FEASIBILITY REPORT FOR ... [VOLUME-II]

REHABILITATION, UPGRADATION & BEAUTIFICATION OF LAKES

SUBMITTED TO ...

THANE MUNICIPAL CORPORATION, THANE.

* *GRAPHICAL REPRESENTATIONS*
* *WIND ROSE DIAGRAMS*
* *ILLUSTRATION BY PHOTOGRAPHS*

PREPARED BY ...

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TABLE NO. 1

DETAILS OF LAKES IN THANE CORPORATION AREA:-

Sr. No.	NAME OF LAKE	AREA (sq. ft.)
1.	MAKHMALI LAKE	6,122.90
2.	SIDDHESHAWAR LAKE	46,661.02
3.	KOLBAD LAKE	1,877.10
4.	KACHRALI LAKE	17,214.21
5.	MASUNDA LAKE	1,23,545.10
6.	KAUSA LAKE	1,38,437.00
7.	KHIDKALI LAKE	6,399.00
8.	RAYALDEVI LAKE	60,668.90
9.	REWALE LAKE	4,170.29
10.	KASARWADAVALI LAKE	8,574.87
11.	NAAR LAKE	3,073.32
12.	GHOSALE LAKE	34,589.00
13.	UPVAN LAKE	60,239.00
14.	HARIYALI LAKE	25,279.00
15.	BRAHMA LAKE	47,182.00

TABLE NO. 2

WIND DIRECTION ANALYSIS:-

Sr. No.	NAME OF LAKE	WIND DIRECTION
1.	MAKHMALI TALAO	S
2.	SIDDHESHAWAR LAKE	NW - N
3.	KOLBAD LAKE	S
4.	KACHRALI LAKE	NW - S
5.	MASUNDA LAKE	S
6.	KAUSA LAKE	NW - E
7.	KHIDKALI LAKE	NE
8.	RAYALDEVI LAKE	NE - SE
9.	REWALE LAKE	NW - E
10.	KASARWADAVALI LAKE	E
11.	NAAR LAKE	W - NW
12.	GHOSALE LAKE	W - NW
13.	UPVAN LAKE	W - NW
14.	HARIYALI LAKE	W - NW
15.	BRAHMA LAKE	NE

TABLE NO. 3

MONTHLY AVERAGE OF NOISE LEVEL:-

Sr. No.	NAME OF LAKE	MONTHLY AVERAGE OF NOISE LEVEL AT DAY-NIGHT (dB)	
		AUG - SEPT	OCT - NOV
1.	MAKHMALI TALAO	80-105	92-120
2.	SIDDHESHAWAR LAKE	95-118	92-122
3.	KOLBAD LAKE	87-125	90-129
4.	KACHRALI LAKE	90-110	95-122
5.	MASUNDA LAKE	95-135	90-139
6.	KAUSA LAKE	85-109	90-110
7.	KHIDKALI LAKE	75-111	82-115
8.	RAYALDEVI LAKE	90-121	93-135
9.	REWALE LAKE	86-101	90-121
10.	KASARWADAVALI LAKE	91-110	0-0
11.	NAAR LAKE	65-92	71-95
12.	GHOSALE LAKE	85-110	90-121
13.	UPVAN LAKE	76-105	80-110
14.	HARIYALI LAKE	90-121	95-131
15.	BRAHMA LAKE	79-102	85-111

TABLE NO. 4

NATIONAL AMBIENT AIR QUALITY STANDARDS ($\mu g/m^3$):-

Parameter	Experiment Period	Industrial Area	Residential Area	Sensitive Area
SO2	Annual Avg.	80	60	15
	24 hr. Avg	120	80	30
NO x	Annual Avg	80	60	15
	24 hr. Avg	120	80	30
SPM	Annual Avg	360	140	70
	24 hr. Avg	500	200	100
RSPM	Annual Avg	120	60	50
	24 hr. Avg	150	100	75
Lead	Annual Avg	1.0	0.75	0.5
	24 hr. Avg	1.5	1	0.75
CO	8 hr. Avg	5.0 mg/m^3	2 mg/m^3	1 mg/m^3
	1 hr. Avg	10.0 mg/m^3	4 mg/m^3	2mg/m^3

TABLE NO. 5

LIST OF ZOOPLANKTONS PRESENT IN THE LAKE

SR. NO.	ZOOPLANKTONS
1	Keratella
2	Naviculla
3	Quadricauda
4	Moina
5	Tragilaria
6	Synedra

TABLE NO. 6

LIST OF PROTOZA PRESENT IN THE LAKE

SR. NO.	PROTOZA
1	Arcella
2	Amoeba psuedopoda
3	Amoeba histolitica

TABLE NO. 7

LIST OF PHYTOPLANKTONS PRESENT IN THE LAKE

SR. NO.	PHYTOPLANKTONS
1	Anaebena
2	Nostoc
3	Microcyst
4	Spirogyra
5	Eudorina
6	Clamydomonas
7	Scenedesmus armatus
8	Scenedesmus quadricauda

TABLE NO. 8

PARTIAL LIST OF FISHES PRESENT IN THE LAKE

SR. NO.	FISHES
1	Lobo- rohita
2	Catla-catla
3	Hypopthalmicthys-molitrix (silver carp)

TABLE NO. 9

ANALYTICAL STATUS OF LAKE WATERS

A) FIRST FIVE IMPORTANT PARAMETERS:-

Sr.No.	PARAMETERS	MAKHMALI LAKE	SIDDHESHWAR LAKE	KOLBAD LAKE
1	Ph	6.9	8.0	7.5
2	S.S mg/lit	32.0	25.0	26.0
3	D.O mg/lit	5.9	0.9	5.0
4	B.O.D mg/lit	29.0	6.9	35.0
5	C.O.D mg/lit	56.0	190	62.0

B) METALS IN LAKE WATERS:-

Sr.No.	PARAMETERS	MAKHMALI LAKE	SIDDHESHWAR LAKE	KOLBAD LAKE
1	Mn mg/lit	-	-	0.01
2	Cu mg/lit	-	-	-
3	Zn mg/lit	-	0.54	-
4	Mg mg/lit	22.11	23.8	15.0
5	Cd mg/lit	-	-	-
6	Fe mg/lit	0.050	0.93	0.52
7	Ca mg/lit	22.07	51.4	25.0
8	Pb mg/lit	-	-	-

C) INORGANICS IN LAKE WATERS:-

Sr.No.	PARAMETERS	MAKHMALI LAKE	SIDDHESHWAR LAKE	KOLBAD LAKE
1.	Alkalinity	187.0	280.0	80.0
2.	Ammo. Nitrogen	0.57	2.12	0.91
3.	Ca- Hardness	109.0	128.0	54.0
4.	Mg- Hardness	138.0	152.0	120.0
5.	Total Hardness	247.0	280.0	174.0
6.	Inorganic-Phosphate	6.2	4.92	14.2
7.	Total Phosphate	7.5	9.8	20.1
8.	Nitrite mg/lit	-	0.3	-
9.	Nitrate mg/lit	0.10	0.35	0.10
10.	Sulphate mg/lit	105.0	138.0	82.0
11.	T.D.S mg/lit	389.0	617.0	400.0
12.	Chloride mg/lit	72.0	73.0	105.0
13.	Conductivity	801.0	889.0	722.0

TABLE NO. 10

ANALYTICAL STATUS OF LAKE WATERS

A) FIRST FIVE IMPORTANT PARAMETERS:-

Sr.No.	PARAMETERS	KACHRALI LAKE	MASUNDA LAKE	KAUSA LAKE
1	pH	07.20	7.2	9.0
2	S.S mg/lit	22.00	21.0	40.0
3	D.O mg/lit	04.60	5.2	1.3
4	B.O.D mg/lit	23.00	19.0	56
5	C.O.D mg/lit	43.00	55	430

B) METALS IN LAKE WATERS:-

Sr.No.	PARAMETERS	KACHRALI LAKE	MASUNDA LAKE	KAUSA LAKE
1	Mn mg/lit	0.500	-	0.48
2	Cu mg/lit	0.020	-	0.12
3	Zn mg/lit	1.020	-	-
4	Mg mg/lit	26.12	21.4	18.5
5	Cd mg/lit	-	-	-
6	Fe mg/lit	-	0.53	8.1
7	Ca mg/lit	19.11	69.3	25.0
8	Pb mg/lit	-	0.23	-

C) INORGANICS IN LAKE WATERS:-

Sr.No.	PARAMETERS	KACHRALI LAKE	MASUNDA LAKE	KAUSA LAKE
1.	Alkalinity	190.00	110	235
2.	Ammo. Nitrogen	0.9	1.10	3.5
3.	Ca- Hardness	100.00	189	156
4.	Mg- Hardness	52.00	53	110
5.	Total Hardness	152.00	242	266
6.	Inorganic-Phosphate	1.30	0.462	183.
7.	Total Phosphate	-	3.12	23.0
8.	Nitrite mg/lit	-	0.120	0.008
9.	Nitrate mg/lit	0.20	0.56	0.54
10.	Sulphate mg/lit	79.00	159	152.0
11.	T.D.S mg/lit	260.00	522	580
12.	Chloride mg/lit	40.00	50	92
13.	Conductivity	550.00	744	821

TABLE NO. 11

ANALYTICAL STATUS OF LAKE WATERS

A) FIRST FIVE IMPORTANT PARAMETERS:-

Sr.No.	PARAMETERS	KHIDKALI LAKE	RAYALDEVI LAKE	REWALE LAKE
1	pH	06.20	7.9	8.0
2	S.S mg/lit	37.50	40.0	30.0
3	D.O mg/lit	03.20	2.9	4.2
4	B.O.D mg/lit	30.60	45.0	22.0
5	C.O.D mg/lit	89.00	65	29.0

B) METALS IN LAKE WATERS:-

Sr.No.	PARAMETERS	KHIDKALI LAKE	RAYALDEVI LAKE	REWALE LAKE
1	Mn mg/lit	0.101	-	0.90
2	Cu mg/lit	0.042	0.31	-
3	Zn mg/lit	0.900	0.20	-
4	Mg mg/lit	18.90	36.3	22.0
5	Cd mg/lit	-	-	-
6	Fe mg/lit	0.193	0.55	0.19
7	Ca mg/lit	20.05	32.0	28.9
8	Pb mg/lit	0.08	-	-

C) INORGANICS IN LAKE WATERS:-

Sr.No.	PARAMETERS	KHIDKALI LAKE	RAYALDEVI LAKE	REWALE LAKE
1.	Alkalinity	201.00	161	101
2.	Ammo. Nitrogen	1.02	0.76	10
3.	Ca- Hardness	101.00	170	100
4.	Mg- Hardness	40.00	99	79
5.	Total Hardness	141.00	269	179
6.	Inorganic-Phosphate	4.10	-	10.2
7.	Total Phosphate	3.60	-	2.3
8.	Nitrite mg/lit	-	-	-
9.	Nitrate mg/lit	0.30	0.217	0.20
10.	Sulphate mg/lit	57.00	233	90
11.	T.D.S mg/lit	310.00	475	525
12.	Chloride mg/lit	46.00	95	90
13.	Conductivity	600.00	825	519

TABLE NO. 12

ANALYTICAL STATUS OF LAKE WATERS

A) FIRST FIVE IMPORTANT PARAMETERS:-

Sr.No.	PARAMETERS	KASARWADA VALI LAKE	NAAR LAKE	GHOSALE LAKE
1	pH	7.0	8.3	8.2
2	S.S mg/lit	29.0	18.0	52.0
3	D.O mg/lit	3.9	2.8	3.9
4	B.O.D mg/lit	60	85.0	29.9
5	C.O.D mg/lit	40	480.0	62.0

B) METALS IN LAKE WATERS:-

Sr.No.	PARAMETERS	KASARWADA VALI LAKE	NAAR LAKE	GHOSALE LAKE
1	Mn mg/lit	0.60	0.123	0.108
2	Cu mg/lit	-	0.84	0.06
3	Zn mg/lit	-	0.91	0.072
4	Mg mg/lit	11	21.5	17.3
5	Cd mg/lit	-	-	-
6	Fe mg/lit	0.30	4.8	1.04
7	Ca mg/lit	17.22	23.8	22.1
8	Pb mg/lit	-	1.30	-

C) INORGANICS IN LAKE WATERS:-

Sr.No.	PARAMETERS	KASARWADA VALI LAKE	NAAR LAKE	GHOSALE LAKE
1.	Alkalinity	75	181.0	70
2.	Ammo. Nitrogen	1.10	0.38	0.19
3.	Ca- Hardness	70	120.0	110
4.	Mg- Hardness	43	123.0	95
5.	Total Hardness	113	243.0	205
6.	Inorganic-Phosphate	6.04	10.11	2.1
7.	Total Phosphate	5.3	28.6	4.2
8.	Nitrite mg/lit	-	0.077	0.29
9.	Nitrate mg/lit	0.26	-	-
10.	Sulphate mg/lit	76	143.0	173
11.	T.D.S mg/lit	390	534.0	525
12.	Chloride mg/lit	69	93.0	100
13.	Conductivity	500	821.0	145

TABLE NO. 13

ANALYTICAL STATUS OF LAKE WATERS

A) FIRST FIVE IMPORTANT PARAMETERS:-

Sr.No.	PARAMETERS	UPVAN LAKE	HARIYALI LAKE	BRAHMA LAKE
1	pH	7.3	7.3	8.0
2	S.S mg/lit	90.0	39.0	45.0
3	D.O mg/lit	4.2	3.9	3.1
4	B.O.D mg/lit	32.0	61	28.0
5	C.O.D mg/lit	70.0	289	69.0

B) METALS IN LAKE WATERS:-

Sr.No.	PARAMETERS	UPVAN LAKE	HARIYALI LAKE	BRAHMA LAKE
1	Mn mg/lit	0.36	0.030	0.423
2	Cu mg/lit	1.09	0.12	0.012
3	Zn mg/lit	1.01	-	0.33
4	Mg mg/lit	22.3	17.3	38.0
5	Cd mg/lit	-	-	-
6	Fe mg/lit	2.36	2.8	0.83
7	Ca mg/lit	16.0	21.0	29.0
8	Pb mg/lit	-	-	1.80

C) INORGANICS IN LAKE WATERS:-

Sr.No.	PARAMETERS	UPVAN LAKE	HARIYALI LAKE	BRAHMA LAKE
1.	Alkalinity	129	241	121.3
2.	Ammo. Nitrogen	0.55	0.58	0.29
3.	Ca- Hardness	145	128.3	121.0
4.	Mg- Hardness	72	121	98.0
5.	Total Hardness	217	249.3	219.0
6.	Inorganic-Phosphate	7.6	8.9	4.56
7.	Total Phosphate	-	18.9	5.60
8.	Nitrite mg/lit	-	0.12	0.024
9.	Nitrate mg/lit	-	0.21	-
10.	Sulphate mg/lit	165	121.0	99.0
11.	T.D.S mg/lit	560	523	510.0
12.	Chloride mg/lit	82	99	85.0
13.	Conductivity	720	752.2	729.0

TABLE NO. 14

MONTHLY AVERAGE OF VARIOUS PARAMETERS FOR THE MONTH OF AUGUST-1999

PARAME -TERS	NAME OF LAKES						
	MAKHMALI LAKE	SIDDHESHWAR LAKE	KOLBAD LAKE	KACHARALI LAKE	MASUNDA LAKE	KAUSA LAKE	KHIDKALI LAKE
SOX (microgm/ cum)	22.5	21.0	17.3	22.0	26.3	21.0	27.0
NOX (microgm/ cum)	36.5	39.2	21.9	36.2	41.2	37.3	28.2
CO (ppm)	7.2	7.52	5.2	6.9	6.5	5.5	5.1
SPM (microgm/ cum)	101	111	127	115	121	141	117

TABLE CONTD..

PARAME -TERS	NAME OF LAKES							
	RAYALA DEVI LAKE	REWALE LAKE	KASARWADAVALI LAKE	NAAR LAKE	GHOSALE LAKE	UPVAN LAKE	HARIYALI LAKE	BRAHMA LAKE
SOX (microgm/ cum)	22.9	19.3	15.1	17.0	21.2	12.1	17.1	22.0
NOX (microgm/ cum)	32.0	43.8	21.9	29.0	36.8	21.2	18.9	37.5
CO (ppm)	8.1	6.25	4.20	4.9	8.2	3.9	5.1	7.0
SPM (microgm/ cum)	116	131	80	85	122	99	115	143

TABLE NO. 15

MONTHLY AVERAGE OF VARIOUS PARAMETERS FOR THE MONTH OF SEPTEMBER-1999

PARAME -TERS	NAME OF LAKES						
	MAKHMALI LAKE	SIDDHESHWAR LAKE	KOLBAD LAKE	KACHARALI LAKE	MASUNDA LAKE	KAUSA LAKE	KHIDKALI LAKE
SOX (microgm/ cum)	22.9	19.9	16.8	22.9	27.3	22.9	26.0
NOX (microgm/ cum)	35.0	40.1	19.8	22.6	51.3	42.3	29.2
CO (ppm)	7.1	7.3	6.9	5.4	7.2	6.9	5.8
SPM (microgm/ cum)	105	117	130	102	139	115	110

TABLE CONTD..

PARAME -TERS	NAME OF LAKES							
	RAYALA DEVI LAKE	REWALE LAKE	KASARWADAVALI LAKE	NAAR LAKE	GHOSALE LAKE	UPVAN LAKE	HARIYALI LAKE	BRAHMA LAKE
SOX (microgm/ cum)	21.0	18.6	15.5	18.9	26.0	22.0	10.9	22.0
NOX (microgm/ cum)	33.2	43.6	40.0	46.2	35.8	19.3	17.8	51.0
CO (ppm)	5.2	7.9	9.0	5.9	7.5	6.9	4.2	5.0
SPM (microgm/ cum)	120	119	76	97	110	118	119	131

TABLE NO. 16

MONTHLY AVERAGE OF VARIOUS PARAMETERS FOR THE MONTH OF OCTOBER-1999

PARAME -TERS	NAME OF LAKES						
	MAKHMALI LAKE	SIDDHESHWAR LAKE	KOLBAD LAKE	KACHARALI LAKE	MASUNDA LAKE	KAUSA LAKE	KHIDKALI LAKE
SOX (microgm/ cum)	16.5	20.2	13.3	17.3	19.0	20.2	18.1
NOX (microgm/ cum)	32.5	33.0	20.9	40.2	37.8	36.0	29.0
CO (ppm)	7.65	6.5	4.5	7.15	5.32	6.5	4.45
SPM (microgm/ cum)	95	120	111	108	127	132	101

TABLE CONTD..

PARAME -TERS	NAME OF LAKES							
	RAYALA DEVI LAKE	REWALE LAKE	KASARWADAVALI LAKE	NAAR LAKE	GHOSALE LAKE	UPVAN LAKE	HARIYALI LAKE	BRAHMA LAKE
SOX (microgm/ cum)	22.0	17.9	13.2	12.5	17.8	14.2	0	20.2
NOX (microgm/ cum)	33.0	40.8	22.9	26.3	35.8	19.22	22.17	33.5
CO (ppm)	6.9	5.85	3.79	3.5	7.6	4.2	3.7	6.95
SPM (microgm/ cum)	115	126	97	92	101	88	96	130

TABLE NO. 17

MONTHLY AVERAGE OF VARIOUS PARAMETERS FOR THE MONTH OF NOVEMBER-1999

PARAME-TERS	NAME OF LAKES						
	MAKHMALI LAKE	SIDDHESHWAR LAKE	KOLBAD LAKE	KACHARALI LAKE	MASUNDA LAKE	KAUSA LAKE	KHIDKALI LAKE
SOX (microgm/ cum)	17.8	20.9	17.6	0	17.9	20.6	27.0
NOX (microgm/ cum)	33.0	32.5	21.9	36.5	37.9	35.0	27.9
CO (ppm)	9.8	6.9	3.5	7.9	6.9	8.1	5.6
SPM (microgm/ cum)	97	100	112	110	131	130	95

TABLE CONTD..

PARAME -TERS	NAME OF LAKES							
	RAYALA DEVI LAKE	REWALE LAKE	KASARWADAVALI LAKE	NAAR LAKE	GHOSALE LAKE	UPVAN LAKE	HARIYALI LAKE	BRAHMA LAKE
SOX (microgm/ cum)	22.9	18.1	15.9	13.6	12.8	16.9	0	26.0
NOX (microgm/ cum)	33.0	42.0	17.9	25.6	33.8	17.2	23.0	36.0
CO (ppm)	7.2	8.85	6.7	5.2	7.0	5.9	4.9	8.65
SPM (microgm/ cum)	119	142	112	105	96	107	99	134

GRAPHICAL REPRESENTATION

FIGURE-1

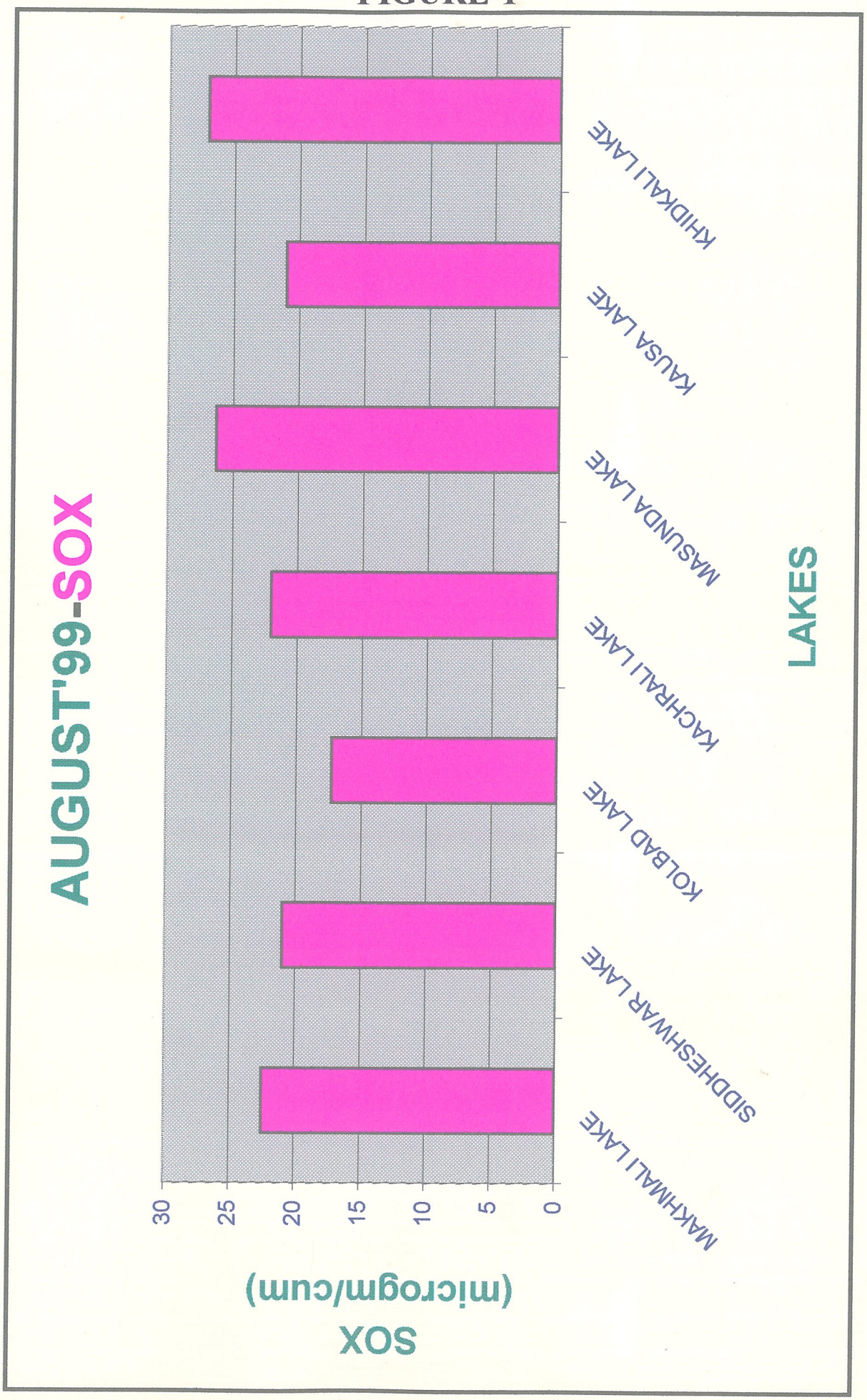

AUGUST'99-SOX
SOX
(microgm/cum)
30
25
20
15
10
5
0
MAKHMALI LAKE
SIDDHESHWAR LAKE
KOLBAD LAKE
KACHRALI LAKE
MASUNDA LAKE
KAUSA LAKE
KHIDKALI LAKE
LAKES

FIGURE-2


AUGUST'99-SOX
SOX
(microgm/cum)
0
5
10
15
20
25
LAKES
RAYALDEVI LAKE
REWALE LAKE
KASARWADAVALI LAKE
NAAR LAKE
GHOSALE LAKE
UPVAN LAKE
HARIYALI LAKE
BRAHMA LAKE

FIGURE-3

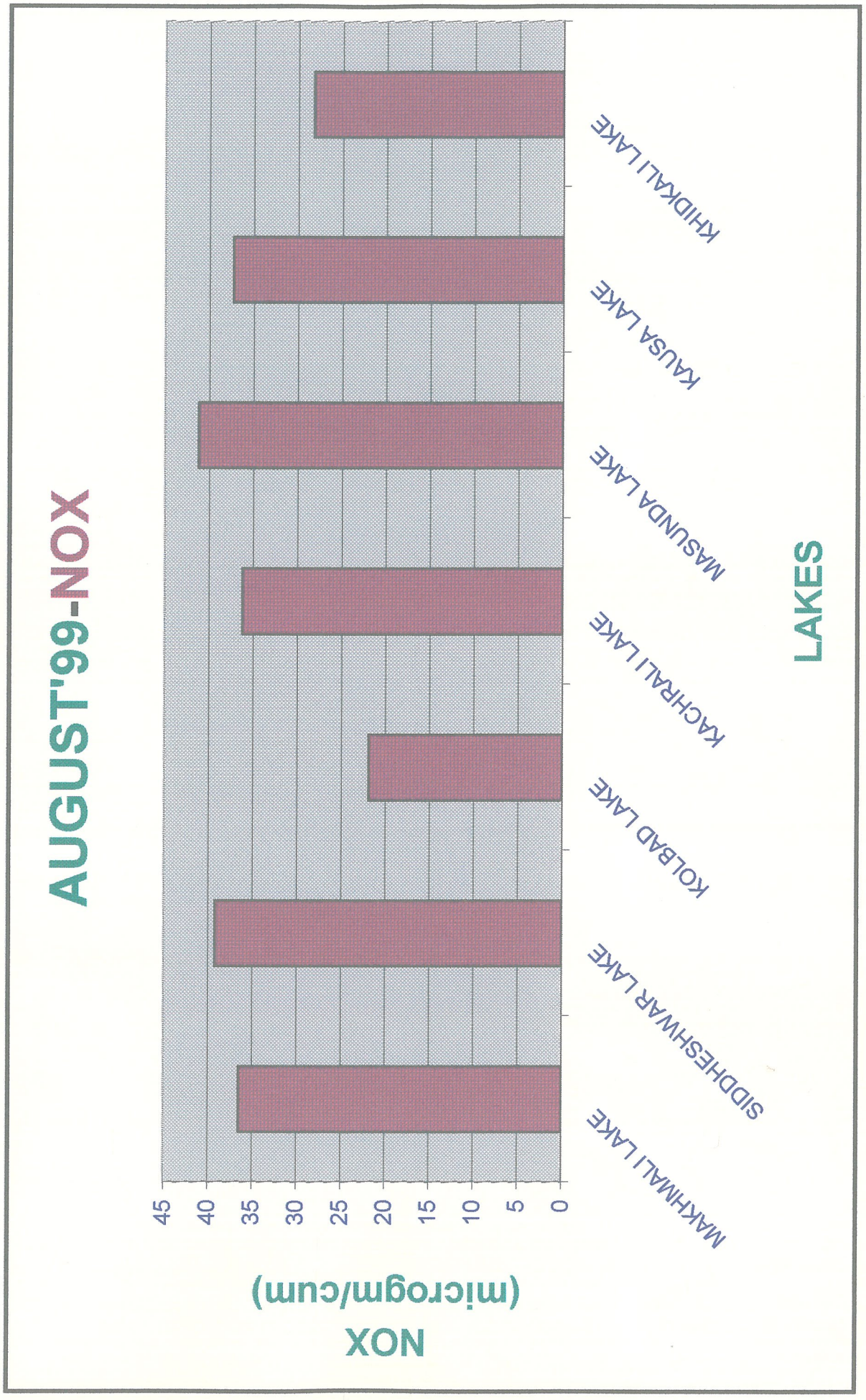

AUGUST'99-NOX
NOX
(microgm/cum)
45
40
35
30
25
20
15
10
5
0
LAKES
KHIDKALI LAKE
KAUSA LAKE
MASUNDA LAKE
KACHRALI LAKE
KOLBAD LAKE
SIDDHESHWAR LAKE
MAKHMALI LAKE

FIGURE-4

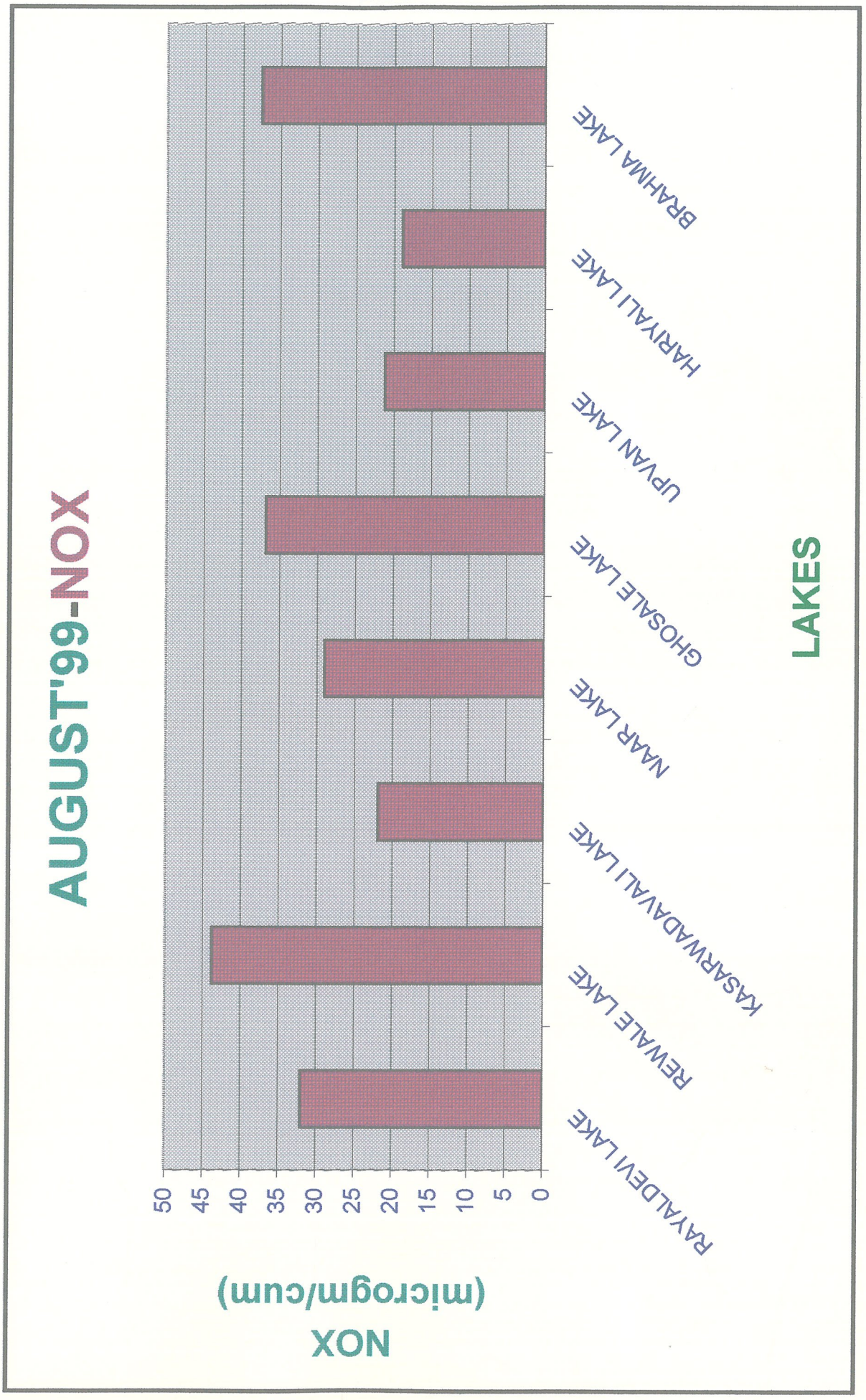

AUGUST'99-NOX
NOX
(microgm/cum)
0
5
10
15
20
25
30
35
40
45
50
RAYALDEVI LAKE
REWALE LAKE
KASARWADAVALI LAKE
NAAR LAKE
GHOSALE LAKE
UPVAN LAKE
HARIYALI LAKE
BRAHMA LAKE
LAKES

FIGURE-5

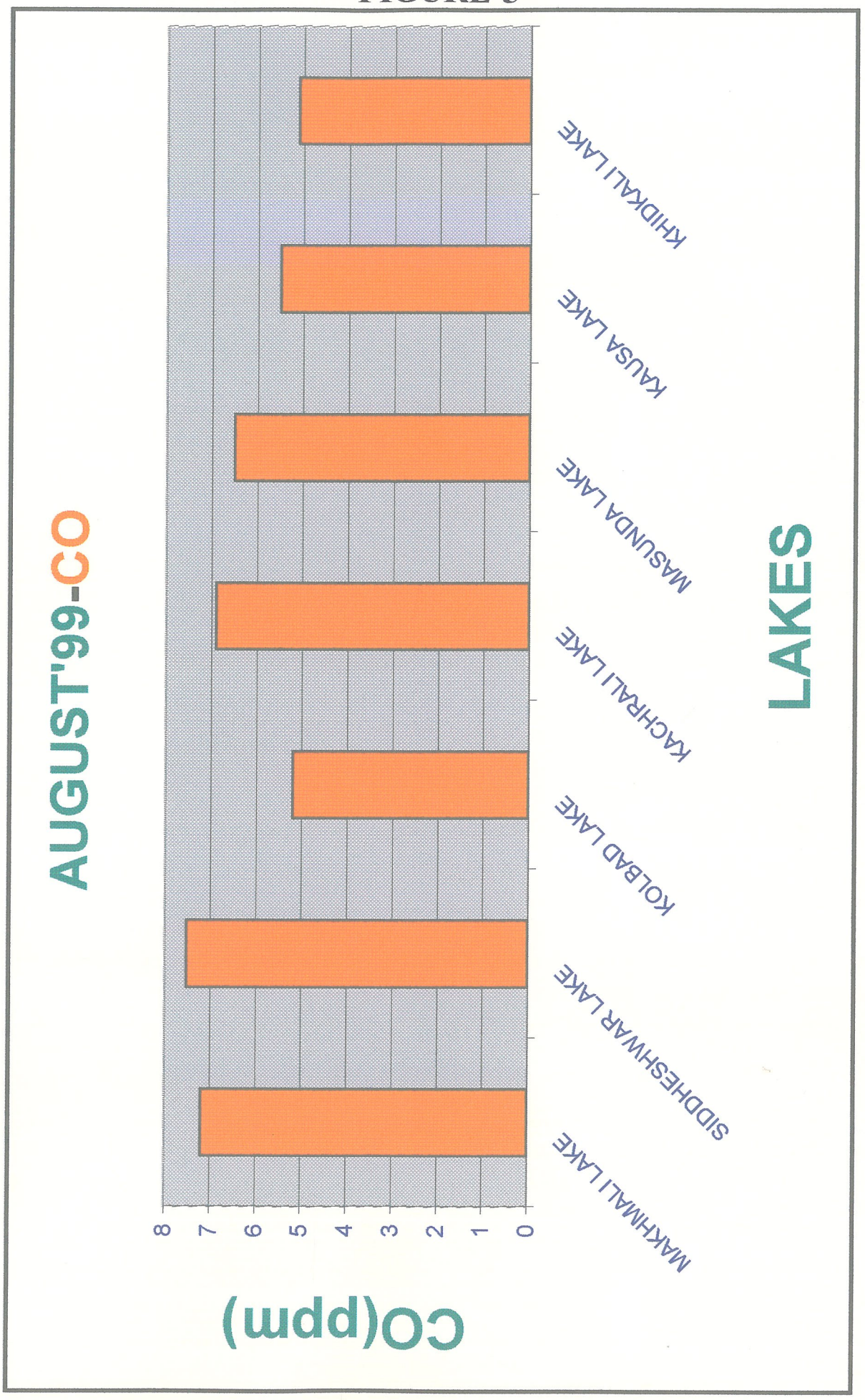

AUGUST'99-CO
LAKES
CO(ppm)
0
1
2
3
4
5
6
7
8
MAKHMALI LAKE
SIDDHESHWAR LAKE
KOLBAD LAKE
KACHRALI LAKE
MASUNDA LAKE
KAUSA LAKE
KHIDKALI LAKE

FIGURE-6

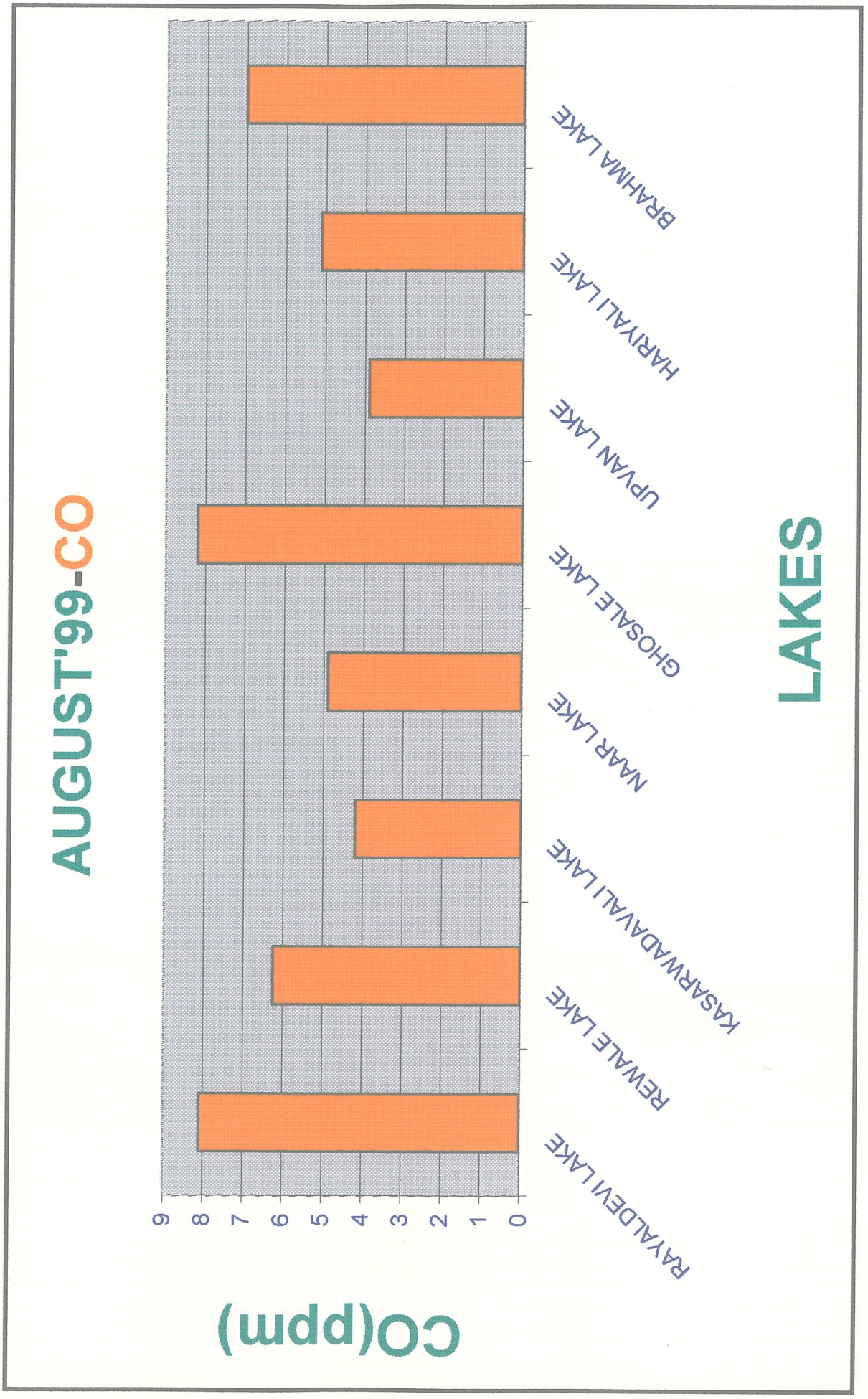

AUGUST'99-CO
LAKES
CO(ppm)
0
1
2
3
4
5
6
7
8
9
RAVALDEVI LAKE
REWALE LAKE
KASARWADAVALI LAKE
NAAR LAKE
GHOSALE LAKE
UPVAN LAKE
HARIYALI LAKE
BRAHMA LAKE

FIGURE-7

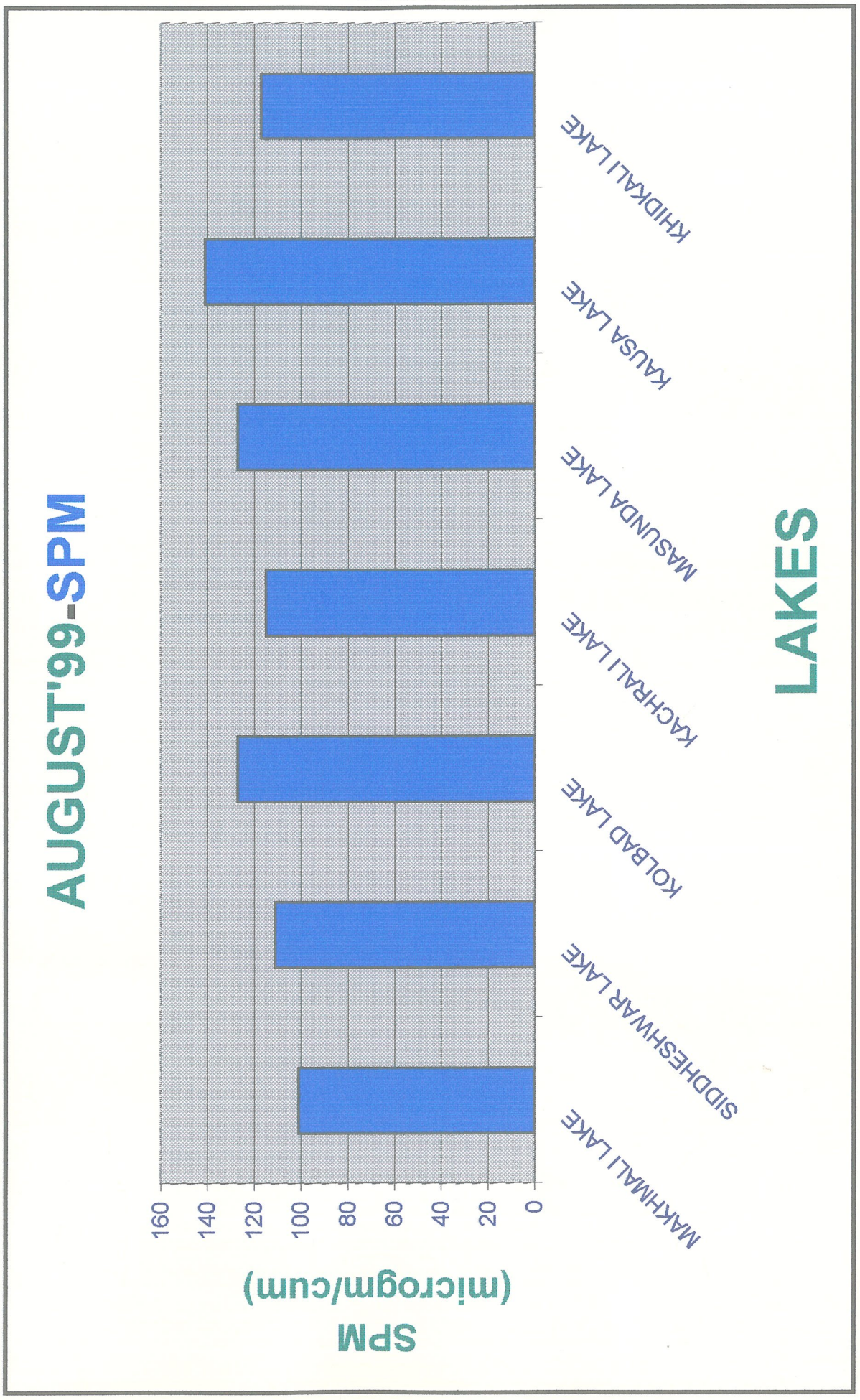

AUGUST'99-SPM
LAKES
SPM
(microgm/cum)
160
140
120
100
80
60
40
20
0
MAKHMALI LAKE
SIDDHESHWAR LAKE
KOLBAD LAKE
KACHRALI LAKE
MASUNDA LAKE
KAUSA LAKE
KHIDKALI LAKE

FIGURE-8

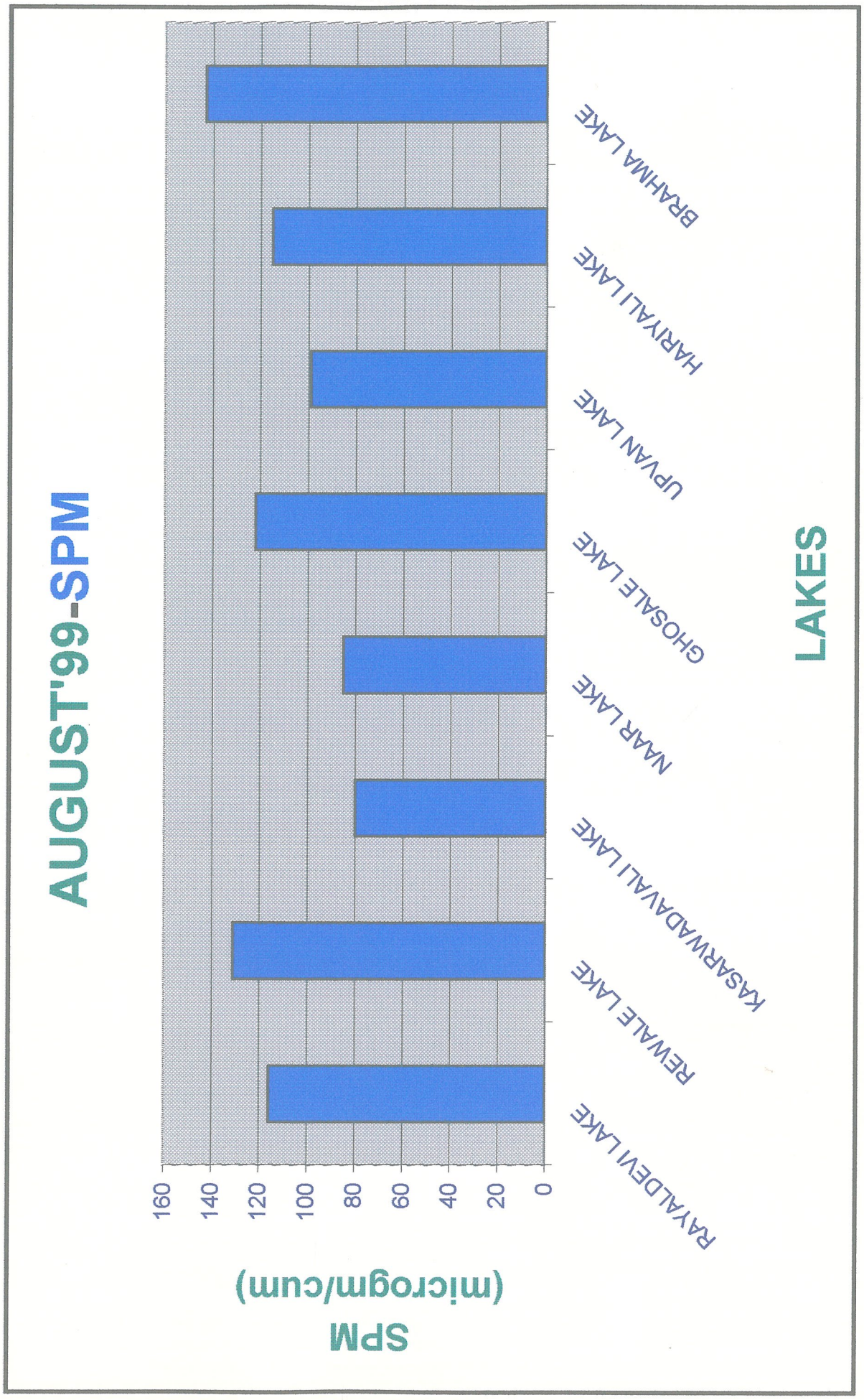

AUGUST'99-SPM
SPM
(microgm/cum)
160
140
120
100
80
60
40
20
0
RAYALDEVI LAKE
REWALE LAKE
KASARWADAVALI LAKE
NAAR LAKE
GHOSALE LAKE
UPVAN LAKE
HARIYALI LAKE
BRAHMA LAKE
LAKES

FIGURE-9

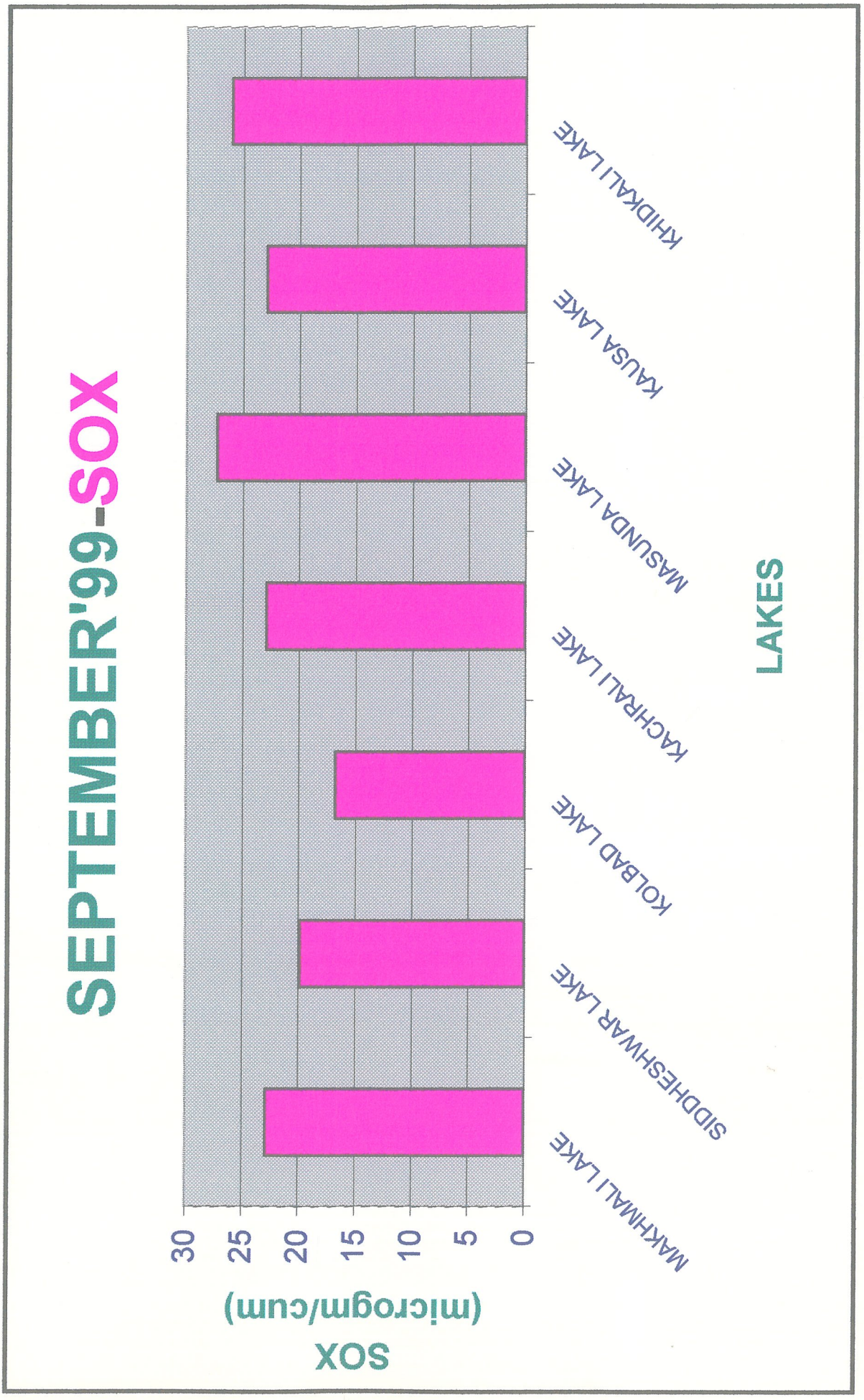
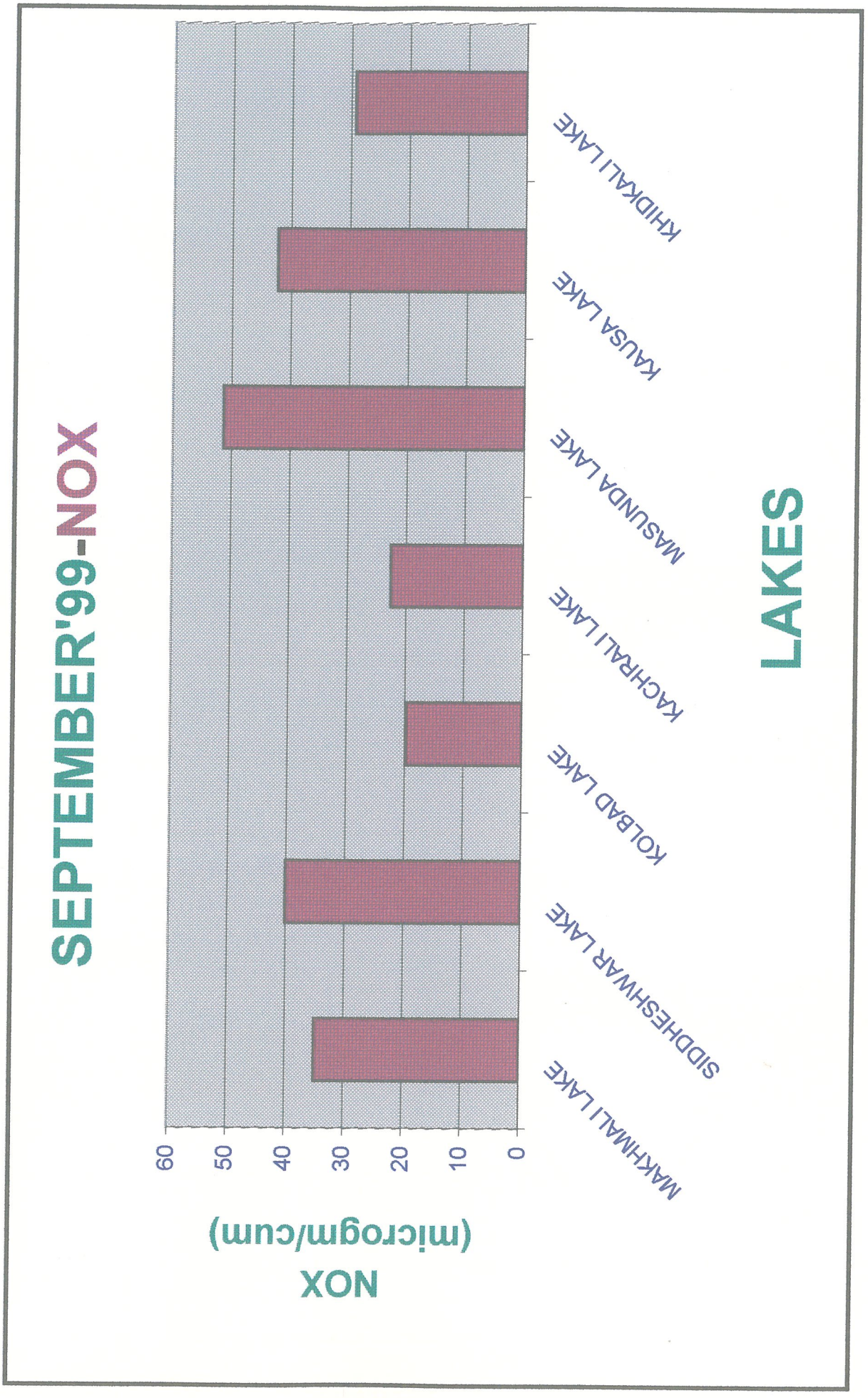

SEPTEMBER'99-SOX
SOX
(microgm/cum)
30
25
20
15
10
5
0
LAKES
MAKHMALI LAKE
SIDDHESHWAR LAKE
KOLBAD LAKE
KACHRALI LAKE
MASUNDA LAKE
KAUSA LAKE
KHIDKALI LAKE

FIGURE-10


SEPTEMBER'99-SOX
SOX
(microgm/cum)
0
5
10
15
20
25
30
LAKES
RAYALDEVI LAKE
REWALE LAKE
KASARWADAVALI LAKE
NAAR LAKE
GHOSALE LAKE
UPVAN LAKE
HARIYALI LAKE
BRAHMA LAKE

FIGURE-11


SEPTEMBER'99-NOX
LAKES
NOX
(microgm/cum)
0
10
20
30
40
50
60
MAKHMALI LAKE
SIDDHESHWAR LAKE
KOLBAD LAKE
KACHRALI LAKE
MASUNDA LAKE
KAUSA LAKE
KHIDKALI LAKE

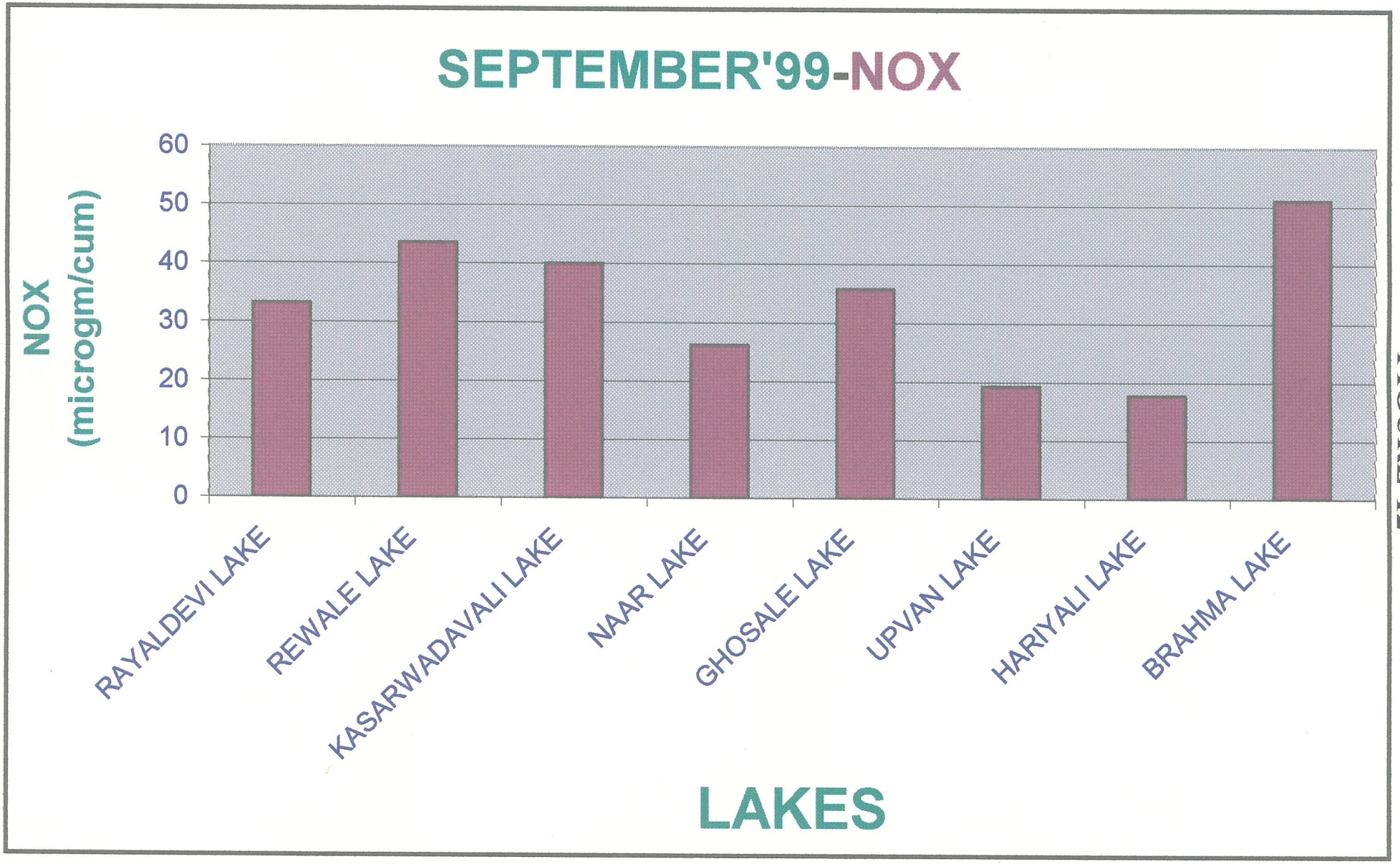

SEPTEMBER'99-NOX
NOX (microgm/cum)
60
50
40
30
20
10
0
RAYALDEVI LAKE
REWALE LAKE
KASARWADAVALI LAKE
NAAR LAKE
GHOSALE LAKE
UPVAN LAKE
HARIYALI LAKE
BRAHMA LAKE
LAKES

FIGURE-12

FIGURE-13

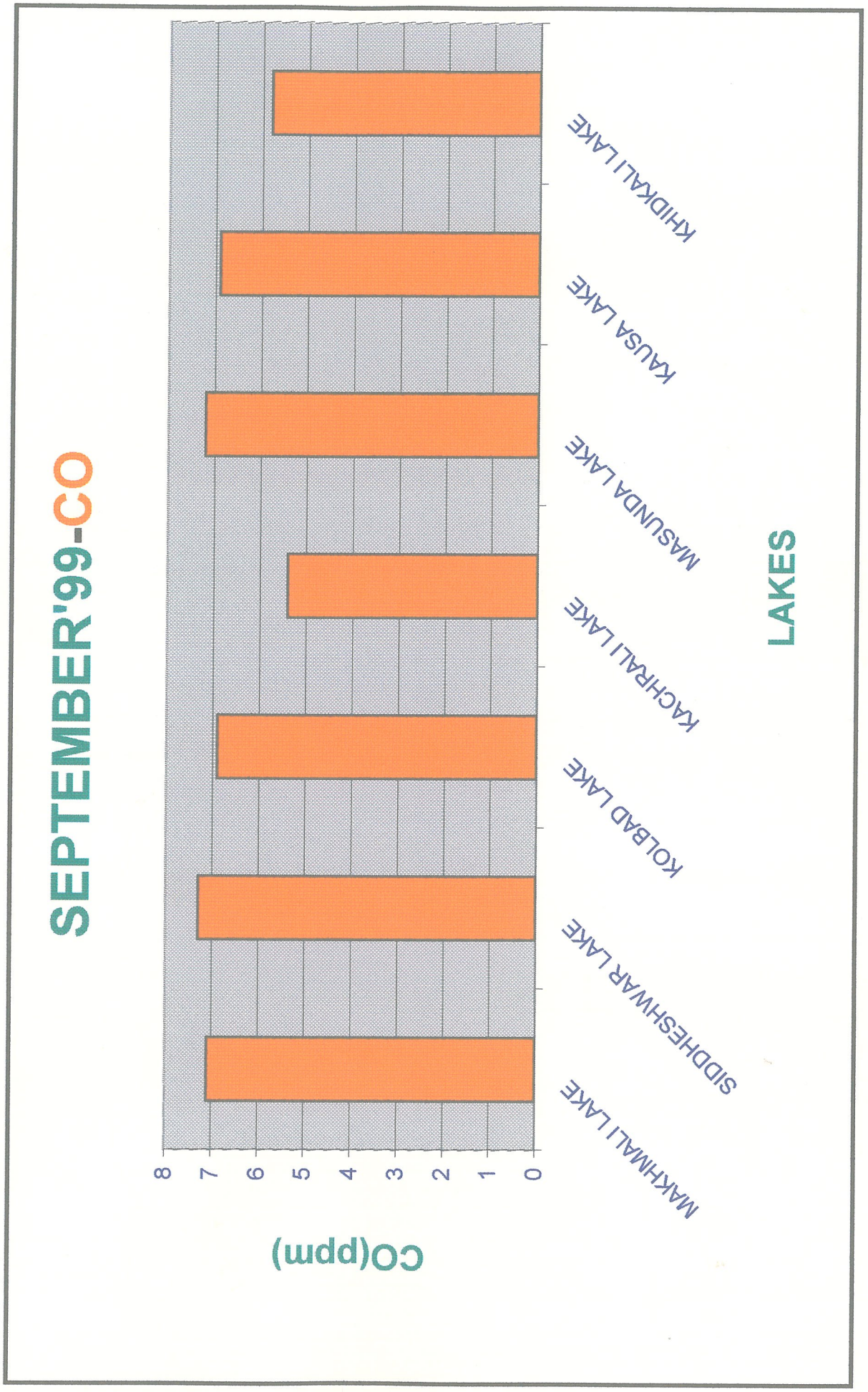

SEPTEMBER'99-CO
LAKES
MAKHMALI LAKE
SIDDHESHWAR LAKE
KOLBAD LAKE
KACHRALI LAKE
MASUNDA LAKE
KAUSA LAKE
KHIDKALI LAKE
CO(ppm)
0
1
2
3
4
5
6
7
8

FIGURE-14

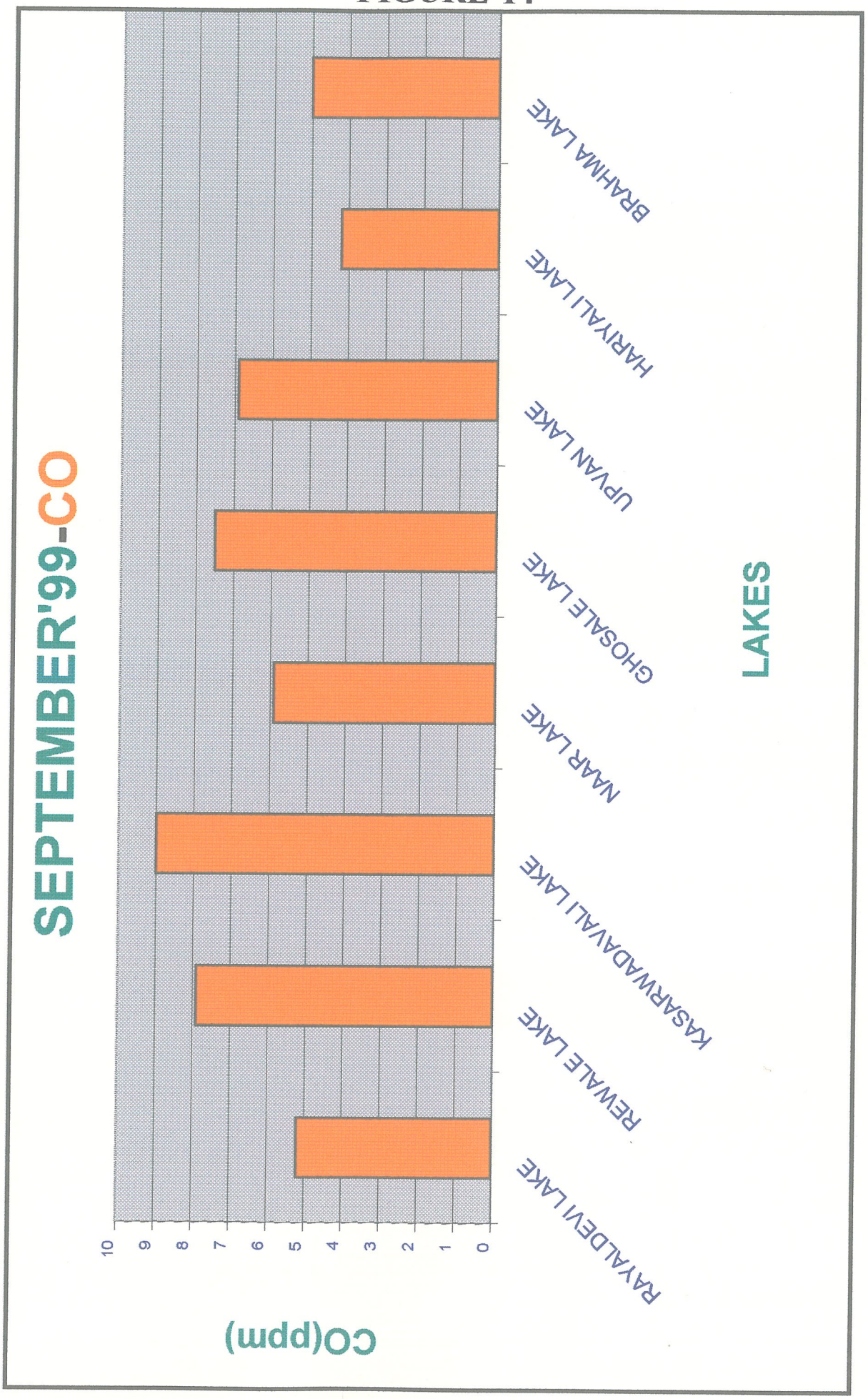

SEPTEMBER'99-CO
CO(ppm)
0
1
2
3
4
5
6
7
8
9
10
LAKES
BRAHMA LAKE
HARIYALI LAKE
UPVAN LAKE
GHOSALE LAKE
NAAR LAKE
KASARWADAVALI LAKE
REWALE LAKE
RAYALDEVI LAKE

FIGURE-15

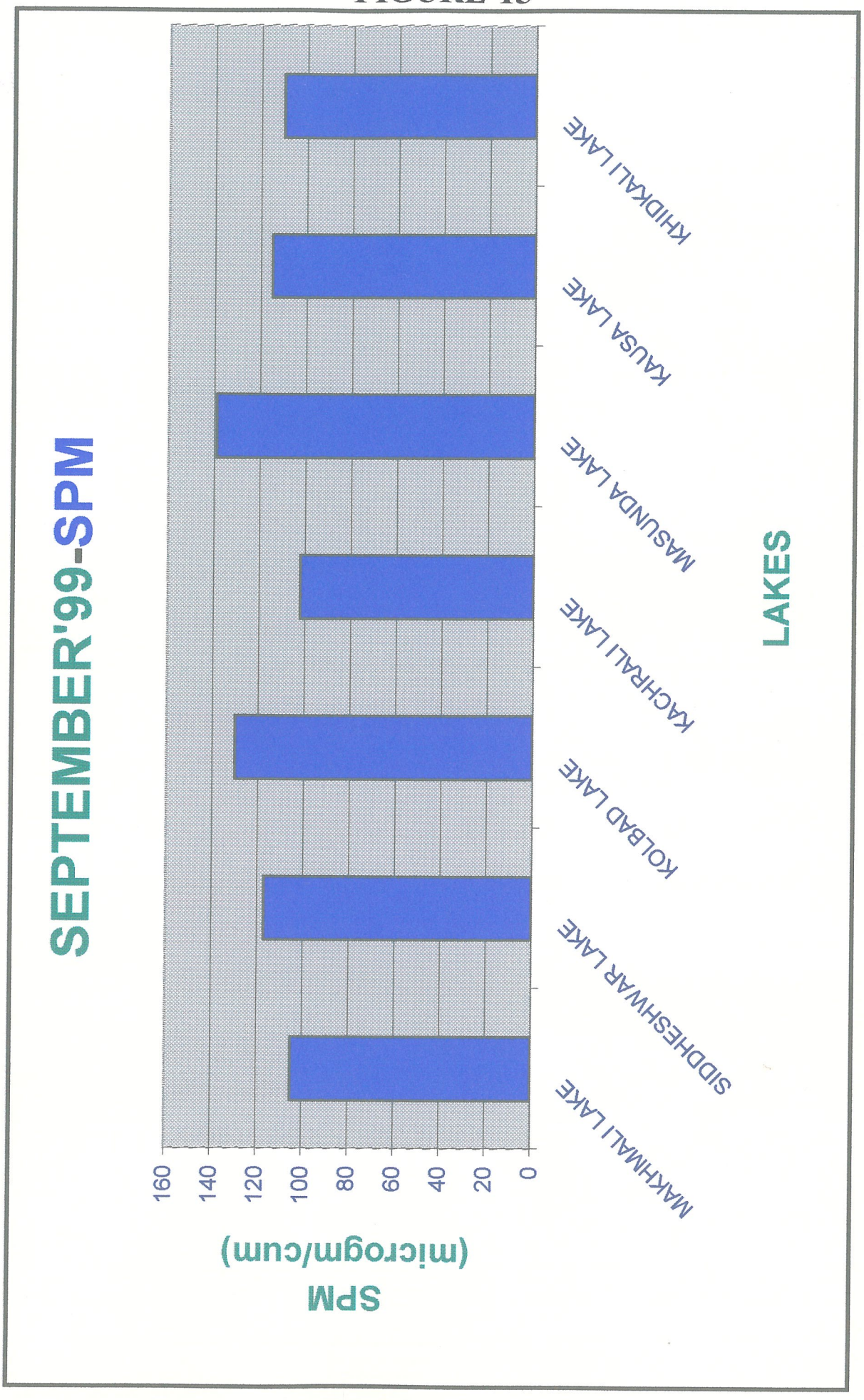

SEPTEMBER'99-SPM
LAKES
MAKHMALI LAKE
SIDDHESHWAR LAKE
KOLBAD LAKE
KACHRALI LAKE
MASUNDA LAKE
KAUSA LAKE
KHIDKALI LAKE
SPM
(microgm/cum)
0
20
40
60
80
100
120
140
160

FIGURE-16

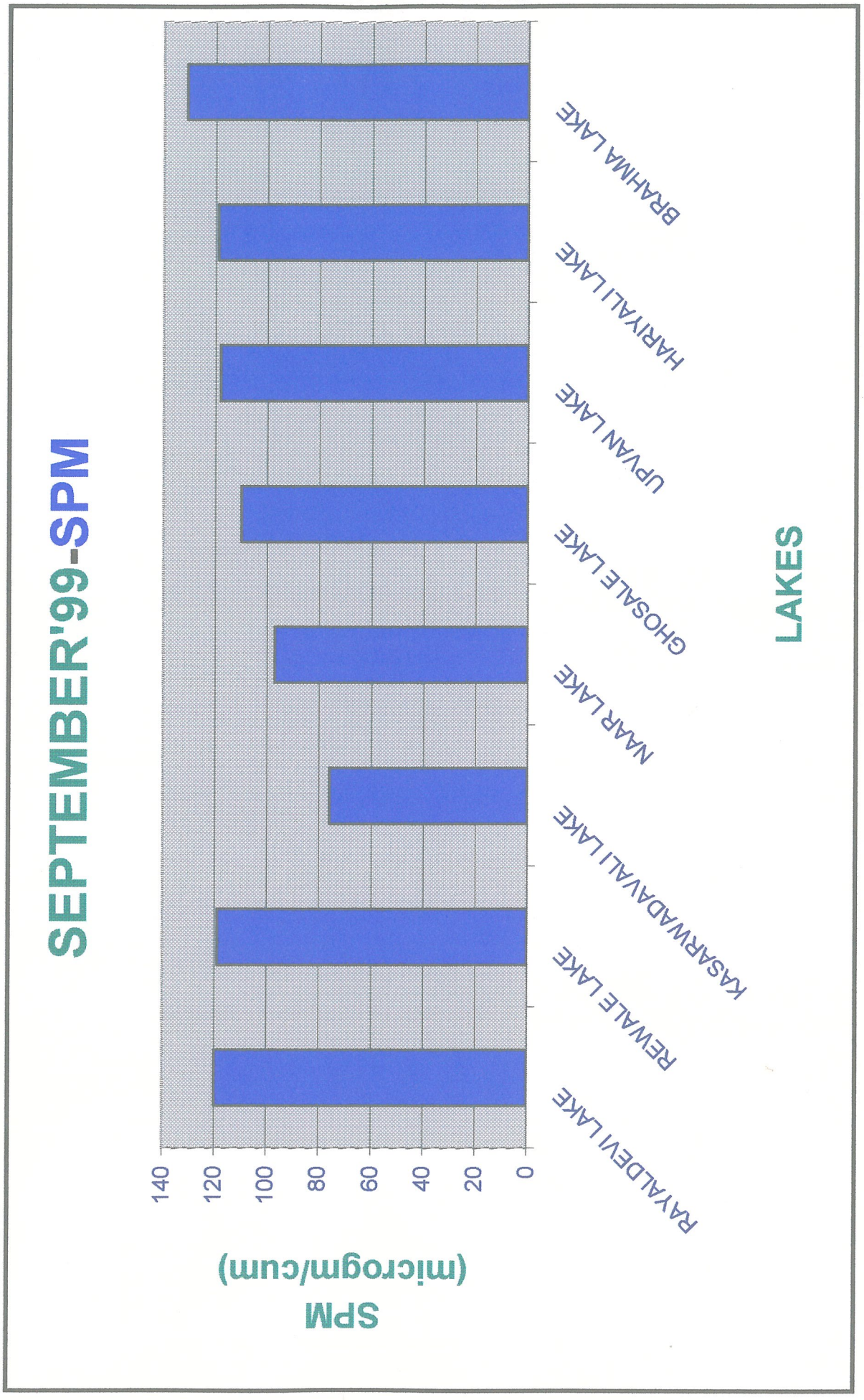

SEPTEMBER'99-SPM
SPM
(microgm/cum)
140
120
100
80
60
40
20
0
RAVALDEVI LAKE
REWALE LAKE
KASARWADAVALI LAKE
NAAR LAKE
GHOSALE LAKE
UPVAN LAKE
HARIYALI LAKE
BRAHMA LAKE
LAKES

FIGURE-17

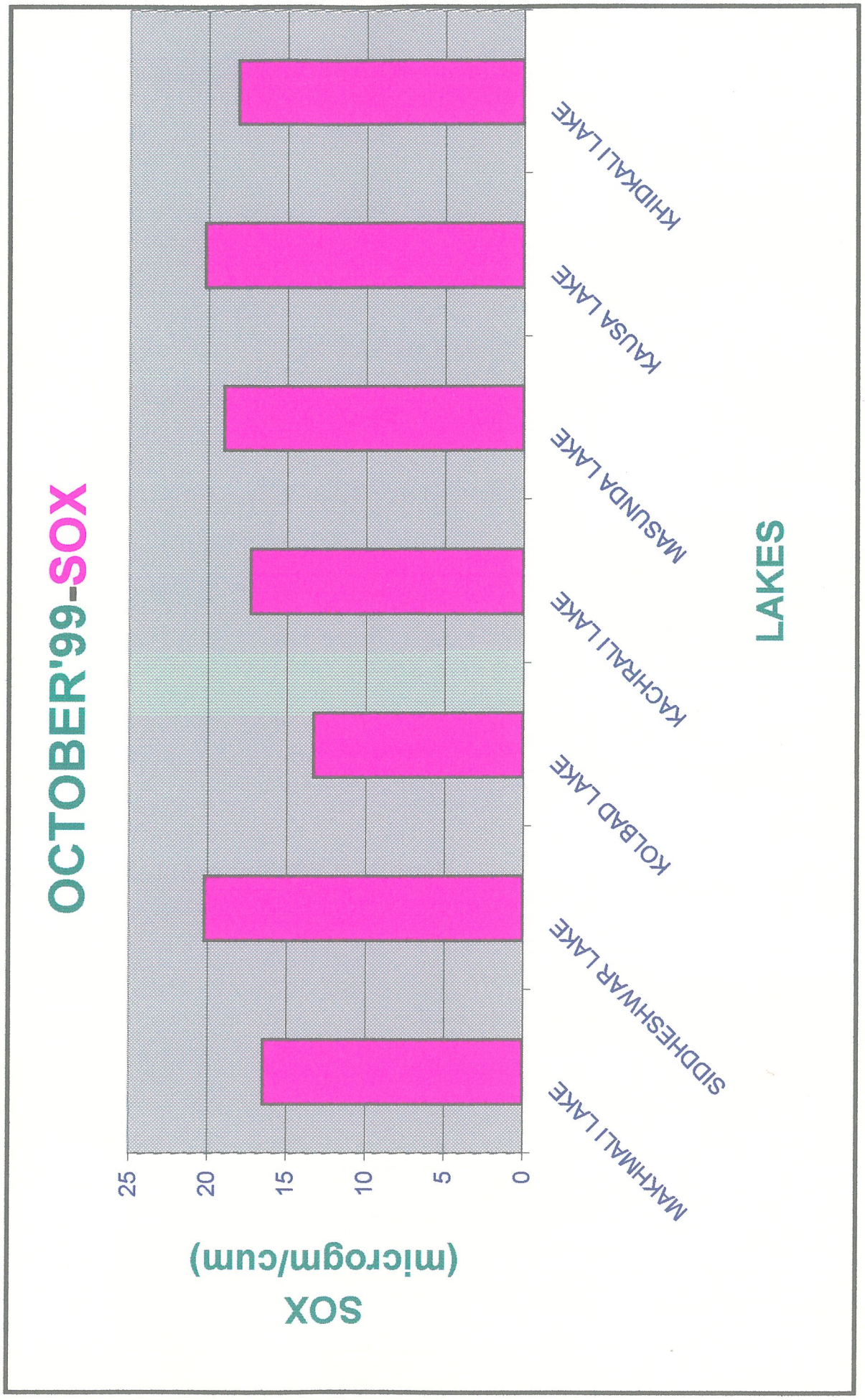

OCTOBER'99-SOX
SOX
(microgm/cum)
25
20
15
10
5
0
LAKES
MAKHMALI LAKE
SIDDHESHWAR LAKE
KOLBAD LAKE
KACHRALI LAKE
MASUNDA LAKE
KAUSA LAKE
KHIDKALI LAKE

FIGURE-18


OCTOBER'99-SOX
SOX
(microgm/cum)
0
5
10
15
20
25
LAKES
RAYALDEVI LAKE
REWALE LAKE
KASARWADAVALI LAKE
NAAR LAKE
GHOSALE LAKE
UPVAN LAKE
HARIYALI LAKE
BRAHMA LAKE

FIGURE-19

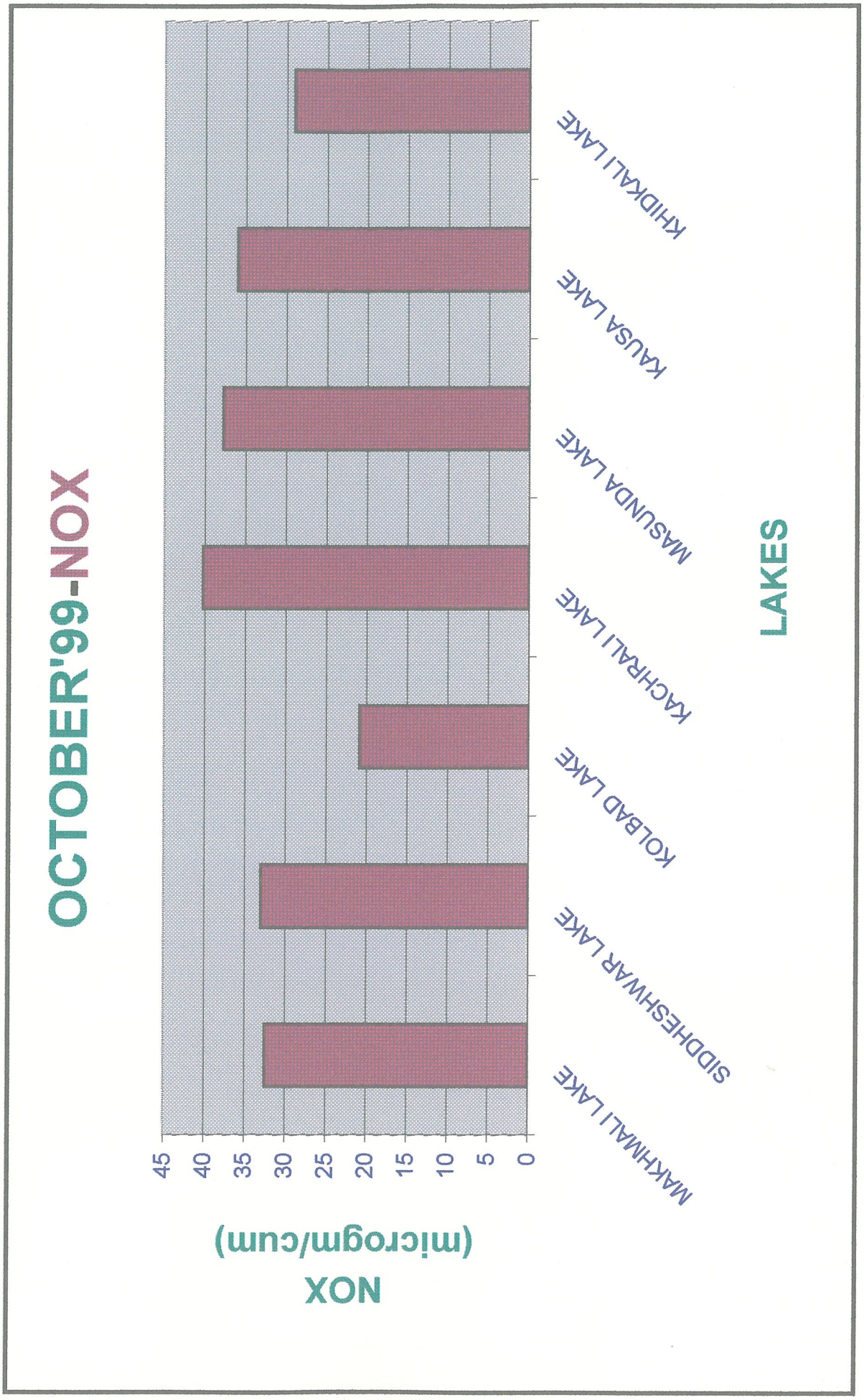

OCTOBER'99-NOX
NOX
(microgm/cum)
45
40
35
30
25
20
15
10
5
0
MAKHMALI LAKE
SIDDHESHWAR LAKE
KOLBAD LAKE
KACHRALI LAKE
MASUNDA LAKE
KAUSA LAKE
KHIDKALI LAKE
LAKES

FIGURE-20

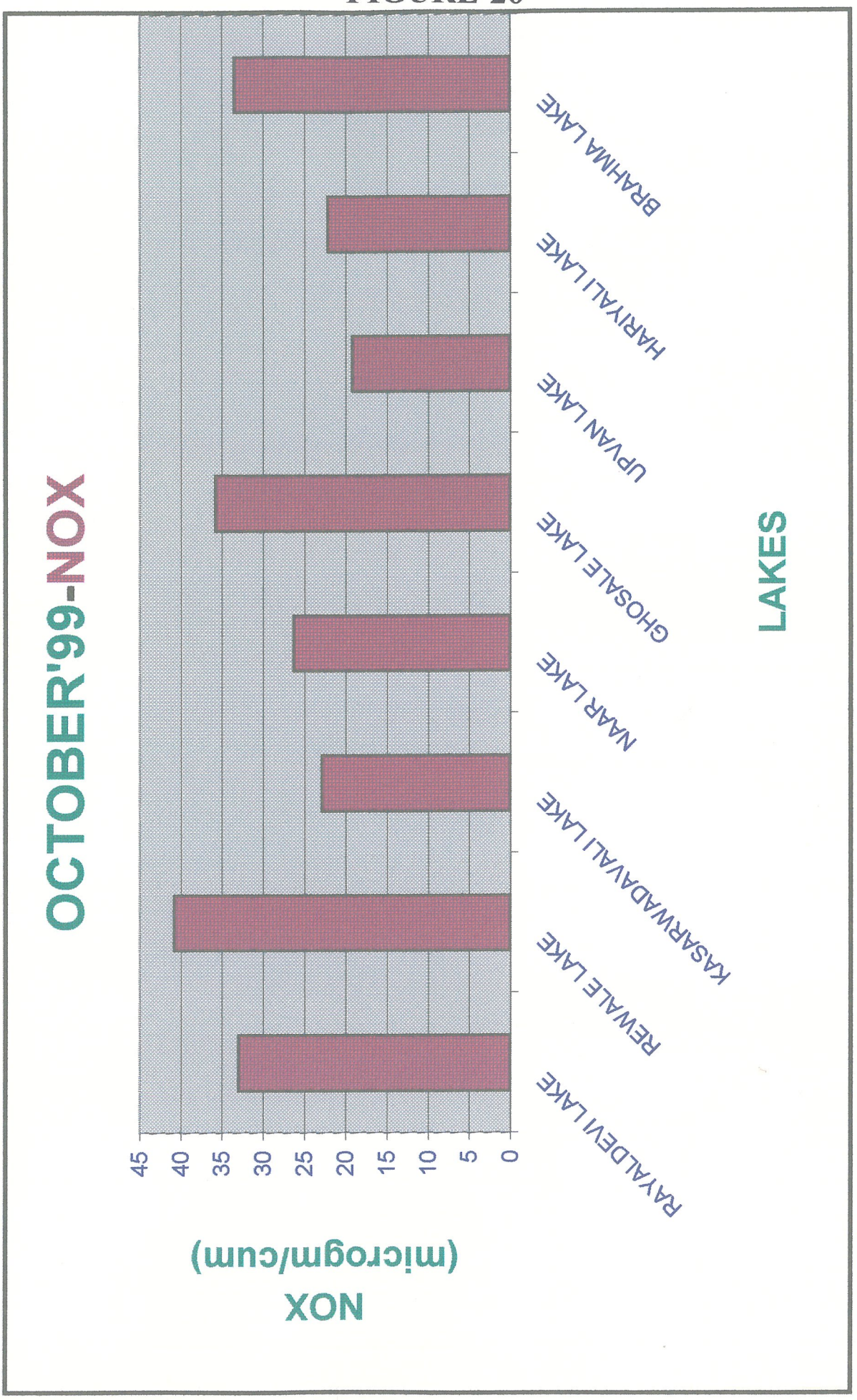

OCTOBER'99-NOX
NOX
(microgm/cum)
0
5
10
15
20
25
30
35
40
45
RAYALDEVI LAKE
REWALE LAKE
KASARWADAVALI LAKE
NAAR LAKE
GHOSALE LAKE
UPVAN LAKE
HARIYALI LAKE
BRAHMA LAKE
LAKES

FIGURE-21

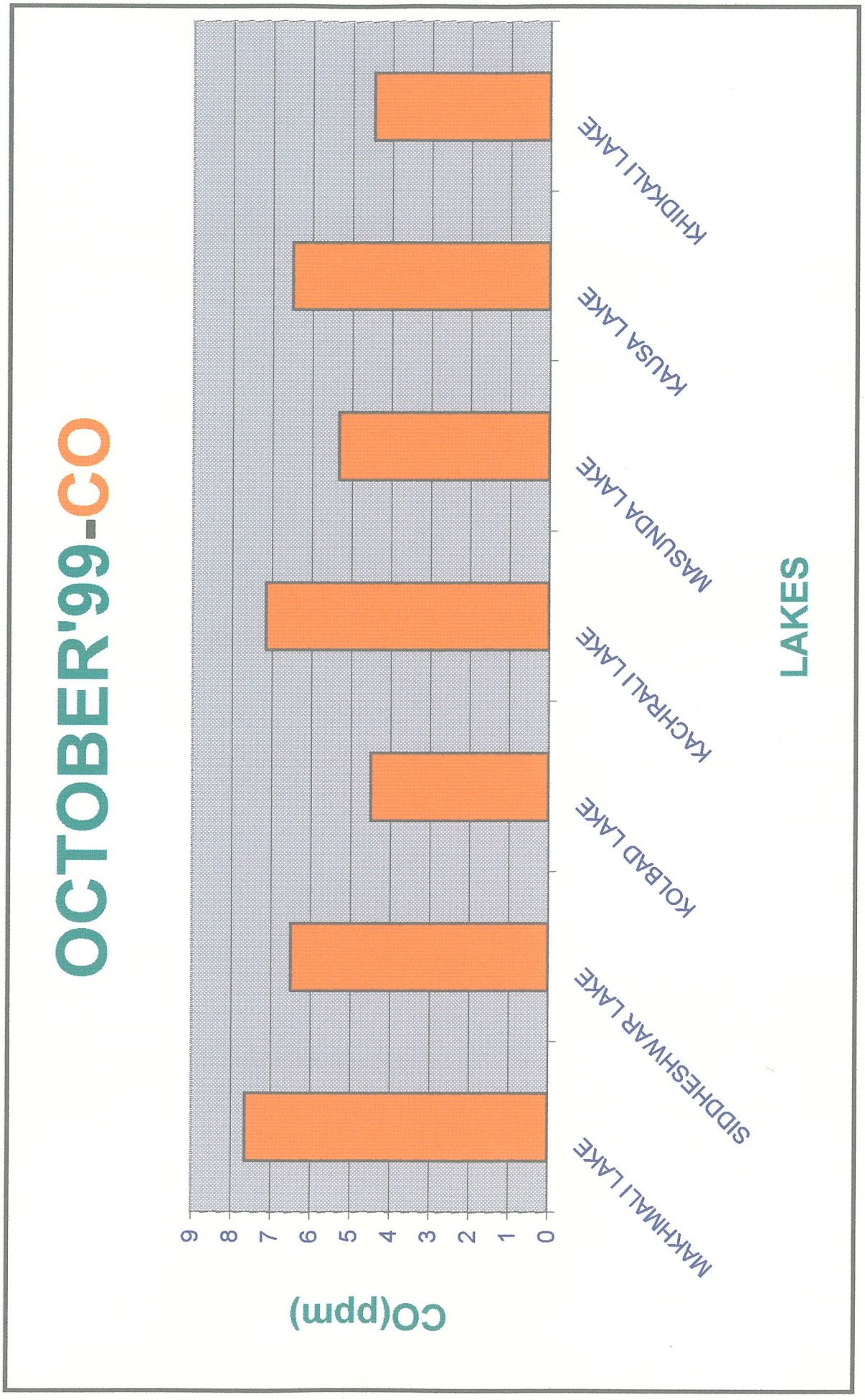

OCTOBER'99-CO
CO(ppm)
0
1
2
3
4
5
6
7
8
9
MAKHMALI LAKE
SIDDHESHWAR LAKE
KOLBAD LAKE
KACHRALI LAKE
MASUNDA LAKE
KAUSA LAKE
KHIDKALI LAKE
LAKES

FIGURE-22

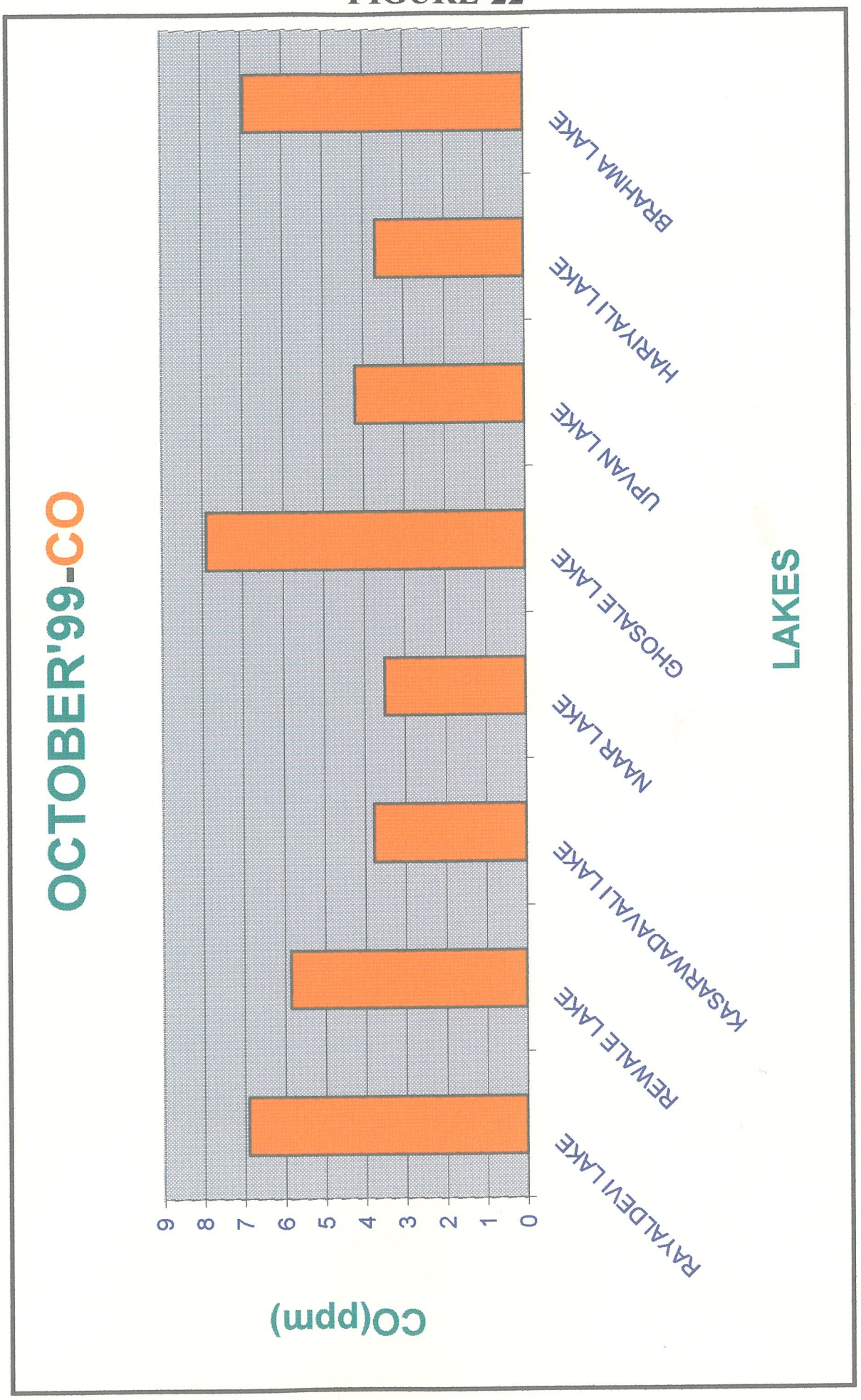

OCTOBER'99-CO
CO(ppm)
0
1
2
3
4
5
6
7
8
9
RAYALDEVI LAKE
REWALE LAKE
KASARWADAVALI LAKE
NAAR LAKE
GHOSALE LAKE
UPVAN LAKE
HARIYALI LAKE
BRAHMA LAKE
LAKES

FIGURE-23

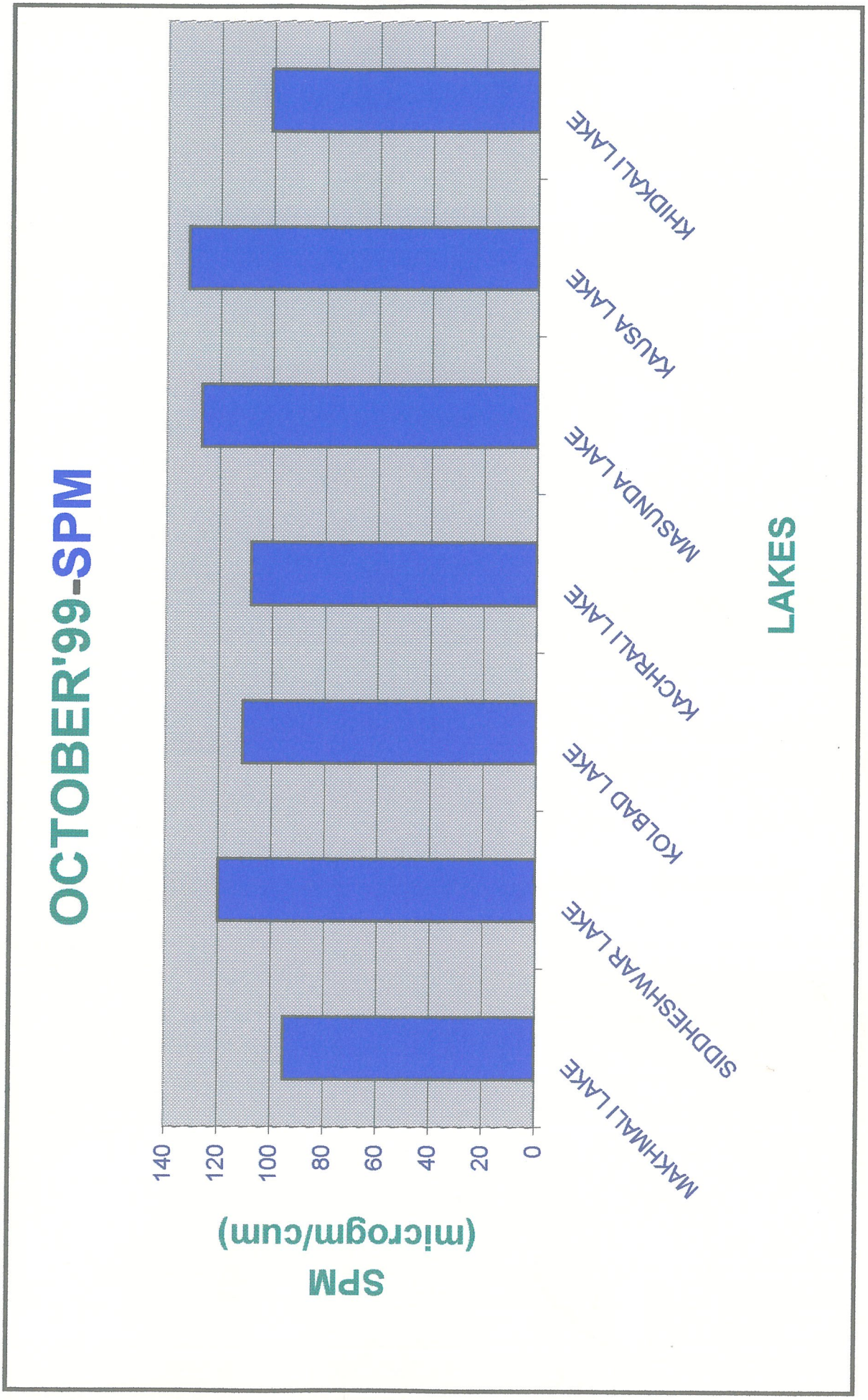
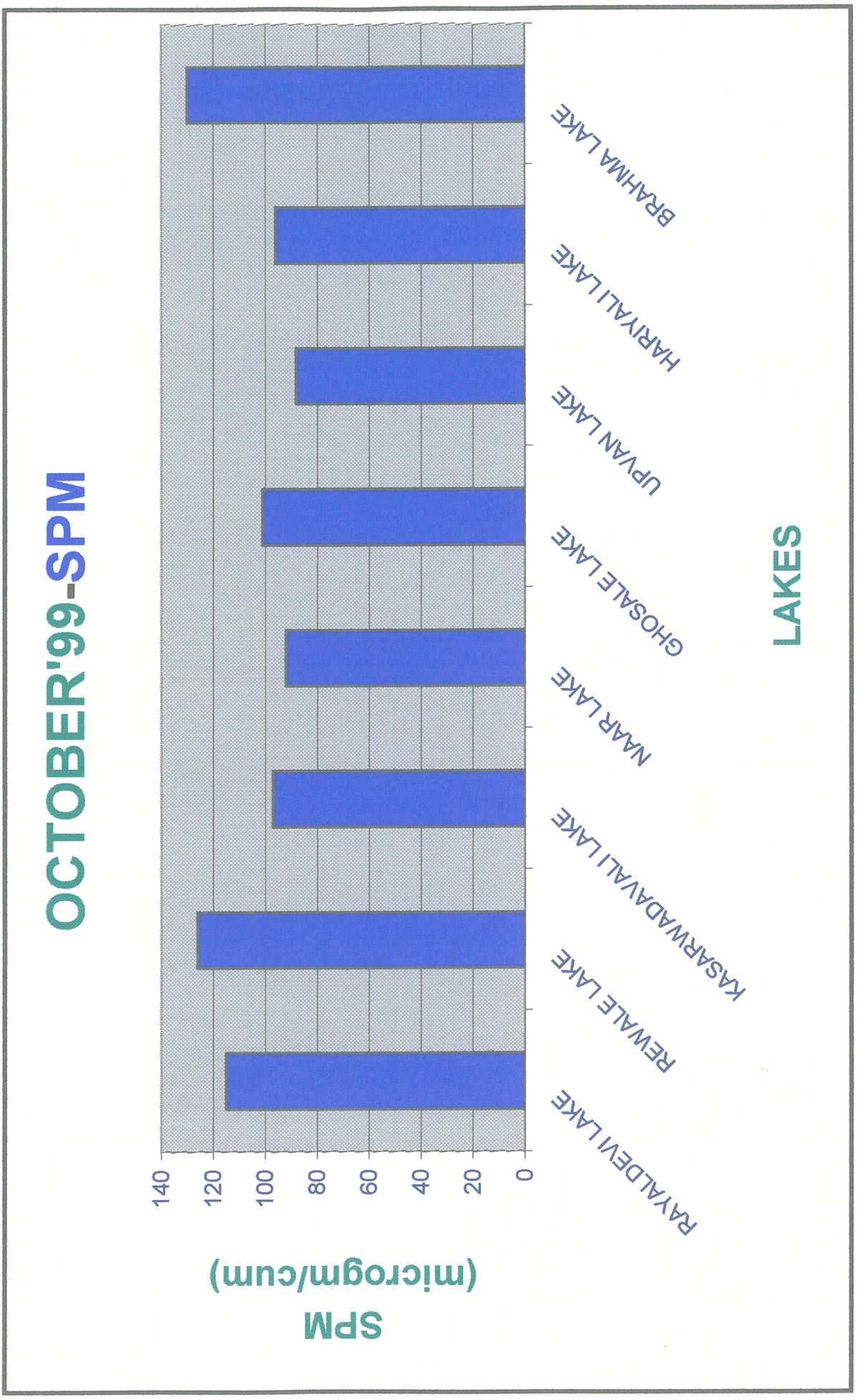

OCTOBER'99-SPM
SPM
(microgm/cum)
140
120
100
80
60
40
20
0
MAKHMALI LAKE
SIDDHESHWAR LAKE
KOLBAD LAKE
KACHRALI LAKE
MASUNDA LAKE
KAUSA LAKE
KHIDKALI LAKE
LAKES

FIGURE-24


OCTOBER'99-SPM
SPM
(microgm/cum)
140
120
100
80
60
40
20
0
RAYALDEVI LAKE
REWALE LAKE
KASARWADAVALI LAKE
NAAR LAKE
GHOSALE LAKE
UPVAN LAKE
HARIYALI LAKE
BRAHMA LAKE
LAKES

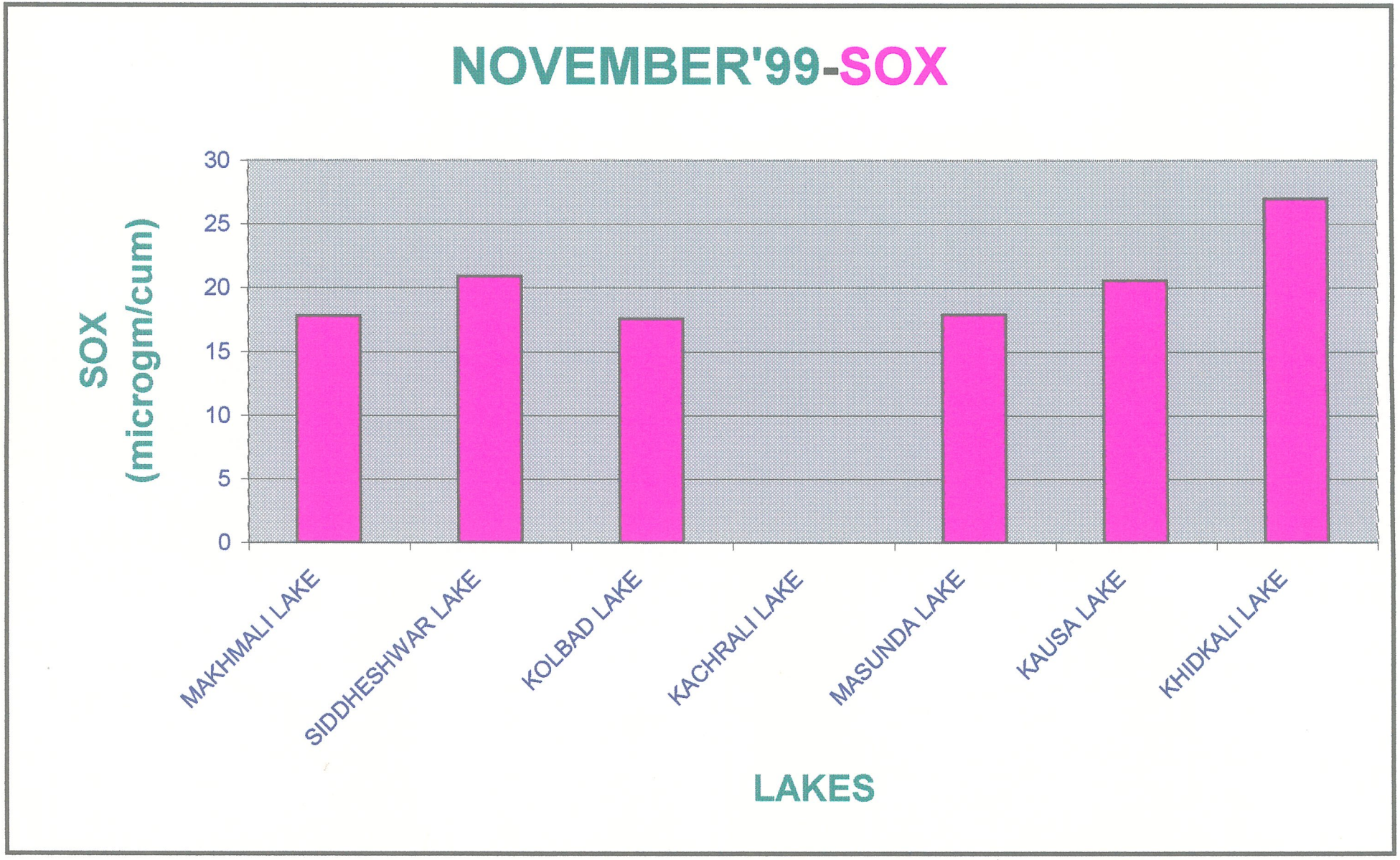

NOVEMBER'99-SOX
SOX (microgm/cum)
30
25
20
15
10
5
0
MAKHMALI LAKE
SIDDHESHWAR LAKE
KOLBAD LAKE
KACHRALI LAKE
MASUNDA LAKE
KAUSA LAKE
KHIDKALI LAKE
LAKES

FIGURE-25

FIGURE-26

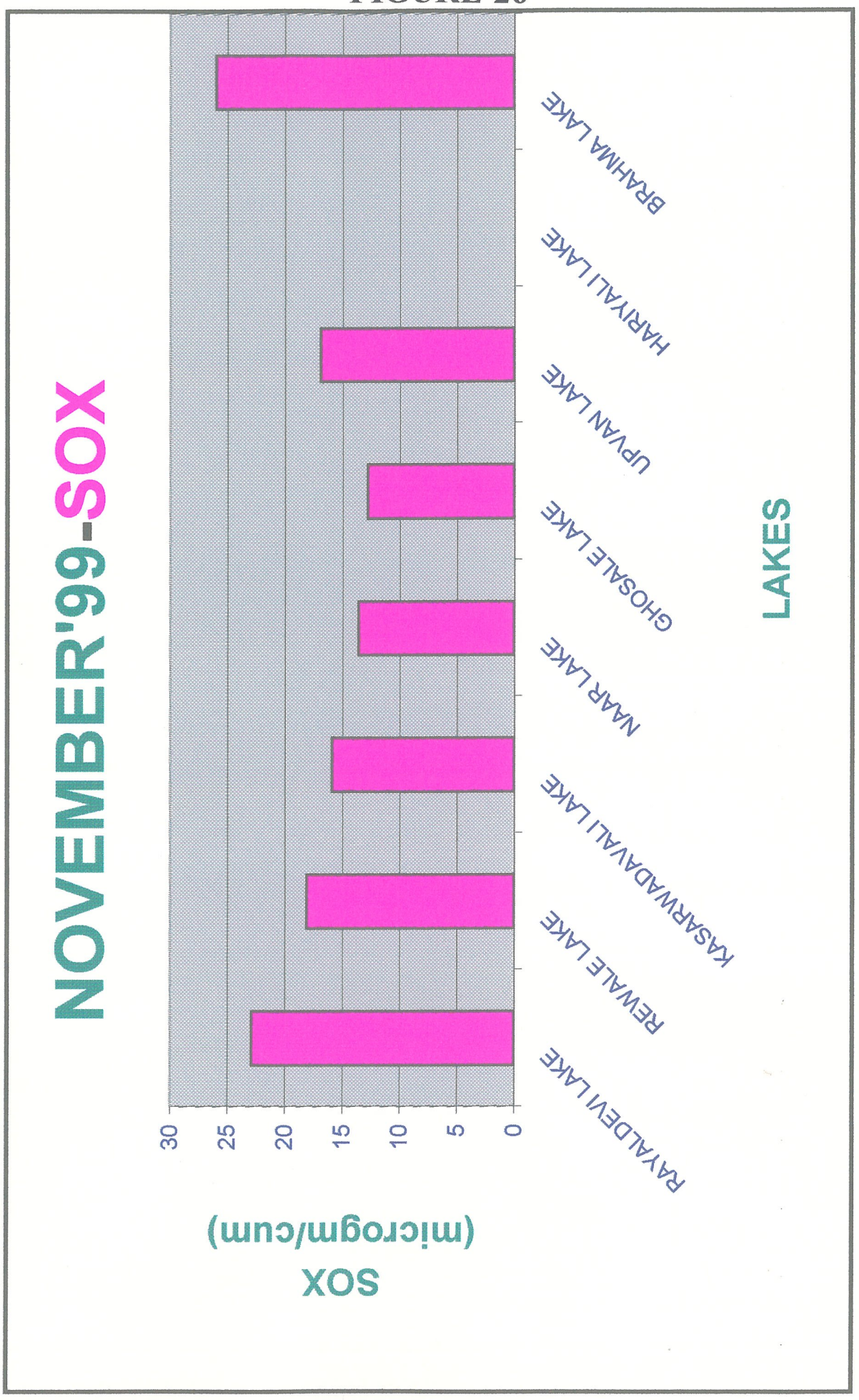
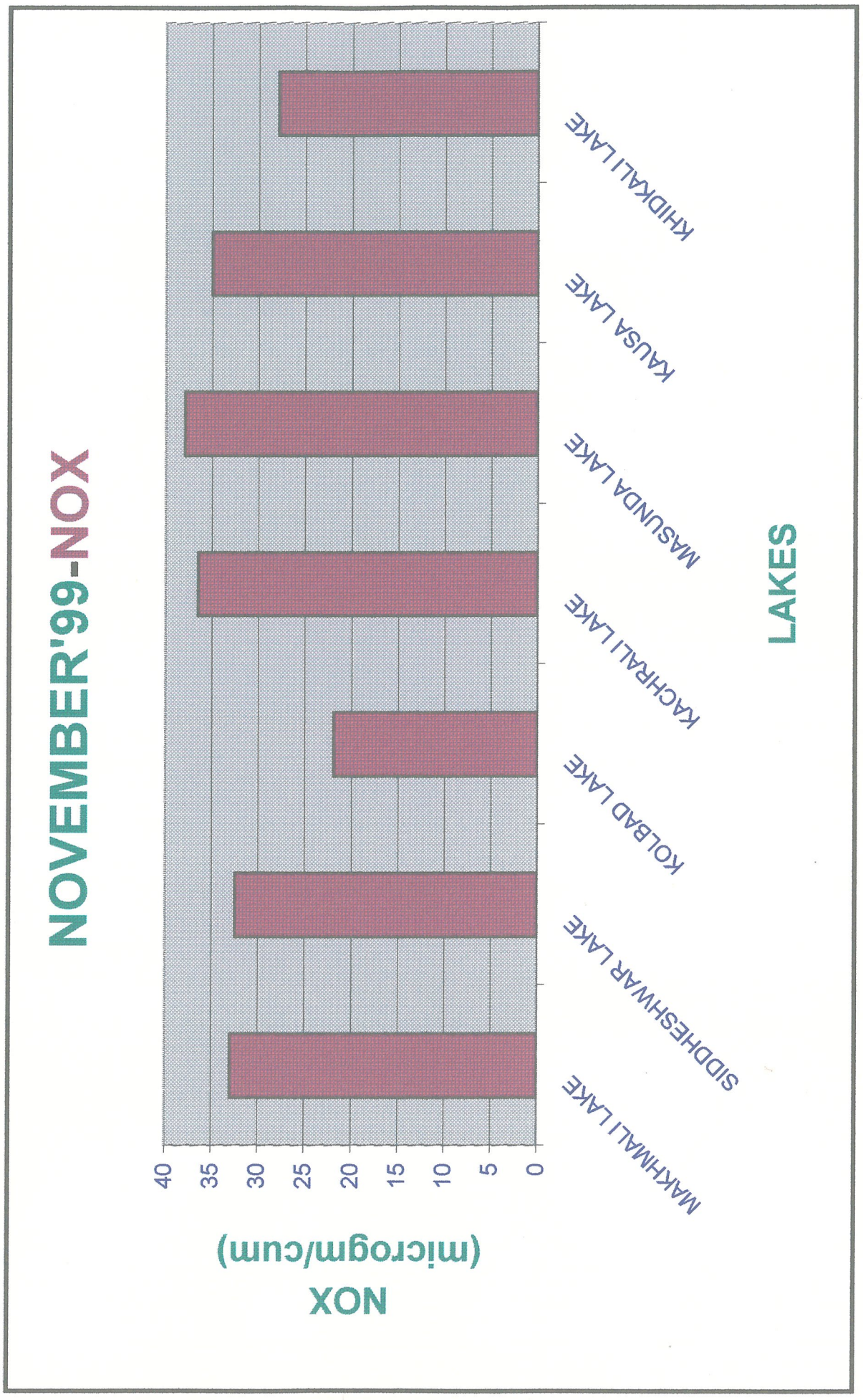

NOVEMBER'99-SOX
SOX
(microgm/cum)
30
25
20
15
10
5
0
RAYALDEVI LAKE
REWALE LAKE
KASARWADAVALI LAKE
NAAR LAKE
GHOSALE LAKE
UPVAN LAKE
HARIYALI LAKE
BRAHMA LAKE
LAKES

FIGURE-27


NOVEMBER'99-NOX
LAKES
MAKHMALI LAKE
SIDDHESHWAR LAKE
KOLBAD LAKE
KACHRALI LAKE
MASUNDA LAKE
KAUSA LAKE
KHIDKALI LAKE
0
5
10
15
20
25
30
35
40
NOX
(microgm/cum)

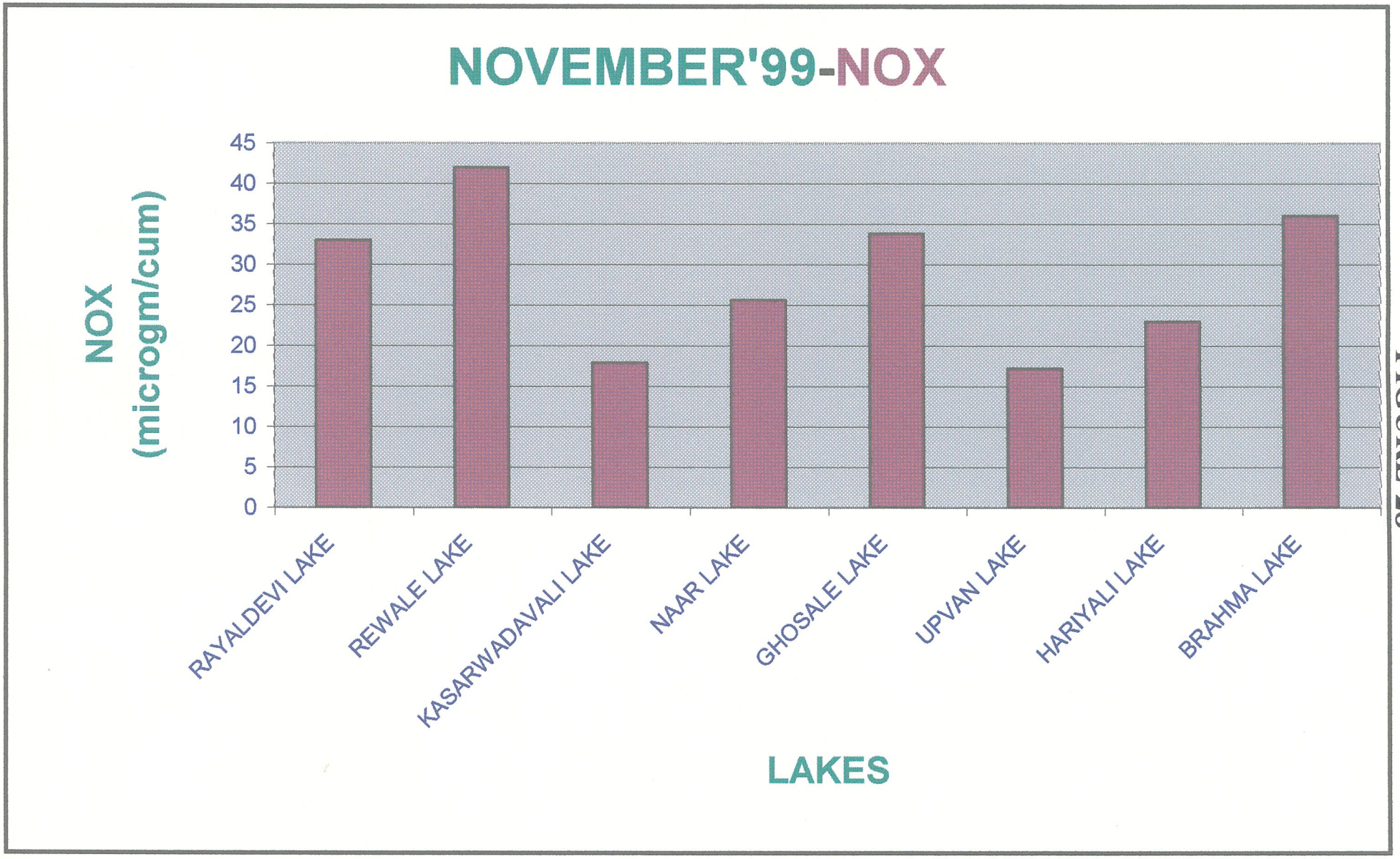

NOVEMBER'99-NOX
NOX (microgm/cum)
45
40
35
30
25
20
15
10
5
0
RAYALDEVI LAKE
REWALE LAKE
KASARWADAVALI LAKE
NAAR LAKE
GHOSALE LAKE
UPVAN LAKE
HARIYALI LAKE
BRAHMA LAKE
LAKES

FIGURE-28

FIGURE-29

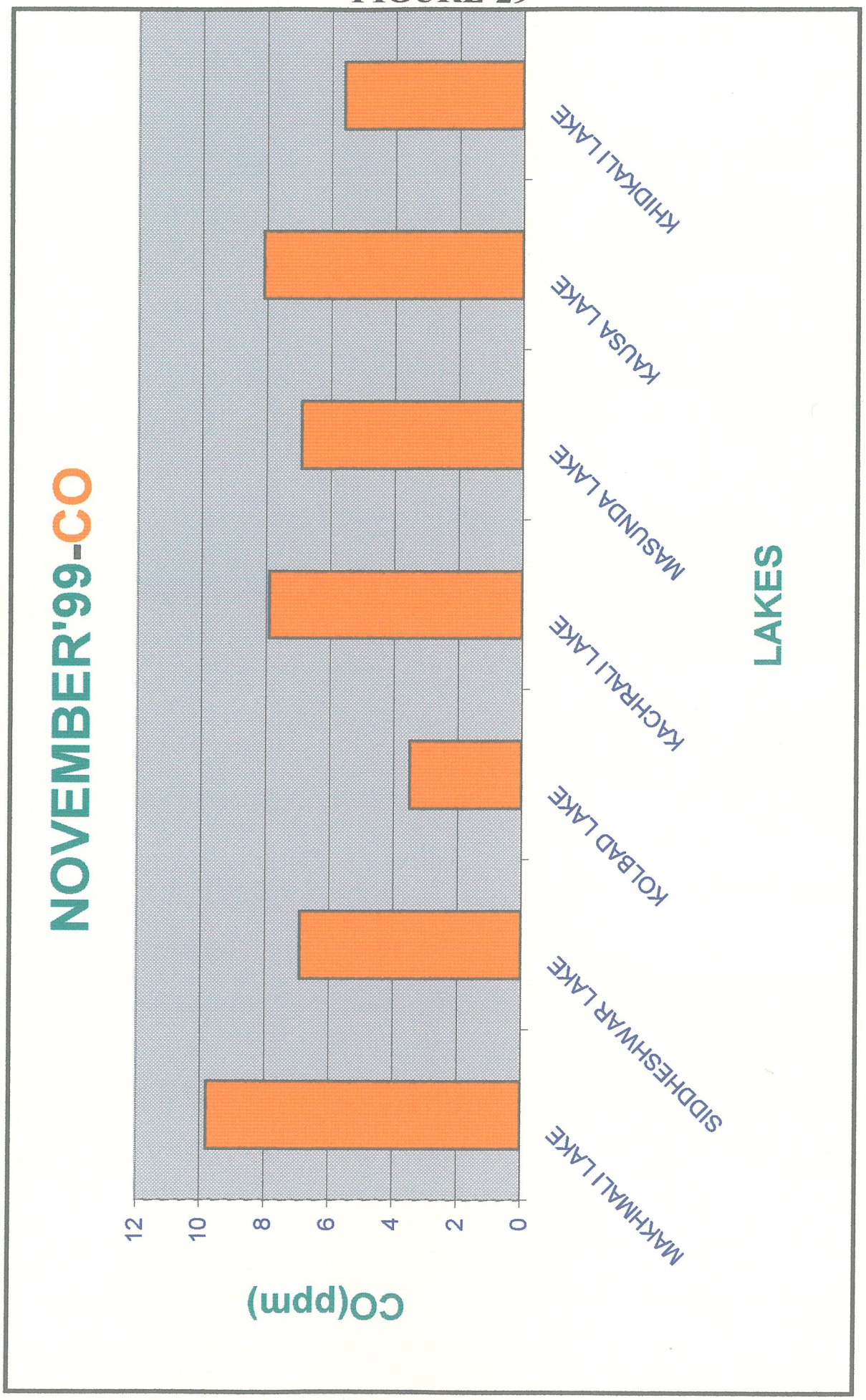

NOVEMBER'99-CO
LAKES
CO(ppm)
0
2
4
6
8
10
12
MAKHMALI LAKE
SIDDHESHWAR LAKE
KOLBAD LAKE
KACHRALI LAKE
MASUNDA LAKE
KAUSA LAKE
KHIDKALI LAKE

FIGURE-30

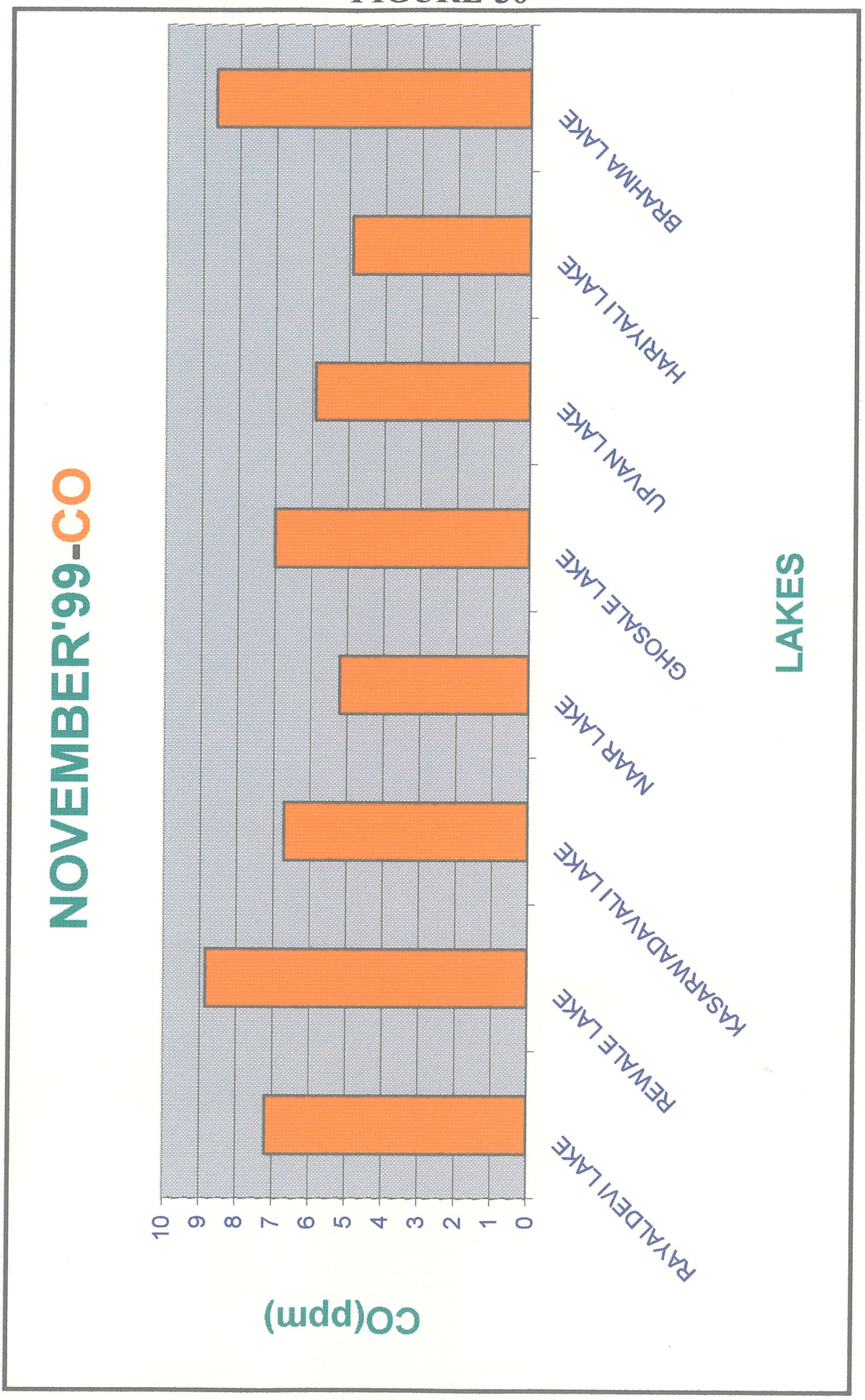

NOVEMBER'99-CO
CO(ppm)
10
9
8
7
6
5
4
3
2
1
0
RAYALDEVI LAKE
REWALE LAKE
KASARWADAVALI LAKE
NAAR LAKE
GHOSALE LAKE
UPVAN LAKE
HARIYALI LAKE
BRAHMA LAKE
LAKES

FIGURE-31

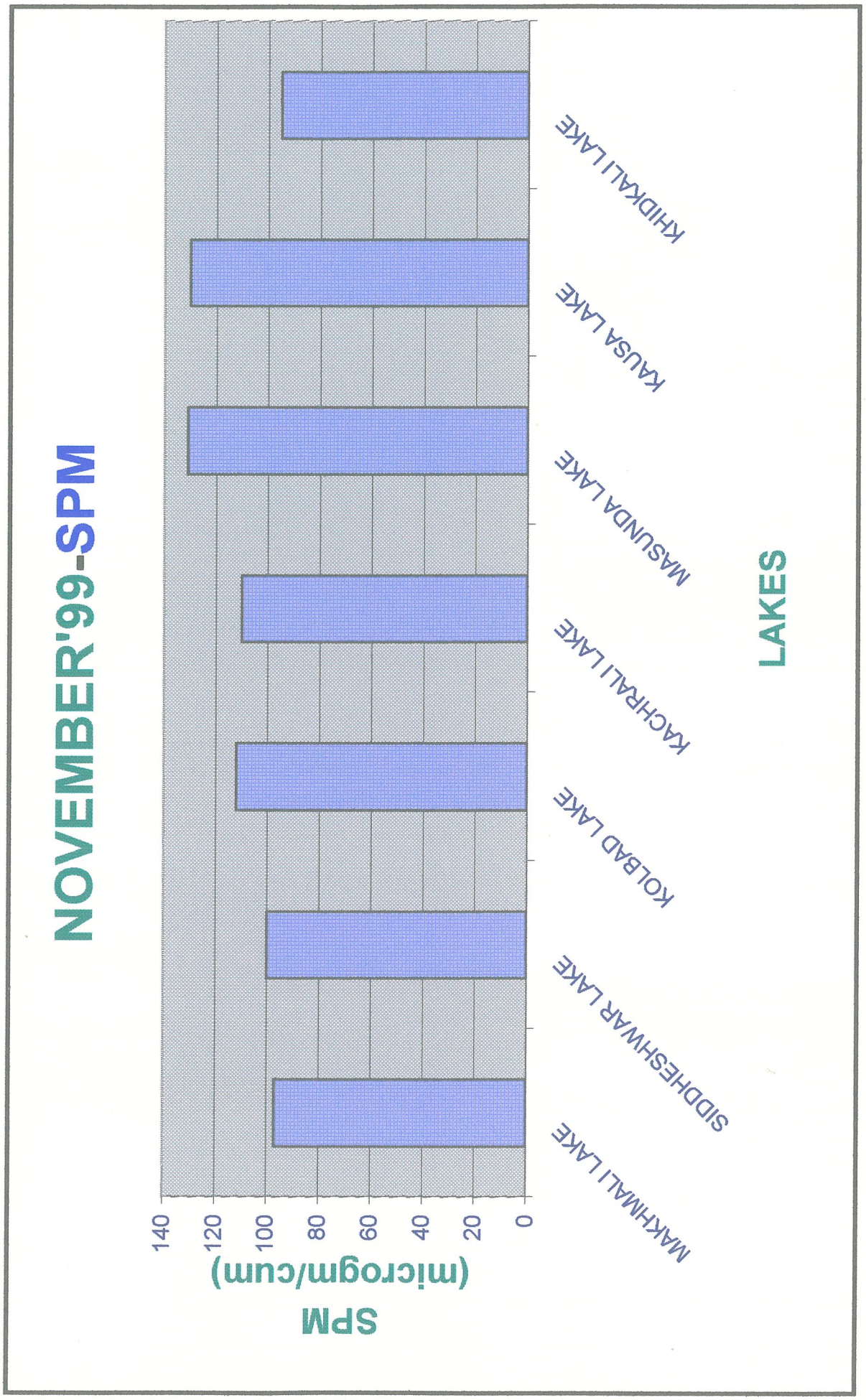

NOVEMBER'99-SPM
LAKES
SPM
(microgm/cum)
0
20
40
60
80
100
120
140
MAKHMALI LAKE
SIDDHESHWAR LAKE
KOLBAD LAKE
KACHRALI LAKE
MASUNDA LAKE
KAUSA LAKE
KHIDKALI LAKE

FIGURE-32

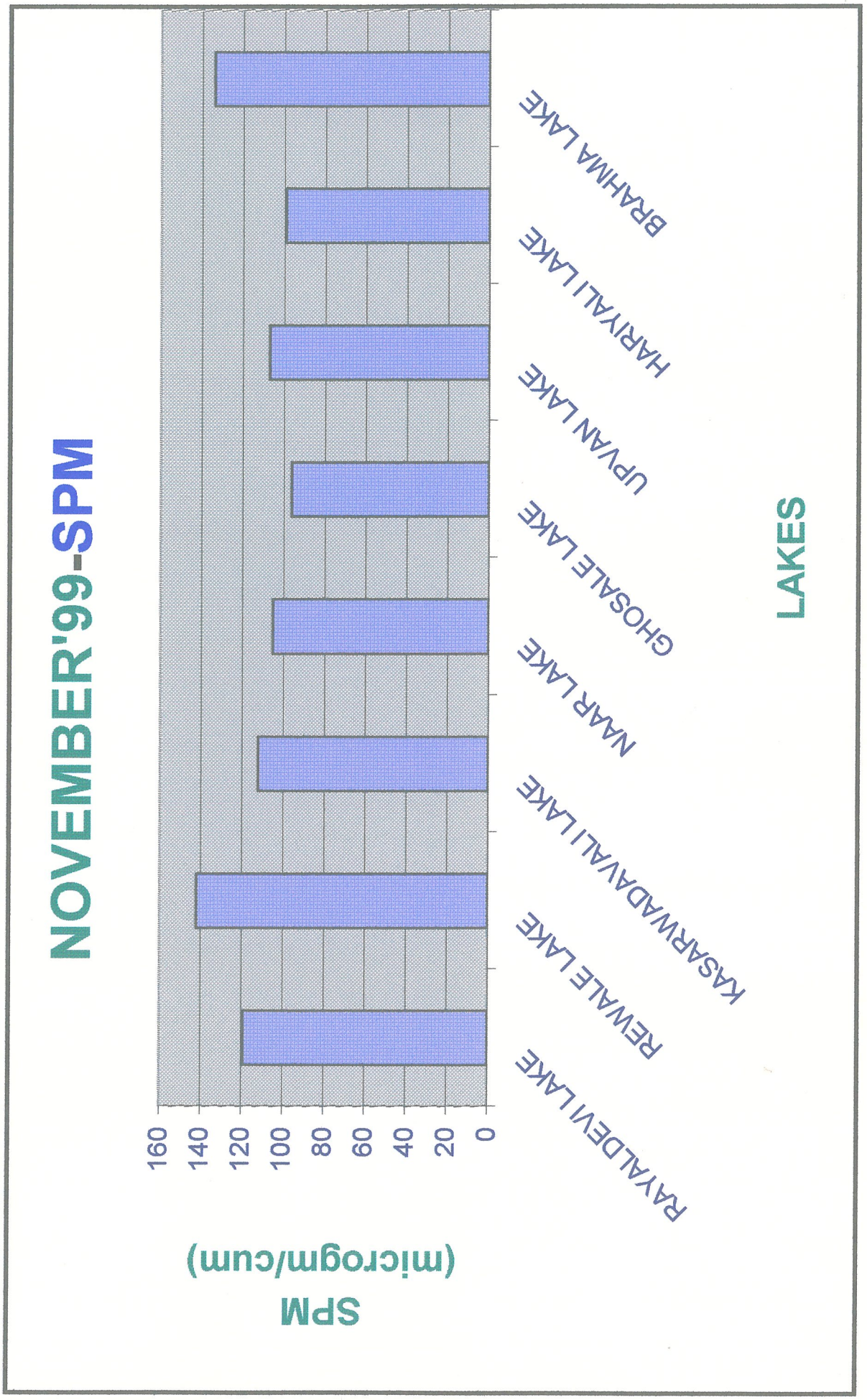

NOVEMBER'99-SPM
SPM
(microgm/cum)
0
20
40
60
80
100
120
140
160
LAKES
RAVALDEVI LAKE
REWALE LAKE
KASARWADAVALI LAKE
NAAR LAKE
GHOSALE LAKE
UPVAN LAKE
HARIYALI LAKE
BRAHMA LAKE

FIGURE-33

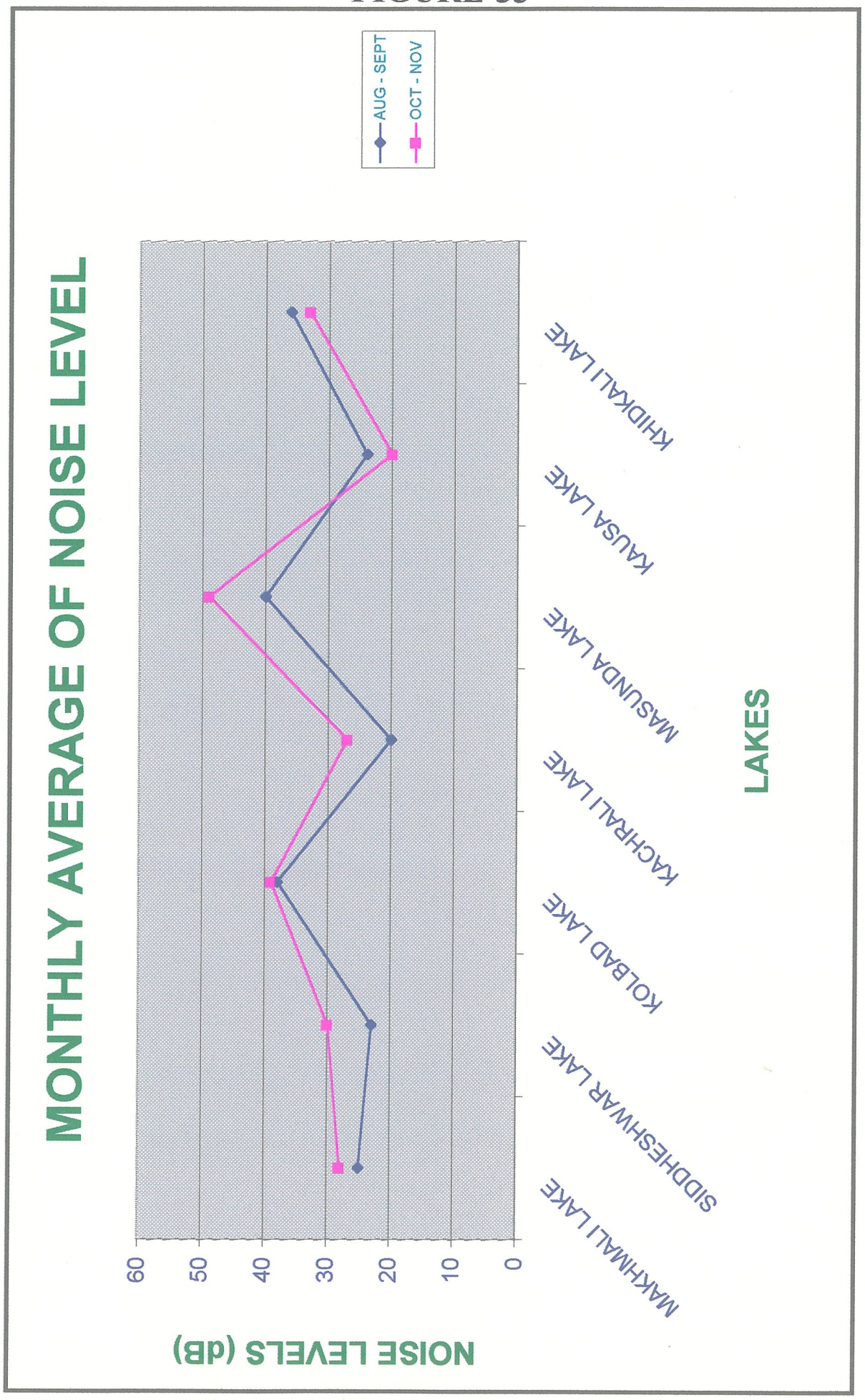
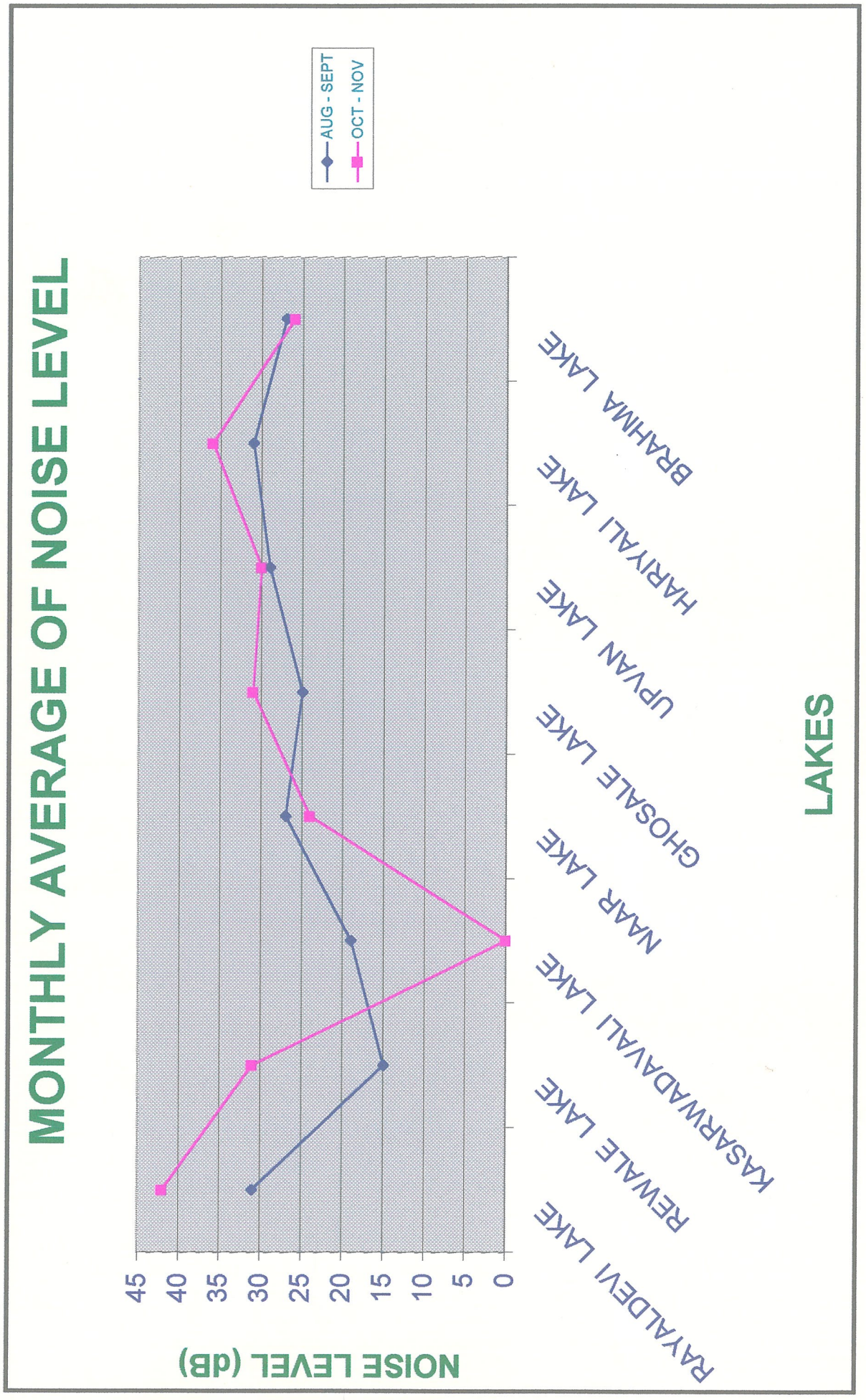

MONTHLY AVERAGE OF NOISE LEVEL
AUG - SEPT
OCT - NOV
NOISE LEVELS (dB)
60
50
40
30
20
10
0
MAKHMALI LAKE
SIDDHESHWAR LAKE
KOLBAD LAKE
KACHRALI LAKE
MASUNDA LAKE
KAUSA LAKE
KHIDKALI LAKE
LAKES

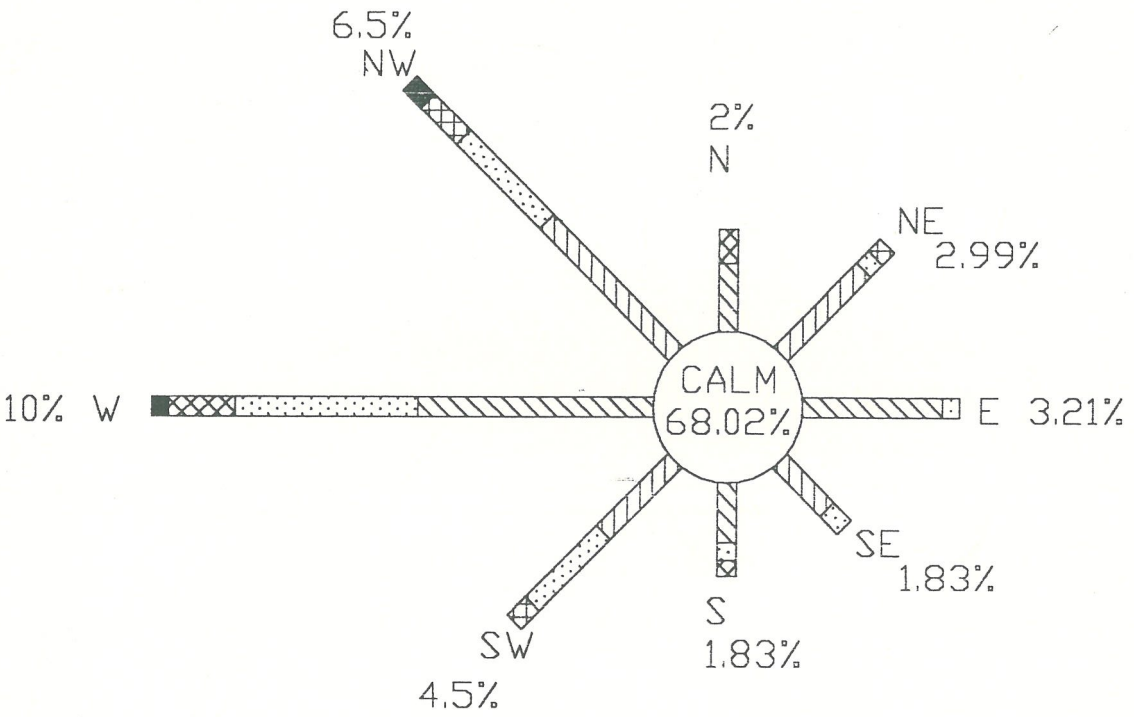
FIGURE-34


MONTHLY AVERAGE OF NOISE LEVEL
AUG - SEPT
OCT - NOV
NOISE LEVEL (dB)
0
5
10
15
20
25
30
35
40
45
RAVALDEVI LAKE
REWALE LAKE
KASARWADAVALI LAKE
NAAR LAKE
GHOSALE LAKE
UPVAN LAKE
HARIYALI LAKE
BRAHMA LAKE
LAKES

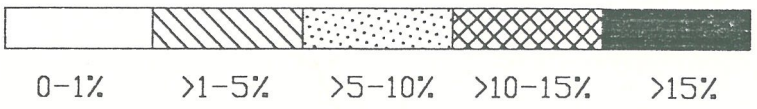
WINDROSE DIAGRAMS

WIND-ROSE

MONTH : SEPTEMBER

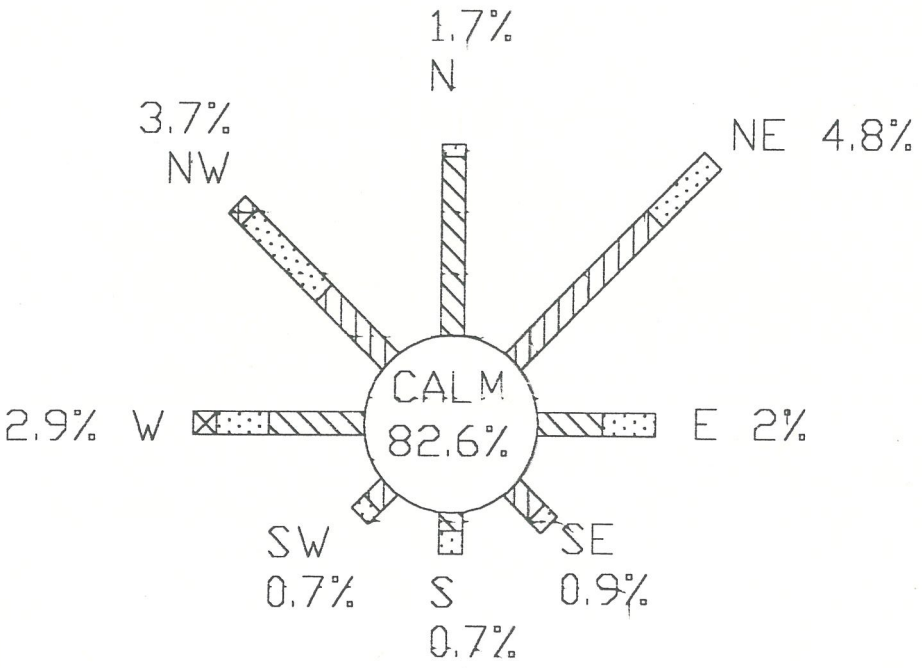


SCALE : 1 CM = 2%

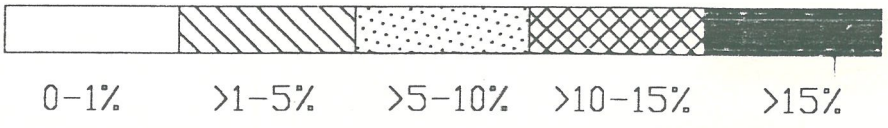


WIND-ROSE

MONTH : OCTOBER

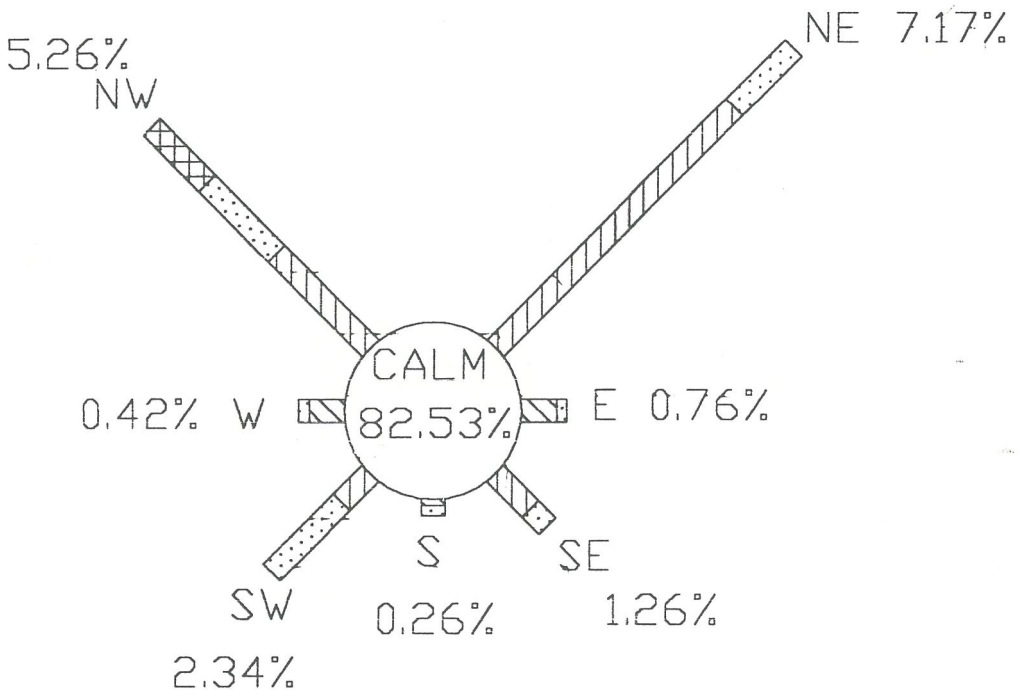


SCALE : 1 CM = 2%

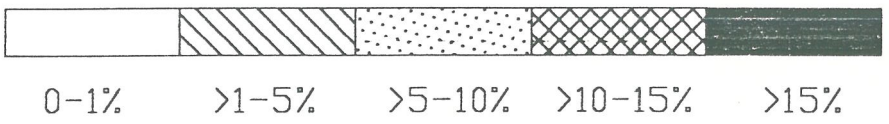


WIND-ROSE

MONTH : NOVEMBER

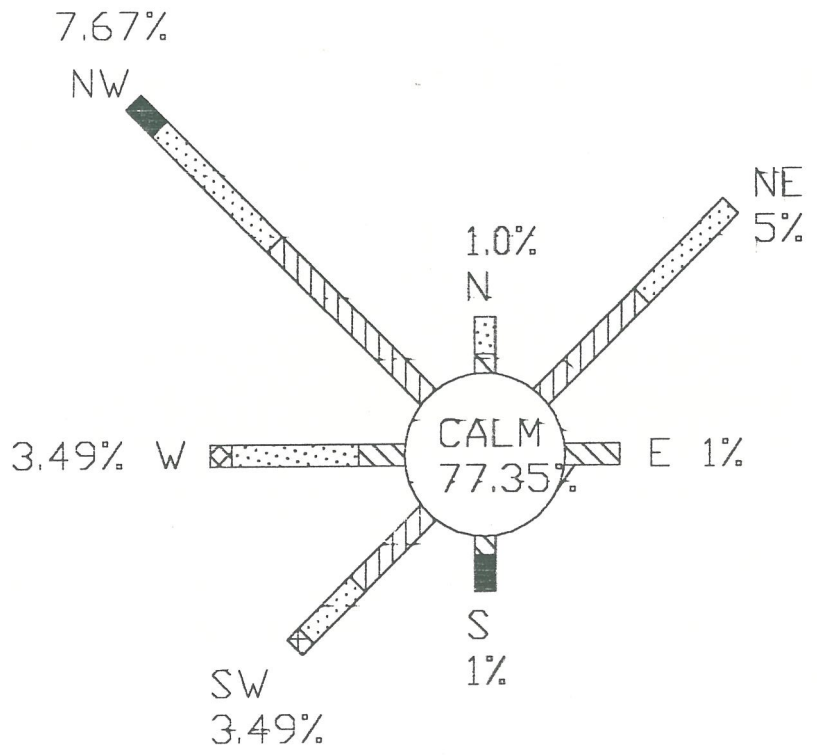


SCALE : 1 CM = 2%



WIND-ROSE

MONTH : DECEMBER



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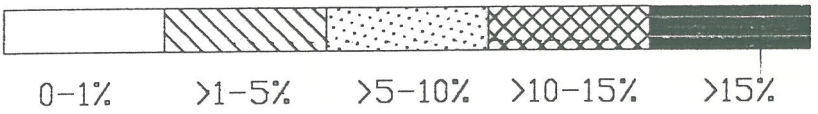
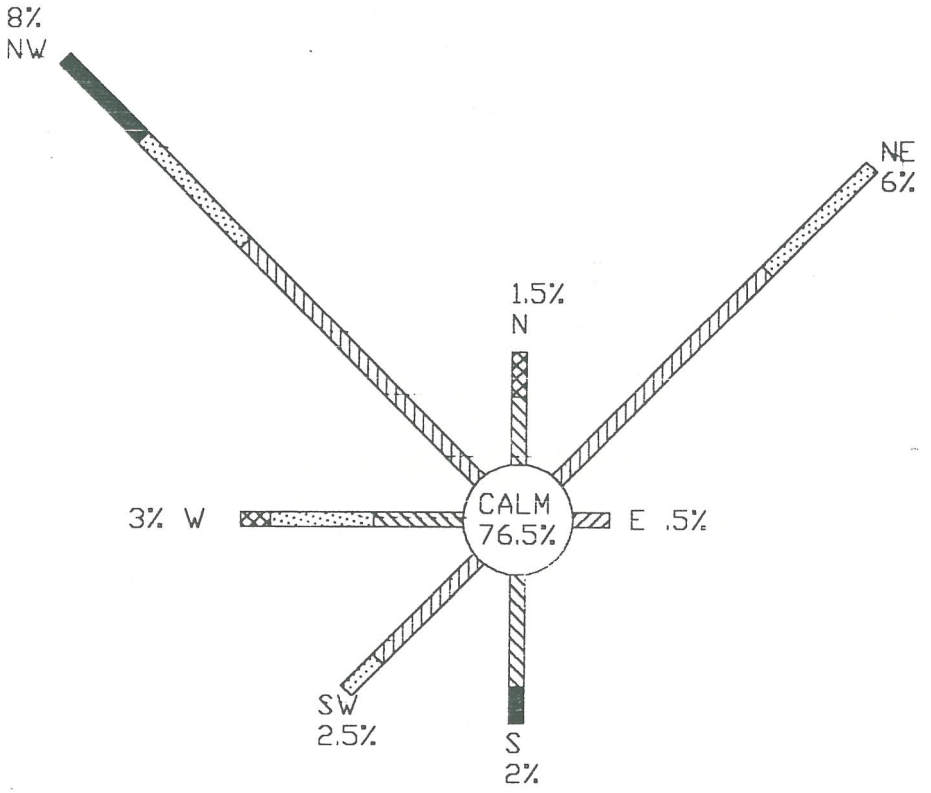


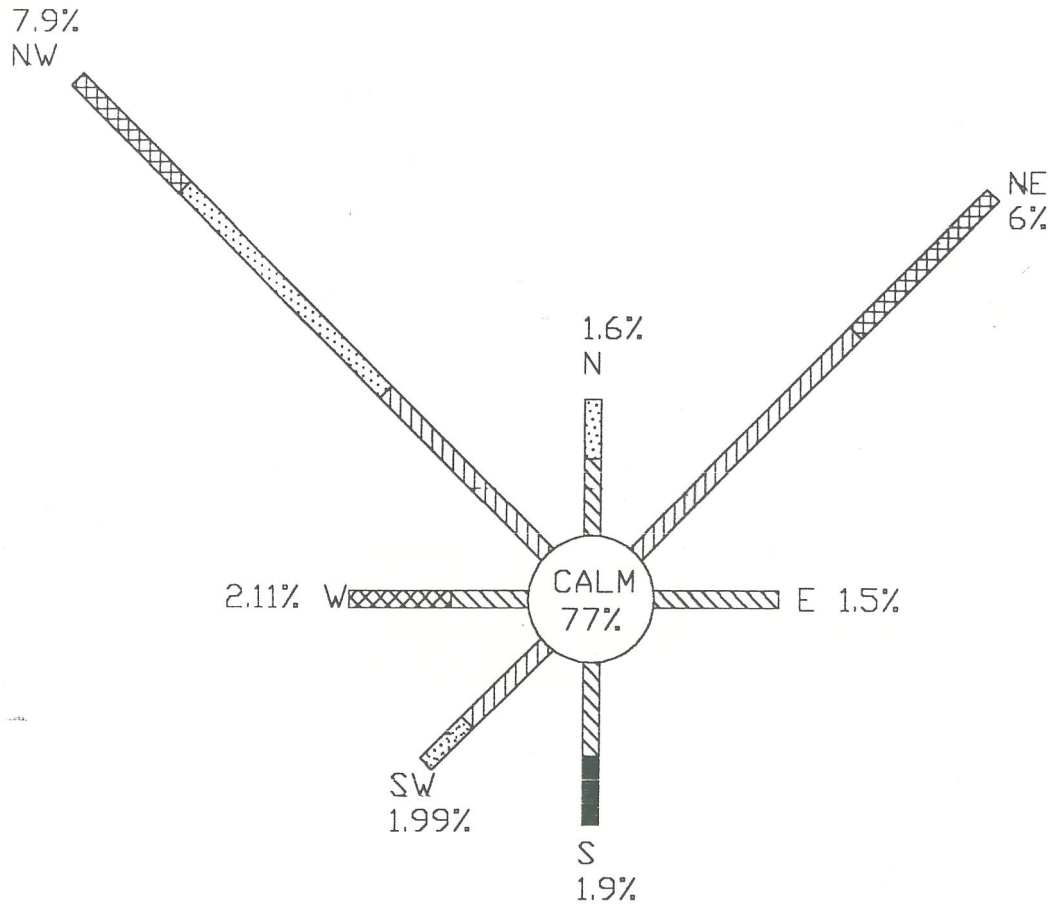
WIND-ROSE FOR MAKHMALI LAKE



SCALE : 1CM = 2%

0-1% >1-5% >5-10% >10-15% >15%

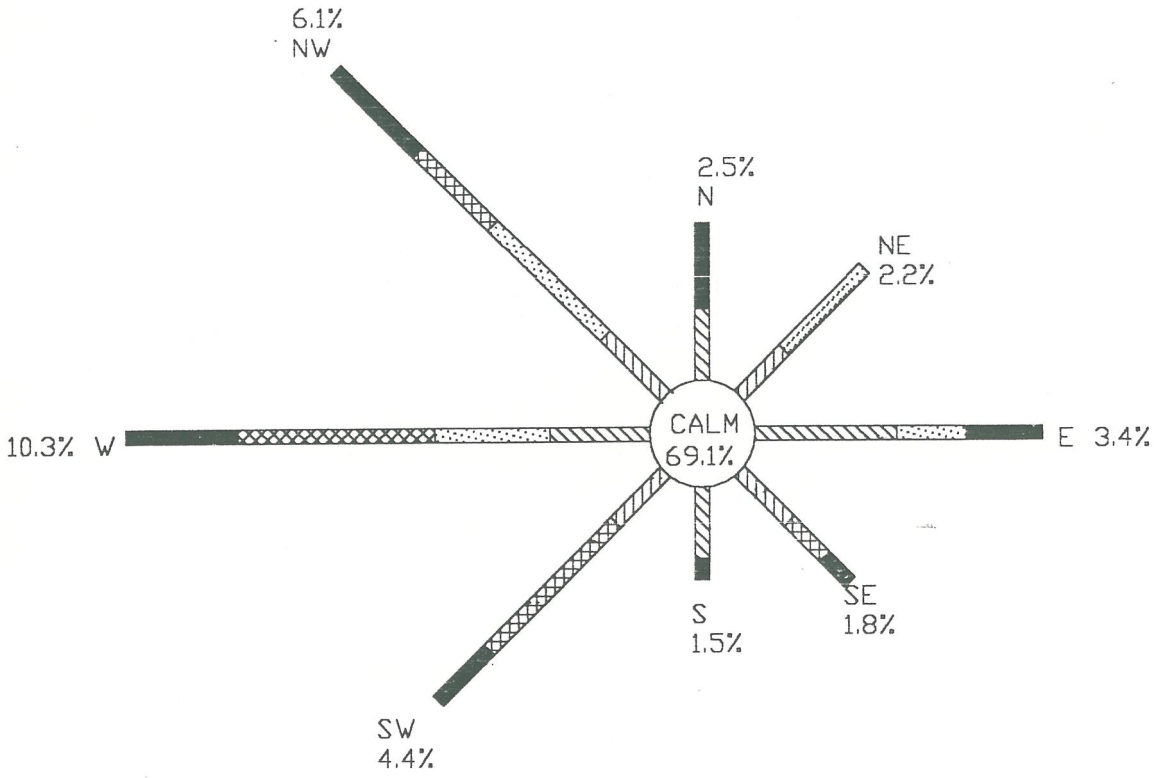
WIND-ROSE FOR SIDDHESHWAR LAKE



SCALE : 1CM = 2%

0-1% >1-5% >5-10% >10-15% >15%

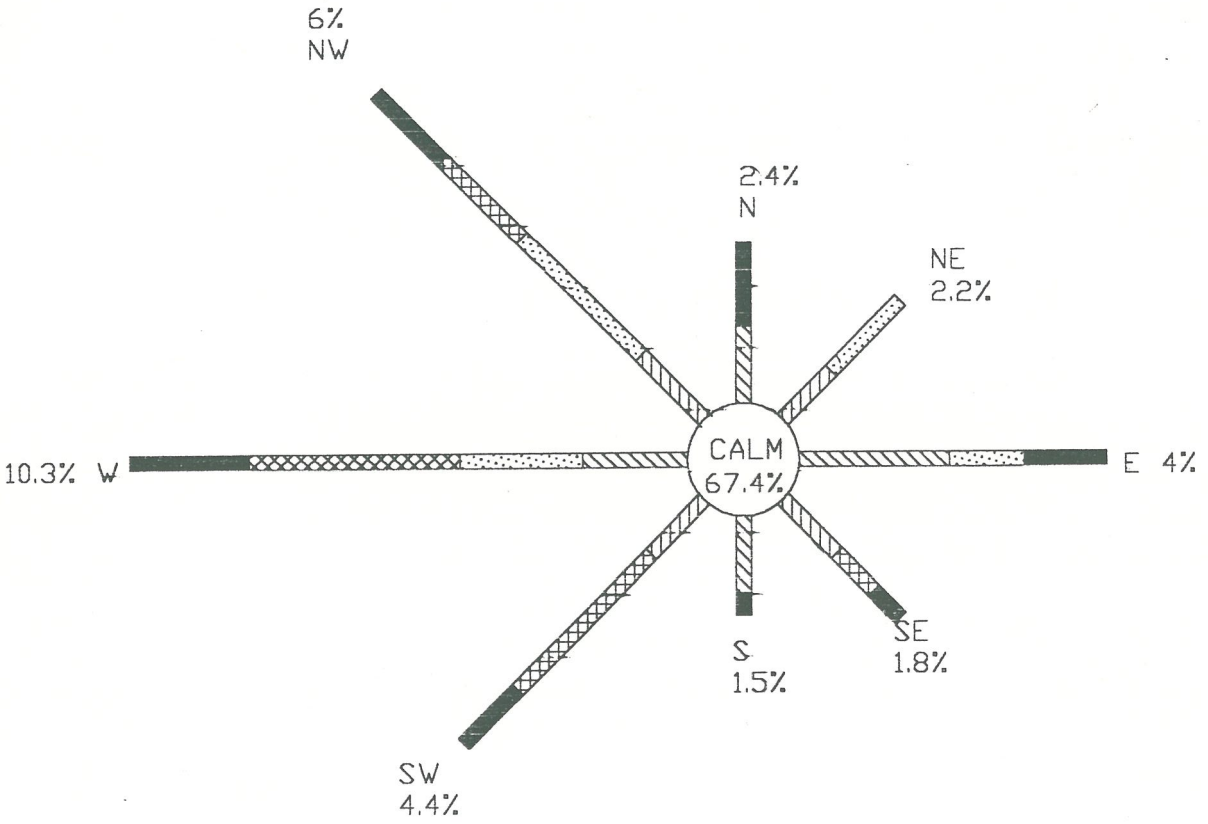
WIND-ROSE FOR KOLBAD LAKE



SCALE : 1CM = 2%

0-1% >1-5% >5-10% >10-15% >15%

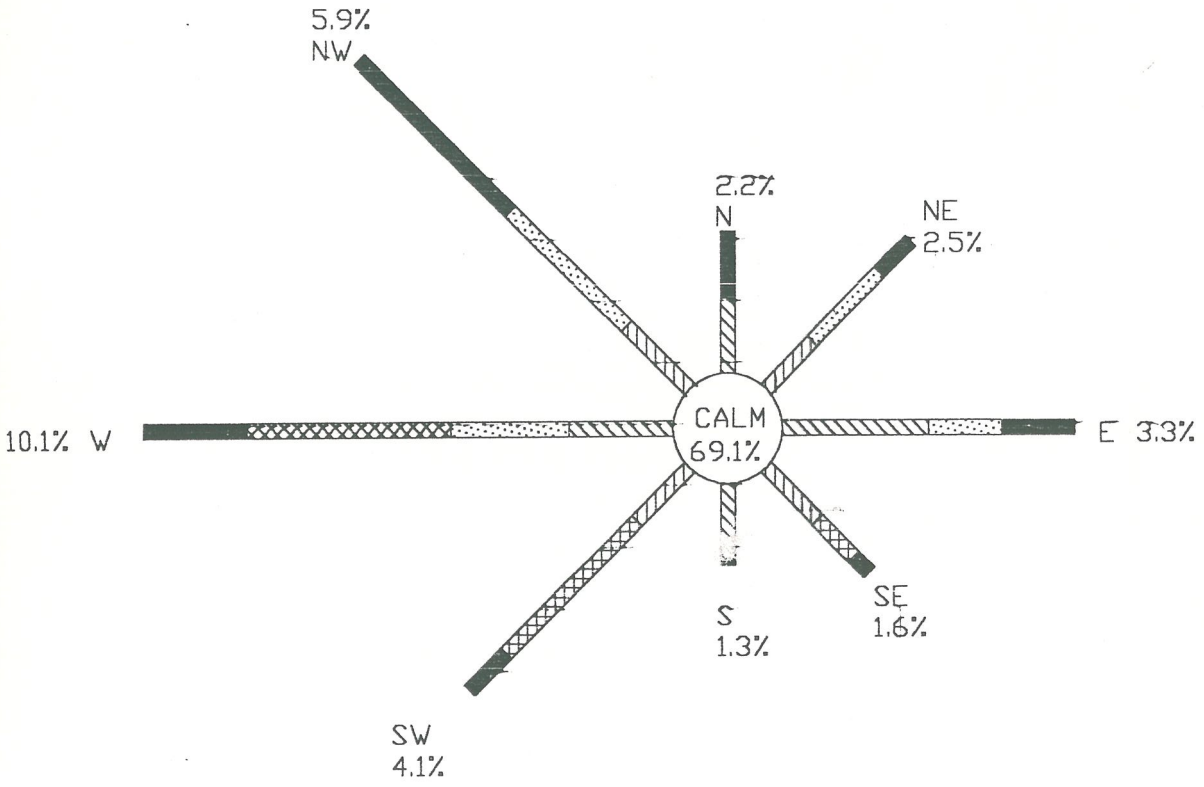
WIND-ROSE FOR KACHRALI LAKE



SCALE : 1CM = 2%

0-1% >1-5% >5-10% >10-15% >15%

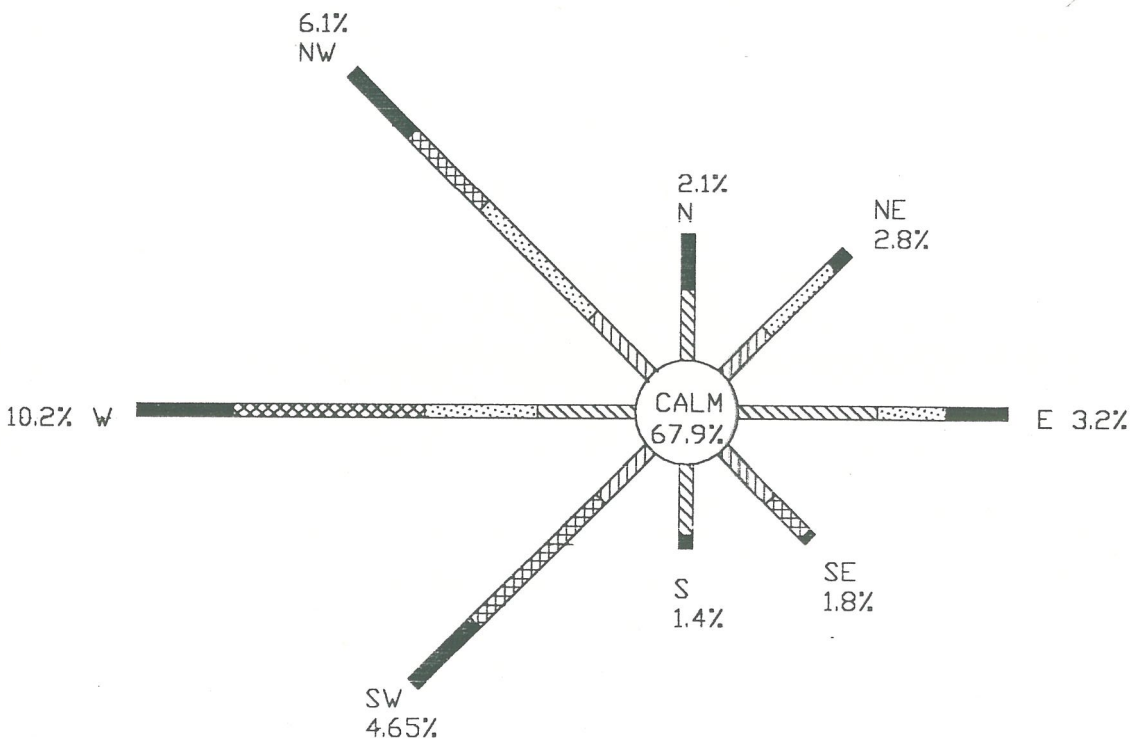
WIND-ROSE FOR MASUNDA LAKE



SCALE : 1CM = 2%

0-1% >1-5% >5-10% >10-15% >15%

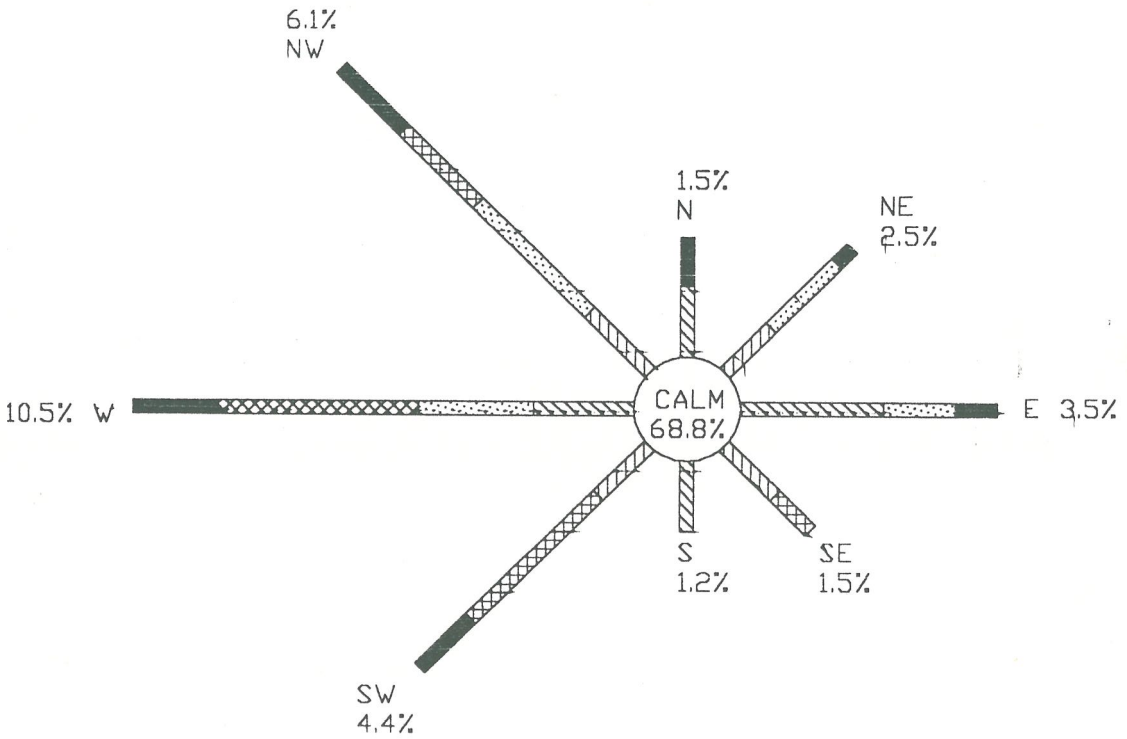
WIND-ROSE FOR KAUSA LAKE



SCALE : 1CM = 2%

0-1% >1-5% >5-10% >10-15% >15%

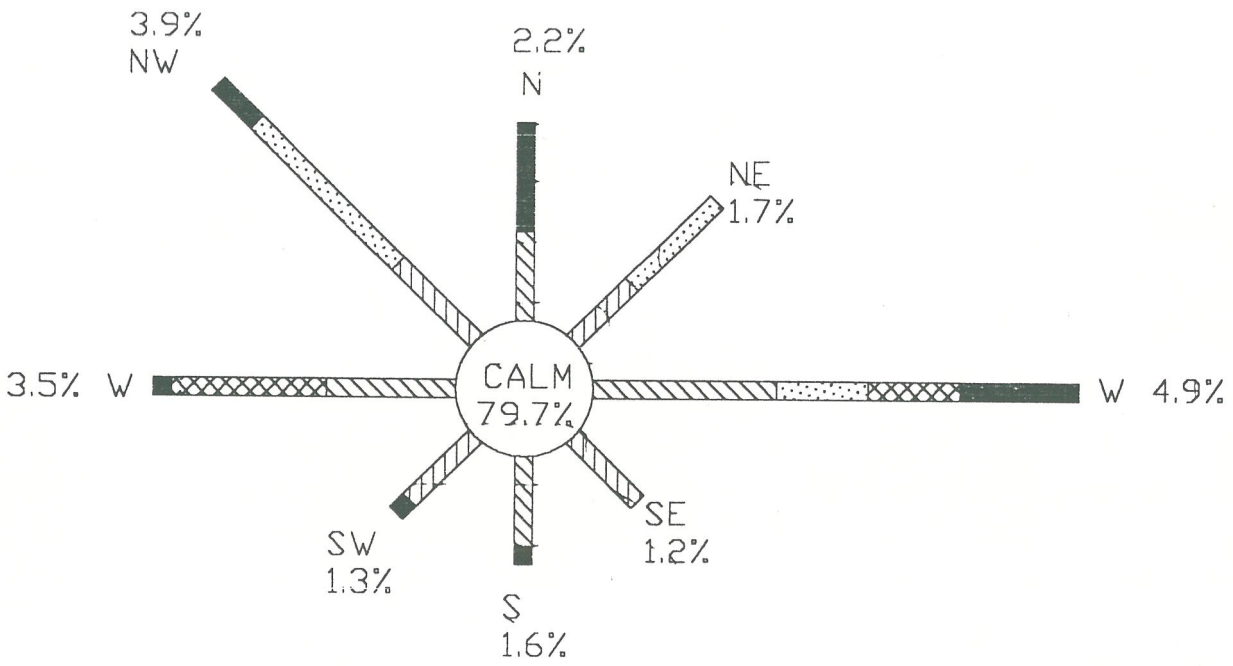
WIND-ROSE FOR KHIDKALI LAKE



SCALE : 1CM = 2%

0-1% >1-5% >5-10% >10-15% >15%

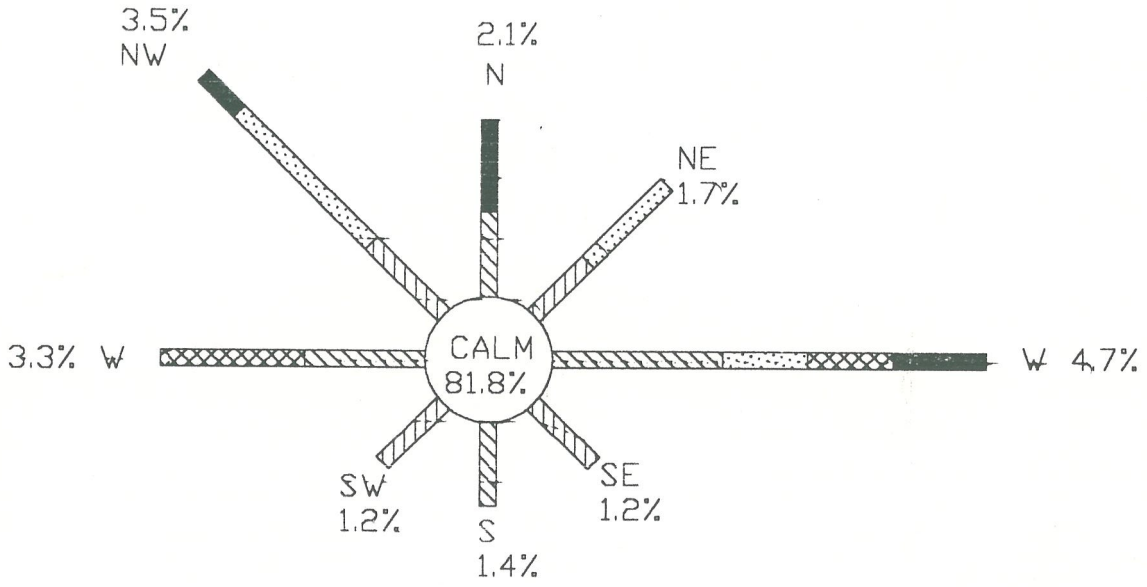
WIND-ROSE FOR RAYALDEVI LAKE



SCALE : 1CM = 2%

0-1% >1-5% >5-10% >10-15% >15%

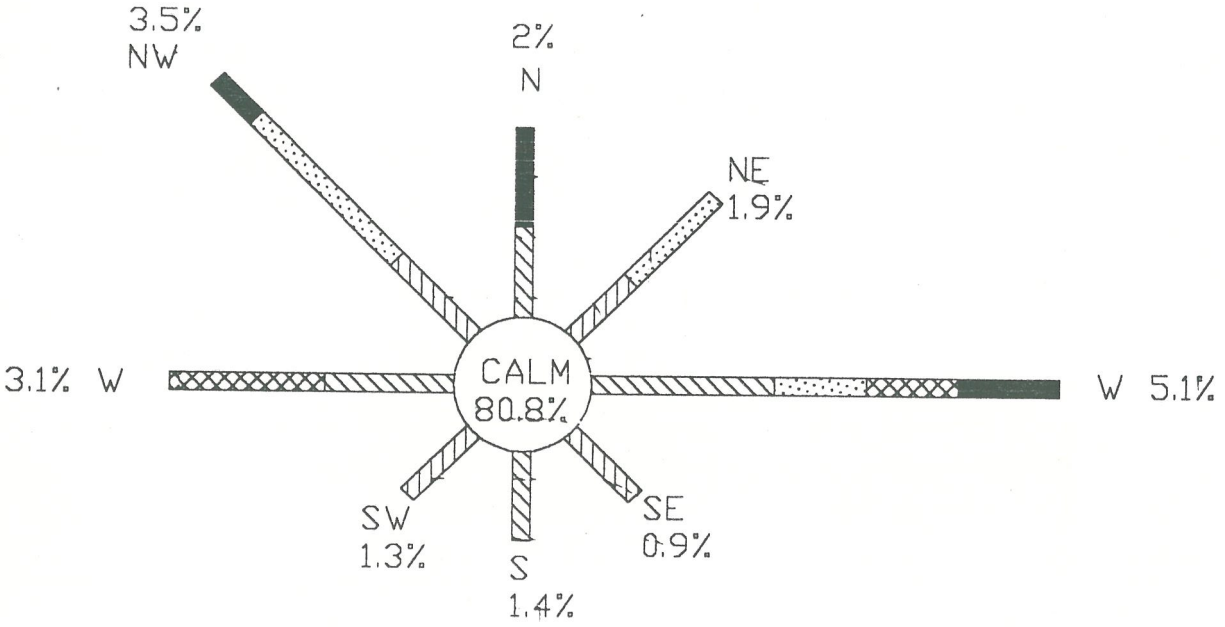
WIND-ROSE FOR REWALE LAKE



SCALE : 1CM = 2%

0-1% >1-5% >5-10% >10-15% >15%

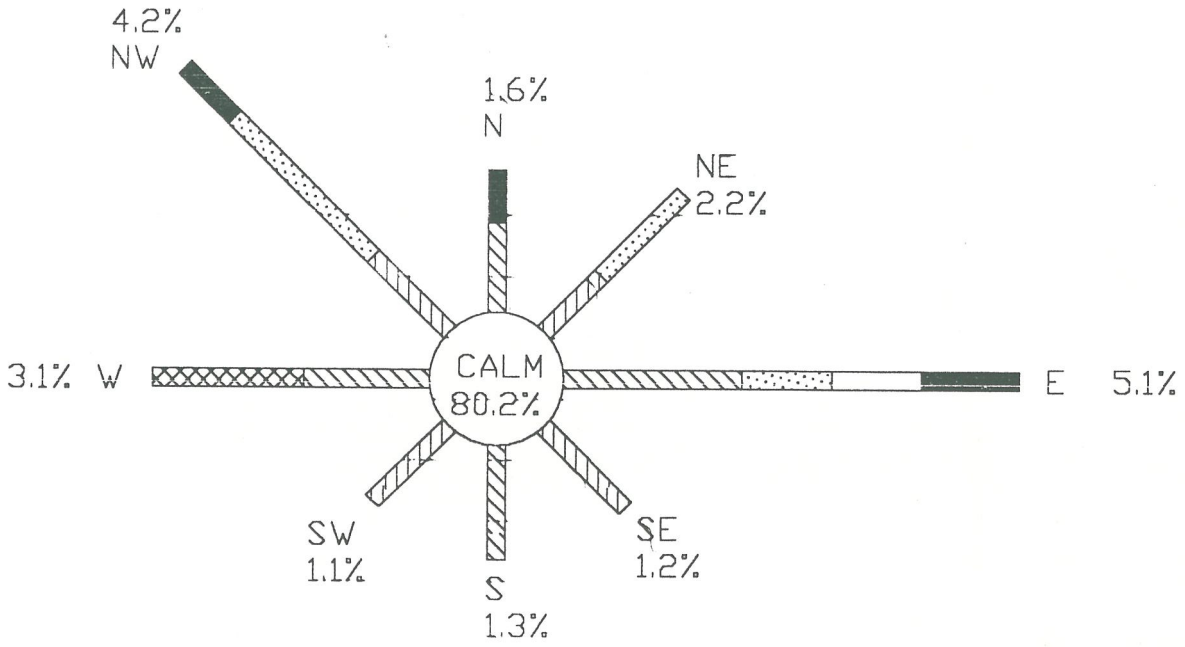
WIND-ROSE FOR KASARWADAVALI LAKE



SCALE : 1CM = 2%

0-1% >1-5% >5-10% >10-15% >15%

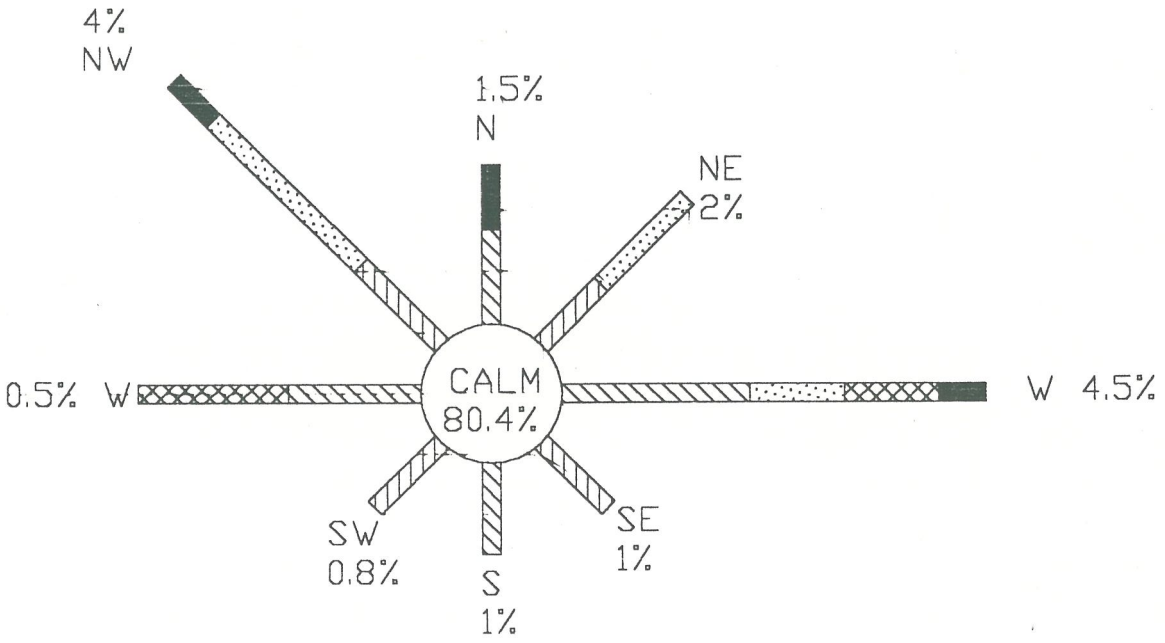
WIND-ROSE FOR NAAR LAKE



SCALE : 1CM = 2%

0-1% >1-5% >5-10% >10-15% >15%

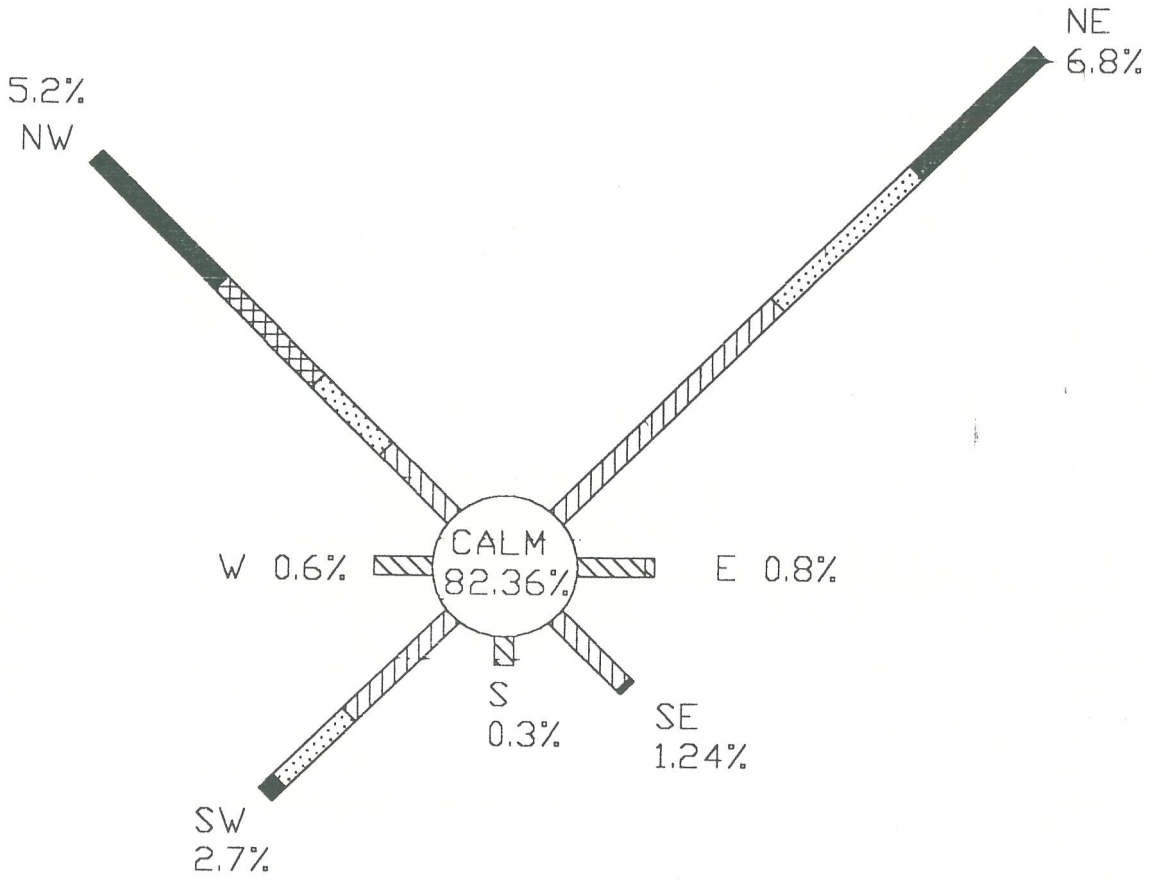
WIND-ROSE FOR GHOSALE LAKE



SCALE : 1CM = 2%

0-1% >1-5% >5-10% >10-15% >15%

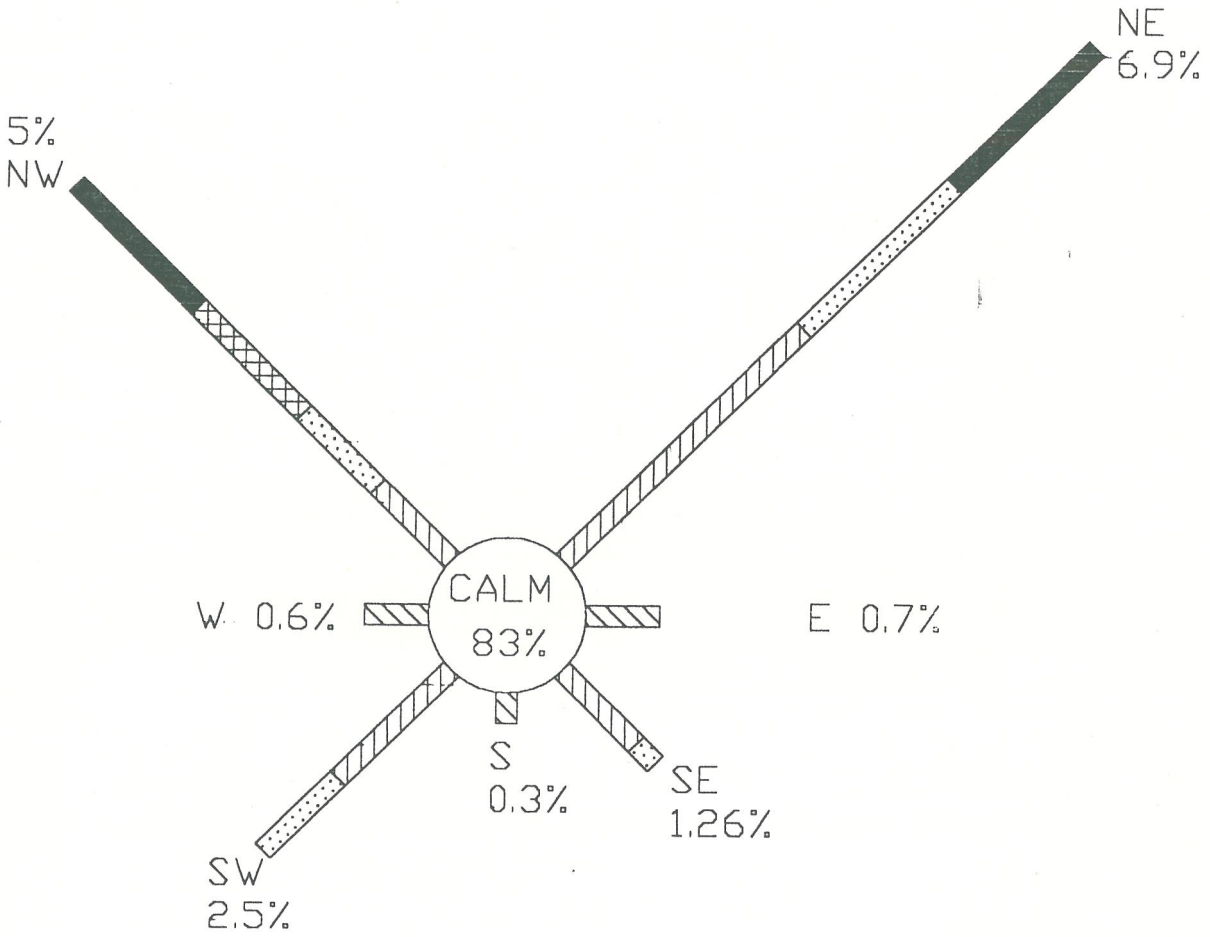
WIND-ROSE FOR UPVAN LAKE



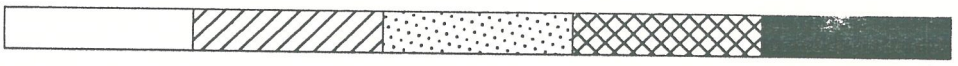
SCALE : 1CM = 2%

0-1% >1-5% >5-10% >10-15% >15%

WIND-ROSE FOR HARIYALI LAKE

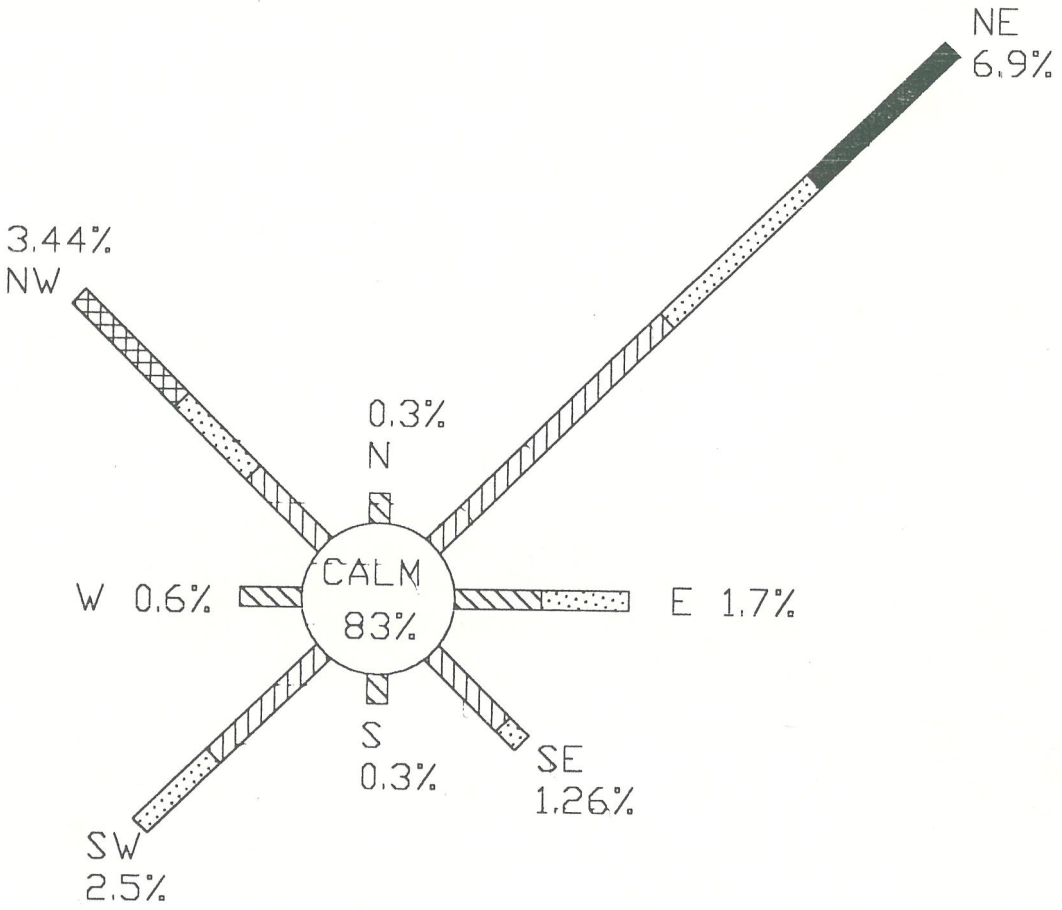


SCALE : 1CM = 2%



0-1% >1-5% >5-10% >10-15% >15%

WIND-ROSE FOR BRAHMA LAKE



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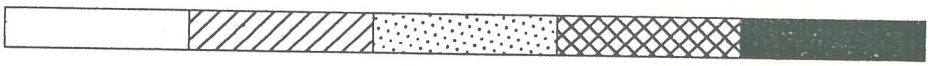


0-1% >1-5% >5-10% >10-15% >15%

ILLUSTRATION BY PHOTOGRAPHS

EXISTING CONDITIONS

OF

MAKHMALI LAKE

MSW DUMPED IN THE LAKE

SLUMS !!! BUILDINGS !!!

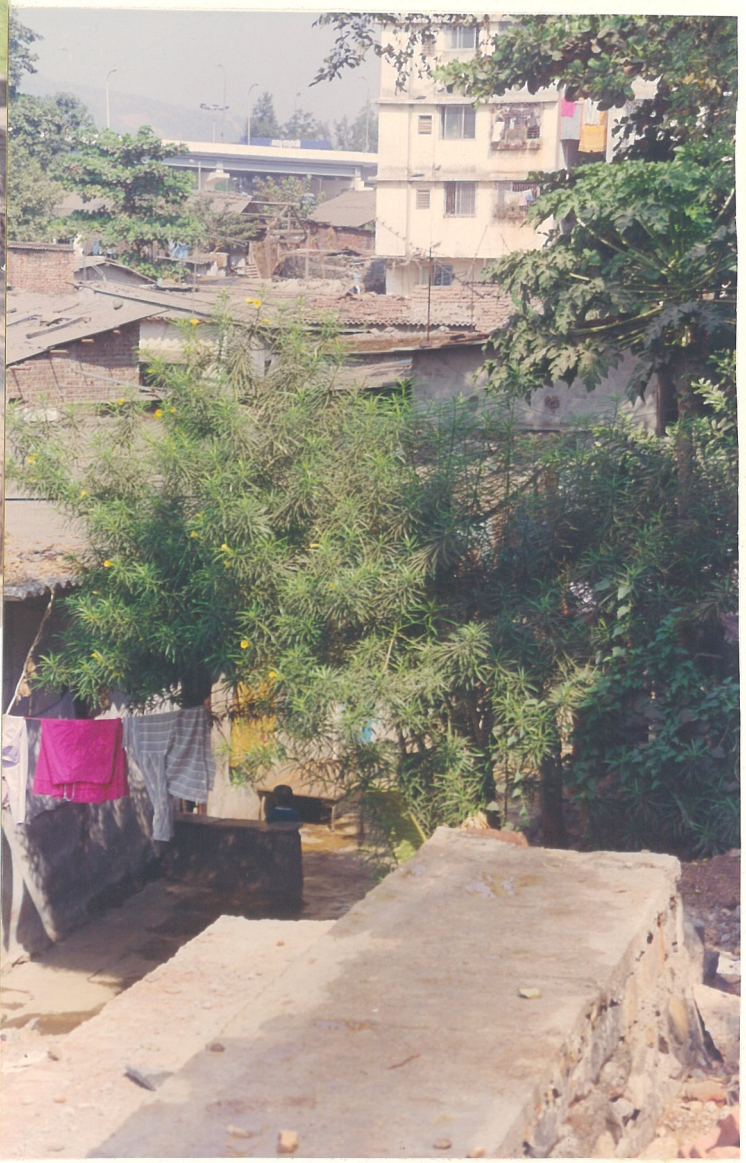
GARBAGE DUMP OVERFLOWING INTO LAKE

GARBAGE...
SOLID WASTE...
USED FLOWERS...
VEGETATIVE GROWTH...

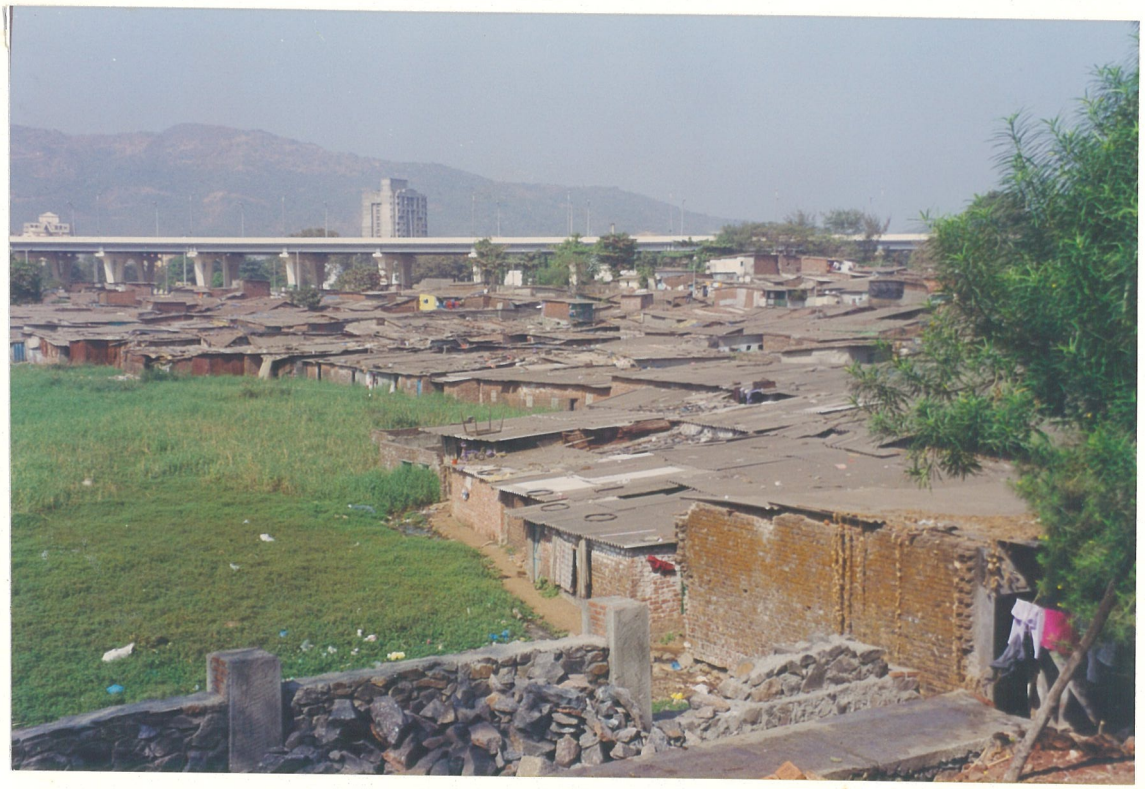
EXISTING CONDITIONS

OF

SIDDHESHWAR LAKE



SLUMS !!! BUILDINGS !!!



GARBAGE DUMP OVERFLOWING INTO LAKE

GARBAGE...
SOLID WASTE...
USED FLOWERS...
VEGETATIVE GROWTH...

EXISTING CONDITIONS

OF

KOLBAD LAKE

MSW DUMPED IN THE LAKE

SLUMS !!! BUILDINGS !!!

GARBAGE DUMP OVERFLOWING INTO LAKE

GARBAGE...
SOLID WASTE...
USED FLOWERS...
VEGETATIVE GROWTH...

EXISTING CONDITIONS

OF

KACHRALI LAKE

MSW DUMPED IN THE LAKE

SLUMS !!! BUILDINGS !!!

SLUMS, SLUMS, SLUMS .....

GARBAGE DUMP OVERFLOWING INTO LAKE

GARBAGE...
SOLID WASTE...
USED FLOWERS...
VEGETATIVE GROWTH...

EXISTING CONDITIONS

OF

KAUSA LAKE

MSW DUMPED IN THE LAKE

SLUMS !!! BUILDINGS !!!

SLUMS, SLUMS, SLUMS .....

GARBAGE DUMP OVERFLOWING INTO LAKE

GARBAGE...
SOLID WASTE...
USED FLOWERS...
VEGETATIVE GROWTH...

EXISTING CONDITIONS

OF

KHIDAKALI LAKE

GARBAGE DUMP OVERFLOWING INTO LAKE

MSW DUMPED IN THE LAKE

SLUMS !!! BUILDINGS !!!

GARBAGE...
SOLID WASTE...
USED FLOWERS...
VEGETATIVE GROWTH...

EXISTING CONDITIONS

OF

RAYALDEVI LAKE

MSW DUMPED IN THE LAKE

SLUMS !!! BUILDINGS !!!

SLUMS, SLUMS, SLUMS .....

GARBAGE DUMP OVERFLOWING INTO LAKE

GARBAGE...
SOLID WASTE...
USED FLOWERS...
VEGETATIVE GROWTH...

EXISTING CONDITIONS

OF

REWALE LAKE

MSW DUMPED IN THE LAKE

SLUMS !!! BUILDINGS !!!

SLUMS, SLUMS, SLUMS .....

GARBAGE DUMP OVERFLOWING INTO LAKE

GARBAGE...
SOLID WASTE...
USED FLOWERS...
VEGETATIVE GROWTH...

EXISTING CONDITIONS

OF

KASARWADAVALI LAKE

SLUMS !!! BUILDINGS !!!

GARBAGE DUMP OVERFLOWING INTO LAKE

GARBAGE...
SOLID WASTE...
USED FLOWERS...
VEGETATIVE GROWTH...

EXISTING CONDITIONS

OF

NAAR LAKE

MSW DUMPED IN THE LAKE

SLUMS !!! BUILDINGS !!!

GARBAGE...
SOLID WASTE...
USED FLOWERS...
VEGETATIVE GROWTH...

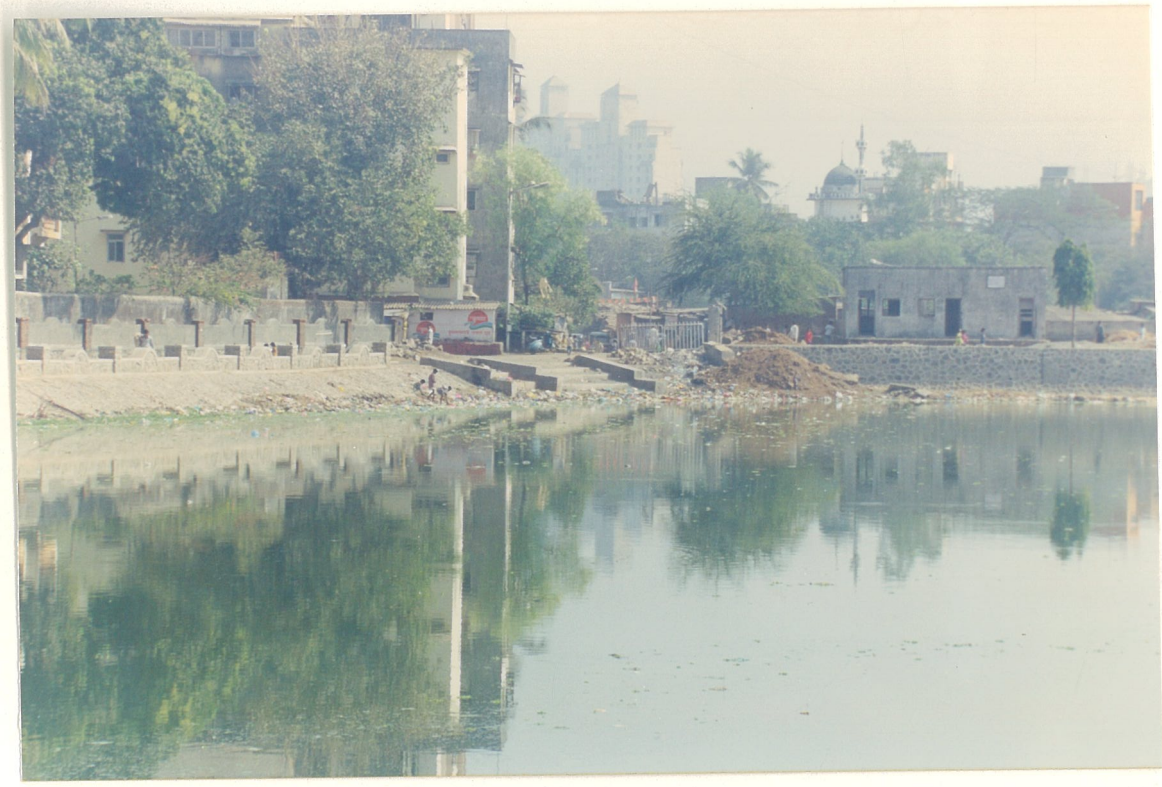
EXISTING CONDITIONS

OF

GHOSALE LAKE

MSW DUMPED IN THE LAKE

SLUMS !!! BUILDINGS !!!



SLUMS, SLUMS, SLUMS .....

GARBAGE DUMP OVERFLOWING INTO LAKE

GARBAGE...
SOLID WASTE...
USED FLOWERS...
VEGETATIVE GROWTH...

EXISTING CONDITIONS

OF

UPVAN LAKE

MSW DUMPED IN THE LAKE

SLUMS !!! BUILDINGS !!!

GARBAGE DUMP OVERFLOWING INTO LAKE

GARBAGE...
SOLID WASTE...
USED FLOWERS...
VEGETATIVE GROWTH...

EXISTING CONDITIONS

OF

HARIYALI LAKE

GARBAGE DUMP OVERFLOWING INTO LAKE

GARBAGE...
SOLID WASTE...
USED FLOWERS...
VEGETATIVE GROWTH...

GARBAGE...
SOLID WASTE...
USED FLOWERS...
VEGETATIVE GROWTH...

EXISTING CONDITIONS

OF

BRAHMA LAKE

MSW DUMPED IN THE LAKE

SLUMS !!! BUILDINGS !!!

GARBAGE DUMP OVERFLOWING INTO LAKE

GARBAGE...
SOLID WASTE...
USED FLOWERS...
VEGETATIVE GROWTH...