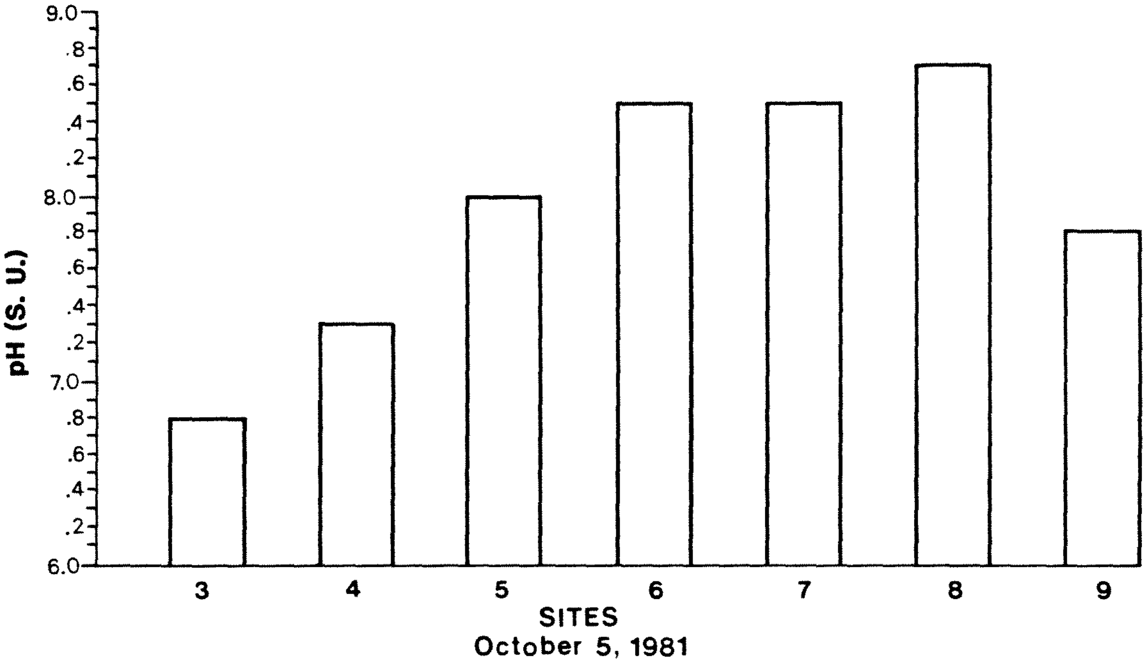


Figure 10.7a. Horizontal pH profile in Overholser Reservoir on October 5, 1981.

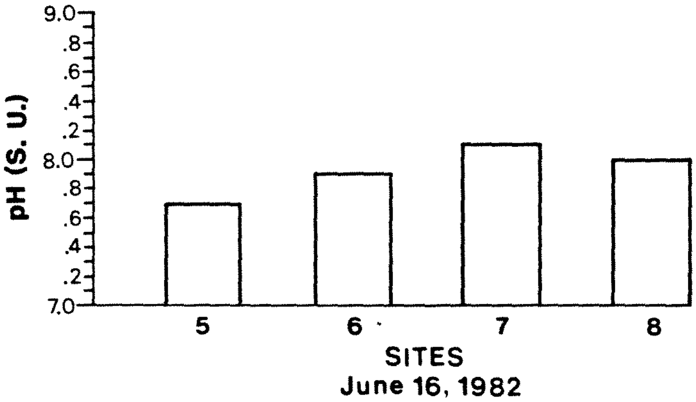


Figure 10.7b. Horizontal pH profile in Overholser Reservoir on June 16, 1982.

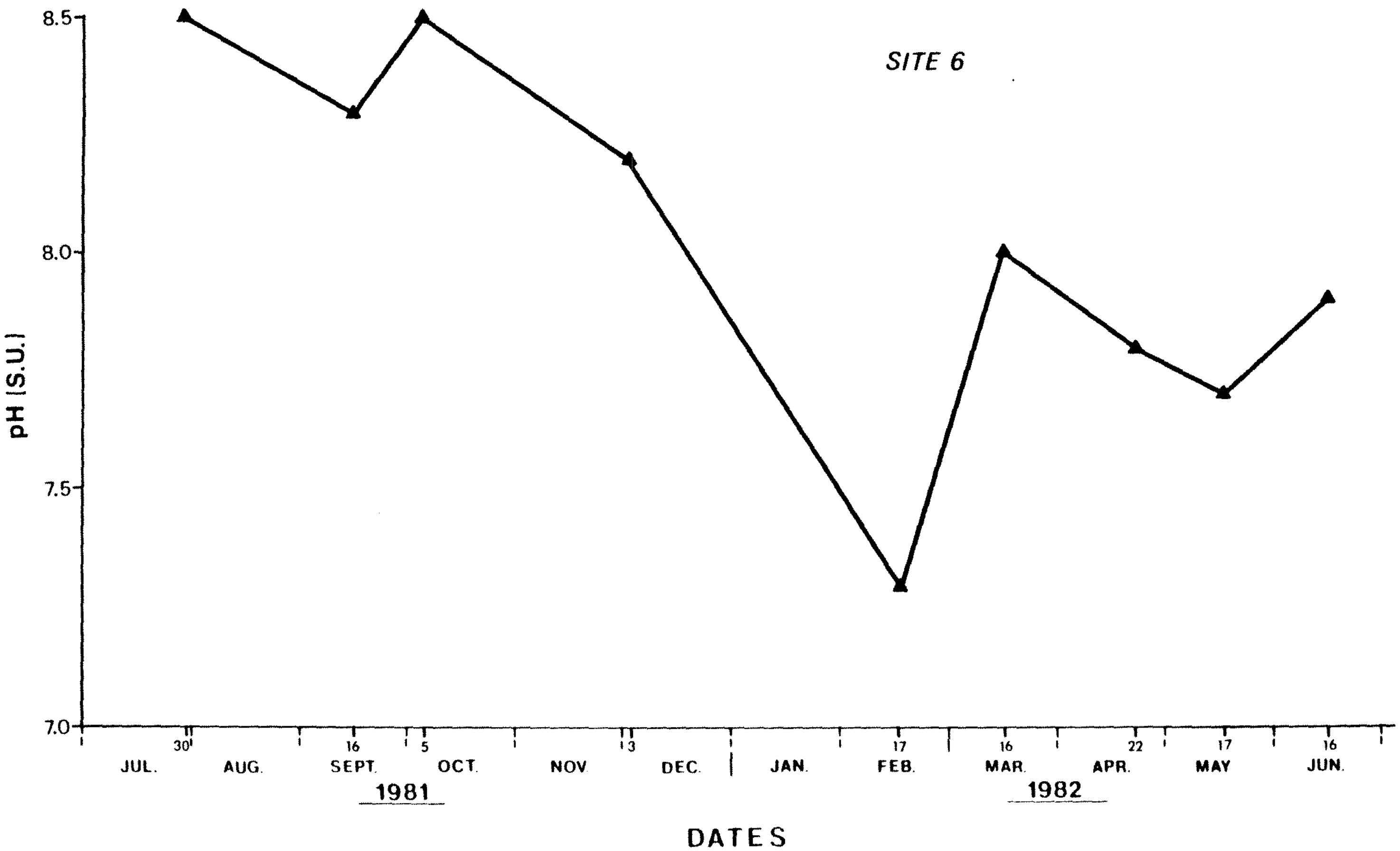


Figure 10.8. Temporal variability of pH at transect 6 in Overholser Reservoir.

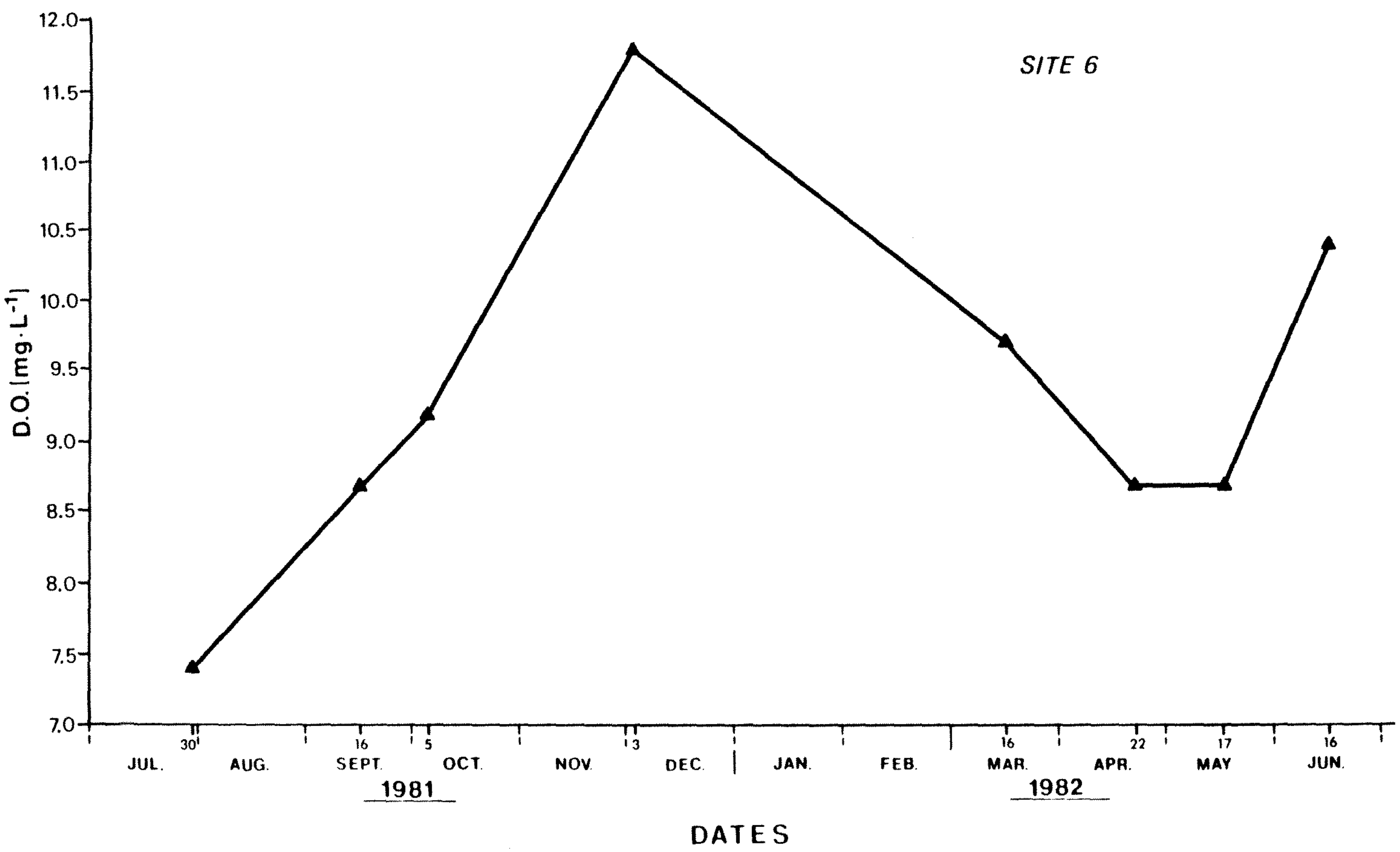


Figure 10.9. Temporal variability of dissolved oxygen at transect 6 in Overholser Reservoir.

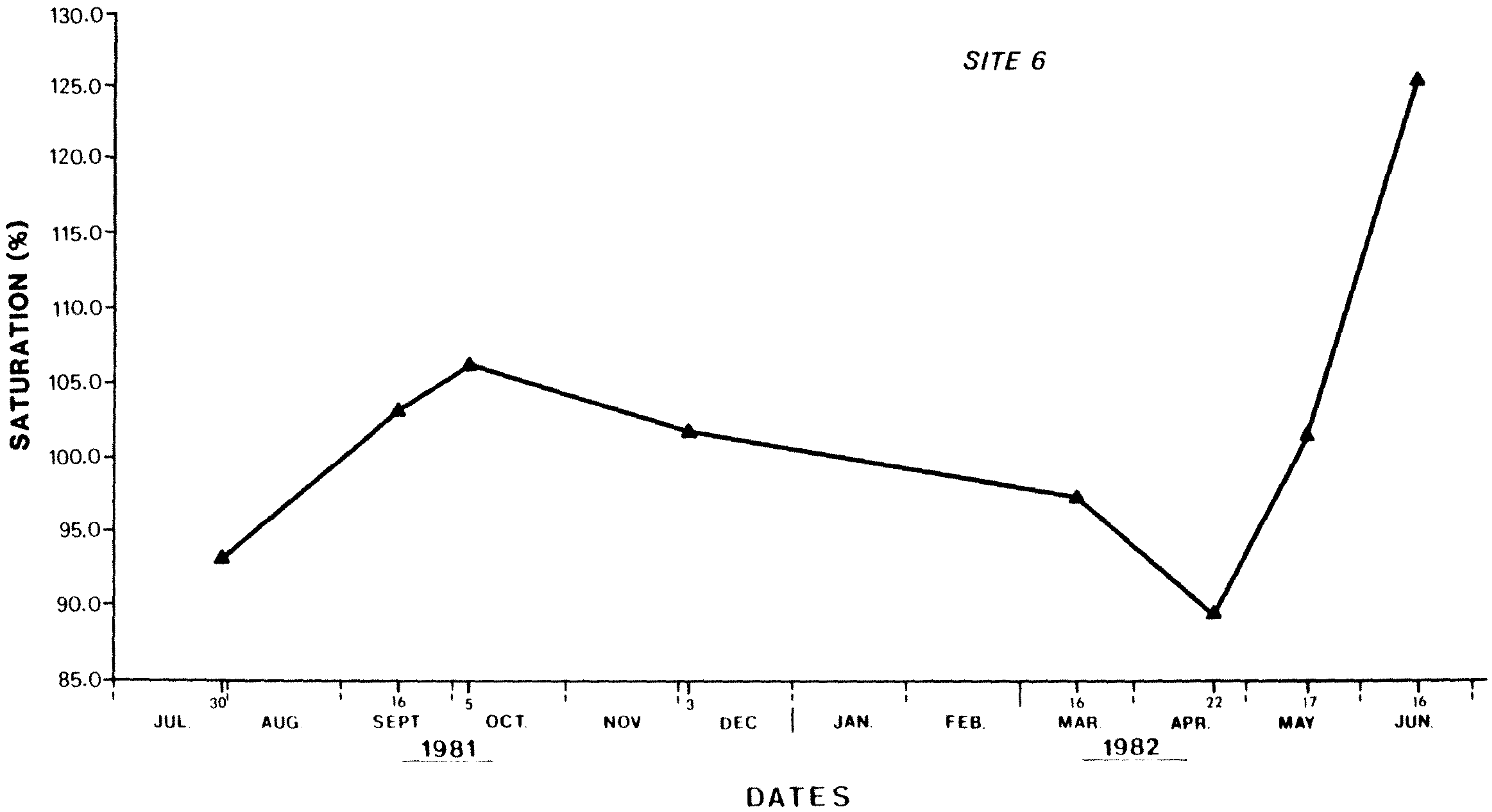


Figure 10.10. Temporal variability in the percent saturation of dissolved oxygen at transect 6 in Overholser Reservoir.

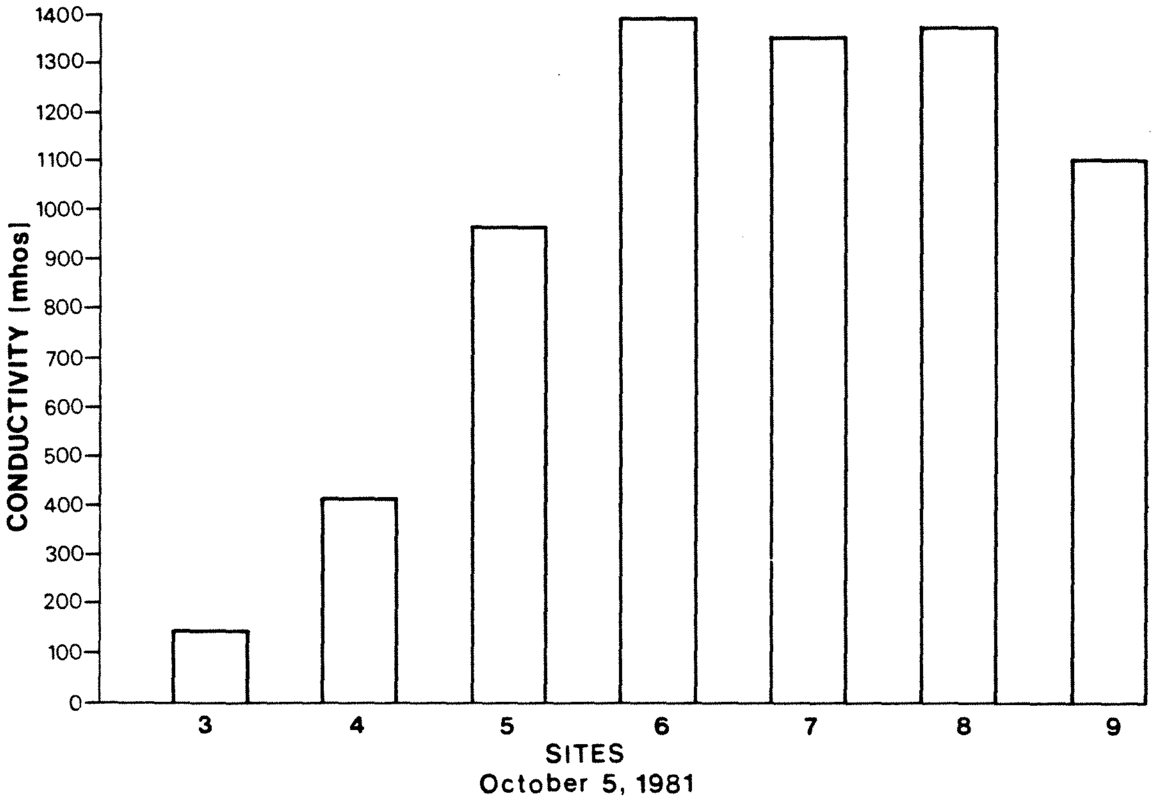


Figure 10.11a. Horizontal conductivity profiles in and around Overholser Reservoir on October 5, 1981.

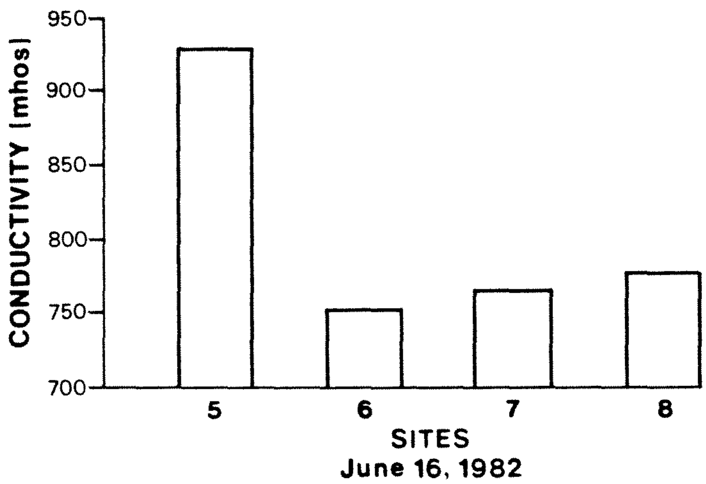


Figure 10.11b. Horizontal conductivity profiles in and around Overholser Reservoir on June 16, 1982.

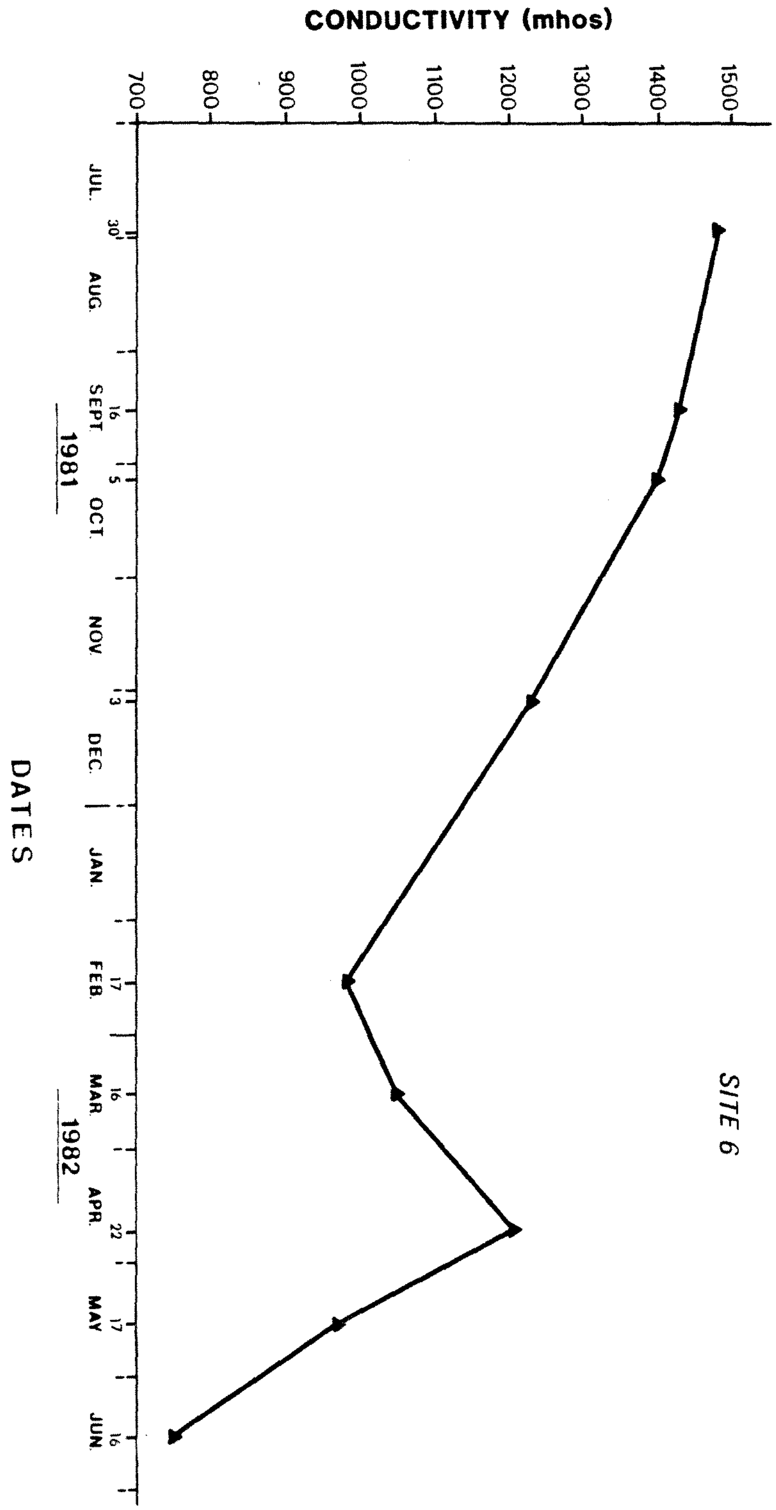


Figure 10.12. Temporal variability of conductivity at transect 6 in Overholser Reservoir.

that, with the exception of high conductivity values (Figures 10.11a and 10.12), Overholser Reservoir's chemistry is typical of most Oklahoma reservoirs. Concentrations of nutrients such as Total Phosphorus (Table 10.1) ranged from 253 to 573 micrograms per liter while dissolved ortho-phosphorus ranged from 206 to 264 micrograms per liter and comprised from 46 to 81 percent of the Total Phosphorus concentration. Total Nitrogen (Table 10.2) ranged from 0.39 to 3.10 mg/L and predominantly consisted of Kjeldahl nitrogen which comprised 28 to 93 percent of the nitrogen species.

Nonparametric analysis of the Total Nitrogen data (Figure 10.13) indicated that water collected at sample sites 3, 4, 5, and 9 had significantly higher ($P < 0.01$) nitrogen concentrations than water collected within the reservoir. Further analysis of the Total Phosphorus data (Figure 10.14) indicated that sampling stations 4, 5, and 9 had significantly higher Total Phosphorus concentrations than water from sample site 3 and very nearly significantly higher concentrations than the in-reservoir stations 6, 7, and 8.

Total Alkalinity (Table 10.3) ranged from 144 to 224 mg/L as $CaCO_4$ while phenolphthalein alkalinity ranged from 8 to 32 mg/L as $CaCO_4$, indicating the reservoir is a well buffered system and the predominant ionic species is the bicarbonate ion.

Table 10.1. Spatial and temporal variability of total phosphorus in Overholser Reservoir.

DATE	TOTAL PHOSPHORUS ($mg \cdot L^{-1}$) Sites/Transects 6	7	8a	8b
06/04/81	0.337	0.470	---	---
06/18/81	0.388	0.478	0.382	---
07/07/81	0.378	0.402	0.331	0.355
07/16/81	0.358	0.335	0.379	0.332
08/12/81	0.326	0.340	0.360	0.315
09/16/81	0.287	0.287	0.313	0.340
10/05/81	0.363	0.280	0.280	0.328
11/23/81	0.296	0.332	0.271	0.283
12/15/81	0.376	0.388	0.280	0.304
02/17/82	0.261	0.259	0.253	0.266
03/16/82	0.265	0.298	0.441	0.270
04/22/82	0.445	0.514	0.558	0.578
05/18/82	0.328	0.305	0.324	0.369
06/16/82	0.308	0.300	0.348	0.312

Table 10.2. Spatial and temporal variability of total nitrogen in Overholser Reservoir.

DATE	TOTAL NITROGEN ($mg \cdot L^{-1}$) Sites/Transects 6	7	8a	8b
06/04/81	1.00	--	1.68	--
06/18/81	1.23	1.34	1.35	--
07/07/81	0.99	0.43	0.39	0.49
07/16/81	1.69	2.31	1.30	0.63
08/12/81	2.28	3.07	1.67	1.05
09/16/81	1.70	1.24	3.10	0.86
10/05/81	1.44	2.73	1.34	1.44
11/23/81	0.77	0.68	0.77	0.49
12/15/81	0.60	0.49	0.60	0.60
01/28/82	0.88	0.94	0.71	0.77
02/17/82	1.17	0.92	0.94	0.88
03/16/82	1.05	1.05	0.96	0.96
04/22/82	0.40	0.49	0.58	0.40
05/18/82	1.13	1.05	1.00	0.94
06/16/82	1.19	1.05	1.28	0.74

Absolute Differences Between Sample Sites for Total Nitrogen Rank Sums

3	4	5	6	7	8A	8B	9	
	8	3.5	21.5	28	36	53.5	9.5	3
		4.5	13.5	20	28	45.5	1.5	4
			18	24.5	32.5	50	6	5
				6.5	14.5	32	12	6
					8	25.5	18.5	7
						17.5	26.5	8A
							44	8B
								9

Critical Value
-at .05 is 38
-at .01 is 44

Figure 10.13. Nonparametric spatial analysis of total nitrogen rank sums.

Absolute Differences Between Sample Sites for Total Phosphorus Rank Sums

3	4	5	6	7	8A	8B	9	
	47.5	47	13	13	13.5	15	41	3
		.5	34.5	34.5	34	32.5	6.5	4
			34	34	33.5	32	6	5
				0	.5	2	28	6
					.5	2	28	7
						1.5	27.5	8A
							26	8B
								9

Critical Value
-at .05 is 36
-at .01 is 42

Figure 10.14. Nonparametric spatial analysis of total phosphorus rank sums.

Table 10.3. Spatial and temporal variability of total alkalinity in Overholser Reservoir.

DATE	TOTAL ALKALINITY Sites/Transects 6	7	8a	8b
06/04/81	200	-	202	-
06/18/81	214	212	212	-
07/07/81	212	224	204	218
07/16/81	212	204	208	214
08/12/81	196	196	200	196
09/16/81	200	196	198	200
10/05/81	192	188	190	198
11/23/81	164	168	170	154
12/15/81	198	172	168	164
01/28/82	192	188	188	190
02/17/82	150	150	156	156
04/22/82	208	212	214	206
05/18/82	158	166	162	162
06/16/82	153	152	144	150

Biological:

Biological quality of Overholser Reservoir was evaluated based upon the analysis of chlorophyll standing crop. A nonparametric statistical analysis was performed upon the spectrophotometrically analyzed chlorophyll a data (Figure 10.15) collected at each sample site and transect with the sampling frequency specified in the Federal Register (Vol. 45, No. 25). No significant differences were found to exist between the various sample sites and transects with regard to their chlorophyll a content.

The conclusion that there were no significant differences in chlorophyll a distribution within Overholser Reservoir seemed, based upon our experience with the reservoir, to be largely due to the imposed sampling frequency. Consequently, a method (Grimshaw, et al., in prep.) was developed to intensively analyze the spatial and temporal distribution of chlorophyll a. This analysis was performed on eleven occasions from July 21 to October 6 during the summer of 1982 (Figure 10.1 and Figures 10.16a-10.26b). These data indicate there are two areas of the reservoir (an area in the northeast and an area in the southeast) which persistently contained unusually high amounts of chlorophyll a.

The area of high chlorophyll a content in the northeast corner of the reservoir was due to the leakage of low flows into Overholser Reservoir from the North Canadian River. Upon being informed of our data, the Oklahoma City Water Resources Department initiated and completed a project to raise the height of the rollover structure to Overholser Reservoir, effectively stopping all low flow leakage into the reservoir.

Absolute Differences Between Sample Sites for Chlorophyll Rank Sums

3	4	5	6	7	8A	8B	9	
	17	3.5	13.5	4.5	15	15.5	8	3
		13.5	3.5	21.5	2	1.5	25	4
			10	8	11.5	12	11.5	5
				18	1.5	2	21.5	6
					19.5	20	3.5	7
						.5	23	8A
							23.5	8B
								9

Critical Value
-at .05 is 38
-at .01 is 44

Figure 10.15. Nonparametric spatial analysis of chlorophyll a content rank sums.

Figure 10.16a. Isopleth map of chlorophyll a content in Overholser Reservoir on July 21, 1982, at 0.3 meter.

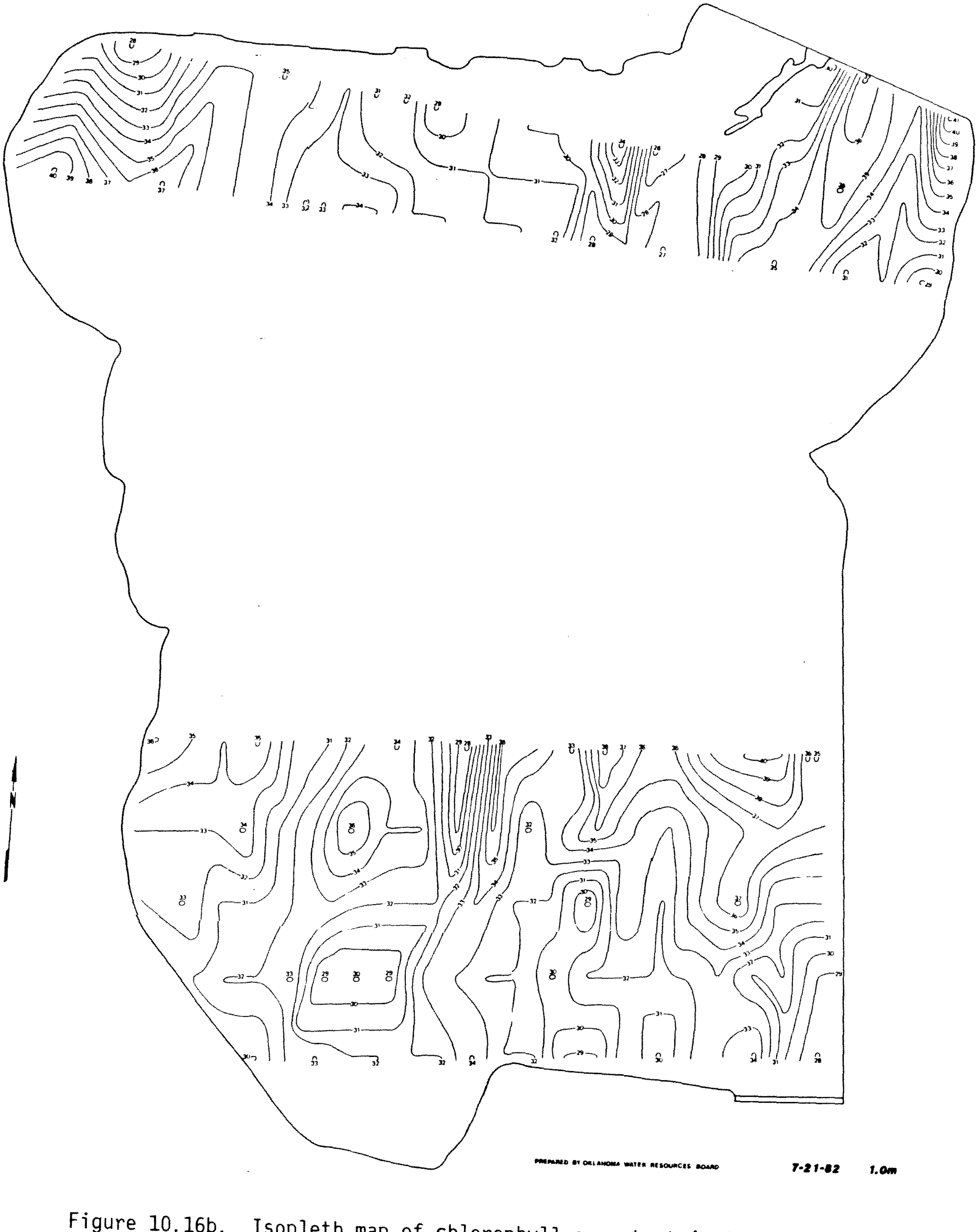


Figure 10.16b. Isopleth map of chlorophyll a content in Overholser Reservoir on July 21, 1982, at 1.0 meter.

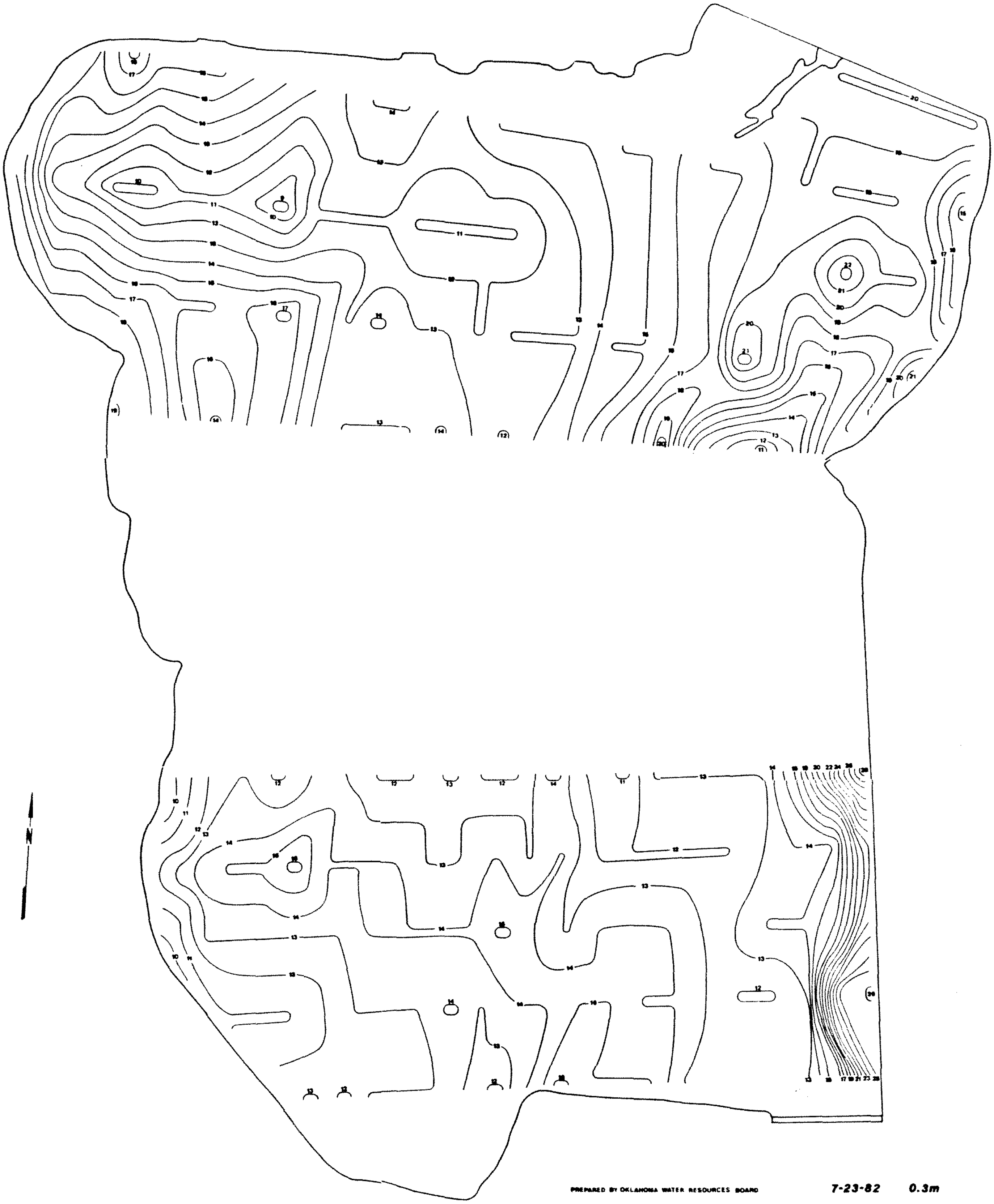


Figure 10.17a. Isopleth map of chlorophyll a content in Overholser Reservoir on July 23, 1982, at 0.3 meter.

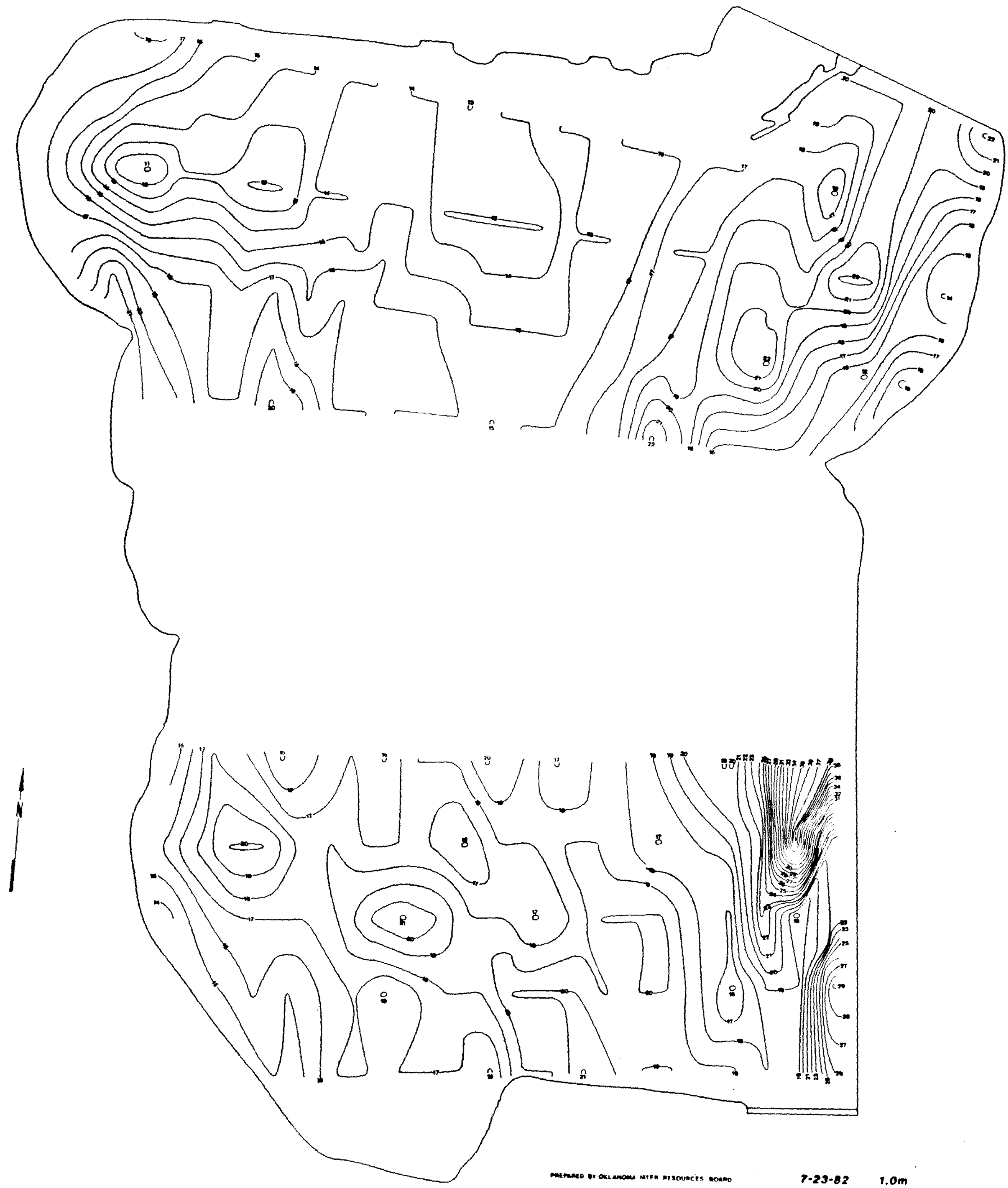


Figure 10.17b. Isopleth map of chlorophyll a content in Overholser Reservoir on July 23, 1982, at 1.0 meter.

Figure 10.18a. Isopleth map of chlorophyll a content in Overholser Reservoir on July 27, 1982, at 0.3 meter.

Figure 10.18b. Isopleth map of chlorophyll a content in Overholser Reservoir on July 27, 1982, at 1.0 meter.

Figure 10.19a. Isopleth map of chlorophyll a content in Overholser Reservoir on July 30, 1982, at 0.3 meter.

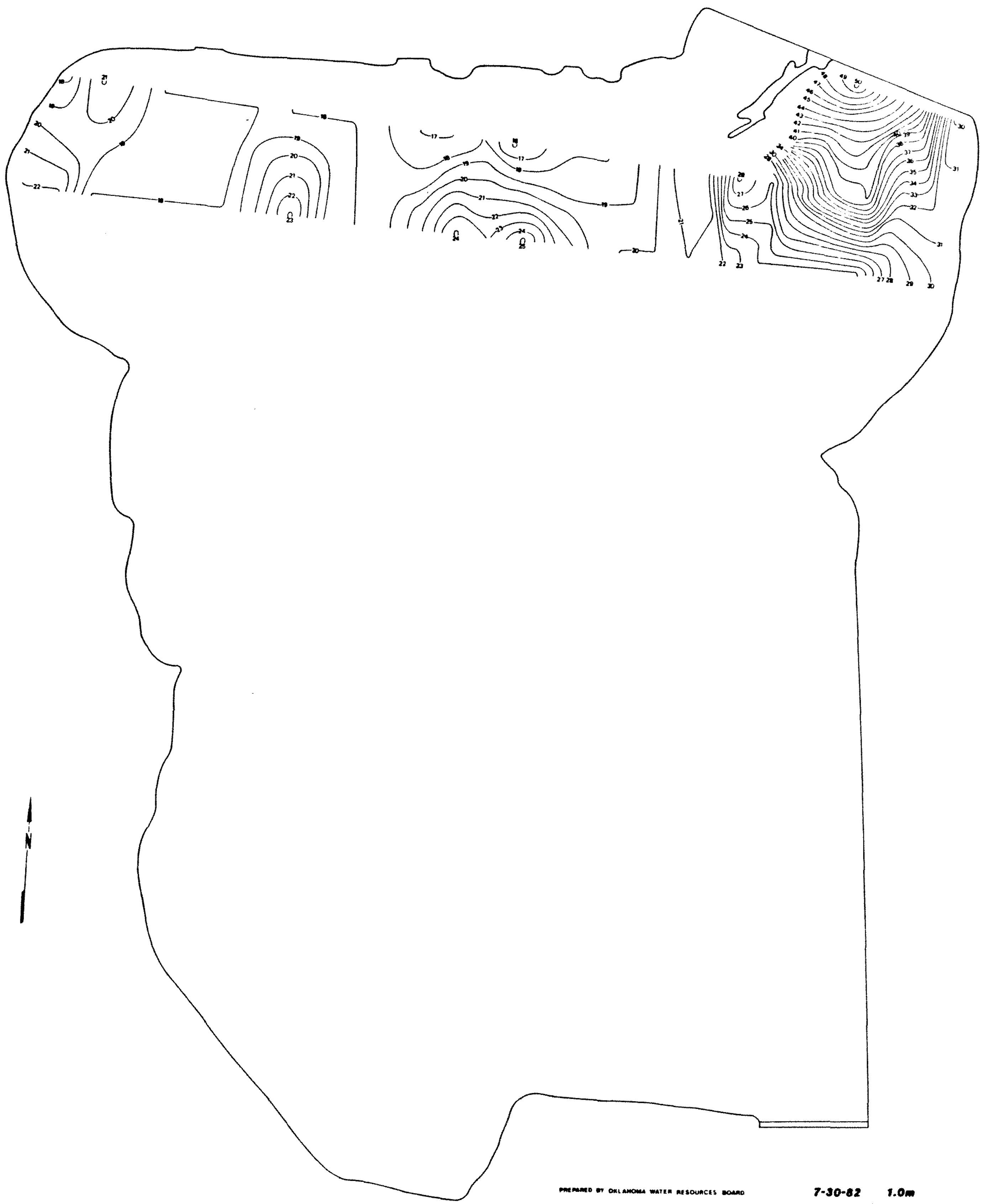


Figure 10.19b. Isopleth map of chlorophyll a content in Overholser Reservoir on July 30, 1982, at 1.0 meter.

Figure 10.20a. Isopleth map of chlorophyll a content in Overholser Reservoir on August 3, 1982, at 0.3 meter.

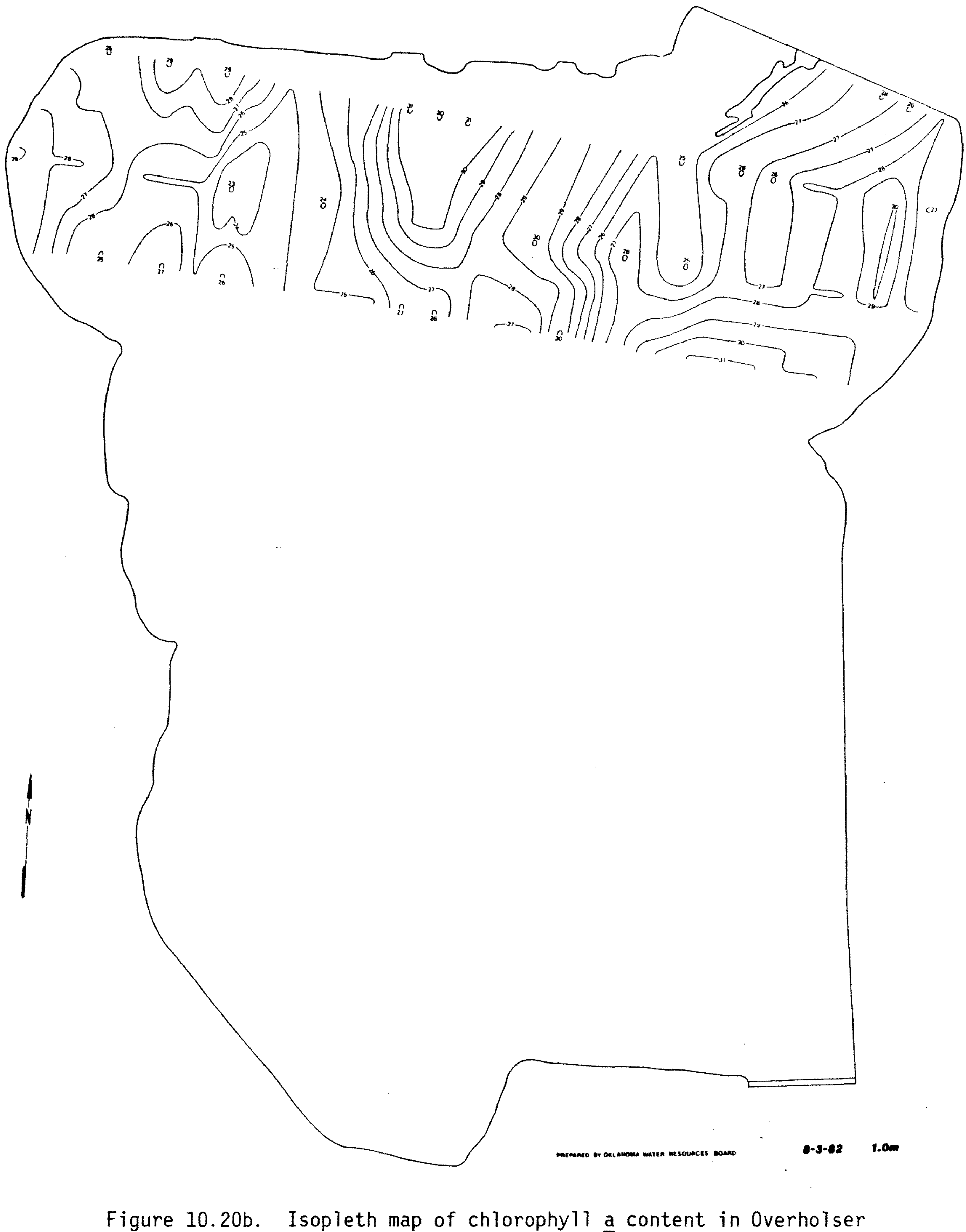


Figure 10.20b. Isopleth map of chlorophyll a content in Overholser Reservoir on August 3, 1982, at 1.0 meter.

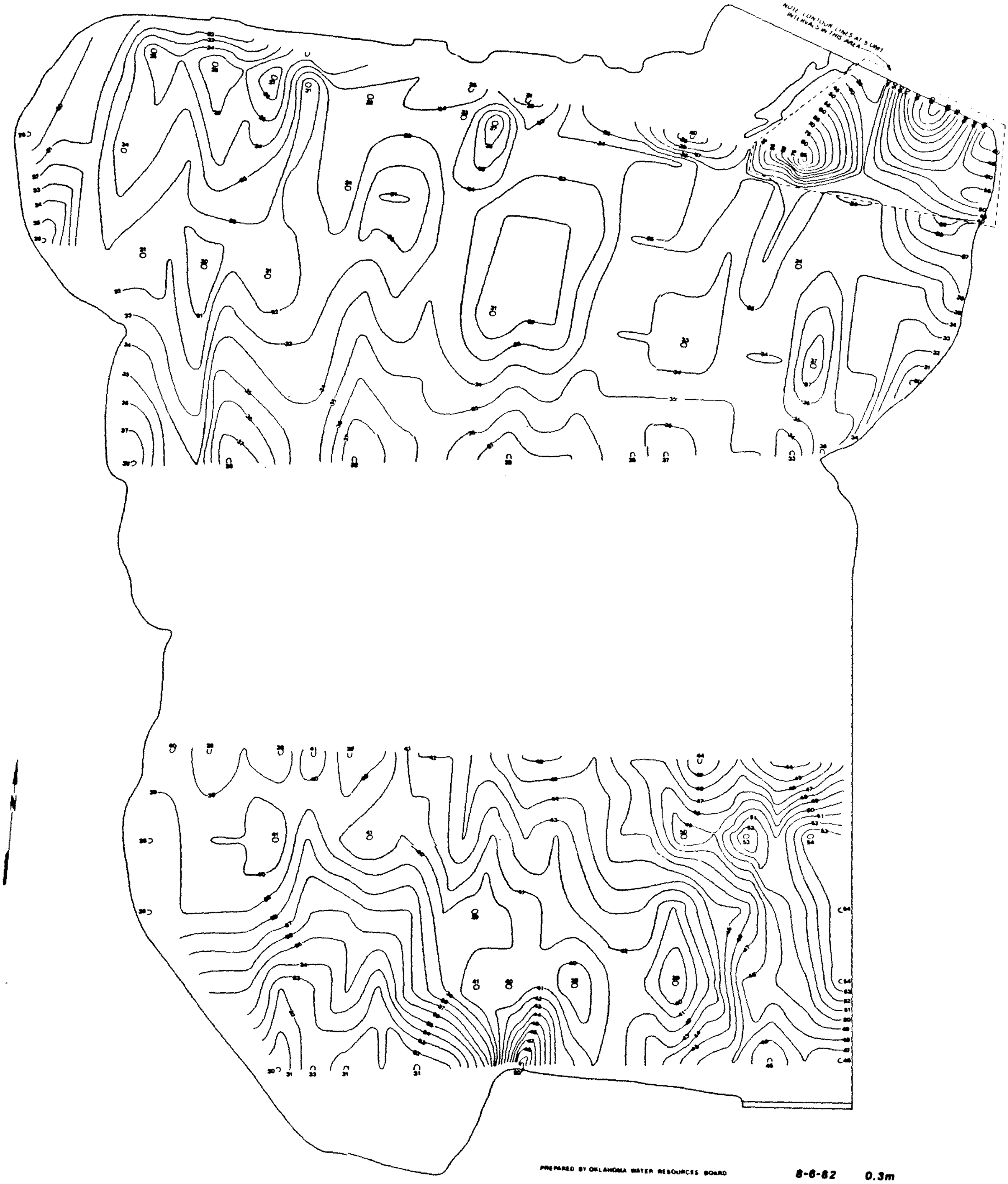


Figure 10.21a. Isopleth map of chlorophyll a content in Overholser Reservoir on August 6, 1982, at 0.3 meter.

Figure 10.21b. Isopleth map of chlorophyll a content in Overholser Reservoir on August 6, 1982, at 1.0 meter.

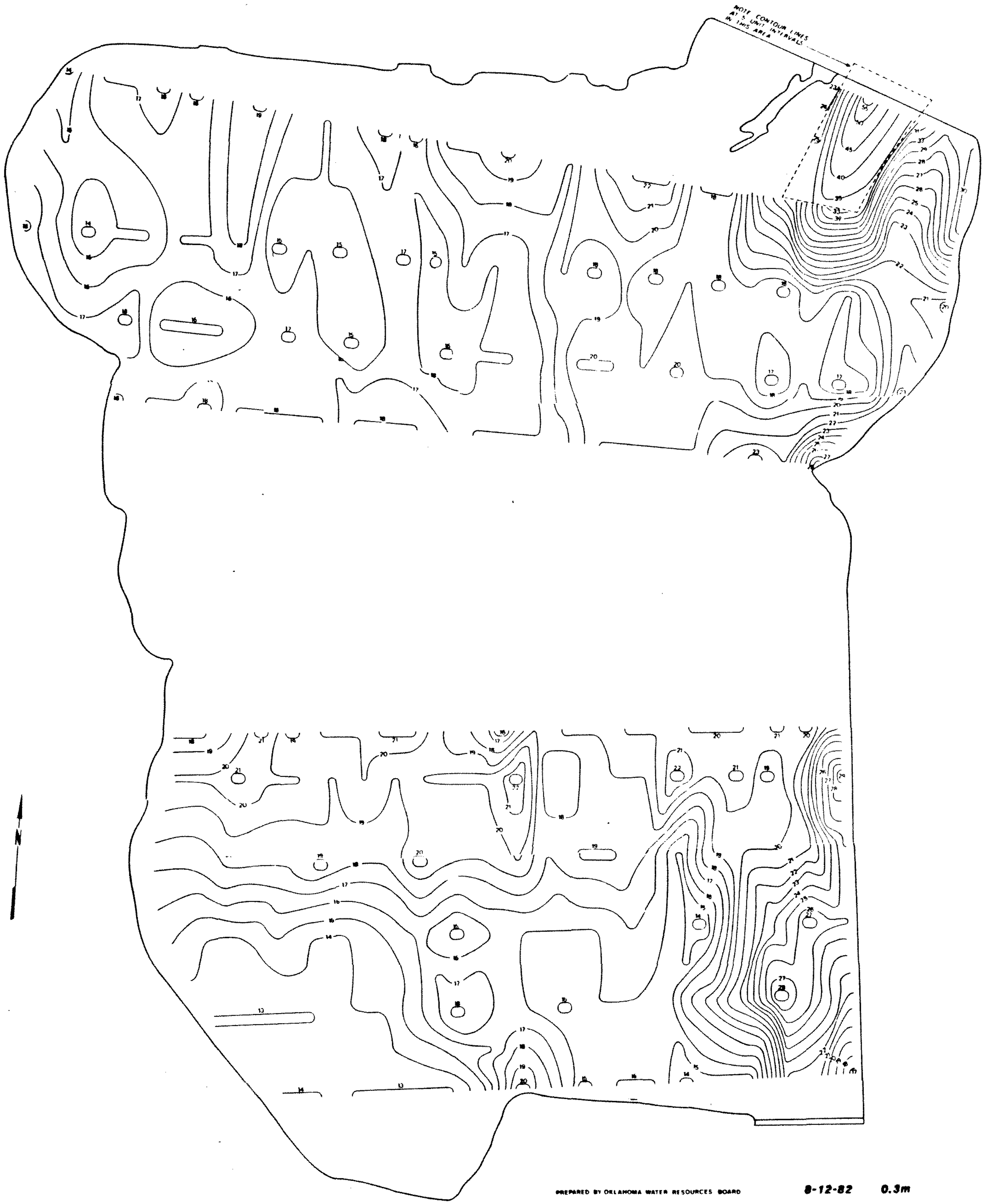


Figure 10.22a. Isopleth map of chlorophyll a content in Overholser Reservoir on August 12, 1982, at 0.3 meter.

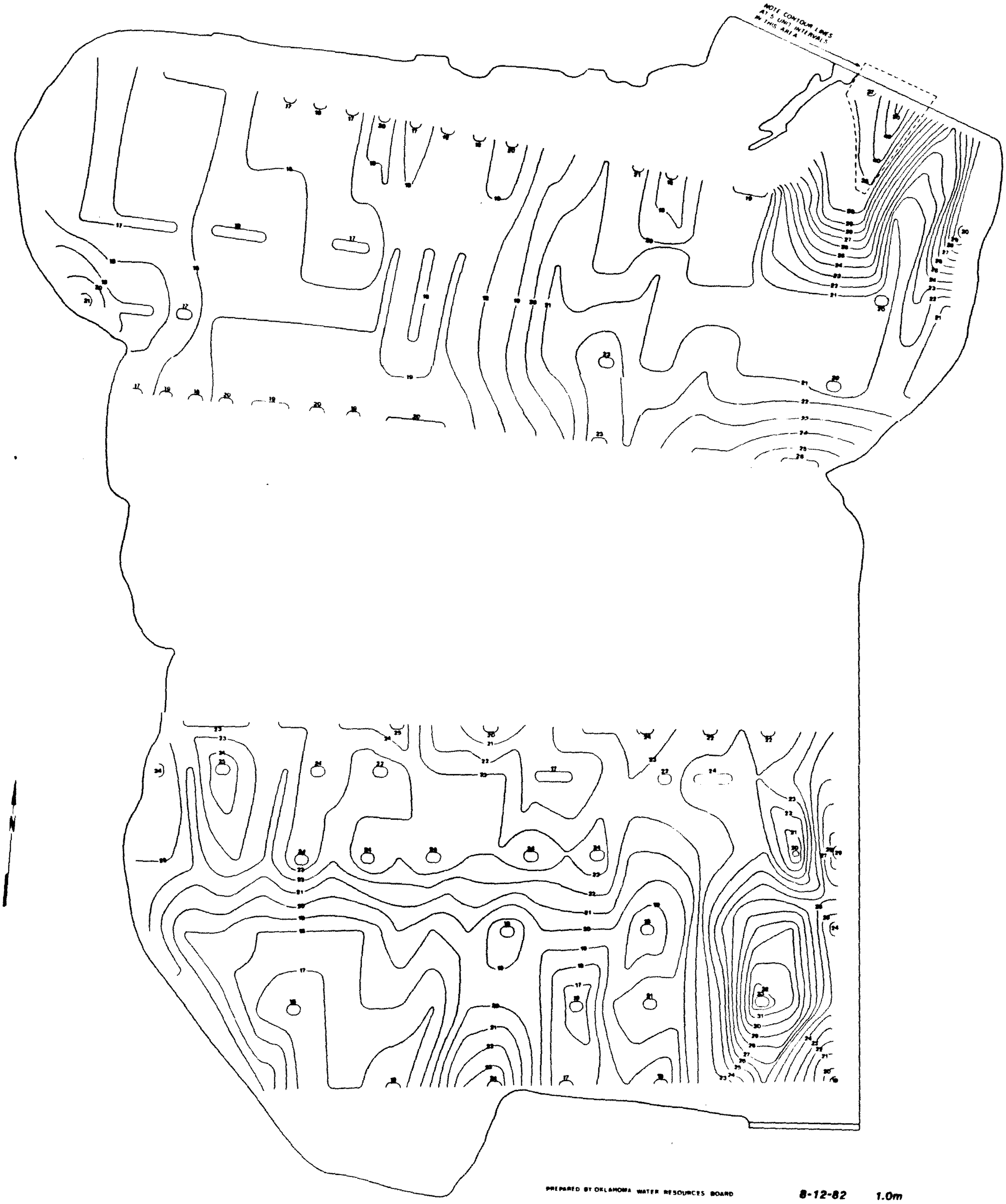


Figure 10.22b. Isopleth map of chlorophyll a content in Overholser Reservoir on August 12, 1982, at 1.0 meter.

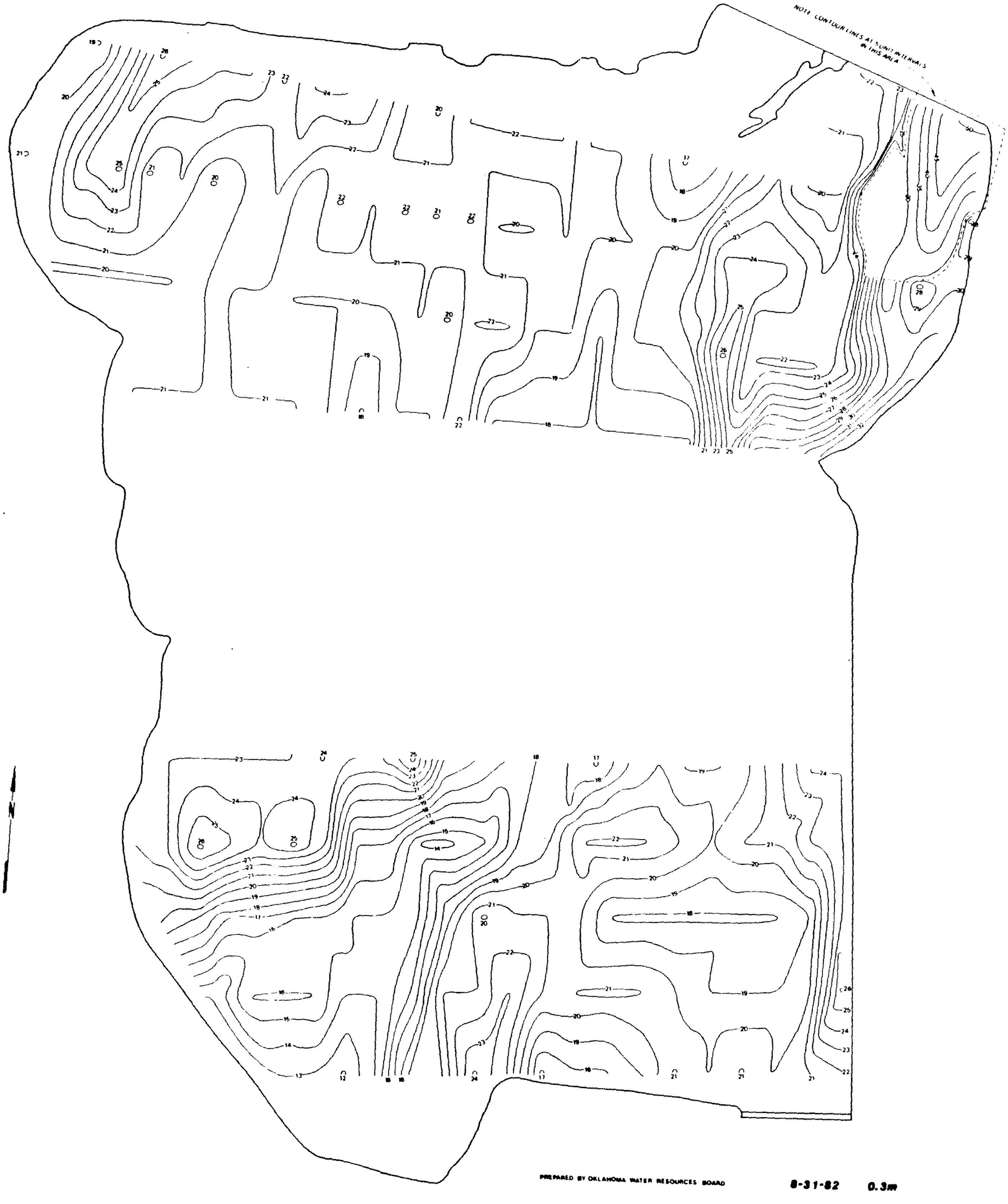


Figure 10.23a. Isopleth map of chlorophyll a content in Overholser Reservoir on August 31, 1982, at 0.3 meter.

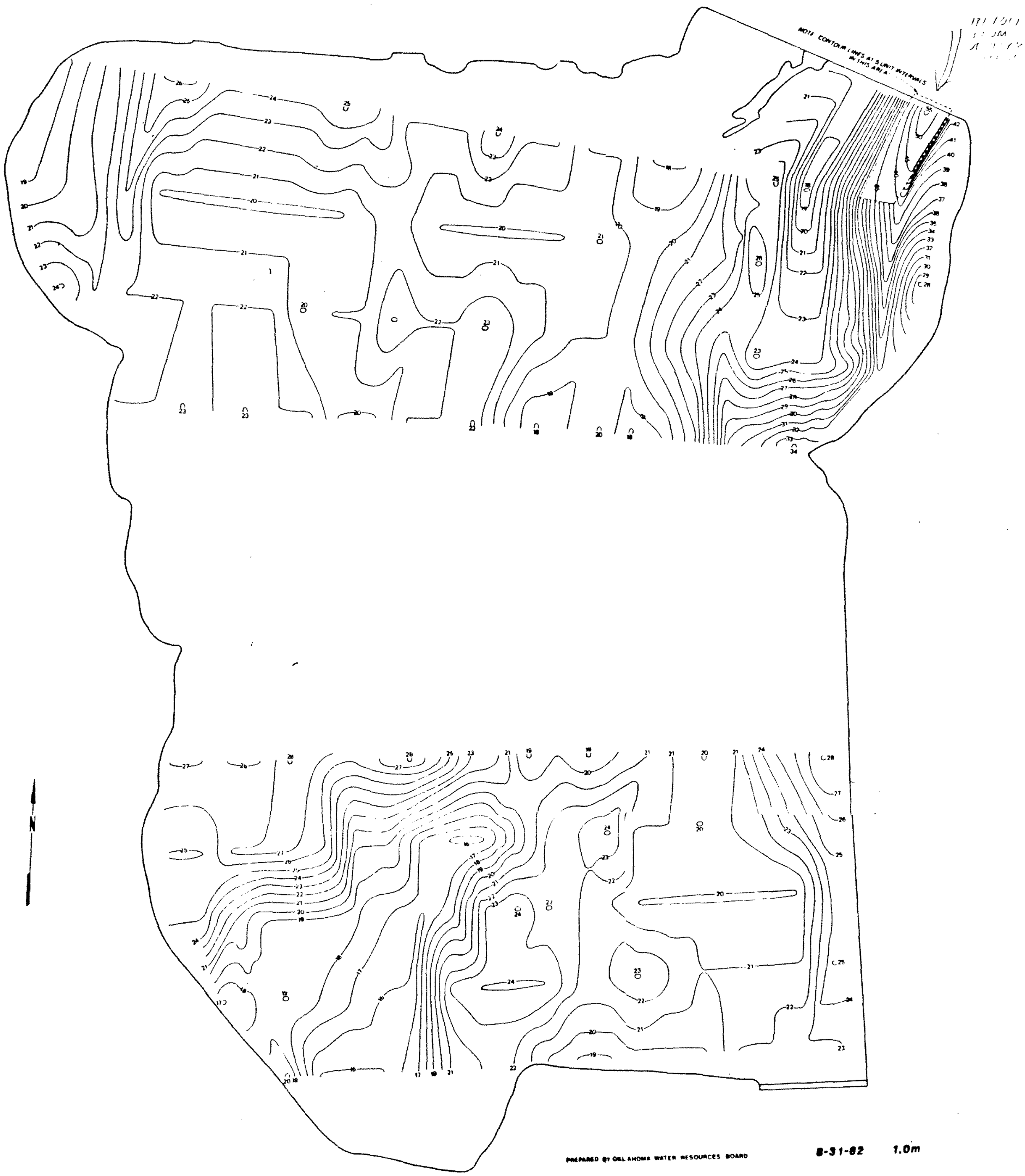


Figure 10.23b. Isopleth map of chlorophyll a content in Overholser Reservoir on August 31, 1982, at 1.0 meter.

Figure 10.24a. Isopleth map of chlorophyll a content in Overholser Reservoir on September 8, 1982, at 0.3 meter.

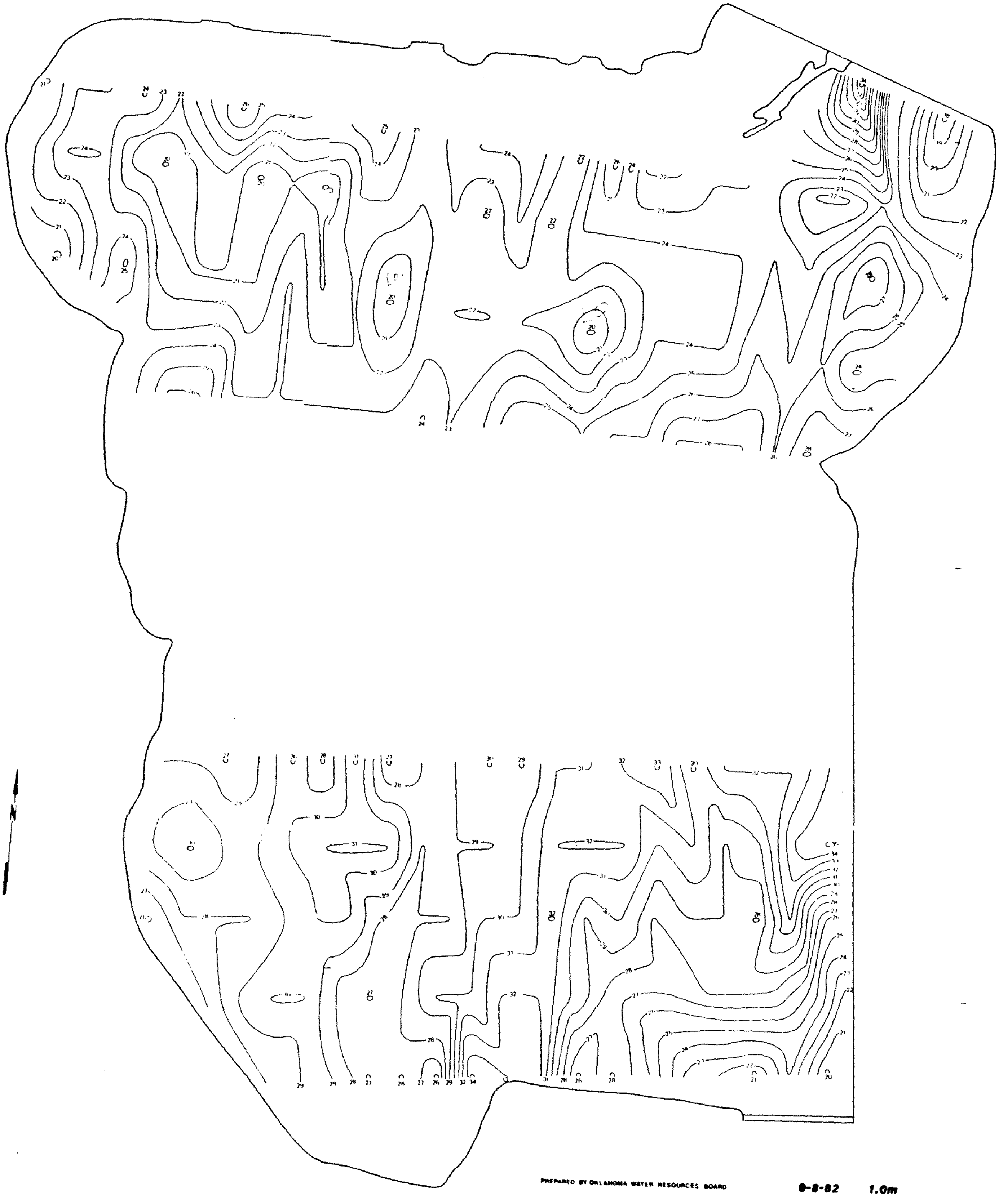


Figure 10.24b. Isopleth map of chlorophyll a content in Overholser Reservoir on September 8, 1982, at 1.0 meter.

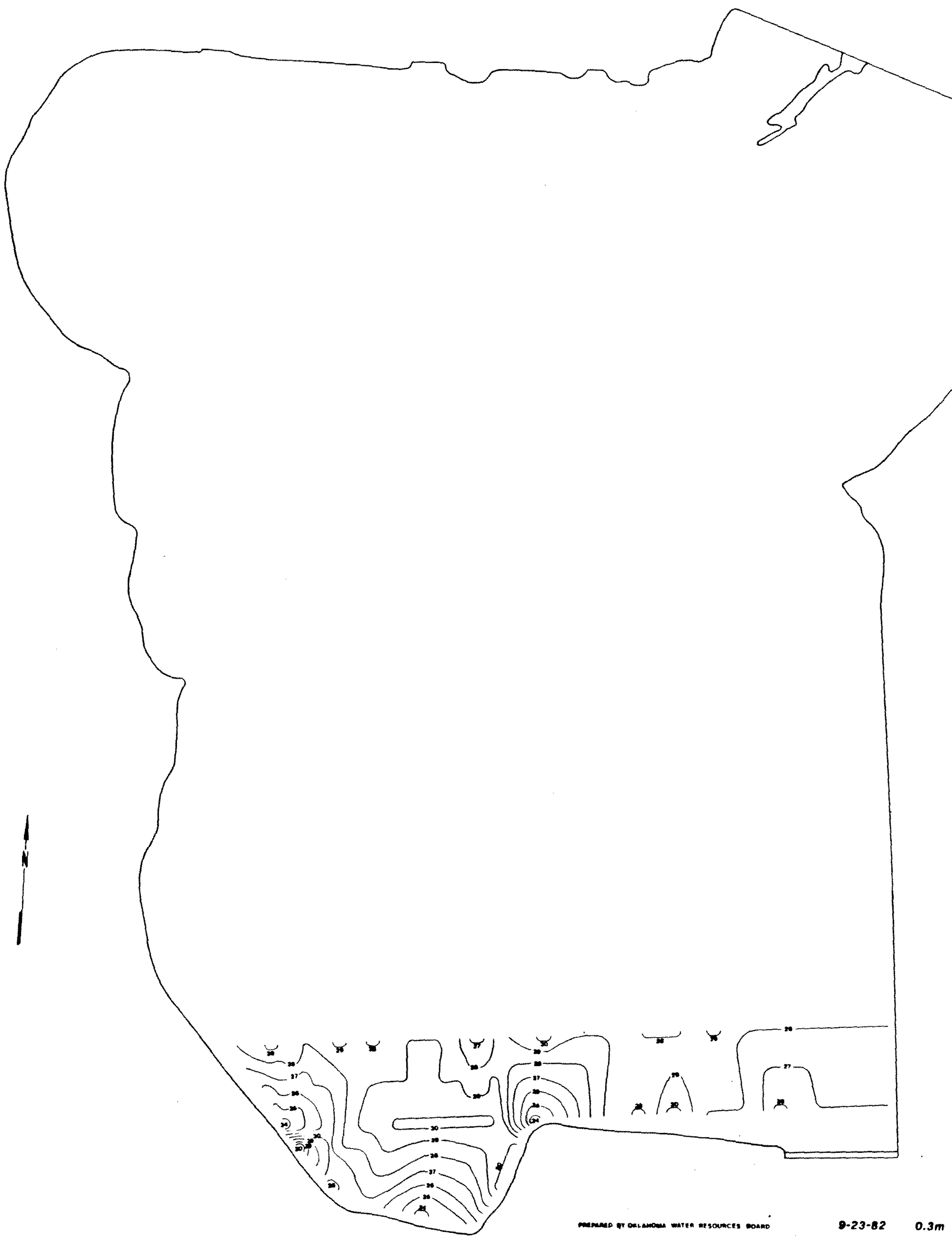


Figure 10.25a. Isopleth map of chlorophyll a content in Overholser Reservoir on September 23, 1982, at 0.3 meter.

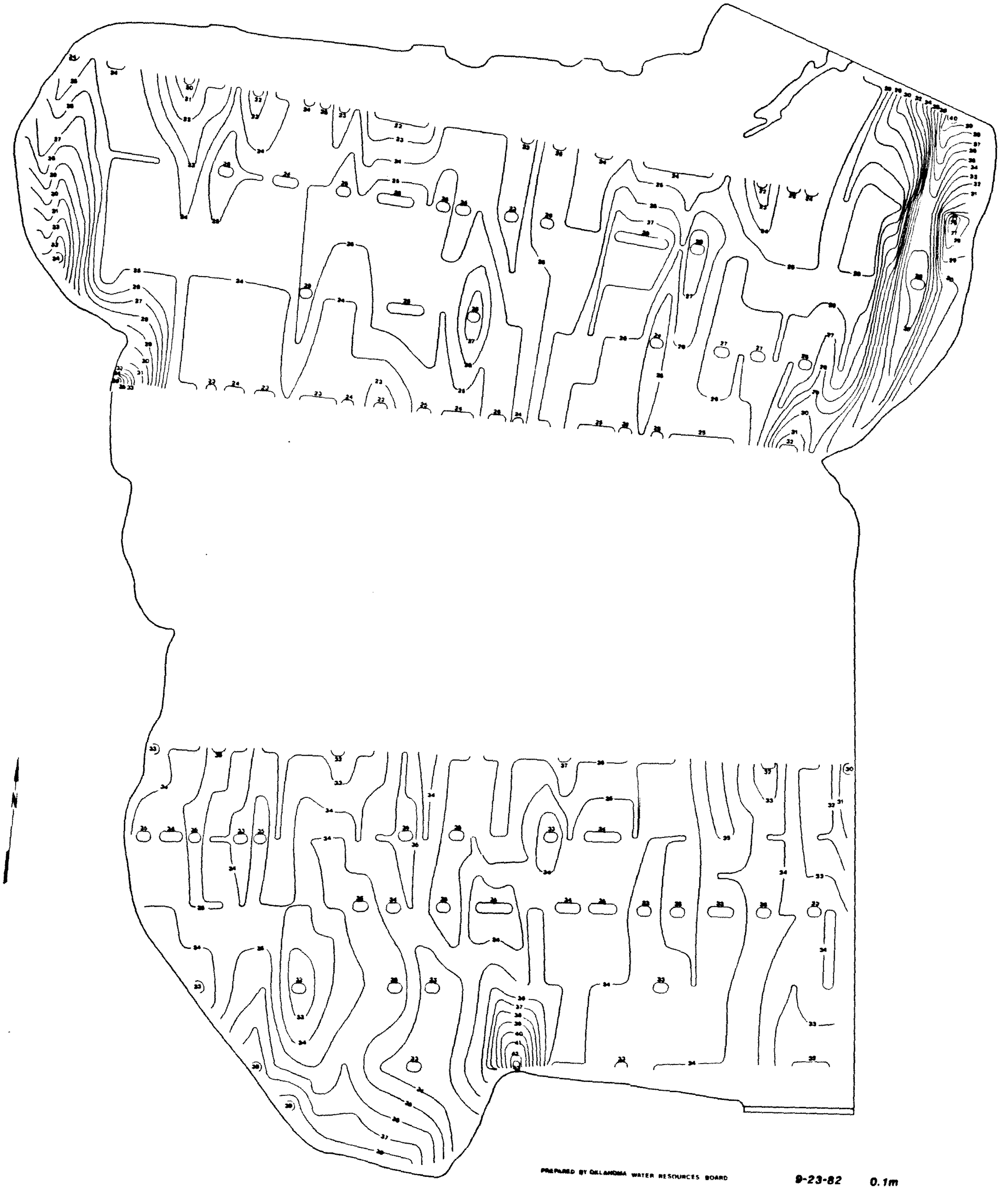


Figure 10.25b. Isopleth map of chlorophyll *a* content in Overholser Reservoir on September 23, 1982, at 1.0 meter.

Figure 10.26a. Isopleth map of chlorophyll a content in Overholser Reservoir on October 6, 1982, at 0.3 meter.

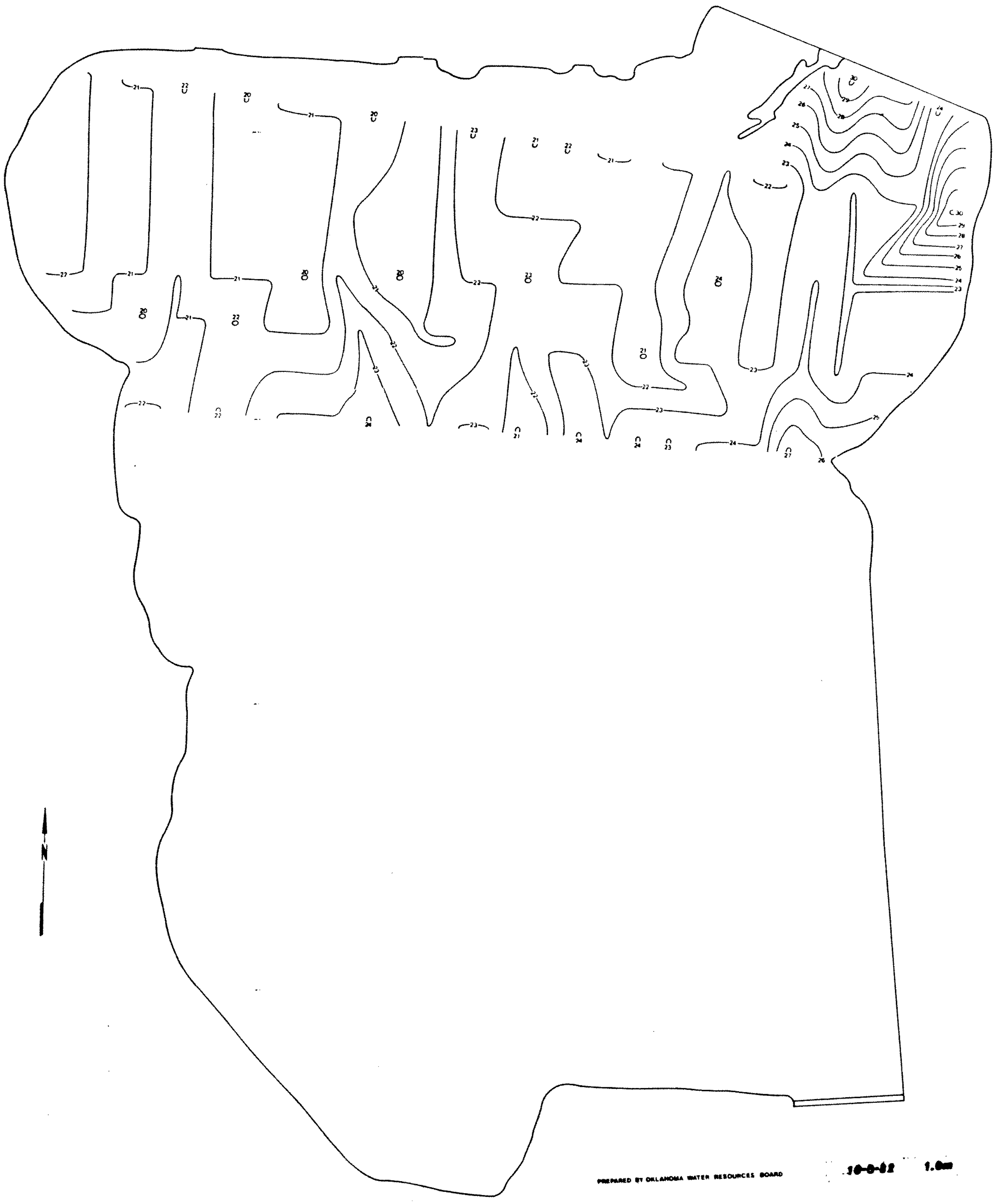


Figure 10.26b. Isopleth map of chlorophyll a content in Overholser Reservoir on October 6, 1982, at 1.0 meter.

The area of high chlorophyll a content in the southeastern corner of the reservoir may be due to: 1) leakage of low flows of the North Canadian River from the diversion canal through the causeway into the reservoir or 2) an upwelling phenomenon. Further field work will be necessary to determine which explanation is correct.

Bathymetric Mapping:

Two bathymetric maps of Overholser Reservoir were drawn (Figures 10.27 and 10.28) based upon 44 sonar transects located at approximately 250 feet intervals. The first map was based upon data collected by the U.S. Navy in 1951, while the second map was based upon data which was collected in 1982 during the course of this study. Planimetry of these maps permitted a determination to be made of the volume capacity of the reservoir in 1951 and 1982 (Figure 10.29) and indicated that 24 percent of the reservoir's volume capacity (Figure 10.30) has been lost due to sediment accumulation. The present volume capacity of Overholser Reservoir was determined to be 15,463 acre-feet.

Assessment of Phosphorus and Nitrogen Inflows
and Outflows/Hydrologic Budget:

The hydrologic budget (Table 10.4) for Overholser Reservoir was determined by the Oklahoma City Water Resources Department. The accuracy of this budget was such that it precluded the calculation of nutrient budgets. However, general insights into nitrogen and phosphorus inflows and outflows to and from Overholser Reservoir can be

Figure 10.27. Bathymetric map of Overholser Reservoir for 1951.

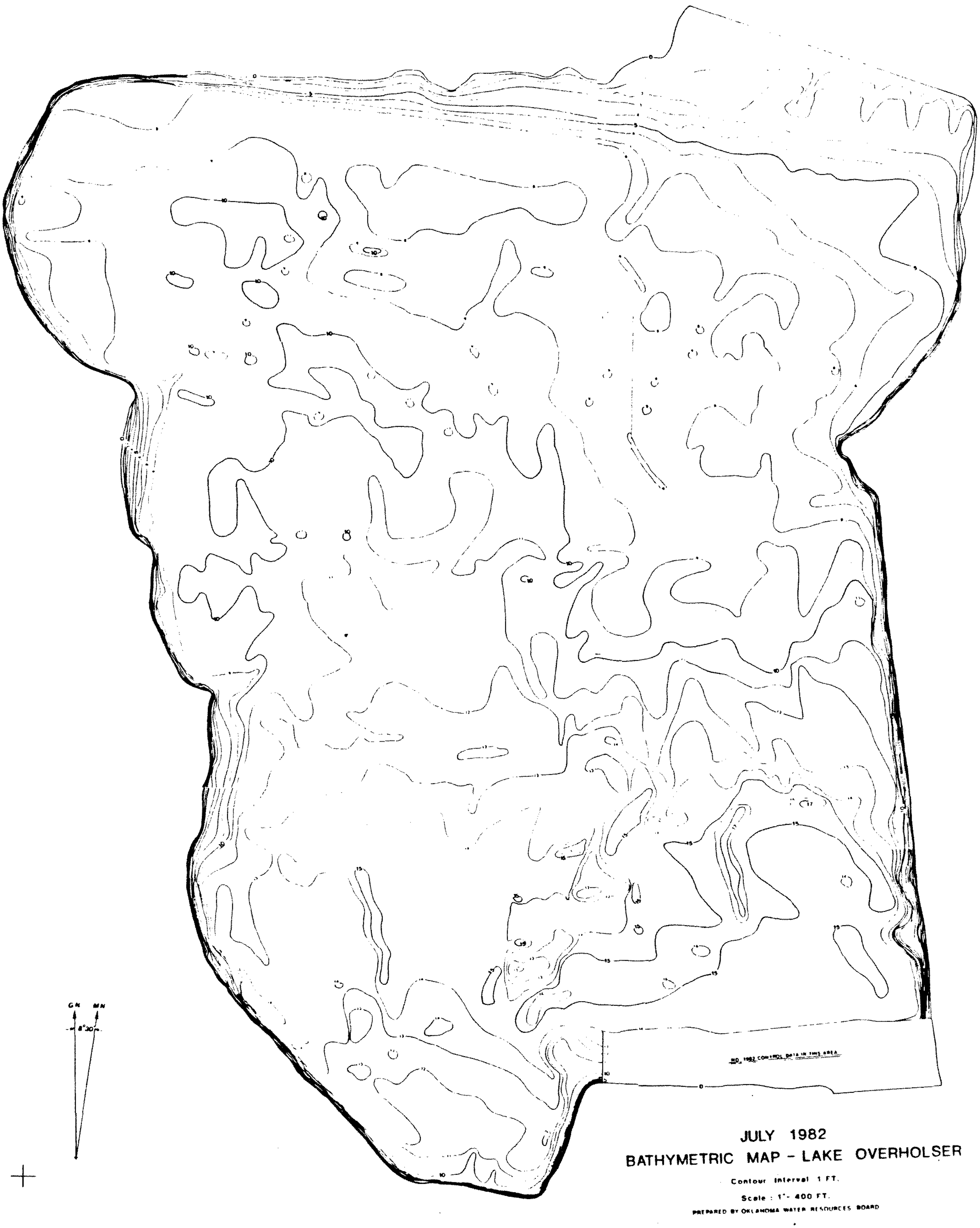


Figure 10.28. Bathymetric map of Overholser Reservoir for 1982.

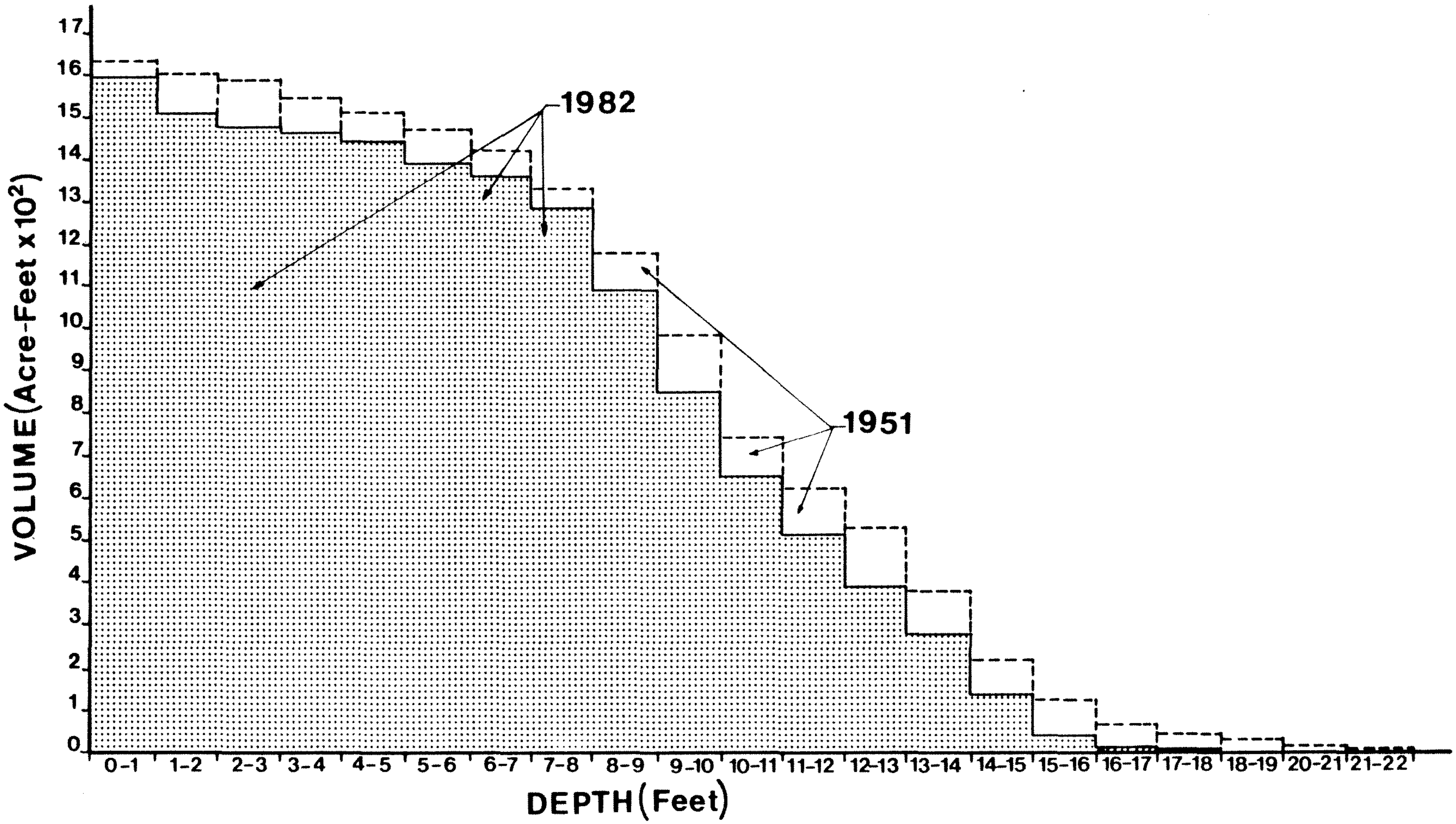


Figure 10.29. Comparison of the volume capacity of Overholser Reservoir at discrete contour intervals.

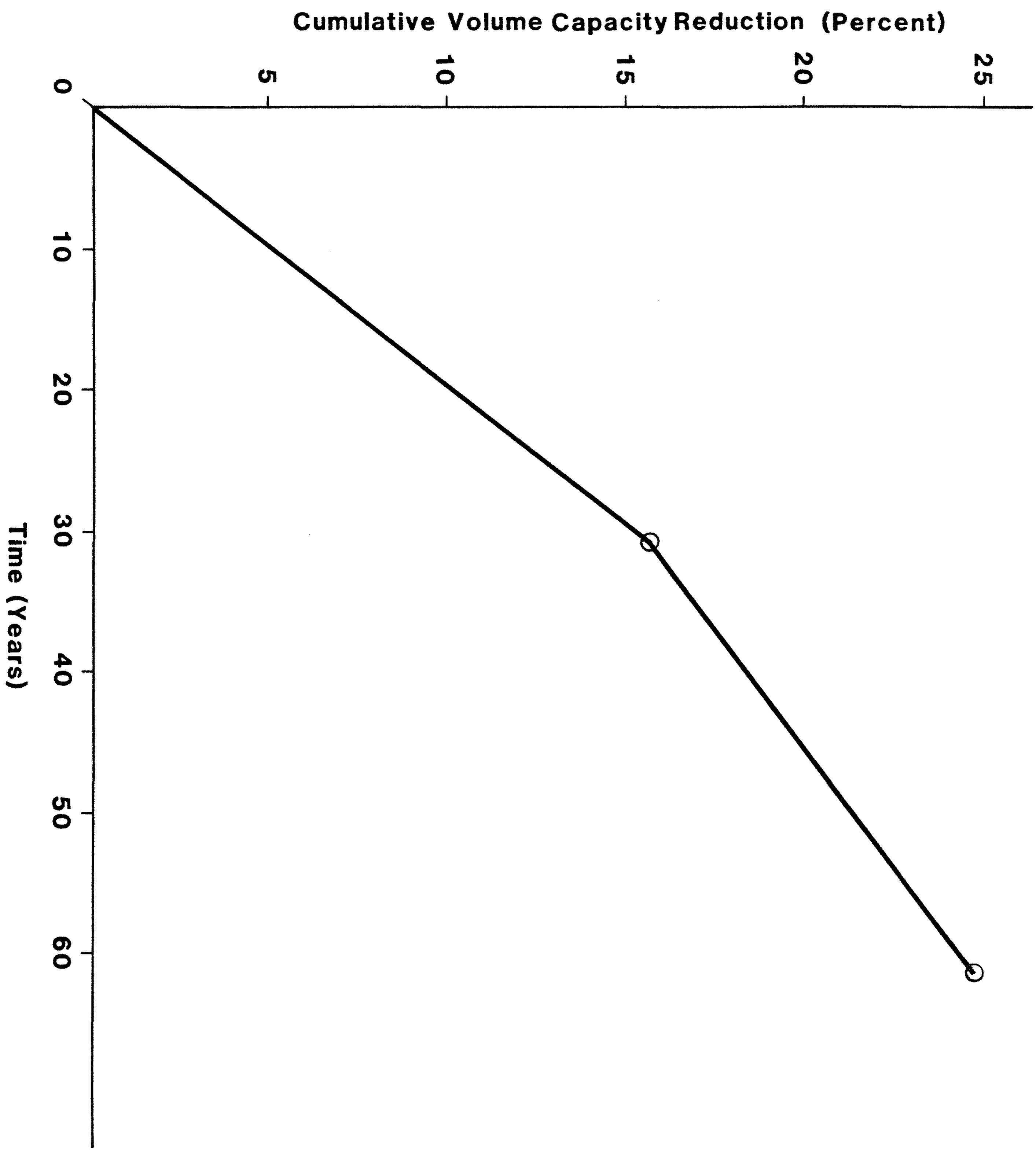


Figure 10.30. Percent reduction in the volume capacity of Overholser Reservoir.

Table 10.4. Hydrologic budget for Lake Overholser.

Parameter	1981 June	July	Aug	Sept	Oct	Nov	Dec	1982 Jan	Feb	March	April	May	
INFLOWS (Acre-Feet)													
Temp (L)	Not Recorded	75	67	56	34	28	19	19	24	38	45	55	--
Temp Mean	Not Recorded	81.6	70.7	65.7	44.7	34.8	27.4	29.4	34.3	46.5	57.3	60.1	--
Temp (H)	Not Recorded	88	76	78	55	41	38	36	48	53	68	66	--
Rainfall (inches)	7.41	2.31	3.29	0.77	5.41	2.48	0.43	0.12	4.18	1.13	2.15	9.40	39.08
Rainfall (acre-feet)	944	293	419	98	689	316	55	15	533	144	274	1199	4979
N. Canadian River	0	689	842	0	1836	229	0	3058	0	0	0	7028	13,682
Total Acre-Feet Gains	944	982	1261	98	2525	545	55	3073	533	144	274	8227	18,661
OUTFLOWS (Acre-Feet)													
Flow to Overholser Plant	330	1308	628	574	544	616	975	767	562	0	576	986	7865
Pumped to OG&E	475	422	408	150	334	275	302	351	289	187	107	208	3508
Evaporation	666	857	782	602	329	197	312	107	258	431	510	453	4904
Released Throuh Gates	0	0	0	0	1945	0	0	0	0	0	0	8139	10,084
Total Acre-Feet Losses	1471	2587	1968	1326	3152	1088	1589	1225	1109	618	1193	9786	23,361

gained from the observation that the reservoir loses approximately 18.5 cfs due to seepage (ACOG, 1981). This amounts to 13,393 acre-feet annually which is approximately 87 percent of the reservoir volume capacity.

Consideration of the sorption characteristics of nitrogen and phosphorus species indicates that the reservoir loses nitrogen through bed seepage but does not lose phosphorus. The total nitrogen load lost through bed seepage amounts to at least 1.65×10^4 kg/year utilizing the annual mean total nitrogen value for the reservoir and assuming 18.5 cfs leakage.

Groundwater inflow into the reservoir was determined based upon data (Figures 10.31 and 10.32) from four seepage meters positioned within the lake. These meters indicated that the groundwater seepage contribution into Overholser Reservoir is 107 acre-feet annually and carries a Total Nitrogen load of 1400 kilograms.

Temperature and Dissolved Oxygen Profiles:

Temperature (Figures 10.33, 10.34a, and 10.34b) and dissolved oxygen (Figures 10.9, 10.10, 10.35, 10.36a, 10.36b, 10.37a, and 10.37b) data were collected at the sampling stations and transects described above (Figure 10.2). Representative thermal data is presented in Figure 10.3. These and other data indicate that the deep area near the dam in Overholser Reservoir thermally stratifies in early summer and remains stratified throughout the summer, whereas the shallow portion of the reservoir is regularly destabilized due to wind action.

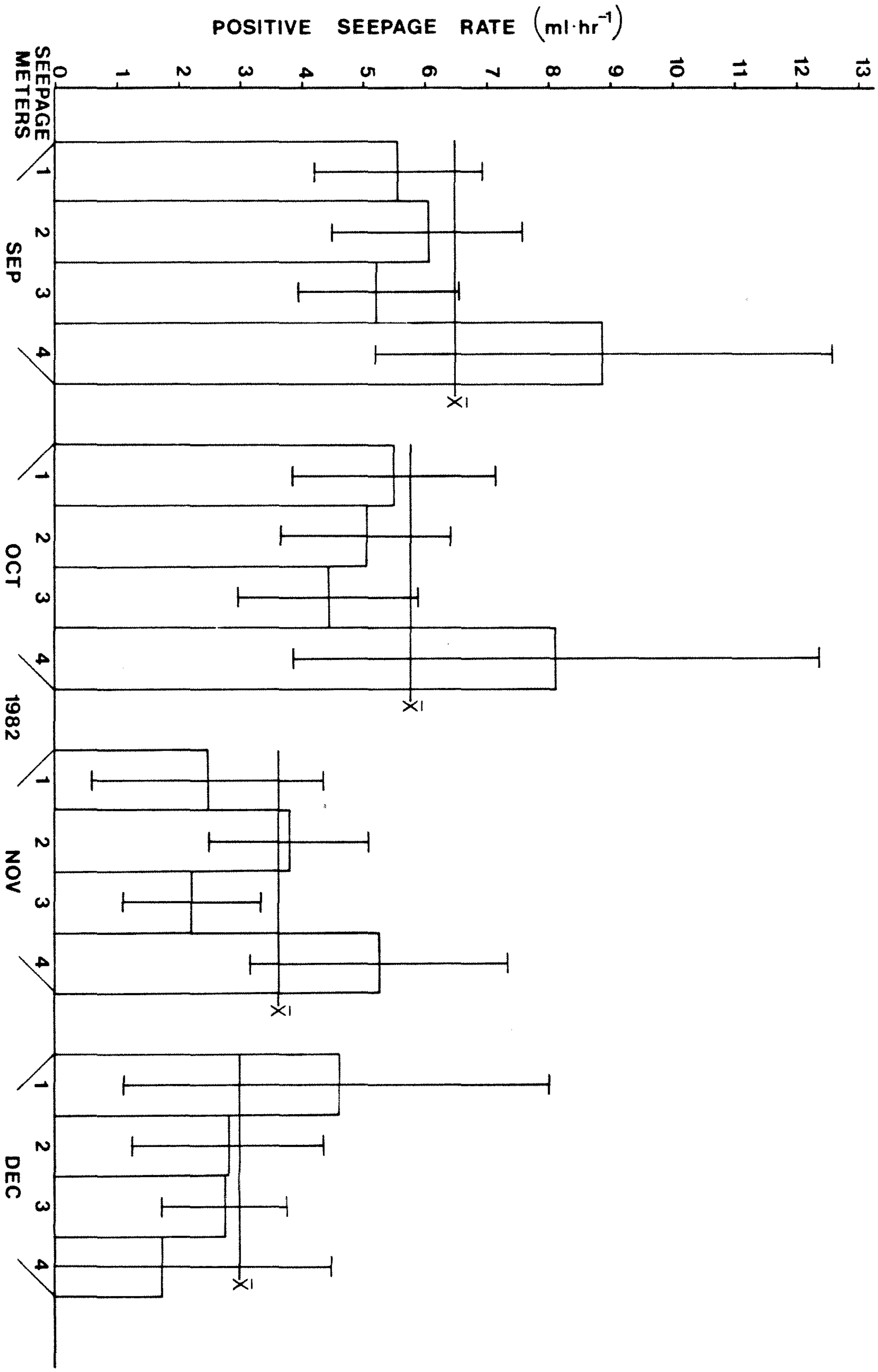


Figure 10.31. Quantitative groundwater seepage data collected in Overholser Reservoir.

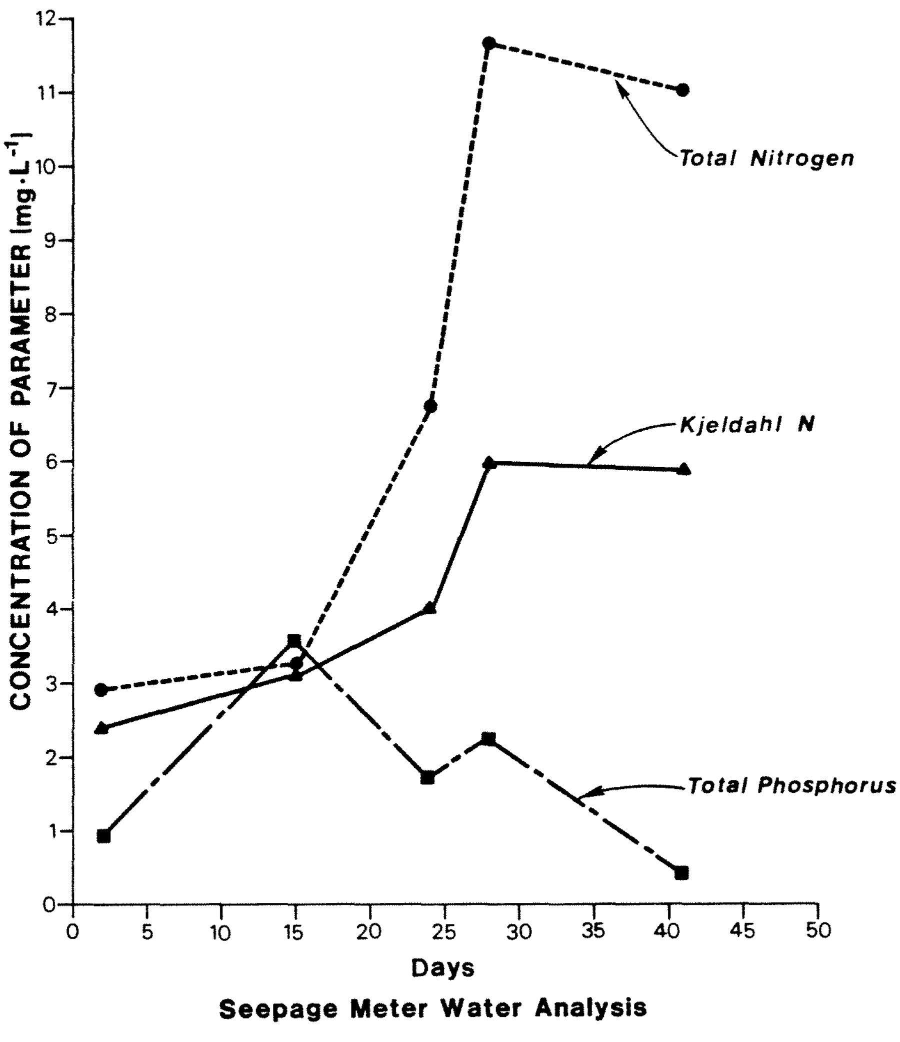


Figure 10.32. Qualitative groundwater seepage data collected in Overholser Reservoir.

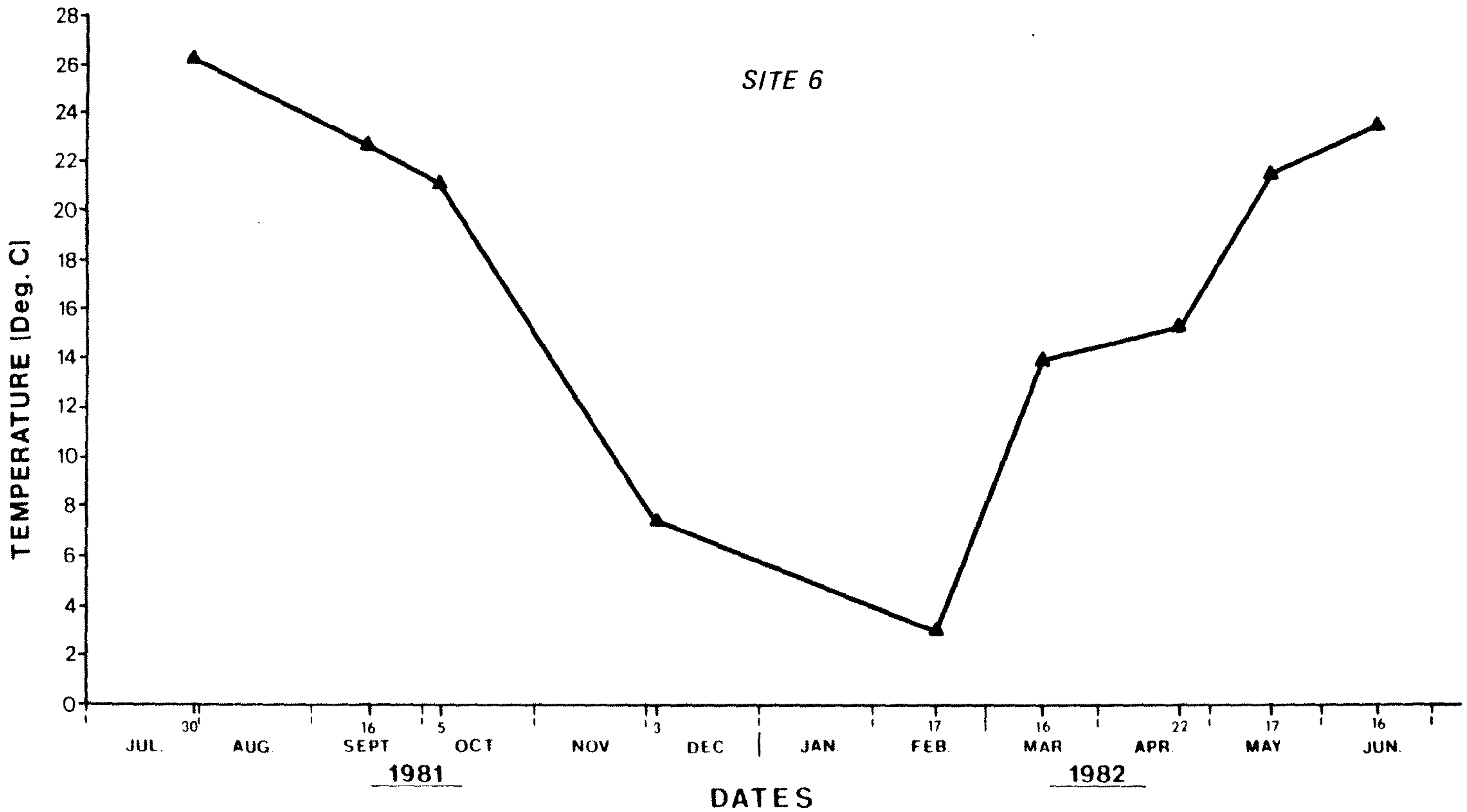


Figure 10.33. Temporal variability of temperature at transect 6 in Overholser Reservoir.

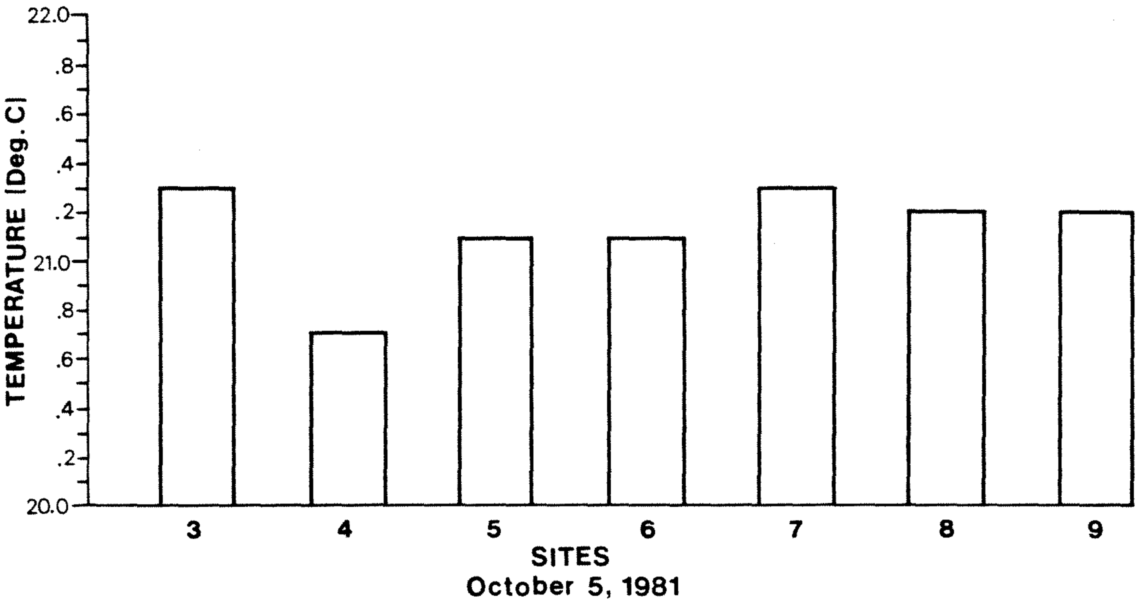


Figure 10.34a. Horizontal temperature profiles in and around Overholser Reservoir on October 5, 1981.

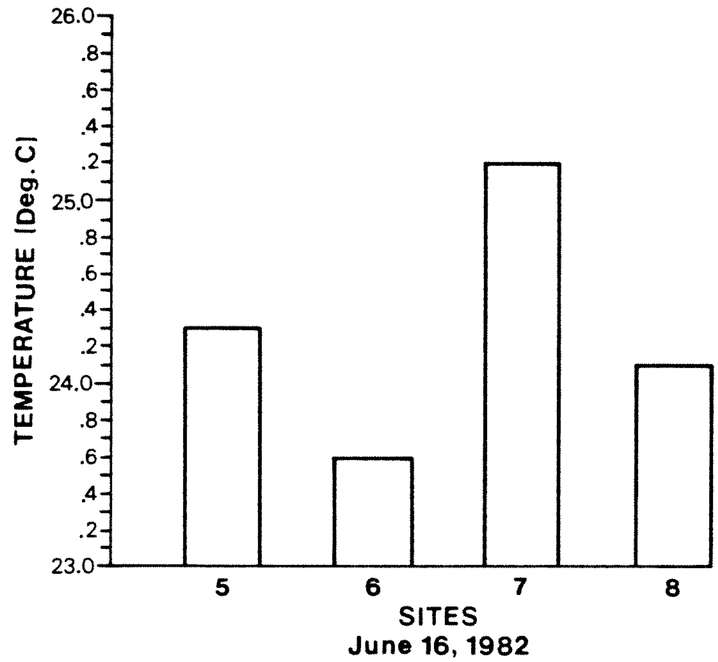


Figure 10.34b. Horizontal temperature profiles in and around Overholser Reservoir on June 16, 1982.

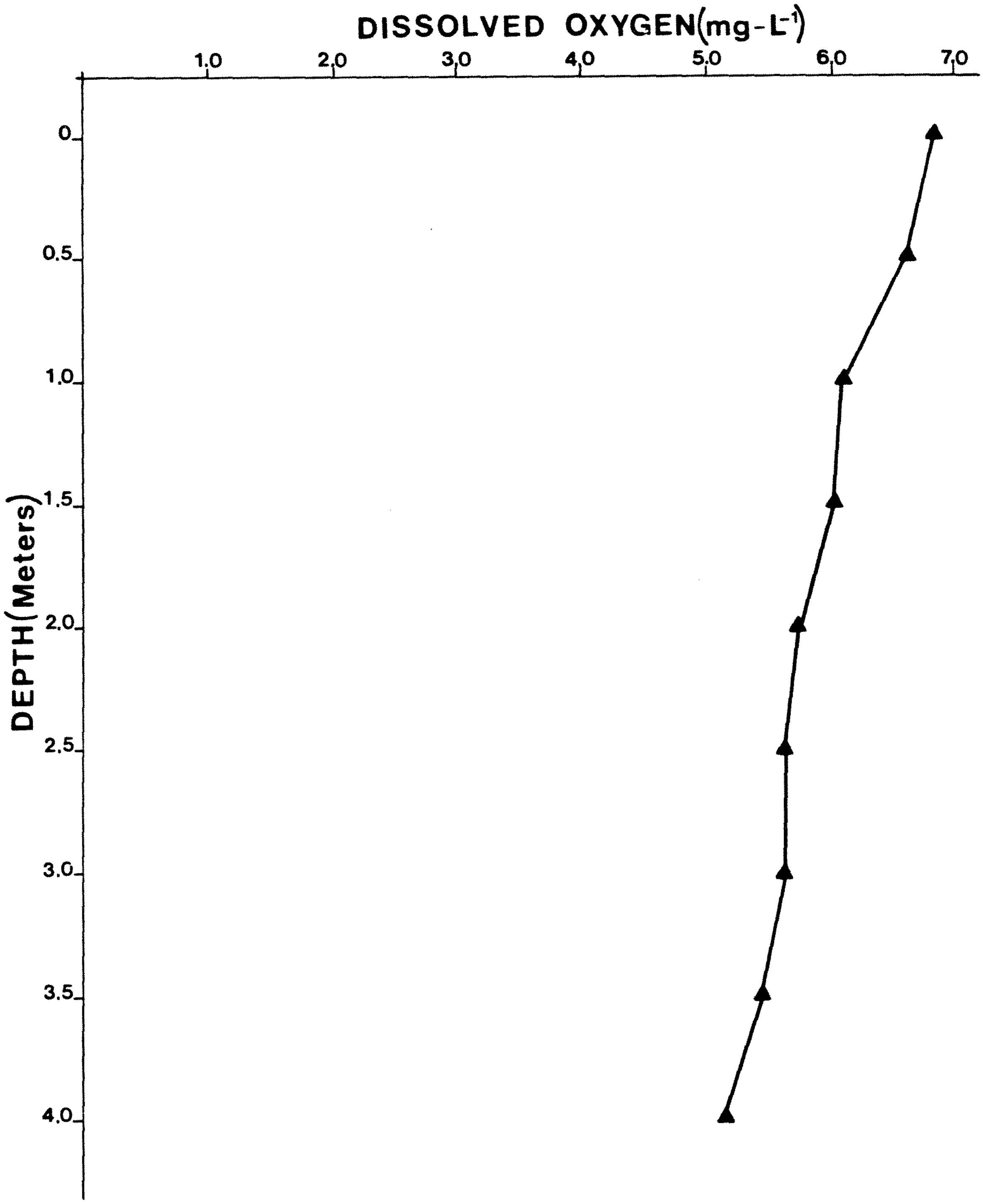


Figure 10.35. Vertical dissolved oxygen profile at transect 8 in Overholser Reservoir on July 30, 1981.

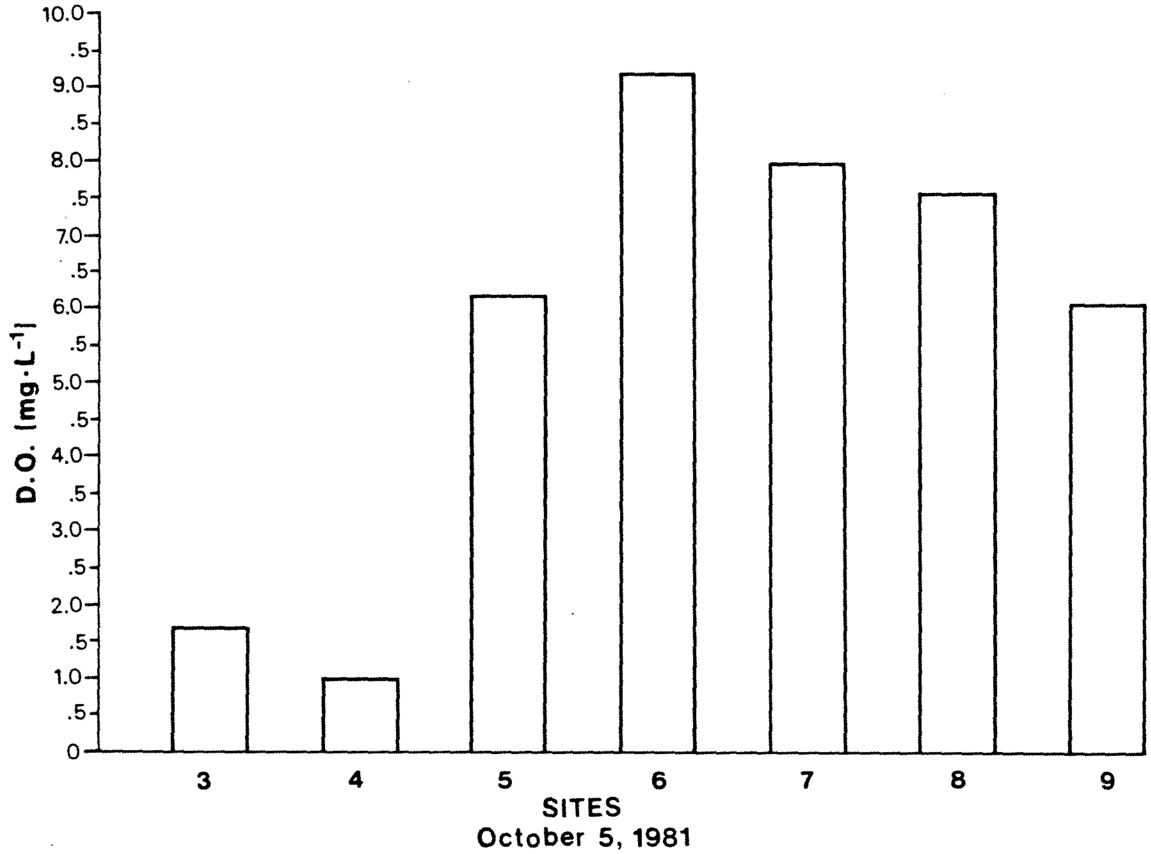


Figure 10.36a. Horizontal dissolved oxygen profiles in and around Overholser Reservoir on October 5, 1981.

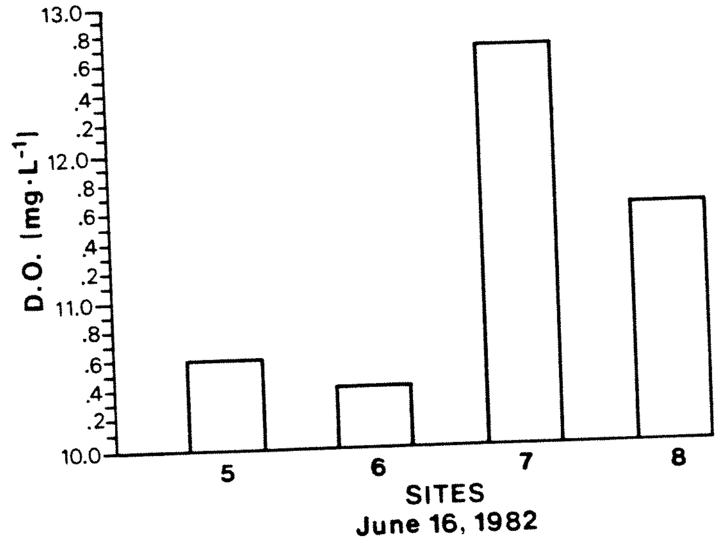


Figure 10.36b. Horizontal dissolved oxygen profiles in and around Overholser Reservoir on June 16, 1982.

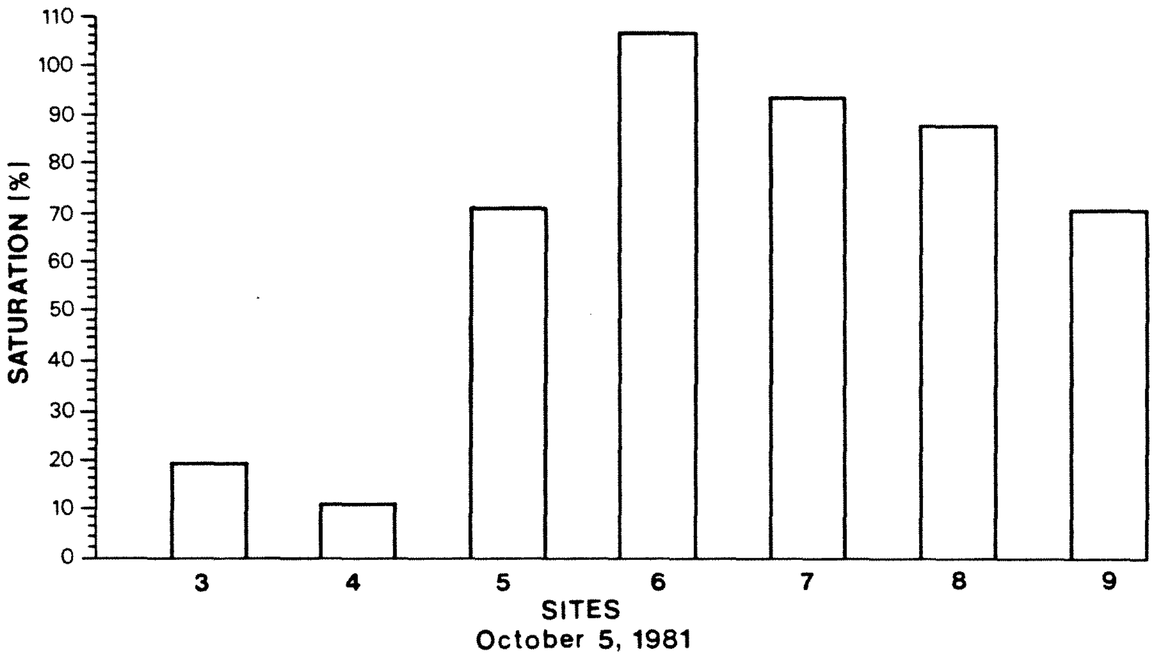


Figure 10.37a. Horizontal percent saturation of dissolved oxygen profiles in and around Overholser Reservoir on October 5, 1981.

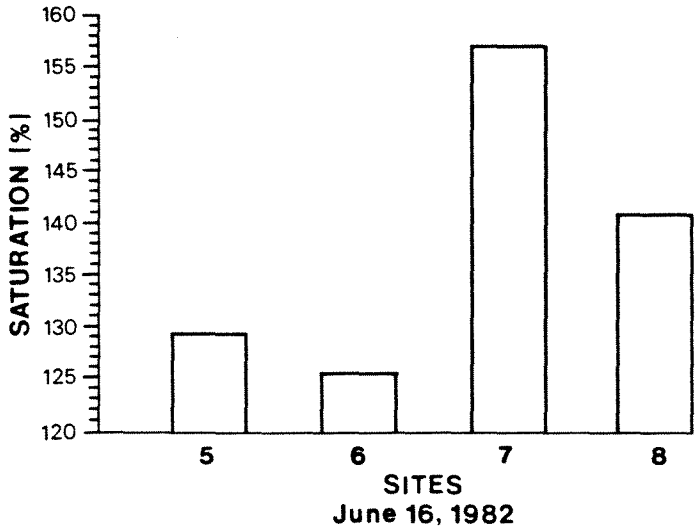


Figure 10.37b. Horizontal percent saturation of dissolved oxygen profiles in and around Overholser Reservoir on June 16, 1982.

Although Overholser Reservoir does thermally stratify in the deeper area near the dam, its hypolimnion does not become anaerobic in the summer months (Figures 10.10, 10.37a, and 10.37b). An aerobic hypolimnion is unusual in a eutrophic reservoir and presumably is due to the existence of oxygen rich currents which penetrate the hypolimnion.

Nutrients and Alkalinity:

Nutrients and alkalinity data are presented in Tables 10.1, 10.2, and 10.3 and are discussed under the sections dealing with the N to P ratio and with the chemical quality of the lake. Additional nutrient data is included in Appendix A.

Chlorophyll *a* for the Upper mixing Zone:

The chlorophyll *a* isopleth maps (Figures 10.16a-10.26b) illustrate the spatial and temporal aspects of chlorophyll *a* distribution in Overholser Reservoir. Results of this analysis are discussed under the sections entitled "Biological Lake Quality" and "Trophic Condition."

Total Nitrogen to Total Phosphorus Ratios:

Overholser Reservoir is often turbid due either to the inflow of inorganic particulate matter or due to its resuspension as a response to wind induced wave action. Consequently, primary production in the reservoir is often light limited (Grimshaw, et al., 1980).

Algal bloom events occurred in Overholser Reservoir in June of both 1981 and 1982 (Table 10.5). The ratio of Total Nitrogen to Total Phosphorus during these events should indicate the growth limiting nutrient (Wetzel, 1975). Since this ratio (Table 10.6) varies between 3.17 to 3.86 to 1, it seems clear that nitrogen is the major limiting nutrient within Overholser Reservoir, at least when inorganic turbidity is not limiting the system.

Extent of Algal Blooms:

Data (Table 10.5) obtained from sample sites and transects (Figure 10.2) beginning June 18, 1981, and continuing through June 16, 1982, indicates the occurrence of at least four algal bloom events during this time period. The first occurred June 18 and the second occurred September 16, 1981. The third and fourth events occurred February 17 and June 16, 1982, respectively. The highest chlorophyll a values recorded during this study occurred during the fourth bloom. The mean value for the reservoir on this date was 93 micrograms per liter with a sample size of four and a range of 73-104 micrograms per liter. Carlson's trophic state index for the reservoir, based upon these data, is 75, once again indicating that the reservoir is eutrophic.

However, as discussed above the sampling frequency specified in the Federal Register for chlorophyll a was too low to adequately reflect the actual number of bloom events which occurred in the reservoir.

Table 10.5. Temporal and spatical variability of chlorphyll _a_ content in Overholser Reservoir.

DATE	CHLOROPHYLL _a_ ($mg \cdot L^{-1}$) Site/Transect 6	7	8a	8b
06/18/81	46.5	42.7	38.4	
07/07/81	24.8	34.3	35.3	23.2
07/16/81	20.8	33.1	25.9	27.1
08/12/81	29.5	28.5	22.0	21.0
09/16/81	35.9	36.8	33.0	38.1
10/05/81	25.0	25.4	21.1	21.0
11/23/81	33.8	28.5	10.1	39.2
12/15/81	12.6	18.9	14.3	13.6
01/28/82	20.5	13.5	13.2	13.0
02/17/82	33.3	25.6	43.8	39.2
03/16/82	20.5	58.0	21.6	20.5
04/22/82	12.9	24.3	10.6	11.3
05/18/82	12.9	24.3	10.6	11.3
06/16/82	97.0	73.0	97.0	104.0

Table 10.6. Temporal and spatial variability in the Nitrogen to Phosphorus ratio in Overholser Reservoir.

DATE		TRANSECT 6	8
06/18/81	Ratio	3.17:1	3.53:1
06/16/82	Ratio	3.86:1	3.68:1

Greater confidence in defining the occurrence of algal bloom events can be obtained from an analysis of the data gathered in the summer of 1982 during the development of the serial chlorophyll mapping method (Grimshaw, et al., in prep.).

These data (Figure 10.1) indicate the occurrence of at least three and possibly more bloom events during the time period beginning July 21 and ending October 6, 1982. Mean values of chlorophyll a content were calculated in this study based upon sample sizes of 90 to 400 observations per depth.

They also indicate that, to insure complete analysis of algal bloom dynamics, chlorophyll should be sampled at least once every three days on Overholser Reservoir.

Algal Biomass, Genera, Cell Density,
and Cell Volume Determination:

Samples of water were collected during an algal bloom and analyzed to genera for predominant algal forms (Table 10.7). The sample taken along transect 8 (Figure 10.2) had three genera of algae (one genus of green algae and two genera of diatoms) that constituted 93.6 percent of the total algae observed in the sample. Five genera of algae were identified in the sample taken along transect 6 and of these, two were members of the green algae while three were diatoms.

Table 10.7. Algal composition of water collected on June 17, 1982, in Overholser Reservoir.

PARAMETER	SAMPLE 1130*-SITE 6/A cells/ml	avg mm^3/cell	SAMPLE 1133**-SITE 8/1 cells/ml	avg mm^3/cell
Chlorophyta				
Chlorella sp.	390	150	-	-
Oocystis sp.	220	630	270	360
Bacillariophyta				
Coscinadiscus sp.	590	1100	-	-
Cyclotella sp.	5100	730	8700	2100
Stephanodiscus sp.	8600	3200	3800	4600

* These five genera accounted for 93.1% of the total algae observed in the sample.

** These three genera accounted for 93.6% of the total algae observed in the sample.

Diatoms were observed to have incomplete frustules which indicated that there may have been a dissolved silica deficiency during the course of the algal bloom. Deficiencies of this type are temporary as the dissolved silica equilibrium is rapidly reestablished following the algal bloom. As indicated earlier, the N/P ratio indicated that nitrogen is the major limiting nutrient during the bloom season when inorganic turbidity is not light limiting.

Methods for relating algal species composition to relative degrees of pollution have been reported (Palmer, 1969; EPA, 1973; Patrick and Reimer, 1966). Two of these methods (EPA, 1973; Patrick and Reimer, 1966) rely on diatom analysis exclusively for this determination, while Palmer utilizes the identification of both diatoms and nondiatom algae in a determination of relative pollution. Since samples were analyzed only to the five most common genera, a detailed analysis can not be made. Palmer does relate algal genera to relative degrees of pollution (Table 10.8), but a direct comparision is not valid with Palmer's Index because of the incomplete nature of the analysis. However, genera observed during the algal bloom are high on Palmer's pollution list and thus suggest high macronutrient levels. For example, of the 60 ranked genera of algae that have been reported to be associated with pollution (based on relative importance and frequency reported in the literature), <u>Chlorella</u> was ranked fifth from the top of the list, <u>Cyclotella</u> was ranked 15th, and <u>Stephanodiscus</u> was ranked 32nd.

Based on these data, it is logical to infer that Overholser Reservoir's eutrophic condition is caused by nutrient loading which has stimulated

Table 10.8. Pollution-tolerant genera of algae. List of 60 most tolerant genera, in orders of decreasing emphasis by 165 authorities (Palmer, 1969).

No.	GENUS	GROUP*	NO. AUTHORS	TOTAL POINTS
1	Euglena	F	97	172
2	Oscillatoria	B	93	161
3	Chlamydomonas	F	68	115
4	Scendesmus	G	70	112
5	Chlorella	G	60	103
6	Nitzxchia	D	58	98
7	Navicula	D	61	92
8	Stigeoclanium	G	50	69
9	Synedra	D	44	58
10	Ankistrodesinus	G	36	57
11	Phacus	F	39	57
12	Phornidium	B	37	52
13	Melosira	D	37	51
14	Gomphonema	D	35	47
15	Cyclotella	D	35	47
16	Closterium	G	34	45
17	Micractinium	G	27	44
18	Pandorina	F	32	42
19	Anarystis	B	28	39
20	Lepocinclis	F	25	38
21	Spirogyra	G	26	37
22	Anaberna	B	27	36
23	Crypioinonas	F	27	36
24	Pdeiastrum	G	28	35
25	Arthrospira	B	18	34
26	Trachelomonas	F	26	34
27	Carieria	F	21	33
28	Chlorogonium	F	23	33
29	Fragilaria	D	24	33
30	Ulothrix	G	25	33
31	Surirella	D	27	33
32	Stephanodiscus	D	22	32
33	Eudorina	F	23	30
34	Lyngbya	B	17	28
35	Oocystis	G	20	28
36	Agmenellum	B	19	27
37	Spirulina	B	17	25
38	Pyrobotrys	E	16	24
39	Cymbella	D	19	24

* Groups: B, blue-green; D, diatom; F, flagellate; G, green.

Table 10.8. Continued.

No.	GENUS	GROUP*	NO. AUTHORS	TOTAL POINTS
40	Actinastrum	G	20	24
41	Coelastrum	G	21	24
42	Cladophara	G	22	24
43	Hantzschia	D	18	23
44	Diatoma	D	19	22
45	Spondylomorum	F	16	21
46	Golenkinia	G	14	19
47	Achnanthes	D	16	21
48	Synura	F	14	18
49	Pinnularin	D	15	18
50	Chiorococcum	G	15	17
51	Asterionella	D	14	17
52	Cocconcis	D	14	17
53	Cosmamus	G	14	17
54	Gonium	F	15	17
55	Tribonema	G	16	16
56	Siaurouris	D	14	16
57	Selenasirum	G	13	14
58	Dietyosphaerium	G	11	14
59	Cymatopieura	D	13	14
60	Crueigreia	G	13	14

* Groups: B, blue-green; D, diatom; F, flagellate; G, green.

the production of algae, many genera of which have been linked with pollution problems.

Secchi Disk Depth and Suspended Solids:

Analysis of suspended solids data (Table 10.9) over the annual cycle indicate that peak values occurred July 7, September 9, November 23, 1981 and on March 16 and June 16, 1982. The determination of suspended solids content does not discriminate between organic and inorganic components so a rigorous analysis is not possible utilizing these data. However, analysis of mean values for suspended solids at sample sites 5 and 7 and transects 6 and 8 (Table 10.9) reveals a trend of decreasing suspended solids content as one progresses from the North Canadian River (site 5) through the northern end of the reservoir (Transect 6) towards its southern end (Transect 8).

Since bathymetric data indicated a large reduction in the volume capacity of the reservoir has occurred, an analysis of the washload entering the reservoir was conducted. Mean particle diameters were directly determined (Figure 10.38) using photomicrographic techniques. These data indicate that the mean particle diameter of the washload entering the reservoir is 60 microns.

Theoretical settling velocities were then calculated for a range of particle sizes and are presented in Figure 10.39. These calculations indicate that 60 micron particles will settle at a rate of 8 cm per second under turbulent flow conditions. These and other data were

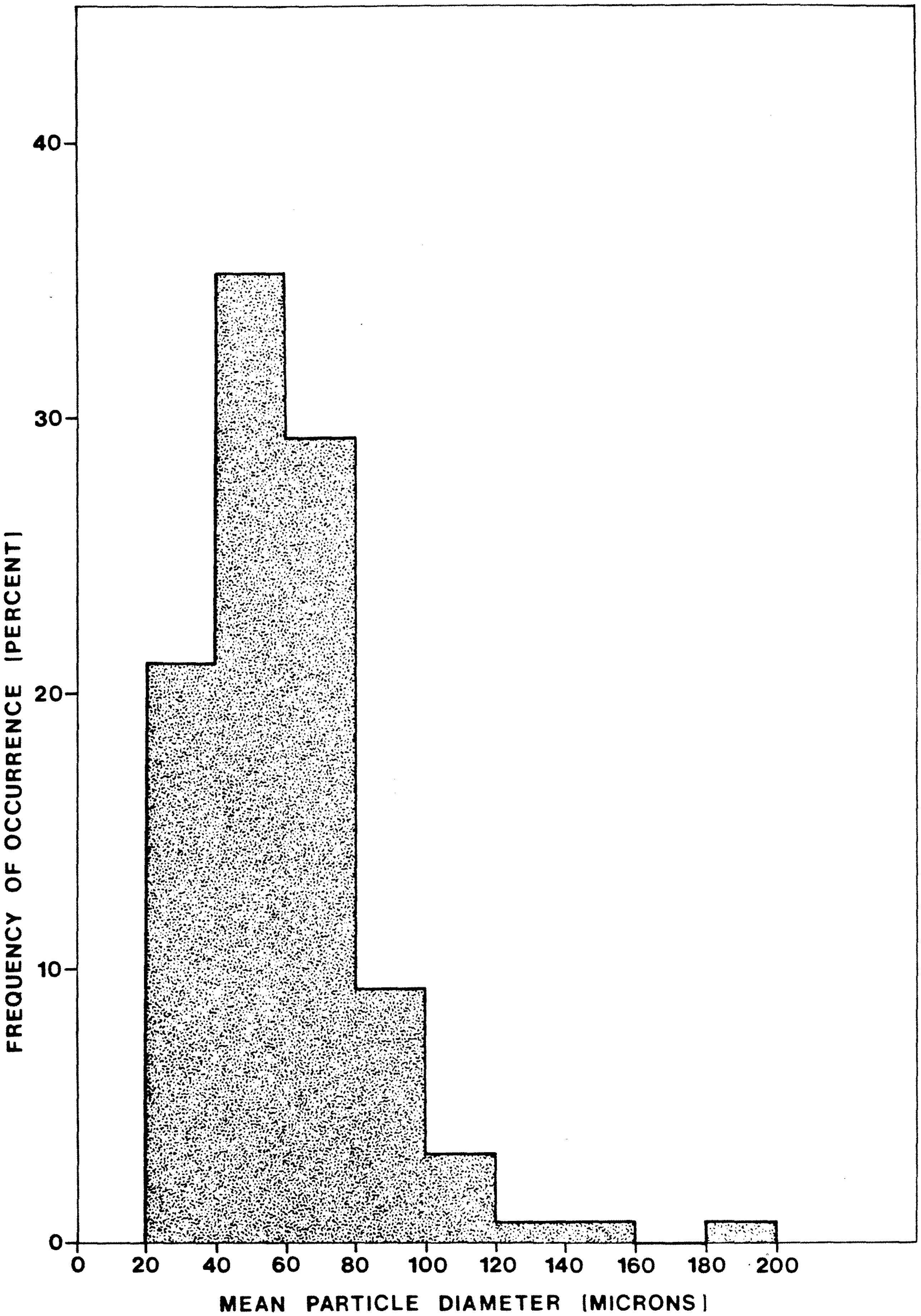


Figure 10.38. Truncated frequency histrogram of mean particle diameters in Overholser Reservoir's washload.

Table 10.9. Temporal and spatial variability of suspended solids in and around Overholser Reservoir.

DATE	Suspended Solids Sites/Transects 5	6	7	8a	8b
06/18/81	62	32	22	12	16
07/07/81	2	36	28	26	4
07/16/81	62	26	8	2	2
08/12/81	26	40	30	18	16
09/16/81	76	32	36	37	35
10/05/81	58	36	18	4	10
11/23/81	18	38	22	42	44
12/15/81	2	10	6	4	6
01/28/82	20	18	18	12	14
02/17/82	20	9	7	6	5
03/16/82	40	18	36	32	24
04/22/82	42	26	28	20	26
05/18/82	120	12	10	410	18
06/16/82	26	34	28	22	20

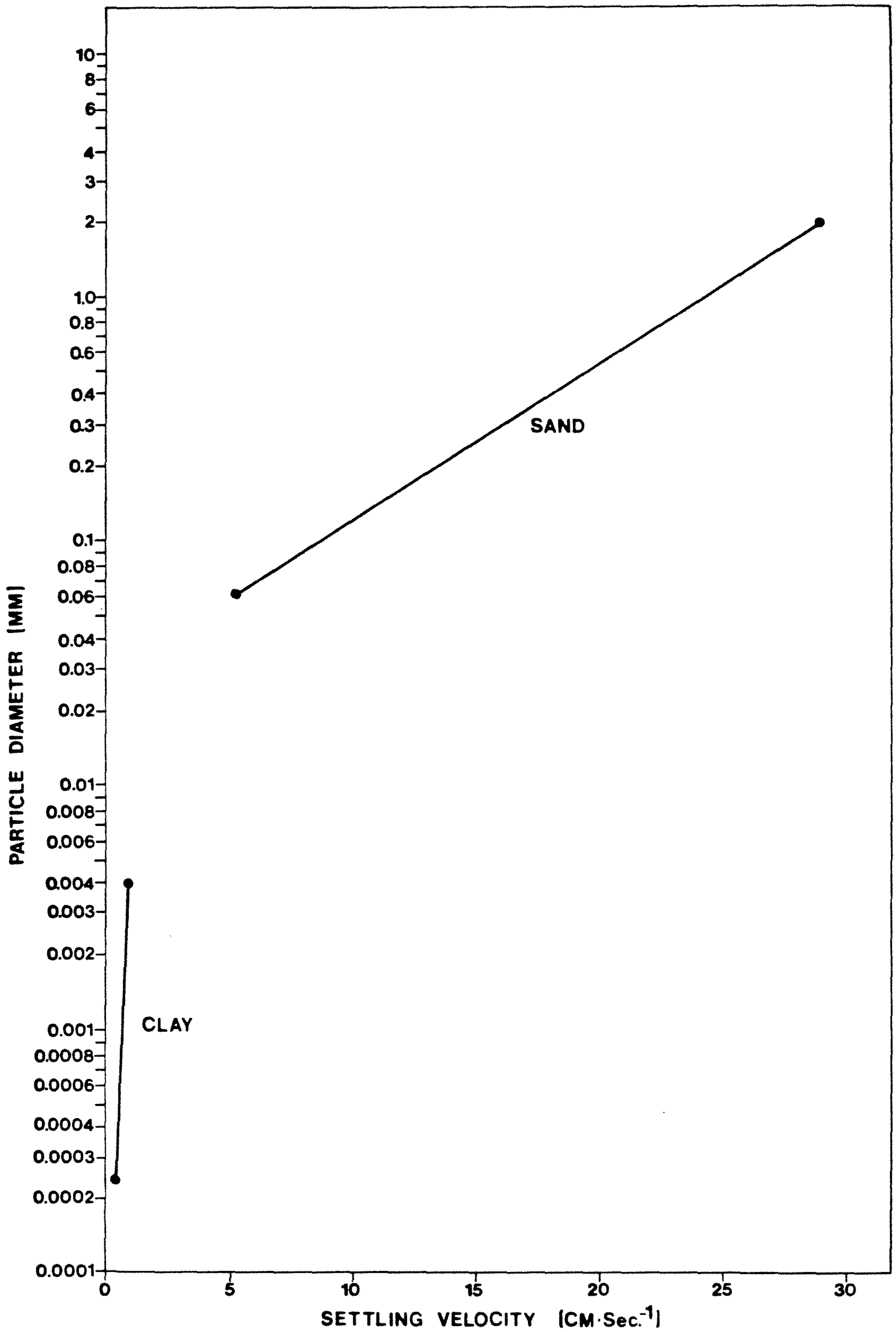


Figure 10.39. Settling velocities calculated for a range of washload particle sizes.

utilized to determine the dimensions of the proposed sedimentation basin which could be located just north of the rollover inlet structure (Figure 10.40).

Additional planimetric analysis of bathymetric data indicates that the washload is deposited biomodally (Figure 10.29) on a volume basis between the 9 to 10 and the 12 to 13 foot contour intervals. On the basis of subjective analysis of the 1982 bathymetric map (Figure 10.28) this washload material appears to be depositing in sections of the presently inundated, former North Canadian River channel oriented in an east-west direction.

Sediment cores were collected along transect 8 (Figure 10.2) and analyzed utilizing mechanical and Cesium 137 methods (McHenry 1976). Mechanical particle size analysis (Table 10.10) indicates a homogenous and consistent sediment deposition history. On a volume basis, approximately 75 percent of this sediment was clay and 25 percent was silt in the 2 to 20 micron size range.

Sediment cores were also collected north of site 5 in the proposed sedimentation basin and chemically analyzed for aldrin, dieldrin (Table 10.11), and Total Chromium (Table 10.12). Results of this analysis indicate there is no excessive accumulation of these materials in the sediment.

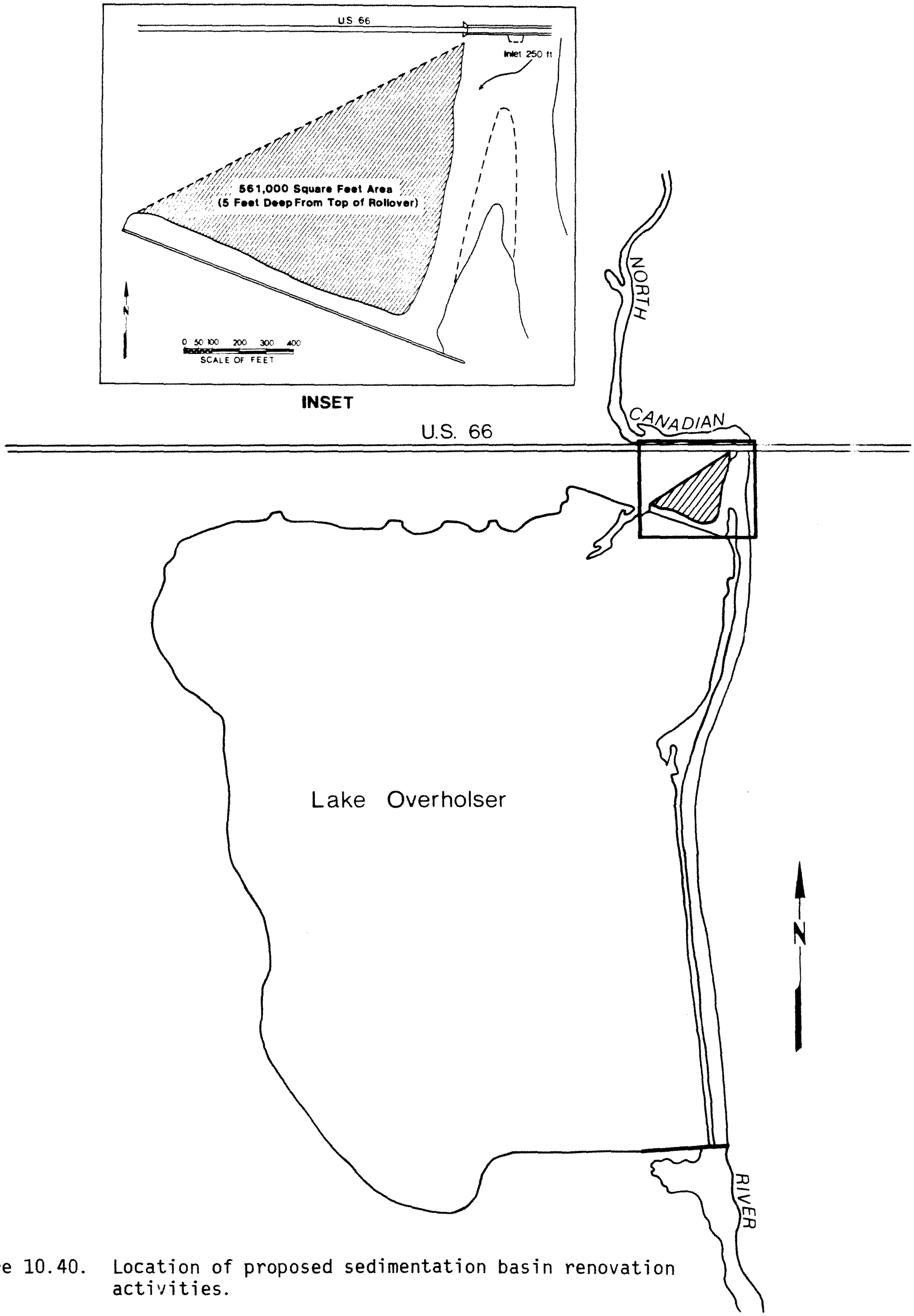


Figure 10.40. Location of proposed sedimentation basin renovation activities.

Table 10.10. Size variation with depth of Overholser Reservoir sediment collected at Transect 8.

DEPTH (inch)	CLAY <2m	2-20m	SILT 2-50m	>20m	SAND >50m
0-2	76.2	19.8	22.8	4.0	1.0
2-4	75.8	20.2	23.2	4.0	1.0
4-6	75.0	20.0	24.0	5.0	1.0
6-8	74.0	21.0	25.0	5.0	1.0
8-10	71.2	22.8	27.3	6.0	1.5
10-12	76.5	20.0	23.0	3.5	0.5
12-14	78.0	18.5	21.5	3.5	0.5
14-16	78.5	19.0	21.0	2.5	0.5
16-18	78.5	19.0	21.0	2.5	0.5
18-20	75.0	20.0	24.2	5.0	0.8

Table 10.11. Variability of pesticides in the sediment of Overholser Reservoir.

SAMPLE NO.	ALDRIN µg/L	DIELDRIN µg/L
141 A	0.004*	0.007*
141 B	0.004*	0.007*
141 C	0.004*	0.007*
142 A	0.004*	0.007*
142 B	0.004*	0.007*
142 C	0.004*	0.007*

* = less than indicated value

Table 10.12. Variability of chromium in sediment of Overholser Reservoir.

SAMPLE NO.	CHROMIUM mg/kg
141 A	22.5
141 B	17.5
141 C	22.5
142 A	25.5
142 B	27.0
142 C	30.0

Areal Extent of Vascular Plants:

A small area of aquatic macrophytes exists in the northcentral portion of Overholser Reservoir. It is 3.3 hectares in area and is dominated by _Typha latifolia_.

Bacterial Analysis:

Analysis of fecal coliform bacteriological data from sampling stations and transects in Overholser Reservoir (Table 10.13) indicate a trend of decreasing colony counts as one progressed from sample site 4 (14,425 colonies per 100 ml) through transect 6 (7,014 colonies per 100 ml) to transect 8 (1,354 colonies per 100 ml). These data indicate that aeration, photolytic actions, and thermal changes occurring within the reservoir are acting to reduce the number of fecal coliform bacteria in the water. They also indicate that bacteria levels were highest in Overholser Reservoir in the month of July.

Fish Flesh Analysis:

A composite sample of muscle tissue from eleven channel catfish (_Ichtalurus punctatus_) were analyzed for chlorinated pesticides polychlorinated biphenyls and heavy metals. Results of these analyses are presented in Table 10.14. Inspection of these data indicates there does not appear to be any problem of bioaccumulation of chlorinated compounds occurring in Overholser Reservoir. A similar conclusion can be made from inspection of the heavy metal data.

Table 10.13. Temporal and spatial variability in fecal coliform colony counts in and around Overholser Reservoir.

	Sites/Transects		
DATE	4	6	8
06/04/81	3000	55	15
07/07/81	16,000	1200	400
07/16/81	37,000	2800	1500
09/16/81	1700	24,000	3500

Table 10.14. Concentration of chlorinated hydrocarbon pesticides, heavy metals, and PCB's in fish flesh from channel catfish collected in Overholser Reservoir.

PARAMETER	$\mu g \cdot L^{-1}$
A & B BHC	1.09
Lindane	0.10
Heptachlor	<0.10
Aldrin	<0.20
p,pDDE	3.56
Dieldrin	<0.20
p,pDDT	<0.70
Endrin	<0.70
Methoxychlor	<2.00
Chlordane	4.76
Archlor 1242	<6.00
Archlor 1254	20.00
p,pDDD	<0.70
Cadmium	<100
Chromium	1200
Copper	500
Lead	<1000
Zinc	6800
Mercury	100

SECTION VII

BIOLOGICAL RESOURCES (TASK 11):

Overholser Reservoir is located upon a recent geological formation referred to as alluvium. Soil developed from this alluvium is classified as bottomland soil and has associated, characteristic plants. These plants, when taken collectively, are referred to as bottomland vegetation and consist of cottonwood (Populus deltoides), poison ivy (Toxicodendron radicans), hackberry (Celtus occidentalis), black willow (Salix nigra), buck bush (Symphoricarpos symphoricarpus), chittam wood (Cotinus americanus), rough-leafed dogwood (Cornus asperifolia), American elm (Ulmus americana), boxelder (Acer negundo), burr oak (Quercus macrocarpa), smooth sumac (Rhus glabra), and green ash (Fraxinus lanceolata).

Additional vegetation associations can, however, be found just east and west of the reservoir proper; blackjack-post oak vegetation to the east and tallgrass prairie to the west. Ground cover characteristic of these vegetation areas include little bluestem (Andropogon scoparius), big bluestem (A. furcatus), Indian grass (Sorghastrum nutans), switch grass (Panicum virgatum), buffalo grass (Buchloe dactyloides), blue grama (Bouteloua gracilis), side oats grama (B. curtipendula), and black grama.

Terrestrial vertebrate species found in association with these vegetation areas include the badger (Taxidea taxus), striped skunk

(Mephitis mesomelas), coyote (Canis latrans), mink (Mustela vison), racoon (Procyon lotor), white-tailed deer (Odocoileus virginanus louisianae), and squirrel (Scurius spp.).

Migratory bird species that utilize the reservoir directly include Canadian geese (Branta canadensis), mallard duck (Anas platyrhynchos), blue-winged teal (Anas discors), coot (Fulica americana), and merganser (Mergus merganser). Resident bird species that occupy the habitat around the reservoir include the bobwhite (Colinus virginianus), and the greater prairie chicken (Tympanuchus cupido americanus).

Overholser Reservoir also provides direct habitat for large populations of aquatic vertebrates. Chief among these are the fishes which predominantly consist of channel catfish (Ictalurus punctatus), flathead catfish (Pylodictis olivaris), bluegill (Lepomis macrochirus), gizzard shad (Dorosoma cepedianium), white bass (Morone chrysops), black crappie (Pomoxis nigromaculatus), and largemouth bass (Micropterus salmoides). Largely due to wind action, Overholser Reservoir is an extremely productive fishery. The effects of wind action, such as destabilization of thermal stratification and induction of underflow currents, result in the entire volume of the reservoir being suitable for the survival and growth of fish throughout the year. Wind action, the reservoir's morphometry, and the sandy nature of the reservoir bed all work in concert to maintain Overholser Reservoir as an edaphic climax community. These factors act to restrict and retard the development of aquatic macrophytes and, consequently, enhances energy flow and nutrient cycling through pelagic microscopic algal species.

Climate and geology, therefore, have resulted in the majority of energy and nutrients passing through the "pelagic" food chain, i.e.:

<u>nutrients</u>
↓
microscopic algae → zooplankton → primary consumer → secondary consumer
↑
<u>energy</u>

In the case of Overholser Reservoir, this translates into the following representative food chain case:

<u>nutrients</u>
↓
diatoms, green algae → *Daphnia* spp., *Cyclops* spp. → Gizzard Shad → White Bass
↑
<u>energy</u>

Since the food chain described above appears to be the main pathway for energy flow in Overholser Reservoir and based upon the information concerning chlorophyll *a* distribution obtained from the serial chlorophyll mapping method discussed above, it would be logical to infer that the horizontal distribution of zooplankton, gizzard shad, and white bass in Overholser Reservoir will closely reflect that of chlorophyll.

An extensive listing of flora and fauna of the central Oklahoma region is presented in Appendix B.

SECTION VIII

RESTORATION ALTERNATIVES AND RECOMMENDATIONS (TASK 12):

The problem of sedimentation and the periodic stimulation of algal blooms in Overholser Reservoir, historically, have been caused by different factors. Consequently, the restoration alternatives require different approaches to address the problems of water quality. Restoration alternatives were evaluated and discussed with the Overholser Reservoir Committee thorughout the course of the public participation program. These alternatives were grouped into symptomatic and causative approaches and were evaluated with regard to their cost and applicability to Overholser Reservoir.

Symptomatic Approaches:

Dilution

The addition of dilution water to Overholser Reservoir could reduce the concentration of nutrients in the reservoir but obviously would not reduce nutrient loading. Consequently, this restoration method is viewed as a symptomatic treatment and not as one which would solve the reservoir's problems.

Stormwater runoff is presently utilized to fill the reservoir since its total phosphorus concentration is low. The only additional source of water to Overholser Reservoir would be water presently stored in Canton

Reservoir. The total phosphorus concentration of Canton water, however, is considerably higher than that found in stormwater runoff. Consequently, the addition of Canton water would increase the total phosphorus concentration in Overholser Reservoir instead of reducing it. Dilution, therefore, is not a feasible restoration alternative for Overholser Reservoir.

Nutrient Inactivation

Nutrient inactivation by application of aluminum sulfate (alum) is also viewed as a symptomatic approach to lake restoration. In addition to its symptomatic nature, the method has the disadvantage that it can only be applied after an environmental impact has occurred.

Application rates taken from the literature range from 0.4 to 22.6 mg/L. Utilizing the upper treatment level, a single application to Overholser Reservoir would cost $189,163 for aluminum sulfate and an additional $500 in personnel and application hardware, resulting in a total cost of approximately $189,663 per application.

1.9×10^{10}) liters/lake volume X 22.6 mg/L =

4.29×10^{11} mg or 4.29×10^{5} kg X 0.4405286 dollars/kg =

$189,163

Macrophyte Harvesting

Macrophyte harvesting is not a feasible restoration option for Overholser Reservoir since the areal extent of reservoir bottom covered by macrophytes is less than one percent of the reservoir's surface area (Task 10).

Aeration/Mixing

Hypolimnetic aeration was not considered as a feasible restoration alternative for Overholser Reservoir since the data from Task 10 indicates that this reservoir does not develop an anaerobic hypolimnion due to wind action which induces bottom currents and destabilizes thermal stratification.

Dredging Overholser Reservoir

Stormwater entering the Overholser Reservation carries a high sediment load and is influenced by two identifiable structures: (1) the marsh, located north of Route 66, and (2) the rollover inlet structure located at the northeastern corner of the reservoir proper. While the data in Figure 10.30 illustrates the significant loss of reservoir volume capacity (24 percent) since the time of the reservoir's construction, the symptomatic approach of dredging the reservoir proper was not recommended by the committee. It was concluded that such activity would disrupt the integrity of the reservoir's bottom which acts as a natural sealant inhibiting water loss through the sandy underlayer upon which the reservoir was built. Additionally, in-lake dredging would be cost prohibitive, would reduce the esthetic quality of this heavily used reservoir, and would need to be addressed in the future as sedimentation would continue to decrease the reservoir's volume capacity.

Causitive Treatment:

Biomanipulation

Biomanipulation was considered to be too poorly documented to be proposed as a restoration method. Theoretically, however, it might be quite effective since the primary energy pathway in the reservoir appears to be the following food chain:

Diatoms + Green Algae → Daphnia → Shad → Sand Bass
Cyclops

Experimental manipulation of the shad population, either by increased predation by sand bass or by selective removal of components of the population which presently avoid predation due to their size could decrease the reservoir's algal standing crop.

Watershed Management

Total Watershed Management:

The size of Overholser Reservoir's watershed, the reservoir's off-channel design and the present use of stormwater runoff to fill the reservoir all tend to minimize the magnitude of the effect which total watershed management would have on reducing nutrient loading to the reservoir.

Localized Watershed Management:

Marsh Protection

The extensive marsh area north of Overholser Reservoir and Route 66 is functioning at the present time as a sediment and nutrient filter. The aquatic macrophytes in this unique biotic zone, removes, in an imperfect manner, much of the sediment and nutrients that flows into the marsh from upriver or from adjacent farm areas. Although the data in Figure 10.30, shows a decrease in volume in Overholser Reservoir since 1952, the trend is merely suggestive as it is based on only three data points. The fact that the marsh has been increasing in area and moving upriver gives credence to a possible causal relationship between marshland area and reduced reservoir volume loss.

The protection of this wetlands area would insure its role as an effective, but imperfect, sediment and nutrient filtering mechanism serving both Overholser Reservoir and Lake Hefner. Additionally, the preservation of the marshlands would have benefits for both the wildlife and people interested in enjoying the wildlife. Oklahoma City has declared the marsh a "Wildlife Area" and has thereby given the region protective status.

Vehicle Barriers

The installation of barriers to restrict vehicular traffic from access to the reservoir's banks would improve the aesthetic quality of the reservoir as well as reduce bank erosion. Oklahoma City has installed these devices on the eastern side of the reservoir and around the recreational area west of the dam.

Diversion

The off-channel design of Overholser Reservoir permits the diversion of low-flow waters around the reservoir.

Dredging Sedimentation Basin

Although the marsh acts as a sediment filter, sediment with a mean particle diameter of 60 microns enters the reservoir over the rollover inlet structure during reservoir filling (high flows). This problem has been aggravated in recent years as sediment accumulation in the sedimentation basin south of Route 66 has completely filled the old sedimentation basin and has forced the channeling of an inlet canal to the rollover inlet structure. This process has increased the water velocity as it enters the reservoir. Physical laws dictate that as water velocity increases, the particle size capable of being carried increases. Consequently, particles that might have settled out prior to reaching the rollover structure are presently carried over its concrete wall during reservoir filling events.

Hydrologic and economic factors indicated that a triangularly shaped segment of the existing sedimentation basin should be renovated north of Overholser Reservoir's rollover inlet structure (Figure 10.40). The proposed area should be 561,000 square feet in area and five feet deep. This would require the removal of 166,000 cubic yards of sediment. It is estimated that the cost of sediment removal from this area would be $664,000 (assuming an estimate of $4.00 per cubic yard of sediment). The resulting sedimentation basin should, theoretically, allow for the settling of particles down to the 40 micron range and thereby reduce the transport of large particles into the reservoir by 60 to 80 percent. Sociological and political constraints have as yet precluded site selection by the Overholser Reservoir Committee and thus the issue of site selection remains to be addressed.

Periodic dredging of a small sedimentation basin is favorable to the symptomatic approach of dredging the reservoir since the sedimentation basin concentrates the sediment at no energy costs, is small enough to be manageable, and is minimally disturbing ecologically and esthetically.

Restoration Plan Proposed for Overholser Reservoir:

Action 1: Localized Watershed Management

(1) The marsh located north of Overholser Reservoir and Route 66 should be protected. Oklahoma city has already accomplished this action by declaring the marsh a "Wildlife Area."

(2) Vehicle barriers should be placed around the reservoir's banks. Oklahoma City has partially accomplished this task.

(3) All roads and parking lots should be hard surfaced.

Action 2: Dredging

The existing sedimentation basin for Overholser Reservoir should be renovated or a new sedimentation basin should be constructed.

Action 3: Limnological Studies

Studies should be conducted to:

(1) determine the cause of the persistent area of unusually high chlorophyll *a* content in the southeastern corner of the reservoir.

(2) to determine the qualitatively and quantitatively most appropriate portion of the hydrograph to divert into Overholser Reservoir.

Action 4: Repair of Rollover Structure

The rollover structure should be repaired to insure that there is no low-flow leakage over, around, or through it. Oklahoma City has already accomplished these repair operations.

SECTION IX

RESTORATION BENEFITS (Task 13):

The following is a discussion of the restoration benefits that are expected to result if the recommendations proposed are implemented.

Economic Benefits From Actions 1 and 2:

The renovation of the sedimentation basin and the continued protection of the marshlands north of the reservoir should prevent any further significant loss of the volume capacity of Overholser Reservoir and consequently, reduce the need for pumping water from Atoka Reservoir.

Economic Benefits From Action 3:

A study which would determine the cause of the persistent occurrence of water with high chlorophyll a content in the southeastern corner of the reservoir would provide the information necessary to predict the time of occurrence and the area of initiation of algal blooms in Overholser Reservoir. This would result in a considerable reduction in water treatment chemical costs as well as reduce the cost of water quality monitoring. If algacide applications were necessary, information concerning the location and areal extent of reservoir areas which stimulate algal bloom development would: 1) reduce the amount of algacide necessary for treatment, 2) reduce the areal extent of the area of application, and 3) reduce man power costs.

A study of the quantitative and qualitative characteristics of the storm flow hydrograph will permit a reduction in nutrient loading of the reservoir as well as maximize the quantity of high quality water available for use.

Ecological Benefits of Actions 1 and 2:

Protection of the marsh and maintenance of high water quality in Overholser Reservoir would benefit wildlife populations that inhabit reservation. Protecting the diversity of aquatic life in the reservation is desirable as its presence provides a biological indicator of the reservation's water quality condition.

Aesthetic Benefits of Action 1:

Restricting motor vehicle traffic from the lake edge would improve the condition of the vegetation along the shoreline and adjacent areas while preventing bank erosion and thereby improve both the chemical and aesthetic quality of the reservoir.

Protection of the marshlands and the life found there would benefit individuals that appreciate observing the type of wildlife that is unique to the Oklahoma City area and benefit the many sportspersons that utilize the reservoir.

SECTION X

PHASE II PROJECT MANAGEMENT AND SAMPLING SCHEDULES (Tasks 14 and 15):

A program was developed in order to monitor Overholser Reservoir water quality during implementation of restoration procedures. This will allow for the determination of the effects of the project on water quality and will provide data which will indicate if a redirection of the project is warranted to meet its goals. Those parameters which were indicated to be significant in the Phase I diagnostic monitoring program will be of major concern (Table 14/15.1).

A proposed milestone work schedule for project completion under Phase II is provided. Included is a proposed budget and payment schedule that is related to the milestone (Table 14/15.2).

Table 14/15.1. Phase II monitoring program.

DATE	PARAMETERS	MONITORING FREQUENCY
Grant Award Date (GAD) plus one month	Suspended Solids Turbidity	As specified in Federal Register Vol. 24, No. 25
GAD plus two months	Suspended Solids Turbidity	As specified in Federal Register Vol. 24, No. 25
GAD plus three months (Phase II work begins)	Suspended Solids Turbidity	As specified in Federal Register Vol. 24, No. 25
GAD plus 4....15 months	Suspended Solids Turbidity	As specified in Federal Register Vol. 24, No. 25

Sampling will be conducted above and below project area (i.e. two sites).

Table 14/15.2. Overholser Reservoir Phase II milestone schedule.

DATE	ACTIVITY
Grant Award Date (GAD) plus one month or adjust to two months before onset of work	Phase II monitoring program
GAD plus two months	Pre-project monitoring continues
GAD plus three months	Project work begins
GAD plus 4....15 months	Concurrent and past project monitoring

SECTION XI

NON-FEDERAL FUNDING (Task 16):

The Water Resources Department and other Oklahoma City agencies were contacted in an attempt to locate potential sources of non-federal matching funds.

Oklahoma City has invested considerable funds in maintaining and restoring Overholser Reservoir over the last decade. Projects such as Overholser Dam renovation and inlet channel dredging have absorbed substantial city resources. The completion of the elevated rollover structure and the installation of car barriers around the east and southeast sides of the lake were funded by Oklahoma City and were recommendations of the Overholser committee (Tasks 12 and 20). Oklahoma City is thus committed to the improvement of Overholser Reservation. In the future, Oklahoma City proposes to: (1) include the Overholser Reservoir within its city-wide "String of Pearls" project and (2) construct paths, gates, and parking facilities in and around the marsh area, now designated as "wildlife refuge." Both plans are also recommendations of the Overholser committee.

Inasmuch as Oklahoma City regards the marsh area as an area to be protected and enjoyed, they have tentatively designated the following funds for establishing a viable system of marsh protection and visitor education:

(1) \$1,750 to post the area with signs (self directing tour and trail signs).

(2) \$100,000 for a 100 space parking lot adjacent to the marsh area.

(3) \$2,000 for 7 metal gates (for blocking access roads).

(4) \$1,000 for 14-4" gate posts (one on each side of 3).

(5) \$2,500 for 3" end post for fence (for right angle turns in the road).

(6) \$180,000 for 6" fencing (#9 gage chain-link/barbed wire strands at top).

TOTAL COST \$267,250

The Overholser committee agrees that marsh protection will benefit Overholser Reservoir in the long run (Task 13). Such an expenditures of funds, therefore, represents a source of non-federal funds.

SECTION XII

SUMMARY OF POLLUTION CONTROL ACTIVITY IN THE WATERSHED (Task 17):

The following agencies were contacted concerning other pollution control programs that have occurred or are occurring in the Overholser Reservoir watershed:

> Oklahoma Department of Pollution Control (DPC), Department of Agriculture Soil Conservation Service (ASCS), Oklahoma State Department of Health (OSDH), Association of Central Oklahoma Governments (ACOG), and Oklahoma Corporation Commission (OCC).

Representatives from most agencies did not know of any pollution control projects, grants, or activities that have occurred or are occurring in the Overholser Reservoir Watershed. The OSDH representative indicated that construction grants for upgrading the sewage treatment facilities in El Reno and Yukon have been completed and both facilities are online. Only the Yukon facility discharges effluent into the North Canadian River (Task 8).

All contacted agencies agreed there were no Section 208 Area Wastewater management Programs occurring in the Overholser Reservoir Watershed.

SECTION XIII

PLAN OF OPERATION AND MAINTENANCE (Task 18):

This Phase II project involves: (1) possible construction or renovation of a sedimentation basin (as described in Task 12); (2) controlling unauthorized access to the marsh area (north of Route 66 and now designated as Wildlife Refuge) and establishing paths and parking areas for visitors; and (3) the continued construction of car barriers on the southwest, west and north side of the reservoir.

If the sediment (mostly sand) in the sedimentation basin can be sold for profit or removed at minimal cost, construction or renovation of the sedimentation basin would be conducted by a chosen contractor and supervised by the Oklahoma City Water Resources Department (OCWRD). Later dredging operation would be managed by the OCWRD. As mentioned in Task 12, the siting of the sedimentation basin has not yet been accomplished because of committee disagreement on a specific location.

Closing off the marsh area with fences and gates (as well as constructing paths and parking areas) would be managed and maintained by the Parks and Recreation Department (PRD). Continued car barrier construction would also be managed by the PRD. Similarly, both the OWRD and the PRD will be responsible for developing the line period in which these operations will take place. As mentioned in Task 16, the actual implementation of these various projects will be contingent upon available local funds.

SECTION XIV

PERMIT REQUIREMENTS (Task 19):

According to a representative for the Army Corps of Engineers (COE), a 404 permit will be required for dredging operations within the sedimentation basin region of Overholser Reservoir. The region has been designated "wetlands" and as such 404 permits for dredging and stacking of dredged material are needed. Prior to receiving any 404 permit the COE representative advises that the area sited for dredging be visually evaluated for additional permitting considerations.

SECTION XV

PUBLIC PARTICIPATION (TASK 20):

The projected public participation program for the Lake Overholser Phase II project is included in Table 20.1. Appendix C contains a complete record of the Phase I public participation activities to date for Lake Overholser. Meeting announcements, attendance records, responsiveness summaries, and press releases are also included.

Table 20.1. Lake Overholser Phase II Public Participation Milestone Schedule.

DATE	ACTIVITY
Grant Award Date (GAD)	Revise mailing list
GAD plus two months	Press release for public meeting
GAD plus three months	Public meeting to begin project
GAD plus five months and every two months thereafter until restoration projects end.	Committee meeting for update

A public meeting will be held at the beginning of the two year monitoring program which is required for any Phase II project. Also, press releases will be sent out before each major restoration technique is implemented.

REFERENCES

ACOG. 1977. Environmental Assessment (Output 602). Oklahoma City.

ACOG. 1977. Urban Stormwater Problem Identification (Output 302I). Oklahoma City.

Carlson, R. E. 1977. A Trophic State Index for Lakes. Limnol. Oceanogr. 22:361.

City of Oklahoma City, Department of Planning. 1976. An Overview of the National Environment of Oklahoma City: Its Capabilities and Limitations. Report No. 2. Oklahoma City Urban System Analysis Series. Oklahoma City.

Duck, L. G., and J. B. Fisher. 1945. A Survey of the Game and Furbearing Animals of Oklahoma. State Bulletin No. 3.

Grimshaw, H. J., C. E. Barb, J. A. Harrington, S. M. Torrans, and H. E. Brown. 1980. Classification of Oklahoma Reservoirs Using LANDSAT Multispectral Scanner Data. Oklahoma Water Resources Board, Oklahoma City.

Grimshaw, H. J., G. L. Shapiro, and D. Butler. In Prep. Serial Chlorophyll Mapping: Application to Water Quality Assessment.

McHenry, J. R. 1976. A Rapid Method for Determining Recent Deposition Rates of Freshwater Sediments, In: Interactions Between Sediments and Freshwaters. September 6-10, 1976. Amsterdam. pp. 203-207.

Palmer, C. 1969. A Composite Rating of Algae Tolerating Organic Pollution. J. Phycol. 5:78-82.

Patrick, R. L. and C. W. Reimer. 1966. The Diatoms of the United States. Monographs of the Academy of Natural Science of Philadelphia. Vol. 1, No. 13, Philadelphia, Penn.

Stemen, T. R., and W. S. Myers. 1937. Oklahoma Flora. Harlow Publication Company. Oklahoma City.

Sutton, G. M. 1967. Oklahoma Birds. University of Oklahoma Press, Norman.

U.S. Environmental Protection Agency. 1973. Biological Field and Laboratory Methods. EPA Env. Monit. Series.

Wetzel, R. G. 1975. Limnology. W. B. Saunders. Philadelphia.

APPENDICES

APPENDIX A

WATER CHEMISTRY ANALYSIS

OKLAHOMA CITY COUNTY HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH SERVICES
PUBLIC HEALTH LABORATORY

Environmental Monitoring and Analysis Division

Analytical Report Summary

Project O.W.R.B. LAKE OVERHOLSER Sampling Dates: 6/4/81

	Station No.		
PARAMETERS (ppm)	1	2	3
"P" Alkalinity	0	0	0
Total Alkalinity	54	74	36
as(NTU): Turbidity	500	620	780
BOD	6.7	6.5	6.6
Dissolved Solids	130	260	60
Settleable Solids(ml/L)	0.5	0.1*	0.1*
Total Ortho Phosphate as P	0.402	0.257	0.489
Total Phosphate as P	0.846	0.492	1.089
Nitrite as N	0.04	0.02	0.05
Nitrate as N	1.92	1.04	4.24
Ammonia as N	0.10*	0.10*	0.10*
Kjeldahl N as N	0.11*	0.11*	1.46
Total Nitrogen as N	2.17*	1.27*	5.80

R=Rejected: See analyst comments.
*=Less than indicated value.

FINAL OFFICIAL COPY

FINAL OFFICIAL COPY

Station No.

PARAMETERS (ppm)	4	6	8a
"P" Alkalinity	0	14	14
Total Alkalinity	66	200	202
as(NTU): Turbidity	470	35	26
BOD	7.4	2.6	1.7
Dissolved Solids	160	900	900
Settleable Solids(ml/L)	0.1	0.1*	0.1*
Total Ortho Phosphate as P	0.518	0.373	0.373
Total Phosphate as P	0.833	0.337	0.470
Nitrite as N	0.05	0.02	0.02
Nitrate as N	2.51	0.10*	0.10*
Ammonia as N	0.17	0.10*	0.10*
Kjeldahl N as N	1.46	0.78	1.46
Total Nitrogen as N	4.19	1.00*	1.68*

R = Rejected: See analyst comments.

* = Less than indicated value.

** = Less than Detection Limit.

no typo — due to [illegible]

OKLAHOMA CITY COUNTY HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH SERVICES
PUBLIC HEALTH LABORATORY

Environmental Monitoring and Analysis Division
Analytical Report Summary

Project O.W.R.B. LAKE OVERHOLSER Sampling Dates: 06/04/81

	Station No.			
Parameter	1a	1b	2a	2b
Fecal Coliforms (#/100ml)	3.0×10^3+	3.0×10^3+	3.0×10^3+	3.0×10^3
	3a	3b	4a	4b
Fecal Coliforms	3.0×10^3+	3.0×10^3+	3.0×10^3+	3.0×10^3+
	6a	6b	8a	8b
Fecal Coliforms	90.0	20.0	20.0	10.0

+ = More than indicated Value.

FINAL OFFICIAL COPY

OKLAHOMA CITY COUNTY HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH SERVICES
PUBLIC HEALTH LABORATORY

Environmental Monitoring and Analysis Division

Analytical Report Summary

Project O.W.R.B. LAKE OVERHOLSER Sampling Dates: 6/18/81

	Station No.			
	2	3	4	5
PARAMETERS (ppm)				
"P" Alkalinity	20	0	10	0
Total Alkalinity	198	180	204	180
Suspended Solids	2	52	22	62
Dissolved Ortho PO_4 as P	0.020	0.114	0.566	0.428
Total Phosphate as P	0.076	0.268	0.738	0.560
Nitrite as N	0.01*	0.03	0.01*	0.02
Nitrate as N	0.14	0.35	0.23	0.41
Ammonia as N	0.10*	0.10*	0.10*	0.10*
Kjeldahl N as N	1.29	1.23	1.18	1.79
Total Nitrogen as N	1.54*	1.71*	1.52*	2.32*
Chlorophyll-a(ppb)	21.8	55.4	45.7	53.1
Phenophytin-a(ppb)	1.4	9.2	0.0	1.1

R=Rejected: See analyst comments.
*=Less than indicated value.

FINAL OFFICIAL COPY

Page Two

6/18

PARAMETERS (ppm)	*Station No.* 6	7	8	9
"P" Alkalinity	14	20	18	0
Total Alkalinity	214	212	212	144
Suspended Solids	32	22	12	16
Dissolved Ortho PO_4 as P	0.338	0.321	0.364	0.349
Total Phosphate as P	0.388	0.478	0.382	0.394
Nitrite as N	0.01*	0.01*	0.01*	0.04
Nitrate as N	0.17	0.33	0.23	0.52
Ammonia as N	0.10*	0.10*	0.10*	0.10*
Kjeldahl N as N	0.95	0.90	1.01	1.29
Total Nitrogen as N	1.23*	1.34*	1.35*	1.95*
Chlorophyll-a(ppb)	46.5	42.7	38.4	14.6
Pheophytin-a(ppb)	0.0	0.0	0.0	5.3

R = Rejected: See analyst comments.

** = Less than indicated value.*

*** = Less than Detection Limit.*

Note

FINAL OFFICIAL COPY

OKLAHOMA CITY COUNTY HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH SERVICES
PUBLIC HEALTH LABORATORY

Environmental Monitoring and Analysis Division

Analytical Report Summary

Project O.W.R.B. LAKE OVERHOLSER   Sampling Dates: 7/07/81

	Station No.			
	2	3	4	5
PARAMETERS (ppm)				
Total Alkalinity	110	196	116	192
"P" Alkalinity	R	0	R	10
Turbidity (as NTU)	520	98	610	100
Dissolved Solids	220	350	200	800
Settleable Solids	0.8	0.1	1.5	0.1*
Suspended Solids	576	22	800	2
Total Phosphorous as P	0.712	0.594	1.066	0.378
Dissolved Ortho PO_4 as P	0.123	0.198	0.173	0.160
Nitrite as N	0.05	0.02	0.02	0.01
Nitrate as N	0.58	0.11	0.26	0.26
Ammonia as N	0.10*	0.68	0.20	0.21
Kjeldahl N as N	0.11*	0.11*	0.45	0.11*
Total Nitrogen as N	0.84*	0.92*	0.93	0.59*
Chlorophyll-a(ppb)	7.9	27.7	25.3	23.3
Pheophytin-a(ppb)	8.7	9.5	27.9	1.8

R=Rejected: See analyst comments.
*=Less than indicated value.

FINAL OFFICIAL COPY

ANALYST'S COMMENTS: Too much color in sample.

7/07

PARAMETERS (ppm)	Station No. 6	7	8-Surface	8-2M	9
Total Alkalinity	212	224	204	218	158
"P" Alkalinity	16	22	28	20	0
Turbidity (as NTU)	47	32	20	22	27
Dissolved Solids	700	900	800	900	500
Settleable Solids	0.1*	0.1*	0.1*	0.1*	0.1*
Suspended Solids	36	28	26	4	10
Total Phosphorous as P	0.378	0.402	0.331	0.355	0.355
Dissolved Ortho PO_4 as P	0.311	0.298	0.286	0.311	0.311
Nitrite as N	0.01	0.01*	0.01*	0.01*	0.03
Nitrate as N	0.10*	0.10	0.17	0.16	0.30
Ammonia as N	0.10*	0.10*	0.10*	0.10*	0.19
Kjeldahl N as N	0.78	0.22	0.11*	0.22	0.11*
Total Nitrogen as N	0.99*	0.43*	0.39*	0.49*	0.63*
Chlorophyll-a(ppb)	24.8	34.3	35.3	23.2	50.4
Pheophytin-a(ppb)	2.2	6.7	2.1	9.8	12.3

R = Rejected: See analyst comments.

* = Less than indicated value.

FINAL OFFICIAL COPY

OKLAHOMA CITY COUNTY HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH SERVICES
PUBLIC HEALTH LABORATORY

Environmental Monitoring and Analysis Division

Analytical Report Summary

Project O.W.R.B. LAKE OVERHOLSER   Sampling Dates: 7/16/81

	Station No.			
	2	3	4	5
PARAMETERS (ppm)				
Total Alkalinity	236	226	224	214
"P" Alkalinity	20	0	20	14
Suspended Solids	12	56	62	62
Dissolved Ortho PO_4 as P	0.104	0.104	0.333	0.295
Total Phosphate	0.178	0.199	0.448	0.408
Nitrite as N	0.01*	0.03	0.01*	0.01*
Nitrate as N	0.10*	0.10	0.10*	0.10*
Ammonia as N	0.10*	0.88	0.10*	0.10*
Kjeldahl N as N	1.04	0.87	0.76	0.87
Total Nitrogen as N	1.25*	1.88	0.97*	1.08*
Chlorophyll-a (ppb)	13.9	70.9	28.9	42.3
Pheophytin-a (ppb)	0.7	19.9	2.5	8.7

*=Less than indicated value.

FINAL OFFICIAL COPY

Page Two

Overholser-7/16/81

Station No.

PARAMETERS (ppm)	6	7	8-1.0M	8-4feet	9
Total Alkalinity	212	204	208	214	184
"P" Alkalinity	22	8	30	20	6
Suspended Solids	26	8	2	2	6
Dissolved Ortho PO_4 as P	0.293	0.272	0.322	0.317	0.272
Total Phosphate as P	0.358	0.335	0.379	0.332	0.382
Nitrite as N	0.01*	0.01*	0.01*	0.01*	0.03
Nitrate as N	0.10*	0.10*	0.10*	0.10*	0.24
Ammonia as N	0.10*	0.10*	0.10*	0.10*	0.25
Kjeldahl N as N	1.48	2.10	1.09	0.42	R
Total Nitrogen as N	1.69*	2.31*	1.30*	0.63*	0.52*
Chlorophyll-a (ppb)	20.8	33.1	25.9	27.1	27.4
Pheophytin-a (ppb)	1.0	4.9	3.1	2.3	5.4

R = Rejected: See analyst comments.

* = Less than indicated value.

FINAL OFFICIAL COPY

OKLAHOMA CITY COUNTY HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH SERVICES
PUBLIC HEALTH LABORATORY

Environmental Monitoring and Analysis Division

Analytical Report Summary

Project O.W.R.B. LAKE OVERHOLSER Sampling Dates: 8/12/81

	Station No.			
	2	3	4	5
PARAMETERS (ppm)				
Total Alkalinity	192	192	210	190
"P" Alkalinity	10	0	12	2*
Suspended Solids	14	26	38	26
Dissolved Ortho PO_4 as P	0.102	0.077	0.364	0.329
Total Phosphate	0.223	0.287	0.799	0.521
Nitrite as N	0.01*	0.01*	0.07	0.05
Nitrate as N	0.10*	0.10*	0.10*	0.24
Ammonia as N	0.10*	0.18	0.38	0.29
Kjeldahl N as N	1.74	2.24	1.12	2.35
Total Nitrogen as N	1.95*	2.53*	1.67*	2.93
Chlorophyll-a (ppb)	29.0	51.0	26.5	28.5

*=Less than indicated value.

FINAL OFFICIAL COPY

Page Two
Overholser-8/12/81
Station No.

PARAMETERS (ppm)	6	7	8-1.0M	8-2.0M	9
Total Alkalinity	196	196	200	196	148
"P" Alkalinity	14	14	22	18	0.0
Suspended Solids	40	30	18	16	12
Dissolved Ortho PO_4 as P	0.217	0.209	0.226	0.226	0.279
Total Phosphate as P	0.326	0.340	0.360	0.315	0.406
Nitrite as N	0.01*	0.01*	0.01*	0.01*	0.05
Nitrate as N	0.10*	0.10*	0.10*	0.10*	0.40
Ammonia as N	0.10*	0.10*	0.10*	0.10*	0.53
Kjeldahl N as N	2.07	2.86	1.46	0.84	2.18
Total Nitrogen as N	2.28*	3.07*	1.67*	1.05*	3.16
Chlorophyll-a(ppb)	29.5	28.5	22.0	21.0	14.0

* = Less than indicated value.

OKLAHOMA CITY COUNTY HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH SERVICES
PUBLIC HEALTH LABORATORY

Environmental Monitoring and Analysis Division

Analytical Report Summary

Project O.W.R.B. LAKE OVERHOLSER Sampling Dates: 9/16/81

	Station No.			
	3	**4**	**5**	**6**
PARAMETERS (ppm)				
Total Alkalinity	120	212	216	200
"P" Alkalinity	0	8	12	24
Suspended Solids	124	73.3	76	32
Dissolved Ortho PO_4 as P	0.088	0.230	0.275	0.146
Total Phosphate	0.313	0.633	0.713	0.287
Nitrite as N	0.02	0.01*	0.02	0.01*
Nitrate as N	0.10*	0.10*	0.10*	0.10*
Ammonia as N	0.10*	0.10*	0.10*	0.10*
Kjeldahl N as N	5.41	0.95	5.41	1.49
Total Nitrogen as N	5.63*	1.16*	5.63*	1.70*
Chlorophyll-a(ppb)	82.8	37.2	47.4	35.9
Pheophytin-a(ppb)	1.3	9.9	12.6	3.0

*=Less than indicated value.

FINAL OFFICIAL COPY

Overholser 9/16

	Station No.			
	7	8-1.0M	8-3.0M	9
PARAMETERS (ppm)				
Total Alkalinity	196	198	200	184
"P" Alkalinity	26	22	24	12
Suspended Solids	36	37	35	27
Dissolved Ortho PO_4 as P	0.121	0.133	0.146	0.146
Total Phosphate	0.287	0.313	0.340	0.447
Nitrite as N	0.01*	0.01*	0.01*	0.01*
Nitrate as N	0.10*	0.10*	0.10*	0.10*
Ammonia as N	0.10*	0.10*	0.10*	0.10*
Kjeldahl N as N	1.03	2.89	0.65	3.92
Total Nitrogen as N	1.24*	3.10*	0.86*	4.13*
Chlorophyll-a(ppb)	36.8	33.0	38.1	74.4
Pheophytin-a(ppb)	0.8	9.4	5.1	14.1

* = Less than indicated value.

OKLAHOMA CITY COUNTY HEALTH DEPARTMENT

ENVIRONMENTAL HEALTH SERVICES

PUBLIC HEALTH LABORATORY

Environmental Monitoring and Analysis Division

Analytical Report Summary

Project O.W.R.B. LAKE OVERHOLSER Sampling Dates: 10/5/81

	Station No.			
	3	4	5	6
PARAMETERS (ppm)				
Total Alkalinity	40	78	170	192
"P" Alkalinity	0	0	0	20
Suspended Solids	1280	200	58	36
Dissolved Ortho PO_4 as P	0.122	0.827	0.352	0.230
Total Phosphate	0.140	0.830	0.492	0.363
Nitrite as N	0.18	0.12	0.03	0.01*
Nitrate as N	0.98	0.31	0.10	0.10*
Ammonia as N	0.28	0.10*	0.10*	0.10*
Kjeldahl N as N	6.89	2.30	1.90	1.23
Total Nitrogen as N	8.33	2.83*	2.13*	1.44*
Chlorophyll-a(ppb)	3.3	32.6	25.3	25.0
Pheophytin-a(ppb)	4.9	9.4	11.7	5.0

*=Less than indicated value.

FINAL OFFICIAL COPY

Overholser 10/5/81

PARAMETERS (ppm)	Station No. 7	8-1.0M	8-3.0M	9
Total Alkalinity	188	190	192	188
"P" Alkalinity	22	32	26	0
Suspended Solids	18	4	10	10
Dissolved Ortho PO_4 as P	0.203	0.230	0.230	0.284
Total Phosphate	0.280	0.280	0.328	0.304
Nitrite as N	0.01*	0.02	0.01*	0.01*
Nitrate as N	0.10*	0.10*	0.10*	0.10*
Ammonia as N	0.10*	0.10*	0.10*	0.10*
Kjeldahl N as N	2.52	1.12	1.23	0.73
Total Nitrogen as N	2.73*	1.34*	1.44*	0.93*
Chlorophyll-a(ppb)	25.4	21.1	21.0	10.5
Pheophytin-a(ppb)	2.4	5.4	4.4	8.1

* = Less than indicated value.

OKLAHOMA CITY COUNTY HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH SERVICES
PUBLIC HEALTH LABORATORY

Environmental Monitoring and Analysis Division

Analytical Report Summary

Project O.W.R.B. LAKE OVERHOLSER   Sampling Dates: 11/23/81

	Station No.			
	3	4	5	6
PARAMETERS (ppm)				
Total Alkalinity	128	184	286	164
Dissolved Solids	380	684	956	760
Suspended Solids	38	30	18	38
Dissolved Ortho PO_4 as P	0.053	0.225	0.362	0.198
Total Phosphate	0.223	0.296	0.453	0.296
Nitrite as N	0.01*	0.01*	0.03	0.01*
Nitrate as N	0.10*	0.10*	0.10*	0.10*
Ammonia as N	0.10*	0.10*	0.39	0.10*
Kjeldahl N as N	0.84	0.56	0.75	0.56
Total Nitrogen as N	1.05*	0.77*	1.27*	0.77*
Chlorophyll-a(ppb)	41.3	34.4	13.4	33.8
Pheophytin-a(ppb)	2.5	0.0	0.8	0.0

*=Less than indicated value.

FINAL OFFICIAL COPY

Page Two

Overholser 11/23/81

PARAMETERS (ppm)	Station No. 7	8-1.0M	8-3.0M	9
Total Alkalinity	168	170	154	240
Dissolved Solids	744	724	760	908
Suspended Solids	22	42	44	22
Dissolved Ortho PO_4 as P	0.185	0.217	0.198	0.488
Total Phosphate	0.332	0.271	0.283	0.611
Nitrite as N	0.01*	0.01*	0.01*	0.02
Nitrate as N	0.10*	0.10*	0.10*	0.10*
Ammonia as N	0.10*	0.10*	0.10*	0.10*
Kjeldahl N as N	0.47	0.56	0.28	0.75
Total Nitrogen as N	0.68*	0.77*	0.49*	0.97*
Chlorophyll-a(ppb)	28.5	10.1	39.2	107.2
Pheophytin-a(ppb)	0.3	0.0	0.0	0.9

* = Less than indicated value.

FINAL OFFICIAL COPY

OKLAHOMA CITY-COUNTY HEALTH DEPARTMENT

ENVIRONMENTAL HEALTH SERVICES
PUBLIC HEALTH LABORATORY

Environmental Monitoring and Analysis Division

Analytical Report Summary

Project O.W.R.B. OVERHOLSER LAKE Sampling Dates: 12-15-81

	Station No.			
	3	4	5	6
PARAMETERS				
Total Alkalinity	96	240	270	198
Dissolved Solids	468	832	952	808
Suspended Solids	12	2	2	10
Dis. Ortho-Phosphate as P	0.087	0.336	0.684	0.354
Total Phosphate as P	0.209	0.388	0.721	0.376
Nitrite as N	0.01*	0.01*	0.01	0.01*
Nitrate as N	0.34	0.10*	0.10*	0.10*
Ammonia as N	0.10*	0.10*	0.13	0.10*
Kjeldahl as N	0.62	0.45	0.28	0.39
Total Nitrogen	1.07*	0.66*	0.52*	0.60*
Chlorophyll a (ppb)	18.6	14.4	6.5	12.6
Pheophytin a (ppb)	0.6	1.4	1.2	0.2

*=Less than detection limit.

FINAL OFFICIAL COPY

12-15-81

Overholser Lake

PARAMETERS (ppm)	7	8-1 M.	8-3 M.	9	10
	Station No.				
Total Alkalinity	172	168	164	270	42
Dissolved Solids	740	572	708	928	1048
Suspended Solids	6	4	6	6	6
Dis. Ortho-Phosphate as P	0.234	0.265	0.253	0.533	0.521
Total Phosphate as P	0.388	0.280	0.304	0.626	0.554
Nitrite as N	0.01*	0.01*	0.01*	0.01*	0.01*
Nitrate as N	0.10*	0.10*	0.10*	0.10*	0.10*
Ammonia as N	0.10*	0.10*	0.10*	0.10*	0.10*
Kjeldahl N as N	0.28	0.39	0.39	0.62	0.56
Total Nitrogen	0.49*	0.60*	0.60*	0.83*	0.77*
Chlorophyll a (ppb)	18.9	14.3	13.6	49.5	43.5
Pheophytin a (ppb)	1.3	0.6	1.4	3.6	2.7

*=Less than detection limit.

FINAL OFFICIAL COPY

OKLAHOMA CITY-COUNTY HEALTH DEPARTMENT

ENVIRONMENTAL HEALTH SERVICES

PUBLIC HEALTH LABORATORY

Environmental Monitoring and Analysis Division

Analytical Report Summary

Project: O.W.R.B. Overholser Lake Sampling Dates: 1-28-82

	Station No.				
PARAMETERS	3	4	5	6	7
Total Alkalinity	376	262	256	192	188
Dissolved Solids	652	972	904	828	764
Suspended Solids	10	10	20	18	18
Ortho-Phosphate as P	0.050*	0.384	0.687	0.277	0.233
Total Phosphate as P	R	R	R	R	R
Nitrite as N	0.01*	0.01*	0.03*	0.01*	0.01*
Nitrate as N	0.10*	0.10*	0.37	0.10*	0.10*
Ammonia as N	0.10*	0.10*	0.47	0.10*	0.10*
Kjeldahl N as N	0.50	0.56	1.40	0.67	0.73
Total Nitrogen as N	0.71*	0.77*	2.27	0.88*	0.94*
Chlorophyll a	10.2	8.8	18.7	20.5	13.5
Pheophytin a	1.0	0.9	2.6	0.7	0.3

* = Less than indicated Value

R = Rejected by analyst

FINAL OFFICIAL COPY

OKLAHOMA CITY-COUNTY HEALTH DEPARTMENT

ENVIRONMENTAL HEALTH SERVICES

PUBLIC HEALTH LABORATORY

Environmental Monitoring and Analysis Division

Analytical Report Summary

Project: O.W.R.B. Overholser Lake Sampling Dates: 1-28-82

Station No.

PARAMETERS	8-Surf.	8-3M	9
Total Alkalinity	188	190	280
Dissolved Solids	764	772	736
Suspended Solids	12	14	18
Ortho-Phosphate as P	0.254	0.269	0.579
Total Phosphate as P	R	R	R
Nitrite as N	0.01*	0.01*	0.01*
Nitrate as N	0.10*	0.10*	0.10*
Ammonia as N	0.10*	0.10*	0.10*
Kjeldahl N as N	0.50	0.56	1.01
Total Nitorgen as N	0.71*	0.77*	1.22*
Chlorophyll a	13.2	13.0	32.6
Pheophytin a	0.8	0.3	2.4

* = Less than indicated value

R = Rejected by analyst

FINAL OFFICIAL COPY

WP 60-2

OKLAHOMA CITY-COUNTY HEALTH DEPARTMENT

ENVIRONMENTAL HEALTH SERVICES

PUBLIC HEALTH LABORATORY

Environmental Monitoring and Analysis Division

Analytical Report Summary

Project O.W.R.B. Overholser

Sampling Date: 2-17-82

	Station No.				
	3	4	5	6	7
PARAMETERS					
Total Alkalinity	130	98	140	150	150
Dissolved Solids	400	320	610	618	634
Suspended Solids	71	52	20	9	7
Dissolved Ortho PO_4	0.090	0.177	0.209	0.215	0.231
Total Phosphate (as P)	0.239	0.292	0.381	0.261	0.259
Nitrite (as N)	0.03	0.04	0.01	0.01*	0.01*
Nitrate (as N)	0.86	0.65	0.27	0.22	0.11
Ammonia (as N)	0.25	0.49	0.11	0.10*	0.13
Kjeldahl N (as N)	1.06	1.12	0.84	0.84	0.67
Total N (as N)	2.20	2.30	1.23	1.17*	0.92*
Chlorophyll a	2.7	2.1	33.8	33.3	25.6
Pheophytin a	1.1	0.1	1.4	0.3	1.3

*=less than indicated value

FINAL OFFICIAL COPY

	Station No.		
	8-1M	**8-3M**	**9**
PARAMETERS			
Total Alkalinity	156	156	138
Dissolved Solids	633	631	494
Suspended Solids	6	5	34
Dissolved Ortho PO_4	0.206	0.213	0.218
Total Phosphate (as P)	0.253	0.266	0.468
Nitrate (as N)	0.01*	0.01*	0.04
Nitrate (as N)	0.10*	0.10*	0.70
Ammonia (as N)	0.10*	0.10*	0.60
Kjeldahl N (as N)	0.73	0.67	1.34
Total N (as N)	0.94*	0.88*	2.68
Chlorophyll a	43.8	39.2	16.1
Pheophytin a	1.8	2.2	1.6

*=less than indicated value

FINAL OFFICIAL COPY

OKLAHOMA CITY-COUNTY HEALTH DEPARTMENT

ENVIRONMENTAL HEALTH SERVICES

PUBLIC HEALTH LABORATORY

Environmental Monitoring and Analysis Division

Analytical Report Summary

Project **O.W.R.B. OVERHOLSER** Sampling Dates: 3/16/82

Station No.

PARAMETERS

	3	4	5	6	7
Dissolved Solids	556	468	796	700	672
Suspended Solids	62	110	40	18	36
Dis. Ortho-Phosphate as P	0.167	0.265	0.246	0.199	0.194
Total Phosphate	0.368	0.548	0.407	0.265	0.298
Nitrite (as N)	0.18	0.04	0.03	0.01*	0.01*
Nitrate (as N)	0.36	0.72	0.36	0.10*	0.10*
Ammonia (as N)	0.26	0.35	0.18	0.10*	0.10*
Kjeldahl N (as N)	2.89	1.68	1.49	0.84	0.84
Total N (as N)	3.69	2.79	2.06	1.05*	1.05*
Chlorophyll a	27.1	10.7	34.0	20.5	58.0
Pheophytin a	5.3	1.8	3.8	3.1	4.3

*=less than indicated value

FINAL OFFICIAL COPY

PARAMETERS	8-1M	8-3M	9
Dissolved Solids	752	724	792
Suspended Solids	32	24	24
Dis. Ortho-Phosphate (as P)	0.218	0.220	0.352
Total Phosphate (as P)	0.441	0.270	0.415
Nitrite (as N)	0.01*	0.01*	0.02
Nitrate (as N)	0.10*	0.10*	0.23
Ammonia (as N)	0.10*	0.10*	0.16
Kjeldahl N (as N)	0.75	0.75	0.84
Total N (as N)	0.96*	0.96*	1.25
Chlorophyll a	21.6	20.5	37.1
Pheophytin a	2.5	3.4	3.6

*=less than indicated value

FINAL OFFICIAL COPY

OKLAHOMA CITY-COUNTY HEALTH DEPARTMENT

ENVIRONMENTAL HEALTH SERVICES

Environmental Monitoring and Analysis Division

Analytical Report Summary

Project: Overholser Lake

Sampling Date: 4-22-82

	Site No.				
PARAMETERS	3	4	5	6	7
Total Alkalinity	424	320	300	208	212
Dissolved Solids	1028	1064	1084	764	756
Suspended Solids	18	44	42	26	28
Dissolved Ortho PO_4	0.039	0.361	0.552	0.255	0.186
Total Phosphate (as P)	0.184	0.617	0.853	0.445	0.514
Nitrite (as N)	0.01*	0.01*	0.01*	0.01*	0.01*
Nitrate (as N)	0.10*	0.10*	0.15	0.10*	0.10*
Ammonia (as N)	0.10*	0.10*	0.10*	0.10*	0.10*
Kjeldahl N (as N)	0.47	0.47	0.56	0.19	0.28
Total N (as N)	0.68*	0.68*	0.82*	0.40*	0.49*
Chlorophyll a	41.5	58.3	44.1	18.1	27.0
Pheophytin a	2.8	5.6	3.1	3.2	5.1

*=less than indicated value

FINAL OFFICIAL COPY

PARAMETERS	Site No. 8-1M	8-3M	9
Total Alkalinity	214	206	284
Dissolved Solids	756	796	896
Suspended Solids	20	26	100
Dissolved Ortho PO_4	0.250	0.264	0.279
Total Phosphate (as P)	0.558	0.573	0.647
Nitrite (as N)	0.01*	0.01*	0.01*
Nitrate (as N)	0.10*	0.10*	0.10*
Ammonia (as N)	0.10*	0.10*	0.10*
Kjeldahl N (as N)	0.37	0.19	0.84
Total N (as N)	0.58*	0.40*	1.05*
Chlorophyll a	19.6	19.0	118
Pheophytin a	3.1	3.6	14.0

*=less than indicated value

FINAL OFFICIAL COPY

OKLAHOMA CITY–COUNTY HEALTH DEPARTMENT

ENVIRONMENTAL HEALTH SERVICES

Environmental Monitoring and Analysis Division

Analytical Report Summary

Project: Overholser Lake

Sampling Date: 5-18-82

PARAMETERS	Site No. 3	4	5	6
Total Alkalinity	74	52	62	158
Dissolved Solids	388	312	396	592
Suspended Solids	142	92	120	12
Dissolved Ortho PO_4	0.126	0.224	0.205	0.226
Total Phosphate (as P)	0.243	0.431	0.543	0.328
Nitrite (as N)	0.02	0.02	0.02	0.01
Nitrate (as N)	0.60	0.55	0.38	0.11
Ammonia (as N)	0.10*	0.10*	0.13	0.11
Kjeldahl N (as N)	1.34	1.51	1.62	0.90
Total N (as N)	2.06*	2.18*	2.15	1.13
Chlorophyll a	10.7	9.1	12.8	12.9
Pheophytin a	0.5*	1.8	10.5	1.2

*=less than indicated value

FINAL OFFICIAL COPY

Overholser Lake 5-18-82

PARAMETERS	Site No. 7	8-1m	8-3m	9
Total Alkalinity	166	162	162	62
Dissolved Solids	652	620 ?	624	352
Suspended Solids	10	410	18	224
Dissolved Ortho PO_4	0.219	0.234	0.238	0.173
Total Phosphate (as P)	0.305	0.324	0.369	0.586
Nitrite (as N)	0.01*	0.01	0.01	0.02
Nitrate (as N)	0.10	0.10	0.10*	0.34
Ammonia (as N)	0.10*	0.11	0.10*	0.16
Kjeldahl N (as N)	0.84	0.78	0.73	2.14
Total N (as N)	1.05*	1.00	0.94*	1.62
Chlorophyll a (mg/l)	24.3	10.6	11.3	2.2
Pheophytin a	1.4	1.3	3.6	1.7

*=less than indicated value

FINAL OFFICIAL COPY

OKLAHOMA CITY-COUNTY HEALTH DEPARTMENT

ENVIRONMENTAL HEALTH SERVICES

Environmental Monitoring and Analysis Division

Analytical Report Summary

Project: Overholser Lake　　　　Sampling Date:6-16-82

PARAMETERS	Site No. 3	4	5	6a	6b
Total Alkalinity	252	390	168	150	156
Dissolved Solids	868	988	640	484	508
Suspended Solids	182	28	26	34	28
Dissolved Ortho PO_4	0.087	0.092	0.154	0.202	0.229
Total Phosphate (as P)	0.414	0.152	0.234	0.306	0.310
Nitrite (as N)	0.01*	0.04	0.01*	0.01*	0.01*
Nitrate (as N)	0.10*	0.59	0.10*	0.10*	0.10*
Ammonia (as N)	0.10*	0.15	0.10*	0.10*	0.10*
Kjeldahl N (as N)	0.76	0.84	0.98	1.01	0.95
Total N (as N)	0.97*	1.62	1.19*	1.22*	1.16*
Chlorophyll a	76	12	61	93	100
Pheophytin a	19	1.5	0.5*	3.1	2.6

0.308

av.
1.8
1.19

97

FINAL OFFICIAL COPY

NOTE

Site No.

PARAMETERS	7	8-1m	8-3m	9
Total Alkalinity	152	144	150	280
Dissolved Solids	412	496	508	896
Suspended Solids	22	20	16	116
Dissolved Ortho PO_4	0.203	0.250	0.224	0.108
Total Phosphate (as P)	0.300	0.348	0.312	0.276
Nitrite (as N)	0.01*	0.02	0.01	0.01*
Nitrate (as N)	0.10*	0.10*	0.10*	0.10*
Ammonia (as N)	0.10*	0.10*	0.10*	0.10*
Kjeldahl N (as N)	0.84	1.06	0.53	0.62
Total N (as N)	1.05*	1.28*	0.74*	0.83
Chlorophyll a	73	97	104	150
Pheophytin a	0.5*	2.7	4.5	1.0

*=less than indicated value

FINAL OFFICIAL COPY

APPENDIX B

LIST OF FLORA AND FAUNA IN CENTRAL OKLAHOMA

LIST OF TREES

FAMILY ACERACAE	
#box elder	*Acer negundo*
silver maple	*Acer saccharinum*
sugar maple	*Acer saccharum*
FAMILY CORNACEAE	
#roughleaf dogwood	*Cornus drummondii*
FAMILY EBENACEAE	
#persimmon	*Diospyros virginiana*
FAMILY FAGACEAE	
#bur oak	*Quercus macrocarpa*
blackjack oak	*Quercus marilandica*
#chinquapin oak, chestnut oak	*Quercus muhlenbergii*
scrub oak	*Quercus prinoides*
Schneck's oak	*Quercus shumardii, var. schneckii*
#post oak	*Quercus stellata*
black oak	*Quercus velutina*
FAMILY JUGLANDACEAE	
bitternut hickory	*Carya cordiformis*
#pecan	*Carya illinoensis*
shagbark hickory	*Carya ovata*
black hickory	*Carya texana*
white mockernut hickory	*Carya tomentosa*
#black walnut	*Juglans nigra*
FAMILY LEGUMINOSAE	
honey locust	*Gleditsia triacanthos*
#Kentucky coffee tree	*Gymnocladus dioica*
FAMILY MORACEAE	
#osage orange, Bois d'arc	*Maclura pomifera*
white mulberry	*Morus alba*
black mulberry	*Morus nigra*
red mulberry	*Morus rubra*
FAMILY OLEACEAE	
swamp privet	*Forestiera pubescens*
white ash	*Fraxinus americana*
#green ash	*Fraxinus pennsylvanica*
FAMILY PINACEAE	
ashe juniper	*Juniperus ashei*
#red cedar	*Juniperus virginia*
FAMILY PLATANACEAE	
sycamore	*Platanus occidentalis*

FAMILY ROSACEAE

#red bud	*Cercis canadensis*
cock-spurthorn	*Crataegus crus-galli*
American plum	*Prunus americana*
#chickasaw plum	*Prunus angustifolia*
Oklahoma plum	*Prunus gracilis*
Hortulan plum	*Prunus hortulana*
#Mexican plum	*Prunus mexicana*
peach	*Prunus persica*
choke cherry	*Prunus virginiana*

FAMILY RUTACEAE

common hoptree	*Ptelea trifoliata*
common pricklyash	*Zanthoxylum americanum*

FAMILY SALICACEAE

cottonwood	*Populus deltoides*
brittle willow	*Salix fragilis*
willow	*Salix humilis*
sandbar willow	*Salix interior*
#black willow	*Salix nigra*

FAMILY SAPINDACEAE

#(western) soapberry	*Sapindus drummondii*

FAMILY SAPOTACEAE

#wooly buckthorn, chittamwood	*Bumelia lanuginosa*

FAMILY TAMARICACEAE

#salt cedar	*Tamarix gallica*

FAMILY ULMACEAE

southern hackberry	*Celtis laevigata*
#Texas hackberry, sugar berry	*Celtis laevigata (var. texana)*
hackberry	*Celtis occidentalis, var. crossifolia*
hackberry	*Celtis occidentalis*
netleaf hackberry	*Celtis reticulata*
winged elm	*Ulmus alata*
#American elm, white elm	*Ulmus americana*
#Siberian elm	*Ulmus pumila*
#red elm, slippery elm	*Ulmus rubra*

LIST OF SHRUBS AND WOODY VINES

FAMILY ANACARDIACEAE

#skunk brush	*Rhus aromatica, var. flabellifor*[illegible]
fragrant sumac, skunk brush	*Rhus aromatica, var. serotina*
winged sumac	*Rhus copallina, var. copallina*
#smooth sumac	*Rhus glabra*
poison ivy	*Toxicodendron radicans*
poison oak	*Toxicodendron toxicarium*

FAMILY BIGNONIACEAE

southern catalpa	*Catalpa bignonioides*
northern catalpa	*Catalpa speciosa*

FAMILY CAPRIFOLIACEAE

Japanese honeysuckle	*Lonicera japonica*
American elder	*Sambucus canadensis*
#coral-berry, buckbrush	*Symphoriocarpos orbiculatus*
blackhaw	*Viburnum prunifolium*

FAMILY CELASTRACEAE

American bittersweet	*Celastrus scandens*
wahoo	*Euonymus atropurpureus*

FAMILY COMPOSITAE

sand sage	*Artemisia filifolia*
willow baccharis	*Baccharis salicina*

FAMILY ERICACEAE

farkleberry, blueberry, huckleberry	*Vaccinium stramineum*

FAMILY GUTTIFERAE

St. Andrew's cross	*Ascyrum hypericoides, var. hypericoides*
St. Andrew's cross	*Ascyrum hypericoides, var. multicaula*
Drummond's St. John's wort	*Hypericum drummondii*
dwarf St. John's wort	*Hypericum mutilum*
common St. John's wort	*Hypericum perforatum*
spotted St. John's wort	*Hypericum punctatum*

FAMILY HIPPOCASTANACEAE

shrubby buckeye	*Aesculus arguta*

FAMILY LEGUMINOSAE

#prairie acacia, shame weed	*Acacia angustissima*
lead plant	*Amorpha canescens*
indigo bush	*Amorpha fruticosa*
honey mesquite	*Prosopis juliflora*
rose acacia	*Robinia hispida*
black locust	*Robinia pseudo-acacia*

LIST OF SHRUBS AND WOODY VINES, CONT.

FAMILY LILIACEAE

bristly greenbriar, cat brier	*Smilax bona-nox*
greenbriar	*Smilax rotundifolia*
China root	*Smilax tamnoides*
hispid greenbriar	*Smilax tamnoides, var. hispida*

FAMILY LORANTHACEAE

Christmas mistletoe	*Phoradendron serotinum*

FAMILY MALVACEAE

bladder ketmia	*Hibiscus trionum*

FAMILY MENISPERMACEAE

#redberried moonseed, coral vine	*Cocculus carolinus*
common moonseed	*Menispermum canadense*

FAMILY RANUNCULACEAE

yamleaf clematis	*Clematis dioscoreifolia*
Pitcher's clematis	*Clematis pitcheri*

FAMILY RHAMNACEAE

jerseytea	*Ceanothus americanus*
smaller red-root	*Ceanothus herbaceus*

FAMILY ROSACEAE

green hawthorne	*Crataegus biridis*
Engelmann's hawthorne	*Crataegus engelamannii*
downy hawthorne	*Crataegus mollis*
Reverchon's hawthorne	*Crataegus reverchonii*
leafy rose, white prairie rose	*Rosa foliolosa*
Arkansas rose	*Rosa arkansana*
Enslen's dewberry	*Rubus enslenii*
highbush blackberry, Oklahoma blackberry	*Rubus ostryifolius*
southern dewberry	*Rubus trivialis*
	Rubus villosus

FAMILY RUBIACEAE

common buttonbush	*Cephalanthus occidentalis, var. pubescens*

FAMILY SAPINDACEAE

balloon vine	*Cardiospermum halicacabum*

FAMILY SAXIFRAGACEAE

golden currant	*Ribes odoratum*

FAMILY SOLANACEAE

matrimony vine	*Lycium halmifolium*

FAMILY VERBENACEAE

American beautyberry	*Callicarpa americana*

LIST OF SHRUBS AND WOODY VINES, CONT.

FAMILY VITACEAE

peppervine	*Ampelopsis arborea*
simple-leaved ampelopsis	*Ampelopsis cordata*
ivy treebine, marine vine	*Cissus incisa*
Virginia creeper	*Parthenocissos quinguefolia*
bush grape	*Vitis acerfolia*
summer grape	*Vitis aestivalis*
sweet grape	*Vitis cinerea*
cat grape	*Vitis palmata*
#riverbank grape, wild grape	*Vitis riparia*
sand grape	*Vitis rupestris*
frost grape	*Vitis vulpina*

FAMILY GRAMINEAE

#western wheat grass	*Agropyron smithii*
#spring bentgrass, rough hairgrass, winter bentgrass	*Agrostis hyemalis*
hairgrass	*Aira elegans*
#big bluestem	*Andropogon gerardi*
#sand bluestem	*Andropogon hallii*
silvery beardgrass	*Andropogon ternerius*
Virginia beardgrass	*Andropogon virginicus*
few-flowered aristida	*Aristida oligantha*
silver bluestem	*Bothriochloa saccharoides*
#side oats grama	*Bouteloua curtipendula*
#bluegrama	*Bouteloua gracilis*
hairy grama	*Bouteloua hirsuta*
hairy grama	*Bouteloua pectinata*
#grama grass	*Bouteloua rigidiseta*
#rescuegrass	*Bromus willdenowii*
#Japanese chess	*Bromus japonicus*
#smooth brome	*Bromus pubescens*
#cheat, chess grass	*Bromus secalinus*
#downy chess	*Bromus tectorum*
#buffalo grass	*Buchloe dactyloides*
mat sandbur, grassbur	*Cenchrus pauciflorus (incertus)*
broadleaf spanglegrass	*Chasmanthium latifolium*
stout woodreed	*Cinna grundinacea*
#Bermuda grass	*Cynodon dactylon*
#(hairy) crabgrass	*Digitaria sanguinalis*
	Echinochloa colonum
barnyardgrass	*Echinochloa crusgalli*
goosegrass	*Eleusine indica*
nodding wild rye	*Elymus canadensis*
#smooth southern (wild rye)	*Elymus virginicus*
lacegrass	*Eragrostis capillaris*
short-stalked love-grass	*Eragrostis curtipedicellata*
stinkgrass	*Eragrostis cilianensis*
	Eragrostis diffusa
Frank's love-grass	*Eragrostis frankii*
love-grass	*Eragrostis intermedia*
love-grass	*Eragrostis oxylepis*
creeping love-grass	*Eragrostis reptans*
purple love-grass	*Eragrostis spectabilis*
#nodding fescue	*Festuca obtusa*
#southern fescue, annual fescue	*Festuca sciurea*
beard grass	*Gymnopogon ambiguus*
#little barley	*Hordeum pusillum*
prairie junegrass	*Koeleria macrantha*
whitegrass	*Leersia virginica*
green sprangletop	*Leptochloa dubia*
bearded sprangletop	*Leptochloa fascicularis*
	Leptochloa uninervia
diffuse crab-grass, fall witchgrass	*Leptoloma cognatum*
ray-grass	*Lolium perenne*

FAMILY GRAMINEAE, CONT.

Carolina jointtail	*Manisurus cylindrica*
#nimble will (grass)	*Muhlenbergia schreberi*
beaked panicum	*Panicum anceps*
common switch grass	*Panicum capillare*
fall panicum	*Panicum dichotomiflorum*
gaping panicum	*Panicum hians*
	Panicum lanuginosum, var. lindheimeri
#softleaf panicum (panic-grass)	*Panicum malacophyllum*
blunt panic-grass	*Panicum obtusum*
#panicum (panic-grass)	*Panicum oligosanthes*
redtop panicum	*Panicum rigidulum*
Scribner panicum	*Panicum scribnerianum*
roundseed panicum	*Panicum sphaerocarpon*
#switch grass	*Panicum virgatum*
joint-grass	*Paspalum distichum*
Florida paspalum	*Paspalum floridanum*
hurrahgrass	*Paspalum setaceum, var. muehlenbergii*
#vasey grass	*Paspalum urvailii*
#canary grass	*Phalaris caroliniana*
#annual bluegrass	*Poa annua*
#Texas bluegrass, prairie bluegrass	*Poa arachnifera*
#prairie spear-grass, plains bluegrass	*Poa arida*
annual Beard-grass	*Polymnia uvedalia*
schedonnardus	*Schedonnardus paniculatus*
#little bluestem	*Schizachyrium scoparium*
knotroot bristlegrass	*Setaria geniculatas*
green bristlegrass	*Setaria viridis*
#indiangrass	*Sorghastrum nutans*
#johnsongrass	*Sorghum halepense*
hair-grass dropseed	*Sporobolus giroides*
tall dropseed, long-leaved rush-grass	*Sporobolus asper*
sand dropseed	*Sporobolus cryptandrus*
#white tridens	*Tridens albescens*
tall red-top	*Tridens flavus*
narrow-three-toothed grass	*Tridens strictus*
#(eastern) gamagrass	*Tripsacum dactyloides*
#wheat (escaped)	*Triticum aestivum*
#six weeks fescue	*Vulpia octoflora*

FAMILY CYPERACEAE

	Carex annectens
southern sedge	*Carex austrina*
Frank's sedge	*Carex frankii*
#sedge	*Carex gravida*
hop sedge	*Carex lupulina*
redroot flat sedge	*Cyperus erythororhizos*
	Cyperus aristatus
chufa	*Cyperus esculentus*
slender flat sedge	*Cyperus filiculmis*
Hall's cyperus	*Cyperus hallii*

FAMILY CYPERACEAE, CONT.

globe flat sedge	*Cyperus ovularis*
false nutgrass	*Cyperus strigosus*
	Eleocharis acicularis
#flatstem spikesedge, spikerush	*Eleocharis compressea*
blunt spikesedge	*Eleocharis obtusa*
slender fimbry	*Fimbristylis autumnalis*
fimbry	*Fimbristylis caroliniana*
#bullrush	*Fimbristylis drummondii*
hairy fimbristylis	*Fimbristylis puberula*
umbrellagrass	*Fuirena simplex*
American bulrush	*Scirpus americanus*
rusty bulrush	*Scirpus lineatus*
softstem bulrush	*Scirpus validus*
fringed bulrush	*Scleria ciliata*

LIST OF HERBACEOUS PLANTS OTHER THAN GRASSES AND SEDGES

FAMILY ACANTHACEAE

water willow	*Justicia americana*
wild petunia	*Ruellia humilus*

FAMILY AIZOACEAE

carpet weed	*Mollugo verticillata*

FAMILY ALISMACEAE

Kansas sagittaria	*Sagittaria ambigua*

FAMILY AMARANTHACEAE

	Amaranthus albus
redroot pigweed	*Amaranthus retroflexus*
common waterhamp	*Amaranthus tamarascinus*

FAMILY AMARYLLIDACEAE

cebolleta	*Cooperia drummondii*
yellow stargrass	*Hypoxis hirsuta*

FAMILY AMMIACEAE

#bristly-fruited spermolepis	*Spermolepis echinata*

FAMILY APOCYNACEAE

#hemp dogbane	*Apocynum cannabinum*

FAMILY ARACEAE

drug sweetflag	*Acorus calamus*
#dragonroot Jack-in-the-pulpit, green dragon Jack-in-the-pulpit	*Arisaema dracontium*

FAMILY ASCLEPIADACEAE

bluntleaf milkweed	*Asclepias amplexicaulis*
swamp milkweed	*Asclepias incarnata*
butterfly weed	*Asclepias tuberosa*
#(green) milkweed	*Asclepias viridis*

FAMILY BIGNONIACEAE

#trumpet flower, trumpet vine	*Campsis radicans*

FAMILY BORAGINACEAE

India heliotrope	*Heliotropium indicum*
pasture heliotrope	*Heliotropium tenellum*
corn gromwell	*Lithospermum arvense*
hairy puccoon	*Lithospermum carolinense*
narrowleaf gromwell	*Lithospermum incisum*

FAMILY CAMPANULACEAE

small Venus looking glass	*Triodanis biflora*
slimpod Venus looking glass	*Triodanis leptocarpa*
#(clasping) Venus looking glass	*Triodanis perfoliata*

FAMILY CARYOPHYLLACEAE

Pitcher's sandwort	*Arenaria patula*
thymeleaf sandwort	*Arenaria serpyllifolia*
shortstalk chickweed	*Cerastium brachypodum*
big chickweed	*Cerastium vulgatuem*
jagged chickweed	*Holosteum umbellatum*
#chickweed (starwort)	*Stellaria media*

FAMILY CHENOPODIACEAE

#lambs quarters	*Chenopodium album*
slimleaf goosefoot	*Chenopodium leptophyllum*
monolepsis	*Monolepis nuttalliana*
#tumbleweed, Russian thistle	*Salsola kali*

FAMILY COMMELINACEAE

slender day-flower	*Commelina erecta*
#(western) spiderwort	*Tradescantia occidentalis*
reflexed spiderwort	*Tradescantia ohioensis*

FAMILY COMPOSITAE

#(western) yarrow	*Achillea millifolium*
prairie false dandelion	*Agoseris cruspidata*
short common ragweed	*Ambrosia artemisiifolia, var. elatior*
#western ragweed	*Ambrosia psilostachya*
#giant ragweed	*Ambrosia trifida*
#pussytoes	*Antennaria plantaginifolia*
Arkansas dozedaisy	*Aphanostephus skirrhobasis*
sagewort	*Artemisia carruthii*
#(Louisiana) sage	*Artemisia ludoviciana*
many-flowered aster	*Aster ericoides*
aromatic aster	*Aster oblongifolius*
skydrop aster	*Aster patens*
western daisy	*Astranthium integrifolium*
	Bidens discoideis
beggar ticks	*Bidens frondosa*
basket flower	*Centaurea americana*
#least daisy, prairie daisy	*Chaetopappa asteroides*
hairy goldaster	*Chrysopsis villosa var. stenophylla*
#wavy-leaved thistle	*Cirsium undulatum*
horse weed	*Conyza canadensis*
#big flower coreopsis, large flowered tickseed	*Coreopsis grandiflora*
tickseed coreopsis	*Coreopsis lanceolata*
#plains coreopsis, brown-eyed susan	*Coreopsis tinctoria*
clasping coneflower	*Dracopsis amplexicaulis*
narrow-leaved purple cone-flower	*Echiniacea angustifolia*
yerba de tayo	*Eclipta alba*
leafy elephantfoot	*Elephantopus carolinianus*
#annual fleabane, daisy fleabane	*Erigeron annuus*

LIST OF HERBACEOUS PLANTS OTHER THAN GRASSES AND SEDGES, CONT.

FAMILY COMPOSITAE, CONT.

#Philadelphia (fleabane)	*Erigeron philadelphicus*
daisy fleabane	*Erigeron ramonsus*
#(prairie) fleabane	*Erigeron strigosus*
late eupatorium	*Eupatorium serotinum*
#bighead evax, rabbit tobacco	*Evax prolifera*
blanket flower	*Gaillardia lanceolata*
#snowy gaillardia, indian blanket	*Gaillardia pulchella*
#rayless gaillardi	*Gaillardia sauvis*
sweet everlasting	*Gnaphalium obtusifolium*
purple cudweed	*Gnaphalium purpureum*
spinytooth gumweed	*Grindelia lanceolata*
#curlycup gumweed, gumplant	*Grindelia squarrosa*
common broomweed	*Gutierrezia (Xanthocephalum) dracunculoides*
bitter sneezeweed	*Helenium amarum, var. amarum*
#common sunflower	*Helianthus annuus*
Maximilian's sunflower	*Helianthus maximiliani*
ashy sunflower	*Helianthus mollis*
#prairie sunflower	*Helianthus petiolaris*
wolly white hymenoppus	*Hymenopappus tenuifolius*
#(narrow leaf) hymenoxys	*Hymenoxys linearifolia*
rough marsh elder	*Iva angustifolia*
western dwarf dandelion	*Krigia occidentalis*
	Krigia oppositifolia
plains kuhnia	*Kuhnia eupatorioides, var. ozarkana*
Canada lettuce	*Lactuca canadensis*
lettuce	*Lactuca scariola, var. integrata*
#aster	*Leucelene ericoides*
dotted gay feather	*Liatris punctata*
scaley gay feather	*Liatris squarrosa*
#ragweed parthenium, false ragweed	*Parthenium hysterophorus*
#purple pluchea, marsh fleabane	*Pluchea purpurascens*
	Prenanthes altissima
#Carolina false dandelion, leafy false dandelion	*Pyrrhopappus carolinianus*
false dandelion	*Pyrrhopappus geiseri*
#false dandelion	*Pyrrhopappus grandiflorus*
pinewoods coneflower	*Rudbeckia pulcherrima*
#black-eyed susan	*Rudbeckia hirta*
rosin-weed	*Silphium gatesii*
compass plant	*Silphium laciniatum*
Missouri goldenrod	*Solidago missouriensis, var. fasciculata*
variety golden-rod	*Solidago mollis*
stiff golden-rod	*Solidago rigida*
(spiny) sow-thistle	*Sonchus asper*
#red-seeded dandelion	*Taraxacum erythrospermum*
#red-seeded dandelion, common dandelion	*Taraxacum officinale*
#thread leaf thelesperma	*Thelesperma ambiguum*

LIST OF HERBACEOUS PLANTS OTHER THAN GRASSES AND SEDGES, CONT.

FAMILY COMPOSITAE, CONT.

goat's beard	*Tragopogon major*
oyster plant	*Tragopogon porrifolius*
goat's beard	*Tragopogon pratensis*
#winged verbesina	*Verbesina helianthoides*
#(Baldwin) ironweed	*Vernonia baldwinii*
cocklebur	*Xanthium commune*
abrojo	*Xanthium strumarium*

FAMILY CRUCIFERAE

sicklepod	*Arabis canadensis*
Virginia rockcress	*Arabis virginica*
indian mustard	*Brassica juncea*
charlock	*Brassica kaber*
rutabaga	*Brassica napus*
	Brassica oleracea
turnip, field mustard, bird's rape	*Brassica rapa*
#(common) shepherdpurse	*Capsella bursa-pastoris*
#tansy-mustard	*Descurainia pinnata*
#shortpod draba	*Draba brachycarpa*
wedge leaved whitlow grass	*Draba cuneifolia*
draba	*Draba reptans*
western wallflower	*Erysimum asperum*
spreading erysimum	*Erysimum repandum*
wild pepper-grass	*Lepidium densiflorum*
#Virginia pepper-grass	*Lepidium virginianum*
	Lesquerella engelmannii
stalkless yellow cress	*Rorippa nastortium-aquaticum*
	Sibara virginica
Sisymbrium altissimum	*Sisymbrium altissimum*
hedge mustard	*Sisymbrium officinale*
	Streptanthus hyacinthoides

FAMILY CUCURBITACEAE

#stinking gourd, Missouri gourd	*Cucurbita foetidissima*

FAMILY DROSERACEAE

annual sundew	*Drosera annua*

FAMILY ELATINACEAE

Texas bergia	*Bergia texana*
	Elatine triandra

FAMILY EUPHORBIACEAE

copperleaf	*Acalypha gracilens*
hophornbeam copperleaf	*Acalypha ostryaefolia*
copperleaf	*Acalypha rhomboidca*
#Virginia copperleaf, copperweed	*Acalypha virginica*
#bull nettle	*Cnidoscolus texanus*
wooly croton	*Croton capitatus*
tropic croton	*Croton glandulosus*
#(one seed) croton	*Croton monanthogynus*
Texas croton	*Croton texensis*
rushfoil	*Crotonopsis linearis*
flowering spurge	*Euphorbia corollata*
	Euphorbia corollata, var. mollis
ridgeseed euphorbia	*Euphorbia glyptosperma*
hairy spreading euphorbia	*Euphorbia humistrata*
#snow-on-the-mountain	*Euphorbia marginata*
	Euphorbia missurica, var. intermedia
milk purslave, spotted suphorbia	*Euphorbia nutans*
warty euphorbia	*Euphorbia spathulata*
mat euphorbia	*Euphorbia serpens*
slimseed euphorbia	*Euphorbia strictospora*
prairie surge	*Euphorbia zygophylloides*
euphorbia	*Euphorbia supina*

FAMILY FUMARIACEAE

golden corydalis	*Corydalis aurea*

FAMILY GENTIANACEAE

lira de San Pedro, bluebells	*Eustoma russellianum*
squarestem rose gentian	*Sabatia angularis*
	Sabatia campestris

FAMILY GERANIACEAE

pink needle, pin clover, alfilerillo	*Erodium cicutarium*
#(Carolina) crane's-bill	*Geranium carolinianum*

FAMILY IRIDACEAE

#(prairie) blue-eye grass	*Sisyrinchium campestre*

FAMILY JUNCACEAE

flatleaf rush	*Juncus crassifolius*
slimpod rush	*Juncus diffusissimus*
#(Dudley) rush	*Juncus dudleyi*
inland rush	*Juncus interior*
grassleaf rush	*Juncus marginatus*
poverty rush	*Juncus tenuis*
Torrey rush	*Juncus torreyi*

FAMILY LABIATAE

false pennyroyal	*Hedeoma drummondii*
rough false pennyroyal	*Hedeoma hispidum*
#(henbit) deadnettle	*Lamium amplexicaule*
lemon beebalm	*Monarda citriodora*
basil beebalm	*Monarda clinopodioides*
#wild bergamot, horse mint	*Monarda fistulosa*
spotted beebalm	*Monarda punctata*
self-heal	*Prunella vulgaris, var. lanceolata*
azure sage	*Salvia azurea, var. grandiflora*
#(small) skullcap	*Scutellaria parvula*
bugleweed	*Lycopus americanus*
Virginia germander	*Teucrium canadense*

FAMILY LEGUMINOSAE

milkvetch, ground plum	*Astragalus crassicarpus, var. crassicarpus*
#(Nuttall) milkvetch	*Astragalus nuttallianus*
Atlantic wild indigo	*Baptisia leucantha*
#(plains wild) indigo, cream colored false indigo	*Baptisia leucophaea*
#blue (false) wild indigo	*Baptisia (australis, var.) minor*
wild senna, partridge poa	*Cassia fasciculata*
#(prairie) mimosa, Illinois bundleflower	*Desmanthus illinoensis*
#sessil tickclover, beggars tick	*Desmodium glutinosum*
sessil tickclover	*Desdodium sessilifolium*
downy milkpea	*Galactia volubilis*
wild licorice	*Glycyrrhiza lepidota*
coast indigo	*Indigofera miniata*
roundhead lespedeza	*Lespedeza capitata*
wand lespedeza	*Lespedeza frutescens*
lespedeza	*Lespedeza intermedia*
Korean lespedeza	*Lespedeza stipulacea*
Stuev's lespedeza	*Lespedeza stuevei*
#white sweet clover	*Melilotus alba*
yellow sweet clover	*Melilotus officinalis*
yellow neptunia	*Neptunia lutea*
stemless loco-weed	*Oxytropis lambertii*
white prairie clover	*Petalostemum candidum, var. candidum*
purple prairie clover	*Petalostemum purpureum*
digitate psoralea	*Psoralea digitata*
#wild alfalfa, scurvy pea	*Psoralea tenuiflora*
#(catclaw) sensitive briar	*Schrankia uncinata*
bequilla	*Sesbania exaltata*
trailing wildbean	*Strophostyles helvola*
	Strophostyles pauciflora
wild sweetpea	*Tephrosia virginiana*
#(least) hop-clover	*Trifolium dubium*
#white clover	*Trifolium repens*
#vetch	*Vicia dasycarpa*

FAMILY LILIACEAE

#wild garlic	*Allium canadensis*
wild drummond onion	*Allium drummondii*
blue funnellily	*Androstephium coeruleum*
asparagus, garden asparagus	*Asparagus officinalis*
white fawnlily	*Erythronium albidum*
#false garlic	*Northoscordum bivalve*
shrubby yucca, small soapweed	*Yucca arkansana*
bear-grass, spanish dagger	*Yucca glauca*

FAMILY LINACEAE

Lewis flax	*Linum lewisii*
#(large-flowered) yellow flax	*Linum rigidum*
grooved-yellow flax	*Linum sulcatum*

FAMILY LOGANIACEAE

juniperleaf	*Polypremum procumbens*

FAMILY LYTHRACEAE

Wright's ammannia	*Ammannia auriculata*
purple ammannia	*Ammannia coccinea*
winged lytrum	*Lythrum lanceolatum var. alatum*
toothcup	*Rotala ramosior*

FAMILY MALVACEAE

indian mallow	*Abutilon theophrasti*
plains poppymallow	*Callirhoe alcaeoides*
#purple poppymallow	*Callirhoe involucrata*
common mallow	*Malva neglecta*
common mallow	*Malva rotundifolia*
scarlet globe mallow	*Sphaeralcea coccinea*

FAMILY NYCTAGINACEAE

#(wild) four o'clock	*Mirabilis nyctaginea*

FAMILY ONAGRACEAE

	Gaura parviflora
small flower gaura	*Gaura triangulata*
	Ludwigia alternifolia
seedbox	*Ludwigia glandulosa*
false loosestrife	*Ludwigia palustris*
false loosestrife	*Ludwigia peploides*
verdolaga de agua	*Oenothera laciniata*
#cutleaf evening primrose	*Oenothera missouriensis*
Missouri primrose, glade-lily	*Oenothera rhombipetala*
four point evening primrose	*Oenothera serrulata*
#(narrow-leaf) evening primrose	*Oenothera speciosa*
amapola del campo, showy primrose	

FAMILY OXALIDACEAE

#yellow wood sorrel	*Oxalis dillenii*
upright yellow wood-sorrel	*Oxalis stricta*
#violet wood-sorrel	*Oxalis violacea*

FAMILY PAPAVERACEAE

leafy white prickly poppy	*Argemone polyanthemos*

FAMILY PHYTOLACCACEAE

#poke weed, pokeberry	*Phytolacca americana*

FAMILY PLANTAGINACEAE

#bottle brush plantain, large-breasted plantain	*Plantago aristata*
plantain	*Plantago elongata*
#wooly plantain, silver plantain	*Plantago purshii (patagonica)*
#redseed plantain	*Plantago rhodosperma*
#paleseed plantain, dwarf plantain	*Plantago virginica*

FAMILY POLEMONIACEAE

standing cypress	*Ipomopsis rubra*

FAMILY POLYGALACEAE

white milkwort	*Polygala alba*
whorled milkwort	*Polygala verticillata*

FAMILY POLYGONACEAE

annual fleabane	*Eriogonum annuum*
longleaf wild-buckwheat	*Eriogonum longifolium, var. plantagineum*
#knotweed	*Polygonum aviculari*
prostrate knotweed	*Polygonum paviculare, var. littorale*
#Pennsylvania smartweed, pink smartweed	*Polygonum pensylvanicum*
dotted smartweed	*Polygonum (Persicaria) punctatum*
bushy knotweed	*Polygonum ramossissimum*
#(wood) pale dock	*Rumex altissimus*
#curly dock	*Rumex crispus*
#heartwing sorrel, wild sorrel	*Rumex hastatulus*
#wild begonia	*Rumex vemosus*
swamp dock	*Rumex verticillatus*

FAMILY PORTULACACEAE

spring beauty	*Claytonia virginica*

FAMILY PRIMULACEAE

western rockjasmine	*Androsace occidentalis*

FAMILY RANUNCULACEAE

Carolina anemone	*Anemone caroliniana*
#prairie larkspur	*Delphinium virescens*
blister buttercup	*Ranunculus sceleratus*

FAMILY ROSACEAE

#prickly poppy	*Agrimonia intermedia*
manyflower groovebur	*Agrimonia parviflora*
#white avens, geum	*Geum canadense*

FAMILY RUBIACEAE

#poorjo	*Diodia teres*
#(catchweed) bedstraw	*Galium aparine*
#(woods) bedstraw	*Galium circalcans*
	Hedyotis nigricans
	Hedyotis uniflora

FAMILY SAXIFRAGACEAE

ditch stonecrop	*Penthorum sedoides*

FAMILY SCROPHULARIACEAE

	Gratiola brevifolia
Virginia-hedge hyssop	*Gratiola virginica*
	Leucospora multifada
#(oldfield) toadflax	*Linaria canadensis*
monkey flower	*Mimulus alatus*
cobaea beard-tongue	*Penstemon cobaea*
beard-tongue	*Penstemon laxiflorus*
Oklahoma beard-tongue	*Penstemon oklahomensis*
	Scrophularia lanceolata
#flannel mullein, common mullein	*Verbascum thapsus*
water speedwell, brook-pimpernel	*Veronica anagallis-aquatica*
#(purselane) speedwell	*Veronica peregrina*
wayside speedwell	*Veronica polita*

FAMILY SOLANACEAE

#jimsonweed	*Datura stramonium*
#(clammy) ground cherry	*Physalis heterophylla*
#(Carolina) horsenettle	*Solanum carolinense*
#silverleaf nightshade, silverleaf nettle	*Solanum elaeagnifolium*
black nightshade	*Solanum nigrum*
#buffalobur	*Solanum rostratum*

FAMILY UMBELLIFERAE

#(Texas) chervil	*Chaerophyllum texanum*
water hemlock	*Cicuta maculata*
#wild carrot	*Daucus pusillus*
levenworth eryngo	*Eryngium levenworthii*
buttonshakerroot eryngo	*Eryngium yuccifolium*
whorled pennywort	*Hydrocotyle verticillata*
Arkansas dogshade	*Limnosciadium pinnatom*
	Ptilimnium nuttallii
hedge parsley	*Torilis japonica*
	Trepocarpus aethusae

LIST OF HERBACEOUS PLANTS OTHER THAN GRASSES AND SEDGES, CONT.

FAMILY URTIECEAE

smallspike false nettle	*Boehmeria cylindrica*
James nailwort	*Paronychia jamesii*

FAMILY VALERIANACEAE

#(beaked) cornsalad	*Valerianella radiata*

FAMILY VERBANACEAE

#wedge leaf frogfruit, spoon leaf frogfruit	*Phyla cuneifolia*
Texas frog-fruit	*Phyla incisa*
frogfruit, northern frog-fruit	*Phyla lanceolata*
common frogfruit, capeweed	*Phyla nodiflora*
small-flowered verbena	*Verbena bipinnatifida*
bigbract verbena	*Verbena bracteata*
rose verbena, rose vervain	*Verbena canadensis*
Texas verbain	*Verbena halei*
blue verbena, blue vervain	*Verbena hastata*
rose verbena, verbena	*Verbena simplex*
#(hoary) vervain	*Verbena stricta*
white verbena, white vervain	*Verbena urticifolia*

FAMILY VIOLACEAE

lanceleaf violet	*Viola lanceolata, var. uittata*
#Missouri violet	*Viola missouriensis*
#field pansy, wild pansy	*Viola rafinesquii*

FAMILY ZYGOPHYLLACEAE

puncture vine	*Tribulus terrestris*

APPENDIX 602-D

TERRESTRIAL WILDLIFE SPECIES LIST

LIST OF AMPHIBIANS

The following list contains 16 species and subspecies of amphibians known to exist in the ACOG region. Nomenclature and taxonomic order are based on Conant (1975).

ORDER URODELA

small-mouthed salamander	*Ambystoma texanum*
spotted salamander	*Ambystoma maculatum*
barred tiger salamander	*Ambystoma tigrinium mavortium*

ORDER ANURA

Hurter's spadefoot (Rare-2)	*Scaphiopus holbrooki hurteri*
plains spadefoot	*Scaphiopus bombifrons*
dwarf American toad	*Bufo americanus*
Rocky Mountain toad	*Bufo woodhousei woodhousei*
Great Plains toad	*Bufo cognatus*
Blanchard's cricket frog	*Acris crepitans blanchardi*
eastern gray treefrog	*Hyla versicolor*
spotted chorus frog	*Pseudacris clarki*
western chorus frog	*Pseudacris triseriata*
Strecker's chorus frog	*Pseudacris streckeri streckeri*
western narrow-mouthed toad	*Gastrophryne olivacea*
bullfrog	*Rana catesbeiana*
plains leopard frog	*Rana blairi*

LIST OF REPTILES

The following list contains 53 species and subspecies of reptiles known to exist in the ACOG region. Nomenclature and taxonomic order are based on Conant (1975).

TURTLES	ORDER TESTUDINES
midland smooth softshell turtle	*Trionyx muticus muticus*
western spiny softshell turtle	*Trionyx spiniferus hartwegi*
common snapping turtle	*Chelydra serpentina*
yellow mud turtle	*Kinosternon flavescens flavescens*
western chicken turtle	*Deirochelys reticularia miaria*
red-eared turtle	*Chrysemys scripta elegans*
three-toed box turtle	*Terrapene carolina triunguis*
ornate box turtle	*Terrapene ornata ornata*
LIZARDS AND SNAKES	**ORDER SQUAMATA**
eastern collared lizard	*Crotaphytus collaris*
northern earless lizard	*Holbrookia maculata maculata*
Texas horned lizard	*Phrynosoma cornutum*
southern prairie lizard	*Sceloporus undulatus consobrinus*
five-lined skink	*Eumeces fasciatus*
Great Plains skink	*Eumeces obsoletus*
southern prairie skink	*Eumeces serpentrionalis obtusirostris*
ground skink	*Leiolopisma laterale*
prairie racerunner	*Cnemidophorus sexlineatus viridis*
western slender glass lizard	*Ophisaurus attenuatus attenuatus*
New Mexico blind snake	*Leptotyphlops dulcis dissectus*
plains blind snake	*Leptotyphlops dulcis dulcis*
Kansas glossy snake	*Arizona elegans elegans*
western worm snake	*Carphophis amoenus vermis*
*scarlet snake (Rare-1)	*Cemophora coccinea copei*
eastern yellow-bellied racer	*Coluber constrictor flaviventris*
prairie ringneck snake	*Diadophis punctatus arnyi*
Great Plains rat snake	*Elaphe guttata emoryi*
black rat snake	*Elaphe obsoleta obsoleta*
dusty hognose snake	*Heterodon nasicus gloydi*
plains hognose snake	*Heterodon nasicus nasicus*
eastern hognose snake	*Heterodon platyrhinos*
*Texas night snake (Rare-2)	*Hypsiglena torquata texana*
prairie kingsnake	*Lampropeltis calligaster calligaster*
speckled kingsnake	*Lampropeltis getulus holbrooki*
western milk snake	*Lampropeltis triangulum gentilis*
eastern coachwhip	*Masticophis flagellum flagellum*
western coachwhip	*Masticophis flagellum testaceus*
blotched water snake	*Natrix erythrogaster transversa*
diamond-backed water snake	*Natrix rhombifera rhombifera*
rough green snake	*Opheodrys aestivus*
bullsnake	*Pituophis melanoleucus sayi*
Graham's water snake	*Natrix grahami*
Great Plains ground snake	*Sonora episcopa episcopa*

LIZARDS AND SNAKES, CONT.	ORDER SQUAMATA
Texas brown snake	*Storeria dekayi texana*
flat-headed snake	*Tantilla gracilis*
checkered garter snake	*Thamnophis marcianus marcianus*
western ribbon snake	*Thamnophis proximus proximus*
red-sided garter snake	*Thamnophis sirtalis parietalis*
central lined snake	*Tropidoclonion lineatum annectens*
rough earth snake	*Virginia striatula*
broad-banded copperhead	*Agkistrodon contortrix laticinctus*
timber rattlesnake	*Crotalus horridus horridus*
western massasauga	*Sistrurus catenatus tergeminus*
western pigmy rattlesnake	*Sistrurus miliarius streckeri*

LIST OF BIRDS

The following list contains 335 species of birds known to exist in the ACOG region. Of these 335 species, 65 are found very infrequently (less than ten reported observations) in the four county ACOG area and probably reflect accidental sightings, extreme range extensions, or even possible zoo escapes. These 65 species should not be considered typical avifauna of the region, and are denoted by "(Infrequent)" after their common names (this information was furnished by David O. Dillon Jr., and Richard Gunn of the Oklahoma Department of Pollution Control, based on their review of Dr. G. M. Sutton's birding records). It should also be noted that no distinctions are made between winter and summer residents, breeding species, and migrant species. Nomenclature and taxonomic order are based on Sutton (1974).

LOONS	ORDER GAVIIFORMES Family Gaviidae
common loon	*Gavia immer*
GREBES	ORDER PODICIPEDIFORMES Family Podicipedidae
horned grebe	*Podiceps auritus*
eared grebe	*Podiceps nigricollis*
western grebe	*Aechmophorus accidentalis*
pied-billed grebe	*Podilymbus podiceps*
PELICANS AND ALLIES	ORDER PELECANIFORMES Family Pelecanidae
white pelican	*Pelecanus erythrorhynchos*
	Family Phalacrocoracidae
double-crested cormorant	*Phalacrocorax auritus*
olivaceous cormorant (Infrequent)	*Phalacrocorax olivaceous*
	Family Anhingidae
*anhinga (Endangered)(Infrequent)	*Anhinga anhinga*
DEEP WATER WADERS	ORDER CICONIIFORMES Family Ardeidae
great blue heron	*Ardea herodias*
green heron	*Butorides virescens*
little blue heron	*Florida caerulea*
cattle egret	*Bubulcus ibis*
great egret	*Casmerodius albus*
snowy egret	*Egretta thula*
Louisiana heron (Infrequent)	*Hydranassa tricolor*
black-crowned night heron	*Nycticorax nycticorax*
yellow-crowned night heron	*Nyctanassa violacea*
least bittern	*Ixobrychus exilis*
American bittern	*Botaurus lentiginosus*
	Family Ciconiidae
wood stork (Infrequent)	*Mycteria americana*

	<u>Family Threskiornithidae</u>
white-faced ibis	*Plegadis chihi*
roseate spoonbill (Infrequent)	*Ajaia ajaja*
SWANS, GEESE AND DUCKS	ORDER ANSERIFORMES
	<u>Family Anatidae</u>
whistling swan	*Olor columbianus*
Canada goose	*Branta canadensis*
white-fronted goose	*Anser albifrons*
snow goose	*Chen caerulescens*
mallard	*Anas platyrhynchos*
black duck (Infrequent)	*Anas rubripes*
gadwall	*Anas strepera*
pintail	*Anas acuta*
green-winged teal	*Anas crecca*
blue-winged teal	*Anas discors*
cinnamon teal	*Anas cyanoptera*
northern shoveler	*Anas cylpeata*
American wigeon or baldpate	*Anas americana*
wood duck	*Aix sponsa*
redhead	*Aythya americana*
ring-necked duck	*Aythya collaris*
canvasback	*Aythya valisineria*
greater scaup (Infrequent)	*Aythya marila*
lesser scaup	*Aythya affinis*
common goldeneye	*Bucephala clangula*
bufflehead	*Bucephala albeola*
oldsquaw (Infrequent)	*Clangula hyemalis*
surf scoter (Infrequent)	*Melanitta perspicallata*
black scoter (Infrequent)	*Melanitta nigra*
ruddy duck	*Oxyura jamaicensis*
hooded merganser	*Lophodytes cucullatus*
common merganser	*Mergus merganser*
red-breasted merganser	*Mergus serrator*
DIURNAL BIRDS OF PREY	ORDER FALCONIFORMES
	<u>Family Catharidae</u>
turkey vulture	*Cathartes aura*
black vulture (Infrequent)	*Coragyps atratus*
	<u>Family Accipitridae</u>
Mississippi kite	*Ictinia mississippiensis*
*swallow-tailed kite (Endangered) (Infreq.)	*Elanoides forficatus*
goshawk	*Accipiter gentilis*
sharp-skinned hawk	*Accipiter striatus*
Cooper's hawk	*Accipiter cooperii*
red-tailed hawk	*Buteo jamaicensis*
red-shouldered hawk	*Buteo lineatus*
broad-winged hawk	*Buteo platypterus*
Swainson's hawk	*Buteo swainsoni*
rough-legged hawk	*Buteo lagopus*
ferruginous hawk	*Buteo regalis*
Harris's hawk (Infrequent)	*Parabuteo unicinctus*
*golden eagle (Rare-1)	*Aquila chrysaetos*
+*bald eagle (Endangered)	*Haliaeetus leucocephalus*
marsh hawk	*Circus cyaneus*

DIURNAL BIRDS OF PREY, CONT.	ORDER FALCONIFORMES
	Family Pandioidae
osprey	*Pandion haliaetus*
	Family Falconidae
*prairie falcon (Endangered)(Infrequent)	*Falco mexicanus*
+*peregrine falcon (Endangered)(Infrequent)	*Falco peregrinus*
merlin	*Falco columbarius*
American kestrel or sparrow hawk	*Falco sparverius*
CHICKENLIKE BIRDS	ORDER GALLIFORMES
	Family Phasianidae
bobwhite	*Colinus virginianus*
	Family Meleagrididae
turkey	*Meleagris gallopavo*
CRANES AND ALLIES	ORDER GRUIFORMES
	Family Gruidae
+whooping crane (Endangered)	*Grus americana*
*sandhill crane (Rare-2)	*Grus canadensis*
RAILS AND ALLIES	ORDER RALLIFORMES
	Family Rallidae
king rail	*Rallus elegans*
Virginia Rail (Infrequent)	*Rallus limicola*
sora rail	*Porzana carolina*
black rail (Infrequent)	*Laterallus jamaicensis*
*purple gallinule (Rare-2)(Infrequent)	*Porphyrula martinica*
common gallinule	*Gallinula chloropus*
American coot	*Fulica americana*
SHOREBIRDS, GULLS, AUKS AND ALLIES	ORDER CHARADRIIFORMES
	Family Charadriidae
semipalmated plover	*Charadrius semipalmatus*
piping plover	*Charadrius melodus*
snowy plover	*Charadrius alexandrinus*
killdeer	*Charadrius vociferus*
*mountain plover (Rare-2) (Infrequent)	*Charadrius montanus*
American golden plover	*Pluvialis dominica*
black-bellied plover	*Pluvialis squatarola*
ruddy turnstone	*Arenaria interpres*
	Family Scolopacidae
American woodcock	*Philohela minor*
common snipe	*Capella gallinago*
*long-billed curlew (Rare-2)	*Numenius americanus*
whimbrel	*Numenius phaeopus*
upland sandpiper	*Bartramia longicauda*
spotted sandpiper	*Actitis macularia*
solitary sandpiper	*Tringa solitaris*
greater yellow legs	*Tringa melanoleuca*
lesser yellow legs	*Tringa flavipes*
willet	*Catoptrophorus semipalmatus*
red knot	*Calidris canutus*

RAILS AND ALLIES, CONT.

pectoral sandpiper
white-rumped sandpiper
Baird's sandpiper
least sandpiper
dunlin
semipalmated sandpiper
western sandpiper
sanderling
long-billed dowitcher
stilt sandpiper
buff-breasted sandpiper
marbled godwit
Hudsonian godwit

American avocet
black-necked stilt

red phalarope (Infrequent)
Wilson's phalarope
northern phalarope

parasitic jaeger (Infrequent)

glaucous gull
herring gull
ring-billed gull
laughing gull
Franklin's gull
Bonaparte's gull
black-legged kittwake (Infrequent)
Forster's tern
common tern
least tern
Caspian tern
black tern
black skimmer (Infrequent)

PIGEONS AND ALLIES

band-tailed pigeon (Infrequent)
rock dove
mourning dove
Inca dove (Infrequent)

PARROTS

monk parakeet

ORDER RALLIFORMES
<u>Family Scolopacidae</u>

Calidris melanotos
Calidris fuscicollis
Calidris bairdii
Calidris minutilla
Calidris alpina
Calidris pusilla
Calidris mauri
Salidris alba
Limnodromus scolopaceus
Micropalama himantopus
Tryngites subruficollis
Limosa fedao
Limosa haemastica

<u>Family Recurvirostridae</u>

Recurvirostra americana
Himantopus mexicanus

<u>Family Phalaropodidae</u>

Phalaropus fulicarius
Steganopus tricolor
Lobipes lobatus

<u>Family Stercorariidae</u>

Stercorarius parasiticus

<u>Family Laridae</u>

Larus hyperboreus
Larus argentatus
Larus delawarensis
Larus artricilla
Larus pipixcan
Larus philadelphia
Rissa tridactyla
Sterna forsteri
Sterna hirundo
Sterna albifrons
Hydroprogne caspia
Chlidonian niger
Rynchops nigra

ORDER COLUMBIFORMES
<u>Family Columbidae</u>

Columba fasciata
Columba livia
Zenaida macroura
Scardafella inca

ORDER PSITTACIFORMES
<u>Family Psittacidae</u>

Myiopsitta monachus

CUCKOOS AND ALLIES	ORDER CUCLIFORMES Family Cuclidae
yellow-billed cuckoo	*Coccyzus americanus*
black-billed cuckoo	*Cocyzus erythropthalmus*
roadrunner	*Geococcyx californianus*
groove-billed ani (Infrequent)	*Crotophaga sulcirostris*
OWLS	ORDER STRIGIFORMES Family Tytonidae
barn owl	*Tyto alba*
	Family Stridigae
screech owl	*Otus asio*
great horned owl	*Bubo virginianus*
snowy owl	*Nyctea scandiaca*
burrowing owl	*Speotyto cunicularia*
barred owl	*Strix varia*
long-eared owl	*Asio otus*
short-eared owl	*Asio flammeus*
GOATSUCKERS AND ALLIES	ORDER CAPRIMULGIFORMES Family Caprimulgidae
chuck-will's-widow	*Caprimulgus carolinensis*
whip-poor-will (Infrequent)	*Caprimulgus vociferus*
poor-will (Infrequent)	*Phalaenoptilus nuttallii*
common nighthawk	*Chordeiles minor*
SWIFTS AND HUMMINGBIRDS	ORDER APODIFORMES Family Apodidae
chimney swift	*Chaetura pelagica*
	Family Trochilidae
ruby-throated hummingbird	*Archilochus colubris*
black-chinned hummingbird	*Archilochus alexandri*
rufous hummingbird (Infrequent)	*Selasphorus rufus*
KINGFISHERS AND ALLIES	ORDER CORACIIFORMES Family Alcedinidae
belted kingfisher	*Megaceryle alcyon*
WOODPECKERS AND ALLIES	ORDER PICIFORMES Family Picidae
common flicker	*Colaptes auratus*
pileated woodpecker	*Dryocopus pileatus*
red-bellied woodpecker	*Centurus carolinus*
red-headed woodpecker	*Melanerpes erythrocephalus*
*Lewis's woodpecker (Rare-2)(Infrequent)	*Asyndesmus lewis*
yellow-bellied sapsucker	*Sphyrapicus varius*
hairy woodpecker	*Dendrocopos villosus*
downy woodpecker	*Dendrocopos pubescens*
ladder-backed woodpecker	*Dendrocopos scalaris*

SPARROWLIKE BIRDS	ORDER PASSERIFORMES
	Family Tyrannidae
eastern kingbird	*Tryannus tryannus*
western kingbird	*Tryannus verticalis*
scissor-tailed flycatcher	*Muscivora forficata*
great crested flycatcher	*Myiarchus crinitus*
eastern phoebe	*Sayornis phoebe*
*Say's pheobe (Rare-2)(Infrequent)	*Sayornis saya*
yellow-bellied flycatcher	*Empidonax flaviventris*
Acadian flycatcher	*Empidonax virescens*
Alder flycatcher	*Empidonax alnorum*
least flycatcher	*Empidonax minimus*
eastern wood pewee	*Contropus virens*
olive-sided flycatcher	*Nuttallornis borealis*
vermilion flycatcher (Infrequent)	*Pyrocephalus rubinus*
	Family Alaudidae
horned lark	*Eremophila alpestris*
	Family Hirundinidae
tree swallow	*Iridoprocne bicolor*
bank swallow	*Riparia riparia*
rough-winged swallow	*Stelgidopteryx ruficollis*
barn swallow	*Hirundo rustica*
cliff swallow	*Petrochelidon pyrrhonota*
purple martin	*Progne subis*
	Family Corvidae
blue jay	*Cyanocitta cristata*
*black-billed magpie (Rare-2)(Infrequent)	*Pica pica*
common crow	*Corvus brachyrhyrchos*
Clark's nutcracker (Infrequent)	*Nucifraga columbiana*
	Family Paridae
Carolina chickadee	*Parus carolinensis*
tufted titmouse	*Parus bicolor*
	Family Sittadae
white-breasted nuthatch	*Sitta carolinensis*
red-breasted nuthatch	*Sitta canadensis*
	Family Certhiidae
brown creeper	*Certhia familaris*
	Family Troglodytidae
house wren	*Troglodytes aedon*
winter wren	*Troglodytes troglodytes*
Bewick's wren	*Thryomanes bewickii*
Carolina wren	*Thryothorus ludovicianus*
long-billed marsh wren	*Telmatodytes palustris*
short-billed marsh wren	*Cistothrous platensis*
rock wren (Infrequent)	*Salpinctes obsoletus*

SPARROWLIKE BIRDS, CONT.	ORDER PASSERIFORMES
	Family Mimidae
mockingbird	*Mimus polyglottis*
gray catbird	*Dumetella carolinensis*
brown thrasher	*Toxostoma rufum*
*curve-billed thrasher (Rare-2) (Infreq.)	*Toxostoma curvirostre*
*sage thrasher (Rare-2) (Infrequent)	*Oreoscoptes montanus*
	Family Turdidae
robin	*Turdus migratoruis*
wood thrush	*Hylocichla mustelina*
hermit thrush	*Catharus guttatus*
Swainson's thrush	*Catharus ustulatus*
gray-cheeked thrush	*Catharus minimus*
veery	*Catharus fuscescens*
eastern bluebird	*Sialia sialis*
mountain bluebird	*Sialia currucoides*
Townsend's solitaire	*Myadestes townsendi*
	Family Sylviidae
blue-gray gnatcatcher	*Polioptila caerulea*
golden-crowned kinglet	*Regulus satrapa*
ruby-crowned kinglet	*Regulus calendula*
	Family Motacillidae
water pipit	*Anthus spinoletta*
Sprague's pipit	*Anthus spragueii*
	Family Bombycillidae
Bohemian waxwing (Infrequent)	*Bombycilla garrulus*
cedar waxwing	*Bombycilla cedroroum*
	Family Laniidae
northern shrike (Infrequent)	*Lanius excubitor*
loggerhead shrike	*Lanius ludovicianus*
	Family Sturnidae
starling	*Sturnus vulgaris*
	Family Vireonidae
black-capped vireo	*Vireo atricapilla*
white-eyed vireo	*Vireo griseus*
Bell's vireo	*Vireo bellii*
yellow-throated vireo	*Vireo flavifrons*
solitary vireo	*Vireo solitarius*
red-eyed vireo	*Vireo olivaceus*
Philadelphia vireo	*Vireo philadelphicus*
warbling vireo	*Vireo gilvus*
	Family Parulidae
black-and-white warbler	*Mniotilta varia*
prothonotary warbler	*Protonotaria citrea*

	<u>Family Parulidae, cont.</u>
golden-winged warbler (Infrequent)	*Vermivora chrysoptera*
blue-winged warbler (Infrequent)	*Vermivora pinus*
Tennessee warbler	*Vermivora peregrina*
orange-crowned warbler	*Vermivora celata*
Nashville warbler	*Vermivora ruficapilla*
northern parula warbler	*Parula americana*
yellow warbler	*Dendroica petechia*
magnolia warbler	*Dendroica magnolia*
black-throated blue warbler (Infrequent)	*Dendroica caerulescens*
yellow-rumped warbler	*Dendroica coronata*
black-throated gray warbler (Infrequent)	*Dendroica nigrescens*
black-throated green warbler	*Dendroica virens*
Blackburnian warbler	*Dendroica fusca*
yellow-throated warbler	*Dendroica dominica*
chestnut-sided warbler (Infrequent)	*Dendroica pensylvanica*
bay-breasted warbler (Infrequent)	*Dendroica castanea*
blackpoll warbler (Infrequent)	*Dendroica striata*
prairie warbler	*Dendroica discolor*
oven bird	*Seiurus aurocapillus*
northern waterthrush	*Seiurus noveboracensis*
Louisiana waterthrush	*Seiurus motacilla*
Kentucky warbler	*Oporornis formosus*
Connecticut warbler (Infrequent)	*Oporornis agilis*
mourning warbler	*Oporornis philadelphia*
MacGillivray's warbler	*Oporornis tolmiei*
common yellowthroat	*Geothylpis trichas*
yellow-breasted chat	*Icteria virens*
hooded warbler (Infrequent)	*Wilsonia citrina*
Wilson's warbler	*Wilsonia pusilla*
Canada warbler (Infrequent)	*Wilsonia canadensis*
American redstart	*Setophaga ruticilla*
	<u>Family Ploceidae</u>
English sparrow	*Passer domesticus*
	<u>Family Icteridae</u>
bobolink	*Dolichonyx oryzivorus*
eastern meadow lark	*Sturnella magna*
western meadow lark	*Sturnella neglecta*
yellow-headed blackbird	*Xanthocephalus xanthocephalus*
red-winged blackbird	*Agelaius phoeniceus*
orchard oriole	*Icterus spurius*
northern oriole	*Icterus galbula*
rusty blackbird	*Euphagus carolinus*
Brewer's blackbird	*Euphagus cyanocephalus*
great-tailed grackle	*Cassidix mexicanus*
common grackle	*Quiscalus quiscula*
brown-headed cowbird	*Molathrusater*

SPARROWLIKE BIRDS, CONT.

ORDER PASSERIFORMES

	Family Thraupidae
scarlet tanager (Infrequent)	*Piranga olivacea*
summer tanager	*Piranga rubra*
	Family Fringillidae
cardinal	*Cardinalis cardinalis*
rose-breasted grosbeak	*Pheucticus ludovicianus*
black-headed grosbeak (Infrequent)	*Pheucticus melanocephalus*
blue grosbeak	*Guiraca caerulea*
indigo bunting	*Passerina cyanea*
lazuli bunting (Infrequent)	*Passerina amoena*
painted bunting	*Passerina ciris*
dickcissel	*Spiza americana*
evening grosbeak	*Hesperiphona vespertina*
purple finch	*Carpodacus purpureus*
house finch (Infrequent)	*Carpodacus mexicanus*
pine grosbeak (Infrequent)	*Pinicola enucleator*
pine siskin	*Spinus pinus*
American goldfinch	*Spinus tristis*
lesser goldfinch (Infrequent)	*Spinus psaltria*
red crossbill	*Loxia curvirostra*
white-winged crossbill (Infrequent)	*Loxia leucoptera*
green-tailed towhee (Infrequent)	*Chlorura chlorura*
rufous-sided towhee	*Pipilo erythrophthalmus*
lark bunting (Infrequent)	*Calamospiza melanocorys*
Savannah sparrow	*Passerculus sandwichensis*
grasshopper sparrow	*Ammodramus savannarum*
Baird's sparrow (Infrequent)	*Ammodramus bairdii*
Henslow's sparrow (Infrequent)	*Ammodramus henslowii*
sharp-tailed sparrow (Infrequent)	*Ammospiza caudacuta*
LeConte's sparrow	*Ammospiza leconteii*
vesper sparrow	*Pooecetes gramineus*
lark sparrow	*Chondestes grammacus*
Cassin's sparrow	*Aimophila cassinii*
*black-throated sparrow (Rare-2) (Infreq.)	*Amphispiza bilineata*
dark-eyed junco	*Junco hyemalis*
*gray-headed junco (Rare-2) (Infrequent)	*Junco caniceps*
tree sparrow	*Spizella arborea*
chipping sparrow	*Spizella passerina*
clay-colored sparrow	*Spizella pallida*
Brewer's sparrow (Infrequent)	*Spizella breweri*
field sparrow	*Spizella pusilla*
Harris's sparrow	*Zonotrichia querula*
white-crowned sparrow	*Zonotrichia leucophrys*
white-throated sparrow	*Zonotrichia albicollis*
fox sparrow	*Passerella iliaca*
Lincoln's sparrow	*Melospiza lincolnii*
swamp sparrow	*Melospiza georgiana*
song sparrow	*Melospiza melodia*
McCown's longspur	*Calcarius mccownii*
Lapland longspur	*Calcarius lapponicus*
Smith's longspur	*Calcarius pictus*
chestnut-collared longspur	*Calcarius ornatus*
snow bunting (Infrequent)	*Plectrophenax nivalis*

LIST OF MAMMALS

The following list contains 51 species of mammals known to exist in the ACOG region. Nomenclature and taxonomoc order are based on Blair (1968) and Greer (1977).

ORDER MARSUPIALIA

Virginia oppossum	*Didelphis virginiana*

ORDER INSECTIVORA

short-tailed shrew	*Blarina brevicauda*
least shrew	*Cryptotis parva*
eastern mole	*Scalopus aquaticus*

ORDER CHIROPTERA

silver-haired bat	*Lasionycteris noctivagans*
eastern pipistrelle	*Pipistrellus subflavus*
red bat	*Lasiurus borealis*
hoary bat	*Lasiurus cinereus*
big brown bat	*Eptesicus fuscus*
cave myotis	*Myotis velifer*
Townsend's big-eared bat	*Plecotus townsendii*
Brasilian free-tailed bat (guano bat)	*Tadarida brasiliensis*

ORDER EDENTATA

nine-banded armadillo	*Dasypus novemcinctus*

ORDER LAGOMORPHA

black-tailed jackrabbit	*Lepus californicus*
eastern cottontail	*Sylvilagus floridaans*
*swamp rabbit (Endangered)	*Sylvilagus aquaticus*

ORDER RODENTIA

eastern fox squirrel	*Sciurus niger*
*black-tailed prairie dog (Rare-2)	*Cynomys ludovicianus*
thirteen-lined ground squirrel	*Spermophilus tridecemlineatus*
southern flying squirrel	*Glaucomys volans*
plains pocket gopher	*Geomys bursarius*
hispid pocket mouse	*Perognathus hispidus*
Ord's kangaroo rat	*Dipodomys ordii*
beaver	*Castor canadensis*
plains harvest mouse	*Reithrodontomys montanus*
fulvous harvest mouse	*Reithrodontomys fulvescens*
deer mouse	*Peromyscus maniculatus*
white-footed mouse	*Peromyscus leucopus*
cotton mouse	*Peromyscus gossypinus*
northern grasshopper mouse	*Onychomys leucogaster*
hispid cotton rat	*Sigmodon hispidus*
eastern woodrat	*Neotoma floridana*
*prairie vole (Rare-1)	*Microtus ochrogaster*
woodland vole	*Microtus pinetorum*

LIST OF MAMMALS, CONT.

ORDER RODENTIA, CONT.

muskrat	*Ondatra zibethicus*
*meadow jumping mouse (Rare-2)	*Zapus hudsonius*
nutria	*Myocastor coypus*
gray squirrel	*Sciurus carolinensis*
Texas mouse	*Peromyscus atiwateri*

ORDER CARNIVORA

coyote	*Canis latrans*
red fox	*Vulpes*
gray fox	*Urocyon cinereoargenteus*
raccoon	*Procyon lotor*
long-tailed weasel	*Mustela frenata*
mink	*Mustela vison*
badger	*Taxidea taxus*
striped skink	*Mephitis mephitis*
eastern spotted skunk	*Spilogale putorius*
+*mountain lion (cougar)(Endangered)	*Felis concolor*
bobcat	*Lynx rufus*

ORDER ARTIODACTYLA

whitetail deer	*Odocoileus virginianus*
bison	*Bison bison*

*Denotes species listed as rare or endangered by the Rare and Endangered Species of Oklahoma Committee (1975). The pertinent definitions used by this committee are as follows:

Endangered - Any species or subspecies occurring in Oklahoma threatened with extinction through the destruction, drastic modification, or severe curtailment, or the threatened destruction, drastic modification or severe curtailment of its habitat, or its over-utilization for commercial or sporting purposes, or the effect on it of disease or predation, or other natural or man-made factors affecting its continued existence. Continued survival of this species is unlikely without implementation of special protective measures.

Rare-1 - A rare species or subspecies is one that, although not presently threatened with extinction, is in such small numbers that it may be endangered if its environment worsens.

Rare-2 - A species or subspecies that may be quite abundant where it does occur but is known in only a few localities or in a restricted habitat within Oklahoma.

+Denotes species listed as endangered by the U.S. Fish and Wildlife Service. The Endangered Species Act of 1973 (PL 93-205; 87 Stat. 884) defines as "endangered", those species in danger of "extinction throughout all or a significant part of their range".

APPENDIX C

PUBLIC PARTICIPATION
MEETING SUMMARIES

TASK - PUBLIC PARTICIPATION FOR PHASE I STUDY

FOR LAKE OVERHOLSER

INTRODUCTION

The Oklahoma Water Resources Board, in cooperation with the Oklahoma Department of Pollution Control, will provide for, encourage, and assist public participation in developing proposed Phase I projects for the restoration and, or protection of four publicly owned lakes. The Oklahoma Water Resources Board (OWRB) has designated Lynda Sinclair to serve as the agency Public Participation Coordinator (PPC) for the four Phase I studies. In accordance with the Public Participation Federal Regulations, Title 40, Section 25.11, the following activities are planned: Public comment will be solicited in developing, evalutating and selecting alternatives for lake restoration or protection; in assessing environmental impacts; and identifying measures to mitigate any adverse impacts that are identified. Relevant project information will be completed and available for review in a depository 30 days prior to any meeting.

A formal public hearing will be held before the final selection of an alternative for lake restoration if the alternative involves major construction, dredging or significant modifications to the environment, or if deemed appropriate by the Regional Administrator or the Project Officer.

A summary of the public comments and grantee's response to said comments shall be prepared and submitted to EPA either as a report or as responsiveness summaries.

Public consultation will be coordinated with related or existing programs or activities to encourage the greatest participation by the public.

The Public Participation Program must remain flexible to enable incorporation of the needed modifications in accordance with the public input. Maintaining this philosophy throughout the program will be accomplished by following the "Citizen Participation by Objective Method" as outlined in the "Citizen Participation Handbook", Third Edition 1978, Institute for Participatory Planning, Laramie, Wyoming.

As delineated in the project proposal submitted July 30, 1979, we will utilize valid and legitimate mechanisms to establish SEACA (Substantial Effective Agreement on a Course of Action) in accordance with the Citizen Participation Handbook.

In overview, the SEACA process will ensure that the interested and or affected public will have the opportunity to be involved, informed, and heard in the decision making process regarding major project results. The mechanisms for this public involvement should include the utilization of several activities such as public meetings, fact sheets for press releases and news letters, presentations to various civic functions and organizations and public awareness bulletins (posters) which with planning can be integrated to form SEACA.

Each public meeting held will include the important two-way communication feature as public input will assist in project direction. Fact sheets in newsletters and for press releases should inform and solicit public involvement when needed for project direction. The public awareness education bulletins should ensure that the "lake-user public" has the opportunity to review the project. These notices can provide an alternative means of informing the public that would not attend or do not have the opportunity to attend public meetings.

FEDERAL REQUIREMENTS

FOR PUBLIC PARTICIPATION

The OWRB has included the five basic functions required in the proposed policy on public participation from the Code of Federal Register, 40 CFR-Part 25 reference. The public participation task will be addressed according to these basic functions: Identification, Outreach, Dialogue, Assimilation and Feedback.

1. IDENTIFICATION:

   A mailing list of potential interest groups has been assimilated for Lake Overholser. These groups were chosen as those who may be affected or interested in any phase of the Clean Lakes program. Attached are mailing lists of these groups, which may be expanded at any time. A Gopher committee will be chosen to represent each lake.

2. OUTREACH:

   Accurate information that is pertinent and understandable will be sent out in a timely manner through media ads, mailings, depositories and public service announcements as well as other means of cummunication.

   a. Content:

      Information concerning the project such as background, time tables of proposed actions and technical summaries will be provided. Public meetings will be held to discuss the issues and to inform the public of the social, economical and environmental consequences of proposed decisions.

      Newsletters and news releases will inform the public of available materials or documents.

   b. Notification:

      All appropriate parties will be notified of any opportunities to participate and give input. This will usually be done through mailouts and the media.

c. <u>Timing</u>:

A formal public meeting will have 30 days notice where as a public hearing will have 45 days notice. Notification will be handled through mailing lists and material posted in Lake Overholser area.

d. <u>Fees For Copying</u>:

Copies of pertinent documents will be provided free of charge. Any charges incurred will be charged to the Lake Overholser grant.

e. <u>Depositories</u>:

Copies of the workplan, reports, studies and important documents will be placed in local public and university library depositories. A list of these depositories is attached.

3. <u>DIALOGUE</u>:

This will provide the public an avenue to exchange views and explore issues, answers and consequences. The method chosen will be the most effective one at the time. This could be meetings, workshops, hearings and the establishment of a Gopher committee.

The public will be notified of meetings well in advance and the meeting times and places will be scheduled at the most convenient times and locations possible for the public.

a. <u>Requirements For A Public Hearing</u>:

Public hearings will be held with the approved guidelines that follow:

1. Timing of Notice - Notices will be well publicized and mailed out 45 days in advance. (Exceptions are lsited in the Federal Register.)

2. Content of Notice - The notice will identify the issues to be discussed at the hearing and will include a discussion of the agency's tentative plans on these issues.

3. Provision of Information - All reports, documents and data relevant to the public hearings will be made available to the public as soon as the OWRB is able to release them. This should be no later then 30 days prior to the hearing.

4. Conduct of Hearing - The public attending a hearing will be informed of the issues at hand, the considerations of the OWRB and DPC regarding the laws and regulations, the Boards tentative conclusions along with obtaining input from the public. This can be done through questions and answer period to allow for full expression of views.

5. Record of Hearings - The hearing record will be left open 10 days following the hearing to receive additional comment. A transcript will be prepared and made available to the public.

b. Requirements For Advisory Groups:

The use of an Advisory Committee has not yet been established for Lake Overholser. The legitimacy of such a committee for this area is still being questioned.

4. Assimilation:

There will be an assimilation of public view points and preferences into the final conclusions. This will be done by putting together the results of "Outreach and Dialogue". The OWRB and DPC will then incorporate the views and concerns of the public into subsequent project actions. Assimilation will include three elements:

a. Documentation:

Documentation will outline considerations of the public's views in the form of Responsiveness Summaries or other appropriate forms.

b. Content:

Each Responsiveness Summary will include:

1. An explanation of the Public Participation activity conducted.

2. Identify those people or groups who attended.

3. Describe the matters on which the public was consulted.

4. Summarize the public's views, comments, and suggestions.

5. Depict the Water Board's responses. If modification will be considered or if not, why the proposal is rejected.

c. USE:

Responsiveness Summaries will be used in any decisions made on the project.

5. FEEDBACK:

The OWRB in coordination with the DPC will inform interested parties and other groups of the outcome of the publics involvement. This may be done through personal letters or phone calls. The following elements must be present:

a. Content:

A statement of the action taken on Lake Overholser will indicate the effect the public's comments had on that action.

b. Availability:

The OWRB and DPC will supply the public with appropriate feedback and will insure that all public participants in the Lake Overholser area have access to that feedback. Also, when Responsiveness Reports or similar documents have been prepared they will be made available to the public.

LAKE OVERHOLSER
PUBLIC PARTICIPATION
ESTABLISHED OBJECTIVES AND TECHNIQUES

The Public Participation Program was planned around the Hans Bleiker Citizens Participation by Objectives Handbook. The following techniques were chosen by the handbooks systematic determination of selecting techniques to fulfill stated objectives.

Objectives obtained from the handbook will be listed for Lake Overholser and following these a list of alternative techniques will be displayed. In order to meet the federal regulations concerning Public Participation, at the end of each technique a reference will be made as to which regulation the technique addresses. Objectives were selected by a working team from OWRB and DPC which included personnel familiar with the current status at each lake in the program. The four lakes were considered jointly so that economy of scale could be identified if possible.

Each of the lakes shared some objectives that may be considered very important to these projects: establishing and maintaining the legitimacy of the OWRB and DPC, and establishing and maintaining the legitimacy of our decision making processes were needed for every lake in the program, these, along with specific objectives for each lake will be the main concern of the Public Participation Program.

LAKE OVERHOLSER OBJECTIVES

1. Establishing the legitimacy of the agencies involved. (OWRB, DPC, EPA AND OKC)

2. Establishing the legitimacy of the agencies' decision-making process

3. Learn to see the project through the public's eyes.

4. Receive and understand all information that the various interests need to communicate to the different agencies involved.

5. Search for consensus of common goals among the represented agencies and the various interested parties representing the public at large.

Several techniques, as identified by the CP Process will be used as aides in achieving the defined objectives listed above. Following the description of these techniques will be a calendar with specific dates listed for public meetings and hearings. There are also listings of all other types of public contacts.

A. Using a Committee of "Gofers":

A group of individuals will be selected from organizations and the general public to represent the "Gofer" committee. These people will be those individuals who already have an interest in environmental affairs. They will be responsible for keeping their organization and the general public informed on the progress of the project. Existing organizations will be used to make the most of their involvement. This method, taken from the Citizens Participation Handbook, was chosen as the most effective way of getting the publics views and keeping them involved. A list of representatives will be completed and sent to EPA in March 1981 (Dialogue, Assimilation and Feedback).

B. Public Meetings:

There will be two public meetings. The first meeting will be held in February 1981. This meeting will cover the review of the Overholser Lake work plan. At this time any comments can be made concerning any changes that may need to be made. The second meeting will be held after the conclusion of the data sampling period. This meeting will be held in January 1983. A public forum will follow this meeting to solicit public comments and answer any questions (Assimilation and Feedback).

C. Public Hearings:

A public hearing will be held in April 1983, near the end of the project, to obtain public comment and to discuss feasibility ideas. The draft will be left open to the public ten days after the public hearing for this purpose. All comments will be considered prior to submittal to EPA of the final plan (Outreach, Dialogue, Assimilation and Feedback).

D. Brochure/Handbill:

A brochure describing the project along with a contact phone number will be distributed in the Oklahoma City area. This brochure will include all six grants that are included in the Clean Lakes 314 Project. A handbill describing the Overholser Lake project will be distributed in the Northwest part of Oklahoma City in January 1981 (Outreach and Assimilation).

OVERHOLSER	1980	1981	1982	[illegible]
JANUARY		1/20/81 Public meeting notice		1/27/83 Public meeting with forum
FEBRUARY		2/19/81 Public meeting workplan review		GOFER--COMMITTEE--CONTACTS 2/14/83 Public hearing notice
MARCH		"Gofer" Committee organization and list sent to EPA Quarterly press release	Quarterly press release	Quarterly press release
APRIL		"Gofer" Committee meeting		4/7/83 Public hearing 4/18/83 Comment period
MAY			Tour-student involvement	5/31/83 Final report to DPC
JUNE		Quarterly press release	Quarterly press release	6/13/83 Final report to PCCB
JULY		GOFER---COMMITTEE---CONTACTS	SAMPLING GOFER---COMMITTEE---CONTACTS	7/15/83 Final report to EPA
AUGUST				Quarterly press releases to include: articles in newsletters, environmental education releases to media regarding the Clean Lakes Program and decision-making process and Public Service Announcements (PSA), T.V. and Radio spots. Participate in publication of Oklahoma Clean Lakes brochure. Project identification sign at lake site. A guided tour with student involvement.
SEPTEMBER		Quarterly press release	Quarterly press release	
OCTOBER				
NOVEMBER			End of sampling	
DECEMBER	Handbill organization and publication	SAMPLING Begin sampling Quarterly press release	12/20/82 Public meeting notice. Quarterly press release	

LAKE OVERHOLSER

	Total Public Participation Funds	OWRB	DPC
"Gofer" Committee Formation, Meetings and Staff Support	$2400	$1200	$1200
One Public Meeting	600	300	300
One Public Meeting with Forum	1034	517	517
Public Hearing	600	300	300
Public Service Announcements (PSA's)	free	---	---
Newsletters	325	325	---
Brochures	650	125	125
Tour-Student Involvement	922	461	461
Printing Costs	1700	1700	---
Informational mailings	1351	----	1351
Responsiveness Summaries	846	336	510
Meeting Facilities	500	---	500
Speaker Availability	400	400	---
Sign	100	50	50
	$11,428	$5714	$5714

Clean Lakes Milestone Schedule

DATE	MONEY	REPORT	TASKS WITHIN REPORT	PUBLIC PARTICATION
1-1-81		Interim Report	1, 2, 3	Handbill organization & public meeting notice 1/20/81 Gofer Commit tee Organization
4-30-81	4,460	Progress Report	1, 3	List to EPA Public meeting 2/19/81
-1-81	12,100	Interim Report	4, 5, 6	Quarterly press releas Gofer Committee Meetir
10-1-82	12,100	Progress Report	7, 8, 10, 11	Quarterly press releas Gofer Committee Meetir
1-2-82	12,100	Interim Report	9, 10, 12	Quarterly press releas
4-1-82	12,100	Progress Report	11, 13	Tour/student involvem
7-1-82	12,100	Interim Report	11, 14, 15, 16, 17, 18, 19, 20, 21	Quarterly press relea
10-1-82	12,100	Progress Report	14, 15, 16, 18, 19, 20, 21	Gofer contacts Public Hearing Notice 1/27/83
1-1-83		DRAFT OF FINAL REPORT		Public hearing/forum 4/7/83 Comment Period 4/18/8
4-1-83	FINAL	REPORT		Final to DPC 5/31/83 Final to PCCB 6/13/83
7-1-83	FINAL	REPORT		Final to EPA 7/15/83

Must match 5700s

Interagency agreement

Must agree with workplan

Must agree with Federal Register and the Grant Agreement

Must meet with project officers approval

Oklahoma Department of Pollution Control
Box 53504 • N.E. 10th & Stonewall • Oklahoma City, Oklahoma 73152 • (405) 271-4677

Lawrence R. Edmison, J.D.
Director

Ralph D. Campbell
Programs Director

December 11, 1980

Mr. Oliver Delaney, Editor
The Oklahoma Gazette
109 State Capitol Building
Oklahoma City, OK 73105

Dear Mr. Delaney:

I would appreciate the attached notice (Lake Overholser, Clean Lakes Program draft workplan) being published in the January 1, 1981, edition of The Oklahoma Gazette.

Sincerely,

Amelia Saul

Amelia Saul
Asst. to the Director

AS:jh

Attachment

The Oklahoma Department of Pollution Control does hereby give notice that a public meeting will be held to discuss a Clean Lakes Workplan for Lake Overholser in the Lakes Overholser and Hefner Maintenance Building, 1800 Lake Overholser Drive, Oklahoma City Oklahoma, at 7:00 p.m. on February 19, 1981. This grant is being funded by the Environmental Protection Agency to the Oklahoma Pollution Control Coordinating Board (PCCB), and the study will be conducted by the Oklahoma Water Resources Board (OWRB), a member agency of the PCCB. The federal Clean Lakes Program is designed to study and restore publicly owned recreational lakes. A copy of the proposed workplan can be obtained by contacting the OWRB at 271-2541.

Any person may present his views either in writing or orally at the above stated meeting.

Oklahoma Department of Pollution Control

Box 53504 • N.E. 10th & Stonewall • Oklahoma City, Oklahoma 73152 • (405) 271-4677

Lawrence R. Ed[illegible]
Director

Ralph D. Campbell
Programs Director

February 9, 1981

For additional information:
Amelia Saul

FOR IMMEDIATE RELEASE

Lake Overholser has become a popular spot in the Oklahoma City area for fishing and is also well known for its annual speed boat races. It is not, however, well known for its clean water.

Lake Overholser is one of a select group of lakes that has been chosen for a Phase I Diagnostic-Feasibility Study to determine the water quality, to evaluate solutions to the existing pollution problems, and to recommend the most feasible program to restore or preserve the lakes water quality. This project is being funded by the U.S. Environmental Protection Agency (EPA) to the Oklahoma Pollution Control Coordinating Board with Oklahoma Water Resources Board (OWRB) acting as project manager.

If the Phase I project reveals that a pollution problem exists and that a feasible solution is possible, then a Phase II Implementation program will be recommended. This will include methods and procedures for controlling pollution entering the lake. Federal assistance from EPA will be requested.

Since the main thrust of the Clean Lakes Program is to restore lake water quality for public use and appreciation, it is the intention of EPA and the State of Oklahoma to involve the public as much as possible in the decision-making process. Therefore, a Public Participation Program has been designed to keep the public informed and allow for public input of views and ideas concerning the project. In order to receive these views from the public and to keep them informed of major decision points, public meetings and hearings, as well as brochures, press releases, and radio and T.V. advertisements, have been scheduled. The first of these scheduled activities is a public meeting to discuss the Lake Overholser draft work plan. The meeting, sponsered by the Department of Pollution Control and the OWRB, will be held on February 19, 1981 at 7:00 p.m. in the Overholser Maintenance Building, 1800 Lake Overholser Drive, Oklahoma City.

The public is urged to attend and become aware of what each citizen can do to preserve the quality and beauty of this lake. A copy of the draft workplan may be obtained by contacting the OWRB at 271-2532 or reviewed at ACOG, the Sub-State Planning District office or any of the Oklahoma City Metropolitan branch libraries.

Oklahoma Department of Pollution Control

Box 53504 • N.E. 10th & Stonewall • Oklahoma City, Oklahoma 73152 • (405) 271-4677

Lawrence R. Edmison, J.D.
Director

Ralph D. Campbell
Programs Director

April 29, 1981

For Additional Information contact:
Amelia Saul

FOR IMMEDIATE RELEASE

A workplan to determine causes of water pollution in Lake Overholser was recently approved and funded in part by the Environmental Protection Agency under its Clean Lakes Program. The funding was awarded to the Pollution Control Coordinating Board with the Oklahoma Water Resources Board, a member agency of the Board, conducting the study. Sampling of the water will begin shortly, and analyses of the samples will be used to determine adequate pollution abatement techniques. Citizens in the area are encouraged to contact the Oklahoma Water Resources Board at 271-2532 for additional information.

# # #

Oklahoma Department of Pollution Control

Box 53504 • N.E. 10th & Stonewall • Oklahoma City, Oklahoma 73152 • (405) 271-4677

You're doin fine Oklahoma! 1907 Diamond Jubilee 1982

Lawrence R. Edmison, J.D.
Director

Ralph D. Campbell
Programs Director

July 28, 1981

For additional information
contact: Bob Kinniburgh

FOR IMMEDIATE RELEASE

The Oklahoma Water Resources Board (OWRB) has recently begun taking water samples from Overholser Reservoir as the first step in the Phase I Clean Lakes Study. This study, which is partially funded by the Environmental Protection Agency through the Pollution Control Coordinating Board of which the OWRB is a member, began in January of this year.

A Citizen's Advisory Committee for the Overholser Lake project is being formed to encourage public participation in the program. A mailing list has been organized and letters concerning the committee distributed to area residents. If you are interested in serving on the committee or interested in receiving the letter describing committee member responsibilities, send your name and address to the Oklahoma Water Resources Board, 1000 N. E. 10th, P.O. Box 53585, Oklahoma City, Oklahoma 73152 or call Lynda Sinclair at (405) 271-2538.

Oklahoma Department of Pollution Control
Box 53504 • N.E. 10th & Stonewall • Oklahoma City, Oklahoma 73152 • (405) 271-4677

Lawrence R. Edmison, J.D.
Director

Ralph D. Campbell
Programs Director

January 11, 1982

For additional information,
contact Ken Morris, Oklahoma
Water Resources Board
(405) 271-2541

FOR IMMEDIATE RELEASE

Obtaining water quality data from Lake Overholser is not a very comfortable task during the winter months according to Dr. Jim Grimshaw, Oklahoma Water Resources Board (OWRB), principal investigator for the Lake Overholser Clean Lakes Project. This data is being collected as part of the National Clean Lakes Program grant to Oklahoma administered by the Pollution Control Coordinating Board to the OWRB. The project is twofold: Phase I is to diagnose and develop feasible methods to restore the lake to its initial quality for recreational use. Phase II includes actual restoration of the lake. Although there appears to be no additional federal funding for this program, continuance of the restoration process with other funding, state and/or local, is possible. An advisory committee sponsored by the OWRB will consider funding alternatives.

Restoration of Lake Overholser is of the utmost importance as statistics gathered during the Clean Lakes studies have shown that Lake Overholser ranks second only to Lake Thunderbird, which had over 3 million visitors in 1980, in being the most heavily visited reservoir within a 50 mile radius of Oklahoma City.

For information regarding the program or the advisory committee, contact Ken Morris or Lynda Sinclair, OWRB, (405) 271-2541.

Oklahoma Department of Pollution Control

Box 53504 • N.E. 10th & Stonewall • Oklahoma City, Oklahoma 73152 • (405) 271-4677

You're doin' fine, Oklahoma! 1907 · 75 · 1982 Diamond Jubilee

Lawrence R. Edmison, J.D.
Director

PRESS RELEASE

The Oklahoma Water Resources Board will be holding a meeting to form a Lake Committee for Lake Overholser July 15, 1982, at 7:30 p.m. in Bresee Hall, Room 301 on the Bethany Nazarene College Campus, 6729 N.W. 39th Expressway, Oklahoma City. This meeting will be the first in a series of committee meetings for the Lake Overholser Clean Lakes project.

The National Clean Lakes Program was developed in 1972 as part of the Clean Waters Act with the intention of protecting and/or restoring the quality of the State's publicly owned freshwater lakes for recreational use. The Overholser Lake project was awarded by grant to the Oklahoma Pollution Control Coordinating Board, and is being administered and coordinated by the Oklahoma Water Resources Board.

Under the grant awarding agency, the Environmental Protection Agency, guidelines call for a Public Participation Program which involves the organization of an advisory committee, says Ms. Lynda Sinclair, Public Participation Coordinator for the project. "The committee must have representation from local public interest groups, economic interest groups, private citizens and public officials," Sinclair said.

The study is currently winding down the Phase I project, the determination and diagnosis of the lakes problems and the gathering of information on feasible restoration options.

This meeting will involve beginning steps on forming the lake advisory committee. Meetings to follow will focus on the conditions of the lake affecting the decline of recreational use and possible methods of restoration. If you would be interested in serving on the committee or have any questions concerning the Clean Lakes Project, please contact Ms. Sinclair or Main Hutcheson at (405) 271-2541.

# # #

NOTICE OF MEETING

(Special, Emergency, Cancelled, Continued, Reconvened or Rescheduled Regular Meeting)

TO BE FILED IN THE OFFICE OF SECRETARY OF STATE
RE: HB 1416 of 1st Reg. Sess. of 36th Okla. Leg. (1977)

DATE: July 12, 1982

STATE PUBLIC BODY: DEPARTMENT OF POLLUTION CONTROL
P. O. BOX 53504
OKLAHOMA CITY, OK 73152

ADDRESS:

TELEPHONE: 271-4677

		DATE	TIME	PLACE
SPECIAL MEETING	(XX)	July 15, 1982	7:30 p.m.	Bresee Hall, Room 301 Bethany Nazarene College 6729 N.W. 39th Expressway Bethany, OK
EMERGENCY MEETING	( )			
CANCELLED MEETING	( )			
RECONVENED OR CONTINUED MEETING	( )			
RESCHEDULED REGULAR MEETING	( )			

REMARKS:

Lake Overholser Clean Lakes Committee Meeting

NAME OF PERSON REPORTING DATE Amelia Saul

(Please print or type)

TITLE Executive Assistant

SIGNATURE Amelia Saul

LAKE OVERHOLSER
CLEAN LAKES COMMITTEE MEETING

July 15, 1982, 7:30 p.m.
Bethany Nazarene College
6729 N.W. 39th Expressway
Bresee Hall, Room 301
Bethany, Oklahoma

A G E N D A

I. INTRODUCTION

   A. General review of project
   B. Status report for Lake Overholser

II. DISCUSSION OF COMMITTEE FORMATION

   A. EPA regulations for advisory committees
      1. Four groups that must be represented:
         (a) Private Citizens
         (b) Public Interest
         (c) Economic Interests
         (d) Public Officials

   B. Identification and list organization of persons and groups that should be involved with the committee/study

III. QUESTIONS/COMMENTS

IV. SELECTION OF NEXT MEETING DATE

V. ADJOURNMENT

Sue Lowe
LS

Oklahoma Department of Pollution Control

Box 53504 • N.E. 10th & Stonewall • Oklahoma City, Oklahoma 73152 • (405) 271-4677

You're doin' fine, Oklahoma! 75 1907 Diamond Jubilee 1982

November 8, 1982

Lawrence R. Edmison, J.D.

For More Information Contact: Lynda Sinclair
Water Quality Division
Oklahoma Water Resources Board
(405) 271-2541

FOR IMMEDIATE RELEASE:

OKLAHOMA CITY — Running may be as good for a body of water as it is for the human body, a committee investigating the quality of water in Oklahoma City's Lake Overholser is discovering. The committee, set up to provide citizen input into the Lake Overholser Clean Lakes Project directed by the Oklahoma Water Resources Board and the Oklahoma Department of Pollution Control, will discuss the concept at a public committee meeting November 18 at 7:00 p.m. on the Bethany Nazarene College campus.

The committee will hear from Paige Lammerts, the primary mover behind the Hefner Trails jogging course now under development at Lake Hefner. Lammerts originated the idea, and the lake-area residents and interested citizens that form the Overholser committee hope to learn how the project began and how private funding for it was obtained.

Lynda Sinclair, OWRB Limnologist, says a one-year water sampling of Overholser waters has indicated sedimentation problems, due in part to erosion from lake banks. The erosion is a result of grass and shoreline vegetation being worn away by vehicles straying off the asphalt road that circles the lake, Sinclair says.

"As cars and trucks have carved out roads near the lake, they've killed the plant life that would normally hold the soil in place. Consequently, much more dirt is swept

- more -

into the water by rain and wind. The committee is exploring the possibility that a designated jogging and hiking trail along the lake edge might keep vehicles from overrunning the area.'"'

As the committee looks into the water by rain and wind. The committee is exploring the possibility that a designated jogging and hiking trail along the lake edge might keep vehicles from overrunning the area."

As the committee looks at various solutions to prevent the lake from further filling in with sediment, paying for restoration is at the top of their lists. Sinclair points out that the Overholser study is part of the National Clean Lakes Program partially funded by the Environmental Protection Agency in an effort to protect the quality of the country's publicy-owned freshwater lakes by controlling sources of pollution. The Lake Overholser Committee is in Phase I, the stage which calls for detailed examination of the lake and its watershed along with analysis of the economic and technical feasibility of restoration. Funds for Phase II, the actual restoration process, are no longer available from the EPA.

The restoration need remains, Sinclair says, noting that Oklahoma City relies on Overholser for water storage while city residents use the lake extensively for fishing, pleasure boating and boat racing. Sedimentation has substantially reduced the reservoir's volume capacity and mean depth, spelling trouble for both water supply and recreational uses.

Anyone interested is welcome to attend the November 18 meeting, Sinclair says. The meeting will be held in Room 135 of the Business and Home Economics Building, 4000 North College, Bethany.

# # #

FOR IMMEDIATE RELEASE:

OKLAHOMA CITY-- Running may be as good for a body of water as it is for the human body, a committee investigating the quality of water in Oklahoma City's Lake Overholser is discovering. The committee, set up to provide citizen input into the Lake Overholser Clean Lakes Project directed by the Oklahoma Water Resources Board and the Oklahoma Department of Pollution Control, will discuss the concept at a public committee meeting November 18 at 7:00 p.m. on the Bethany Nazarene College campus.

The committee will hear from Paige Lammerts, the primary mover behind the Hefner Trails jogging course now under development at Lake Hefner. Lammerts originated the idea, and the lake-area residents and interested citizens that form the Overholser committee hope to learn how the project began and how private funding for it was obtained.

Lynda Sinclair, OWRB limnologist, says a one-year water sampling of Overholser waters has indicated sedimentation problems, due in part to erosion from lake banks. The erosion is a result of grass and shoreline vegetation being worn away by vehicles straying off the asphalt road that circles the lake, Sinclair says.

11/8/82

(more)

"As cars and trucks have carved out roads near the lake, they've killed the plant life that would normally hold the soil in place. Consequently, much more dirt is swept into the water by rain and wind. The committee is exploring the possibility that a designated jogging and hiking trail along the lake edge might keep vehicles from overrunning the area."

As the committee looks at various solutions to prevent the lake from further filling in with sediment, paying for restoration is at the top of their lists. Sinclair points out that the Overholser study is part of the National Clean Lakes Program partially funded by the Environmental Protection Agency in an effort to protect the quality of the country's publicy-owned freshwater lakes by controlling sources of pollution. The Lake Overholser Committee is in Phase I, the stage which calls for detailed examination of the lake and its watershed along with analysis of the economic and technical feasibility of restoration. Funds for Phase II, the actual restoration process, are no longer available from the EPA. However, the restoration need remains. Sinclair ~~says,~~ not~~ing~~ed that Oklahoma City relies on Overholser for water storage while city residents use the lake extensively for fishing, pleasure boating and boat racing. Sedimentation has substantially reduced the reservoir's volume capacity and mean depth, spelling trouble for both water supply and recreational uses.

(more)

Anyone interested is welcome to attend the November 18 meeting, Sinclair says. The meeting will be held in Room 135 of the Business and Home Economics Building, 4000 N. College.

# # #

LC

NOTICE OF MEETING

(Special, Emergency, Cancelled, Continued, Reconvened or Rescheduled Regular Meeting)

TO BE FILED IN THE OFFICE OF SECRETARY OF STATE
RE: HB 1416 of 1st Reg. Sess. of 36th Okla. Leg. (1977)

DATE: APRIL 1, 1983

RECEIVED
APR 1 1983
Oklahoma Water Resources Board

STATE PUBLIC BODY: Oklahoma Water Resources Board and Oklahoma Department of Pollution Control

ADDRESS: 1000 N.E. Tenth Street
Oklahoma City, Oklahoma 73152

TELEPHONE: 271-4468

		DATE	TIME	PLACE
SPECIAL MEETING	(xx)	April 7, 1983	7:00 PM	SEE BELOW
EMERGENCY MEETING	( )			
CANCELLED MEETING	( )			
RECONVENED OR CONTINUED MEETING	( )			
RESCHEDULED REGULAR MEETING	( )			

REMARKS:

Bethany Nazarene College
6729 N.W. 39th Expressway
Royce Brown Building
Room 136

Technical Subcommittee Meeting for Lake Overholser Clean Lakes Project

NAME OF PERSON REPORTING DATE: David B. Harkness
(Please print or type)

TITLE: Programs Director

SIGNATURE: [signature]

OKLAHOMA PRESS
CLIPPING BUREAU
Oklahoma City, Oklahoma

Daily Oklahoman
Oklahoma City, OK
194,690

DATE

Water Samples Taken From City Lake

The Oklahoma Water Resources Board has begun taking water samples from the Overholser Reservoir in west Oklahoma City as the first step of its Phase I Clean Lakes Study.

The study is being partially funded by the Environmental Protection Agency through the Pollution Control Coordinating Board, of which the OWRB is a member.

Officials said a citizen's advisory committee for the Overholser Lake project is being informed to encourage public participation.

People interested in serving on the committee or learning what the responsibilities of its members will be can contact the Oklahoma Water Resources Board, 1000 NE 10, P.O. Box 53585, Oklahoma City, OK.

Water Samples Taken From City Lake

The Oklahoma Water Resources Board (OWRB) has begun taking water samples from the Overholser Reservoir in west Oklahoma City as the first step of its Phase I Clean Lakes Study.

The study is being partially funded by the Environmental Protection Agency through the Pollution Control Coordinating Board, of which the OWRB is a member.

Officials said a citizen's advisory committee for the Overholser Lake project is being informed to encourage public participation.

People interested in serving on the committee or learning what the responsibilities of its members will be can contact the Oklahoma Water Resources Board, 1000 NE 10, P.O. Box 53585, Oklahoma City, OK.

Overholser Neighborhood Residents Fighting to Save Lake

By Kay Atkins

It's a great dream for a spring afternoon.

There's a clear lake bouncing balls of light through a leafy lattice over its bank. On the edge of the dream, a squirrel scampers across a grass-cushioned clearing. Nearby, a stately elm tree towers over the buzz of bees getting tipsy on wild rose nectar.

It's the sort of lazy daydream that could lure a dreamer to nap.

But neighbors of Lake Overholser can't afford to nap if their dream is to replace the littered and eroded bank of their silt-clouded lake.

So they're staying awake these days to attend meetings, make telephone calls and prod governmental officials to nurture their abused lake.

Mrs. Trent Densmore is a relative newcomer to the area, but the dream has already led her into becoming a member of the steering committee of the newly formed Lake Overholser Association.

From her living room windows on Lake Overholser Drive, she commands a view of the lake beyond the channel of the North Canadian River and the narrow band of land that separates the two water bodies.

"I really don't think people who come here mean to harm the area," said Mrs. Densmore. "They're just thoughtless. And they don't know that some of the things they're doing are illegal."

Those illegal things include littering, dumping and driving off the pavement onto the lake bank.

That last offense, a pastime for teen-aged lovers, fishermen, cyclists and four-wheelers, has become so frequent that a road has been tracked almost around the entire northwest Oklahoma City lake.

An illegal road with resulting erosion has exposed tree roots beside the lake.

"That illegal road is so pronounced that it looks as if it were built there," Mrs. Densmore said. "In fact, the park department sent a crew out to grade the existing park roads, and the crew actually graded the illegal road in places. They thought it was a park road."

That illegal road is the cause of many of the lake's problems, according to residents of the area. The earth under and beside the road has been impacted below the level of the roots of the elderly elms along the bank. Some of them have already died from the shock and released their hold on the soil. Rains then scour the top of the hard ground and carry silt into the lake.

"Siltation appears to be the main problem at the lake," said Linda Sinclair, project manager of the federally funded Clean Lakes program. "We're trying to figure out what is causing the sedimentation so we can eliminate the problem and get the lake up to recreational standards."

The Oklahoma City Parks Department also has an interest in preserving the lake because it has jurisdiction over the parklands surrounding the lake.

"We're aware the area has been going down — particularly over the past couple of years," said Bob Cheatham, park planner. "Last winter we planted several fairly large trees, but they were knocked down by four-wheelers."

Residents, park officials and rangers agree that one of the biggest problems is public education. People simply don't know that it's illegal to drive on that official-looking road.

"The rangers have tried to enforce the law," Cheatham said. "They give tickets, but they don't hold up in traffic court because there aren't any signs telling people not to drive there."

So signs appear to be one answer to the problem, and they've already been ordered, Cheatham said. In addition, posts and cables have been strung to bar illegal traffic in the 16th Street Park beside the lake dam.

"We hope to get posts and cable up along the east side of the lake, too," said Cheatham. "Of course, we have the same problem all around the lake that we have on the east side. But other areas aren't directly across from residential property. So we've decided to start on the east side."

Even that beginning can't materialize overnight. Cheatham said mowing duties tie up most of the department's available manpower during summer months. So neighbors will have to wait at least until next winter for the cable to be strung.

Mrs. Densmore said the lake's neighbors are willing to help. Some of them would volunteer to finance plantings of grass and trees along the banks. Others would cheerfully undertake maintenance of banks near their homes.

"But no one wants to invest time and money on this until we know that what we do would be protected," Mrs. Densmore said. "And right now the parks department can't give us that protection."

Mrs. Densmore and her neighbors know it won't be easy to restore the area to the condition it was in when people first began building summer cottages there. They realize that bird sanctuaries and clean water can't materialize without a lot of hard work.

But they already know how to begin the hard work.

It starts with a dream, a springtime dream that can linger all the way through fall.

— Staff Photos by Paul Southerland

Elm trees canopy the pavement on Lake Overholser Drive.

City, Environmentalists Work on Sludge Problem

By Gail Mitchell

Officials from the city Water Department, the Audubon Society and Sierra Club are trying to work out an agreement concerning the existence of 20,000 cubic feet of lime sludge north of Lake Overholser.

Representitives of the groups met for more than three hours Thursday, but no concrete proposals were worked out.

Another meeting between the Water Department and environmentalists is scheduled for Thursday.

The meeting was arranged after environmentalists contacted the Army Corps of Engineers earlier this week and asked them to have the five-acre area of sludge removed and dumping discontinued because it has reportedly damaged part of a wildlife habitat.

The Corps received 16 complaints from citizens and one from the Environmental Protection Agency and U.S. Fish and Wildlife Service after a public notice stating the city wanted a permit to dump in the area was posted on Feb. 19, said Rick Gardner, environmental specialist with Corps.

These objections were passed on to the city Water Department March 31, Gardner said, so the city could begin resolving the situation.

A solution is to be reached 45 days from the date the city is furnished with the information, he said.

The after-the-fact permit would allow the them to leave the sludge — a byproduct from sewage treatment — where it is.

Federal regulations require a permit to place any sludge in a wetland, city officials said.

Earl Hearn, water technologist for the Oklahoma City Water Resources Department, said tests of the water in the wetlands area will be conducted to see what impact, if any, the dumping has had.

"We're going to try and solve our problem before we go back to the Corps of Engineers. We're trying to solve it on a local level," Hearn said.

City Water Director Pat Brian, said it would cost $6 a cubic yard to remove the sludge and $6 a cubic yard to place it in a landfill.

Brian said if the department can eliminate the objections, and the environmentalists write the Corps and say the situation has been taken care of, the Corps will issue a permit.

Brian said the city began putting the sludge in the area about a year and a half ago.

Daily Oklahoman & Times
Northside News
11/15/82

Lake Overholser projects to be discussed at meeting

The Lake Overholser Clean Lakes Project will be discussed at a public committee meeting at 7 p.m. Thursday in Room 135 of the Business and Home Economics Building at Bethany Nazarene College.

The project committee was established to investigate the lake's water quality. The project is directed by the Oklahoma Water Resources Board and the Oklahoma Department of Pollution Control.

The committee will discuss the possibility of a designated jogging and hiking trail along the lake's edge, a solution to prevent the lake from further filling in with sediment, controlling sources of pollution and restoration of the lake.

...eir concerns is that congressmen ... before the ...
...y release files." ... the documents ...

273

OKLAHOMA PRESS
CLIPPING BUREAU
Oklahoma City, Oklahoma

Capitol Hill Beacon
Oklahoma City, OK
Circ. 1,063

DATE: 18 Nov 82

Vehicles overrun Lake Overholser

273-148

Running may be so good for a body of water, as it is for the human body, a committee investigating the quality of water in Oklahoma City's Lake Overholster Clean Lakes Project directed by the Oklahoma Water Resources Board and Oklahoma Department of Pollution Control will discuss the ... in a public committee meeting November 18, at 7:00 p.m. on Bethany Nazarene College campus.

The committee will hear from Paige Lammerts, the primary mover behind the Heiner Trails jogging course now under development at Lake Heiner. Lammerts originated the idea, and the lake-area residents and interested citizens that form the Overholser committee hope to learn how the project began and how private funding for it was obtained.

Lynda Sinclair, OWRB Limnologist, says a one-year, water sampling of Overholser waters has indicated sedimentation problems, due in part to erosion from Lake banks. The erosion is a result of grass and shoreline vegetation being worn any by vehicles straying off the asphalt road that circles the lake, Sinclair says.

"As cars and trucks have carved out roads near the lake, they've killed the plant life that would normally hold the soil in place. Consequently, much more dirt is swept into the water by rain and wind. The committee is exploring the possibility that a designated jogging and hicking trail along the lake edge might keep the vehicles from overruning the area."

As the committee looks at various solutions to prevent the lake from further filling in with sediment, paying for restoration is at the top of their list. Sinclair points out that the Overholser study is part of the National Clean Lakes Program partially funded by the Environmental Protection Agency in an effort to protect the quality of the Country's publicly-owned freshwater lakes by controlling sources of pollution. The Lake Overholser Committee is in Phase I, the stage which calls for detailed examination of the lake and its watershed along with analyis of the economic and technical feasibility of restoration. Funds for Phase II, the actual restoration process, are no longer available from the EPA.

The restoration need remains, Sinclair says, nothing that Oklahoma City relies on Overholser for water storage while city residents use the lake extensively for fishing, pleasure boating and boat racing. Sedimentation has substantially reduced the resovoir's volume capacity and mean depth, spelling trouble for both water supply and recreational uses.

Anyone interested is welcome to attend the November 18 meeting, Sinclair says. The meeting will be held in Room 135 of the Business and Home Economics Building, 4000 N. College, Bethany.

memo

TO: ______________________ DATE: 4-21-83

FROM: Sue

Oklahoma Water Resources Board

- [ ] Please handle
- [ ] For your signature
- [ ] For your information
- [ ] Review and comment
- [ ] Review and return
- [ ] Review and see me
- [ ] As requested
- [ ] Other____________

REMARKS:

The PSA's for Lake Overholser were mailed to 7 OKC radio stations.

Oklahoma News Network
KKNG
KTOK
KEBC
KOMA
KATT
KJ 103

FORM 101-0478

JAMES R. BARNETT, Executive Director
MICHAEL R. MELTON, Assistant Director

OKLAHOMA WATER RESOURCES BOARD

P.O. BOX 53585 • 1000 N.E. 10TH STREET • OKLAHOMA CITY, OKLAHOMA 73152 • (405)271-2555

Public Service Director:

The Oklahoma Water Resources Board will hold a public meeting on Thursday, April 28 at Bethany Nazarene College beginning at 7:00 p.m.

Under a grant awarded by the Environmental Protection Agency, the OWRB is conducting diagnostic and rehabilitative studies on seven municipal lakes in Oklahoma, including Oklahoma City's Lake Overholser.

The grant carries with it certain public participation requirements. To fulfill those demands, we are asking your cooperation in airing the enclosed public service announcements during a six day period April 23 - April 28 6:00 p.m.

Thank you for your help. If I can be of any assistance, please call me at 271-2541.

Sincerely,

Ron Jarman
Chief, Water Quality

Lake Overholser PSA run April 22 - 6:00 p.m. April 28.

LET US TELL YOU HOW LAKE OVERHOLSER CAN BE A BEAUTIFLUL RECREATIONAL LAKE. JOIN US AT A PUBLIC MEETING THURSDAY, EVENING AT 7:00 AT BETHANY NAZARENE COLLEGE. FOR MORE INFORMATION CALL, THE OKLAHOMA WATER RESOURCES BOARD AT 271-2541.

Lake Overholser PSA run April 22 - 6:00 p.m. April 28

OKLAHOMA CITY'S LAKE OVERHOLSER IS DUE FOR A CLEAN UP. WE NEED YOUR IDEAS AT A PUBLIC MEETING THURSDAY EVENING AT 7:00 P.M. AT BETHANY NAZARENE COLLEGE. FOR MORE INFORMATION CALL, THE OKLAHOMA WATER RESOURCES BOARD AT 271-2541.

Lake Overholser PSA run April 22 - 6:00 p.m. April 28

THE CLEAN UP OF LAKE OVERHOLSER'S WATERS AND SHORELINE NEEDS YOUR SUPPORT. COME TO A PUBLIC MEETING THURSDAY EVENING AT 7 O'CLOCK AT BETHANY NAZARENE COLLEGE. FOR MORE INFORMATION, CALL THE OKLAHOMA WATER RESOURCES BOARD AT 271-2541.

OVERHOLSER RESERVOIR PUBLIC MEETING

PROGRAM

February 19, 1981

7:00 - 9:00 p.m.

This is your meeting - we are having this meeting to find out from you if we have designed this project to meet your needs regarding recreation associated with Lake Overholser. We encourage comments and questions and want to know what your needs are!!

— Introduction and Historical Perspective...Ken Morris

— Film Strip - "Freddy the Fish"

— Oklahoma Water Resources (OWRB) Work Plan Overview...Jim Grimshaw

— Public Participation Program...Lynda Sinclair

— Discussion and Questions...Participants

— Evaluation of Public Meeting...Critique Sheet

To help you understand the Clean Lakes Program we have prepared a brief presentation on the goals and techniques we would like to adopt. This is shown on the agenda above. However, your thoughts and comments can change these to better suit the needs of you and your neighbors. Let us know how you feel.

PUBLIC MEETING

CLEAN LAKES PROJECT

OVERHOLSER RESERVOIR

February 19, 1981

ATTENDANCE RECORD

Name	Address	Mailing List	Representing

* If you would like to be added to our mailing list, please indicate "YES" under the heading.

Doug Paulsen	500 Will Rogers Bldg.	YES	Tourism + Recreation
[illegible]	2623 N.W. 13TH	YES	Water Res. Dept
[illegible]	2905 NW 28		OWRB
Mark Brown	406 NW 94th		concerned citizen
Hilda Brown	414 N.W. 94th Apt. 445 OKC.		OWRB
T. Daniel Loomis	2136 [illegible] Parker, Norman		City of Norm
Mary Kronsburgh	716 NW 46 OKC		
Robert M [illegible]	NE 10th + Stonewall		ODPC
Elmer E. Davis			
[illegible]			City of Bethany
Fred E Powers			City of Bethany
Bobby Conway			City of Okla City
Earl E. [illegible]			City of OKC
Albert Mitts			City of OKC

Name	Address	Representing
Jack L. Males	4803 N. Donald Bethany Okla.	Water Dept.
C. L. [illegible]	3030 Overholser Dr. 73127	
Trent Densmore	2100 Overholser Dr. 73127	Lake Overholser Association
[illegible]	[illegible] Overholser Dr.	
C. BROCK	LAKE RANGER	
R. J. McCann	Okla City	
Robby Canavey	Bethany	
Robert C Hayward	3536 OVERHOLSER Dr 73008 787 7211	

JAMES R. BARNETT, Executive Director
MICHAEL R. MELTON, Assistant Director

OKLAHOMA WATER RESOURCES BOARD

1000 N.E. 10TH STREET • P.O. BOX 53585 • OKLAHOMA CITY, OKLAHOMA 73152 • (405)271-2555

DATE: June 23, 1981

TO: Robert Kinniburgh, Environmental Planner
Oklahoma Department of Pollution Control

FROM: Ron Jarman, Chief
Water Quality Division Ken

Enclosed is the Quarterly Progress Report #2 for the Overholser Lake (Clean Lakes' project #S-006294-01-0). Included in the report is the responsiveness summary for the last public meeting. We apologize for the delay as this report should have been in EPA's Dallas office by May 31, 1981. We appreciate your patience in this matter. We plan to submit Quarterly Progress Report #3 by mid July.

If you have any questions please contact Ken Morris of this office.

cc: Al Metz
Oklahoma City Water Resources Division

Date: June 23, 1981

Contact Person: Lynda Sinclair and
Ken Morris, 271-2532

Project #: S-006294-01-0

RESPONSIVENESS SUMMARY

PUBLIC MEETING

OVERHOLSER CLEAN LAKES WORK PLAN

February 19, 1981

The following is a summation of the issues introduced and citizen comments made about the Overholser Reservoir Clean Lakes Project.

NOTIFICATION PROCEDURES:

Public notice of the Overholser Reservoir Clean Lakes public meeting was given in advance of the required 30 day notification period by Amelia Saul with the Department of Pollution Control (DPC). Notification was sent and published in the Oklahoma Gazette in the January 1, 1981 edition. On February 9, 1981 a press release was sent to all the daily, weekly and college-university newspapers in the Oklahoma City and other surrounding areas. This same release was also sent to local radio stations. On February 12, 1981 an article appeared in the Yukon Review, Yukon, Oklahoma regarding the meeting.

Copies of the work plan were given to the Oklahoma Department of Libraries for distribution to the library depositories. All libraries in the Oklahoma City metro area received copies of the work plan for review on February 9, 1981. Copies of the work plan were also sent to the area sub-state agency, Association of Central Oklahoma Governments, in Oklahoma City.

A sign displaying the meeting place and time was put up at the street entrance to the Overholser warehouse on February 19, 1981 where the meeting was held.

AGENDA:

The public meeting agenda was designed to introduce citizens to the Clean Lakes Program and the Overholser Reservoir Work Plan. Presented was an introduction and historical perspective on the project along with an overview of the work plan. Also included was a description of the Public Participation Program. Questions and discussion were encouraged.

Media used for the public meeting included: sketch pad and easel to present and define technical terms and phrases related to the Clean Lakes Project; slides were used to describe the work plan overview and a film strip put out by the Environmental Protection Agency (EPA) on the origin of the National Clean Lakes Program was shown; a critique sheet was used to determine the effectiveness of the meeting and to gain insight into the public awareness.

PARTICIPANTS:

Speakers: Ken Morris, Project Manager (OWRB); Dr. Jim Grimshaw, Principal Investigator (OWRB); Lynda Sinclair, Public Participation Coordinator (OWRB); Bob Kinniburgh, Environmental Planner (DPC); Earl Hearn, (Oklahoma City Water Department).

Attendees: There were 23 people in attendance at the meeting, representing various interest groups (see attached attendance record).

ISSUES:

The following issues were addressed and responded to at the Overholser Reservoir public meeting. These, along with the questions and comments, will be incorporated into the Overholser Clean Lakes Project.

Issue 1: A two year Reservoir Classification study was done using LANDSAT satellite technology. Nine reservoirs were sampled monthly and over 50 others were evaluated using the satellite technique to correlate reflectance data from water quality characteristics of the lakes.

Response: LANDSAT has shown that types of reflected radiation tell different things about the water through eyes or bandwidths which emit wavelength intervals known as nanometers. Each bandwith can detect some different characteristic of the water which can be used to correlate satellite data with actual field data. If this technique proved functional it may save time and money by not having to visit each lake.

Issue 2: Relationships were developed from reflectance data the satellite recorded and from water quality characteristics of these lakes.

Response: An example: Oolagha and Keystone. LANDSAT showed reflectance differences in (slides) two arms of these lakes, suggesting that a relationship exists between LANDSAT data and the water quality characteristics of these two lakes.

Issue 3: The problem of sedimentation appeared to be one of Overholser's major problems. Not much actual sediment data exists for Overholser.

Response: The Overholser work plan will examine the sedimentation rate in detail. One technique will be comparing the known relationship of satellite data and turbidity to come up with a working relationship of satellite data and sedimentation.

Also the method of Cessium 137 radioactive dating technique will be used to show the amount of sediment accumulated since the atmospheric testing.

Issue 4: The sedimentation basin in the North Canadian River area is full.

Response: One possible technique may be to arrange with the Corps of Engineers to dredge the sedimentation basin in the North Canadian River.

Issue 5: Sources of pollution will be identified and studied. There are two known pollutants at this time that will be examined.

Response 1: Overholser has been treated with copper sulfate to kill the algae. Copper is toxic and bioaccumulates in filter feeding fish. These fish in turn, are eaten by people in which the chemical also accumulates.

Response 2: Brine from oil field drilling will be examined. Salt water causes the fresh water to be more dense and it doesn't mix as it normally should. Oxygen is then used in the unmixed water and chemicals can then be released from the bottom mud. The water becomes deoxygenated and nonproductive for use by aquatic life.

Issue 6: Mention of taste and odor problems and phosphates from commercial fertilizers and feedlots in Yukon was made.

Response: Sampling during storm events will allow rapid focusing on the problem. Certain materials accumulate in pockets or depressions and then when it rains these materials are washed out into the storm water run off. The material is then flushed down in "slugs" into tributaries and rivers.

Nitrogen and phosphates cause oxygen depletion when turbidity levels decrease to the point where algae blooms can occur. One way in which this problem may be reduced is to inform home owners of proper fertilization application rates.

Issue 7: The OWRB will also look at toxics and heavy metals and said accumulations, specifically lead from automobile exhausts.

Response: To reduce lead pollution from automobile exhaust in storm water runoff, traffic access to Overholser could be periodically limited.

Issue 8: Turbidity (clarity of the water) is another problem at Overholser, partially caused by bank erosion.

Response: Runoff from the road around the lake goes directly into the lake taking with it particles of soil and other materials that end up as sediment, some with toxic materials.

Possible Correction Methods:

a) Sediment traps - velocity of water is slowed allowing sediment to settle out.
b) Regulation of lake perimeter by putting up signs or barracades to keep people off areas immediately around the lake allowing for sufficient development of a vegetation border to hold the soil particles.

One method that may be used to study this problem could be to erect posts and cables around the lake during the Phase I study to monitor the effect of keeping people off the areas between the lake and the road. This could be financially supported by grant or city funds (such construction costs would be above and beyond the current study budget).

Issue 9: Dumping of garbage on the riverside is a real problem, though there is not much trouble with waste haulers.

Response:

Possible Solutions:

1. Closing parts of the river roads where dumping is known to to take place.

2. Double the monetary penalty for hauling trash. Violaters are presently fined $100 by a Court of Records charge. A mutual feeling exists that an inadequate amount of rangers patrol the area to catch dumpers.

Issue 10: Chain of custody must be followed when reporting a dumping or when turning in evidence to the State Health Department (OSDH) or any state agency.

Response:
Instructions were given which included two indivduals are needed to testify. Evidence must be kept under lock and key until given to the next person in the chain and each individual in the chain must be willing to testify that they possessed the evidence the entire time.

Issue 11: Concern was expressed at the shortage of rangers and as such is causing a policing problem.

Response: Lack of funds seem to be the main restriction for increasing ranger staff. Contacting the City Council for information was suggested to the public as a mechanism which may help the ranger staffing problem.

QUESTIONS AND COMMENTS

Question 1: Would this Overholser Clean Lakes Program become a model program for other lakes in the state?

OWRB: Results of the study could be important to us in the management of this and other lakes within the state.

Question 2: Is this program going to consider allowing swimming in Overholser?

OWRB: One of the primary goals of the Clean Lakes Program is to protect and restore waters for recreational use. This does not mean swimming will be specifically considered for Overholser. It will still be used as a municipal water supply.

Question 3: What is the significance of the salts that appear in the Edmond water sources to the lakes in the Oklahoma City area.

OWRB: Overpumping of freshwater from the Garber-Wellington aquifer has caused salt water to rise and take its place. This exposes wells to the salt water or oilfield brine. This is a potential problem with Overholser.

Question 4: Have any sites been identified for toxic wastes?

OWRB: This will be an area examined for the whole drainage basin.

Question 5: Is the water bad?

OWRB: There is not much water chemistry data. The chemistry of the water may be fine but problems may exist because the materials causing the problems may be tied up in the sediments and/or inorganic material. These are not readily available for chemical analysis.

Question 6: Is federal money already inhand, and how long will the project last?

OWRB: The work plan is awaiting approval and money will not be received until it is. The cost share will be as follows:

Phase I -	Federal Share	70%	$100,000
	State and Local with the Oklahoma City Water Dept. supplying inkind services of $3,056	30%	42,857

Phase II
A 50/50 match from the federal government. The Phase II funding is uncertain at this point because of government cut backs.

The duration of the project will be from September 1, 1980 to July 30, 1982, with the final report being completed July 1, 1983.

Question 7: Will the City of Oklahoma City Water Department defer their responsibility for cleanup at the lake until this project gets underway?

OKC Water Dept: The City is the beneficiary for the Oklahoma City Municipal Improvement Authority or Water Trust. They fund major projects that can not be funded otherwise. The City and Water Trust will do things that need to be done in the meantime.

We have contracted with the OWRB for $18,000 part of which will be inkind services provided by the Trust for two Clean Lakes Projects. There are many things the City is doing and plan to do in the case of Lake Overholser.

1. Supply 16 years of records including earliest contours of the low grade and subsequent surveys of the bottom of the lake showing the rate of sedimentation.

2. Restrictions now exist on oil drilling companies including those west of Overholser in Canadian County.

   It was feared that intense oil activity might impact the quality of the water of Overholser and Hefner. Consultants were hired eight years ago to develop safe drilling practices and rules for drilling. Two years ago another consultant was hired to reevaluate these rules to see if the City did have protection for the reservoirs knowing the oil development was coming closer to the reservoirs. The consultants found 200 to 300 wells in the prime area of the watershed. Rules and City ordinances were drawn up. Part of the rules state that a drilling company must have $800,000,000 of insurance for protection and cleanup in case of any accidents. Other rules are more specific for equipment used and the drilling site.

Question 8: Will the City handle the problem of destruction of property by motorcycles/vehicles and landscape deterioration i.e., tree roots revealed, leading to dying trees and to the collapse of the river bank, or will the City wait for the study to be completed?

OKC Water Dept: The City Parks Dept. is working on this. A fence is being constructed of post and cable to keep people from driving that close to the lake, but the Parks Dept. is shorthanded.

PUBLIC PARTICIPATION

This aspect of the Clean Lakes Program was explained and discussed. Discussion centered around a newly formed lake group, Lake Overholser Association and what they could do to help. They were told to first express their concerns to the City Council by way of a Neighborhood Lake Association through letters and attend City Council meetings. Secondly, through the Clean Lakes Program, a Lake Association may be beneficial in identifying vandals, helping with restoration projects by such things as trash and bottle pickup before the City mows or helping the Parks Department with their minor construction projects.

CONCLUSIONS

All issues and questions raised at the meeting have been addressed. The following are the key points of the meeting.

1. Access points around the lake should be restricted somewhat.
2. A policing problem exists. An adequate amount of rangers to patrol the lake does not exist.
3. Illegal dumping of garbage and waste haulers are a problem.
4. Sedimentation rate, turbidity and other pollution causes are of concern.

The final work plan will be ready for distribution at the end of the project as soon as EPA reviews it and when all public comments have been taken into consideration for modification of the work plan. Quarterly press releases will be sent out to inform the public on the progress of this project. A public hearing will be held in January 1983 to obtain public input on the final project.

If further information is needed it may be obtained by contacting Ken Morris with the OWRB.

MEETING CRITIQUE

At the start of the meeting a critique sheet was handed out asking citizens to evaluate the meeting and the Overholser work plan. The following is a list of the questions along with a summary of the responses given. Only five critique sheets were returned.

Question 1: Do you feel that your views were sincerely heard and considered?

Response: There was a consensus of agreement to this question.

Question 2: In your own words what were the meeting objectives?

Response: To explain the work plan, to find ways of improving the lake, to introduce the public participation program and to hear comments and suggestions.

Question 3: What suggestions do you have that might make future meetings more profitable?

Response: Most people said there was not adequate publicity or advertisement of the meeting. Others suggested a written outline of materials to be covered at the meeting should be distrituted and presentations should be better planned. The last response requested a better meeting location. Overall everyone agreed that more public participation was needed.

Question 4: What are your feelings about the Clean Lakes Program and the Overholser Reservoir Public Meeting.

Response: Comments ranged from "favorable to excellent - keep up the good work to badly needed". No negative responses were given.

Question 5: Do you have suggestions as to future methods of maintaining communication between the public and the Oklahoma Water Resources Board?

Response: Public contact. Suggestions included mailings to area residents about meetings and board plans, Public Broadcast System (Channel 13) programs, telephone contact to the Lake Overholser Association about meetings and distribution of flyers.

PLEASE COMPLETE AND RETURN, THANK YOU!

MEETING CRITIQUE

Do you feel that your views were sincerely heard and considered? Yes No
If no, why?

In your own words what were the meeting objectives?

yes —
very considerate

What suggestions do you have that might make future meetings more profitable?

more participation

What are your feelings about the Clean Lakes Program and the Overholser Reservoir Public Meeting.

excellent for public education —

Do you have suggestions as to future methods of maintaining communication between the public and the Oklahoma Water Resources Board?

Telephone Lake Overholser Assn. —
flyers — 789-8594

PLEASE COMPLETE AND RETURN, THANK YOU.

MEETING CRITIQUE

Do you feel that your views were sincerely heard and considered? Yes No
If no, why?

In your own words what were the meeting objectives?

Water Resources Work Plan - Both Fed., State and Local. plus Public Participation Program

What suggestions do you have that might make future meetings more profitable?

written outlines of material to be covered in meeting.

What are your feelings about the Clean Lakes Program and the Overholser Reservoir Public Meeting.

Excellent - Keep up the good work.

Do you have suggestions as to future methods of maintaining communication between the public and the Oklahoma Water Resources Board?

Mailings to area Residents of places and Times of meetings, and as to what the Board plans to do.

MEETING CRITIQUE

Do you feel that your views were sincerely heard and considered? Yes No
If no, why?

In your own words what were the meeting objectives?

To Hear Comments and Suggestions

What suggestions do you have that might make future meetings more profitable?

Better Planning for Presentation —
Better Location —

What are your feelings about the Clean Lakes Program and the Overholser Reservoir Public Meeting.

Do you have suggestions as to future methods of maintaining communication between the public and the Oklahoma Water Resources Board?

MEETING CRITIQUE

Do you feel that your views were sincerely heard and considered? Yes No
If no, why?

In your own words what were the meeting objectives?

TO REHABILITATE LAKE OVERHOLSER
AND ITS IMMEDIATE SURROUNDINGS

What suggestions do you have that might make future meetings more profitable?

ADVERTISEMENT TO AREA
RESIDENTS OF TIME & PLACE

What are your feelings about the Clean Lakes Program and the Overholser Reservoir Public Meeting.

SOUND OBJECTIVE
BADLY NEEDED

Do you have suggestions as to future methods of maintaining communication between the public and the Oklahoma Water Resources Board?

PERIODIC SCHEDULED MEETINGS

PLEASE COMPLETE AND RETURN, THANK YOU.

MEETING CRITIQUE

Do you feel that your views were sincerely heard and considered? Yes No
If no, why?

In your own words what were the meeting objectives?

To find ways to improve the lake and area

What suggestions do you have that might make future meetings more profitable?

Publicity - I heard [illegible] by accident

What are your feelings about the Clean Lakes Program and the Overholser Reservoir Public Meeting.

Favorable.

Do you have suggestions as to future methods of maintaining communication between the public and the Oklahoma Water Resources Board?

PBS - outdoors program Channel 13
Public use requirement on cable T.V.

JAMES R. BARNETT, Executive Director
MICHAEL R. MELTON, Assistant Director

OKLAHOMA WATER RESOURCES BOARD

P.O. BOX 53585 • 1000 N.E. 10TH STREET • OKLAHOMA CITY, OKLAHOMA 73152 • (405)271-2555

July 1, 1982

Mr. and Mrs Lee V. Powell
4709 Doral Court
Oklahoma City, Oklahoma 73132

Dear Mr. and Mrs. Powell:

The first of a series of committee meetings for the Lake Overholser Clean Lakes Project will be held Thursday, July 15, 1982, at 7:30 p.m., at Bethany Nazarene College, Bresee Hall, Room 301, 6729 N.W. 39th Expressway, Bethany, Oklahoma.

This meeting, and the meetings to follow, will focus on the conditions of the lake affecting the decline of recreational use and possible methods of restoration. The committee will be in charge of expressing community concerns and views to the OWRB staff and project investigator, Dr. Jim Grimshaw. Committee member responsibilities are as follows with more specific duties to be decided on by the committee after formation:

(1) to express opinions, views, and offer advice on the committee;

(2) to communicate what is going on in the project back to individuals, group organization, etc., of the affected area; and

(3) to communicate all views, concerns, and desires from groups, organizations, etc., to the project staff.

The OWRB is very interested in having the community involved in this project. You will be informed of meetings by direct mailouts and press releases. Public and committee meetings will be held at major decision points.

If you know of anyone who may be interested in having personal involvement in your community and its plans, please contact Lynda Sinclair of this office at 271-2541.

Sincerely,

Ron Jarman, Chief
Water Quality Division

RLJ:LS:sdh

You're doin' fine Oklahoma! 75 1907 Diamond Jubilee 1982

Lake Overholser - Private Citizens - Job M

1
Mr. Neal Balkan
2509 Dittmer
Oklahoma City, Oklahoma 73127
Mr. Balkan

29
Ms. Carleta Barton
8316 Northwest 34th Street
Bethany, Oklahoma 73008
Ms. Barton

32
Mr. Amos Verne Bollinger
P.O. Box 888
Choctaw, Oklahoma 73020
Mr. Bollinger

2
Mrs. Rodger Brown
2232 Crestmont
Norman, Oklahoma 73069
Mrs. Brown

3
Ms. Marian Bruce
4908 North McMillan
Bethany, Oklahoma 73008
Ms. Bruce

25
Mrs. Buela Cavener
1812 Northwest 23rd Street
Oklahoma City, Oklahoma 73106
Mrs. Cavener

4
Ms. Lois Chiles
1801 Westbrook Terrace
Norman, Oklahoma 73069
Ms. Chiles

Lake Overholser - Private Citizens - Job M

5
Mr. Leonard Cox
515 West Kansas
Okarche, Oklahoma 73762
Mr. Cox

23
Mr. Steven Crisswell
2623 Northwest 13th
Oklahoma City, Oklahoma 73107
Mr. Crisswell

6
Ms. Carolyn Deatherage
1230 Avondale
Norman, Oklahoma 73069
Ms. Deatherage

21
Mr. and Mrs. Trent Densmore
2100 Overholser Drive
Bethany, Oklahoma 73127
Mr. and Mrs. Densmore

7
Mr. John Depue
Route 2, Box 338
Mustang, Oklahoma 73064
Mr. Depue

8
Ms. Mary Lue Eastmond
4621 Northwest 59th Terrace
Oklahoma City, Oklahoma 73122
Ms. Eastmond

9
Mr. James Elder
1700 Liberty Tower
Oklahoma City, Oklahoma 73102
Mr. Elder

Lake Overholser - Private Citizens - Job M

24
Mr. Warren D. Harden
2409 Butler Drive
Norman, Oklahoma 73069
Mr. Harden

22
Mr. Robert C. Haywood
3536 Overholser Drive
Bethany, Oklahoma 73127
Mr. Haywood

26
Mr. Wesley S. Isaacs
1304 Lafayette Drive
Oklahoma City, Oklahoma 73119
Mr. Isaacs

10
Mr. Alan David Martinez
433 Northwest 25th Street, #7
Oklahoma City, Oklahoma 73103
Mr. Martinez

11
Ms. Ann Million
2630 Beaurue
Norman, Oklahoma 73069
Ms. Million

30
Ms. Patricia L. Muzny
1209 Southwest 47th Street
Oklahoma City, Oklahoma 73109
Ms. Muzny

12
Mr. Steve Nash
2730 South Chataqua, #403
Norman, Oklahoma 73069
Mr. Nash

Lake Overholser - Private Citizens - Job M

31
Ms. Dorothy B. Newell
8304 Lakeaire Drive
Oklahoma City, Oklahoma 73132
Ms. Newell

13
Mr. Dale Orcutt
Route 2, Box Indian Springs 95
Crescent, Oklahoma 73028
Mr. Orcutt

34
Mr. Jimmie Pigg
401 Rock Place
Moore, Oklahoma 73060
Mr. Pigg

20
Mr. and Mrs Lee V. Powell
4709 Doral Court
Oklahoma City, Oklahoma 73132
Mr. and Mrs. Powell

27
Ms. Euelda N. Sharp
3116 North Halloway
Bethany, Oklahoma 73008
Ms. Sharp

33
Dr. and Mrs. E. E. Shircliff
107 Northwest 14th
Oklahoma City, Oklahoma 73103
Dr. and Mrs. Shircliff

14
Mr. Frank Silovsky
6205 Post Oak Road
Oklahoma City, Oklahoma 73105
Mr. Silovsky

 Lake Overholser - Private Citizens - Job M

28
Dr. Katherine B. Sohler
2106 North Indiana
Oklahoma City, Oklahoma 73106
Dr. Sohler

15
Mr. Joe Stuever
5815 Melton Drive
Oklahoma City, Oklahoma 73132
Mr. Stuever

16
Mr. W. A. "Tate" Taylor
1706 Crestmont
Norman, Oklahoma 73069
Mr. Taylor

Deleted

17
Ms. Patty Thayer
Box 370
Norman, Oklahoma 73070
Ms. Thayer

18
Mr. Gene Tyner
910 South McCall Drive
Norman, Oklahoma 73069
Mr. Tyner

19
Ms. Cherly Woods
1908 Northwest 41st Street
Oklahoma City, Oklahoma 73118
Ms. Woods

29
Ms. Deborah Gillson
AAUW
2012 Lansboro
Oklahoma City, Oklahoma 73120
Ms. Gillson

1
Ms. Ruth Thompson
American Business Women's
Association
1600 Northwest 31, #157
Oklahoma City, Oklahoma 73118
Ms. Thompson

31
Mr. Chester L. Bynum, President
Cleveland County Chapter
Audubon Society
Box 2666
Norman, Oklahoma 73069
Mr. Bynum

30
Mr. Hubert Harris, President
Oklahoma City Chapter
Audubon Society
4907 North Willow
Bethany, Oklahoma 73008
Mr. Harris

40
Ms. Nancy Krosley
Oklahoma City Chapter
Audubon Society
4301 Northwest 21st Terrace
Oklahoma City, Oklahoma 73107
Ms. Krosley

41
Mr. John Shachford
Oklahoma City Chapter
Audubon Society
Route 1, Box 125
Oklahoma City, Oklahoma 73111
Mr. Shachford

26
Mr. Richard Strouhal, President
Central Oklahoma Master
Conservancy District
Route 4, Box 275
Norman, Oklahoma 73069
Mr. Strouhal

Lake Overholser - Public Interest - Job N

23
Dr. Warren Smith
Biology Department
Central State University
327 East Tenth
Edmond, Oklahoma 73034
Dr. Smith

16
Mr. Bob Kerr
Kerr Foundation, Inc.
1208 Fidelity Plaza
Oklahoma City, Oklahoma 73102
Mr. Kerr

10
Ms. Diane Brown, President
League of Women Voters
of Oklahoma
400 Northwest 23rd Street
Oklahoma City, Oklahoma 73103
Ms. Brown

12
Ms. Lou Freeman
League of Women Voters
7312 Northwest 19th
Bethany, Oklahoma 73008
Ms. Freeman

8
Ms. Jean McLaughlin
Oklahoma City Chapter
League of Women Voters
3709 Northwest 70th Street
Oklahoma City, Oklahoma 73116
Ms. McLaughlin

39
Ms. Carla B. Paul
League of Women Voters
of Oklahoma City
1116 Northeast 55th
Oklahoma City, Oklahoma 73111
Ms. Paul

11
Ms. Barbara Rice, President
League of Women Voters
of Oklahoma
307 Northwest 42nd Street
Oklahoma City, Oklahoma 73118
Ms. Rice

9
Ms. Britt Wisniewski
Norman Chapter
League of Women Voters
1007 Lincoln Green Street
Norman, Oklahoma 73069
Ms. Wisniewski

42
Mr. John Robison, Architect
~~National Development and Community Conservation Organization~~ Neighborhood Development Conservation Center
2927 North Paseo
Oklahoma City, Oklahoma 73103
Mr. Robison

2
Dr. George Hulsey
Regional Director
National Wildlife Federation
502 South Crawford
Norman, Oklahoma 73069
Dr. Hulsey

38
Mr. Harold Jones
North Park Estates Neighborhood Assoc.
Urban League of Oklahoma City
1824 Northeast 54th
Oklahoma City, Oklahoma 73111
Mr. Jones

3
Mr. Wallace C. Denny, President
Oklahoma Association of
Conservation Districts
1002 North Wentz
Guthrie, Oklahoma 73044
Mr. Denny

32
Mr. B. L. Smith, Editor
Oklahoma Canoers Newsletter
3112 Chaucer Drive
Village, Oklahoma 73120
Mr. Smith

34
Mr. Steven A. Lewis, President
Oklahoma Fishery Society
P.O. Box 53465
Oklahoma City, Oklahoma 73152
Mr. Lewis

Lake Overholser - Public Interest - Job N

4
Ms. Jeannie Ellis, President
Oklahoma Lakes Association
6909 Ashby Terrace
Oklahoma City, Oklahoma 73149
Ms. Ellis

15
Mr. Bill Moyer
Associate Director
Oklahoma Municipal League
201 Northeast 23rd Street
Oklahoma City, Oklahoma 73105
Mr. Moyer

14
Mr. Donald C. Rider
Executive Director
Oklahoma Municipal League
201 Northeast 23rd Street
Oklahoma City, Oklahoma 73105
Mr. Rider

35
Mr. Jack G. Springer
Oklahoma State Chamber of Commerce
4020 North Lincoln Boulevard
Oklahoma City, Oklahoma 73105
Mr. Springer

33
Ms. Virginia Smith
Oklahoma Trails Association
3108 Southwest 65th Street
Oklahoma City, Oklahoma 73159
Ms. Smith

37
Mr. Kirt Cunningham
Oklahoma Wildlife Federation
4545 North Lincoln Blvd.
Suite 171
Oklahoma City, Oklahoma 73105
Mr. Cunningham

6
Mr. Rick Jameson
Executive Director
Oklahoma Wildlife Federation
4545 North Lincoln Boulevard
Suite 171
Oklahoma City, Oklahoma 73105
Mr. Jameson

36
Ms. Barbara Rauch
Attorney at Law
Oklahoma Wildlife Federation
Box 928
Edmond, Oklahoma 73034
Ms. Rauch

5
Mr. Joel Smith, President
Oklahoma Wildlife Federation
806 Pine Oak
Edmond, Oklahoma 73034
Mr. Smith

20
Bill Roach, Ph.D.
Water Utilities Training Center
Oscar Rose Junior College
6420 Southeast 15th Street
Midwest City, Oklahoma 73110
Dr. Roach

27
Dr. Marvin Baker
Sierra Club
300 Hal Muldrow Drive
Apartment 227
Norman, Oklahoma 73069
Dr. Baker

28
Mr. Fenton Rood
Sierra Club
728 Northwest 21st
Oklahoma City, Oklahoma 73103
Mr. Rood

17
Ms. Rachael Butler
Department of Geography
University of Oklahoma
Norman, Oklahoma 73019
Ms. Butler

18
C. H. Lawrence, Ph.D.
Department of Environmental Health
University of Oklahoma
at Oklahoma City (HSC)
801 Northeast 13th Street
Oklahoma City, Oklahoma 73190
Dr. Lawrence

Lake Overholser - Public Interest - Job N

21
George Reid
Regents Professor/Director
University of Oklahoma
Bureau of Water & Environmental
Resources Research
Norman, Oklahoma 73019
Professor Reid

19
Ms. Jayne M. Salisbury
Oklahoma Climatological Survey
University of Oklahoma
815 Jenkins Street
Norman, Oklahoma 73019
Ms. Salisbury

24
Leale E. Streebin, Ph.D.
University of Oklahoma
Civil Engineering and
Environmental Science
Norman, Oklahoma 73019
Dr. Streebin

25
Dr. George W. Tauxe
Associate Professor
University of Oklahoma
School of Civil Engineering
and Environmental Science
Norman, Oklahoma 73019
Dr. Tauxe

13
Mr. Leonard Benton
Executive Director
Urban League of Oklahoma City
3017 North Eastern Avenue
Oklahoma City, Oklahoma 73111
Mr. Benton

Overholser - Economic Interest - Job 0

26
Mr. Harold Black
Associated Engineers, Inc.
1253 Alameda Street
Norman, Oklahoma 73071
Mr. Black

23
Mr. Julius Kubier, President
Associated Industries of Oklahoma, Inc.
6161 North May Avenue
Suite 282
Oklahoma City, Oklahoma 73112
Mr. Kubier

27
Mr. Franz C. Lauffer
Benham Blair & Affiliates
1200 Northwest 63rd
P.O. Box 20400
Oklahoma City, Oklahoma 73156
Mr. Lauffer

24
Mr. Ted A Williamson
C. H. Guernsey & Company
National Foundation West Building
Northwest 58th and Portland
Oklahoma City, Oklahoma 73112
Mr. Williamson

22
Mr. Carl Short
Central Oklahoma Homebuilders
P.O. Box 18803
Oklahoma City, Oklahoma 73154
Mr. Short

30
Upton B. Henderson, Ph.D.
Chairman of Economics
Central State University
1505 Oak Drive
Edmond, Oklahoma 73034
Dr. Henderson

18
Mr. Todd E. Thompson
Chemical Resources, Inc.
First Life Assurance Building
119 North Robinson, Suite 909
Oklahoma City, Oklahoma 73102
Mr. Thompson

1
Mr. Rick Killman, Lab
Dayton Tire and Rubber Company
2500 South Council Road
P.O. Box 24011
Oklahoma City, Oklahoma 73124
Mr. Killman

2
Mr. Steve Vandegrift
Environmental Control Laboratory
P.O. Box 274
Norman, Oklahoma 73070
Mr. Vandegrift

25
Mr. Terry Thurman
Espey, Huston & Associates, Inc.
4545 Lincoln Blvd. - Suite 16
Oklahoma City, Oklahoma 73105
Mr. Thurman

3
N. Tripathy, Ph.D.
Chemical Lab
General Motors Corporation
P.O. Box 26527
Oklahoma City, Oklahoma 73126
Dr. Tripathy

4
Dr. Thomas L. Hurst
Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City, Oklahoma 73125
Dr. Hurst

31
Ms. Kay Brothers
Staff Environmental Engineer
Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City, Oklahoma 73125
Ms. Brothers

5
Mr. John M. Carver
Senior Environmental Specialist
Kerr-McGee Nuclear Corporation
Kerr-McGee Center
Oklahoma City, Oklahoma 73125
Mr. Carver

33
Mr. Lynn A. Leverett
LEVCO
P.O. Box 7572
Amarillo, Texas 79109
Mr. Leverett

21
Mr. Ellis Freeny
Oklahoma Cattleman's Association
Box 82395
Oklahoma City, Oklahoma 73108
Mr. Freeny

28
Oklahoma City Chamber of Commerce
One Santa Fe Plaza
Oklahoma City, Oklahoma 73102
Sir or Madam

32
Mr. Nathaniel H. Batchelder
Public Information
Oklahoma City Zoo
2101 N.E. 50th
Oklahoma City, Oklahoma 73111
Mr. Batchelder

20
Mr. Kenneth McFall
Executive Secretary
Oklahoma Farm Bureau
2501 North Stiles
Oklahoma City, Oklahoma 73152
Mr. McFall

6
Mr. Jim Pollard
Oklahoma Gas and Electric Company
P.O. Box 321
Oklahoma City, Oklahoma 73101
Mr. Pollard

7
Mr. Charles Tyree
Chief, Environmental Affairs
Oklahoma Gas and Electric Company
P.O. Box 321
Oklahoma City, Oklahoma 73101
Mr. Tyree

Overholser - Economic Interest - Job 0

29
Mr. Jack G. Springer
Oklahoma State Chamber of Commerce
4020 North Lincoln Boulevard
Oklahoma City, Oklahoma 73105
Mr. Springer

19
Mr. Leo Cravens
Executive Vice-President
Oklahoma State Home Builders Assocation
800 Northeast 63rd Street
Oklahoma City, Oklahoma 73105
Mr. Cravens

8
Mr. M. A. Witte
Oklahoma Testing Laboratories
P.O. Drawer 60268
Oklahoma City, Oklahoma 73146
Mr. Witte

9
Mr. Lynn Martin, M.S.
Phillips Petroleum Company
101 N. Robinson
10th Floor
Oklahoma City, Oklahoma 73102
Mr. Martin

10
Mr. D. J. Porter
Porter Testing Laboratory
P.O. Box 25303
Oklahoma City, Oklahoma 73125
Mr. Porter

11
Dr. Tom Warren
Rose Rock Resources
City Center Building
Main & Broadway
Oklahoma City, Oklahoma 73102
Dr. Warren

12
Mr. Larry E. Shoffner
Shoffner Sand of Oklahoma, Inc.
P.O. Box 863
Edmond, Oklahoma 73034
Mr. Shoffner

 Overholser - Economic Interest - Job 0

13
Ms. Diane Howard
TECHRAD, Inc.
4619 North Sante Fe
Oklahoma City, Oklahoma 73118
Ms. Howard

14
Mr. D. W. Portwood
Tenneco Oil Company
3000 United Founders Blvd.
Cuidad Building, Suite 139
Oklahoma City, Oklahoma 73112
Mr. Portwood

15
Dr. Keith L. Stanley
Western Electric Company
7725 West Reno Avenue
Oklahoma City, Oklahoma 73125
Dr. Stanley

16
Mr. R. G. Wynne
Western Electric Company
7725 West Reno Avenue
Oklahoma City, Oklahoma 73125
Mr. Wynne

17
Mr. Robert A. Allen
Engineering Manager
Wolverine Division, UOP, Inc.
500 Wolverine Road
Shawnee, Oklahoma 74801
Mr. Allen

Lake Overholser - Public Officials - Job P

55
The Honorable Alfred Reece
720 West Jackson
Crescent, Oklahoma 73028
Sir

37
Mr. Tony Mayne
ACOG
4801 Classen Boulevard
Suite 200
Oklahoma City, Oklahoma 73118
Mr. Mayne

19
ACOG Representative
112 West Monroe
P.O. Box 561
Crescent, Oklahoma 73028
Sir or Madam

20
ACOG Representative
Route 1, Box 156
Union City, Oklahoma 73090
Sir or Madam

27
ACOG Representative
Drawer D
Calumet, Oklahoma 73014
Sir or Madam

1
Mr. Mark Butler
Bureau of Land Management
200 Northwest Fifth
Room 548
Oklahoma City, Oklahoma 73102
Mr. Butler

2
Mr. A. O. Peck
Oklahoma Representative
Bureau of Reclamation
50 Penn Place
Suite 560
Oklahoma City, Oklahoma 73118
Mr. Peck

Lake Overholser - Public Officials - Job P

51
Mr. Albert A. Alberts, Chairman
Canadian County Commissioners
Canadian County Courthouse
El Reno, Oklahoma 73036
Mr. Alberts

48
Mr. Joe Brandics
County Planner
Canadian County Courthouse
El Reno, Oklahoma 73036
Mr. Brandics

53
The Honorable Leon L. Liebscher
Canadian County Courthouse
El Reno, Oklahoma 73036
Sir

54
The Honorable Eldon Lyon
Mayor
City of Bethany
Box 219
Bethany, Oklahoma 73008
Mayor Lyon

56
Councilwoman Kay Wilkinson
City of Del City
4800 Southeast 19th Street
Del City, Oklahoma 73115
Ms. Wilkinson

57
The Honorable James H. Nolen
Mayor
City of Del City
P.O. Box 15177
Del City, Oklahoma 73115
Mayor Nolen

58
Mr. Gene Holmes
Planning Director
City of Del City
P.O. Box 15177
Del City, Oklahoma 73115
Mr. Holmes

59
Mr. John Wile
City of Edmond
23 East First
Edmond, Oklahoma 73034
Mr. Wile

93
Mr. Larry Slayton
Project Director
City of Edmond
100 East First Street
P.O. Box 2970
Edmond, Oklahoma 73034
Mr. Slayton

60
Mr. Gene Watts
Assistant City Manager
City of El Reno
101 North Choctaw
P.O. Drawer 700
El Reno, Oklahoma 73036
Mr. Watts

62
Mr. Paul Buntz
City Manager
City of Guthrie
Guthrie, Oklahoma 73044
Mr. Buntz

66
The Honorable Marvin Almon
Mayor
City of Midwest City
P.O. Box 10570
Midwest City, Oklahoma 73140
Mayor Almon

67
Mr. Dave Farrington
City Engineer
City of Midwest City
Box 10570
Midwest City, Oklahoma 73140
Mr. Farrington

68
Mr. Gary R. Vaughan
City of Moore
125 East Main
P.O. Box 7049
Moore, Oklahoma 73153
Mr. Vaughan

Lake Overholser - Public Officials - Job P

69
Mr. Bob Swanagon
City Planner
City of Moore
P.O. Box 7049
Moore, Oklahoma 73153
Mr. Swanagon

70
Mr. Douglas D. Henley
City of Nichols Hills
P.O. Box 14038
Oklahoma City, Oklahoma 73113
Mr. Henley

71
The Honorable Leland Fox
Mayor
City of Nicoma Park
Box 545
Nicoma Park, Oklahoma 73066
Mayor Fox

73
The Honorable William S. Morgan
Mayor
City of Norman
P.O. Box 370
Norman, Oklahoma 73069
Mayor Morgan

74
Mr. David Rennie
Public Works Director
City of Norman
P.O. Box 370
Norman, Oklahoma 73070
Mr. Rennie

75
Mr. Earl Hearn
City of Oklahoma City
200 North Walker
Oklahoma City, Oklahoma 73102
Mr. Hearn

76
Ms. Carol Tagge
Oklahoma City Water Department
City of Oklahoma City
200 North Walker
Oklahoma City, Oklahoma 73102
Ms. Tagge

77
Councilman Bob McCoy
Ward One
City of Oklahoma City
200 North Walker
Oklahoma City, Oklahoma 73102
Councilman McCoy

78
Ms. Adelaide Binstock
Budget Director
City of Oklahoma City
200 North Walker
Oklahoma City, Oklahoma 73102
Ms. Binstock

86
Ms. Jane Webster
City of Oklahoma City
200 North Walker
Oklahoma City, Oklahoma 73102
Ms. Webster

79
Mr. Jim Martin
President of the Board
City of Piedmont
P.O. Box 151
Piedmont, Oklahoma 73078
Mr. Martin

80
Mr. Bob Hulsey
Public Works Director
City of Piedmont
P.O. Box 144
Piedmont, Oklahoma 73078
Mr. Hulsey

81
Mr. Kenneth Beal
City Manager
City of Spencer
P.O. Box 266
Spencer, Oklahoma 73084
Mr. Beal

82
The Honorable Harry Moses
Mayor
City of Spencer
8714 Silver Creek
Spencer, Oklahoma 73084
Mayor Moses

Lake Overholser - Public Officials - Job P

85
Councilman John Rost
City of Warr Acres
P.O. Box 32304
Warr Acres, Oklahoma 73123
Councilman Rost

52
Mr. Emil Fox, County Commissioner
Cleveland County District 1
Cleveland County Courthouse
Norman, Oklahoma 73069
Mr. Fox

47
Mr. August Helmbright
Supervising Sanitarian
Cleveland County Health Department
641 East Robinson
Norman, Oklahoma 73069
Mr. Helmbright

14
Mr. Pierre Taron
COEDD
Sub-State Planning District No. 5
16 East Ninth Street
Shawnee, Oklahoma 74801
Mr. Taron

17
Mr. Gary Witt
Department of Economic
& Community Affairs
4545 N. Lincoln Blvd. - Suite 285
Oklahoma City, Oklahoma 73105
Mr. Witt

24
Mr. Bob Funston, Director
Department of Economic
& Community Affairs
4545 N. Lincoln Blvd. - Suite 285
Oklahoma City, Oklahoma 73105
Mr. Funston

91
Mr. Neil Garrison
Martin Park Nature Center
Department of Parks and Recreation
5000 West Memorial Road
Oklahoma City, Oklahoma 73142
Mr. Garrison

8
James L. Tanner, Col., USAF
Deputy Base Commander
Department of the Air Force
Headquarters 2854th
Air Base Group (AFLC)
Tinker Air Force Base, Oklahoma 73145
Col. Tanner

Deleted

87
Mr. R. Hunter Kemmet, Director
Economic Development Administration
805 Old Post Office Building
Oklahoma City, Oklahoma 73102
Mr. Kemmet

88
Ms. Laura Thomas
Environmental Division
Housing and Urban Development
200 Northwest 5th Street
Oklahoma City, Oklahoma 73102
Ms. Thomas

18
Mr. Thomas H. Clapper
Research Associate
Legislative Council
Room 305, State Capitol
Oklahoma City, Oklahoma 73105
Mr. Clapper

72
The Honorable Earl Musgrave
Mayor, Town of Noble
Box 557
Noble, Oklahoma 73068
Mayor Musgrave

Deleted

7
Mr. Russell E. Smith
Supervisory Mine Inspector
Mine Safety and Health
Administration
110 North Mercedes
Norman, Oklahoma 73069
Mr. Smith

3
Mr. Edwin Kessler, Director
National Severe Storms Laboratory
National Oceanic and Atmospheric Adm.
Environmental Research Laboratories
1313 Halley Circle
Norman, Oklahoma 73069
Mr. Kessler

Lake Overholser - Public Officials - Job P

39
Mr. Ed Pugh
Special Assistant
Office of the Governor
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Pugh

50
Tommy B. White, Ph.D., Director
Environmental Health Services
Oklahoma City-County Health Department
P.O. Box 53445
Oklahoma City, Oklahoma 73105
Dr. White

90
Ms. Sylvia Ritzhey
Environmental Health Services
Oklahoma City-County Health Department
P.O. Box 53445
Oklahoma City, Oklahoma 73105
Ms. Ritzhey

10
Mr. John A. Hassell
Oklahoma Conservation Commission
Room 20, State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Hassell

23
Mr. Keith Vaughan
Oklahoma Conservation Commission
20 State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Vaughan

13
Mr. Charles Bowlin
Oklahoma Corporation Commission
Jim Thorpe Building
Oklahoma City, Oklahoma 73105
Mr. Bowlin

44
Mr. Hamp Baker, Chairman
Oklahoma Corporation Commission
Jim Thorpe Building
Third Floor
Oklahoma City, Oklahoma 73105
Mr. Baker

49
Mr. Paul Clowers
Oklahoma County Engineer
Oklahoma County Court House
Room 119
Oklahoma City, Oklahoma 73102
Mr. Clowers

~~30~~
~~Mr. Richard Hill~~
~~Oklahoma Department of Energy~~
~~4400 Lincoln Boulevard~~
~~Oklahoma City, Oklahoma 73105~~
~~Mr. Hill~~

Delete -

29
Mr. Blaney Qualls
Oklahoma Department of Mines
4040 North Lincoln Boulevard
Room 109
Oklahoma City, Oklahoma 73105
Mr. Qualls

36
Mr. Lawrence Edmison, Director
Oklahoma Department of Pollution Control
1000 Northeast Tenth Street
Oklahoma City, Oklahoma 73105
Mr. Edmison

34
Mr. Miles Logsdon
Division of Planning & Development
Oklahoma Department of Tourism
and Recreation
500 Will Rogers Building
Oklahoma City, Oklahoma 73105
Mr. Logsdon

43
Mr. Abe Hesser
Oklahoma Department of Tourism
and Recreation
501 Will Rogers Building
Oklahoma City, Oklahoma 73105
Mr. Hesser

38
Mr. Monty Murphy
Oklahoma Department of Transportation
200 Northeast 21st Street
Oklahoma City, Oklahoma 73105
Mr. Murphy

Lake Overholser - Public Officials - Job P

42
Mr. Richard A. Ward
Oklahoma Department of Transportation
200 Northeast 21st Street
Oklahoma City, Oklahoma 73105
Mr. Ward

46
Mr. J. Carl Miller
Oklahoma Department of Transportation
200 Northeast 21st
Oklahoma City, Oklahoma 73105
Mr. Miller

89
Mr. Kyle McKinley
Oklahoma Department of Transportation
200 Northeast 21st
Oklahoma City, Oklahoma 73105
Mr. McKinley

11
Mr. Ric Gomez
Chief, Environmental Services
Oklahoma Department of Wildlife
Conservation
P.O. Box 53465
Oklahoma City, Oklahoma 73159
Mr. Gomez

28
Mr. Steve Lewis, Director
Oklahoma Department of Wildlife
Conservation
1801 North Lincoln Boulevard
Oklahoma City, Oklahoma 73105
Mr. Lewis

45
Mr. Ron Suttles
Environmental Biologist
Oklahoma Department of Wildlife
Conservation
1801 North Lincoln Boulevard
Oklahoma City, Oklahoma 73105
Mr. Suttles

25
Mr. W. J. Bowman, Chief
Oklahoma Employment Security
Commission
Will Rogers Building
Oklahoma City, Oklahoma 73152
Mr. Bowman

41
Mr. Bryce A. Baggett
Executive Director
Oklahoma Employment Security
Commission
200 Will Rogers Building
Oklahoma City, Oklahoma 73105
Mr. Baggett

33
Dr. Charles J. Mankin
Oklahoma Geological Survey
830 Van Vleet Oval
Room 163
Norman, Oklahoma 73019
Dr. Mankin

35
Dr. Kenneth V. Luza
Oklahoma Geological Survey
830 Van Vleet Oval
Room 163
Norman, Oklahoma 73019
Dr. Luza

32
Thomas Donica, M.D., Member
Oklahoma State Board of Health
4900 North Portland
Oklahoma City, Oklahoma 73112
Dr. Donica

12
Mr. Jack Craig, Commissioner
Oklahoma State Department of Agriculture
122 State Capitol
Oklahoma City, Oklahoma 73105
Mr. Craig

15
Mr. Jim Leach
Forestry Division
Oklahoma State Department of Agriculture
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Leach

16
Mr. Bob Birchell
Forestry Division
Oklahoma State Department of Agriculture
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Birchell

Lake Overholser - Public Officials - Job P

21
Mr. Joseph P. Marak
Oklahoma State Department of Agriculture
122 State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Marak

26
Mr. Clyde Bower
Environmental Coordinator
Oklahoma State Department of Agriculture
122 State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Bower

22
Mr. Brent VanMeter, Acting Director
Water Facilities Engineering Service
Oklahoma State Department of Health
Standards Division
P.O. Box 53551
Oklahoma City, Oklahoma 73152
Mr. VanMeter

31
Dr. Joan Leavitt, Commissioner
Oklahoma State Department of Health
P.O. Box 53551
Oklahoma City, Oklahoma 73104
Dr. Leavitt

40
Mr. Mark Coleman
Oklahoma State Department of Health
1000 Northeast Tenth Street
Oklahoma City, Oklahoma 73105
Mr. Coleman

83
Councilman Roy Carmack
The Village
3004 Kerry Lane
The Village, Oklahoma 73120
Councilman Carmack

5
Mr. David Burris
Tinker Air Force Base
2854 CES/DEEX
Tinker AFB, Oklahoma 73145
Mr. Burris

61
Mr. Eddie Jackson
Chairman of the Board
Town of Forest Park
P.O. Box 11397
Forest Park, Oklahoma 73121
Mr. Jackson

63
Town of Hallpark
Box 1205
Norman, Oklahoma 73070
Sir or Madam

64
Mr. Matthew Watkins
Town of Harrah
P.O. Box 636
Harrah, Oklahoma 73045
Mr. Watkins

65
Mr. Joseph D. Burkhart
Board Member
Town of Jones
P.O. Box 512
Jones, Oklahoma 73049
Mr. Burkhart

84
Town of Valley Brook
6315 Camille Avenue
Valley Brook, Oklahoma 73149
Sir or Madam

6
Mr. Beryl G. Baggett
Area Conservationist
U.S. Department of Agriculture
Soil Conservation Service - Area V
1016 Northwest 67th - Suite A
Oklahoma City, Oklahoma 73116
Mr. Baggett

92
Ms. Ann Hartley
Project Officer
U.S. Environmental Protection Agency
Region VI
1201 Elm Street
Dallas, Texas 75270
Ms. Harley

Lake Overholser - Public Officials - Job P

4
Mr. Jerry Stoner
U.S. Geological Survey, WRD
201 Northwest Third Street
Room 621
Oklahoma City, Oklahoma 73102
Mr. Stoner

9
~~Mr. Ray Crooks~~ change to Ken C. Crawford
Meterologist in Charge
Weather Service Forecast Office
Will Rogers World Airport
P.O. Box 59997
Oklahoma City, Oklahoma 73159
Mr. Crooks

Mr. Greg Summers
Okla. Fisheries Research Lab
1416 Planck St.
Norman, OK 73069

JAMES R. BARNETT, Executive Director
MICHAEL R. MELTON, Assistant Director

OKLAHOMA WATER RESOURCES BOARD

P.O. BOX 53585 • 1000 N.E. 10TH STREET • OKLAHOMA CITY, OKLAHOMA 73152 • (405)271-2555

DATE: September 20, 1982

TO: Committee Members
Lake Overholser Clean Lakes Project

FROM: Ron Jarman, Chief
Water Quality Division

SUBJECT: Summary for July 15th
Committee Meeting

Enclosed is a copy of the summary for the July 15, 1982, Lake Overholser Clean Lakes Committee meeting.

The Oklahoma Water Resources Board appreciates your time and interest in this project and believes this committee can be instrumental in its future successes.

If you have any questions or comments, please contact Research and Standards Head, Dr. Main Hutcheson, or Lynda Sinclair at (405) 271-2541.

SUMMARY
LAKE OVERHOLSER
CLEAN LAKES
COMMITTEE MEETING

A meeting to organize a Lake Advisory Committee for the Lake Overholser Clean Lakes project was held at Bethany Nazarene College, Bresee Hall, on July 15, 1982.

Present at the meeting were the following individuals:

Project Officials:

Lynda Sinclair - Public Participation Coordinator, Oklahoma Water Resources Board (OWRB)
Dr. Jim Grimshaw - Principal Investigator, OWRB
Laura Stout - Project Technician, OWRB

Private Citizens Group:

Dan Butler
Sharon Densmore

Public Interest Group:

Hubert Harris, Oklahoma City Audubon Society
Leo R. Finkenbinder - Biology Department, Bethany Nazarene College
Neil Garrison, Sierra Club

Economic Interest Group:

Ted Williamson, C. H. Gurnsey & Co.
Maxwell J. Tilford, Bass Enterprises
Zack Williams, OG&E

Public Official Group:

Earl Hearn, Oklahoma City Water Department
Albert Metts, Oklahoma City Water Department
Greg Summers, Oklahoma Department of Wildlife Conservation
Robert J. Hicks, Oklahoma City Rangers
John A. Morgan, Oil and Gas Division, Oklahoma Corporation Commission
John A. Hassell, Oklahoma Conservation Commission, Water Quality
Sylvia Ritzky, Oklahoma City-County Health Department
Robert H. Arndt, Oklahoma Geological Survey
Quang Pham, Oklahoma State Department of Health
Greg Wallace, Association of Central Oklahoma Governments (ACOG)

INTRODUCTION:

Ms. Sinclair opened the meeting by explaining the general purpose of the meeting was to discuss the formation of a Lake Advisory Committee for the Lake Overholser, Phase I, Clean Lakes project.

A general review of the project was given, explaining that the Lake Overholser project is one of seven National Clean Lakes projects partially funded by EPA, currently under study by OWRB. Its purpose is to protect or restore publicly owned fresh water lakes for recreational use.

TOPICS:

A project status report was given by Dr. Grimshaw, principal Investigator for the Lake Overholser project. He explained that a twelve month sampling program has been conducted as part of the diagnostic portion of the study. At present, he is in the process of statistically analyzing the data from this program. Tasks in the work plan that have been completed to date are 1 through 9. Task 10 and 11 are currently underway.

The major problems associated with Lake Overholser at this time appear to be high nutrient levels resulting in algal build-up and sedimentation. Lake Overholser is an off channel reservoir with ocassional main river flow through the reservoir. There is an option to let water in at selected times when it is of better quality. When water is of poorer quality, the reservoir may be bypassed. There are possibilities of improvement using management techniques.

The committee formation and purpose was explained stating that EPA guidelines require that four groups be represented on the committee: private citizens, public interests, economic interests, and public officials to allow for balanced advice. The committee's purpose is to assist OWRB project officials in analyzing data and coming up with recommendations for lake restoration.

Selection of possible members was done randomly by forming a mailing list of interested people from these four groups. Letters were sent inviting these people to the first committee meeting.

Handouts, as well as the public participation work plan, were used to describe how the committee objectives were derived.

The committee, as described in the work plan, is to be a "Gofer" committee where by a member from each interest will represent his/her group on the Advisory Committee. His/her responsibility will be to relay information from the committee back to their group and to bring ideas and feasible recommendations for the Overholser project from their group to the committee. These ideas will be assimilated to help OWRB in its decision making process.

A general committee was formed by all those present, allowing for the addition of other interested parties to join as committee formation continues. This will be done by the collection of names of individuals and organizations.

The general committee was divided into two subcommittees. A technical subcommittee and public relations subcommittee.

The responsibilities of the technical subcommittee will be to examine the data that OWRB collects and provide lay explanations and recommendations to the general committee. Technical subcommittee members:

John Morgan - Corporation Commission, Pollution Abatement Department
Max Tilford - Bass Enterprises
Ted Williamson - C. H. Gurnsey and Co.
Leo Finkenbinder - Bethany Nazarene College, Biology Department
Member - Oklahoma Geological Survey (OGS)
Earl Hearn - Oklahoma City Water Resources Department
Member - Association of Central Oklahoma, Governments (ACOG)
Quang Pham - Oklahoma State Department of Health

The public relations subcommittee consists of Sharon Densmore at this time and will be responsible for obtaining names of interested parties. One area of interest will be contacting public officials such as legislators, congressmen, and city council members of the Lake Overholser area and present the project to Civic organizations to educate the public.

Group Comments:

During discussion several groups presented their interests in Lake Overholser and the project. Comments were received from the Oklahoma City Water Resources Department representing the Oklahoma City Municipal Improvement Authority.

Oklahoma City's primary interest is with water quality. The reservoir is owned and operated by Oklahoma City as a municipal water supply where approximately 25 percent of Oklahoma City's water comes from Lake Overholser. Those things that may impact the quality of the water for drinking need to be considered along with recreational and wildlife habitat needs.

The Oklahoma Municipal Improvement Authority is involved with the Overholser Clean Lakes project under a subcontract agreement of 30 percent match under the federal grant.

Any restoration techniques be will worked out with the city which will be the agency directly involved in administering the restoration. Any funding assistance will also be used to help Oklahoma City.

Other Areas of Committee Consideration:

Discussion was held on designation of the north end of the lake (all the sedimentation basin between east and west river roads) as a wildlife refuge. The city legal department and other agencies and organizations are presently drafting ordinances to allow for this designation. There will also be plans to control access to this area. This may be a way to improve the water quality and environment at the lake.

Plans are being drafted for redesigning the municipal harbor. Some funds are available for redevelopment and aesthetic improvements in the harbor area.

Some of the land around the north end of the lake is designated as National Wetlands. This designation may have some effect on how much of the area and what type restoration techniques may be used. It was stated that the primary goal is to protect the reservoir from sedimentation.

A wildlife survey has not been conducted. Impacts of a restoration project on the northern end of the lake, depending on the techniques used, are unknown. Cattails in that area are used extensively by certain groups and will need to be considered.

The location of other sources of funding, such as state and local sources, will need to be explored.

Next Meeting:

The next meeting was scheduled for August 26, 1982, 7:30 p.m., place to be announced. For the next meeting the committee will decide on its structure; how the committee will decide on items; and obtain names of other interested persons or groups. Tasks that have been completed will be reviewed. Any data relevant to this project and the problems being addressed will be examined or accepted by OWRB.

Meeting was adjourned.

LAKE OVERHOLSER COMMITTEE - PRIVATE CITIZENS

7
Mr. Dan Butler
2200 N. Porter Ave.
Norman, Oklahoma 73071
Mr. Butler

6
Mr. J. Atkins
2424 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Atkins

4
Mr. and Mrs. Ron Barlow
2600 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Barlow

2
Mr. Amos Verne Bollinger
P.O. Box 888
Choctaw, Oklahoma 73020
Mr. Bollinger

5
Mr. J. Brushmiller
2530 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Brushmiller

3
Mr. Robert Hayes
2808 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Hayes

1
Mr. Robert C. Haywood
3536 Overholser Drive
Bethany, Oklahoma 73127
Mr. Haywood

10
Mr. and Mrs. Trent Densmore
Lake Overholser Association
2100 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Densmore

11
Mr. and Mrs. Dick Sawyer
Lake Overholser Association
2220 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Sawyer

12
Mr. and Mrs. James Franks
Lake Overholser Association
2204 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Franks

13
Mr. and Mrs. Don Eckel
Lake Overholser Association
3400 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Eckel

14
Mr. C. L. Gibbes
Lake Overholser Association
3030 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Gibbs

15
Mr. Steve Persa
Lake Overholser Association
3500 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Persa

16
Mr. and Mrs. Jim Ford
Lake Overholser Association
3410 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Ford

17
Mr. and Mrs. Bryce Martin
Lake Overholser Association
8309 N.W. 27th
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Martin

18
Ms. Jan Greve
Lake Overholser Association
3125 Lakeview Manor Drive
Oklahoma City, Oklahoma 73127
Ms. Greve

19
Mr. Ted Palmer
Lake Overholser Association
3813 N. Eagle Lane
Bethany, Oklahoma 73008
Mr. Palmer

20
Mr. and Mrs. Cliff McEntire
Lake Overholser Association
8720 N.W. 23rd
Oklahoma City, Oklahoma 73127
Mr. and Mrs. McEntire

21
Mr. and Mrs. Troy Messer
Lake Overholser Association
6905 N.W. 52nd
Bethany, Oklahoma 73008
Mr. and Mrs. Messer

22
Mr. and Mrs. Bob Loper
Lake Overholser Association
3736 Riverside Dr.
Bethany, Oklahoma 73008
Mr. and Mrs. Loper

23
Mr. and Mrs. Wayne Barnes
Lake Overholser Association
2205 Markwell Pl.
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Barnes

28
Mr. Hubert Harris
Oklahoma City Chapter
Audubon Society
4907 N. Willow
Box 344
Bethany, Oklahoma 73008
Mr. Harris

29
Mr. Leo R. Finkerbinder
Biology Department
Bethany Nazarene Collete
1113 N.E. Foreman Rd.
Yukon, Oklahoma 73099
Mr. Finkerbinder

5
Mr. Kirt Cunningham
Oklahoma Wildlife Federation
4545 North Lincoln Blvd.
Suite 171
Oklahoma City, Oklahoma 73105
Mr. Cunningham

27
Ms. Jeannie Ellis, President
Oklahoma Lakes Assocation
6909 Ashby Terrace
Oklahoma City, Oklahoma 73149
Ms. Ellis

1
Ms. Lou Freeman
League of Women Voters
7312 N.W. 19th
Bethany, Oklahoma 73008
Ms. Freeman

7
Ms. Nancy Krosley
Oklahoma City Chapter
Audubon Society
4301 Northwest 21st Terrace
Oklahoma City, Oklahoma 73107
Ms. Krosley

24
Ms. Jean McLaughlin
Oklahoma City Chapter
League of Women Voters
3709 N.W. 70th Street
Oklahoma City, Oklahoma 73116
Ms. McLaughlin

4
Ms. Barbara Rauch
Attorney at Law
Oklahoma Wildlife Federation
Box 928
Edmond, Oklahoma 73034
Ms. Rauch

2
George Reid
Regents Professor/Director
University of Oklahoma
Bureau of Water & Environmental
Resources Research
Norman, Oklahoma 73019
Professor Reid

6
Bill Roach, Ph.D.
Water Utilities Training Center
Oscar Rose Junior College
6420 Southeast 15th Street
Midwest City, Oklahoma 73110
Dr. Roach

9
Mr. John Robison, Architect
Neighborhood Development and
Conservation Center
2927 North Paseo
Oklahoma City, Oklahoma 73103
Mr. Robison

3
Mr. Fenton Rood
Sierra Club
728 Northwest 21st
Oklahoma City, Oklahoma 73103
Mr. Rood

8
Mr. John Shachford
Oklahoma City Chapter
Audubon Society
Route 1, Box 125
Oklahoma City, Oklahoma 73111
Mr. Shachford

25
Ms. Virginia Smith
Oklahoma Trails Association
3108 S.W. 65th Street
Oklahoma City, Oklahoma 73159
Ms. Smith

26

Mr. B. L. Smith, Editor
Oklahoma Canoers Newsletter
3112 Chaucer Drive
The Village, Oklahoma 73120

Mr. Smith

LAKE OVERHOLSER COMMITTEE - ECONOMIC INTEREST

5
Mr. Bob Reed
ARBCO Dredging, Inc.
P.O. Box 170263
Arlington, Texas 76003
Mr. Reed

6
Mr. Lynn Leverett
LEVCO
Box 7572
Amarillo, Texas 79109
Mr. Leverett

7
Mr. Jack G. Springer
Oklahoma State Chamber of Commerce
4020 N. Lincoln Blvd.
Oklahoma City, Oklahoma 73105
Mr. Springer

8
Mr. Maxwell J. Tilford
Bass Enterprises
2812 N. Donald
Oklahoma City, Oklahoma 73127
Mr. Tilford

9
Mr. Zack Williams
Oklahoma Gas & Electric Company
321 N. Harvey
Oklahoma City, Oklahoma 73101
Mr. Williams

4
Ms. Kay Brothers
Staff Environmental Engineer
Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City, Oklahoma 73125
Ms. Brothers

2
Mr. Leo Cravens
Executive Vice-President
Oklahoma State Home Builders Assocation
800 Northeast 63rd Street
Oklahoma City, Oklahoma 73105
Mr. Cravens

3
Mr. Gary D. Mannering
Oklahoma City Chamber of Commerce
One Santa Fe Plaza
Oklahoma City, Oklahoma 73102
Mr. Mannering

1
Dr. Keith L. Stanley
Western Electric Company
7725 West Reno Avenue
Oklahoma City, Oklahoma 73125
Dr. Stanley

LAKE OVERHOLSER COMMITTEE - PUBLIC OFFICIALS

9
Mr. Greg Summers
Oklahoma Department of
Wildlife Conservation
1416 Planck
Norman, Oklahoma 73069
Mr. Summers

10
Mr. Robert J. Hicks
Office of Chief Ranger
Oklahoma City Rangers
201 Channing Sq.
Suite B5B
Oklahoma City, Oklahoma 73002
Mr. Hicks

11
Mr. John A. Morgan
Oil and Gas Division
Oklahoma Corporation Commission
Jim Thorpe Building
Oklahoma City, Oklahoma 73105
Mr. Morgan

12
Mr. John Hassell
Water Quality
Oklahoma Conservation Commission
20 State Capitol
Oklahoma City, Oklahoma 73105
Mr. Hassell

13
Ms. Sylvia Ritzky
Oklahoma City-County Health Department
921 N.E. 23rd Street
Oklahoma City, Oklahoma 73105
Ms. Ritzky

14
Mr. Robert Arndt
Oklahoma Geological Survey
830 Van Vleet Oval
Room 163
Norman, Oklahoma 73019
Mr. Arndt

15
Mr. Quang Pham
Oklahoma State Department of Health
1000 N.E. 10th Street
Oklahoma City, Oklahoma 73152
Mr. Pham

16
Mr. Tony Mayne
ACOG
4801 Classen Blvd.
Suite 200
Oklahoma City, Oklahoma 73118
Mr. Mayne

17
Mr. Greg Wallace
ACOG
4801 Classen Blvd.
Suite 200
Oklahoma City, Oklahoma 73118
Mr. Wallace

8
Mr. Neil Garrison
Martin Park Nature Center
Department of Parks and Recreation
5000 West Memorial Road
Oklahoma City, Oklahoma 73142
Mr. Garrison

5
Mr. Earl Hearn
City of Oklahoma City
200 North Walker
Oklahoma City, Oklahoma 73102
Mr. Hearn

1
Mr. Edwin Kessler, Director
National Severe Storms Laboratory
National Oceanic and Atmospheric Adm.
Environmental Research Laboratories
1313 Halley Circle
Norman, Oklahoma 73069
Mr. Kessler

6
Mr. Kyle McKinley
Oklahoma Department of Transportation
200 Northeast 21st
Oklahoma City, Oklahoma 73105
Mr. McKinley

3
Mr. J. Carl Miller
Oklahoma Department of Transportation
200 Northeast 21st
Oklahoma City, Oklahoma 73105
Mr. Miller

LAKE OVERHOLSER COMMITTEE - PUBLIC OFFICIALS

7
Ms. Sylvia Ritzhey
Environmental Health Services
Oklahoma City-County Health Department
P.O. Box 53445
Oklahoma City, Oklahoma 73105
Ms. Ritzhey

2
Mr. Jerry Stoner
U.S. Geological Survey, WRD
201 Northwest Third Street
Room 621
Oklahoma City, Oklahoma 73102
Mr. Stoner

4
Tommy B. White, Ph.D., Director
Environmental Health Services
Oklahoma City-County Health Department
P.O. Box 53445
Oklahoma City, Oklahoma 73105
Dr. White

LAKE OVERHOLSER
CLEAN LAKES COMMITTEE MEETING

July 15, 1982, 7:30 p.m.
Bethany Nazarene College
6729 N.W. 39th Expressway
Bresee Hall, Room 301
Bethany, Oklahoma

A G E N D A

I. INTRODUCTION

A. General review of project
B. Status report for Lake Overholser

II. DISCUSSION OF COMMITTEE FORMATION

A. EPA regulations for advisory committees
1. Four groups that must be represented:
(a) Private Citizens
(b) Public Interest
(c) Economic Interests
(d) Public Officials

B. Identification and list organization of persons and groups that should be involved with the committee/study

III. QUESTIONS/COMMENTS

IV. SELECTION OF NEXT MEETING DATE

V. ADJOURNMENT

COMMITTEE FORMATION

Why (Advisory) Committees are established:

(a) to provide a community perspective on agency projects and programs, and

(b) they can provide a forum for addressing issues, promote constructive dialogue among the various interests represented on the group and enhance community understanding of the agency's actions.

The purpose of the Committee is to:

critique and aid agency staff in determining the best, fairest, most feasible and practical means of dealing with water quality and recreational problems.

Accomplishments of Committee members:

(a) they are long-term participants in a planning project;

(b) they serve as a sounding board for new ideas;

(c) they will provide input and response to agency recommendations; and

(d) members are to advise, but do not have management authority.

The major functions of Committee members are:

(a) information and motivating the groups they represent to participate in the management process;

(b) to make recommendations about project functions; and

(c) to give guidance to agency staff throughout planning and implementation and to provide a continuing structure for citizen input.

CHAPTER I

INTRODUCTION

"CITIZEN PARTICIPATION" is a label that means different things to different people. To some, it means the direct involvement at the "grass-roots-level" by the various individuals, groups, corporations, institutions, etc. who constitute "the public" in the development of plans and the making of decisions that may affect them. To others, it means the "cluttering-up" of the problem-solving process that professionals normally use, with the troublesome and, essentially, non-contributing involvement of lay people. To still others – in fact, to a majority of public officials and professionals who are in public service of one form or another – "CITIZEN PARTICIPATION" has a meaning that falls somewhere between these two extremes.

In developing this *Handbook*, we are making no assumptions about what "CITIZEN PARTICIPATION" means to you, the reader. For all we know, your definition of CP may fall anywhere on this broad spectrum of meanings.

Instead of making assumptions about your definition of CP – and, thereby, about your philosophy of CP –, we are making several assumptions about your responsibilities. We are assuming that you are either an official, or a professional, who is responsible – either in a public or in a private capacity – for developing solutions to some rather big and complex problems.

More specifically, we assume that your problem-solving responsibilities include one or more of the following activities:

- **Planning**
- **Designing**
- **Implementing**

or – **Administering**

an agency or a project which – either because of its size or its complexity – is likely to affect a great many different interests. This the only assumption we are making about you, the reader.

If the above description of responsibilities includes you, the approach that we offer here to CITIZEN PARTICIPATION should help you perform those responsibilities more effectively. On the other hand, if your responsibilities are not included in the above description, neither this *Handbook* nor the Training Courses for which it serves as a text probably will be of much use to you.

It isn't that we don't have a philosophy of our own about the inherent desirability or undesirability, constructiveness or destructiveness of CITIZEN PARTICIPATION; we do.* But, we feel that public officials and other professionals don't need someone to preach to them about CITIZEN PARTICIPATION philosophy; what they need is practical help, workable tools, penetrating insights into how CP works – all of it designed to be applicable under the day-to-day pressures, deadlines, and other constraints that every public official and professional has to function under.

We perceive this kind of practical "HOW-TO" help to be particularly important because much of the research that has been done in the area of CITIZEN PARTICIPATION, and most of what has been published on the subject in recent years, falls into two categories. The first of these categories – the one that describes most of the material that has been published – consists of the material that is of a theoretical or philosophical nature. It tends to "preach" to the public official in a moralisitc manner about the virtues of CITIZEN PARTICIPATION. The second category of materials that have been published is more application-oriented, but it is almost exclusively written for the benefit of *the lay citizen* – i.e. the grass-roots participant – rather than for the public official or professional. There is nothing wrong with providing the lay citizen assistance in how he can participate more effectively in the tornado of governmental activities that affect him, and that are being carried out by an absolutely bewildering number of federal, state, regional, local, semi-public, private, . . . etc. entities. The lay citizen not only needs help, he deserves help.

But, if the lay citizen needs and deserves help, so does the public official. There really is a considerable concensus among all parties and all philosophies that CITIZEN PARTICIPATION plays an important role. The sixty-four thousand dollar question is WHAT IMPORTANT ROLE SHOULD IT – AND CAN IT – PLAY? Furthermore: HOW DO YOU DO IT? HOW – and with what – should a public official proceed to develop and execute a CITIZEN PARTICIPATION Program that will really add to the quality of what's being done, one that helps him fulfill his responsibilities better, . . .?

We find that the typical public official working on some important problem – but one that's difficult,

---

*While we don't think that our own philosophy about CITIZEN PARTICIPATION is terribly important, the reader might be more at ease if he did not have to guess what it is but had the benefit of seeing all of our cards on the table. Let us, therefore, do that. In a nutshell, our philosophy is something like this: *In a democratic society in general – and in the U.S. at this time in particular – CP plays an extremely important role not only in all public decision-making but even in private decision-making on large and/or complex projects. But, CP is neither inherently "good" nor is it inherently "bad"; it is a complex and ill-understood phenomenon and has the potential of playing either a constructive or a destructive role in public and private decision-making.* Chapter IV reveals more about our philosophy.

controversial, even unpopular . . . i.e. the kind where there are no easy solutions – has the greatest need for practical assistance in HOW TO INTERACT CONSTRUCTIVELY AND EFFECTIVELY with the many different interests who are potentially affected by what he does. Not only is there very little available in the form of practical help for him in HOW TO DO CITIZEN PARTICIPATION, but **he often is burdened with well-meaning but ill-advised CP Guidelines.** Some of the "CP advice" and "CP requirements" being promulgated and dispensed by many federal agencies are based on very serious misconceptions about how the complex system of CP works. The effect of some of this really well-intended, but ill-conceived, advice tends to be both painful and costly.

Thus, we find, not only does the professional with the actual responsibility for a project, a program, an agency – which, in turn, is responsible for solving some really tough problem – have very little practical help, he is also the one who has to examine and, if necessary, protect the CP Guidelines and CP Regulations that are being imposed on him and his operation. Of course the only responsible and constructive way for an individual or an agency to protect a CP Guideline or CP Requirement is a.) to clearly and convincingly show WHY and HOW is the Guideline or Requirement in question wrong and b.) to **make a constructive proposal for HOW the Guideline's or Requirement's purpose can be achieved much better.**

"CPO": CP by Objectives

Public officials who attended some of our 1977 Short Courses have aptly referred to the over-all management approach that we have developed for CP as the "CP by Objectives" approach. We find this label is not only very handy, it also captures the basic thrust of the approach that we have developed.

We offer the "CP by Objectives" approach as a methodology for public officials in:

- deciding what – if any – CP that they need
- deciding how to design a CP Program that is taylored to their specific needs and constraints
- programming and budgeting such a taylored CP Program
- executing it
- deciding on whether the CP Guidelines and CP Requirements that happen to apply can be accepted or whether they should be protested; and, if they are to be protested, how to make the most effective case for setting them aside.

There are, of course, citizens groups that do have certain statutory decision-making powers; and, this is why some professionals and a great many lay citizens are confused. For example, every governmental jurisdiction has numerous Citizen Boards, or Commissions, that are not elected but are appointed much in the same way that Citizen Advisory Committees often are appointed, but they have actual, legal decision-making powers and responsibilities. The setting is ripe for confusion when we realize that some of these Boards' actual decisions are advisory decisions – which is not the same as advice – for some other governmental bodies. For example, Planning Boards in most places are appointed Citizen Boards. They have, through state enabling legislation and local laws, certain responsibilities and administrative powers. In some of their decisions, e.g., approving and disapproving proposals to subdivide land for development, they are "the government"; except for an appeal to the courts, they have the first and last say on the subject. At the same time, their decisions on zoning changes – arrived at very much the same way, i.e., through staff work, public hearings, etc., as their subdivision decisions – are only "advisory decisions" for consideration by the real decision-makers on zoning issues, which is the local City Council or Board of County Commissioners.

We want to stress that 1) you as public official must be careful not to delegate decision-making responsibilities to your Advisory Committees that are not yours to delegate, and 2) you must make it clear to the members of your Citizen Advisory Committee that their's is strictly an advisory role, that you will listen to them; but, whether you follow their advice or not, you are and will be responsible for the decisions that get made.

Variations, An Advisory Committee of "Gofers"

Some agencies use Citizen Advisory Committees not just to get advice, but also to effect good two-way communication between the agency's project staff and the various affected interests. The way they accomplish this is:

- They ask every potentially affected interest, every possibly interested existing organization, club, tradegroup, civic group, etc. to designate a "Gofer."
- The "Gofer" then, is added to the Citizen Advisory Committee.
- Each member or "Gofer" of this kind of Advisory Committee accepts the responsibility for doing three things:
    1) To express his own opinions, views, and offer his own advice on the Committee.
    2) To communicate what is going on in the project back to the individuals, group, organization, etc. whose "Gofer" he is.
    3) To communicate all views, concerns, desires, etc. from his group, organization, etc. to the project staff. He, in other words, agrees to carry messages faithfully, without changing or distorting them.
- The project team continues to advertise broadly who all of these contact people – or "Gofers" – are and what groups they represent. They exhort the public to: Find out from your "Gofer" what is going on and let him know what your concerns are.

This can be a very effective CP TECHNIQUE that may have the capability of accomplishing a number of CP OBJECTIVES for you.

Disadvantages of this CP TECHNIQUE

In some governmental programs – notably in the 1950's – there was frequent abuse of the concept of Citizen Advisory Committees. For example, many a mayor was guilt of appointing Advisory Committees with a very biased membership to advise him on urban renewal matters. Then, when other interests protested his urban renewal policies and insisted on participating in the development of urban renewal policies, he could legitimately argue that he had not only good professional staff, that he already had a Citizen Advisory Committee that was made up of all sorts of lay citizens. He could, thus, use it as a device to effectively prevent the participation of some of the affected interests.

In places where this abuse occurred, and where memories are long enough for the people to remember, your creation of a Citizen Advisory Committee may be watched with suspicion.

Advantages of this CP TECHNIQUE

Citizen Advisory Committees can provide you with very valuable information and insight; they can provide you with a short-cut method for getting community reactions to alternative proposals.

CP TECHNIQUE NO. 2:
USING CITIZEN ADVISORY COMMITTEES

Basic Principles of this CP TECHNIQUE

Public agencies – as well as private entities – often find themselves in the position where they have to make decisions that have far-reaching consequences for many different interests. However, the professional staff is not intimately familiar with the values held by the various interests. Several means have been devised for bringing the values of the affected interests to bear on the decisions that are being made by staff personnel; the establishment of Citizen Advisory Committees is one such device.

It has become increasingly popular to utilize Citizen Advisory Committees not only for public agencies but also for major undertakings by private industries, for applied research projects by universities, and for various policy-making groups of legislative bodies.

Several assumptions are implicit in the concept of Advisory Committees that – if not clearly understood – can lead to problems:

- The elected, appointed, or hired officials who have the responsibility for making decisions affecting these various interests cannot fully represent the values of the potentially affected interests.
- A body which is selected for the purpose of reflecting the affected interests' values, i.e., a Citizen Advisory Committee, is formed. The members of the committee are the "Reflectors" not the "Representatives" of the affected interests.

Key Features of this CP TECHNIQUE

A Citizen Advisory Committee generally is appointed; it then "advises" a decision-maker, or a group of decision-makers, on the basis of their own values.

The key features that distinguish Advisory Committees are:

- The way its members are selected.
- The role the Committee plays.

The selection process can vary greatly. If you need an Advisory Committee, you should recruit its membership in such a way 1) that all affected interests have a spokesman – this does not rule out one individual speaking out for several interests – and 2) that the individuals care enough about the project so they'll really make an effort to make a contribution. People who ask to be on such committees generally care enough to participate actively, but you probably will not have a very broadly representative group if you rely entirely on a self-selection process.

The roles that Advisory Committees play vary rather widely too – and there is reason for some confusion. Advisory Committees – by definition – are not decision-making groups; they advise decision-makers; they themselves do not decide. It is important that Advisory Committee members understand this point from the outset. An Advisory Committee that feels it ought to be making decisions rather than advising decision-makers, is bound to become very frustrated and discontent. On the other hand, if you are a public agency with duly constituted responsibilities and powers – you cannot, and must not, delegate your decision-making responsibilities to an Advisory Committee. Delegating any of your responsibilities and powers to any one else – especially to an ad hoc group such as a Citizen Advisory Committee – is not one of the powers that you have; it would constitute a flagrant abuse of powers that are not yours to use.

LAKE OVERHOLSER

CLEAN LAKES PROJECT

Committee Meeting

July 15, 1982

ATTENDANCE RECORD

*If you would like to be added to our mailing list, please indicate "YES" under the heading.

		NAME	ADDRESS	MAILING LIST*	REPRESENTING
Tech. Comm.	1	Ted Williamson	3555 NW 58th	on list mailing list Yes	C. H. Guernsey & Co.
	2	Earl Hearn	100 N. Walker Bldg, OKC.	P.O. on list comm. list YES	OKC Water Dept.
Tech Comm.	3	Maxwell J. Tilford	2812 N. Donald, OKC, 73127	yes	Economic Int. Bass Enterprises Geologist
Public Relat.	4	Sharon M/M L. Trent Densmore	2100 Overholser Dr, OKC 73127	on Comm. list P.C. Yes	(Unofficially, Overholser Community Ass
	5	Hubert Harris	4907 N. Willow (Box 344) Bethany, Ok.	P.I. YES	city Audubon oklahoma
Tech. Comm.	6	Joe R. Finkenbinder	1113 NE Foreman Rd. Yukon, OK 73099	P.I. Yes	Biol. Dept. Bethany Nazarene College
	7	Greg Summers	1416 Planck Norman 73069	P.O. Yes	Okla Dept. Wildlife Conserv.
	8	Robert J. Hicks	Office of Chief Ranger Suite B5B 201 Channing Sq. Okla City 73102	P.O. yes	Okla City Ranger
Tech Comm.	9	John A Morgan	Jim Thorpe Bldg OKC OKC	P.O.	Oil & Gas Division Okla Corp Comm.
	10	John A. Hassell	20 State Capitol OKC	P.O.	Oklahoma Conservation Comm. Water Quality
	11	Dan Butler	2200 N Porter Ave Norman OK 73071	P.C.	~~OCC~~
	12	Sylvia Ritzky	921 NE 23rd, OKC 73105	P.O.	OCCHD
Tech.	13	Robert H. Arndt	830 Van Vleet Oval Rom 163, Norman OK 73019	P.O. Yes	Okla Geological Survey
	14	Zack Williams	[redacted] 321 N. Harvey, OKC 73101	Yes	Econ. Int. OG&E

LAKE OVERHOLSER

CLEAN LAKES PROJECT

Committee Meeting

July 15, 1982

ATTENDANCE RECORD

NAME	ADDRESS	MAILING LIST*	REPRESENTING

*If you would like to be added to our mailing list, please indicate "YES" under the heading.

	NAME	ADDRESS	MAILING LIST*	REPRESENTING
1	QUANG PHAM	OK. State Health Dept. 1000 NE 10th, OKC, 73152	Yes	P.O. OK. S.D. Heal
2				
3	Tony Main ACOG. Greg Wallace	Association of Central OK Govt. 4801 Classen suite 200 ~~Okc, ok~~	Yes	P.O. ACOG/GWA
4	Albert Metts	100 N. Walker Bldg, OKC	Yes	P.O. Don't Add on Com. List. OKC ~~Water Dept.~~
5	Neil Garrison	5000 W. Memorial Rd., OKC 73142	Yes	Sierra Club
6	J.S.			
7	J.G			
8	L.			
9				
10				
11				
12				
13				
14				

omm

ech. comm.

JAMES R. BARNETT, Executive Director
MICHAEL R. MELTON, Assistant Director

OKLAHOMA WATER RESOURCES BOARD

P.O. BOX 53585 • 1000 N.E. 10TH STREET • OKLAHOMA CITY, OKLAHOMA 73152 • (405)271-2555

August 16, 1982

Mr. and Mrs Lee V. Powell
2204 Overholser Drive
Bethany, Oklahoma 73127

Dear Mr. and Mrs. Powell:

A committee meeting for the Lake Overholser Clean Lakes Project is scheduled for August 26, 1982, at 7:30 p.m. at Bethany Nazarene College, Bresee Hall, Room 302, located at 6729 N.W. 39th Expressway, Bethany, Oklahoma.

If you have any questions regarding this meeting, please contact Lynda Sinclair of this office at (405) 271-2541.

Sincerely,

Ron Jarman

Ron Jarman, Chief
Water Quality Division

RLJ:LSS:sdh

LAKE OVERHOLSER COMMITTEE - PRIVATE CITIZENS

12
Mr. Dan Butler
2200 N. Porter Ave.
Norman, Oklahoma 73071
Mr. Butler

8
Mr. J. Atkins
2424 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Atkins

6
Mr. and Mrs. Ron Barlow
2600 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Barlow

4
Mr. Amos Verne Bollinger
P.O. Box 888
Choctaw, Oklahoma 73020
Mr. Bollinger

7
Mr. J. Brushmiller
2530 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Brushmiller

11
Mr. Glenn Dickerson
1400 Eagle Lane
Bethany, Oklahoma 73008
Mr. Dickerson

5
Mr. Robert Hayes
2808 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Hayes

3
Mr. Robert C. Haywood
3536 Overholser Drive
Bethany, Oklahoma 73127
Mr. Haywood

2
Mr. Bill Milton
3100 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Milton

9
Mr. J. Nelson
1512 Eagle Lane
Bethany, Oklahoma 73008
Mr. Nelson

10
Mr. Clay Nixon
1408 Eagle Lane
Bethany, Oklahoma 73008
Mr. Nixon

1
Mr. and Mrs Lee V. Powell
2204 Overholser Drive
Bethany, Oklahoma 73127
Mr. and Mrs. Powell

10
Mr. and Mrs. Trent Densmore
Lake Overholser Association
2100 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Densmore

11
Mr. and Mrs. Dick Sawyer
Lake Overholser Association
2220 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Sawyer

12
Mr. and Mrs. James Franks
Lake Overholser Association
2204 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Franks

13
Mr. Kent Glasgow
Lake Overholser Association
2200 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Glasgow

14
Mr. and Mrs. Don Eckel
Lake Overholser Association
3400 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Eckel

15
Mr. C. L. Gibbes
Lake Overholser Association
3030 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Gibbs

16
Mr. Steve Persa
Lake Overholser Association
3500 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Persa

17
Mr. and Mrs. Jim Ford
Lake Overholser Association
3410 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Ford

18
Mr. and Mrs. Bryce Martin
Lake Overholser Association
8309 N.W. 27th
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Martin

19
Ms. Jan Greve
Lake Overholser Association
3125 Lakeview Manor Drive
Oklahoma City, Oklahoma 73127
Ms. Greve

20
Mr. Ted Palmer
Lake Overholser Association
3813 N. Eagle Lane
Bethany, Oklahoma 73008
Mr. Palmer

21
Mr. Bart Nixon
Lake Overholser Association
1408 Eagle Lane
Bethany, Oklahoma 73008
Mr. Nixon

22
Mr. and Mrs. Cliff McEntire
Lake Overholser Association
8720 N.W. 23rd
Oklahoma City, Oklahoma 73127
Mr. and Mrs. McEntire

23
Mr. and Mrs. Troy Messer
Lake Overholser Association
6905 N.W. 52nd
Bethany, Oklahoma 73008
Mr. and Mrs. Messer

24
Mr. and Mrs. Bob Loper
Lake Overholser Association
3736 Riverside Dr.
Bethany, Oklahoma 73008
Mr. and Mrs. Loper

25
Mr. Fred L. Deal
Lake Overholser Association
1816 Eagle Lane
Bethany, Oklahoma 73008
Mr. Deal

26
Mr. and Mrs. Boyd Love
Lake Overholser Association
1820 Eagle Lane
Bethany, Oklahoma 73008
Mr. and Mrs. Love

27
Mr. and Mrs. Wayne Barnes
Lake Overholser Association
2205 Markwell Pl.
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Barnes

32
Mr. Hubert Harris
Oklahoma City Chapter
Audubon Society
4907 N. Willow
Box 344
Bethany, Oklahoma 83008
Mr. Harris

33
Mr. Leo R. Finkerbinder
Biology Department
Bethany Nazarene Collete
1113 N.E. Foreman Rd.
Yukon, Oklahoma 73099
Mr. Finkerbinder

5
Mr. Kirt Cunningham
Oklahoma Wildlife Federation
4545 North Lincoln Blvd.
Suite 171
Oklahoma City, Oklahoma 73105
Mr. Cunningham

31
Ms. Jeannie Ellis, President
Oklahoma Lakes Assocation
6909 Ashby Terrace
Oklahoma City, Oklahoma 73149
Ms. Ellis

1
Ms. Lou Freeman
League of Women Voters
7312 N.W. 19th
Bethany, Oklahoma 73008
Ms. Freeman

7
Ms. Nancy Krosley
Oklahoma City Chapter
Audubon Society
4301 Northwest 21st Terrace
Oklahoma City, Oklahoma 73107
Ms. Krosley

28
Ms. Jean McLaughlin
Oklahoma City Chapter
League of Women Voters
3709 N.W. 70th Street
Oklahoma City, Oklahoma 73116
Ms. McLaughlin

4
Ms. Barbara Rauch
Attorney at Law
Oklahoma Wildlife Federation
Box 928
Edmond, Oklahoma 73034
Ms. Rauch

2
George Reid
Regents Professor/Director
University of Oklahoma
Bureau of Water & Environmental
Resources Research
Norman, Oklahoma 73019
Professor Reid

6
Bill Roach, Ph.D.
Water Utilities Training Center
Oscar Rose Junior College
6420 Southeast 15th Street
Midwest City, Oklahoma 73110
Dr. Roach

JAMES R. BARNETT, Executive Director
MICHAEL R. MELTON, Assistant Director

OKLAHOMA WATER RESOURCES BOARD

P.O. BOX 53585 • 1000 N.E. 10TH STREET • OKLAHOMA CITY, OKLAHOMA 73152 • (405)271-2555

August 23, 1982

Mr. Bill Milton
3100 Overholser Drive
Oklahoma City, Oklahoma 73127

Dear Mr. Milton:

The committee meeting for the Lake Overholser Clean Lakes Project which was scheduled for August 26, 1982, has been rescheduled due to remodeling of Room 302 in Bresee Hall. The meeting will be held on September 2, 1982, at 7:30 p.m. at Bethany Nazarene College, the Royce Brown Business and Home Economics Building, Room 125, Bethany, Oklahoma.

This building is located at 4000 N. College, but due to limited parking because of night classes it may be best to use the parking lot behind the building. The parking lot is located one-half block north of 39th Expressway on Peniel (one block east of College) on the west side of the road. A map is enclosed for your convenience.

If you have any questions regarding this meeting, please contact Lynda Sinclair of this office at (405) 271-2541.

Sincerely,

Ron Jarman

Ron Jarman, Chief
Water Quality Division

RLJ:LSS:sdh

Enclosure as stated

JAMES R. BARNETT, Executive Director
MICHAEL R. MELTON, Assistant Director

OKLAHOMA WATER RESOURCES BOARD

P.O. BOX 53585 • 1000 N.E. 10TH STREET • OKLAHOMA CITY, OKLAHOMA 73152 • (405)271-2555

October 6, 1982

Mr. Edwin Kessler, Director
National Severe Storms Laboratory
National Oceanic and Atmospheric Adm.
Environmental Research Laboratories
1313 Halley Circle
Norman, Oklahoma 73069

Dear Mr. Kessler:

A committee meeting for the Lake Overholser Clean Lakes project will be held at 7:00 p.m. on November 18, 1982, at Bethany Nazarene College, the Royce Brown Business and Home Economics Building, 4000 N. College, Room 135, Bethany, Oklahoma.

If you have any questions regarding this meeting, please contact Lynda Sinclair of this office at (405) 271-2541.

Sincerely,

Ron Jarman, Chief
Water Quality Division

RLJ:LSS:sdh

LAKE OVERHOLSER COMMITTEE - PRIVATE CITIZENS

6
Mr. Dan Butler
2200 N. Porter Ave.
Norman, Oklahoma 73071
Mr. Butler

5
Mr. J. Atkins
2424 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Atkins

3
Mr. and Mrs. Ron Barlow
2600 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Barlow

1
Mr. Amos Verne Bollinger
P.O. Box 888
Choctaw, Oklahoma 73020
Mr. Bollinger

4
Mr. J. Brushmiller
2530 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Brushmiller

2
Mr. Robert Hayes
2808 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Hayes

10
Mr. and Mrs. Trent Densmore
Lake Overholser Association
2100 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Densmore

11
Mr. and Mrs. Dick Sawyer
Lake Overholser Association
2220 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Sawyer

12
Mr. and Mrs. James Franks
Lake Overholser Association
2204 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Franks

13
Mr. and Mrs. Don Eckel
Lake Overholser Association
3400 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Eckel

14
Mr. C. L. Gibbes
Lake Overholser Association
3030 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Gibbs

15
Mr. Steve Persa
Lake Overholser Association
3500 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Persa

16
Mr. and Mrs. Jim Ford
Lake Overholser Association
3410 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Ford

17
Mr. and Mrs. Bryce Martin
Lake Overholser Association
8309 N.W. 27th
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Martin

18
Ms. Jan Greve
Lake Overholser Association
3125 Lakeview Manor Drive
Oklahoma City, Oklahoma 73127
Ms. Greve

19
Mr. Ted Palmer
Lake Overholser Association
3813 N. Eagle Lane
Bethany, Oklahoma 73008
Mr. Palmer

20
Mr. and Mrs. Cliff McEntire
Lake Overholser Association
8720 N.W. 23rd
Oklahoma City, Oklahoma 73127
Mr. and Mrs. McEntire

21
Mr. and Mrs. Troy Messer
Lake Overholser Association
6905 N.W. 52nd
Bethany, Oklahoma 73008
Mr. and Mrs. Messer

22
Mr. and Mrs. Bob Loper
Lake Overholser Association
3736 Riverside Dr.
Bethany, Oklahoma 73008
Mr. and Mrs. Loper

23
Mr. and Mrs. Wayne Barnes
Lake Overholser Association
2205 Markwell Pl.
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Barnes

LAKE OVERHOLSER COMMITTEE - PUBLIC INTEREST

27
Mr. Hubert Harris
Oklahoma City Chapter
Audubon Society
4907 N. Willow
Box 344
Bethany, Oklahoma 73008
Mr. Harris

28
Mr. Leo R. Finkerbinder
Biology Department
Bethany Nazarene Collete
1113 N.E. Foreman Rd.
Yukon, Oklahoma 73099
Mr. Finkerbinder

5
Mr. Kirt Cunningham
Oklahoma Wildlife Federation
4545 North Lincoln Blvd.
Suite 171
Oklahoma City, Oklahoma 73105
Mr. Cunningham

1
Ms. Lou Freeman
League of Women Voters
7312 N.W. 19th
Bethany, Oklahoma 73008
Ms. Freeman

7
Ms. Nancy Krosley
Oklahoma City Chapter
Audubon Society
4301 Northwest 21st Terrace
Oklahoma City, Oklahoma 73107
Ms. Krosley

24
Ms. Jean McLaughlin
Oklahoma City Chapter
League of Women Voters
3709 N.W. 70th Street
Oklahoma City, Oklahoma 73116
Ms. McLaughlin

4
Ms. Barbara Rauch
Attorney at Law
Oklahoma Wildlife Federation
Box 928
Edmond, Oklahoma 73034
Ms. Rauch

2
George Reid
Regents Professor/Director
University of Oklahoma
Bureau of Water & Environmental
Resources Research
Norman, Oklahoma 73019
Professor Reid

6
Bill Roach, Ph.D.
Water Utilities Training Center
Oscar Rose Junior College
6420 Southeast 15th Street
Midwest City, Oklahoma 73110
Dr. Roach

9
Mr. John Robison, Architect
Neighborhood Development and
Conservation Center
2927 North Paseo
Oklahoma City, Oklahoma 73103
Mr. Robison

3
Mr. Fenton Rood
Sierra Club
728 Northwest 21st
Oklahoma City, Oklahoma 73103
Mr. Rood

8
Mr. John Shachford
Oklahoma City Chapter
Audubon Society
Route 1, Box 125
Oklahoma City, Oklahoma 73111
Mr. Shachford

25
Ms. Virginia Smith
Oklahoma Trails Association
3108 S.W. 65th Street
Oklahoma City, Oklahoma 73159
Ms. Smith

26
Mr. B. L. Smith, Editor
Oklahoma Canoers Newsletter
3112 Chaucer Drive
The Village, Oklahoma 73120
Mr. Smith

LAKE OVERHOLSER COMMITTEE - ECONOMIC INTEREST

5
Mr. Bob Reed
ARBCO Dredging, Inc.
P.O. Box 170263
Arlington, Texas 76003
Mr. Reed

6
Mr. Lynn Leverett
LEVCO
Box 7572
Amarillo, Texas 79109
Mr. Leverett

7
Mr. Jack G. Springer
Oklahoma State Chamber of Commerce
4020 N. Lincoln Blvd.
Oklahoma City, Oklahoma 73105
Mr. Springer

8
Mr. Maxwell J. Tilford
Bass Enterprises
2812 N. Donald
Oklahoma City, Oklahoma 73127
Mr. Tilford

9
Mr. Zack Williams
Oklahoma Gas & Electric Company
321 N. Harvey
Oklahoma City, Oklahoma 73101
Mr. Williams

10
Mr. Ted Williamson
C. H. Guernsey & Company
National Foundation West Building
Northwest 58th and Portland
Oklahoma City, Oklahoma 73112
Mr. Williamson

4
Ms. Kay Brothers
Staff Environmental Engineer
Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City, Oklahoma 73125
Ms. Brothers

2
Mr. Leo Cravens
Executive Vice-President
Oklahoma State Home Builders Assocation
800 Northeast 63rd Street
Oklahoma City, Oklahoma 73105
Mr. Cravens

3
Mr. Gary D. Mannering
Oklahoma City Chamber of Commerce
One Santa Fe Plaza
Oklahoma City, Oklahoma 73102
Mr. Mannering

1
Dr. Keith L. Stanley
Western Electric Company
7725 West Reno Avenue
Oklahoma City, Oklahoma 73125
Dr. Stanley

LAKE OVERHOLSER COMMITTEE - PUBLIC OFFICIALS

9
Mr. Greg Summers
Oklahoma Department of
Wildlife Conservation
1416 Planck
Norman, Oklahoma 73069
Mr. Summers

10
Mr. Robert J. Hicks
Office of Chief Ranger
Oklahoma City Rangers
201 Channing Sq.
Suite B5B
Oklahoma City, Oklahoma 73002
Mr. Hicks

11
Mr. John A. Morgan
Oil and Gas Division
Oklahoma Corporation Commission
Jim Thorpe Building
Oklahoma City, Oklahoma 73105
Mr. Morgan

12
Mr. John Hassell
Water Quality
Oklahoma Conservation Commission
20 State Capitol
Oklahoma City, Oklahoma 73105
Mr. Hassell

13
Ms. Sylvia Ritzky
Oklahoma City-County Health Department
921 N.E. 23rd Street
Oklahoma City, Oklahoma 73105
Ms. Ritzky

14
Mr. Robert Arndt
Oklahoma Geological Survey
830 Van Vleet Oval
Room 163
Norman, Oklahoma 73019
Mr. Arndt

15
Mr. Quang Pham
Oklahoma State Department of Health
1000 N.E. 10th Street
Oklahoma City, Oklahoma 73152
Mr. Pham

16
Mr. Tony Mayne
ACOG
4801 Classen Blvd.
Suite 200
Oklahoma City, Oklahoma 73118
Mr. Mayne

17
Mr. Greg Wallace
ACOG
4801 Classen Blvd.
Suite 200
Oklahoma City, Oklahoma 73118
Mr. Wallace

8
Mr. Neil Garrison
Martin Park Nature Center
Department of Parks and Recreation
5000 West Memorial Road
Oklahoma City, Oklahoma 73142
Mr. Garrison

5
Mr. Earl Hearn
City of Oklahoma City
200 North Walker
Oklahoma City, Oklahoma 73102
Mr. Hearn

1
Mr. Edwin Kessler, Director
National Severe Storms Laboratory
National Oceanic and Atmospheric Adm.
Environmental Research Laboratories
1313 Halley Circle
Norman, Oklahoma 73069
Mr. Kessler

6
Mr. Kyle McKinley
Oklahoma Department of Transportation
200 Northeast 21st
Oklahoma City, Oklahoma 73105
Mr. McKinley

3
Mr. J. Carl Miller
Oklahoma Department of Transportation
200 Northeast 21st
Oklahoma City, Oklahoma 73105
Mr. Miller

7
Ms. Sylvia Ritzhey
Environmental Health Services
Oklahoma City-County Health Department
P.O. Box 53445
Oklahoma City, Oklahoma 73105
Ms. Ritzhey

2
Mr. Jerry Stoner
U.S. Geological Survey, WRD
201 Northwest Third Street
Room 621
Oklahoma City, Oklahoma 73102
Mr. Stoner

4
Tommy B. White, Ph.D., Director
Environmental Health Services
Oklahoma City-County Health Department
P.O. Box 53445
Oklahoma City, Oklahoma 73105
Dr. White

DATE: November 15, 1982

TO: Interested Parties

FROM: Ron Jarman, Chief RJ
Water Quality Division

SUBJECT: Lake Overholser Clean Lakes
Committee Meeting

The Lake Overholser Clean Lakes Committee will hold a meeting November 18, 1982, at 7:00 p.m. at the Royce Brown Business and Home Economics Building, Room 135 on the Bethany Nazarene College Campus, 4000 North College.

The committee will hear from Ms. Paige Lammerts, the primary mover behind the Hefner Trails jogging course now being developmed at Lake Hefner.

Committee input to date has indicated an interest in developing a similar program for Lake Overholser as part of the restoration proposal.

Interested citizens and lake area residents are invited to attend the meeting to learn how the project began and how private funding was obtained.

If you have any questions, please contact Lynda Sinclair of this office at (405) 271-2541.

LAKE OVERHOLSER
CLEAN LAKES COMMITTEE MEETING

Bethany Nazarene College
Royce Brown Home Economics and Business Building
4000 North College, Room 135
Bethany, Oklahoma
November 18, 7:00 p.m.

AGENDA

I. INTRODUCTION

II. GUEST SPEAKER

Paige Lammerts - originator of Hefner Trails jogging course
Questions and Comments

III. TECHNICAL COMMITTEE REPORT

Synopsis of technical data
Questions and Comments

IV. SELECTION OF NEXT COMMITTEE MEETING DATE

V. ADJOURNMENT

LAKE OVERHOLSER
CLEAN LAKES
COMMITTEE MEETING

November 18, 1982

ATTENDANCE RECORD

Agency in Charge: Oklahoma Water Resources Board

Principal Investigator-Dr. Jim Grimshaw
Public Participation Coordinator-Lynda Sinclair Lynda Sinclair

PRIVATE CITIZEN GROUP

1 Horothy B. Merrell 8304 Lakeview Dr.	7
2 Nancy Kisley	8
3 Nancy A. Jones	9
4 Larry A Jones	10
5	11
6	12

PUBLIC INTEREST GROUP	ORGANIZATION
1 [illegible]	Bethany Nazarene College
2 Neil Garrison	Sierra Club
3 Sharon Densmore	Lake Overholser Association
4 J. Kent Densmore	Lake Overholser Assoc.
5 ~~[illegible]~~	~~[illegible]~~
6 LARRY JONES	OKLA. CITY BEAUTIFUL POLLUTION CONTROL ASSOCIATION OF C[illegible]
John Shackford	Okla. City Audubon Society

ATTENDANCE RECORD

ECONOMIC INTEREST GROUP	ORGANIZATION
1 Ted A. Williamson	C.H. Guernsey & Co
2 MAXWELL J. TILFORD	Bass Enterprises
3	
4	
5	
6	
7	

BLIC OFFICIAL GROUP	AFFILIATION
1 DWAYNE STUTZMAN	OKLAHOMA TOURISM & RECREATION DEPT.
2 JIM GRIMSHAW	OWRB
3 ELDON D. LYON	CITY OF BETHANY
Dan Andrulonis	Ok. State Dept. of Health
5 EARL E. HEARN	OKLA CITY WATER RESOURCES
6 ~~John Shackford~~	~~Okla. City Audubon Society~~
7 Cheryl Ball	OCCHD
8 Greg Walker	ACOG

LAKE OVERHOLSER
CLEAN LAKES COMMITTEE MEETING
SUMMARY

November 18, 1982

PRESENT:

Project Officials

Dr. Jim Grimshaw, Principal Investigator, OWRB
Lynda Sinclair, Public Participation Coordinator, OWRB

Private Citizens

Dorthy B. Newell
Nancy Krosley
Nancy A. Jones
Larry Jones

Public Interest

Dr. Leo R. Finkenbinder, Bethany Nazarene College
Neil Garrison, Sierra Club
Sharon Densmore, Lake Overholser Association
T. Trent Densmore, Lake Overholser Association
Larry Jones, Oklahoma City Beautiful, Pollution Control Assoc. of Oklahoma
John Shackford, Oklahoma City Audubon Society

Economic Interest

Ted A. Williamson, C.H. Guernsey and Co.
Maxwell J. Tilford, Bass Enterprises

Public Official

Dwayne Stutzman, Oklahoma Department of Tourism and Recreation
Eldon D. Lyon, City of Bethany
Dan Andrulonis, Oklahoma State Department of Health
Earl E. Hearn, Oklahoma City Water Resources Department
Dr. Cheryl Ball, Oklahoma City-County Health Department
Greg Walker, ACOG

The committee has been investigating various ways to improve the road area around the lake. One suggestion submitted by the committee was to keep motor vehicles from having access to the shoreline directly around the lake.

One possible solution would be to erect a jogging trail in this area. This would keep vehicles away from the shoreline so that vegetation could be reestablished.

Paige Lammerts, the originator of the Hefner Trails which is planned construction around Lake Hefner, spoke to the committee and explained how her idea came about, how she is obtaining funds, and how she plans to complete her project. Ms. Lammerts stated that she thought of the idea after seeing a similar project in Dallas.

The proposed Hefner Trail consists of a 10 foot wide, 1½ mile long trail. Along with the track, other facilities are planned for construction such as a central gazebo for lockers and the rental of roller skates. Toilet facilities, lights, a parking lot, drinking fountains, benches, and litter containers would be placed in the area for public convenience. Grass would be planted in the areas around the track with ponds and bridges also being constructed. The total cost of the project is set at $500,000.

The city was approached with the idea. Although they could not provide any funds for the construction of the trail, they agreed to maintain the trail after construction.

Fund raising techniques were presented including televised public service announcements and press releases. Fund raising auctions have also been held to raise money. A greater public involvement activity held to raise funds involved a marathon sponsored by several Oklahoma City groups.

Ms. Lammert suggested that if a project like this were to be instigated for Lake Overholser that a marathon run be sponsored by the group as one way of raising funds.

The committee did not reach any conclusions on whether or not a similar project should be attempted at Lake Overholser.

The second half of the meeting was presented by Max Tilford of the technical subcommittee. A report was given on what information the technical subcommittee is investigating.

(1) Sedimentation of the reservoir is one in-lake problem being examined. Bathymetric maps have been constructed by OWRB and Mr. Tilford from data obtained in 1951 and 1982, to show the contours of the lake bottom. This information was then used to show the percent decreased water volume of the lake.

% Change	
Construction	1919 - 20,300 acre/feet
15%	1952 - 17,500 acre/feet
9%	1982 - 15,900 acre/feet
24%	Decrease in water volume over 63 years

(2) The technical subcommittee also proposes that the original sedimentation basin be dredged to perform its original function of reducing the sediment load to the lake.

OWRB presented the Tulsa Corps of Engineers with three alternative plans for placement of a sedimentation basin. They concluded that dredging of the original sedimentation basin would be the most logical location from an ecological stand point.

Calculations such as flow volume into the basin, the depth the basin needs to be dredged, and how often it will need to be cleaned out are being made by OWRB. The marsh appears to be acting as a filter for large particles. Determination will be made on what size particles will be removed by placing the sedimentation basin in its original location.

(3) Nutrient influx to the lake is also being examined by the technical subcommittee. Fluorometry methods are being used to determine chlorophyll concentrations in the lake. Herbicides and insecticides do not appear to be a problem.

CONCLUSION:

The old sedimentation basin will be surveyed to determine how much sediment has accumulated in the basin and how much material would need to be dredged. The City of Oklahoma City has suggested the possibility of using the sediment for land application. Along with this may come a maintenance contract for periodic dredging.

It was decided that future committee meetings be held on the third Thursday of every month as needed at 7:00 p.m. with hopes of continuing to meet at Bethany Nazarene College.

The next technical subcommittee meeting will be Monday, January 24, 1983, at Bass Enterprises, Quail Ridge Tower Office Building, N. May Avenue, Oklahoma City, Oklahoma.

The next general committee meeting will be February 10, 1983. Place to be announced. Technical data will be presented by the technical subcommittee.

OWRB presented the Tulsa Corps of Engineers with three alternative plans for placement of a sedimentation basin. They concluded that dredging of the original sedimentation basin would be the most logical location from an ecological stand point.

Calculations such as flow volume into the basin, the depth the basin needs to be dredged, and how often it will need to be cleaned out are being made by OWRB. The marsh appears to be acting as a filter for large particles. Determination will be made on what size particles will be removed by placing the sedimentation basin in its original location.

(3) Nutrient influx to the lake is also being examined by the technical subcommittee. Fluorometry methods are being used to determine chlorophyll concentrations in the lake. Herbicides and insecticides do not appear to be a problem.

CONCLUSION:

The old sedimentation basin will be surveyed to determine how much sediment has accumulated in the basin and how much material would need to be dredged. The City of Oklahoma City has suggested the possibility of using the sediment for land application. Along with this may come a maintenance contract for periodic dredging.

It was decided that future committee meetings be held on the third Thursday of every month as needed at 7:00 p.m. with hopes of continuing to meet at Bethany Nazarene College.

The next technical subcommittee meeting will be Monday, January 24, 1983, at Bass Enterprises, Quail Ridge Tower Office Building, N. May Avenue, Oklahoma City, Oklahoma.

The next general committee meeting will be February 10, 1983. Place to be announced. Technical data will be presented by the technical subcommittee.

LAKE OVERHOLSER
CLEAN LAKES COMMITTEE MEETING
SUMMARY

November 18, 1982

PRESENT:

Project Officials

Dr. Jim Grimshaw, Principal Investigator, OWRB
Lynda Sinclair, Public Participation Coordinator, OWRB

Private Citizens

Dorthy B. Newell
Nancy Krosley
Nancy A. Jones
Larry Jones

Public Interest

Dr. Leo R. Finkenbinder, Bethany Nazarene College
Neil Garrison, Sierra Club
Sharon Densmore, Lake Overholser Association
T. Trent Densmore, Lake Overholser Association
Larry Jones, Oklahoma City Beautiful, Pollution Control Assoc. of Oklahoma
John Shackford, Oklahoma City Audubon Society

Economic Interest

Ted A. Williamson, C.H. Guernsey and Co.
Maxwell J. Tilford, Bass Enterprises

Public Official

Dwayne Stutzman, Oklahoma Department of Tourism and Recreation
Eldon D. Lyon, City of Bethany
Dan Andrulonis, Oklahoma State Department of Health
Earl E. Hearn, Oklahoma City Water Resources Department
Dr. Cheryl Ball, Oklahoma City-County Health Department
Greg Walker, ACOG

The committee has been investigating various ways to improve the road area around the lake. One suggestion submitted by the committee was to keep motor vehicles from having access to the shoreline directly around the lake.

One possible solution would be to erect a jogging trail in this area. This would keep vehicles away from the shoreline so that vegetation could be reestablished.

Paige Lammerts, the originator of the Hefner Trails which is planned construction around Lake Hefner, spoke to the committee and explained how her idea came about, how she is obtaining funds, and how she plans to complete her project. Ms. Lammerts stated that she thought of the idea after seeing a similar project in Dallas.

The proposed Hefner Trail consists of a 10 foot wide, 1½ mile long trail. Along with the track, other facilities are planned for construction such as a central gazebo for lockers and the rental of roller skates. Toilet facilities, lights, a parking lot, drinking fountains, benches, and litter containers would be placed in the area for public convenience. Grass would be planted in the areas around the track with ponds and bridges also being constructed. The total cost of the project is set at $500,000.

The city was approached with the idea. Although they could not provide any funds for the construction of the trail, they agreed to maintain the trail after construction.

Fund raising techniques were presented including televised public service announcements and press releases. Fund raising auctions have also been held to raise money. A greater public involvement activity held to raise funds involved a marathon sponsored by several Oklahoma City groups.

Ms. Lammert suggested that if a project like this were to be instigated for Lake Overholser that a marathon run be sponsored by the group as one way of raising funds.

The committee did not reach any conclusions on whether or not a similar project should be attempted at Lake Overholser.

The second half of the meeting was presented by Max Tilford of the technical subcommittee. A report was given on what information the technical subcommittee is investigating.

(1) Sedimentation of the reservoir is one in-lake problem being examined. Bathymetric maps have been constructed by OWRB and Mr. Tilford from data obtained in 1951 and 1982, to show the contours of the lake bottom. This information was then used to show the percent decreased water volume of the lake.

% Change	
Construction	1919 - 20,300 acre/feet
15%	1952 - 17,500 acre/feet
9%	1982 - 15,900 acre/feet
24%	Decrease in water volume over 63 years

(2) The technical subcommittee also proposes that the original sedimentation basin be dredged to perform its original function of reducing the sediment load to the lake.

LAKE OVERHOLSER COMMITTEE - ECONOMIC INTEREST

6
Mr. Bob Reed
ARBCO Dredging, Inc.
P.O. Box 170263
Arlington, Texas 76003
Mr. Reed

7
Mr. Lynn Leverett
LEVCO
Box 7572
Amarillo, Texas 79109
Mr. Leverett

8
Mr. Jack G. Springer
Oklahoma State Chamber of Commerce
4020 N. Lincoln Blvd.
Oklahoma City, Oklahoma 73105
Mr. Springer

9
Mr. Maxwell J. Tilford
Bass Enterprises
2812 N. Donald
Oklahoma City, Oklahoma 73127
Mr. Tilford

10
Mr. Zack Williams
Oklahoma Gas & Electric Company
321 N. Harvey
Oklahoma City, Oklahoma 73101
Mr. Williams

4
Ms. Kay Brothers
Staff Environmental Engineer
Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City, Oklahoma 73125
Ms. Brothers

2
Mr. Leo Cravens
Executive Vice-President
Oklahoma State Home Builders Assocation
800 Northeast 63rd Street
Oklahoma City, Oklahoma 73105
Mr. Cravens

5
Upton B. Henderson, Ph.D.
Chairman of Economics
Central State University
1505 Oak Drive
Edmond, Oklahoma 73034
Dr. Henderson

3
Mr. Gary D. Mannering
Oklahoma City Chamber of Commerce
One Santa Fe Plaza
Oklahoma City, Oklahoma 73102
Mr. Mannering

1
Dr. Keith L. Stanley
Western Electric Company
7725 West Reno Avenue
Oklahoma City, Oklahoma 73125
Dr. Stanley

LAKE OVERHOLSER COMMITTEE - PUBLIC OFFICIALS

9
Mr. Greg Summers
Oklahoma Department of
Wildlife Conservation
1416 Planck
Norman, Oklahoma 73069
Mr. Summers

10
Mr. Robert J. Hicks
Office of Chief Ranger
Oklahoma City Rangers
201 Channing Sq.
Suite B5B
Oklahoma City, Oklahoma 73002
Mr. Hicks

11
Mr. John A. Morgan
Oil and Gas Division
Oklahoma Corporation Commission
Jim Thorpe Building
Oklahoma City, Oklahoma 73105
Mr. Morgan

12
Mr. John Hassell
Water Quality
Oklahoma Conservation Commission
20 State Capitol
Oklahoma City, Oklahoma 73105
Mr. Hassell

13
Ms. Sylvia Ritzky
Oklahoma City-County Health Department
921 N.E. 23rd Street
Oklahoma City, Oklahoma 73105
Ms. Ritzky

14
Mr. Robert Arndt
Oklahoma Geological Survey
830 Van Vleet Oval
Room 163
Norman, Oklahoma 73019
Mr. Arndt

15
Mr. Quang Pham
Oklahoma State Department of Health
1000 N.E. 10th Street
Oklahoma City, Oklahoma 73152
Mr. Pham

16
Mr. Tony Mayne
ACOG
4801 Classen Blvd.
Suite 200
Oklahoma City, Oklahoma 73118
Mr. Mayne

17
Mr. Greg Wallace
ACOG
4801 Classen Blvd.
Suite 200
Oklahoma City, Oklahoma 73118
Mr. Wallace

8
Mr. Neil Garrison
Martin Park Nature Center
Department of Parks and Recreation
5000 West Memorial Road
Oklahoma City, Oklahoma 73142
Mr. Garrison

5
Mr. Earl Hearn
City of Oklahoma City
200 North Walker
Oklahoma City, Oklahoma 73102
Mr. Hearn

1
Mr. Edwin Kessler, Director
National Severe Storms Laboratory
National Oceanic and Atmospheric Adm.
Environmental Research Laboratories
1313 Halley Circle
Norman, Oklahoma 73069
Mr. Kessler

6
Mr. Kyle McKinley
Oklahoma Department of Transportation
200 Northeast 21st
Oklahoma City, Oklahoma 73105
Mr. McKinley

3
Mr. J. Carl Miller
Oklahoma Department of Transportation
200 Northeast 21st
Oklahoma City, Oklahoma 73105
Mr. Miller

LAKE OVERHOLSER COMMITTEE - PUBLIC OFFICIALS

7
Ms. Sylvia Ritzhey
Environmental Health Services
Oklahoma City-County Health Department
P.O. Box 53445
Oklahoma City, Oklahoma 73105
Ms. Ritzhey

2
Mr. Jerry Stoner
U.S. Geological Survey, WRD
201 Northwest Third Street
Room 621
Oklahoma City, Oklahoma 73102
Mr. Stoner

4
Tommy B. White, Ph.D., Director
Environmental Health Services
Oklahoma City-County Health Department
P.O. Box 53445
Oklahoma City, Oklahoma 73105
Dr. White

SUMMARY
LAKE OVERHOLSER COMMITTEE MEETING

Bethany Nazarene College
Royce Brown Building, Room 125
Bethany, Oklahoma
September 2, 1982
7:30 p.m.

Introduction:

The meeting was opened by Dr. Jim Grimshaw, principal investigator for the Overholser Clean Lakes Project. There was a short discussion of the progress to date.

Comments From the General Committee:

The general committee discussed concerns regarding the problems associated with Lake Overholser and suggested possible actions. Preservation of the area and the prevention of sedimentation appeared to be two major concerns. Comments are as follows:

(1) close part of the road that circles the lake to all types of motor vehicles. This would prevent:

    (a) erosion that contributes to sedimentation, and

    (b) destruction of the surrounding area by recreational, off road vehicles;

(2) obtain a city ordinance to close off side and access roads. Access would be limited to designated areas;

3) the construction of a jogging/hiking trail around the lake. Parking lots could provide visitors a place to park. Lighting and mounted rangers to patrol the lake would be used to safeguard the park; and

4) a lake fee could be charged at limited access points for maintenance and up-keep on the proposed park.

The main concern is that vehicles should be kept away from direct contact with the shoreline for aesthetics as well as water quality control.

The general committee was divided into subcommittees to further discuss certain aspects of the project.

Public Relations Subcommittee Discussion:

The job of this committee will be to draw more interest to the project in hopes of finding financial and community support. Several ideas were brought up concerning the general committees comments and proposals as to how these ideas could be effected were discussed.

The public relations subcommittee suggested the investigation of other park projects, such as Tulsa's Riverside Park, to determine how they were accomplished. Another project discussion was the Lake Hefner Trails Park. It was decided to ask a spokesman from the Arkansas River Corridor Development project and the Oklahoma City Parks and Recreations Department to be guest speakers for the public relations subcommittee at the next meeting.

In order to make the community aware and possibly get some backing for the project, suggestions were made to contact the Chamber of Commerce and Oklahoma City Beautiful about attending the committee meetings.

Possible sources of local and state funding were discussed. One suggestion was made to investigate possible funding through the String of Pearls Park, a proposed project for Oklahoma City of which Lake Overholser is a part.

Of more immediate importance was the problem of "off road" parking areas immediately adjacent to the lake. It was suggested that City Council be asked to pass an ordinance prohibiting parking in these areas.

Technical Subcommittee Discussion:

The technical subcommittee was informed that the main problem with Lake Overholser appears to be sedimentation and nutrient pollution. These two problems are under study.

A field trip is scheduled for the technical subcommittee for September 21, 1982, at 10:30 a.m. The purpose of the trip is to examine the lake and its watershed.

It was suggested that a representative from the Corps of Engineers be invited to a meeting to discuss alternative sedimentation basin plans.

Note:

According to the Department of Wildlife Conservation, the north end of the lake is not a federally designated wetland.

LAKE OVERHOLSER CLEAN LAKES
COMMITTEE MEETING
BETHANY NAZARENE COLLEGE
September 2, 1982

ATTENDANCE RECORD

NAME	ORGANIZATION	ADDRESS
Nowanda McEntire	Private citizen	8725 NW 23rd Street
Sgt. C. Harmon	Oklahoma City Ranger	31 NE 66th Street
Greg Summers	Oklahoma Wildlife Dept.	1416 Planck, Norman
Earl Hearn	Oklahoma City Water Resources	200 N. Walker, OKC
Quang Pham	OSDH	1000 NE 10th Street, OKC
Neal Garrison	Sierra Club	5000 W. Memorial Rd.
Dan Butler	OCCHD	2200 N. Poter Ave., Norman
Sharon Densmore	Lake Overholser Assoc.	2100 Overholser Dr.
Sylvia Ritzky	OCCHD	921 NE 23rd, OKC
Jim Franks	Private citizen	2204 Overholser Dr.
Sharon Franks	Private citizen	2204 Overholser Dr.
R. W. Reed Jr.	Arbco Dredging, Inc.	P.O. Box 170263, TX
Maxwell Tieford	Bass Enterprises	2812 N. Donald, OKC
John Morgan	Oklahoma Corporation Comm.	Jim Thrope Bldg., OKC
Lynda Sinclair	OWRB	1000 NE 10th Street
Gary Shapiro	OWRB	1000 NE 10th Street
Jim Grimshaw	OWRB	1000 NE 10th Street

September 27, 1982

Mr. Greg Wallace
ACOG
4801 Classen Blvd.
Suite 200
Oklahoma City, Oklahoma 73118

Dear Mr. Wallace:

A Lake Overholser Technical Subcommittee meeting will be held on Monday, October 4, 1982, from 7:00 to 8:00 p.m. at the Bethany Branch Library, 3510 N. Mueller, Bethany, Oklahoma.

If you have any questions regarding this meeting, please contact Lynda Sinclair of this office at (405) 271-2541.

Sincerely,

Ron Jarman, Chief
Water Quality Division

RLJ:LSS:sdh

LAKE OVERHOLSER
TECHNICAL COMMITTEE MEETING SUMMARY

October 4, 1982
7:00 p.m.

Dr. Jim Grimshaw, Assistant Chairman of the Lake Overholser Technical Committee, reported on the meeting held with the Corps of Engineers on September 29, 1982, to discuss the Corps providing a cost estimate for constructing the Overholser sedimentation basin at two different sites.

The Technical Committee directed Dr. Grimshaw to write a letter to the Corps of Engineers requesting the cost estimate.

The Technical Committee requested Dr. Grimshaw to collect additional wash load samples for particle size analysis at three sites during a regional storm event when there is at least 50 CFS flow in the North Canadian River.

Sampling sites selected were as follows:

(1) Highway 4 bridge north of Yukon;
(2) Morgan Road bridge; and
(3) Old Route 66 bridge northeast of Lake Overholser.

The next meeting will be held in the Bass Enterprises Production Company conference room, 5600 N. May Avenue, Suite 300 at 7:00 p.m. on November 15, 1982.

This technical meeting will discuss the Lake Overholser bathymetric map and the sediment volume which has accumulated in Lake Overholser.

The individuals who participated in the meeting are listed below:

Name	Organization
Mr. Gary Shaprio	OWRB
Dr. Jim Grimshaw	OWRB
Mr. Ted Williamson	C. H. Guernsey & Co.
Dr. Tony Mayne	ACOG
Dr. Leo R. Finkenbinder	BNC
Mr. Max Tilford	Bass Enterprises Production Co.
Dr. Quang Pham	OSDH

September 27, 1982

Mr. Leo R. Finkerbinder
Biology Department
Bethany Nazarene Collete
1113 N.E. Foreman Rd.
Yukon, Oklahoma 73099

Dear Mr. Finkerbinder:

A Lake Overholser Technical Subcommittee meeting will be held on Monday, October 4, 1982, from 7:00 to 8:00 p.m. at the Bethany Branch Library, 3510 N. Mueller, Bethany, Oklahoma.

If you have any questions regarding this meeting, please contact Lynda Sinclair of this office at (405) 271-2541.

Sincerely,

Ron Jarman, Chief
Water Quality Division

RLJ:LSS:sdh

September 27, 1982

Mr. Quang Pham
Oklahoma State Department of Health
1000 N.E. 10th Street
Oklahoma City, Oklahoma 73152

Dear Mr. Pham:

A Lake Overholser Technical Subcommittee meeting will be held on Monday, October 4, 1982, from 7:00 to 8:00 p.m. at the Bethany Branch Library, 3510 N. Mueller, Bethany, Oklahoma.

If you have any questions regarding this meeting, please contact Lynda Sinclair of this office at (405) 271-2541.

Sincerely,

Ron Jarman, Chief
Water Quality Division

RLJ:LSS:sdh

September 27, 1982

Mr. Robert Arndt
Oklahoma Geological Survey
830 Van Vleet Oval
Room 163
Norman, Oklahoma 73019

Dear Mr. Arndt:

A Lake Overholser Technical Subcommittee meeting will be held on Monday, October 4, 1982, from 7:00 to 8:00 p.m. at the Bethany Branch Library, 3510 N. Mueller, Bethany, Oklahoma.

If you have any questions regarding this meeting, please contact Lynda Sinclair of this office at (405) 271-2541.

Sincerely,

Ron Jarman, Chief
Water Quality Division

RLJ:LSS:sdh

September 27, 1982

Mr. John A. Morgan
Oil and Gas Division
Oklahoma Corporation Commission
Jim Thorpe Building
Oklahoma City, Oklahoma 73105

Dear Mr. Morgan:

A Lake Overholser Technical Subcommittee meeting will be held on Monday, October 4, 1982, from 7:00 to 8:00 p.m. at the Bethany Branch Library, 3510 N. Mueller, Bethany, Oklahoma.

If you have any questions regarding this meeting, please contact Lynda Sinclair of this office at (405) 271-2541.

Sincerely,

Ron Jarman, Chief
Water Quality Division

RLJ:LSS:sdh

September 27, 1982

Mr. Ted Williamson
C. H. Guernsey & Company
National Foundation West Building
Northwest 58th and Portland
Oklahoma City, Oklahoma 73112

Dear Mr. Williamson:

A Lake Overholser Technical Subcommittee meeting will be held on Monday, October 4, 1982, from 7:00 to 8:00 p.m. at the Bethany Branch Library, 3510 N. Mueller, Bethany, Oklahoma.

If you have any questions regarding this meeting, please contact Lynda Sinclair of this office at (405) 271-2541.

Sincerely,

Ron Jarman, Chief
Water Quality Division

RLJ:LSS:sdh

September 27, 1982

Mr. Maxwell J. Tilford
Bass Enterprises
2812 N. Donald
Oklahoma City, Oklahoma 73127

Dear Mr. Tilford:

A Lake Overholser Technical Subcommittee meeting will be held on Monday, October 4, 1982, from 7:00 to 8:00 p.m. at the Bethany Branch Library, 3510 N. Mueller, Bethany, Oklahoma.

If you have any questions regarding this meeting, please contact Lynda Sinclair of this office at (405) 271-2541.

Sincerely,

Ron Jarman, Chief
Water Quality Division

RLJ:LSS:sdh

LAKE OVERHOLSER
TECHNICAL COMMITTEE MEETING SUMMARY

October 4, 1982
7:00 p.m.

Dr. Jim Grimshaw, Assistant Chairman of the Lake Overholser Technical Committee, reported on the meeting held with the Corps of Engineers on September 29, 1982, to discuss the Corps providing a cost estimate for constructing the Overholser sedimentation basin at two different sites.

The Technical Committee directed Dr. Grimshaw to write a letter to the Corps of Engineers requesting the cost estimate.

The Technical Committee requested Dr. Grimshaw to collect additional wash load samples for particle size analysis at three sites during a regional storm event when there is at least 50 CFS flow in the North Canadian River.

Sampling sites selected were as follows:

(1) Highway 4 bridge north of Yukon;
(2) Morgan Road bridge; and
(3) Old Route 66 bridge northeast of Lake Overholser.

The next meeting will be held in the Bass Enterprises Production Company conference room, 5600 N. May Avenue, Suite 300 at 7:00 p.m. on November 15, 1982.

This technical meeting will discuss the Lake Overholser bathymetric map and the sediment volume which has accumulated in Lake Overholser.

The individuals who participated in the meeting are listed below:

Name	Organization
Mr. Gary Shaprio	OWRB
Dr. Jim Grimshaw	OWRB
Mr. Ted Williamson	C. H. Guernsey & Co.
Dr. Tony Mayne	ACOG
Dr. Leo R. Finkenbinder	BNC
Mr. Max Tilford	Bass Enterprises Production Co.
Dr. Quang Pham	OSDH

118
Mr. Jim Leach
Forestry Division
Oklahoma State Department of Agriculture
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Leach

133
Dr. Joan Leavitt, Commissioner
Oklahoma State Department of Health
P.O. Box 53551
Oklahoma City, Oklahoma 73104
Dr. Leavitt

199
Mr. Lynn Leverett
LEVCO
Box 7572
Amarillo, Texas 79109
Mr. Leverett

62
Mr. Steven A. Lewis, President
Oklahoma Fishery Society
P.O. Box 53465
Oklahoma City, Oklahoma 73152
Mr. Lewis

131
Mr. Steve Lewis, Director
Oklahoma Department of Wildlife
Conservation
1801 North Lincoln Boulevard
Oklahoma City, Oklahoma 73105
Mr. Lewis

154
The Honorable Leon L. Liebscher
Canadian County Courthouse
El Reno, Oklahoma 73036
Sir

136
Mr. Miles Logsdon
Division of Planning & Development
Oklahoma Department of Tourism
and Recreation
500 Will Rogers Building
Oklahoma City, Oklahoma 73105
Mr. Logsdon

Lake Overholser - Complete

78
Mr. and Mrs. Bob Loper
Lake Overholser Association
3736 Riverside Dr.
Bethany, Oklahoma 73008
Mr. and Mrs. Loper

137
Dr. Kenneth V. Luza
Oklahoma Geological Survey
830 Van Vleet Oval
Room 163
Norman, Oklahoma 73019
Dr. Luza

155
The Honorable Eldon Lyon
Mayor
City of Bethany
Box 219
Bethany, Oklahoma 73008
Mayor Lyon

135
Dr. Charles J. Mankin
Oklahoma Geological Survey
830 Van Vleet Oval
Room 163
Norman, Oklahoma 73019
Dr. Mankin

124
Mr. Joseph P. Marak
Oklahoma State Department of Agriculture
122 State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Marak

218
Mr. Bob Martin
Oklahoma City Rangers
201 Channing Sq.
Suite B5B
Oklahoma City, Oklahoma 73002
Mr. Martin

74
Mr. and Mrs. Bryce Martin
Lake Overholser Association
8309 N.W. 27th
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Martin

178
Mr. Jim Martin
President of the Board
City of Piedmont
P.O. Box 151
Piedmont, Oklahoma 73078
Mr. Martin

88
Mr. Lynn Martin, M.S.
Phillips Petroleum Company
101 N. Robinson
10th Floor
Oklahoma City, Oklahoma 73102
Mr. Martin

9
Mr. Alan David Martinez
433 Northwest 25th Street, #7
Oklahoma City, Oklahoma 73103
Mr. Martinez

215
Mr. Tim Maupin
Assistant City Manager
City of Oklahoma City
200 N. Walker
Oklahoma City, Oklahoma 73102
Mr. Maupin

213
Dr. Tony Mayne
ACOG
4801 Classen Blvd.
Suite 200
Oklahoma City, Oklahoma 73118
Dr. Mayne

176
Councilman Bob McCoy
Ward One
City of Oklahoma City
200 North Walker
Oklahoma City, Oklahoma 73102
Councilman McCoy

228
The Honorable John R. McCune
The State Senate
State Capitol Building
Oklahoma City, Oklahoma 73105
Senator McCune

Lake Overholser - Complete

193
Ms. Nowanda McEntire
8725 N.W. 23rd.
Oklahoma City, Oklahoma 73127
Ms. McEntire

98
Mr. Kenneth McFall
Executive Secretary
Oklahoma Farm Bureau
2501 North Stiles
Oklahoma City, Oklahoma 73152
Mr. McFall

188
Mr. Kyle McKinley
Oklahoma Department of Transportation
200 Northeast 21st
Oklahoma City, Oklahoma 73105
Mr. McKinley

39
Ms. Jean McLaughlin
Oklahoma City Chapter
League of Women Voters
3709 Northwest 70th Street
Oklahoma City, Oklahoma 73116
Ms. McLaughlin

77
Mr. and Mrs. Troy Messer
Lake Overholser Association
6905 N.W. 52nd
Bethany, Oklahoma 73008
Mr. and Mrs. Messer

147
Mr. J. Carl Miller
Oklahoma Department of Transportation
200 Northeast 21st
Oklahoma City, Oklahoma 73105
Mr. Miller

10
Ms. Ann Million
2630 Beaurue
Norman, Oklahoma 73069
Ms. Million

209
Mr. John A. Morgan
Oil and Gas Division
Oklahoma Corporation Commission
Jim Thorpe Building
Oklahoma City, Oklahoma 73105
Mr. Morgan

174
The Honorable William S. Morgan
Mayor
City of Norman
P.O. Box 370
Norman, Oklahoma 73069
Mayor Morgan

181
The Honorable Harry Moses
Mayor
City of Spencer
8714 Silver Creek
Spencer, Oklahoma 73084
Mayor Moses

46
Mr. Bill Moyer
Associate Director
Oklahoma Municipal League
201 Northeast 23rd Street
Oklahoma City, Oklahoma 73105
Mr. Moyer

139
Mr. Monty Murphy
Oklahoma Department of Transportation
200 Northeast 21st Street
Oklahoma City, Oklahoma 73105
Mr. Murphy

173
The Honorable Earl Musgrave
Mayor, Town of Noble
Box 557
Noble, Oklahoma 73068
Mayor Musgrave

25
Ms. Patricia L. Muzny
1209 Southwest 47th Street
Oklahoma City, Oklahoma 73109
Ms. Muzny

Lake Overholser - Complete

11
Mr. Steve Nash
2730 South Chataqua, #403
Norman, Oklahoma 73069
Mr. Nash

26
Ms. Dorothy B. Newell
8304 Lakeaire Drive
Oklahoma City, Oklahoma 73132
Ms. Newell

158
The Honorable James H. Nolen
Mayor
City of Del City
P.O. Box 15177
Del City, Oklahoma 73115
Mayor Nolen

12
Mr. Dale Orcutt
Route 2, Box Indian Springs 95
Crescent, Oklahoma 73028
Mr. Orcutt

222
The Honorable George H. Osborne
The House of Representatives
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Osborne

76
Mr. Ted Palmer
Lake Overholser Association
3813 N. Eagle Lane
Bethany, Oklahoma 73008
Mr. Palmer

65
Ms. Carla B. Paul
League of Women Voters
of Oklahoma City
1116 Northeast 55th
Oklahoma City, Oklahoma 73111
Ms. Paul

108
Mr. A. O. Peck
Oklahoma Representative
Bureau of Reclamation
50 Penn Place
Suite 560
Oklahoma City, Oklahoma 73118
Mr. Peck

72
Mr. Steve Persa
Lake Overholser Association
3500 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Persa

212
Mr. Quang Pham
Oklahoma State Department of Health
1000 N.E. 10th Street
Oklahoma City, Oklahoma 73152
Mr. Pham

29
Mr. Jimmie Pigg
401 Rock Place
Moore, Oklahoma 73060
Mr. Pigg

85
Mr. Jim Pollard
Oklahoma Gas and Electric Company
P.O. Box 321
Oklahoma City, Oklahoma 73101
Mr. Pollard

216
Mrs. Janet Pope
7509 N. Morgan Road
Yukon, Oklahoma 73099
Mrs. Pope

89
Mr. D. J. Porter
Porter Testing Laboratory
P.O. Box 25303
Oklahoma City, Oklahoma 73125
Mr. Porter

Lake Overholser - Complete

93
Mr. D. W. Portwood
Tenneco Oil Company
3000 United Founders Blvd.
Cuidad Building, Suite 139
Oklahoma City, Oklahoma 73112
Mr. Portwood

18
Mr. and Mrs. Lee V. Powell
4709 Doral Court
Oklahoma City, Oklahoma 73132
Mr. and Mrs. Powell

140
Mr. Ed Pugh
Special Assistant
Office of the Governor
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Pugh

132
Mr. Blaney Qualls
Oklahoma Department of Mines
4040 North Lincoln Boulevard
Room 109
Oklahoma City, Oklahoma 73105
Mr. Qualls

63
Ms. Barbara Rauch
Attorney at Law
Oklahoma Wildlife Federation
Box 928
Edmond, Oklahoma 73034
Ms. Rauch

156
The Honorable Alfred Reece
720 West Jackson
Crescent, Oklahoma 73028
Sir

198
Mr. Bob Reed
ARBCO Dredging, Inc.
P.O. Box 170263
Arlington, Texas 76003
Mr. Reed

52
George Reid
Regents Professor/Director
University of Oklahoma
Bureau of Water & Environmental
Resources Research
Norman, Oklahoma 73019
Professor Reid

175
Mr. David Rennie
Public Works Director
City of Norman
P.O. Box 370
Norman, Oklahoma 73070
Mr. Rennie

42
Ms. Barbara Rice, President
League of Women Voters
of Oklahoma
307 Northwest 42nd Street
Oklahoma City, Oklahoma 73118
Ms. Rice

45
Mr. Donald C. Rider
Executive Director
Oklahoma Municipal League
201 Northeast 23rd Street
Oklahoma City, Oklahoma 73105
Mr. Rider

205
Ms. Sylvia Ritzky
Environmental Health Services
Oklahoma City-County Health Department
P.O. Box 53445
Oklahoma City, Oklahoma 73105
Ms. Ritzky

51
Bill Roach, Ph.D.
Water Utilities Training Center
Oscar Rose Junior College
6420 Southeast 15th Street
Midwest City, Oklahoma 73110
Dr. Roach

68
Mr. John Robison, Architect
Neighborhood Development
Conservation Center
2927 North Paseo
Oklahoma City, Oklahoma 73103
Mr. Robison

Lake Overholser - Complete

184
Councilman John Rost
City of Warr Acres
P.O. Box 32304
Warr Acres, Oklahoma 73123
Councilman Rost

50
Ms. Jayne M. Salisbury
Oklahoma Climatological Survey
University of Oklahoma
815 Jenkins Street
Norman, Oklahoma 73019
Ms. Salisbury

69
Mr. and Mrs. Dick Sawyer
Lake Overholser Association
2220 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Sawyer

67
Mr. John Shachford
Oklahoma City Chapter
Audubon Society
Route 1, Box 125
Oklahoma City, Oklahoma 73111
Mr. Shachford

22
Ms. Euelda N. Sharp
3116 North Halloway
Bethany, Oklahoma 73008
Ms. Sharp

28
Dr. and Mrs. E. E. Shircliff
107 Northwest 14th
Oklahoma City, Oklahoma 73103
Dr. and Mrs. Shircliff

91
Mr. Larry E. Shoffner
Shoffner Sand of Oklahoma, Inc.
P.O. Box 863
Edmond, Oklahoma 73034
Mr. Shoffner

100
Mr. Carl Short
Central Oklahoma Homebuilders
P.O. Box 18803
Oklahoma City, Oklahoma 73154
Mr. Short

13
Mr. Frank Silovsky
6205 Post Oak Road
Oklahoma City, Oklahoma 73105
Mr. Silovsky

190
Mr. Larry Slayton
Project Director
City of Edmond
100 East First Street
P.O. Box 2970
Edmond, Oklahoma 73034
Mr. Slayton

60
Mr. B. L. Smith, Editor
Oklahoma Canoers Newsletter
3112 Chaucer Drive
Village, Oklahoma 73120
Mr. Smith

37
Mr. Joel Smith, President
Oklahoma Wildlife Federation
806 Pine Oak
Edmond, Oklahoma 73034
Mr. Smith

61
Ms. Virginia Smith
Oklahoma Trails Association
3108 Southwest 65th Street
Oklahoma City, Oklahoma 73159
Ms. Smith

53
Dr. Warren Smith
Biology Department
Central State University
327 East Tenth
Edmond, Oklahoma 73034
Dr. Smith

Lake Overholser - Complete

23
Dr. Katherine B. Sohler
2106 North Indiana
Oklahoma City, Oklahoma 73106
Dr. Sohler

200
Mr. Jack G. Springer
Oklahoma State Chamber of Commerce
4020 N. Lincoln Blvd.
Oklahoma City, Oklahoma 73105
Mr. Springer

94
Dr. Keith L. Stanley
Western Electric Company
7725 West Reno Avenue
Oklahoma City, Oklahoma 73125
Dr. Stanley

110
Mr. Jerry Stoner
U.S. Geological Survey, WRD
201 Northwest Third Street
Room 621
Oklahoma City, Oklahoma 73102
Mr. Stoner

54
Leale E. Streebin, Ph.D.
University of Oklahoma
Civil Engineering and
Environmental Science
Norman, Oklahoma 73019
Dr. Streebin

56
Mr. Richard Strouhal, President
Central Oklahoma Master
Conservancy District
Route 4, Box 275
Norman, Oklahoma 73069
Mr. Strouhal

14
Mr. Joe Stuever
5815 Melton Drive
Oklahoma City, Oklahoma 73132
Mr. Stuever

217
Mr. Dwayne Stutzman
Oklahoma Department of Tourism
and Recreation
Oklahoma City, Oklahoma 73105
Mr. Stutzman

207
Mr. Greg Summers
Oklahoma Department of Wildlife
Conservation
1416 Planck
Norman, Oklahoma 73069
Mr. Summers

146
Mr. Ron Suttles
Environmental Biologist
Oklahoma Department of Wildlife
Conservation
1801 North Lincoln Boulevard
Oklahoma City, Oklahoma 73105
Mr. Suttles

170
Mr. Bob Swanagon
City Planner
City of Moore
P.O. Box 7049
Moore, Oklahoma 73153
Mr. Swanagon

117
Mr. Pierre Taron
COEDD
Sub-State Planning District No. 5
16 East Ninth Street
Shawnee, Oklahoma 74801
Mr. Taron

55
Dr. George W. Tauxe
Associate Professor
University of Oklahoma
School of Civil Engineering
and Environmental Science
Norman, Oklahoma 73019
Dr. Tauxe

15
Mr. W. A. "Tate" Taylor
1706 Crestmont
Norman, Oklahoma 73069
Mr. Taylor

Lake Overholser - Complete

187
Ms. Laura Thomas
Environmental Division
Housing and Urban Development
200 Northwest 5th Street
Oklahoma City, Oklahoma 73102
Ms. Thomas

34
Ms. Ruth Thompson
American Business Women's
Association
1600 Northwest 31, #157
Oklahoma City, Oklahoma 73118
Ms. Thompson

102
Mr. Terry Thurman
Espey, Huston & Associates, Inc.
4545 Lincoln Blvd. - Suite 16
Oklahoma City, Oklahoma 73105
Mr. Thurman

201
Mr. Maxwell J. Tilford
Bass Enterprises
2812 N. Donald
Oklahoma City, Oklahoma 73127
Mr. Tilford

82
N. Tripathy, Ph.D.
Chemical Lab
General Motors Corporation
P.O. Box 26527
Oklahoma City, Oklahoma 73126
Dr. Tripathy

16
Mr. Gene Tyner
910 South McCall Drive
Norman, Oklahoma 73069
Mr. Tyner

86
Mr. Charles Tyree
Chief, Environmental Affairs
Oklahoma Gas and Electric Company
P.O. Box 321
Oklahoma City, Oklahoma 73101
Mr. Tyree

Lake Overholser - Complete

81
Mr. Steve Vandegrift
Environmental Control Laboratory
P.O. Box 274
Norman, Oklahoma 73070
Mr. Vandegrift

125
Mr. Brent VanMeter, Acting Director
Water Facilities Engineering Service
Oklahoma State Department of Health
Standards Division
P.O. Box 53551
Oklahoma City, Oklahoma 73152
Mr. VanMeter

169
Mr. Gary R. Vaughan
City of Moore
125 East Main
P.O. Box 7049
Moore, Oklahoma 73153
Mr. Vaughan

126
Mr. Keith Vaughan
Oklahoma Conservation Commission
20 State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Vaughan

214
Mr. Greg Wallace
ACOG
4801 Classen Blvd.
Suite 200
Oklahoma City, Oklahoma 73118
Mr. Wallace

143
Mr. Richard A. Ward
Oklahoma Department of Transportation
200 Northeast 21st Street
Oklahoma City, Oklahoma 73105
Mr. Ward

90
Dr. Tom Warren
Rose Rock Resources
City Center Building
Main & Broadway
Oklahoma City, Oklahoma 73102
Dr. Warren

165
Mr. Matthew Watkins
Town of Harrah
P.O. Box 636
Harrah, Oklahoma 73045
Mr. Watkins

161
Mr. Gene Watts
Assistant City Manager
City of El Reno
101 North Choctaw
P.O. Drawer 700
El Reno, Oklahoma 73036
Mr. Watts

185
Ms. Jane Webster
City of Oklahoma City
200 North Walker
Oklahoma City, Oklahoma 73102
Ms. Webster

151
Tommy B. White, Ph.D., Director
Environmental Health Services
Oklahoma City-County Health Department
P.O. Box 53445
Oklahoma City, Oklahoma 73105
Dr. White

160
Mr. John Wile
City of Edmond
23 East First
Edmond, Oklahoma 73034
Mr. Wile

157
Councilwoman Kay Wilkinson
City of Del City
4800 Southeast 19th Street
Del City, Oklahoma 73115
Ms. Wilkinson

202
Mr. Zack Williams
Oklahoma Gas & Electric Company
321 N. Harvey
Oklahoma City, Oklahoma 73101
Mr. Williams

 Lake Overholser - Complete

203
Mr. Ted Williamson
C. H. Guernsey & Company
National Foundation West Building
Northwest 58th and Portland
Oklahoma City, Oklahoma 73112
Mr. Williamson

40
Ms. Britt Wisniewski
Norman Chapter
League of Women Voters
1007 Lincoln Green Street
Norman, Oklahoma 73069
Ms. Wisniewski

120
Mr. Gary Witt
Department of Economic
& Community Affairs
4545 N. Lincoln Blvd. - Suite 285
Oklahoma City, Oklahoma 73105
Mr. Witt

87
Mr. M. A. Witte
Oklahoma Testing Laboratories
P.O. Drawer 60268
Oklahoma City, Oklahoma 73146
Mr. Witte

17
Ms. Cherly Woods
1908 Northwest 41st Street
Oklahoma City, Oklahoma 73118
Ms. Woods

95
Mr. R. G. Wynne
Western Electric Company
7725 West Reno Avenue
Oklahoma City, Oklahoma 73125
Mr. Wynne

PUBLIC HEARING

LAKE OVERHOLSER
CLEAN LAKES PROJECT

April 28, 1983, 7:00 p. m.
Royce Brown Business & Home Economics Bldg.
Bethany Nazarene College in Bethany, Okla.

AGENDA

I. Introduction and project history - Laura Cook (OWRB)

II. Project Overview - Dr. Jim Grimshaw (OWRB)

III. Conclusions & Recommendations - Max Tilford (Overholser Committee member)

IV. Formal Statements - (five minute limit per statement)

V. Introduction of Johnny Walker - (Corps of Engineers)

VI. Continued Committee Work - Max Tilford

VII. Adjournment

PUBLIC HEARING

DRAFT WORK PLAN FOR LAKE OVERHOLSER
CLEAN LAKES PROJECT

April 28, 1983
7:00pm
Royce Brown Business & Home Economics Bldg.
Bethany Nazarene College in Bethany, Okla.

NAME: DAVID MARTINEZ TITLE: Citizen

REPRESENTING: Myself

ADDRESS: 433 NW 25th St #7

CITY: Okla City STATE: OK TELEPHONE: (W) 525-3179

Check:

Wish to Make an Oral Statement(✓) Wish to Submit Written Statement( )
Will Make no Comment()

Written comments may be submitted to the Oklahoma Water Resources Board, Water Quality Division, 10th St., P.O. Box 53585, Oklahoma City, Oklahoma 73152. Comments will be received for a period of 10 days.

PUBLIC HEARING

DRAFT WORK PLAN FOR LAKE OVERHOLSER
CLEAN LAKES PROJECT

April 28, 1983
7:00pm
Royce Brown Business & Home Economics Bldg.
Bethany Nazarene College in Bethany, Okla.

NAME: Earl E. Hearn TITLE: Water/Wastewater Technologist

REPRESENTING: City of Oklahoma City

ADDRESS: 200 N. Walker

CITY: Okla. City STATE: OKLA. TELEPHONE: 231-2422

Check:

Wish to Make an Oral Statement( ) Wish to Submit Written Statement(X)
Will Make no Comment()

Written comments may be submitted to the Oklahoma Water Resources Board, Water Quality Division, 10th St., P.O. Box 53585, Oklahoma City, Oklahoma 73152. Comments will be received for a period of 10 days.

AGENDA FOR THE LAKE OVERHOLSER

TECHNICAL SUBCOMMITTEE MEETING

NOVEMBER 15, 1982

1) Report on the response from the Corps of Engineers concerning sedimentation basin siting.

2) Presentation of 1951 and 1982 Bathymetric maps.

3) Presentation of cumulative reduction in volume capacity vs. time plot.

4) Discussion of these above data.

5) Committee conclusions concerning bathymetric data.

6) Selection of topic to be addressed at the next technical subcommittee meeting.

7) Selection of next meeting time, date, and location.

8) Next general committee meeting will be November 18, 1982, Bethany Nazarene College, Rm. 135., Royce Brown Business and Home Ec. Building., 7:00PM.

9) A thanks to the committee members for their contributions!!!

PUBLIC HEARING

DRAFT WORK PLAN FOR LAKE OVERHOLSER
CLEAN LAKES PROJECT

April 28, 1983
7:00pm
Royce Brown Business & Home Economics Bldg.
Bethany Nazarene College in Bethany, Okla.

NAME: Neil Garrison TITLE: ______________

REPRESENTING: Sierra Club, Oklahoma City Group

ADDRESS: ______________

CITY: Oklahoma City STATE: OK TELEPHONE: 751-2741

Check:

Wish to Make an Oral Statement(✓) Wish to Submit Written Statement(✓)
Will Make no Comment()

Written comments may be submitted to the Oklahoma Water Resources Board, Water Quality Division, 10th St., P.O. Box 53585, Oklahoma City, Oklahoma 73152. Comments will be received for a period of 10 days.

PUBLIC HEARING

DRAFT WORK PLAN FOR LAKE OVERHOLSER
CLEAN LAKES PROJECT

April 28, 1983
7:00pm
Royce Brown Business & Home Economics Bldg.
Bethany Nazarene College in Bethany, Okla.

NAME: MAXWELL J. TILFORD TITLE: ____________

REPRESENTING: myself

ADDRESS: 2812 N. Donald

CITY: OKC STATE: OK TELEPHONE: 789-8565 home
843-8556 office

Check:

Wish to Make an Oral Statement( ) Wish to Submit Written Statement( )
Will Make no Comment()

Written comments may be submitted to the Oklahoma Water Resources Board, Water Quality Division, 10th St., P.O. Box 53585, Oklahoma City, Oklahoma 73152. Comments will be received for a period of 10 days.

SIERRA CLUB
MDCCCXCII

Sierra Club

[redacted]

Oklahoma City Group
Box 60613
Oklahoma City, OK 73146

April 28, 1983

Oklahoma Water Resources Board
P. O. Box 53585
Oklahoma City, Oklahoma

Dear Sir:

We are offering these comments as part of the public record for the Lake Overholser Clean Lakes Study Public Meeting scheduled for April 28, 1983.

We reserve the right to submit additional comments after we have had an opportunity to review comments and any documents presented at the April 28 Public Meeting.

Our principal concern is that the Lake Overholser marshes need to receive adequate protection and that degradation of these marshes should be avoided. Each year we are losing 300,000 acres of vital wetland habitat to drainage and development. Half of the original wetland acreage of the lower 48 states has been lost; half of what remains has been so severely modified that its functional values are significantly impaired. Slowly but steadily, wetland fringes are being encroached upon by small scale developments which in combination have a cumulative impact on this resource.

Marshes are too often thought of as being wastelands. On the contrary, marshes provide many valuable services to us. Marshes remove polluting sediments and toxic chemicals so that degraded waters can be restored to a purer quality for reuse. Marshes store floodwaters so that downstream surges are moderated and lives and property are safeguarded. Marshes furnish vital life-cycle habitat and food for many wildlife species. Marshes play an important role in transporting surface waters to underground aquifers so that groundwater supplies are continually recharged. Biologists estimate that wetlands grow fiber at twice the rate of dry land farms. Minnesota scientists are studying the use of wetland vegetation as a source of energy. Wetlands provide refuge, nesting and food reserves without which migratory water birds cannot survive.

(continued on following pages)

LIST OF BIRDS SEEN WITH SOME REGULARITY AT THE "COFFERDAM MARSH"

Horned Grebe
Eared Grebe
Pied-billed Grebe

Great Blue Heron
Green Heron
Little Blue Heron
Great Egret
Snowy Egret
Black-crowned Night Heron
Yellow-crowned Night Heron
Least Bittern
American Bittern

Mallard
Gadwall
Pintail
Green-winged Teal
Blue-winged Teal
Cinnamon Teal
Northern Shovelor
American Wigeon
Wood Duck
Ruddy Duck

Sharp-shinned Hawk
Cooper's Hawk

Bobwhite

King Rail
Virginia Rail
Sora
Common Gallinule
American Coot

Killdeer

American Woodcock
Common Snipe
Solitary Sandpiper
Lesser Yellowlegs

Black Tern

Mourning Dove

Yellow-billed Cuckoo

Screech Owl
Great Horned Owl
Barred Owl
Long-eared Owl
Short-eared Owl

Common Nighthawk

Chimney Swift

Ruby-throated Hummingbird

Belted Kingfisher

Common Flicker
Red-bellied Woodpecker
Hairy Woodpecker
Downy Woodpecker

Eastern Kingbird
Western Kingbird
Scissor-tailed Flycatcher
Great Crested Flycatcher
Eastern Phoebe
Traill's Flycatcher
Least Flycatcher

Tree Swallow
Bank Swallow
Rough-winged Swallow
Barn Swallow
Cliff Swallow
Purple Martin

Blue Jay
Common Crow

Carolina Chickadee
Tufted Titmouse

House Wren
Winter Wren
Long-billed Marsh Wren
Short-billed Marsh Wren

Mockingbird
Gray Catbird
Brown Thrasher

American Robin

Ruby-crowned Kinglet

Loggerhead Shrike

Bell's Vireo
Solitary Vireo
Warbling Vireo

CONTINUED ON NEXT PAGE

LIST OF BIRDS SEEN WITH SOME REGULARITY AT THE "COFFERDAM MARSH"
(continued from preceding page)

Orange-crowned Warbler
Nashville Warbler
Yellow Warbler
Morning Warbler
Common Yellowthroat
Wilson's Warbler

Yellow-headed Blackbird
Red-winged Blackbird
Orchard Oriole
Northern Oriole
Common Grackle
Brown-headed Cowbird

Northern Cardinal
Indigo Bunting
Dickcissel
American Goldfinch
Harris' Sparrow
Lincoln's Sparrow
Swamp Sparrow
Song Sparrow

The "cofferdam marsh" is that area of marsh immediately north of the Lake Overholser roll-over structure and immediately south of the NW 39th Expressway.

None of the species listed on the preceding pages is an endangered species or a threatend species. This does not imply, however, that some of the species are deserving of special management attention. I would especially call your attention to the following species:

Least Bittern --
This bird is found in but a few other places in Oklahoma County. The specialized habitat requirements of the Least Bittern accounts for its low population levels and limited distribution. This bird has been sighted on numerous occasions in the "cofferdam marsh." Most of the Least Bitterns sighted in the state of Oklahoma are suspected to be transient birds in migration. At least one active Least Bittern nest was discovered by members of the Oklahoma City Audubon Society in the marsh on the north shore of Lake Overholser. The regularity of summer sightings of Least Bitterns in the "Cofferdam Marsh" strongly points to the possibility that this species is nesting in this area also.

Bell's Vireo --
The "Cofferdam Marsh" is excellent habitat for this species. Bell's vireo nests have been found in the "Cofferdam Marsh" every summer. Parasitism of Bell's Vireo nests by cowbirds is a serious problem.. Cowbird parasitism has had significant adverse impacts on the population levels of this species. Habitat loss has also dealt a serious blow to this species.

Mourning Warbler --
This species does not nest in the "Cofferdam Marsh"; it is a summer resident of southern Canada and the northern U.S. It winters in central and South America and uses the "Cofferdam Marsh" as an intermediate stop-over sight for its migration route. The marsh provides food and resting areas for this species on the middle leg of its migration travel lane. This species is attracted to the "Cofferdam Marsh" because the Mourning Warbler frequents dense undergrowth like that found at the "Cofferdam Marsh." There are few other places in this area that provides the habitat that is needed by the Mourning Warbler.

Common Yellowthroat --
A significant population of this species is found in the "Cofferdam Marsh." The specialized habitat present in the "Cofferdam Marsh" attracts this species to this area.

Cinnamon Teal --
This species of the western U.S. is seen in few places in Oklahoma City. The "Cofferdam Marsh" is the only place in the Lake Overholser area where this species has been sighted. It offers the habitat that this species requires; other areas in the Lake Overholser region do not.

Long-billed Marsh Wren and Short-billed Marsh Wren --
The very name of these species testifies to their specialized habitat requirements. The "Cofferdam Marsh" provides valuable habitat for these species.

Swamp Sparrow --
The name of this species is misleading. The "Cofferdam Marsh" habitat attracts a large population of this bird.

The "Cofferdam Marsh" provides valuable feeding areas for all the species of "dabbling ducks" (Mallard, Gadwall, Pintail, Green-winged Teal, Blue-winged Teal, Cinnamon Teal, Northern Shovelor, American Wigeon, and Wood Duck).

Screech Owls, Great Horned Owls, Barred Owls, Long-eared Owls, [redacted] and Short-eared Owls are attracted to the marsh because of the large populations of blackbirds that roost in the "Cofferdam Marsh" in the Autumn.

Great-crested Flycatchers, Eastern Phoebes, Tree Swallows, Bank Swallows, Cliff Swallows, House Wrens, Ruby-crowned Kinglets, Solitary Vireos, and Yellow Warblers inhabit the "Cofferdam Marsh" as migrants. This area provides the cover, food, water, and living space needed by these species. Central Oklahoma is primarily prairie country. Forest birds that migrate through central Oklahoma utilize the wooded borders of major streams like the North Canadian River that flows into Lake Overholser. The dense foliage of the "Cofferdam Marsh" provides valuable habitat for the migrating woodland birds.

If Oklahoma City is to have and enjoy certain species of birds, we need the kind of habitat present in "Cofferdam Marsh." The specialized habitat in the "Cofferdam Marsh" attracts certain kinds of birds. It is irreplaceable. There are no other areas around like it.

One of the attributes that makes the "Cofferdam Marsh" so valuable is its close proximity to the Oklahoma City metropolitan area. It provides valuable wildlife habitat in an area that has experienced wildlife habitat destruction on a broad scale.

Another attribute that makes the "Cofferdam Marsh" important is that it is accessible to the visiting public. While it is true that marshlands exist north of the NW 39th Expressway, the marshes north of the highway are not as accessible as the "Cofferdam Marsh." The "Cofferdam Marsh" has been utilized for almost a 20 year time period for bird populations research and public education programs in the field of bird study. Bird banding has been a principal facet of the research and education programs.

We can not over-emphasize the value of this special wetland known as the "Cofferdam Marsh." Its value is magnified by its proximity to the Oklahoma City urban area because of the additional opportunities it offers urban residents for enjoyment of the natural environment without the need to travel long distances.

The Oklahoma City Group of the Sierra Club encourages the Oklahoma Water Resources Board to adequately protect the unique area known as the "Cofferdam Marsh." We do not feel that this would be a proper site for a rennovated sedimentation basin. A rennovated sedimentation basin should be placed in an alternate site where there would not be such an adverse environmental degradation.

Thank you for giving us this opportunity to express our comments on this matter.

Sincerely,

Neil Garrison
Oklahoma City Group
Sierra Club

PUBLIC HEARING

CLEAN LAKES PROJECT
LAKE OVERHOLSER

April 28, 1983, 7:00pm
Royce Brown Business & Home Economics Bldg.
Bethany Nazarene College in Bethany, Okla.
ATTENDANCE RECORD

	NAME	ADDRESS	REPRESENTING
1	Laura Cook		OWRB
2	[illegible] B. Holmes		ODPC
3	John Morgan		OCC
4	Bob Martin		OC Ranger Dept
5	Ted Williamson		C. H. Guernsey & Co
6	Neil Garrison		Sierra Club
7	ELDON LYON		CITY of BETHANY
8	MAX TILFORD		Overholser Committee
9	Tony Thornton		Daily Oklahoman
10	[illegible] R. [illegible]		BN[illegible]
11	Earl E. [illegible]		OKC WATER RESOURCES
12	John R. Walker		Corps of Engineers Tulsa
13	Quang Pham		OK. State Dept. of Health
14	Sharon Densmore		Lake Overholser Ass'n

ATTENDANCE RECORD

NAME	ADDRESS	REPRESENTED GROUP

Lonnie R. Fitzpatrick Mr

Larry & Linda Enright

We are not receiving any letters

etc. Please send to

3505 Eagle Lane Bethany Ok 73008

George Collins - 8245 NW 11, OKC, OK 73127

Miller Gerardy 1809 Graham Circle OKC 73127

David Martinez 433 NW 25th St #7 Oklahoma City OK 73103

Leo R Finkenbinder 1113 NE Foreman Rd Yukon Ok 73099

Preface

The conclusions and recommendations generated from this study are primarily based upon empirical data gathered during two years of limnological field work and have been reviewed by the Overholser Reservoir Technical Subcommittee and General Committee. Upon request, these data will be made available for further evaluation and analyses.

Conclusions

1. Bathymetric mapping of Overholser Reservoir in 1982 indicated that the reservoir's volume capacity of 19,600 acre-feet has been reduced 24% due to sedimentation of materials washed into the reservoir.

2. The marsh which is located north of the reservoir and Route 66 is acting as an effective natural sedimentation and nutrient filter for water flowing in the North Canadian River prior to its entry into Overholser Reservoir.

3. The present geometry of the intake channel into Overholser Reservoir functions to increase the mean inflow velocity of its water in comparison to the concurrent average flow velocity of water in the North Canadian River. This velocity increase permits the inflow water to carry more sediment than the river washload and accelerates the rate of loss in volume capacity of the reservoir.

[The present narrow inlet channel to the reservoir causes more sediment to be carried into the reservoir than if the channel had the same dimensions as the river.]

4. Serial chlorophyll mapping of Overholser Reservoir in 1982 indicated the persistent occurrence of water with unusually high chlorophyll-a content in the northeast corner of the reservoir. This could have been due to leakage of nutrient rich, low flows from the North Canadian River into the reservoir through spaces between the rollover dam's tilt block (concrete structures that rest upon the rollover dam itself). Statistical analyses of nutrient concentrations in low flow waters of the North Canadian River confirm their elevated Total Phosphorus and Total Nitrogen concentrations in comparison to the concentration of these elements in the reservoir's water.

[by making maps of chlorophyll-a concentration over a period of time (i.e., serial chlorophyll mapping) and then by statistically testing the information provided by the maps, regions of the lake with particularly high amounts of chlorophyll-a (and hence the inference of algae and nutrients) can be determined.]

5. Serial chlorophyll mapping also indicated the persistent occurrence of water with unusually high chlorophyll-a content in the southeastern corner of Overholser Reservoir approximately 2600 feet north of the concrete dam. This phenomenon could be due either to a wind induced upwelling or to leakage of water into the reservoir from the bypass canal.

6. Statistical analyses of data from four seepage meters in Overholser Reservoir indicated that the seepage rate into the

lake measured by one of the four meters was significantly different from the rate measured by the other three meters. Mean monthly data from the four meters indicated a significant decline in seepage rate in the month of November compared to the preceeding month. The mean seepage rate per square meter based upon all the seepage data collected was 0.0182 liters/ hour, and the seepage water exhibited an asymptotic Total Nitrogen concentration of 11 mg./liter. If we assume (a) that the seepage rate determined from the seepage meter data reflects groundwater seepage rates, (b) that the mean seepage rate determined in this study is representative of the mean annual seepage rate, (c) that this rate does not vary significantly from depths of 0.5 to 3.5 feet, (d) that the Total Nitrogen concentration measured in this study is representative of the mean annual Total Nitrogen concentration in groundwater, and (e) that all of the groundwater seepage entering the reservoir occurs within this bottom area, then, the groundwater seepage contribution into Overholser Reservoir is 107 acre-feet per year and carries a Total Nitrogen load of 1400 kilograms.

[Seepage meters are modified 55 gallon drums that trap the groundwater that seeps through the lake bottom and into the lake. Water is collected in an attached bag. Once collected, a determination of seepage rate and chemical content can be made.]

7. Motor vehicle traffic in the immediate vicinity of the reservoir's bank and marshland area kills vegetation, increases the rate of erosion from the land which lies adjacent to the reservoir, increases turbidity levels in and nutrient loadings to the reservoir, and decreases the aesthetic quality of the reservoir.

Recommendations

1. The marsh located north of Overholser Reservoir and Route 66 should be recognized as an important natural resource and protected.

2. The triagularly shaped segment of the existing sedimentation basin north of Overholser Reservoir should be renovated or a sedimentation basin at another location should be constructed. The exact location of the basin should be selected only after comprehensive engineering and environmental studies have been completed. The environmental studies need to be aimed at minimizing the disruption of the wetlands/marshy area north of the lake while fully recognizing that some disruption will occur. The engineering studies should be aimed at maximizing the protection of both Overholser and Hefner Reservoirs.

3. Methods should be undertaken to insure that there is no low flow leakage over, around, or through the reservoir's rollover inlet structure.

4. The ability to predict the time of occurrence and the area of initiation of algal blooms in Overholser Reservoir would result in a considerable reduction in water treatment chemical costs as well as reduce the cost of water quality monitoring. If algacide applications were necessary, information concerning the location and areal extent of reservoir areas which stimulate algal bloom development would 1) reduce the amount of algacide necessary for treatment, 2) reduce the areal extent of the area of application, 3) reduce man power costs, and 4) prevent the build-up of toxic algacide in sediments. Consequently a study should be conducted to determine the cause of the persistent occurrence of water with high chlorophyll-a content in the southeastern corner of Overholser Reservoir.

[Thus it is recommended that the persistent occurrence of high levels of chlorophyll-a in the southeast corner of Overholser Reservoir be further studied to determine the cause as such information could be used in reducing costs associated with water quality management.]

5. Water quality data should be gathered just prior to and during high flows in the North Canadian River and scientifically analyzed to permit a determination to be made of the qualitatively and quantitatively most efficient use of this stormwater. Additionally, a rountine watershed monitoring of possible pollution sources should be conducted annually.

[Thus it is recommended that North Canadian River water be consistently analyzed (and the results studied) before and during storm events to determine when high quality storm water could be used to fill the reservoir. Possible pollution sources in the lake watershed should be monitored.]

6. Motor vehicle traffic should be confined to planned roads and parking areas adjacent to the reservoir.

7. It is recommended that land be acquired on the west side of the reservoir for construction of a public park. Additionally, Overholser Reservation should be considered for inclusion in the "String of Pearls" project.

8. In light of increasing pumping costs from southeast Oklahoma, and in order to help make Overholser and Hefner Reserevoirs more useful a greater percentage of the time, and in order to reduce treatment costs, consideration should be given to the initiation of the serial chlorophyll mapping method developed during this study on other Oklahoma City reservoirs.

9. It is recommended that the City investigate and evaluate the recreational potential of Overholser Reservation with regards to such activities as fishing and wildlife appreciation.

In summary, there appears to be numerous opportunities available to Oklahoma City for more efficient utilization of its reservoir resources. Oklahoma City should investigate these opportunities.

9
Mr. John Robison, Architect
Neighborhood Development and
Conservation Center
2927 North Paseo
Oklahoma City, Oklahoma 73103
Mr. Robison

3
Mr. Fenton Rood
Sierra Club
728 Northwest 21st
Oklahoma City, Oklahoma 73103
Mr. Rood

8
Mr. John Shachford
Oklahoma City Chapter
Audubon Society
Route 1, Box 125
Oklahoma City, Oklahoma 73111
Mr. Shachford

29
Ms. Virginia Smith
Oklahoma Trails Association
3108 S.W. 65th Street
Oklahoma City, Oklahoma 73159
Ms. Smith

30
Mr. B. L. Smith, Editor
Oklahoma Canoers Newsletter
3112 Chaucer Drive
The Village, Oklahoma 73120
Mr. Smith

LAKE OVERHOLSER COMMITTEE - ECONOMIC INTEREST

6
Mr. Bob Reed
ARBCO Dredging, Inc.
P.O. Box 170263
Arlington, Texas 76003
Mr. Reed

5
Upton B. Henderson, Ph.D.
Chairman of Economics
Central State University
1505 Oak Drive
Edmond, Oklahoma 73034
Dr. Henderson

7
Mr. Lynn Leverett
LEVCO
Box 7572
Amarillo, Texas 79109
Mr. Leverett

3
Mr. Gary D. Mannering
Oklahoma City Chamber of Commerce
One Santa Fe Plaza
Oklahoma City, Oklahoma 73102
Mr. Mannering

8
Mr. Jack G. Springer
Oklahoma State Chamber of Commerce
4020 N. Lincoln Blvd.
Oklahoma City, Oklahoma 73105
Mr. Springer

1
Dr. Keith L. Stanley
Western Electric Company
7725 West Reno Avenue
Oklahoma City, Oklahoma 73125
Dr. Stanley

9
Mr. Maxwell J. Tilford
Bass Enterprises
2812 N. Donald
Oklahoma City, Oklahoma 73127
Mr. Tilford

10
Mr. Zack Williams
Oklahoma Gas & Electric Company
321 N. Harvey
Oklahoma City, Oklahoma 73101
Mr. Williams

4
Ms. Kay Brothers
Staff Environmental Engineer
Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City, Oklahoma 73125
Ms. Brothers

2
Mr. Leo Cravens
Executive Vice-President
Oklahoma State Home Builders Assocation
800 Northeast 63rd Street
Oklahoma City, Oklahoma 73105
Mr. Cravens

LAKE OVERHOLSER COMMITTEE - PUBLIC OFFICIALS

9
Mr. Greg Summers
Oklahoma Department of
Wildlife Conservation
1416 Planck
Norman, Oklahoma 73069
Mr. Summers

10
Mr. Robert J. Hicks
Office of Chief Ranger
Oklahoma City Rangers
201 Channing Sq.
Suite B5B
Oklahoma City, Oklahoma 73002
Mr. Hicks

11
Mr. John A. Morgan
Oil and Gas Division
Oklahoma Corporation Commission
Jim Thorpe Building
Oklahoma City, Oklahoma 73105
Mr. Morgan

12
Mr. John Hassell
Water Quality
Oklahoma Conservation Commission
20 State Capitol
Oklahoma City, Oklahoma 73105
Mr. Hassell

13
Ms. Sylvia Ritzky
Oklahoma City-County Health Department
921 N.E. 23rd Street
Oklahoma City, Oklahoma 73105
Ms. Ritzky

14
Mr. Robert Arndt
Oklahoma Geological Survey
830 Van Vleet Oval
Room 163
Norman, Oklahoma 73019
Mr. Arndt

15
Mr. Quang Pham
Oklahoma State Department of Health
1000 N.E. 10th Street
Oklahoma City, Oklahoma 73152
Mr. Pham

16
Mr. Tony Mayne
ACOG
4801 Classen Blvd.
Suite 200
Oklahoma City, Oklahoma 73118
Mr. Mayne

17
Mr. Greg Wallace
ACOG
4801 Classen Blvd.
Suite 200
Oklahoma City, Oklahoma 73118
Mr. Wallace

8
Mr. Neil Garrison
Martin Park Nature Center
Department of Parks and Recreation
5000 West Memorial Road
Oklahoma City, Oklahoma 73142
Mr. Garrison

5
Mr. Earl Hearn
City of Oklahoma City
200 North Walker
Oklahoma City, Oklahoma 73102
Mr. Hearn

1
Mr. Edwin Kessler, Director
National Severe Storms Laboratory
National Oceanic and Atmospheric Adm.
Environmental Research Laboratories
1313 Halley Circle
Norman, Oklahoma 73069
Mr. Kessler

6
Mr. Kyle McKinley
Oklahoma Department of Transportation
200 Northeast 21st
Oklahoma City, Oklahoma 73105
Mr. McKinley

3
Mr. J. Carl Miller
Oklahoma Department of Transportation
200 Northeast 21st
Oklahoma City, Oklahoma 73105
Mr. Miller

LAKE OVERHOLSER
TECHNICAL SUBCOMMITTEE MEETING
SUMMARY

November 15, 1982

PRESENT:

Mr. Earl E. Hearn, Oklahoma City Water Resources Department
Mr. Dan Andrulonis, OSDH
Mr. Gary Shapiro, OWRB
Mr. Max Tilford, Bass Enterprises
Mr. Greg Wallace, ACOG/GWA
Dr. Robert H. Arndt, Geological Survey
Dr. Jo R. Finkenbink, Biological Department, BNC
Dr. Jim Grimshaw, OWRB

The following topics were discussed:

(1) Report on the response from the Corps of Engineers concerning sedimentation basin siting.

(2) Presentation of 1951 and 1982 Bathymetric Maps.

(3) Presentation of cumulative reduction in volume capacity vs. time plot.

(5) Committee conclusions concerning bathymetric data.

(6) Selection of topic to be addressed at the next technical subcommittee meeting.

(7) Selection of next meeting time, date, and location.

(8) Next general committee meeting will be November 18, 1982, Bethany Nazarene College, Room 135, Royce Brown Business and Home Economics Building, at 7:00 p.m.

(9) Selection of the next technical meeting date.

The Technical Subcommittee made the following recommendations and conclusions:

(1) Find out if a 404 permit is required to dredge the sedimentation basin.

(2) Conduct a survey of the sedimentation basin to determine the volume of sediment which needs to be removed.

(3) OWRB should design a sedimentation basin for lake Overholser using the El Reno stage flow data.

(4) Agreed that the best site for the sedimentation basin was just north of the rollover structure extending northward to the old metal bridge on Old Route 66.

(5) Mr. Max Tilford will present findings of technical subcommittee to the Overholser General Committee at the next meeting on November 18, 1982.

(6) The next meeting of the Overholser technical subcommittee will be held at 7:00 on January 24, 1983, at Bass Enterprises.

LAKE OVERHOLSER SUBCOMMITTEE

8
Mr. Tony Mayne
ACOG
4801 Classen Blvd.
Suite 200
Oklahoma City, Oklahoma 73118
Mr. Mayne

2
Mr. Maxwell J. Tilford
Bass Enterprises
2812 N. Donald
Oklahoma City, Oklahoma 73127
Mr. Tilford

1
Dr. Leo R. Finkerbinder
Biology Department
Bethany Nazarene College
1113 N.E. Foreman Rd.
Yukon, Oklahoma 73099
Dr. Finkerbinder

3
Mr. Ted Williamson
C. H. Guernsey & Company
National Foundation West Building
Northwest 58th and Portland
Oklahoma City, Oklahoma 73112
Mr. Williamson

4
Mr. Earl Hearn
Oklahoma City Water Resources Department
City of Oklahoma City
100 Walker Building
Oklahoma City, Oklahoma 73102
Mr. Hearn

5
Mr. John A. Morgan
Oil and Gas Division
Oklahoma Corporation Commission
Jim Thorpe Building
Oklahoma City, Oklahoma 73105
Mr. Morgan

6
Mr. Robert Arndt
Oklahoma Geological Survey
830 Van Vleet Oval
Room 163
Norman, Oklahoma 73019
Mr. Arndt

7
Mr. Quang Pham
Oklahoma State Department of Health
1000 N.E. 10th Street
Oklahoma City, Oklahoma 73152
Mr. Pham

LAKE OVERHOLSER COMMITTEE - PRIVATE CITIZENS

8
Mr. Dan Butler
2200 N. Porter Ave.
Norman, Oklahoma 73071
Mr. Butler

1
Mr. Bill Milton
3100 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Milton

7
Mr. J. Atkins
2424 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Atkins

5
Mr. and Mrs. Ron Barlow
2600 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Barlow

3
Mr. Amos Verne Bollinger
P.O. Box 888
Choctaw, Oklahoma 73020
Mr. Bollinger

6
Mr. J. Brushmiller
2530 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Brushmiller

4
Mr. Robert Hayes
2808 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Hayes

2
Mr. Robert C. Haywood
3536 Overholser Drive
Bethany, Oklahoma 73127
Mr. Haywood

LAKE OVERHOLSER COMMITTEE - PUBLIC OFFICIALS

7
Ms. Sylvia Ritzhey
Environmental Health Services
Oklahoma City-County Health Department
P.O. Box 53445
Oklahoma City, Oklahoma 73105
Ms. Ritzhey

2
Mr. Jerry Stoner
U.S. Geological Survey, WRD
201 Northwest Third Street
Room 621
Oklahoma City, Oklahoma 73102
Mr. Stoner

4
Tommy B. White, Ph.D., Director
Environmental Health Services
Oklahoma City-County Health Department
P.O. Box 53445
Oklahoma City, Oklahoma 73105
Dr. White

10
Mr. and Mrs. Trent Densmore
Lake Overholser Association
2100 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Densmore

11
Mr. and Mrs. Dick Sawyer
Lake Overholser Association
2220 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Sawyer

12
Mr. and Mrs. James Franks
Lake Overholser Association
2204 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Franks

13
Mr. Kent Glasgow
Lake Overholser Association
2200 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Glasgow

14
Mr. and Mrs. Don Eckel
Lake Overholser Association
3400 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Eckel

15
Mr. C. L. Gibbes
Lake Overholser Association
3030 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Gibbs

16
Mr. Steve Persa
Lake Overholser Association
3500 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Persa

17
Mr. and Mrs. Jim Ford
Lake Overholser Association
3410 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Ford

18
Mr. and Mrs. Bryce Martin
Lake Overholser Association
8309 N.W. 27th
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Martin

19
Ms. Jan Greve
Lake Overholser Association
3125 Lakeview Manor Drive
Oklahoma City, Oklahoma 73127
Ms. Greve

20
Mr. Ted Palmer
Lake Overholser Association
3813 N. Eagle Lane
Bethany, Oklahoma 73008
Mr. Palmer

21
Mr. and Mrs. Cliff McEntire
Lake Overholser Association
8720 N.W. 23rd
Oklahoma City, Oklahoma 73127
Mr. and Mrs. McEntire

22
Mr. and Mrs. Troy Messer
Lake Overholser Association
6905 N.W. 52nd
Bethany, Oklahoma 73008
Mr. and Mrs. Messer

23
Mr. and Mrs. Bob Loper
Lake Overholser Association
3736 Riverside Dr.
Bethany, Oklahoma 73008
Mr. and Mrs. Loper

26
Ms. Virginia Smith
Oklahoma Trails Association
3108 S.W. 65th Street
Oklahoma City, Oklahoma 73159
Ms. Smith

27
Mr. B. L. Smith, Editor
Oklahoma Canoers Newsletter
3112 Chaucer Drive
The Village, Oklahoma 73120
Mr. Smith

24
Mr. and Mrs. Wayne Barnes
Lake Overholser Association
2205 Markwell Pl.
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Barnes

29
Mr. Hubert Harris
Oklahoma City Chapter
Audubon Society
4907 N. Willow
Box 344
Bethany, Oklahoma 83008
Mr. Harris

30
Mr. Leo R. Finkerbinder
Biology Department
Bethany Nazarene Collete
1113 N.E. Foreman Rd.
Yukon, Oklahoma 73099
Mr. Finkerbinder

5
Mr. Kirt Cunningham
Oklahoma Wildlife Federation
4545 North Lincoln Blvd.
Suite 171
Oklahoma City, Oklahoma 73105
Mr. Cunningham

28
Ms. Jeannie Ellis, President
Oklahoma Lakes Assocation
6909 Ashby Terrace
Oklahoma City, Oklahoma 73149
Ms. Ellis

1
Ms. Lou Freeman
League of Women Voters
7312 N.W. 19th
Bethany, Oklahoma 73008
Ms. Freeman

7
Ms. Nancy Krosley
Oklahoma City Chapter
Audubon Society
4301 Northwest 21st Terrace
Oklahoma City, Oklahoma 73107
Ms. Krosley

25
Ms. Jean McLaughlin
Oklahoma City Chapter
League of Women Voters
3709 N.W. 70th Street
Oklahoma City, Oklahoma 73116
Ms. McLaughlin

4
Ms. Barbara Rauch
Attorney at Law
Oklahoma Wildlife Federation
Box 928
Edmond, Oklahoma 73034
Ms. Rauch

2
George Reid
Regents Professor/Director
University of Oklahoma
Bureau of Water & Environmental
Resources Research
Norman, Oklahoma 73019
Professor Reid

6
Bill Roach, Ph.D.
Water Utilities Training Center
Oscar Rose Junior College
6420 Southeast 15th Street
Midwest City, Oklahoma 73110
Dr. Roach

9
Mr. John Robison, Architect
Neighborhood Development and
Conservation Center
2927 North Paseo
Oklahoma City, Oklahoma 73103
Mr. Robison

3
Mr. Fenton Rood
Sierra Club
728 Northwest 21st
Oklahoma City, Oklahoma 73103
Mr. Rood

8
Mr. John Shachford
Oklahoma City Chapter
Audubon Society
Route 1, Box 125
Oklahoma City, Oklahoma 73111
Mr. Shachford

JAMES R. BARNETT, Executive Director
MICHAEL R. MELTON, Assistant Director

OKLAHOMA WATER RESOURCES BOARD

P.O. BOX 53585 • 1000 N.E. 10TH STREET • OKLAHOMA CITY, OKLAHOMA 73152 • (405) 271-2555

January 11, 1983

Mr. Tony Mayne
ACOG
4801 Classen Blvd.
Suite 200
Oklahoma City, Oklahoma 73118

Dear Mr. Mayne:

A technical subcommittee meeting for the Lake Overholser Clean Lakes project will be held at 7:00 p.m. on January 24, 1983, at Bass Enterprises, 5600 North May, Suite 300, Oklahoma City, Oklahoma.

If you have any questions regarding this meeting, please contact Lynda Sinclair of this office at (405) 271-2541.

Sincerely,

Ron Jarman

Ron Jarman, Chief
Water Quality Division

RLJ:LSS:sdh

You're doin' fine, Oklahoma! 75 1907 Diamond Jubilee 1982

LAKE OVERHOLSER SUBCOMMITTEE

8
Mr. Tony Mayne
ACOG
4801 Classen Blvd.
Suite 200
Oklahoma City, Oklahoma 73118
Mr. Mayne

2
Mr. Maxwell J. Tilford
Bass Enterprises
2812 N. Donald
Oklahoma City, Oklahoma 73127
Mr. Tilford

1
Dr. Leo R. Finkerbinder
Biology Department
Bethany Nazarene College
1113 N.E. Foreman Rd.
Yukon, Oklahoma 73099
Dr. Finkerbinder

3
Mr. Ted Williamson
C. H. Guernsey & Company
National Foundation West Building
Northwest 58th and Portland
Oklahoma City, Oklahoma 73112
Mr. Williamson

4
Mr. Earl Hearn
Oklahoma City Water Resources Department
City of Oklahoma City
100 Walker Building
Oklahoma City, Oklahoma 73102
Mr. Hearn

5
Mr. John A. Morgan
Oil and Gas Division
Oklahoma Corporation Commission
Jim Thorpe Building
Oklahoma City, Oklahoma 73105
Mr. Morgan

6
Mr. Robert Arndt
Oklahoma Geological Survey
830 Van Vleet Oval
Room 163
Norman, Oklahoma 73019
Mr. Arndt

7
Mr. Quang Pham
Oklahoma State Department of Health
1000 N.E. 10th Street
Oklahoma City, Oklahoma 73152
Mr. Pham

JAMES R. BARNETT, Executive Director
MICHAEL R. MELTON, Assistant Director

OKLAHOMA WATER RESOURCES BOARD

P.O. BOX 53585 • 1000 N.E. 10TH STREET • OKLAHOMA CITY, OKLAHOMA 73152 • (405)271-2555

February 16, 1983

The Honorable Bernest Cain
The State Senate
State Capitol Building
Oklahoma City, Oklahoma 73105

Dear Senator Cain:

A committee meeting for the Lake Overholser Clean Lakes project will be held at 7:00 p.m. on February 17, 1983, at Bethany Nazarene College Auditorium, Room 136, Bethany, Oklahoma.

If you have any questions regarding this meeting, please contact Lynda Sinclair of this office at (405) 271-2541.

Sincerely,

Ron Jarman

Ron Jarman, Chief
Water Quality Division

RLJ:LSS:sdh

5
The Honorable Porter Davis
The House of Representatives
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Davis

6
The Honorable George H. Osborne
The House of Representatives
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Osborne

7
The Honorable Ross Duckett
The House of Representatives
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Duckett

8
The Honorable Mike Fair
The House of Representatives
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Fair

9
The Honorable Don Denman
The House of Representatives
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Denman

10
The Honorable Bill Graves
The House of Representatives
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Graves

1
The Honorable Bernest Cain
The State Senate
State Capitol Building
Oklahoma City, Oklahoma 73105
Senator Cain

11
The Honorable Mike Combs
The State Senate
State Capitol Building
Oklahoma City, Oklahoma 73105
Senator Combs

12
The Honorable John R. McCune
The State Senate
State Capitol Building
Oklahoma City, Oklahoma 73105
Senator McCune

13
The Honorable Butch Choate
The State Senate
State Capitol Building
Oklahoma City, Oklahoma 73105
Senator Choate

14
The Honorable E. W. Keller
The State Senate
State Capitol Building
Oklahoma City, Oklahoma 73105
Senator Keller

JAMES R. BARNETT, Executive Director
MICHAEL R. MELTON, Assistant Director

OKLAHOMA WATER RESOURCES BOARD

P.O. BOX 53585 • 1000 N.E. 10TH STREET • OKLAHOMA CITY, OKLAHOMA 73152 • (405)271-2555

February 3, 1983

Ms. Dorothy B. Newell
8304 Lakeaire Drive
Oklahoma City, Oklahoma 73132

Dear Ms. Newell:

A committee meeting for the Lake Overholser Clean Lakes project will be held at 7:00 p.m. on February 17, 1983, at Bethany Nazarene College Auditorium, Room 136, Bethany, Oklahoma.

If you have any questions regarding this meeting, please contact Lynda Sinclair of this office at (405) 271-2541.

Sincerely,

Ron Jarman

Ron Jarman, Chief
Water Quality Division

RLJ:LSS:sdh

LAKE OVERHOLSER COMMITTEE - PRIVATE CITIZENS

192
Mr. Dan Butler
2200 N. Porter Ave.
Norman, Oklahoma 73071
Mr. Butler

6:30 p.m.

193
Mr. and Mrs. Larry A. Jones
3536 Overholser
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Jones

* Assistant D.A. for OK. CO. 787-7466

6:30 pm OK Thurs.

194
Ms. Nowanda McEntire
8725 N.W. 23rd.
Oklahoma City, Oklahoma 73127
Ms. McEntire

27
Ms. Dorothy B. Newell
8304 Lakeaire Drive
Oklahoma City, Oklahoma 73132
Ms. Newell

217
Mrs. Janet Pope
7509 N. Morgan Road
Yukon, Oklahoma 73099
Mrs. Pope

& Ross Pope
722-6476
6:30 pm OK
Thurs.

Lawrence
Curtis - when material has taken.
Kathie - 424-5344

LAKE OVERHOLSER COMMITTEE - PUBLIC INTEREST

197
Mr. Hubert Harris
Oklahoma City Chapter
Audubon Society
4907 N. Willow
Box 344
Bethany, Oklahoma 73008
Mr. Harris

198
Dr. Leo R. Finkerbinder
Biology Department
Bethany Nazarene College
1113 N.E. Foreman Rd.
Yukon, Oklahoma 73099
Dr. Finkerbinder

195
Mr. and Mrs. Trent Densmore
Lake Overholser Association
2100 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Densmore

* Attorney
787-8319
6:30 p.m. Ok
Thurs.

196
Mr. and Mrs. James Franks
Lake Overholser Association
2204 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Franks

LAKE OVERHOLSER COMMITTEE - ECONOMIC INTEREST

199
Mr. Bob Reed
ARBCO Dredging, Inc.
P.O. Box 170263
Arlington, Texas 76003
Mr. Reed

202
Mr. Maxwell J. Tilford
Bass Enterprises
2812 N. Donald
Oklahoma City, Oklahoma 73127
Mr. Tilford

204
Mr. Ted Williamson
C. H. Guernsey & Company
National Foundation West Building
Northwest 58th and Portland
Oklahoma City, Oklahoma 73112
Mr. Williamson

200
Mr. Lynn Leverett
LEVCO
Box 7572
Amarillo, Texas 79109
Mr. Leverett

203
Mr. Zack Williams
Oklahoma Gas & Electric Company
321 N. Harvey
Oklahoma City, Oklahoma 73101
Mr. Williams

201
Mr. Jack G. Springer
Oklahoma State Chamber of Commerce
4020 N. Lincoln Blvd.
Oklahoma City, Oklahoma 73105
Mr. Springer

LAKE OVERHOLSER COMMITTEE - PUBLIC OFFICIALS

214
Mr. Tony Mayne
ACOG
4801 Classen Blvd.
Suite 200
Oklahoma City, Oklahoma 73118
Mr. Mayne

215
Mr. Greg Wallace
ACOG
4801 Classen Blvd.
Suite 200
Oklahoma City, Oklahoma 73118
Mr. Wallace

156
The Honorable Eldon Lyon
Mayor
City of Bethany
Box 219
Bethany, Oklahoma 73008
Mayor Lyon

205
Mr. Earl Hearn
Oklahoma City Water Resources Department
City of Oklahoma City
100 Walker Building
Oklahoma City, Oklahoma 73102
Mr. Hearn

216
Mr. Tim Maupin
Assistant City Manager
City of Oklahoma City
200 N. Walker
Oklahoma City, Oklahoma 73102
Mr. Maupin

207
Mr. Neil Garrison
Martin Park Nature Center
Department of Parks and Recreation
5000 West Memorial Road
Oklahoma City, Oklahoma 73142
Mr. Garrison

209
Mr. Robert J. Hicks
Office of Chief Ranger
Oklahoma City Rangers
201 Channing Sq.
Suite B5B
Oklahoma City, Oklahoma 73002
Mr. Hicks

206
Ms. Sylvia Ritzky
Environmental Health Services
Oklahoma City-County Health Department
P.O. Box 53445
Oklahoma City, Oklahoma 73105
Ms. Ritzky

211
Mr. John Hassell
Water Quality
Oklahoma Conservation Commission
20 State Capitol
Oklahoma City, Oklahoma 73105
Mr. Hassell

210
Mr. John A. Morgan
Oil and Gas Division
Oklahoma Corporation Commission
Jim Thorpe Building
Oklahoma City, Oklahoma 73105
Mr. Morgan

218
Mr. Dwayne Stutzman
Oklahoma Department of Tourism
and Recreation
Oklahoma City, Oklahoma 73105
Mr. Stutzman

208
Mr. Greg Summers
Oklahoma Department of Wildlife
Conservation
1416 Planck
Norman, Oklahoma 73069
Mr. Summers

212
Mr. Robert Arndt
Oklahoma Geological Survey
830 Van Vleet Oval
Room 163
Norman, Oklahoma 73019
Mr. Arndt

213
Mr. Quang Pham
Oklahoma State Department of Health
1000 N.E. 10th Street
Oklahoma City, Oklahoma 73152
Mr. Pham

Agenda
Lake Overholser
Committee Meeting
Bethany Nazarene College
Auditorium Room 136
February 17, 1983 7:00P.M.

1. Introduction
    1. New Public Participation Coordinator - Laura Cook
2. Technical Committee Report
    1. Chlorophyll Mapping
    2. Rollover
    3. Upwelling Phenomenon
    4. Seepage from Diversion Canal
    5. Questions and Comments
3. No Cost Accomplishments
    1. Rollover mended
    2. Barricade of Shoreline Access
4. Gaining Political Support
    1. Discussion of Goals
    2. Ideas on Who and How to Contact
5. Adjournment

Next Meeting: March 17, 1983 - 7:00P.M.

LAKE OVERHOLSER
CLEAN LAKES
COMMITTEE MEETING

February 17, 1983

Bethany Nazarene Collage
ATTENDANCE RECORD

Agency in Charge: Oklahoma Water Resources Board

Principal Investigator-Dr. Jim Grimshaw
Public Participation Coordinator-Laura Cook Laura Cook

PRIVATE CITIZEN GROUP

1 ~~[illegible]~~ Neil Garrison, Sierra Club ✓ 7

2 Nancy S Jones 787-7466 8

3 9

4 10

5 11

6 12

PUBLIC INTEREST GROUP | ORGANIZATION

1 Sharon Densmore ✓787-8319 Lake Overholser Association

2 Nancy Krosley OkCy, Okla. Audubon Society

3 Alice Jones Citizen

4

5

6

7

Lake Overholser
Committee Meeting
ATTENDANCE RECORD

February 17, 1983

ECONOMIC INTEREST GROUP		ORGANIZATION
1 Ted Williamson	✓	C. H. Guernsey Engineering Co
2 Maxwell J. Tilford	✓	Bass Enterprises Production Co
3		
4		
5		
6		
7		

[PU]BLIC OFFICIAL GROUP		AFFILIATION
1 Dan Andrulenis	✓	OSDH
2 Dean Jones	✓ 789-8688	OKC Water Dept
3 Bob Martin	~~231-2301~~ 755-4058	OKC Ranger Dept.
4 Robert Arndt	✓	Ok Geological Survey
5		
6		
7		
8		
9		

JAMES R. BARNETT, Executive Director
MICHAEL R. MELTON, Assistant Director

OKLAHOMA WATER RESOURCES BOARD

P.O. BOX 53585 • 1000 N.E. 10TH STREET • OKLAHOMA CITY, OKLAHOMA 73152 • (405)271-2555

February 22, 1983

Dr. Leo R. Finkerbinder
Biology Department
Bethany Nazarene College
1113 N.E. Foreman Rd.
Yukon, Oklahoma 73099

Dear Dr. Finkerbinder:

A technical subcommittee meeting for the Lake Overholser Clean Lakes project will be held at 7:00 p.m. on February 28, 1983, at Bass Enterprises, 5600 North May, Suite 300, Oklahoma City, Oklahoma.

If you have any questions regarding this meeting, please contact Laura Cook of this office at (405) 271-2541.

Sincerely,

Ron Jarman

Ron Jarman, Chief
Water Quality Division

RLJ:LJC:sdh

You're doin' fine, Oklahoma! 1907 '75 1982 Diamond Jubilee

LAKE OVERHOLSER SUBCOMMITTEE

214
Dr. Tony Mayne
ACOG
4801 Classen Blvd.
Suite 200
Oklahoma City, Oklahoma 73118
Dr. Mayne

202
Mr. Maxwell J. Tilford
Bass Enterprises
2812 N. Donald
Oklahoma City, Oklahoma 73127
Mr. Tilford

198
Dr. Leo R. Finkerbinder
Biology Department
Bethany Nazarene College
1113 N.E. Foreman Rd.
Yukon, Oklahoma 73099
Dr. Finkerbinder

204
Mr. Ted Williamson
C. H. Guernsey & Company
National Foundation West Building
Northwest 58th and Portland
Oklahoma City, Oklahoma 73112
Mr. Williamson

205
Mr. Earl Hearn
Oklahoma City Water Resources Department
City of Oklahoma City
100 Walker Building
Oklahoma City, Oklahoma 73102
Mr. Hearn

219
Mr. Bob Martin
Oklahoma City Rangers
201 Channing Sq.
Suite B5B
Oklahoma City, Oklahoma 73002
Mr. Martin

210
Mr. John A. Morgan
Oil and Gas Division
Oklahoma Corporation Commission
Jim Thorpe Building
Oklahoma City, Oklahoma 73105
Mr. Morgan

212
Mr. Robert Arndt
Oklahoma Geological Survey
830 Van Vleet Oval
Room 163
Norman, Oklahoma 73019
Mr. Arndt

213
Mr. Quang Pham
Oklahoma State Department of Health
1000 N.E. 10th Street
Oklahoma City, Oklahoma 73152
Mr. Pham

220
Mr. Dean Jones
Overholser Water Treatment Plant
1800 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Jones

Lake Overholser
Technical Sub-committee Meeting Summary
February 28, 1983; 7:00 PM

Members Present:

Dan Andrulenis, OSDH

Neil Garrison, Sierra Club

Ted Williamson, C.H. Guernsey and Co.

Steve Crisswell, Oklahoma City Water Resources

Maxwell Tilford, Bass Enterprise

Dr. Leo Finkerbinder,
Bethany Nazarene College

David Martinez, Citizen

Dr. Tony Mayne, ACOG

Dr. Robert Arndt,
Oklahoma Geological Survey

Dr. H. James Grimshaw II,
OWRB

Gary Shapiro, OWRB

Laura Cook, OWRB

Minutes Summary

I. Dr. Tony Mayne presented an evaluation of the proposed sedimentation basin. Settling velocities, particle size, and electrostatic forces were mentioned as important parameters which were considered in determining a rational construction protocol. Idealized cases were calculated for sedimentation basins of sizes ranging from 50,000 sq. ft. to 500,000 sq. ft. at a ten ft. depth. Streamlining was considered to be the major problem in keeping velocities low enough to effect the settling out of smaller particles. Sedimentation and filtration are the two methods of eliminating washload sediments. In Overholser Reservoir's case, the marsh has been an effective slow sand filter in reducing the amount of sediment entering the reservoir. The reduction in the sedimentation rate since the 1952 bathymetric survey of the reservoir strongly supports this conclusion. Thus, a two system approach to the sedimentation problem was proposed: a) the marsh should continue to serve as a primary biological filter and b) the near lake sedimentation basin could be constructed as a secondary sediment trap.

The present nonfunctional sedimentation basin area was discussed by N. Garrison as an habitat area which needs protection. However, wetlands designation and status appears to be an issue which needs to be resolved before actual sedimentation design is effected. Max Tilford proposed to have aerial photographs taken to discern the areas under discussion.

II. Presentation of Seepage meter data.

Gary Shapiro presented data which were collected from four seepage meters that were placed in a shallow, protected cove for 100 days. Analyses of these data revealed 1) that methodological factors such as bag size and depth had no significant effect on the seepage rate, 2) that there was a significant decrease of groundwater contribution to the reservoir between October and November 1982, 3) that there was a significant difference in the seepage rate determined from one seepage meter when compared with the other three meters during September, October, and November 1982, 4) that Total Nitrogen concentration in the groundwater was asymptotic at approximately 11 mg./liter, 5) that total annual groundwater contribution to the reservoir was 102 acre-ft/year, assuming a mean seepage rate of .0182 liter/hr/sq.meter and a restricted depth of 0.5 to 3.5 feet is accurate, and 6) that the annual loading of Total Nitrogen into the reservoir was 1452 kg./year, assuming 5) above is accurate.

III. Nutrient and Chlorophyll analyses presentation

Dr. H. James Grimshaw II presented analyzed data which revealed that water entering the reservoir was significantly higher in

Total Phosphate concentrations than one particular tributary (Shell Creek) and almost significantly higher than the Total Phosphate concentration in the reservoir itself. An analysis of the Total Nitrogen data revealed that the concentration of Total Nitrogen in the water at all the sites upstream of the reservoir was significantly higher than the water taken in the reservoir at a three meter depth. These findings point out the major impact of low flows on nutrient loading into the reservoir.

It was mentioned that the significantly higher concentration of chlorophyll-a in the southeast corner of the reservoir may have been due to an upwelling effect generated by predominantly southerly winds piling water on the north end of the reservoir and the subsequent underflowing of water from the north to the south along the old river channel. A regression analysis performed on the data showed a significant correlation between a measure of prolonged wind speed and maximum chlorophyll-a concentration in a southeastern quadrant of the reservoir corresponding to the presumed upwelling area. This finding could not have been predicted had point sampling been the only method of chlorophyll analysis.

IV. Land use and political action

Land use for Overholser Reservoir was discussed using the ACOG Year 2000 map. It was suggested that data on lake use (via car counters, concession sales, and portapotty use) might make the City government more cognizant of the need to improve the Overholser area.

The subcommittee agreed that the west side of the reservoir should be designated as a recreation and park area. It was also suggested that the reservoir be incorporated into the "String of Pearls" project.

Dr. Grimshaw agreed to prepare and send out a list of proposed committee recommendations to the subcommittee members prior to the next meeting. It was agreed that the City should be the primary level of government to pursue on matters of our recommendations. Dr. Grimshaw will be the liason between our group and the City Manager.

The next technical subcommittee meeting will be held March 17, 1983 at 7:00 PM at Bass Enterprise in the third floor conference room.

Lake Overholser Technical
Sub-Committee Meeting
February 28, 1983
Bass Enterprise at 7:00pm

I. Chemical analysis of water and results

II. Seepage meters----analysis and conclusions

III. Land use proposals

IV. Political support ideas

JAMES R. BARNETT, Executive Director
MICHAEL R. MELTON, Assistant Director

OKLAHOMA WATER RESOURCES BOARD

P.O. BOX 53585 • 1000 N.E. 10TH STREET • OKLAHOMA CITY, OKLAHOMA 73152 • (405) 271-2555

March 11, 1983

Dr. Leo R. Finkerbinder
Biology Department
Bethany Nazarene College
1113 N.E. Foreman Rd.
Yukon, Oklahoma 73099

Dear Dr. Finkerbinder:

A technical subcommittee meeting for the Lake Overholser Clean Lakes project will be held at 7:00 p.m. on March 17, 1983, at Bass Enterprises, 5600 North May, Suite 300, Oklahoma City, Oklahoma.

Enclosed for your review is a preliminary draft of the conclusions and recommendations which will be discussed at this meeting. Any comments should be in written form so copies can be distributed to the committee members.

If you have any questions regarding this meeting, please contact Laura Cook of this office at (405) 271-2541.

Sincerely,

Ron Jarman, Chief
Water Quality Division

RLJ:LJC:sdh

LAKE OVERHOLSER COMMITTEE
MEETING SUMMARY

April 7, 1983 700 p.m.
BNC, Royce Brown Business and Home
Economics Building, Room 136

Members Present:

Dan Andrulenis, OSDH
Earl Hearn, Oklahoma City Water Resources Department
Jim Grimshaw, OWRB
Bob Martin, Oklahoma City Ranger Department
Gary Shapiro, OWRB
Laura Cook, OWRB
Dana Jenek, Private Citizen
David Martinez, Private Citizen
Nancy Jones, Private Citizen
Larry A. Jones, Private Citizen
Maxwell J. Tilford, Private Citizen
Ted Williamson, C. H. Guernsey & Company
Neil Garrison, Sierra Club
Nancy Krosley, Audubon Club
Dean Jones, Oklahoma City Water Department

Mr. Max Tilford represented the technical subcommittee and presented the draft conclusions and recommendations to the general committee. They were all generally accepted except for recommendation #2. There was much discern about the best location for a sedimentation basin. It would need to be located so that maximum benefits are acquired for both Overholser and Hefner and minimum disruption done to the marshland. The following comments were discussed:

(1) dredge the dry Stincomb Lake;

(2) create another sedimentation basin instead of renovating the original; and

(3) get the Corps of Engineers to do a $50,000 study of the dredging problem.

The revised recommendation #2 is attached along with the others.

The thirteen acres that Dr. Jim Grimshaw originally proposed to dredge, are being considered for incorporation into the proposal that is before Oklahoma City. That proposal is to claim the marshland area as a wildlife habitat. This proposal also recognizes that the primary focus should be to maintain and improve water quality for the city.

Dr. Grimshaw declared that more research is needed on the sedimentation basin before a decision is made.

Mr. Tilford discussed his plans to continue seeking support for the recommendations after the project officially ends. Both Mr. Earl Hearn and Mr. Dean Jones fully agreed that the chance exists of some city activities with such support.

This was the last general committee meeting for the Lake Overholser Clean Lakes project. The public meeting will be held April 28, 1983, at 7:00 p.m. in the Royce Brown Business and Home Economics Building, Room 137 at Bethany Nazarene College.

JAMES R. BARNETT, Executive Director
MICHAEL R. MELTON, Assistant Director

OKLAHOMA WATER RESOURCES BOARD

P.O. BOX 53585 • 1000 N.E. 10TH STREET • OKLAHOMA CITY, OKLAHOMA 73152 • (405)271-2555

March 28, 1983

Ms. Dorothy B. Newell
8304 Lakeaire Drive
Oklahoma City, Oklahoma 73132

Dear Ms. Newell:

A committee meeting for the Lake Overholser Clean Lakes project will be held at 7:00 p.m. on April 7, 1983, at Bethany Nazarene College, Royce Brown Business and Home Economics Building, Room 136, Bethany, Oklahoma. Enclosed is the summary from the last committee meeting.

The Technical Subcommittee met on March 17 and agreed on conclusions and recommendations for the Lake Overholser project which will be presented in draft form at the upcoming meeting for final approval by the General Committee.

If you have any questions regarding this meeting, please contact Laura Cook of this office at (405) 271-2541.

Sincerely,

Ron Jarman, Chief
Water Quality Division

RLJ:LC:sdh

Enclosure as stated

You're doin' fine, Oklahoma! 75 1907 Diamond Jubilee 1982

212
Mr. Robert Arndt
Oklahoma Geological Survey
830 Van Vleet Oval
Room 163
Norman, Oklahoma 73019
Mr. Arndt

192
Mr. Dan Butler
2200 N. Porter Ave.
Norman, Oklahoma 73071
Mr. Butler

221
The Honorable Bernest Cain
The State Senate
State Capitol Building
Oklahoma City, Oklahoma 73105
Senator Cain

230
The Honorable Butch Choate
The State Senate
State Capitol Building
Oklahoma City, Oklahoma 73105
Senator Choate

228
The Honorable Mike Combs
The State Senate
State Capitol Building
Oklahoma City, Oklahoma 73105
Senator Combs

222
The Honorable Porter Davis
The House of Representatives
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Davis

226
The Honorable Don Denman
The House of Representatives
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Denman

Lake Overholser Committee - Compl

195
Mr. and Mrs. Trent Densmore
Lake Overholser Association
2100 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Densmore

224
The Honorable Ross Duckett
The House of Representatives
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Duckett

225
The Honorable Mike Fair
The House of Representatives
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Fair

198
Dr. Leo R. Finkerbinder
Biology Department
Bethany Nazarene College
1113 N.E. Foreman Rd.
Yukon, Oklahoma 73099
Dr. Finkerbinder

196
Mr. and Mrs. James Franks
Lake Overholser Association
2204 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Franks

207
Mr. Neil Garrison
Martin Park Nature Center
Department of Parks and Recreation
5000 West Memorial Road
Oklahoma City, Oklahoma 73142
Mr. Garrison

227
The Honorable Bill Graves
The House of Representatives
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Graves

197
Mr. Hubert Harris
Oklahoma City Chapter
Audubon Society
4907 N. Willow
Box 344
Bethany, Oklahoma 73008
Mr. Harris

211
Mr. John Hassell
Water Quality
Oklahoma Conservation Commission
20 State Capitol
Oklahoma City, Oklahoma 73105
Mr. Hassell

205
Mr. Earl Hearn
Oklahoma City Water Resources Department
City of Oklahoma City
100 Walker Building
Oklahoma City, Oklahoma 73102
Mr. Hearn

209
Mr. Robert J. Hicks
Office of Chief Ranger
Oklahoma City Rangers
201 Channing Sq.
Suite B5B
Oklahoma City, Oklahoma 73002
Mr. Hicks

220
Mr. Dean Jones
Overholser Water Treatment Plant
1800 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Jones

193
Mr. and Mrs. Larry A. Jones
3536 Overholser
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Jones

231
The Honorable E. W. Keller
The State Senate
State Capitol Building
Oklahoma City, Oklahoma 73105
Senator Keller

Lake Overholser Committee - Complete

200
Mr. Lynn Leverett
LEVCO
Box 7572
Amarillo, Texas 79109
Mr. Leverett

156
The Honorable Eldon Lyon
Mayor
City of Bethany
Box 219
Bethany, Oklahoma 73008
Mayor Lyon

219
Mr. Bob Martin
Oklahoma City Rangers
201 Channing Sq.
Suite B5B
Oklahoma City, Oklahoma 73002
Mr. Martin

216
Mr. Tim Maupin
Assistant City Manager
City of Oklahoma City
200 N. Walker
Oklahoma City, Oklahoma 73102
Mr. Maupin

214
Dr. Tony Mayne
ACOG
4801 Classen Blvd.
Suite 200
Oklahoma City, Oklahoma 73118
Dr. Mayne

229
The Honorable John R. McCune
The State Senate
State Capitol Building
Oklahoma City, Oklahoma 73105
Senator McCune

194
Ms. Nowanda McEntire
8725 N.W. 23rd.
Oklahoma City, Oklahoma 73127
Ms. McEntire

210
Mr. John A. Morgan
Oil and Gas Division
Oklahoma Corporation Commission
Jim Thorpe Building
Oklahoma City, Oklahoma 73105
Mr. Morgan

27
Ms. Dorothy B. Newell
8304 Lakeaire Drive
Oklahoma City, Oklahoma 73132
Ms. Newell

223
The Honorable George H. Osborne
The House of Representatives
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Osborne

213
Mr. Quang Pham
Oklahoma State Department of Health
1000 N.E. 10th Street
Oklahoma City, Oklahoma 73152
Mr. Pham

217
Mrs. Janet Pope
7509 N. Morgan Road
Yukon, Oklahoma 73099
Mrs. Pope

199
Mr. Bob Reed
ARBCO Dredging, Inc.
P.O. Box 170263
Arlington, Texas 76003
Mr. Reed

206
Ms. Sylvia Ritzky
Environmental Health Services
Oklahoma City-County Health Department
P.O. Box 53445
Oklahoma City, Oklahoma 73105
Ms. Ritzky

Lake Overholser ...

201
Mr. Jack G. Springer
Oklahoma State Chamber of Commerce
4020 N. Lincoln Blvd.
Oklahoma City, Oklahoma 73105
Mr. Springer

218
Mr. Dwayne Stutzman
Oklahoma Department of Tourism
and Recreation
Oklahoma City, Oklahoma 73105
Mr. Stutzman

208
Mr. Greg Summers
Oklahoma Department of Wildlife
Conservation
1416 Planck
Norman, Oklahoma 73069
Mr. Summers

202
Mr. Maxwell J. Tilford
Bass Enterprises
2812 N. Donald
Oklahoma City, Oklahoma 73127
Mr. Tilford

215
Mr. Greg Wallace
ACOG
4801 Classen Blvd.
Suite 200
Oklahoma City, Oklahoma 73118
Mr. Wallace

203
Mr. Zack Williams
Oklahoma Gas & Electric Company
321 N. Harvey
Oklahoma City, Oklahoma 73101
Mr. Williams

204
Mr. Ted Williamson
C. H. Guernsey & Company
National Foundation West Building
Northwest 58th and Portland
Oklahoma City, Oklahoma 73112
Mr. Williamson

LAKE OVERHOLSER
GENERAL COMMITTEE MEETING SUMMARY

February 17, 1983 7:00 p.m.

Present:

Neil Garrison, Sierra Club
Nancy A. Jones, private citizen
Alice Jones, private citizen
Sharon Densmore, Lake Overholser Assn.
Nancy Krosley, Oklahoma Audubon Society
Ted Williamson, C.H. Guernsey Engineering Company
Max Tilford, Bass Enterprises Prod. Co.
Dan Andrulenis, OSDH
Dean Jones, Oklahoma City Water Department
Bob Martin, Oklahoma City Ranger Department
Robert Arndt, Oklahoma Geological Survey
Jim Grimshaw, OWRB
Lynda Sinclair, OWRB
Gary Shapiro, OWRB
Laura Cook, OWRB

Ms. Lynda Sinclair introduced Ms. Laura Cook, OWRB's new public participation coordinator for the Clean Lakes Studies. Dr. Jim Grimshaw presented slides of field data collected during the Clean Lake project and the conclusions. Chlorophyll mapping results were presented and the upwelling phenomenon discussed. The upwelling which leads to algal blooms seems to be initiated by wind movement and wave currents pulling the nutrients from the bottom sediments to the surface.

Dr. Grimshaw discussed the effect that dredging the original sedimentation basin would have on the lake. It would increase the width of the inlet channel at the point of inflow, therefore, slowing down the velocity and allowing the particles to settle out. There was confusion within the committee as to where the dredging would be done; concern was expressed that it would greatly effect the marsh land area north of the lake. The marsh land is strongly being considered by the city area to be declared a Wildlife Refuge. The placement of the proposed sedimentation basin was then clarified and discussion was tabled until the next meeting.

Dr. Grimshaw mentioned recent improvements of the lake area accomplished at no cost to the project. The rollover dam has been repaired and blockages have been installed to inhibit shoreline access by vehicles.

The committee discussed the need to form a proposal of landuse surrounding the lake. Ideas were: creating a picnic park area on the west side, allowing for canoeing access to the marsh area, and to construct jogging and biking trails on the east side. The committee did not agree on proposals at this time, so the technical sub-committee will discuss landuse and present their conclusions at the next general meetings.

Gaining more public political support of the proposals was decided to be a major concern of the committee. Chambers of Commerce and civic groups should be contacted at this time before the politicians are approached. A broad base of support at the local public level is a necessary prerequisite for action taken by local politicians. After conclusions are finalized, the committee should produce a one page flyer to inform the public of our proposals for lake restoration.

Lake Overholser
Committee Meeting
ATTENDANCE RECORD

April 7, 1983

ECONOMIC INTEREST GROUP	ORGANIZATION
1	
2	
3	
4	
5	
6	
7	

PUBLIC OFFICIAL GROUP	AFFILIATION
1 Don Andrulonis	OSDH
2 Earl E. Hearn	OKC Water Resources Dept.
3 Jim Grinshaw	OWRB
4 Bob Martin	OKC Ranger Dept
5	
6	
7	
8	
9	

LAKE OVERHOLSER
CLEAN LAKES
COMMITTEE MEETING

April 7, 1983

Bethany Nazarene Collage
ATTENDANCE RECORD

Agency in Charge: Oklahoma Water Resources Board

Principal Investigator-Dr. Jim Grimshaw / G Shapiro
Public Participation Coordinator-Laura Cook Laura Cook

PRIVATE CITIZEN GROUP

1 Dana Jenke	7
2 DAVID MARTINEZ	8
3 Nancy Jones	9
4 Larry A Jones	10
5	11
6	12

PUBLIC INTEREST GROUP	ORGANIZATION
1 MAXWELL J. TILFORD	
2 Ted Williamson	C. H. Guernsey & Co
3 Neil Garrison	Sierra Club
4 Nancy Kosley	Audubon Club -
5 Dean Jones	OKC Water Dept
6	
7	

Preface

The conclusions and recommendations generated from this study are primarily based upon empirical data gathered during two years of limnological field work and have been reviewed by the Overholser Reservoir Technical Subcommittee and General Committee. Upon request, these data will be made available for further evaluation and analyses.

Conclusions

1. Bathymetric mapping of Overholser Reservoir in 1982 indicated that the reservoir's volume capacity of 19,600 acre-feet has been reduced 24% due to sedimentation of materials washed into the reservoir.

2. The marsh which is located north of the reservoir and Route 66 is acting as an effective natural sedimentation and nutrient filter for water flowing in the North Canadian River prior to its entry into Overholser Reservoir.

3. The present geometry of the intake channel into Overholser Reservoir functions to increase the mean inflow velocity of its water in comparison to the concurrent average flow velocity of water in the North Canadian River. This velocity increase permits the inflow water to carry more sediment than the river washload and accelerates the rate of loss in volume capacity of the reservoir.

[The present narrow inlet channel to the reservoir causes more sediment to be carried into the reservoir than if the channel had the same dimensions as the river.]

4. Serial chlorophyll mapping of Overholser Reservoir in 1982 indicated the persistent occurrence of water with unusually high chlorophyll-a content in the northeast corner of the reservoir. This could have been due to leakage of nutrient rich, low flows from the North Canadian River into the reservoir through spaces between the rollover dam's tilt block (concrete structures that rest upon the rollover dam itself). Statistical analyses of nutrient concentrations in low flow waters of the North Canadian River confirm their elevated Total Phosphorus and Total Nitrogen concentrations in comparison to the concentration of these elements in the reservoir's water.

[by making maps of chlorophyll-a concentration over a period of time (i.e., serial chlorophyll mapping) and then by statistically testing the information provided by the maps, regions of the lake with particularly high amounts of chlorophyll-a (and hence the inference of algae and nutrients) can be determined.]

5. Serial chlorophyll mapping also indicated the persistent occurrence of water with unusually high chlorophyll-a content in the southeastern corner of Overholser Reservoir approximately 2600 feet north of the concrete dam. This phenomenon could be due either to a wind induced upwelling or to leakage of water into the reservoir from the bypass canal.

6. Statistical analyses of data from four seepage meters in Overholser Reservoir indicated that the seepage rate into the

lake measured by one of the four meters was significantly different from the rate measured by the other three meters. Mean monthly data from the four meters indicated a significant decline in seepage rate in the month of November compared to the preceeding month. The mean seepage rate per square meter based upon all the seepage data collected was 0.0182 liters/ hour, and the seepage water exhibited an asymptotic Total Nitrogen concentration of 11 mg./liter. If we assume (a) that the seepage rate determined from the seepage meter data reflects groundwater seepage rates, (b) that the mean seepage rate determined in this study is representative of the mean annual seepage rate, (c) that this rate does not vary significantly from depths of 0.5 to 3.5 feet, (d) that the Total Nitrogen concentration measured in this study is representative of the mean annual Total Nitrogen concentration in groundwater, and (e) that all of the groundwater seepage entering the reservoir occurs within this bottom area, then, the groundwater seepage contribution into Overholser Reservoir is 107 acre-feet per year and carries a Total Nitrogen load of 1400 kilograms.

[Seepage meters are modified 55 gallon drums that trap the groundwater that seeps through the lake bottom and into the lake. Water is collected in an attached bag. Once collected, a determination of seepage rate and chemical content can be made.]

7. Motor vehicle traffic in the immediate vicinity of the reservoir's bank and marshland area kills vegetation, increases the rate of erosion from the land which lies adjacent to the reservoir, increases turbidity levels in and nutrient loadings to the reservoir, and decreases the aesthetic quality of the reservoir.

Recommendations

1. The marsh located north of Overholser Reservoir and Route 66 should be recognized as an important natural resource and protected.

2. The triagularly shaped segment of the existing sedimentation basin north of Overholser Reservoir should be renovated or a sedimentation basin at another location should be constructed. The exact location of the basin should be selected only after comprehensive engineering and environmental studies have been completed. The environmental studies need to be aimed at minimizing the disruption of the wetlands/marshy area north of the lake while fully recognizing that some disruption will occur. The engineering studies should be aimed at maximizing the protection of both Overholser and Hefner Reservoirs.

3. Methods should be undertaken to insure that there is no low flow leakage over, around, or through the reservoir's rollover inlet structure.

4. The ability to predict the time of occurrence and the area of initiation of algal blooms in Overholser Reservoir would result in a considerable reduction in water treatment chemical costs as well as reduce the cost of water quality monitoring. If algacide applications were necessary, information concerning the location and areal extent of reservoir areas which stimulate algal bloom development would 1) reduce the amount of algacide necessary for treatment, 2) reduce the areal extent of the area of application, 3) reduce man power costs, and 4) prevent the build-up of toxic algacide in sediments. Consequently a study should be conducted to determine the cause of the persistent occurrence of water with high chlorophyll-a content in the southeastern corner of Overholser Reservoir.

[Thus it is recommended that the persistent occurrence of high levels of chlorophyll-a in the southeast corner of Overholser Reservoir be further studied to determine the cause as such information could be used in reducing costs associated with water quality management.]

5. Water quality data should be gathered just prior to and during high flows in the North Canadian River and scientifically analyzed to permit a determination to be made of the qualitatively and quantitatively most efficient use of this stormwater. Additionally, a rountine watershed monitoring of possible pollution sources should be conducted annually.

[Thus it is recommended that North Canadian River water be consistently analyzed (and the results studied) before and during storm events to determine when high quality storm water could be used to fill the reservoir. Possible pollution sources in the lake watershed should be monitored.]

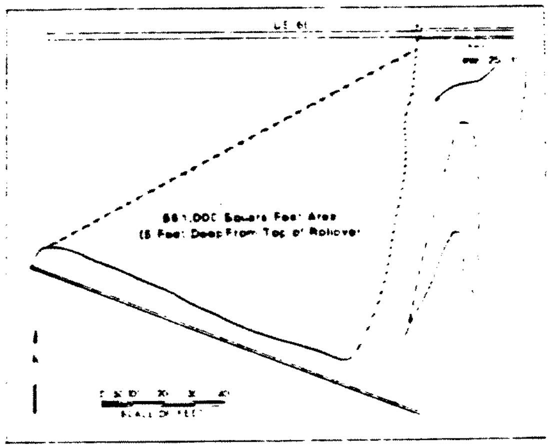
6. Motor vehicle traffic should be confined to planned roads and parking areas adjacent to the reservoir.

7. It is recommended that land be acquired on the west side of the reservoir for construction of a public park. Additionally, the Overholser Reservation should be considered for inclusion in the "String of Pearls" project.

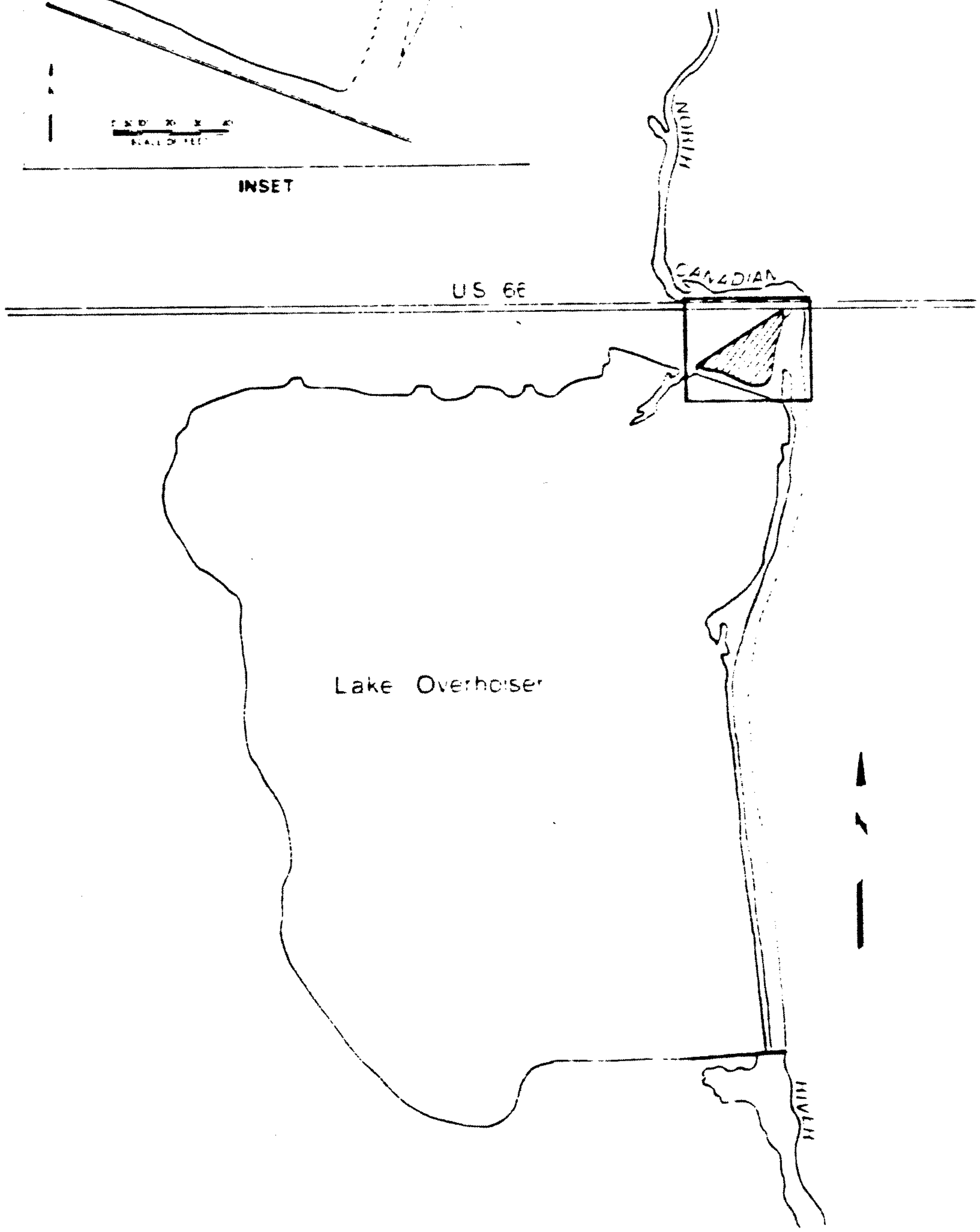
8. In light of increasing pumping costs from southeast Oklahoma, and in order to help make Overholser and Hefner Reserevoirs more useful a greater percentage of the time, and in order to reduce treatment costs, consideration should be given to the initiation of the serial chlorophyll mapping method developed during this study on other Oklahoma City reservoirs.

9. It is recommended that the City investigate and evaluate the recreational potential of Overholser Reservation with regards to such activities as fishing and wildlife appreciation.

In summary, there appears to be numerous opportunities available to Oklahoma City for more efficient utilization of its reservoir resources. Oklahoma City should investigate these opportunities.



INSET



The City of
Oklahoma City
Water Department
200 N. Walker
Oklahoma City, Okla. 73102
Tel. (405) 231-2422

RECEIVED
APR 8 1983
Oklahoma Water Resources Board

April 7, 1983

Mr. Ron Jarman, Chief
Water Quality Division;
Dr. Jim Grimshaw,
Principal Investigator,
Overholser Clean Lakes Study
Oklahoma Water Resources Board

Dear Messrs. Jarman and Grimshaw:

Our comments on the draft conclusions and recommendations are as follows:

CONCLUSIONS (DRAFT)

1. Agreed.

2. We feel that while the sedimentation basin described is still functioning at flood flow rates of the river its life is almost at an end due to its having trapped some five feet of silt over the years and presently serves little purpose during low and intermediate flows when the river never leaves its channel.

3. The present diversion channel was constructed about twelve years ago when the original channel was blocked by vegitation. While this channel is less than one hundred feet wide, it does widen to 1,300 feet as it approached the rollover. Thousands of tons of silt have been removed from this area by periodic mechanical dredging with crane dragline.

5. Guided by your chlorophyll-a maps, a thorough inspection of the bypass levee is indicated at the next scheduled emptying of the bypass.

6. This kind of Nitrogen loading is a serious problem. The remedy is not apparent and will require further study.

RECOMMENDATIONS (DRAFT)

We are generally in agreement on the nine recommendations listed, but would point out that the constructed basin described in #2 while benefiting Overholser, would be of no benefit to Hefner reservoir.

Since Hefner reservoir contains five times the volume of Overholser and depends on the common source of supply with a point of diversion only a few hundred feet upstream from that of Overholser, we would hope that solutions for Overholser would also benefit Hefner.

Therefore, we would like to keep our options open for restoration of the Sedimentation Basin in a manner that would benefit both. The dredging we have to do along the five and one-half mile long Hefner Canal, for silt removal, is very expensive.

In view of these requirements we believe additional study of a means of some upstream restoration is worthwhile.
Also, we believe that sometime in future, because we have more than two hundred producing oil wells in the near watershed of these two reserviors, we may expect some impact of pollution from those operations. Most wells are located along the many branches of Shell Creek tributary. A recommendation for a program of monitoring at strategic points or automatic monitoring installations would be welcome.

Sincerely,

Thomas J. Carpenter

for: Tim Maupin
Acting Water Resources Dept. Director

TM/jlb

cc: Dr. Tomas J. Carpenter
Earl E. Hearn

2nd

Preface

The conclusions and recommendations generated from this study are primarily based upon empirical data gathered during two years of limnological field work and have been reviewed by the Overholser Reservoir Technical Subcommittee and General Committee. Upon request, these data will be made available for further evaluation and analyses.

DRAFT

Conclusions

1. Bathymetric mapping of Overholser Reservoir in 1982 indicated that the reservoir's original volume capacity of 19,600 acre-feet has been reduced 24% due to sedimentation of materials washed into the reservoir.

2. The marsh which is located north of the reservoir and Route 66 is acting as an effective natural sedimentation and nutrient filter for water flowing in the North Canadian River prior to its entry into Overholser Reservoir.

3. The present geometry of the intake channel into Overholser Reservoir functions to increase the mean inflow velocity of its water in comparison to the concurrent average flow velocity of water in the North Canadian River. This velocity increase permits the inflow water to carry more sediment than the river washload and accelerates the rate of loss in volume capacity of the reservoir.

[The present narrow inlet channel to the reservoir causes more sediment to be carried into the reservoir than if the channel had the same dimensions as the river.]

4. Serial chlorophyll mapping of Overholser Reservoir in 1982 indicated the persistent occurrence of water with unusually high chlorophyll-a content in the northeast corner of the reservoir. This could have been due to leakage of nutrient rich, low flow waters from the North Canadian River into the reservoir through spaces between the rollover dam's tilt blocks (concrete structures that rest upon the rollover dam itself). Statistical analyses of nutrient concentrations in low flow waters of the North Canadian River confirm their elevated Total Phosphorus and Total Nitrogen concentrations in comparison to the concentration of these elements in the reservoir's water.

[By making maps of chlorophyll-a concentration over a period of time (i.e., serial chlorophyll mapping) and then by statistically testing the information provided by the maps, regions of the lake with particularly high amounts of chlorophyll-a (and hence the inferrence of algae and nutrients) can be determined.]

5. Serial chlorophyll mapping also indicated the persistent occurrence of water with unusually high chlorophyll-a content in the southeastern corner of Overholser Reservoir approximately 2600 feet north of the concrete dam. This phenomenon could be due either to a wind induced upwelling or to leakage of water into the reservoir from the bypass canal.

6. Statistical analyses of data from four seepage meters in Overholser Reservoir indicated that the seepage rate into the

DRAFT

lake measured by one of the four meters was significantly different from the rate measured by the other three meters. Mean monthly data from the four meters indicated a significant decline in seepage rate into the lake in the month of November compared to the preceeding month. The mean seepage rate per square meter based upon all the seepage data collected was .0182 liters/ hour, and the seepage water exhibited an asymptotic Total Nitrogen concentration of 11 mg./liter. If we assume (a) that the seepage rate determined from the seepage meter data reflects groundwater seepage rates, (b) that the mean seepage rate determined in this study is representative of the mean annual seepage rate, (c) that this rate does not vary significantly from depths of 0.5 to 3.5 feet, (d) that the Total Nitrogen concentration measured in this study is representative of the mean annual Total Nitrogen concentration in groundwater, and (e) that all of the groundwater seepage entering the reservoir occurs within this bottom area, then, the groundwater seepage contribution into Overholser Reservoir is 107 acre-feet per year and carries an estimated Total Nitrogen load of 1400 kilograms.

[Seepage meters are modified 55 gallon drums that trap the groundwater that seeps through the lake bottom and into the lake. Water is collected in an attached bag. Once collected, a determination of seepage rate and chemical content can be made.]

7. Motor vehicle traffic on unpaved roads in the immediate vicinity of the reservoir's bank kills vegetation, increases the rate of erosion from the land which lies adjacent to the reservoir, increases turbidity levels in and nutrient loadings to the reservoir, and decreases the reservoir's aesthetic quality.

DRAFT

Recommendations

1. The marsh located north of Overholser Reservoir and Route 66 should be recognized as an important natural resource and protected.

2. A triangularly shaped segment of the existing sedimentation basin should be rennovated north of Overholser Reservoir's rollover inlet structure. The proposed area should be 561,000 sq. ft. in area and five feet deep. This will require the removal of 166,000 cubic yards of sediment.

3. Methods should be undertaken to insure that there is no low flow leakage over, around, or through the reservoir's rollover inlet structure.

4. The ability to predict the time of occurrence and the area of initiation of algal blooms in Overholser Reservoir would result in a considerable reduction in water treatment chemical costs as well as reduce the cost of water quality monitoring. If algacide applications were necessary, information concerning the location and areal extent of reservoir areas which stimulate algal bloom development would 1) reduce the amount of algacide necessary for treatment and 2) reduce the areal extent of the area of application, and 3) reduce man power costs. Consequently a study should be conducted to determine the cause of the persistent occurrence of water with high chlorophyll-a content in the southeastern corner of Overholser Reservoir.

[Thus it is recommended the persistent occurence of high levels of chlorophyll-a in the southeast corner of Overholser Reservoir be further studied to determine the cause as such information could be used in reducing costs associated with water quality management.]

5. Water quality data should be gathered just prior to and during high flows in the North Canadian River and scientifically analyzed to permit a determination to be made of the qualitatively and quantitatively most efficient use of this stormwater. Additionally, a routine watershed monitoring of possible pollution sources should be conducted annually.

[Thus it is recommended that North Canadian River water be consistently analyzed (and the results studied) before and during storm events to determine when high quality storm water could be used to fill the reservoir. Possible pollution sources in the lake watershed should be monitored.]

6. Motor vehicle traffic should be confined to planned roads and parking areas adjacent to the reservoir.

DRAFT

7. It is recommended that land be acquired on the west side of the reservoir for construction of a public park. Additionally, the Overholser Reservoir should be considered for inclusion in the "String of Pearls" project.

8. In light of increasing pumping costs from southeast Oklahoma, and in order to help make the west side reservoir more useful a greater percentage of the time, consideration should be given to the initiation of the serial chlorophyll mapping method developed during this study on other Oklahoma City reservoirs.

9. It is recommended that the City investigate and evaluate the recreational potential of the reservoir, including the fish and wildlife populations sustained by the reservoir.

In summary, therefore, there appear to be numerous options available to Oklahoma City for more efficient utilization of their reservoir resources. Oklahoma City should investigate these options.

DRAFT

Attention: Charles Scott 4-26-83

The attached material is sent to you

☒ In response to your request

☐ For your information

by Laura Cook

of the
OKLAHOMA WATER RESOURCES BOARD
P.O. BOX 53585
OKLAHOMA CITY, OKLAHOMA 73152
Ph. (405) 271-2555

Comments

Enclosed are the conclusions and recommendations drawn up by the Lake Overholser General Committee and Technical Sub-Committee. Let me know if we can be of any more assistance. I'm looking forward to meeting you at the Hearing Thursday night.

Sincerely,
Laura Cook

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Ecological Services
222 S. Houston, Suite A
Tulsa, Oklahoma 74127

KJ
JA
HJC
LC

RECEIVED
APR 11 1983
Oklahoma Water Resources Board

April 8, 1983

Regional Administrator
Environmental Protection Agency
Attn: Clean Lakes Coordinator
1201 Elm Street
Dallas, Texas 75270

Dear Sir:

The Fish and Wildlife Service has recently become aware of a Clean Lakes Project, under Section 314 of the Clean Water Act, in Oklahoma that we are concerned about. The project is on Overholser Lake in Oklahoma County, Oklahoma. We understand that the Oklahoma Water Resources Board is studying methods to reduce sedimentation in the lake. The principal alternative being considered involves reactivating an old sedimentation basin just north of the lake and adjacent to the North Canadian River. This area now supports a wetland environment consisting of emergent vascular aquatic plants and scrub/shrub vegetation. This area is extensively used by the local Audubon Society as a field bird banding laboratory.

About two years ago, the city of Oklahoma City placed lime sludge from its water treatment plants in this wetland. The City was required to apply for a permit under Section 404 of the Clean Water Act for the unauthorized discharge of fill. The Fish and Wildlife Service, Oklahoma Department of Wildlife Conservation, Oklahoma Water Resources Board, and the Environmental Protection Agency recommended through the 404 permit process that the wetland be protected from further filling activities. The applicant agreed to these recommendations and withdrew the permit application.

The Service would appreciate being apprised of the current status of this project along with an opportunity to review and comment on the draft report. In addition, we would like to receive information on any other Clean Lakes Projects in Oklahoma.

Sincerely yours,

Sidney H. Wilkirson

Sidney H. Wilkirson
Field Supervisor

cc: Chief, Water Quality Division, OWRB, Oklahoma City, Oklahoma
Director, ODWC, Oklahoma City, Oklahoma
Regional Director, FWS, Albuquerque, New Mexico (AEV)

LAKE OVERHOLSER PUBLIC HEARING
MEETING SUMMARY

April 28, 1983

A public hearing was held concerning the Clean Lakes Study on Lake Overholser at the Royce Brown Building auditorium on the Bethany Nazerene College campus. Ms. Laura Cook of the Oklahoma Water Resources Board (OWRB) opened the public hearing and introduced Dr. Jim Grimshaw, OWRB, principal investigator of the Lake Overholser project. Also in attendance was Mr. Dave Harkness of the Oklahoma Department of Pollution Control. Ms. Cook then gave a summary of how and why the Lake Overholser project started. She also explained that the hearing officially ended the OWRB's commitment to the Phase I portion of the project.

Dr. Grimshaw presented, with slides and overheads, the project overview and findings. The conclusions and recommendations derived from the study by the Lake Overholser committee were then reviewed by Mr. Max Tilford, committee member. A written copy of these is attached.

Formal statements were received from the audience. They were given by Mr. Dave Martinez and Mr. Max Tilford, both representing the citizens, Mr. Earl Hearn, representing the City of Oklahoma City; and Mr. Neil Garrison, representing the Oklahoma City Sierra Club. Both Mr. Martinez and Mr. Garrison expressed their concern for the marshland area directly north of Lake Overholser. They felt that if an area was dredged for a sedimentation basin, it would adversely affect the environment and destroy habitat area for certain birds.

Both Mr. Tilford and Mr. Hearn explained that the natural marshland area is extremely important for the well being of Lake Overholser; it acts as a natural filter. But, they also stated that a renovated sedimentation basin is ncecssary to extend the life of the lake. An intensive study of renovation alternatives for the basin is necessary, in order to maximize benefits for the lake and marshland. Ms. Cook explained the procedure for allowing a ten day comment period following the public hearing. A written comment was received from Mr. Neil Garrison which restated his oral comment. Copies of the attendance record and comments are attached.

Ms. Cook officially ended the public hearing and declared the continuing meeting informal. At that time Mr. John Walker was introduced to present his thoughts about renovating the sedimentation basin. He has worked for the U.S. Army Corps of Engineers for twenty years. As a civil engineer, he is knowledgeable about sedimentation basins and had studied the situation at Lake Overholser that day with Dr. Grimshaw.

Mr. Walker explained the mechanics of dredging a sedimentation basin and the measures necessary to provide the optimum results. While answering questions, he stated that he thought the best position for the basin would be above the marshland area on the North Canadian River. He reiterated that an in-depth study should be completed on the sedimentation basin before a final conclusion is reached.

Mr. Tilford spoke to the audience for a few minutes about his plans to continue the committee's work in order to implement some of the suggested restoration methods. The majority of the people in attendance were interested in being on his committee. A time was scheduled for them to meet to set their goals and objectives. The meeting was then adjourned.

JAMES R. BARNETT, Executive Director
MICHAEL R. MELTON, Assistant Director

OKLAHOMA WATER RESOURCES BOARD

P.O. BOX 53585 • 1000 N.E. 10TH STREET • OKLAHOMA CITY, OKLAHOMA 73152 • (405)271-2555

April 19, 1983

Mr. Neal Balkan
2509 Dittmer
Oklahoma City, Oklahoma 73127

Dear Mr. Balkan:

The results of a three year water quality study conducted by the Oklahoma Water Resources Board on Lake Overholser in Oklahoma City, will be the topic of discussion at a Public Meeting on April 28, 1983, starting at 7:00 p.m. The meeting will be held in the first floor auditorium of the Royce Brown Business and Home Economics Building of Bethany Nazarene College in Bethany, Oklahoma. The OWRB will present findings of the study and proposed recommendations to solve problems identified during the study. Also, possibilities for an Implementation Grant will be explained.

The public will have an opportunity to make formal statements, either orally or written. More information on the meeting can be obtained by contacting Laura Cook at (405) 271-2541.

Sincerely,

Ron Jarman

Ron Jarman, Chief
Water Quality Division

RLJ:LC:sdh

You're doin' fine, Oklahoma! 1907 Diamond Jubilee 1982 75

105
Oklahoma City Chamber of Commerce
One Santa Fe Plaza
Oklahoma City, Oklahoma 73102
Sir or Madam

122
ACOG Representative
112 West Monroe
P.O. Box 561
Crescent, Oklahoma 73028
Sir or Madam

123
ACOG Representative
Route 1, Box 156
Union City, Oklahoma 73090
Sir or Madam

130
ACOG Representative
Drawer D
Calumet, Oklahoma 73014
Sir or Madam

164
Town of Hallpark
Box 1205
Norman, Oklahoma 73070
Sir or Madam

183
Town of Valley Brook
6315 Camille Avenue
Valley Brook, Oklahoma 73149
Sir or Madam

152
Mr. Albert A. Alberts, Chairman
Canadian County Commissioners
Canadian County Courthouse
El Reno, Oklahoma 73036
Mr. Alberts

Lake Overholser - Complete

96
Mr. Robert A. Allen
Engineering Manager
Wolverine Division, UOP, Inc.
500 Wolverine Road
Shawnee, Oklahoma 74801
Mr. Allen

167
The Honorable Marvin Almon
Mayor
City of Midwest City
P.O. Box 10570
Midwest City, Oklahoma 73140
Mayor Almon

211
Mr. Robert Arndt
Oklahoma Geological Survey
830 Van Vleet Oval
Room 163
Norman, Oklahoma 73019
Mr. Arndt

30
Mr. J. Atkins
2424 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Atkins

112
Mr. Beryl G. Baggett
Area Conservationist
U.S. Department of Agriculture
Soil Conservation Service - Area V
1016 Northwest 67th - Suite A
Oklahoma City, Oklahoma 73116
Mr. Baggett

142
Mr. Bryce A. Baggett
Executive Director
Oklahoma Employment Security
Commission
200 Will Rogers Building
Oklahoma City, Oklahoma 73105
Mr. Baggett

145
Mr. Hamp Baker, Chairman
Oklahoma Corporation Commission
Jim Thorpe Building
Third Floor
Oklahoma City, Oklahoma 73105
Mr. Baker

57
Dr. Marvin Baker
Sierra Club
300 Hal Muldrow Drive
Apartment 227
Norman, Oklahoma 73069
Dr. Baker

1
Mr. Neal Balkan
2509 Dittmer
Oklahoma City, Oklahoma 73127
Mr. Balkan

31
Mr. and Mrs. Ron Barlow
2600 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Barlow

79
Mr. and Mrs. Wayne Barnes
Lake Overholser Association
2205 Markwell Pl.
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Barnes

24
Ms. Carleta Barton
8316 Northwest 34th Street
Bethany, Oklahoma 73008
Ms. Barton

180
Mr. Kenneth Beal
City Manager
City of Spencer
P.O. Box 266
Spencer, Oklahoma 73084
Mr. Beal

44
Mr. Leonard Benton
Executive Director
Urban League of Oklahoma City
3017 North Eastern Avenue
Oklahoma City, Oklahoma 73111
Mr. Benton

177
Ms. Adelaide Binstock
Budget Director
City of Oklahoma City
200 North Walker
Oklahoma City, Oklahoma 73102
Ms. Binstock

119
Mr. Bob Birchell
Forestry Division
Oklahoma State Department of Agriculture
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Birchell

103
Mr. Harold Black
Associated Engineers, Inc.
1253 Alameda Street
Norman, Oklahoma 73071
Mr. Black

27
Mr. Amos Verne Bollinger
P.O. Box 888
Choctaw, Oklahoma 73020
Mr. Bollinger

129
Mr. Clyde Bower
Environmental Coordinator
Oklahoma State Department of Agriculture
122 State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Bower

116
Mr. Charles Bowlin
Oklahoma Corporation Commission
Jim Thorpe Building
Oklahoma City, Oklahoma 73105
Mr. Bowlin

128
Mr. W. J. Bowman, Chief
Oklahoma Employment Security
Commission
Will Rogers Building
Oklahoma City, Oklahoma 73152
Mr. Bowman

149
Mr. Joe Brandics
County Planner
Canadian County Courthouse
El Reno, Oklahoma 73036
Mr. Brandics

106
Ms. Kay Brothers
Staff Environmental Engineer
Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City, Oklahoma 73125
Ms. Brothers

41
Ms. Diane Brown, President
League of Women Voters
of Oklahoma
400 Northwest 23rd Street
Oklahoma City, Oklahoma 73103
Ms. Brown

2
Mrs. Rodger Brown
2232 Crestmont
Norman, Oklahoma 73069
Mrs. Brown

3
Ms. Marian Bruce
4908 North McMillan
Bethany, Oklahoma 73008
Ms. Bruce

32
Mr. J. Brushmiller
2530 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Brushmiller

163
Mr. Paul Buntz
City Manager
City of Guthrie
Guthrie, Oklahoma 73044
Mr. Buntz

Lake Overholser - Complete

166
Mr. Joseph D. Burkhart
Board Member
Town of Jones
P.O. Box 512
Jones, Oklahoma 73049
Mr. Burkhart

111
Mr. David Burris
Tinker Air Force Base
2854 CES/DEEX
Tinker AFB, Oklahoma 73145
Mr. Burris

191
Mr. Dan Butler
2200 N. Porter Ave.
Norman, Oklahoma 73071
Mr. Butler

107
Mr. Mark Butler
Bureau of Land Management
200 Northwest Fifth
Room 548
Oklahoma City, Oklahoma 73102
Mr. Butler

48
Ms. Rachael Butler
Department of Geography
University of Oklahoma
Norman, Oklahoma 73019
Ms. Butler

59
Mr. Chester L. Bynum, President
Cleveland County Chapter
Audubon Society
Box 2666
Norman, Oklahoma 73069
Mr. Bynum

220
The Honorable Bernest Cain
The State Senate
State Capitol Building
Oklahoma City, Oklahoma 73105
Senator Cain

Lake Overholser - Complete

182
Councilman Roy Carmack
The Village
3004 Kerry Lane
The Village, Oklahoma 73120
Councilman Carmack

84
Mr. John M. Carver
Senior Environmental Specialist
Kerr-McGee Nuclear Corporation
Kerr-McGee Center
Oklahoma City, Oklahoma 73125
Mr. Carver

20
Mrs. Buela Cavener
1812 Northwest 23rd Street
Oklahoma City, Oklahoma 73106
Mrs. Cavener

4
Ms. Lois Chiles
1801 Westbrook Terrace
Norman, Oklahoma 73069
Ms. Chiles

229
The Honorable Butch Choate
The State Senate
State Capitol Building
Oklahoma City, Oklahoma 73105
Senator Choate

121
Mr. Thomas H. Clapper
Senate Committee Staff
Room 320, State Capitol
Oklahoma City, Oklahoma 73105
Mr. Clapper

150
Mr. Paul Clowers
Oklahoma County Engineer
Oklahoma County Court House
Room 119
Oklahoma City, Oklahoma 73102
Mr. Clowers

141
Mr. Mark Coleman
Oklahoma State Department of Health
1000 Northeast Tenth Street
Oklahoma City, Oklahoma 73105
Mr. Coleman

227
The Honorable Mike Combs
The State Senate
State Capitol Building
Oklahoma City, Oklahoma 73105
Senator Combs

5
Mr. Leonard Cox
515 West Kansas
Okarche, Oklahoma 73762
Mr. Cox

115
Mr. Jack Craig, Commissioner
Oklahoma State Department of Agriculture
122 State Capitol
Oklahoma City, Oklahoma 73105
Mr. Craig

97
Mr. Leo Cravens
Executive Vice-President
Oklahoma State Home Builders Assocation
800 Northeast 63rd Street
Oklahoma City, Oklahoma 73105
Mr. Cravens

113
Mr. Ken Crawford
Meterologist in Charge
Weather Service Forecast Office
Will Rogers World Airport
P.O. Box 59997
Oklahoma City, Oklahoma 73159
Mr. Crawford

64
Mr. Kirt Cunningham
Oklahoma Wildlife Federation
4545 North Lincoln Blvd.
Suite 171
Oklahoma City, Oklahoma 73105
Mr. Cunningham

221
The Honorable Porter Davis
The House of Representatives
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Davis

6
Ms. Carolyn Deatherage
1230 Avondale
Norman, Oklahoma 73069
Ms. Deatherage

225
The Honorable Don Denman
The House of Representatives
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Denman

36
Mr. Wallace C. Denny, President
Oklahoma Association of
Conservation Districts
1002 North Wentz
Guthrie, Oklahoma 73044
Mr. Denny

194
Mr. and Mrs. Trent Densmore
Lake Overholser Association
2100 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Densmore

7
Mr. John Depue
Route 2, Box 338
Mustang, Oklahoma 73064
Mr. Depue

134
Thomas Donica, M.D., Member
Oklahoma State Board of Health
4900 North Portland
Oklahoma City, Oklahoma 73112
Dr. Donica

Lake Overholser - Complete

223
The Honorable Ross Duckett
The House of Representatives
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Duckett

8
Ms. Mary Lue Eastmond
4621 Northwest 59th Terrace
Oklahoma City, Oklahoma 73122
Ms. Eastmond

70
Mr. and Mrs. Don Eckel
Lake Overholser Association
3400 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Eckel

138
Mr. Lawrence Edmison, Director
Oklahoma Department of Pollution Control
1000 Northeast Tenth Street
Oklahoma City, Oklahoma 73105
Mr. Edmison

224
The Honorable Mike Fair
The House of Representatives
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Fair

168
Mr. Dave Farrington
City Engineer
City of Midwest City
Box 10570
Midwest City, Oklahoma 73140
Mr. Farrington

197
Dr. Leo R. Finkerbinder
Biology Department
Bethany Nazarene College
1113 N.E. Foreman Rd.
Yukon, Oklahoma 73099
Dr. Finkerbinder

73
Mr. and Mrs. Jim Ford
Lake Overholser Association
3410 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Ford

153
Mr. Emil Fox, County Commissioner
Cleveland County District 1
Cleveland County Courthouse
Norman, Oklahoma 73069
Mr. Fox

172
The Honorable Leland Fox
Mayor
City of Nicoma Park
Box 545
Nicoma Park, Oklahoma 73066
Mayor Fox

195
Mr. and Mrs. James Franks
Lake Overholser Association
2204 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Franks

43
Ms. Lou Freeman
League of Women Voters
7312 Northwest 19th
Bethany, Oklahoma 73008
Ms. Freeman

99
Mr. Ellis Freeny
Oklahoma Cattleman's Association
Box 82395
Oklahoma City, Oklahoma 73108
Mr. Freeny

127
Mr. Bob Funston, Director
Department of Economic
& Community Affairs
4545 N. Lincoln Blvd. - Suite 285
Oklahoma City, Oklahoma 73105
Mr. Funston

Lake Overholser - Complete

206
Mr. Neil Garrison
Martin Park Nature Center
Department of Parks and Recreation
5000 West Memorial Road
Oklahoma City, Oklahoma 73142
Mr. Garrison

71
Mr. C. L. Gibbs
Lake Overholser Association
3030 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Gibbs

58
Ms. Deborah Gillson
AAUW
2012 Lansboro
Oklahoma City, Oklahoma 73120
Ms. Gillson

114
Mr. Ric Gomez
Chief, Environmental Services
Oklahoma Department of Wildlife
Conservation
P.O. Box 53465
Oklahoma City, Oklahoma 73159
Mr. Gomez

226
The Honorable Bill Graves
The House of Representatives
State Capitol Building
Oklahoma City, Oklahoma 73105
Mr. Graves

75
Ms. Jan Greve
Lake Overholser Association
3125 Lakeview Manor Drive
Oklahoma City, Oklahoma 73127
Ms. Greve

19
Mr. Warren D. Harden
2409 Butler Drive
Norman, Oklahoma 73069
Mr. Harden

196
Mr. Hubert Harris
Oklahoma City Chapter
Audubon Society
4907 N. Willow
Box 344
Bethany, Oklahoma 73008
Mr. Harris

189
Ms. Ann Hartley
Project Officer
U.S. Environmental Protection Agency
Region VI
1201 Elm Street
Dallas, Texas 75270
Ms. Hartley

210
Mr. John Hassell
Water Quality
Oklahoma Conservation Commission
20 State Capitol
Oklahoma City, Oklahoma 73105
Mr. Hassell

33
Mr. Robert Hayes
2808 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Hayes

204
Mr. Earl Hearn
Oklahoma City Water Resources Department
City of Oklahoma City
100 Walker Building
Oklahoma City, Oklahoma 73102
Mr. Hearn

148
Mr. August Helmbright
Supervising Sanitarian
Cleveland County Health Department
641 East Robinson
Norman, Oklahoma 73069
Mr. Helmbright

171
Mr. Douglas D. Henley
City of Nichols Hills
P.O. Box 14038
Oklahoma City, Oklahoma 73113
Mr. Henley

Lake Overholser - Complete

144
Mr. Abe Hesser
Oklahoma Department of Tourism
and Recreation
501 Will Rogers Building
Oklahoma City, Oklahoma 73105
Mr. Hesser

208
Mr. Robert J. Hicks
Office of Chief Ranger
Oklahoma City Rangers
201 Channing Sq.
Suite B5B
Oklahoma City, Oklahoma 73002
Mr. Hicks

159
Mr. Gene Holmes
Planning Director
City of Del City
P.O. Box 15177
Del City, Oklahoma 73115
Mr. Holmes

92
Ms. Diane Howard
TECHRAD, Inc.
4619 North Sante Fe
Oklahoma City, Oklahoma 73118
Ms. Howard

179
Mr. Bob Hulsey
Public Works Director
City of Piedmont
P.O. Box 144
Piedmont, Oklahoma 73078
Mr. Hulsey

35
Dr. George Hulsey
Regional Director
National Wildlife Federation
502 South Crawford
Norman, Oklahoma 73069
Dr. Hulsey

83
Dr. Thomas L. Hurst
Kerr-McGee Corporation
P.O. Box 25861
Oklahoma City, Oklahoma 73125
Dr. Hurst

21
Mr. Wesley S. Isaacs
1304 Lafayette Drive
Oklahoma City, Oklahoma 73119
Mr. Isaacs

162
Mr. Eddie Jackson
Chairman of the Board
Town of Forest Park
P.O. Box 11397
Forest Park, Oklahoma 73121
Mr. Jackson

38
Mr. Rick Jameson
Executive Director
Oklahoma Wildlife Federation
4545 North Lincoln Boulevard
Suite 171
Oklahoma City, Oklahoma 73105
Mr. Jameson

219
Mr. Dean Jones
Overholser Water Treatment Plant
1800 Overholser Drive
Oklahoma City, Oklahoma 73127
Mr. Jones

192
Mr. and Mrs. Larry A. Jones
3536 Overholser
Oklahoma City, Oklahoma 73127
Mr. and Mrs. Jones

230
The Honorable E. W. Keller
The State Senate
State Capitol Building
Oklahoma City, Oklahoma 73105
Senator Keller

186
Mr. R. Hunter Kemmet, Director
Economic Development Administration
805 Old Post Office Building
Oklahoma City, Oklahoma 73102
Mr. Kemmet

Lake Overholser - Complete

47
Mr. Bob Kerr
Kerr Foundation, Inc.
1208 Fidelity Plaza
Oklahoma City, Oklahoma 73102
Mr. Kerr

109
Mr. Edwin Kessler, Director
National Severe Storms Laboratory
National Oceanic and Atmospheric Adm.
Environmental Research Laboratories
1313 Halley Circle
Norman, Oklahoma 73069
Mr. Kessler

80
Mr. Rick Killman, Lab
Dayton Tire and Rubber Company
2500 South Council Road
P.O. Box 24011
Oklahoma City, Oklahoma 73124
Mr. Killman

66
Ms. Nancy Krosley
Oklahoma City Chapter
Audubon Society
4301 Northwest 21st Terrace
Oklahoma City, Oklahoma 73107
Ms. Krosley

101
Mr. Julius Kubier, President
Associated Industries of Oklahoma, Inc.
6161 North May Avenue
Suite 282
Oklahoma City, Oklahoma 73112
Mr. Kubier

104
Mr. Franz C. Lauffer
Benham Blair & Affiliates
1200 Northwest 63rd
P.O. Box 20400
Oklahoma City, Oklahoma 73156
Mr. Lauffer

49
C. H. Lawrence, Ph.D.
Department of Environmental Health
University of Oklahoma
at Oklahoma City (HSC)
801 Northeast 13th Street
Oklahoma City, Oklahoma 73190
Dr. Lawrence