COMMODORE

WATER-QUALITY MONITORING PROGRAM
CHATFIELD BASIN AND RESERVOIR
FINAL BASIC-DATA REPORT
JANUARY 1999-DECEMBER 1999

April 13, 2000

Prepared For:

Chatfield Watershed Authority
Denver, Colorado

Prepared By:

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COMMODORE
ADVANCED SCIENCES, INC.

April 13, 2000

Chatfield Watershed Authority
Attention: Ms. Jeanie Rossilon, Chair
c/o Denver Regional Council of Governments
2480 W. 26th Avenue, Suite 200B
Denver, CO 80211-5580

Subject: Water-Quality Monitoring Program, Chatfield Basin and Reservoir: Final Basic-Data Report, January 1999-December 1999
CAS Project No. 8206.03

Dear Ms. Rossilon:

This 1999 Annual Basic-Data Report is submitted by Commodore Advanced Sciences, Inc. (CAS) in fulfillment of the subject program's contract requirements. The data provided in this report were collected in accordance with "1999 Chatfield Watershed Authority, Water Quality Monitoring Program (February 9, 1999)." ACZ Laboratories, Inc., Steamboat Springs, CO, and Acculabs, Inc., Golden, CO performed chemical analyses, and biological analyses were performed by Plateau Ecosystems Consulting, Inc. (PEC), Arvada, CO, and the University of Colorado (CU) Limnology Laboratory. A total of 20 duplicate samples were analyzed for chemical constituents in this year's program.

In an attempt to make this report more user-friendly for Authority members, the organization and content of this report was modified somewhat from that used in previous years. The report is organized into four primary sections - 1. Sampling Site Descriptions and Locations; 2. Basic Data Tables; 3. Summary Data Tables; and 4. Figures. The first section of the report provides written descriptions (Table 1) and maps (Figures 1 and 2) for each sampling location.

Tables 2 through 22 provide the field measurements and laboratory chemical data for samples collected by CAS for the January-through-December 1999 period. Tables 2 through 17 contain data for the two-inflow/outflow sites and the in-reservoir site. Separate tables are provided for field measurements, miscellaneous analyses, nutrient analyses, and metals analyses for each of the sampling sites. Table 19 contains data from an annual reservoir-bottom sediment sample analyzed for total phosphorous, five metals, and total organic carbon. This sample is taken at the in-reservoir location (field code RM) shown on Figure 1.

Table 18 includes tabular in-reservoir water-quality profiles for February 18, 1999 through December 15, 1999 water-quality surveys. The field parameters are presented at one-meter increments for pH, specific conductance, dissolved oxygen and temperature. These data are shown graphically in Figures 21 through 35. The phytoplankton and zooplankton results are provided in both tabular (Tables 20 and 21) and graphical format (Figures 14 through 20).

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Table 22 provides the data collected during the supplemental field screening surveys performed during June, 1999 at 23 locations throughout the watershed (one location is on private property and CAS was not granted access at this location). Figures 2A through 2C are maps of the sampling locations, and Figures 36 through 43 provide graphical summaries of nitrate, phosphorous, and total suspended solids (TSS) for the field screening locations.

Table 23 provides a summary of the total phosphorous and chlorophyll_a concentrations in the reservoir for the period 1982 to 1999. As indicated on this table the average growing-season concentrations of both constituents increased slightly from 1998 levels. The average total phosphorous concentration during the 1999 growing season did not exceed the growing-season standard, and the average chlorophyll_a concentration remained less than the growing-season goal established for Chatfield Reservoir.

Table 24 provides a summary of the data for trace metals analyses from the inflow/outflow and reservoir sites for the last 3 years. For comparative purposes only, water-quality standards for each of these trace metals are also provided on this table. Where applicable, the standards presented on this table are numerical standards based on a hardness of 100 mg/l CaCO3 (the estimated average low flow hardness) for segment 6 of the South Platte River as established by the Colorado Water Quality Control Commission (WQCC). If such a standard does not exist, the basic standard established by the WQCC is provided. The data on this table indicate that the concentrations of these trace metals at the inflow/outflow and reservoir sampling sites are generally very low and rarely exceed the estimated water-quality standards.

Plots of peak and average concentrations for the indicator in-reservoir variables (total phosphorus, chlorophyll-a, and Secchi depth) are given in Figures 3 through 8. Beginning in 1997, the time-series plots depict a point value, rather than an average value from three reservoir locations (filed codes RM, RP, and RS). To facilitate comparison with previous years and assessment of possible trends, the format of these figures was changed slightly from that presented in previous years to provide average growing-season concentrations and Secchi depths for the period from 1982 through 1999. Comparison of growing-season total-phosphorus versus chlorophyll-a concentrations is shown in Figure 9. Figures 10 through 13 provide graphical summaries of the trace-metal data presented in Table 24.

CAS appreciates having the opportunity to provide the Chatfield Watershed Authority with continuing water-quality monitoring and data compilation services. This Basic-Data Report constitutes the final deliverable under our 1999 calendar-year contract. If you have any questions, or need additional information, please give me a call at (303)421-1511.

Sincerely,
COMMODORE ADVANCED SCIENCES, INC.

Doug Dennison, R.G.
Project Manager

Attachments - Annual Basic-Data Report

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SAMPLING SITE DESCRIPTIONS AND LOCATIONS

TABLE 1
1999 CHATFIELD WATERSHED AUTHORITY
WATER QUALITY MONITORING PROGRAM

SAMPLING LOCATION DESCRIPTIONS

In-Reservoir and Inflow/Outflow Sites (Figure 1)

Field Code	Description
RM	In-reservoir near dam
PC	Plum Creek at Titan Road, USGS Site 06709530
SO	Outfall from Chatfield Reservoir, USGS Site 06709601
SP	South Platte at Waterton, USGS Site 06708000

Basin-Wide Screening Locations (Figure 2)

Field Code	Description
CH01	6.2 miles up Deer Creek Canyon Road at confluence of north and south forks of Deer Creek
CH02	Deer Creek just west of Chatfield Reservoir - sampled within park boundary
CH03	Up Waterton Canyon Road to just below Strontia Springs Dam
CH04	South Platte River at Waterton Canyon bridge - routine monitoring site SP
CH05	Drainage from Lockheed-Martin facility - sample at bridge across from Waterton Canyon turnoff on Wadsworth Boulevard
CH06	South Platte River approximately 1 mile upstream from Chatfield Reservoir - follow road past beaver ponds on the south end
CH07	South Platte River at the bridge for the main park road
CH08	Massey Draw just west of the Chatfield park perimeter road near the bike path
CH09	Cook Creek at intersection with Noe Road
CH10	East Plum Creek just below confluence with Cook Creek - under railroad tracks just south of Larkspur
CH11	East Plum Creek at subdivision turnoff - bridge on the east frontage road of I-25 near Tomah exit between Larkspur and Castle Rock
CH12	East Plum Creek at the business park on the south end of Castle Rock

TABLE 1
1999 CHATFIELD WATERSHED AUTHORITY
WATER QUALITY MONITORING PROGRAM

SAMPLING LOCATION DESCRIPTIONS

CH13	East Plum Creek just upstream of the Plum Creek Wastewater Plant - bridge at Meadows Boulevard and Highway 85
CH14	East Plum Creek at Sedalia - State Highway 67 bridge
CH15	Plum Creek off County Road 16 from Highway 85 - near alluvial well number 4
CH16	Plum Creek at Titan Road bridge
CH17	Plum Creek within Chatfield State Park boundary above reservoir
CH18	Indian Creek at intersection with Rio Grande Avenue west of Sedalia
CH19	Site is on private land and permission for access was not granted
CH20	Jackson Creek on FR502 (road was washed out) - for last 2 events site was moved to the intersection of Jackson Creek Road off Road 105
CH21	Bear Creek west of Perry Park subdivision - follow Cheyenne Road to intersection
CH22	West Plum Creek at Red Rock Road intersection off Road 105
CH23	West Plum Creek at intersection with Dakan Road off Road 105
CH24	West Plum Creek at intersection with Highway 67 west of Sedalia

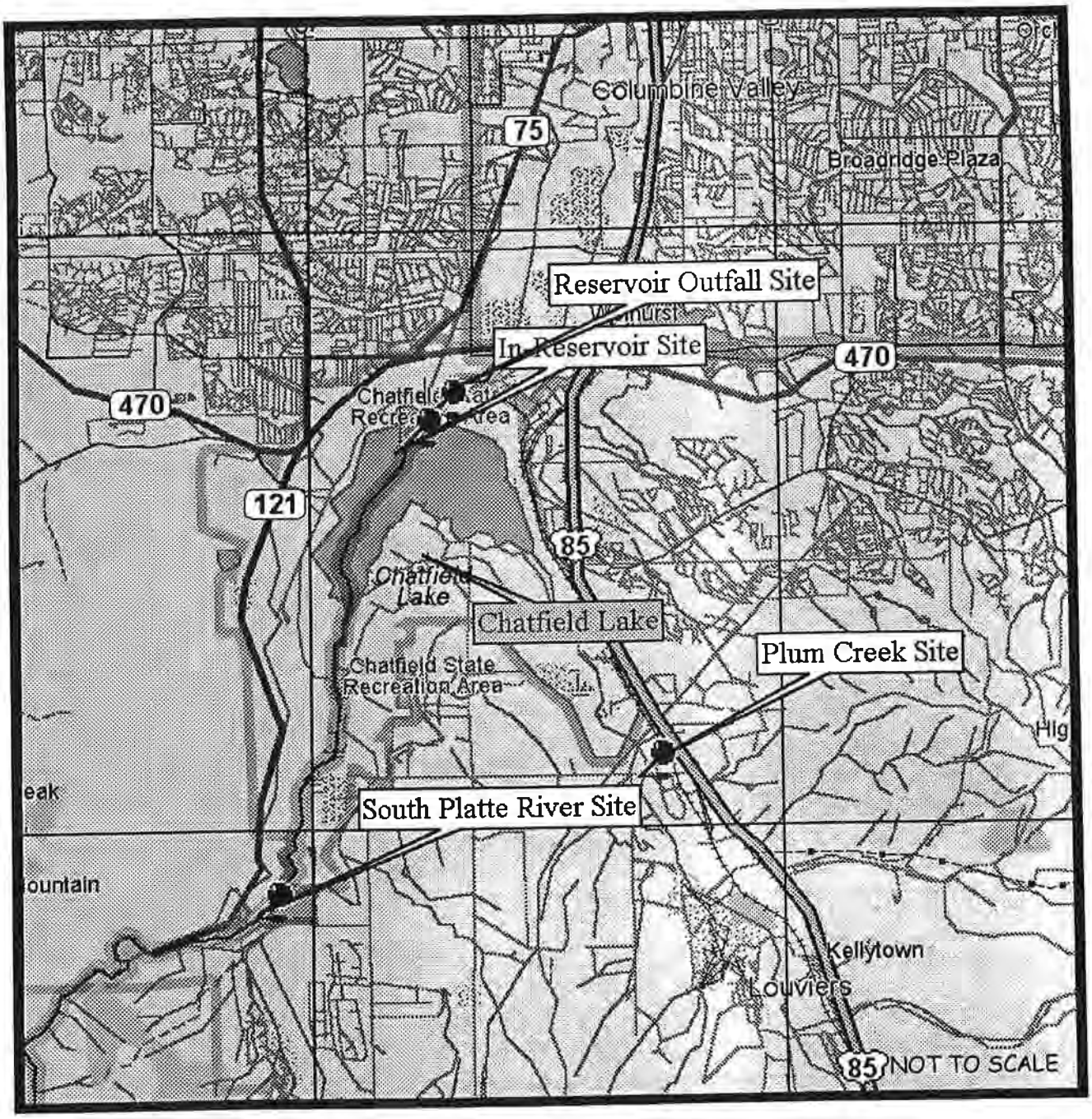

FIGURE 1
IN-RESERVOIR AND INFLOW/OUTFLOW SAMPLING LOCATIONS

CHATFIELD BASIN AND RESERVOIR
WATER-QUALITY MONITORING PROGRAM

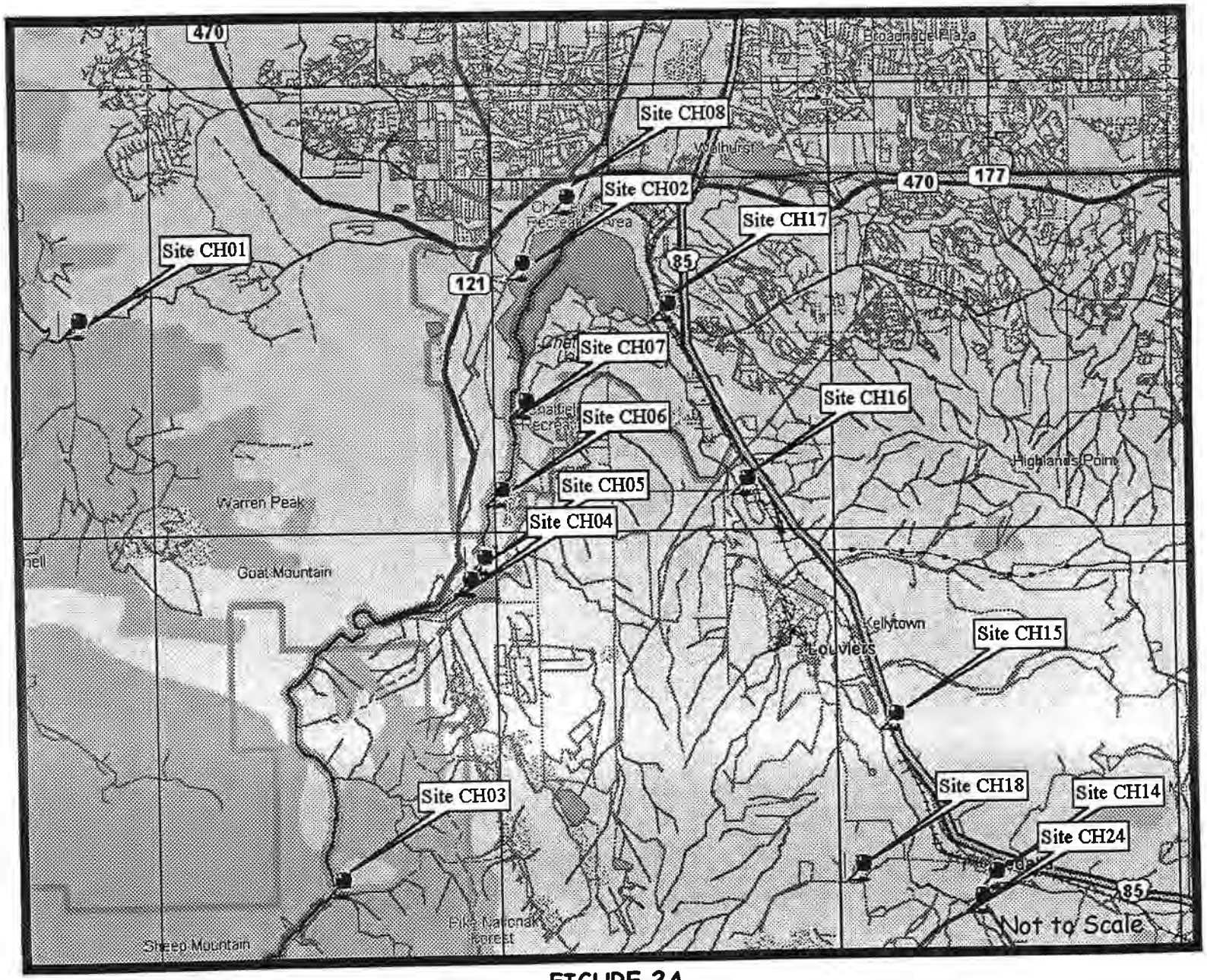

FIGURE 2A

BASIN-WIDE SCREENING SURVEY SAMPLING LOCATIONS

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

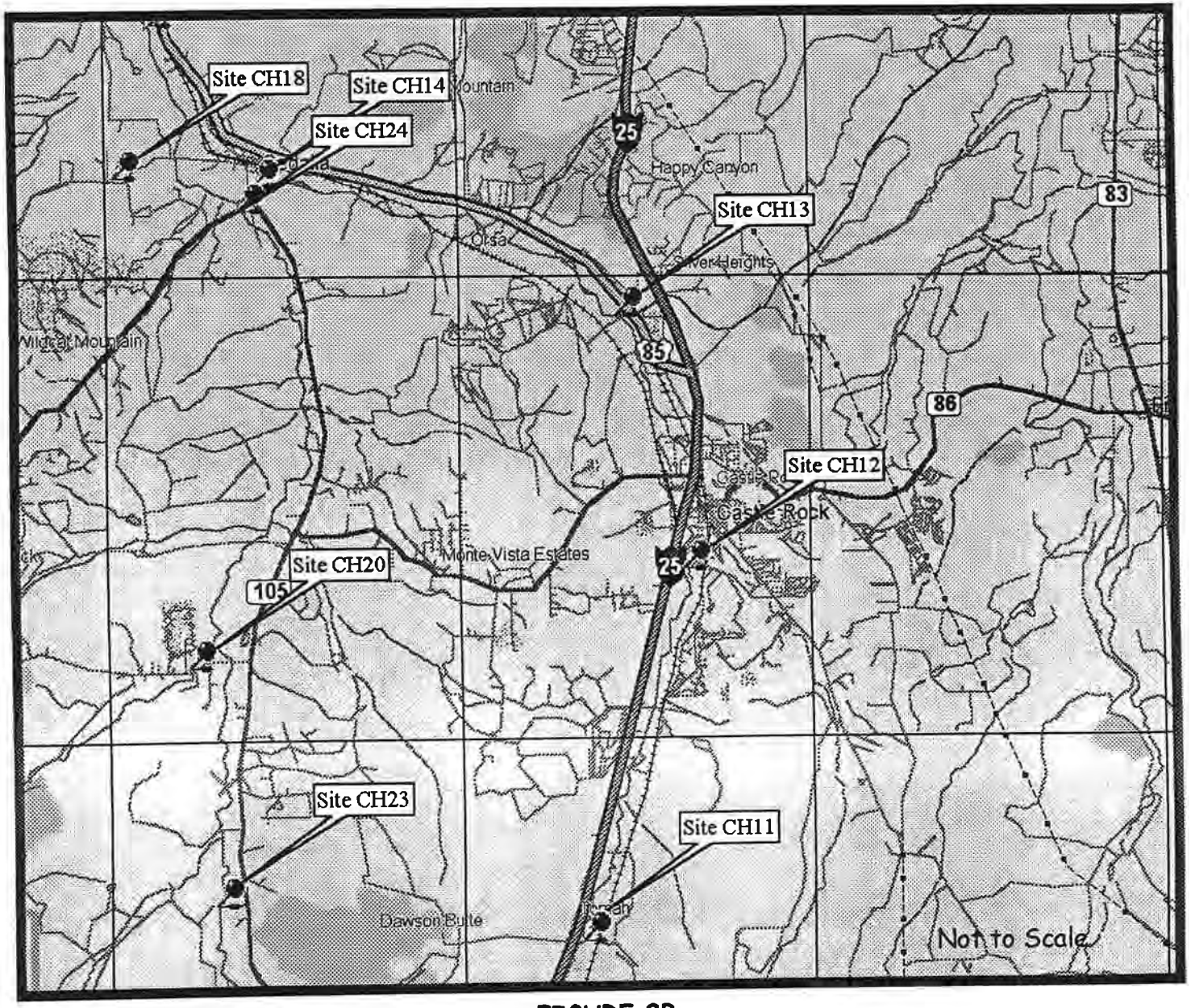

FIGURE 2B

BASIN-WIDE SCREENING SURVEY SAMPLING LOCATIONS

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

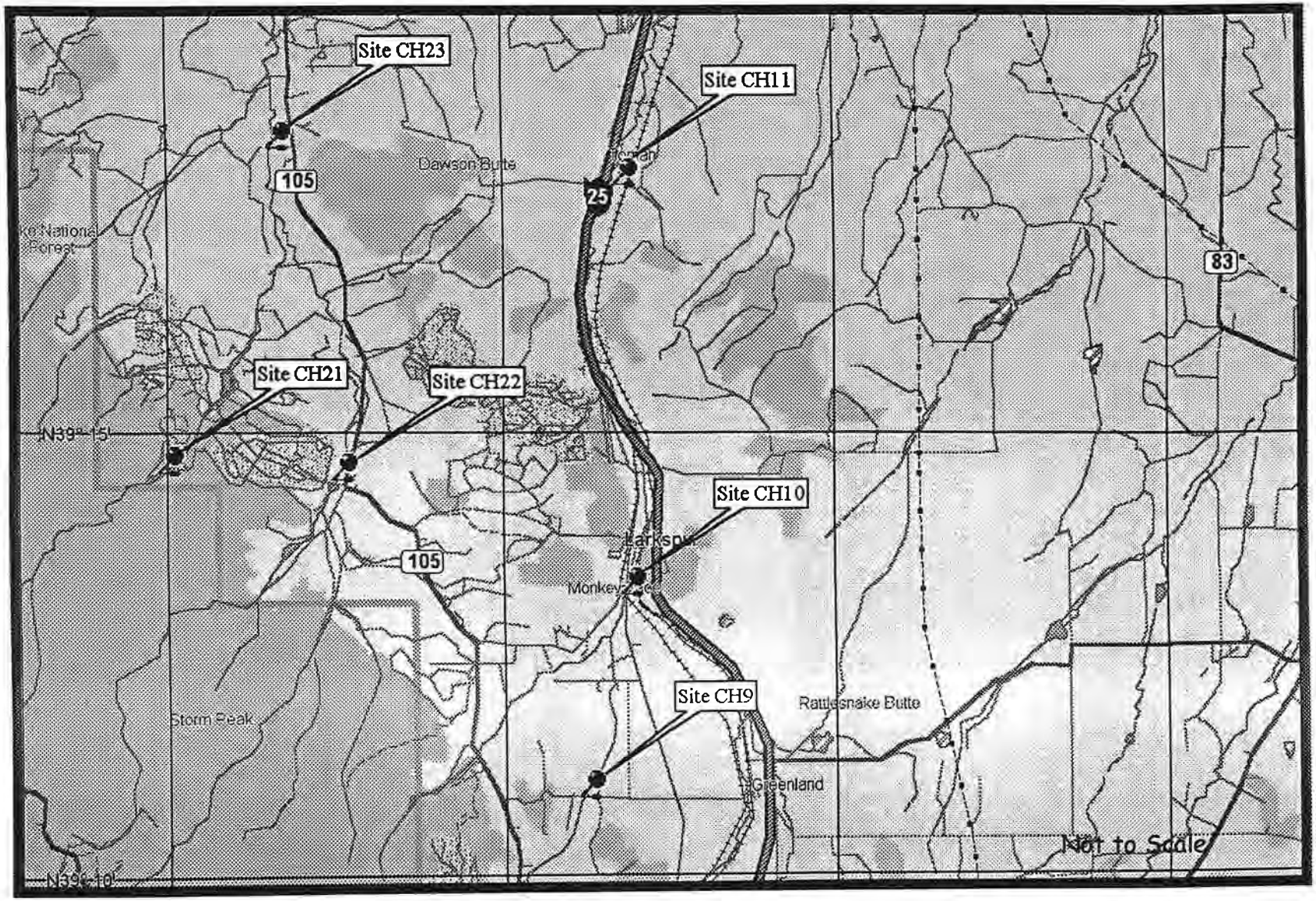

FIGURE 2C

BASIN-WIDE SCREENING SURVEY SAMPLING LOCATIONS

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

BASIC DATA TABLES

TABLE 2
SOUTH PLATTE RIVER AT WATERTON, CO
(FIELD CODE - SP; USGS STATION 06708000)

FIELD MEASUREMENTS

DATE	TIME	INSTANTANEOUS STREAMFLOW (CFS) [1]	pH, FIELD (STD. UNITS)	SPECIFIC CONDUCTANCE FIELD (US/CM)	OXYGEN, DISSOLVED (mg/L)	TEMPERATURE (Deg C)
MDL [2]						
PQL [3]						
18-Feb-99	8:20	50	7.2	386	10.1	1.0
10-Mar-99	7:10	45.7	6.4	271	13.4	2.2
24-Mar-99	8:15	34.2	6.1	357	12.1	6.2
15-Apr-99	7:00	41.6	6.2	267	13.0	1.3
19-May-99	8:30	130	7.0	154	15.3	9.9
09-Jun-99	9:00	802	5.2	218	9.4	10.7
09-Jun-99	*9999*	*802*	*5.2*	*218*	*9.4*	*10.7*
07-Jul-99	7:10	448	6.8	226	10.0	15.7
21-Jul-99	8:10	523	7.3	207	7.2	16.1
04-Aug-99	7:00	675	6.8	159	9.8	14.7
04-Aug-99	*9999*	*675*	*6.8*	*159*	*9.8*	*14.7*
18-Aug-99	7:40	300	6.9	211	6.8	15.0
01-Sep-99	7:00	68.4	6.4	190	8.6	14.9
15-Sep-99	8:15	65.9	6.9	260	7.5	12.6
13-Oct-99	8:20	32.4	6.8	283	8.5	8.8
10-Nov-99	8:30	33	6.0	306	13.1	4.7
15-Dec-99	8:30	56.4	5.8	291	11.6	0.4
15-Dec-99	*9999*	*56.4*	*5.8*	*291*	*11.6*	*0.4*

MINUS SIGN MEANS "LESS THAN" INDICATED VALUE.

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

TIME = 9999 (DATA ITALICIZED) MEANS THE SAMPLE IS A DUPLICATE OR A SPLIT OF THE SAMPLE IMMEDIATELY ABOVE.

1) STREAMFLOW DATA SOURCE: COLORADO DIVISION OF WATER RESOURCES (WRITTEN COMMUNS., JANUARY 23, 2000)

2) MDL= METHOD DETECTION LIMIT.

3) PQL=PRACTICAL QUANTITATION LIMIT.

TABLE 3

SOUTH PLATTE RIVER AT WATERTON, CO

(FIELD CODE - SP; USGS STATION 06708000)

MISCELLANEOUS ANALYSES

DATE	TIME	ALKALINITY, TOTAL (mg/L)	BOD, 5-DAY (mg/L)	COLIFORM, FECAL (#/100 ML)	CYANIDE, WAD (mg/L)	HARDNESS (mg/L as CaCO3)	SUSPENDED SEDIMENT, TOTAL (gm/M^3)
MDL [1]		2	2-6	1	0.01	1	5
PQL [2]		10	2-30	1	0.05	7	20
18-Feb-99	8:20		-3	13		160	70
10-Mar-99	7:10		-3	-1		102	-5
24-Mar-99	8:15	63	-3	-1	-0.01	114	-5
15-Apr-99	7:00		-3	2		102	22
19-May-99	8:30	49	-3	6	-0.01	64	18
09-Jun-99	9:00		-3	29		73	-5
09-Jun-99	*9999*		*-3*	*24*		*74*	*10*
07-Jul-99	7:10	69	26.5	13	-0.01	89	-5
21-Jul-99	8:10						-5
04-Aug-99	7:00		-3	24		66	*10*
04-Aug-99	*9999*		*-3*	*67*		*65*	*12*
18-Aug-99	7:40						*8*
01-Sep-99	7:00		-3	9		81	-5
15-Sep-99	8:15						6
13-Oct-99	8:20		-3	6		105	10
10-Nov-99	8:30	80	-3	110	-0.01	106	-5
15-Dec-99	8:30		-1	-1		113	-5
15-Dec-99	*9999*		*-1*	*-1*		*113*	*-5*

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1) MDL= METHOD DETECTION LIMIT. BOD VALUE VARIES.

2) PQL=PRACTICAL QUANTITATION LIMIT. BOD VALUE VARIES.

TABLE 4

SOUTH PLATTE RIVER AT WATERTON, CO

(FIELD CODE - SP; USGS STATION 06708000)

NUTRIENT ANALYSES

DATE	TIME	NITRATE (mg/L as N)	NITRATE/ NITRITE (mg/L as N)	NITRITE (mg/L as N)	NITROGEN, AMMONIA (mg/L)	NITROGEN, TOTAL (mg/L)	PHOSPHORUS ORTHO, TOTAL (mg/L as P)	PHOSPHORUS, TOTAL (mg/L as P)
MDL [1]		0.02	0.02	0.01	0.05	0.1	0.005	0.01
PQL [2]		0.1	0.1	0.05	0.3	0.5	0.03	0.05
18-Feb-99	8:20	0.25	0.25	-0.01	-0.05		-0.005	0.12
10-Mar-99	7:10	0.13	0.13	-0.01	-0.05		-0.005	-0.01
24-Mar-99	8:15	0.15	0.15	-0.01	0.09	0.5	0.005	-0.01
15-Apr-99	7:00	0.21	0.21	-0.01	-0.05		-0.005	-0.01
19-May-99	8:30	0.08	0.08	-0.01	-0.05	0.3	0.010	0.02
09-Jun-99	9:00	0.07	0.07	-0.01	0.06		-0.005	0.02
09-Jun-99	*9999*	*0.05*	*0.05*	*-0.01*	*0.09*		*0.012*	*0.02*
07-Jul-99	7:10	0.05	0.05	-0.01	0.06	0.2	-0.005	0.01
21-Jul-99	8:10	0.03	0.03	-0.01	-0.05		*-0.005*	0.007
04-Aug-99	7:00	0.14	0.14	-0.01	*0.17*		*0.024*	*0.03*
04-Aug-99	*9999*	*0.09*	*0.09*	*-0.01*	*0.1*		*0.022*	*0.03*
18-Aug-99	7:40	*0.04*	*0.04*	-0.01	-0.05		*0.008*	-0.01
01-Sep-99	7:00	0.03	0.03	-0.01	-0.05		-0.005	-0.01
15-Sep-99	8:15	0.03	0.03	-0.01	-0.05		0.020	0.005
13-Oct-99	8:20	0.13	0.13	-0.01	0.07		0.008	0.01
10-Nov-99	8:30	0.07	0.07	-0.01	-0.05	0.3	-0.005	-0.01
15-Dec-99	8:30	0.12	0.12	-0.01	0.09		0.006	-0.01
15-Dec-99	*9999*	*0.14*	*0.14*	*-0.01*	*0.38*		*0.010*	*0.03*

MINUS SIGN MEANS "LESS THAN" INDICATED VALUE.

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TIME = 9999 (DATA ITALICIZED) MEANS THE SAMPLE IS A DUPLICATE OR A SPLIT OF THE SAMPLE IMMEDIATELY ABOVE.

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2) PQL=PRACTICAL QUANTITATION LIMIT.

TABLE 5

SOUTH PLATTE RIVER AT WATERTON, CO

(FIELD CODE - SP; USGS STATION 06708000)

METALS ANALYSES

DATE	TIME	ARSENIC, TOTAL (mg/L)	CADMIUM, DISSOLVED (mg/L)	CALCIUM, DISSOLVED (mg/L)	COPPER, DISSOLVED (mg/L)	CHROMIUM, HEXAVALENT, DISSOLVED (mg/L)	CHROMIUM, TRIVALENT DISSOLVED (mg/L)	IRON, DISSOLVED (mg/L)	LEAD, DISSOLVED (mg/L)
MDL [1]		0.001	0.003	0.2	0.01	0.0006	0.0006	0.01	0.04
PQL [2]		0.005	0.02	1	0.05	0.005	0.005	0.05	0.2
18-Feb-99	8:20		-0.003	44.4	-0.01				-0.04
10-Mar-99	7:10		-0.003	30.2	-0.01				-0.04
24-Mar-99	8:15	-0.001	-0.003	34.7	-0.01	-0.005	-0.005	0.02	-0.04
15-Apr-99	7:00		-0.003	32.1	-0.01				-0.04
19-May-99	8:30	-0.001	-0.003	18.2	-0.01	-0.005	-0.005	0.24	-0.04
09-Jun-99	9:00		-0.003	19.7	-0.01				-0.04
09-Jun-99	*9999*		*-0.003*	*19.9*	*-0.01*				*-0.04*
07-Jul-99	7:10	-0.001	-0.003	23.1	-0.01	-0.005	-0.005	0.08	-0.04
21-Jul-99	8:10								
04-Aug-99	7:00		-0.003	18.7	-0.01				-0.04
04-Aug-99	*9999*		*-0.003*	*18.6*	*-0.01*				*-0.04*
18-Aug-99	7:40								
01-Sep-99	7:00		-0.003	21.7	-0.01				-0.04
15-Sep-99	8:15								
13-Oct-99	8:20		-0.003	27.3	-0.01				-0.04
10-Nov-99	8:30	-0.001	-0.003	27.7	-0.01	-0.005	-0.005	0.03	-0.04
15-Dec-99	8:30		-0.003	30.1	-0.01				-0.04
15-Dec-99	*9999*		*-0.003*	*30.1*	*-0.01*				*-0.04*

MINUS SIGN MEANS "LESS THAN" INDICATED VALUE.

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

TIME = 9999 (DATA ITALICIZED) MEANS THE SAMPLE IS A DUPLICATE OR A SPLIT OF THE SAMPLE IMMEDIATELY ABOVE.

1) MDL= METHOD DETECTION LIMIT.

2) PQL=PRACTICAL QUANTITATION LIMIT.

TABLE 5 (Continued)
SOUTH PLATTE RIVER AT WATERTON, CO
(FIELD CODE - SP; USGS STATION 06708000)
METALS ANALYSES

DATE	TIME	MAGNESIUM, DISSOLVED (mg/L)	MANGANESE DISSOLVED (mg/L)	MERCURY, DISSOLVED (mg/L)	NICKEL, DISSOLVED (mg/L)	SELENIUM, DISSOLVED (mg/L)	SILVER, DISSOLVED (mg/L)	ZINC, DISSOLVED (mg/L)
MDL [1]		0.2	0.005	0.0002	0.01	0.001	0.005	0.01
PQL [2]		1	0.03	0.001	0.05	0.005	0.03	0.05
18-Feb-99	8:20	11.9		-0.0002		-0.001		
10-Mar-99	7:10	6.5		-0.0002		-0.001		
24-Mar-99	8:15	6.7	0.017	-0.0002	-0.01	-0.001	-0.005	0.02
15-Apr-99	7:00	5.2		-0.0002		-0.001		
19-May-99	8:30	4.6	0.028	-0.0002	-0.01	-0.001	-0.005	0.01
09-Jun-99	9:00	5.7		-0.0002		-0.001		
09-Jun-99	*9999*	*5.8*		*-0.0002*		*-0.001*		
07-Jul-99	7:10	7.7	0.027	-0.0002	-0.01	-0.001	-0.005	-0.01
21-Jul-99	8:10							
04-Aug-99	7:00	4.6		-0.0002		-0.001		
04-Aug-99	*9999*	*4.6*		*-0.0002*		*-0.001*		
18-Aug-99	7:40							
01-Sep-99	7:00	6.6		-0.0002		-0.001		
15-Sep-99	8:15							
13-Oct-99	8:20	9.0		-0.0002		-0.001		
10-Nov-99	8:30	9	0.006	-0.0002	-0.01	-0.001	-0.005	-0.01
15-Dec-99	8:30	9.1		-0.0002		-0.001		
15-Dec-99	*9999*	*9.1*		*-0.0002*		*-0.001*		

MINUS SIGN MEANS "LESS THAN" INDICATED VALUE.

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

TIME = 9999 (DATA ITALICIZED) MEANS THE SAMPLE IS A DUPLICATE OR A SPLIT OF THE SAMPLE IMMEDIATELY ABOVE.

1) MDL= METHOD DETECTION LIMIT.

2) PQL=PRACTICAL QUANTITATION LIMIT.

TABLE 6
PLUM CREEK AT TITAN ROAD NEAR LOUVIERS, CO
(FIELD CODE - PC; USGS STATION 06709530)

FIELD MEASUREMENTS

DATE	TIME	INSTANTANEOUS STREAMFLOW (CFS) [1]	pH, FIELD (STD. UNITS)	SPECIFIC CONDUCTANCE FIELD (US/CM)	OXYGEN, DISSOLVED (mg/L)	TEMPERATURE (Deg C)
MDL [2]						
PQL [3]						
18-Feb-99	8:00	18 (est.)	5.95	580	10.7	2.1
10-Mar-99	7:35	17 (est.)	7.07	420	10.84	3.3
24-Mar-99	7:45	15 (est.)	5.1	575	11.19	7.8
15-Apr-99	7:25	420	6.92	276	13.19	0.1
19-May-99	8:00	227	5.84	332	10.43	12.7
19-May-99	*9999*	*227*	*5.84*	*332*	*10.43*	*12.7*
09-Jun-99	9:25	119	5.89	212	7.66	13.9
07-Jul-99	7:35	21.6	7.72	305	8.89	18.1
21-Jul-99	7:45	36 (est.)	5.65	370	4.5	18.0
04-Aug-99	7:25	56 (est.)	7.55	328	8.66	17.7
18-Aug-99	7:20	62	5.54	342	6.44	15.8
01-Sep-99	7:20	19	7.07	330	6.6	17.5
15-Sep-99	7:45	10 (est.)	5.78	420	7.75	11.4
15-Sep-99	*9999*	*10 (est.)*	*5.78*	*420*	*7.75*	*11.4*
13-Oct-99	8:00	3.9 (est.)	5.79	420	9.81	8.2
10-Nov-99	8:00	10.6 (est.)	5.59	402	10.14	5.1
15-Dec-99	7:50	15 (est.)	4.81	514	11.2	1.6

MINUS SIGN MEANS "LESS THAN" INDICATED VALUE.

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

TIME = 9999 (DATA ITALICIZED) MEANS THE SAMPLE IS A DUPLICATE OR A SPLIT OF THE SAMPLE IMMEDIATELY ABOVE.

1) STREAMFLOW DATA SOURCE: U.S. GEOLOGICAL SURVEY (WRITTEN COMMUNS., JANUARY 23, 2000)
2) MDL= METHOD DETECTION LIMIT.
3) PQL=PRACTICAL QUANTITATION LIMIT.

TABLE 7
PLUM CREEK AT TITAN ROAD NEAR LOUVIERS, CO
(FIELD CODE - PC; USGS STATION 06709530)
MISCELLANEOUS ANALYSES

DATE	TIME	ALKALINITY, TOTAL (mg/L)	BOD, 5-DAY (mg/L)	COLIFORM, FECAL (#/100 ML)	CYANIDE, WAD (mg/L)	HARDNESS (mg/L as CaCO3)	SUSPENDED SEDIMENT, TOTAL (gm/M^3)
MDL [1]		2	3-6	1	0.01	1	5
PQL [2]		10	3-30	1	0.05	7	20
18-Feb-99	8:00		-3	20		152	74
10-Mar-99	7:35		-3	53		127	28
24-Mar-99	7:45	103	-3	48	-0.01	157	72
15-Apr-99	7:25		-3	320		123	1140
19-May-99	8:00	87	-3	120	-0.01	108	252
19-May-99	*9999*	*87*	*-3*	*100*	*-0.01*	*108*	*250*
09-Jun-99	9:25		5	110		88	13
07-Jul-99	7:35	91	-3	350	-0.01	126	100
21-Jul-99	7:45						112
04-Aug-99	7:25		-3	77		121	302
18-Aug-99	7:20						124
01-Sep-99	7:20		-3	560		132	140
15-Sep-99	7:45						164
15-Sep-99	*9999*						*158*
13-Oct-99	8:00		-3	160		139	92
10-Nov-99	8:00		-1	160	-0.01	136	52
15-Dec-99	7:50		-1	72		111	146

MINUS SIGN MEANS "LESS THAN" INDICATED VALUE.
BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.
TIME = 9999 (DATA ITALICIZED) MEANS THE SAMPLE IS A DUPLICATE OR A SPLIT OF THE SAMPLE IMMEDIATELY ABOVE.

1) MDL= METHOD DETECTION LIMIT. BOD VALUE VARIES.
2) PQL=PRACTICAL QUANTITATION LIMIT. BOD VALUE VARIES.

TABLE 8
PLUM CREEK AT TITAN ROAD NEAR LOUVIERS, CO
(FIELD CODE - PC; USGS STATION 06709530)
NUTRIENT ANALYSES

DATE	TIME	NITRATE (mg/L as N)	NITRATE/ NITRITE (mg/L as N)	NITRITE (mg/L as N)	NITROGEN, AMMONIA (mg/L)	NITROGEN, TOTAL (mg/L)	PHOSPHORUS ORTHO, TOTAL (mg/L as P)	PHOSPHORUS, TOTAL (mg/L as P)
MDL [1]		0.02	0.02	0.01	0.05	0.1	0.005	0.01
PQL [2]		0.1	0.1	0.05	0.3	0.5	0.03	0.05
18-Feb-99	8:00	1.05	1.06	0.01	0.13		0.044	0.06
10-Mar-99	7:35	0.65	0.66	0.01	-0.05		0.019	0.04
24-Mar-99	7:45	0.24	0.24	-0.01	-0.05	0.50	0.018	0.04
15-Apr-99	7:25	0.78	0.8	0.02	0.21		0.125	0.52
19-May-99	8:00	0.40	0.40	-0.01	0.07	0.70	0.189	0.20
19-May-99	*9999*	*0.42*	*0.42*	*-0.01*	*-0.05*	*1.00*	*0.211*	*0.21*
09-Jun-99	9:25	0.14	0.14	-0.01	-0.05		0.038	0.22
07-Jul-99	7:35	0.20	0.20	-0.01	-0.05	0.40	0.113	0.11
21-Jul-99	7:45	0.37	0.37	-0.01	*0.05*		0.050	*0.04*
04-Aug-99	7:25	0.73	0.73	-0.01	*0.07*		0.192	0.2
18-Aug-99	7:20	0.48	0.48	-0.01	*0.14*		0.075	0.09
01-Sep-99	7:20	0.61	0.62	0.01	-0.05		0.052	0.1
15-Sep-99	7:45	0.86	0.86	-0.01	0.08		0.111	0.13
15-Sep-99	*9999*	*0.85*	*0.85*	*-0.01*	*-0.05*		*0.067*	*0.12*
13-Oct-99	8:00	0.10	0.1	-0.01	-0.05		0.069	0.08
10-Nov-99	8:00	0.41	0.41	-0.01	-0.05	0.7	0.029	0.06
15-Dec-99	7:50	0.13	0.13	-0.01	-0.05		0.051	0.07

MINUS SIGN MEANS "LESS THAN" INDICATED VALUE.

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

TIME = 9999 (DATA ITALICIZED) MEANS THE SAMPLE IS A DUPLICATE OR A SPLIT OF THE SAMPLE IMMEDIATELY ABOVE.

1) MDL= METHOD DETECTION LIMIT.

2) PQL=PRACTICAL QUANTITATION LIMIT.

TABLE 9
PLUM CREEK AT TITAN ROAD NEAR LOUVIERS, CO
(FIELD CODE - PC; USGS STATION 06709530)
METALS ANALYSES

DATE	TIME	ARSENIC, TOTAL (mg/L)	CADMIUM, DISSOLVED (mg/L)	CALCIUM, DISSOLVED (mg/L)	COPPER, DISSOLVED (mg/L)	CHROMIUM, HEXAVALENT, DISSOLVED (mg/L)	CHROMIUM, TRIVALENT DISSOLVED (mg/L)	IRON, DISSOLVED (mg/L)	LEAD, DISSOLVED (mg/L)
MDL [1]		0.001	0.003	0.2	0.01	0.0006	0.0006	0.01	0.04
PQL [2]		0.005	0.02	1	0.05	0.005	0.005	0.05	0.2
18-Feb-99	8:00		-0.003	49.0	-0.01				-0.04
10-Mar-99	7:35		-0.003	41.0	-0.01				-0.04
24-Mar-99	7:45	-0.001	-0.003	51.1	-0.01	-0.005	-0.005	0.13	-0.04
15-Apr-99	7:25		-0.003	39.1	-0.01				-0.04
19-May-99	8:00	0.002	-0.003	34.5	-0.01	-0.005	-0.005	0.12	-0.04
19-May-99	*9999*	*0.002*	*-0.003*	*34.6*	*-0.01*	*-0.005*	*-0.005*	*0.10*	*-0.04*
09-Jun-99	9:25		-0.003	28.5	-0.01				-0.04
07-Jul-99	7:35	0.001	0.004	40.5	-0.01	-0.005	-0.005	0.08	-0.04
21-Jul-99	7:45								
04-Aug-99	7:25		-0.003	38.8	-0.01				-0.04
18-Aug-99	7:20								
01-Sep-99	7:20		-0.003	42.6	-0.01				-0.04
15-Sep-99	7:45								
15-Sep-99	*9999*								
13-Oct-99	8:00		-0.003	44.7	-0.01				-0.04
10-Nov-99	8:00	-0.01	-0.003	43.3	-0.01	-0.005	-0.005	0.08	-0.04
15-Dec-99	7:50		-0.003	29.8	-0.01				-0.04

MINUS SIGN MEANS "LESS THAN" INDICATED VALUE.

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

TIME = 9999 (DATA ITALICIZED) MEANS THE SAMPLE IS A DUPLICATE OR A SPLIT OF THE SAMPLE IMMEDIATELY ABOVE.

1) MDL= METHOD DETECTION LIMIT.

2) PQL=PRACTICAL QUANTITATION LIMIT.

TABLE 9 (Continued)
PLUM CREEK AT TITAN ROAD NEAR LOUVIERS, CO
(FIELD CODE - PC; USGS STATION 06709530)
METALS ANALYSES

DATE	TIME	MAGNESIUM, DISSOLVED (mg/L)	MANGANESE DISSOLVED (mg/L)	MERCURY, DISSOLVED (mg/L)	NICKEL, DISSOLVED (mg/L)	SELENIUM, DISSOLVED (mg/L)	SILVER, DISSOLVED (mg/L)	ZINC, DISSOLVED (mg/L)
MDL [1]		0.2	0.005	0.0002	0.01	0.001	0.005	0.01
PQL [2]		1	0.03	0.001	0.05	0.005	0.03	0.05
18-Feb-99	8:00	7.1		-0.0002		0.001	-0.005	-0.01
10-Mar-99	7:35	5.9		-0.0002		0.001		
24-Mar-99	7:45	7.2	0.179	-0.0002	-0.01	-0.001	-0.005	0.02
15-Apr-99	7:25	6.1		-0.0002		0.002		
19-May-99	8:00	5.2	0.298	-0.0002	-0.01	0.001	-0.005	-0.01
19-May-99	*9999*	*5.2*	*0.299*	*-0.0002*	*-0.01*	*0.001*	*-0.005*	*-0.01*
09-Jun-99	9:25	4.0		-0.0002		-0.001		
07-Jul-99	7:35	6.1	0.03	-0.0002	-0.01	-0.001	-0.005	0.03
21-Jul-99	7:45							
04-Aug-99	7:25	5.9		-0.0002		-0.001		
18-Aug-99	7:20						-0.005	-0.01
01-Sep-99	7:20	6.3		-0.0002		-0.001		
15-Sep-99	7:45							
15-Sep-99	*9999*							
13-Oct-99	8:00	6.7		-0.0002		-0.001		
10-Nov-99	8:00	6.8	0.123	-0.0002	-0.01	-0.001	-0.005	0.05
15-Dec-99	7:50	9		-0.0002		-0.001		

MINUS SIGN MEANS "LESS THAN" INDICATED VALUE.

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

TIME = 9999 (DATA ITALICIZED) MEANS THE SAMPLE IS A DUPLICATE OR A SPLIT OF THE SAMPLE IMMEDIATELY ABOVE.

1) MDL= METHOD DETECTION LIMIT.

2) PQL=PRACTICAL QUANTITATION LIMIT.

TABLE 10
CHATFIELD RESERVOIR OUTFLOW NEAR LITTLETON, CO
(FIELD CODE - SO; USGS STATION 06709601)

FIELD MEASUREMENTS

DATE	TIME	INSTANTANEOUS STREAMFLOW (CFS) [1]	pH, FIELD (STD. UNITS)	SPECIFIC CONDUCTANCE FIELD (US/CM)	OXYGEN, DISSOLVED (mg/L)	TEMPERATURE (Deg C)
MDL [2]						
PQL [3]						
18-Feb-99	8:40	1.6	7.8	327	11.0	0.5
10-Mar-99	8:10	49	7.7	322	13.0	4.0
10-Mar-99	*9999*	*49*	*7.7*	*322*	*13.0*	*4.0*
24-Mar-99	8:45	37	6.5	313	13.4	7.9
15-Apr-99	8:15	28	7.4	319	10.3	6.5
19-May-99	9:00	160	7.4	249	13.9	13.1
09-Jun-99	10:00	500	6.8	201	7.2	14.9
07-Jul-99	8:20	460	7.7	217	8.6	18.4
07-Jul-99	*9999*	*460*	*7.7*	*217*	*8.6*	*18.4*
21-Jul-99	8:30	380	7.5	225	6.1	20.1
04-Aug-99	8:10	100	7.6	204	7.6	18.4
18-Aug-99	8:00	490	7.3	214	6.6	18.6
01-Sep-99	8:00	48	7.5	207	7.7	18.1
15-Sep-99	8:45	36	7.4	230	6.8	16.6
13-Oct-99	8:40	7.8	7.2	246	7.3	11.1
10-Nov-99	9:00	54	6.2	264	9.0	8.6
15-Dec-99	9:00	39	5.7	284	11.7	1.2

MINUS SIGN MEANS "LESS THAN" INDICATED VALUE.

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

TIME = 9999 (DATA ITALICIZED) MEANS THE SAMPLE IS A DUPLICATE OR A SPLIT OF THE SAMPLE IMMEDIATELY ABOVE.

1) STREAMFLOW DATA SOURCE: U.S.ARMY CORPS OF ENGINEERS (WRITTEN COMMUNS., JANUARY 23, 2000)
2) MDL= METHOD DETECTION LIMIT.
3) PQL=PRACTICAL QUANTITATION LIMIT.

TABLE 11
CHATFIELD RESERVOIR OUTFLOW NEAR LITTLETON, CO
(FIELD CODE - SO; USGS STATION 06709601)

MISCELLANEOUS ANALYSES

DATE	TIME	ALKALINITY, TOTAL (mg/L)	BOD, 5-DAY (mg/L)	COLIFORM, FECAL (#/100 ML)	CYANIDE, WAD (mg/L)	HARDNESS (mg/L as CaCO3)	SUSPENDED SEDIMENT, TOTAL (gm/M^3)
MDL [1]		2	2-6	1	0.01	1	5
PQL [2]		10	2-30	1	0.05	7	20
18-Feb-99	8:40		-3	-1		127	-5
10-Mar-99	8:10		-3	-1		110	6
10-Mar-99	*9999*		*0.3*	*-1*		*120*	*-5*
24-Mar-99	8:45	94	-3	-1	-0.01	130	-5
15-Apr-99	8:15		-3	-1		125	10
19-May-99	9:00	70	-3	22	-0.01	101	58
09-Jun-99	10:00		-3	8		80	18
07-Jul-99	8:20	67	-3	1	-0.01	88	20
07-Jul-99	*9999*	*68*	*-3*	*1*	*-0.01*	*89*	*6*
21-Jul-99	8:30						14
04-Aug-99	8:10		-3	5		82	10
18-Aug-99	8:00						-5
01-Sep-99	8:00		-3	9		89	10
15-Sep-99	8:45						10
13-Oct-99	8:40		-3	16		98	24
10-Nov-99	9:00	82	-3	-1	-0.01	106	-5
15-Dec-99	9:00		-1	-1		111	-5

MINUS SIGN MEANS "LESS THAN" INDICATED VALUE.

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

TIME = 9999 (DATA ITALICIZED) MEANS THE SAMPLE IS A DUPLICATE OR A SPLIT OF THE SAMPLE IMMEDIATELY ABOVE.

1) MDL= METHOD DETECTION LIMIT. BOD VALUE VARIES.
2) PQL=PRACTICAL QUANTITATION LIMIT. BOD VALUE VARIES.

TABLE 12
CHATFIELD RESERVOIR OUTFLOW NEAR LITTLETON, CO
(FIELD CODE - SO; USGS STATION 06709601)

NUTRIENT ANALYSES

DATE	TIME	NITRATE (mg/L as N)	NITRATE/ NITRITE (mg/L as N)	NITRITE (mg/L as N)	NITROGEN, AMMONIA (mg/L)	NITROGEN, TOTAL (mg/L)	PHOSPHORUS ORTHO, TOTAL (mg/L as P)	PHOSPHORUS, TOTAL (mg/L as P)
MDL [1]		0.02	0.02	0.01	0.05	0.1	0.005	0.01
PQL [2]		0.1	0.1	0.05	0.3	0.5	0.03	0.05
18-Feb-99	8:40	0.14	0.14	-0.01	0.07		-0.005	-0.010
10-Mar-99	8:10	-0.02	-0.02	-0.01	-0.05		-0.005	-0.010
10-Mar-99	*9999*	*0.03*	*0.03*	*-0.01*	*-0.05*		*-0.005*	*-0.010*
24-Mar-99	8:45	0.12	0.12	-0.01	0.05	0.2	-0.005	-0.010
15-Apr-99	8:15	-0.02	-0.02	-0.01	-0.05		-0.005	-0.010
19-May-99	9:00	0.18	0.19	0.01	-0.05	0.5	0.113	0.080
09-Jun-99	10:00	0.08	0.08	-0.01	0.08		0.046	0.040
07-Jul-99	8:20	0.04	0.04	-0.01	0.11	0.4	-0.005	0.020
07-Jul-99	*9999*	*0.04*	*0.04*	*-0.01*	*0.11*	*0.3*	*-0.005*	*0.020*
21-Jul-99	8:30	0.04	0.04	-0.01	-0.05		0.031	0.010
04-Aug-99	8:10	0.07	0.07	-0.01	-0.05		0.029	0.020
18-Aug-99	8:00	-0.02	-0.02	-0.01	-0.05		-0.005	-0.010
01-Sep-99	8:00	0.08	0.08	-0.01	-0.05		0.011	-0.010
15-Sep-99	8:45	0.03	0.03	-0.01	-0.05		0.011	0.040
13-Oct-99	8:40	-0.02	-0.02	-0.01	-0.05		0.017	0.030
10-Nov-99	9:00	0.08	0.08	-0.01	-0.05	0.2	-0.005	0.030
15-Dec-99	9:00	0.13	0.13	-0.01	-0.05		0.007	0.030

MINUS SIGN MEANS "LESS THAN" INDICATED VALUE.

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

TIME = 9999 (DATA ITALICIZED) MEANS THE SAMPLE IS A DUPLICATE OR A SPLIT OF THE SAMPLE IMMEDIATELY ABOVE.

1) MDL= METHOD DETECTION LIMIT.

2) PQL=PRACTICAL QUANTITATION LIMIT.

TABLE 13
CHATFIELD RESERVOIR OUTFLOW NEAR LITTLETON, CO
(FIELD CODE - SO; USGS STATION 06709601)

METALS ANALYSES

DATE	TIME	ARSENIC, TOTAL (mg/L)	CADMIUM, DISSOLVED (mg/L)	CALCIUM, DISSOLVED (mg/L)	COPPER, DISSOLVED (mg/L)	CHROMIUM, HEXAVALENT, DISSOLVED (mg/L)	CHROMIUM, TRIVALENT DISSOLVED (mg/L)	IRON, DISSOLVED (mg/L)	LEAD, DISSOLVED (mg/L)
MDL [1]		0.001	0.003	0.2	0.01	0.0006	0.0006	0.01	0.04
PQL [2]		0.005	0.02	1	0.05	0.005	0.005	0.05	0.2
18-Feb-99	8:40		-0.003	36.0	-0.01				-0.04
10-Mar-99	8:10		-0.003	31.1	-0.01				-0.04
10-Mar-99	*9999*		*-0.003*	*34.0*	*-0.01*				*-0.04*
24-Mar-99	8:45	-0.001	-0.003	37.1	-0.01	-0.005	-0.005	0.02	-0.04
15-Apr-99	8:15		-0.003	35.3	-0.01				-0.04
19-May-99	9:00	-0.001	-0.003	30.2	-0.01	-0.005	-0.005	0.32	-0.04
09-Jun-99	10:00		-0.003	23.0	-0.01				-0.04
07-Jul-99	8:20	0.001	0.004	23.6	-0.01	-0.005	-0.005	0.11	-0.04
07-Jul-99	*9999*	*-0.001*	*-0.003*	*23.8*	*-0.01*	*-0.005*	*-0.005*	*0.11*	*-0.04*
21-Jul-99	8:30								
04-Aug-99	8:10		-0.003	22.2	-0.01				-0.04
18-Aug-99	8:00								
01-Sep-99	8:00		-0.003	24.1	-0.01				-0.04
15-Sep-99	8:45								
13-Oct-99	8:40		-0.003	27.2	-0.01				-0.04
10-Nov-99	9:00	-0.001	-0.003	27.7	-0.01	-0.005	-0.005	0.03	-0.04
15-Dec-99	9:00		-0.003	29.7	-0.01				-0.04

MINUS SIGN MEANS "LESS THAN" INDICATED VALUE.

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

TIME = 9999 (DATA ITALICIZED) MEANS THE SAMPLE IS A DUPLICATE OR A SPLIT OF THE SAMPLE IMMEDIATELY ABOVE.

1) MDL= METHOD DETECTION LIMIT.

2) PQL=PRACTICAL QUANTITATION LIMIT.

TABLE 13 (Continued)
CHATFIELD RESERVOIR OUTFLOW NEAR LITTLETON, CO
(FIELD CODE - SO; USGS STATION 06709601)

METALS ANALYSES

DATE	TIME	MAGNESIUM, DISSOLVED (mg/L)	MANGANESE DISSOLVED (mg/L)	MERCURY, DISSOLVED (mg/L)	NICKEL, DISSOLVED (mg/L)	SELENIUM, DISSOLVED (mg/L)	SILVER, DISSOLVED (mg/L)	ZINC, DISSOLVED (mg/L)
MDL [1]		0.2	0.005	0.0002	0.01	0.001	0.005	0.01
PQL [2]		1	0.03	0.001	0.05	0.005	0.03	0.05
18-Feb-99	8:40	8.9		-0.0002		-0.001		
10-Mar-99	8:10	7.9		-0.0002		-0.001		
10-Mar-99	*9999*	*8.5*		*-0.0002*		*-0.001*		
24-Mar-99	8:45	9.0	0.01	-0.0002	-0.01	-0.001	-0.005	-0.01
15-Apr-99	8:15	8.9		-0.0002		-0.001		
19-May-99	9:00	6.1	0.06	-0.0002	-0.01	-0.001	-0.005	0.04
09-Jun-99	10:00	5.4		-0.0002		-0.001		
07-Jul-99	8:20	7.1	0.03	-0.0002	-0.01	-0.001	-0.005	0.03
07-Jul-99	*9999*	*7.1*	*0.022*	*-0.0002*	*-0.01*	*-0.001*	*-0.005*	*0.03*
21-Jul-99	8:30							
04-Aug-99	8:10	6.4		-0.0002		-0.001		
18-Aug-99	8:00							
01-Sep-99	8:00	6.9		-0.0002		-0.001		
15-Sep-99	8:45							
13-Oct-99	8:40	7.4		-0.0002		-0.001		
10-Nov-99	9:00	8.9	0.006	-0.0002	-0.01	-0.001	-0.005	-0.01
15-Dec-99	9:00	9.0		-0.0002		-0.001		

MINUS SIGN MEANS "LESS THAN" INDICATED VALUE.

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

TIME = 9999 (DATA ITALICIZED) MEANS THE SAMPLE IS A DUPLICATE OR A SPLIT OF THE SAMPLE IMMEDIATELY ABOVE.

1) MDL= METHOD DETECTION LIMIT.

2) PQL=PRACTICAL QUANTITATION LIMIT.

TABLE 14
CHATFIELD RESERVOIR NEAR DAM
(FIELD CODE - RM)
FIELD MEASUREMENTS

DATE	TIME	SAMPLING DEPTH (Meters)	TOTAL DEPTH (Meters)	TRANSPARENCY SECCHI DISK (Meters)	pH, FIELD (STANDARD UNITS)	SPECIFIC CONDUCTANCE FIELD (US/CM)	OXYGEN, DISSOLVED (mg/L)	TEMPERATURE (Deg C)
MDL [1]								
PQL [2]								
18-Feb-99	10:05	1.0			8.0	316	12.6	3.0
18-Feb-99	10:10	1.5		3.0	8.0	317	12.9	2.9
18-Feb-99	10:15	10.0	11.0		7.9	326	13.1	3.0
10-Mar-99	10:50	1.0			8.4	313	13.0	5.0
10-Mar-99	10:40	1.0		2.0	8.4	313	13.0	5.0
10-Mar-99	10:30	10.0	11.0		8.2	493	12.7	5.1
24-Mar-99	10:00	1.0			6.9	316	11.5	7.5
24-Mar-99	10:15	1.5		3.0	6.8	317	11.7	7.5
24-Mar-99	*9999*	*1.5*			*6.8*	*317*	*11.7*	*7.5*
24-Mar-99	10:30	10.0	11.0		6.3	313	12.3	7.2
15-Apr-99	10:20	1.0			8.4	329	11.3	8.3
15-Apr-99	*9999*	*1.0*			*8.4*	*329*	*11.3*	*8.3*
15-Apr-99	10:15	1.0		2.0	8.4	329	11.3	8.3
15-Apr-99	*9999*	*10.0*			*7.7*	*332*	*10.9*	*7.9*
15-Apr-99	10:10	10.0	11.0		7.7	332	10.9	7.9
19-May-99	10:40	1.0			7.6	262	15.7	13.7
19-May-99	10:50	0.5		1.0	7.6	262	15.7	13.7
19-May-99	*9999*	*10.0*			*7.5*	*349*	*13.8*	*11.6*
19-May-99	11:00	10.0	11.0		7.5	349	13.8	11.6
09-Jun-99	11:15	1.0			8.0	200	10.5	16.6
09-Jun-99	*9999*	*1.0*			*8.0*	*200*	*10.5*	*16.6*
09-Jun-99	11:30	0.3		0.6	8.0	200	10.5	16.6
09-Jun-99	11:45	10.0	11.0		7.0	195	9.5	13.1
07-Jul-99	9:50	1.0			8.0	221	8.9	21.6
07-Jul-99	9:40	1.0		2.0	8.0	221	8.9	21.6
07-Jul-99	9:25	10.0	11.0		7.4	214	6.4	16.3
21-Jul-99	10:10	1.0			7.8	229	9.0	21.3
21-Jul-99	10:25	1.0		2.0	7.8	229	9.0	21.3
21-Jul-99	10:40	10.0	11.0		7.4	225	4.8	18.6
04-Aug-99	10:15	1.0			8.1	216	8.7	20.6
04-Aug-99	10:10	1.0		2.0	8.1	216	8.7	20.6
04-Aug-99	10:05	10.0	11.0		7.4	200	7.1	18.2
18-Aug-99	10:00	1.0			8.1	215	8.6	20.3
18-Aug-99	*9999*	*1.0*			*8.1*	*215*	*8.6*	*20.3*
18-Aug-99	9:45	1.5		3.5	8.1	215	8.6	20.2
18-Aug-99	9:30	10.0	11.0		7.3	212	6.2	18.4
01-Sep-99	9:15	1.0			8.1	218	8.9	21.1
01-Sep-99	9:30	1.0		2.0	8.1	218	8.9	21.1
01-Sep-99	*9999*	*1.0*			*8.1*	*218*	*8.9*	*21.1*
01-Sep-99	9:45	10.0	12.0		7.5	209	4.2	18.5
15-Sep-99	9:45	1.0			7.4	226	7.5	17.8
15-Sep-99	10:00	1.0		2.0	7.4	226	7.5	17.8
15-Sep-99	10:15	10.0	12.0		5.9	227	7.5	17.6
13-Oct-99	9:50	1.0			8.0	243	10.6	13.3
13-Oct-99	*9999*	*1.0*			*8.0*	*243*	*10.6*	*13.3*
13-Oct-99	10:05	1.3		2.5	8.0	243	10.6	13.3
13-Oct-99	10:20	10.0			7.2	246	10.6	13.2
10-Nov-99	9:50	1.0			7.6	254	11.1	8.8
10-Nov-99	10:00	1.0		2.0	7.6	254	11.1	8.8
10-Nov-99	10:15	10.0	11.0		7.0	263	11.7	8.6
15-Dec-99	10:15	1.0			7.5	291	11.3	2.0
15-Dec-99	10:30	1.0		2.5	7.5	291	11.3	2.0
15-Dec-99	10:45	10.0	11.0		6.7	291	10.6	2.1

MINUS SIGN MEANS "LESS THAN" INDICATED VALUE.

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

TIME = 9999 (DATA ITALICIZED) MEANS THE SAMPLE IS A DUPLICATE OR A SPLIT OF THE SAMPLE IMMEDIATELY ABOVE.

1) MDL= METHOD DETECTION LIMIT.

2) PQL=PRACTICAL QUANTITATION LIMIT.

TABLE 15
CHATFIELD RESERVOIR NEAR DAM
(FIELD CODE - RM)
MISCELLANEOUS ANALYSES

DATE	TIME	SAMPLING DEPTH (Meters)	ALKALINITY, TOTAL (mg/L)	BOD, 5-DAY (mg/L)	CHLOROPHYLL_a (mg/M^3)	COLIFORM, FECAL (#/100 ML)	CYANIDE, WAD (mg/L)	HARDNESS (mg/L as CaCO3)	SUSPENDED SEDIMENT, TOTAL (gm/M^3)
MDL [1]			2	3-6	0.3	1	0.01	1	5
PQL [2]			10	3-6		1	0.05	7	20
18-Feb-99	10:05	1.0		-3	3.6	-1		126	-5
18-Feb-99	10:10	1.5		-3		1		123	-5
18-Feb-99	10:15	10.0		-3		-1		125	-5
10-Mar-99	10:50	1.0		-3	4.1	-1		119	-5
10-Mar-99	10:40	1.0		-3		-1		122	-5
10-Mar-99	10:30	10.0		-3		-1		122	-5
24-Mar-99	10:00	1.0	94	-3	5.0	-1	-0.01	132	10
24-Mar-99	10:15	1.5	91	-3		-1	-0.01	131	-5
24-Mar-99	*9999*	*1.5*	*95*	*-3*		*-1*	*-0.01*	*131*	*8*
24-Mar-99	10:30	10.0	95	-3		-1	-0.01	131	14
15-Apr-99	10:20	1.0		-3	3.9	-1		125	6
15-Apr-99	*9999*	*1.0*			*4.2*				
15-Apr-99	10:15	1.0		-3		1		133	-5
15-Apr-99	*9999*	*10.0*		*-3*		*-1*		*135*	*8*
15-Apr-99	10:10	10.0		-3		-1		134	-5
19-May-99	10:40	1.0	72	-3	4.6	2	-0.01	103	12
19-May-99	10:50	0.5	72	-3		1	-0.01	113	10
19-May-99	*9999*	*10.0*	*62*	*-3*		*19*	*-0.01*	*106*	*56*
19-May-99	11:00	10.0	70	-3		26	-0.01	113	42
09-Jun-99	11:15	1.0		-3	11.0	15		81	20
09-Jun-99	*9999*	*1.0*		*-3*		*10*		*82*	*13*
09-Jun-99	11:30	0.3		-3		10		81	20
09-Jun-99	11:45	10.0		-3		5		78	12
07-Jul-99	9:50	1.0	68	-3	0.6	4	-0.01	89	-5
07-Jul-99	9:40	1.0	71	-3		3	-0.01	91	-5
07-Jul-99	9:25	10.0	65	-3		1	-0.01	86	-5
21-Jul-99	10:10	1.0			3.4				-5
21-Jul-99	10:25	1.0							-5
21-Jul-99	10:40	10.0							22
04-Aug-99	10:15	1.0		-3	3.3	1		84	14
04-Aug-99	10:10	1.0		-3		-1		90	10
04-Aug-99	10:05	10.0		-3		19		83	90
18-Aug-99	10:00	1.0			3.6				-5
18-Aug-99	*9999*	*1.0*							*-5*
18-Aug-99	9:45	1.5							-5
18-Aug-99	9:30	10.0							-5
01-Sep-99	9:15	1.0		-3	3.2	1		89	-5
01-Sep-99	9:30	1.0		-3		2		89	-5
01-Sep-99	*9999*	*1.0*		*-3*		*1*		*90*	*12*
01-Sep-99	9:45	10.0		-3		4		91	12
15-Sep-99	9:45	1.0			4.0				-5
15-Sep-99	10:00	1.0							-5
15-Sep-99	10:15	10.0							8
13-Oct-99	9:50	1.0		-3	7.3	8		98	10
13-Oct-99	*9999*	*1.0*		*-3*		*8*		*99*	*12*
13-Oct-99	10:05	1.3		-3		7		99	10
13-Oct-99	10:20	10.0		-3		15		98	14
10-Nov-99	9:50	1.0	83	-3	5.3	4	-0.01	106	-5
10-Nov-99	10:00	1.0	83	-3		2	-0.01	106	-5
10-Nov-99	10:15	10.0	84	-3		7	-0.01	106	-5
15-Dec-99	10:15	1.0		-1	1.9	-1		114	-5
15-Dec-99	10:30	1.0		-1		-1		111	-5
15-Dec-99	10:45	10.0		-1		1		113	-5

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BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

TIME = 9999 (DATA ITALICIZED) MEANS THE SAMPLE IS A DUPLICATE OR A SPLIT OF THE SAMPLE IMMEDIATELY ABOVE.

1) MDL= METHOD DETECTION LIMIT. BOD VALUE VARIES.

2) PQL=PRACTICAL QUANTITATION LIMIT. BOD VALUE VARIES.

TABLE 16
CHATFIELD RESERVOIR NEAR DAM
(FIELD CODE - RM)
NUTRIENT ANALYSES

DATE	TIME	SAMPLING DEPTH (Meters)	NITROGEN, TOTAL (mg/L)	PHOSPHORUS ORTHO, TOTAL (mg/L as P)	PHOSPHORUS, TOTAL (mg/L as P)
MDL [1]			0.1	0.005	0.01
PQL [2]			0.5	0.03	0.05
18-Feb-99	10:05	1.0	0.2	0.005	-0.01
18-Feb-99	10:10	1.5	0.2	-0.005	-0.01
18-Feb-99	10:15	10.0	0.3	0.016	-0.01
10-Mar-99	10:50	1.0	0.2	-0.005	-0.01
10-Mar-99	10:40	1.0	0.2	-0.005	-0.01
10-Mar-99	10:30	10.0	0.2	-0.005	-0.01
24-Mar-99	10:00	1.0	0.4	-0.005	0.01
24-Mar-99	10:15	1.5	0.2	-0.005	-0.01
24-Mar-99	*9999*	*1.5*	*0.2*	*-0.005*	*0.01*
24-Mar-99	10:30	10.0	0.3	-0.005	-0.01
15-Apr-99	10:20	1.0	0.1	-0.005	0.01
15-Apr-99	*9999*	*1.0*			
15-Apr-99	10:15	1.0	0.2	-0.005	-0.01
15-Apr-99	*9999*	*10.0*	*0.2*	*-0.005*	*-0.01*
15-Apr-99	10:10	10.0	-0.1	-0.005	-0.01
19-May-99	10:40	1.0	0.4	0.035	0.04
19-May-99	10:50	0.5	0.3	0.033	0.04
19-May-99	*9999*	*10.0*	*0.4*	*0.085*	*0.04*
19-May-99	11:00	10.0	0.4	0.081	0.10
09-Jun-99	11:15	1.0	0.5	0.035	0.06
09-Jun-99	*9999*	*1.0*	*0.5*	*0.028*	*0.06*
09-Jun-99	11:30	0.3	0.3	0.032	0.06
09-Jun-99	11:45	10.0	0.2	0.018	0.02
07-Jul-99	9:50	1.0	0.1	-0.005	0.02
07-Jul-99	9:40	1.0	0.1	-0.005	0.01
07-Jul-99	9:25	10.0	0.3	0.014	0.02
21-Jul-99	10:10	1.0	1.0	-0.005	-0.01
21-Jul-99	10:25	1.0	1.2	-0.005	0.02
21-Jul-99	10:40	10.0	0.3	0.032	0.02
04-Aug-99	10:15	1.0	0.5	0.017	0.02
04-Aug-99	10:10	1.0	0.4	0.009	0.02
04-Aug-99	10:05	10.0	0.5	0.096	0.08
18-Aug-99	10:00	1.0	0.4	-0.005	-0.01
18-Aug-99	*9999*	*1.0*	*0.3*	*-0.005*	*-0.01*
18-Aug-99	9:45	1.5	0.2	-0.005	-0.01
18-Aug-99	9:30	10.0	0.3	-0.005	-0.01
01-Sep-99	9:15	1.0	0.1	-0.005	-0.01
01-Sep-99	9:30	1.0	0.2	-0.005	0.01
01-Sep-99	*9999*	*1.0*	*0.1*	*-0.005*	*-0.01*
01-Sep-99	9:45	10.0	0.2	0.008	-0.01
15-Sep-99	9:45	1.0	0.7	0.020	0.011
15-Sep-99	10:00	1.0	-0.1	0.012	-0.01
15-Sep-99	10:15	10.0	0.8	0.011	0.02
13-Oct-99	9:50	1.0	0.3	0.010	0.02
13-Oct-99	*9999*	*1.0*	*0.3*	*0.008*	*0.01*
13-Oct-99	10:05	1.3	0.3	0.010	0.03
13-Oct-99	10:20	10.0	-0.1	0.010	0.01
10-Nov-99	9:50	1.0	0.2	-0.005	0.01
10-Nov-99	10:00	1.0	0.1	-0.005	0.01
10-Nov-99	10:15	10.0	0.2	-0.005	0.01
15-Dec-99	10:15	1.0	0.4	0.009	-0.01
15-Dec-99	10:30	1.0	0.2	0.007	-0.01
15-Dec-99	10:45	10.0	0.2	0.006	-0.01

MINUS SIGN MEANS "LESS THAN" INDICATED VALUE.
BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.
TIME = 9999 (DATA ITALICIZED) MEANS THE SAMPLE IS A DUPLICATE OR A SPLIT OF THE SAMPLE IMMEDIATELY ABOVE.

1) MDL= METHOD DETECTION LIMIT.
2) PQL=PRACTICAL QUANTITATION LIMIT.

TABLE 17
CHATFIELD RESERVOIR NEAR DAM
(FIELD CODE - RM)
METALS ANALYSES

DATE	TIME	SAMPLING DEPTH (Meters)	ARSENIC, TOTAL (mg/L)	CADMIUM, DISSOLVED (mg/L)	CALCIUM, DISSOLVED (mg/L)	COPPER, DISSOLVED (mg/L)	CHROMIUM, HEXAVALENT, DISSOLVED (mg/L)	CHROMIUM, TRIVALENT DISSOLVED (mg/L)	IRON, DISSOLVED (mg/L)	LEAD, DISSOLVED (mg/L)
MDL [1]			0.001	0.003	0.2	0.01	0.0006	0.0006	0.01	0.04
PQL [2]			0.005	0.02	1	0.05	0.005	0.005	0.05	0.2
18-Feb-99	10:05	1.0		-0.003	35.5	-0.01				-0.04
18-Feb-99	10:10	1.5		-0.003	34.8	-0.01				-0.04
18-Feb-99	10:15	10.0		-0.003	35.3	-0.01				-0.04
10-Mar-99	10:50	1.0		-0.003	33.7	-0.01				-0.04
10-Mar-99	10:40	1.0		-0.003	34.6	-0.01				-0.04
10-Mar-99	10:30	10.0		-0.003	34.4	-0.01				-0.04
24-Mar-99	10:00	1.0	-0.001	-0.003	37.5	-0.01	-0.005	-0.005	0.01	-0.04
24-Mar-99	10:15	1.5	-0.001	-0.003	37.4	-0.01	-0.005	-0.005	0.02	-0.04
24-Mar-99	*9999*	*1.5*	*-0.001*	*-0.003*	*37.4*	*-0.01*	*-0.005*	*-0.005*	*0.02*	*-0.04*
24-Mar-99	10:30	10.0	-0.001	-0.003	37.5	-0.01	-0.005	-0.005	0.02	-0.04
15-Apr-99	10:20	1.0		-0.003	35.4	-0.01				-0.04
15-Apr-99	*9999*	*1.0*								
15-Apr-99	10:15	1.0		-0.003	38.1	-0.01				-0.04
15-Apr-99	*9999*	*10.0*		*-0.003*	*38.8*	*-0.01*				*-0.04*
15-Apr-99	10:10	10.0		-0.003	38.5	-0.01				-0.04
19-May-99	10:40	1.0	-0.001	-0.003	30.6	-0.01	-0.005	-0.005	0.30	-0.04
19-May-99	10:50	0.5	-0.001	-0.003	34.1	-0.01	-0.005	-0.005	0.44	-0.04
19-May-99	*9999*	*10.0*	*-0.001*	*-0.003*	*31.5*	*-0.01*	*-0.005*	*-0.005*	*0.5*	*-0.04*
19-May-99	11:00	10.0	-0.001	0.004	34.1	-0.01	-0.005	-0.005	0.59	-0.04
09-Jun-99	11:15	1.0		-0.003	23.8	-0.01				-0.04
09-Jun-99	*9999*	*1.0*		*-0.003*	*24.2*	*-0.01*				*-0.04*
09-Jun-99	11:30	0.3		-0.003	23.8	-0.01				-0.04
09-Jun-99	11:45	10.0		-0.003	21.8	-0.01				-0.04
07-Jul-99	9:50	1.0	-0.001	-0.003	24.1	-0.01	-0.005	-0.005	0.08	-0.04
07-Jul-99	9:40	1.0	-0.001	-0.003	24.6	-0.01	-0.005	-0.005	0.08	-0.04
07-Jul-99	9:25	10.0	0.001	-0.003	23.3	-0.01	-0.005	-0.005	0.14	-0.04
21-Jul-99	10:10	1.0								
21-Jul-99	10:25	1.0								
21-Jul-99	10:40	10.0								
04-Aug-99	10:15	1.0		-0.003	22.6	-0.01				-0.04
04-Aug-99	10:10	1.0		0.004	24.4	-0.01				-0.04
04-Aug-99	10:05	10.0		-0.003	22.7	-0.01				-0.04
18-Aug-99	10:00	1.0								
18-Aug-99	*9999*	*1.0*								
18-Aug-99	9:45	1.5								
18-Aug-99	9:30	10.0								
01-Sep-99	9:15	1.0		-0.003	24.6	-0.01				-0.04
01-Sep-99	9:30	1.0		-0.003	24.6	-0.01				-0.04
01-Sep-99	*9999*	*1.0*		*-0.003*	*24.7*	*-0.01*				*-0.04*
01-Sep-99	9:45	10.0		-0.003	25.5	-0.01				-0.04
15-Sep-99	9:45	1.0								
15-Sep-99	10:00	1.0								
15-Sep-99	10:15	10.0								
13-Oct-99	9:50	1.0		-0.003	27.0	-0.01				-0.04
13-Oct-99	*9999*	*1.0*		*-0.003*	*27.5*	*-0.01*				*-0.04*
13-Oct-99	10:05	1.3		-0.003	27.3	-0.01				-0.04
13-Oct-99	10:20	10.0		-0.003	27.2	-0.01				-0.04
10-Nov-99	9:50	1.0	-0.001	-0.003	29.4	-0.01	-0.005	-0.005	0.03	-0.04
10-Nov-99	10:00	1.0	-0.001	-0.003	29.2	-0.01	-0.005	-0.005	0.03	-0.04
10-Nov-99	10:15	10.0	-0.001	-0.003	29.3	-0.01	-0.005	-0.005	0.04	-0.04
15-Dec-99	10:15	1.0		-0.003	31.7	-0.01				-0.04
15-Dec-99	10:30	1.0		-0.003	30.8	-0.01				-0.04
15-Dec-99	10:45	10.0		-0.003	31.3	-0.01				-0.04

MINUS SIGN MEANS "LESS THAN" INDICATED VALUE.

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

TIME = 9999 (DATA ITALICIZED) MEANS THE SAMPLE IS A DUPLICATE OR A SPLIT OF THE SAMPLE IMMEDIATELY ABOVE.

1) MDL= METHOD DETECTION LIMIT.

2) PQL=PRACTICAL QUANTITATION LIMIT.

TABLE 17 (Continued)
CHATFIELD RESERVOIR NEAR DAM
(FIELD CODE - RM)
METALS ANALYSES

DATE	TIME	SAMPLING DEPTH (Meters)	MAGNESIUM, DISSOLVED (mg/L)	MANGANESE, DISSOLVED (mg/L)	MERCURY, DISSOLVED (mg/L)	NICKEL, DISSOLVED (mg/L)	SELENIUM, DISSOLVED (mg/L)	SILVER, DISSOLVED (mg/L)	ZINC, DISSOLVED (mg/L)
MDL [1]			0.2	0.005	0.0002	0.01	0.001	0.005	0.01
PQL [2]			1	0.03	0.001	0.05	0.005	0.03	0.05
18-Feb-99	10:05	1.0	9.0		0.0005		-0.001		
18-Feb-99	10:10	1.5	8.8		-0.0002		-0.001		
18-Feb-99	10:15	10.0	8.9		0.0005		-0.001		
10-Mar-99	10:50	1.0	8.5		-0.0002		-0.001		
10-Mar-99	10:40	1.0	8.7		-0.0002		-0.001		
10-Mar-99	10:30	10.0	8.7		-0.0002		-0.001		
24-Mar-99	10:00	1.0	9.2	-0.005	-0.0002	-0.01	-0.001	-0.005	0.02
24-Mar-99	10:15	1.5	9.1	-0.005	-0.0002	-0.01	-0.001	-0.005	-0.02
24-Mar-99	*9999*	*1.5*	*9.2*	*-0.005*	*-0.0002*	*-0.01*	*-0.001*	*-0.005*	*-0.02*
24-Mar-99	10:30	10.0	9.1	0.008	-0.0002	-0.01	-0.001	-0.005	0.02
15-Apr-99	10:20	1.0	8.9		-0.0002		-0.001		
15-Apr-99	*9999*	*1.0*							
15-Apr-99	10:15	1.0	9.1		-0.0002		-0.001		
15-Apr-99	*9999*	*10.0*	*9.3*		*-0.0002*		*-0.001*		
15-Apr-99	10:10	10.0	9.3		-0.0002		-0.001		
19-May-99	10:40	1.0	6.4	0.063	-0.0002	-0.01	-0.001	-0.005	0.02
19-May-99	10:50	0.5	6.8	0.071	-0.0002	-0.01	-0.001	-0.005	0.02
19-May-99	*9999*	*10.0*	*6.6*	*0.066*	*-0.0002*	*-0.01*	*-0.001*	*-0.005*	*0.02*
19-May-99	11:00	10.0	6.7	0.074	-0.0002	-0.01	-0.001	-0.005	0.04
09-Jun-99	11:15	1.0	5.2		-0.0002		-0.001		
09-Jun-99	*9999*	*1.0*	*5.3*		*-0.0002*		*-0.001*		
09-Jun-99	11:30	0.3	5.1		0.0006		-0.001		
09-Jun-99	11:45	10.0	5.7		-0.0002		-0.001		
07-Jul-99	9:50	1.0	7.0	0.027	0.0003	-0.01	-0.001	-0.005	0.01
07-Jul-99	9:40	1.0	7.1	0.026	-0.0002	-0.01	-0.001	-0.005	-0.01
07-Jul-99	9:25	10.0	6.8	-0.005	0.0003	-0.01	-0.001	-0.005	-0.01
21-Jul-99	10:10	1.0							
21-Jul-99	10:25	1.0							
21-Jul-99	10:40	10.0							
04-Aug-99	10:15	1.0	6.7		-0.0002		0.018		
04-Aug-99	10:10	1.0	7.0		0.0003		-0.001		
04-Aug-99	10:05	10.0	6.3		0.0003		-0.001		
18-Aug-99	10:00	1.0							
18-Aug-99	*9999*	*1.0*							
18-Aug-99	9:45	1.5							
18-Aug-99	9:30	10.0							
01-Sep-99	9:15	1.0	6.8		0.0003		-0.001		
01-Sep-99	9:30	1.0	6.8		0.0003		-0.001		
01-Sep-99	*9999*	*1.0*	*6.8*		*0.0003*		*-0.001*		
01-Sep-99	9:45	10.0	6.7		-0.0002		-0.001		
15-Sep-99	9:45	1.0							
15-Sep-99	10:00	1.0							
15-Sep-99	10:15	10.0							
13-Oct-99	9:50	1.0	7.3		-0.0002		-0.001		
13-Oct-99	*9999*	*1.0*	*7.4*		*0.0002*		*-0.001*		
13-Oct-99	10:05	1.3	7.4		-0.0002		-0.001		
13-Oct-99	10:20	10.0	7.4		-0.0002		-0.001		
10-Nov-99	9:50	1.0	8.0	0.038	-0.0002	-0.01	-0.001	-0.005	-0.01
10-Nov-99	10:00	1.0	8.0	0.037	-0.0002	-0.01	-0.001	-0.005	-0.01
10-Nov-99	10:15	10.0	8.0	0.038	-0.0002	-0.01	-0.001	-0.005	0.03
15-Dec-99	10:15	1.0	8.5		-0.0002		-0.001		
15-Dec-99	10:30	1.0	8.2		-0.0002		-0.001		
15-Dec-99	10:45	10.0	8.4		-0.0002		-0.001		

MINUS SIGN MEANS "LESS THAN" INDICATED VALUE.

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

TIME = 9999 (DATA ITALICIZED) MEANS THE SAMPLE IS A DUPLICATE OR A SPLIT OF THE SAMPLE IMMEDIATELY ABOVE.

1) MDL= METHOD DETECTION LIMIT.

2) PQL=PRACTICAL QUANTITATION LIMIT.

TABLE 18
CHATFIELD IN-RESERVOIR DEPTH-PROFILE DATA
(FIELD CODE RM)

February 18, 1999, 1005 hours				
DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	8.0	316	12.6	3.0
2	8.0	317	12.9	2.9
3	7.9	318	12.9	3.0
4	7.9	315	12.7	3.0
5	7.9	318	12.9	3.0
6	7.9	319	12.9	2.9
7	7.9	321	13.0	3.0
8	7.9	321	13.0	3.0
9	7.9	322	13.0	3.0
10	7.9	326	13.1	3.0

March 10, 1999, 1030 hours				
DEPTH (meters)	pH	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	8.4	313	13.0	5.0
2	8.4	315	13.0	5.0
3	8.3	315	12.8	5.0
4	8.3	313	12.7	5.0
5	8.2	313	12.9	5.0
6	8.2	313	12.8	5.0
7	8.2	314	12.9	5.0
8	8.2	315	13.0	5.0
9	8.2	313	12.8	5.0
10	8.2	493	12.7	5.1

TABLE 18 (Continued)
CHATFIELD IN-RESERVOIR DEPTH-PROFILE DATA
(FIELD CODE RM)

March 24, 1999, 1000 hours

DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	6.9	316	11.5	7.5
2	6.8	317	11.7	7.5
3	6.7	318	11.7	7.4
4	6.6	321	11.5	7.3
5	6.5	321	11.1	7.4
6	6.3	322	11.7	7.3
7	5.8	321	11.6	7.5
8	6.2	311	12.4	7.2
9	6.2	312	12.7	7.2
10	6.3	313	12.3	7.2

April 15, 1999, 1010 hours

DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	8.4	329	11.3	8.3
2	8.3	329	11.4	8.2
3	8.3	328	11.5	8.2
4	8.2	329	11.1	8.2
5	8.2	329	11.2	8.2
6	8.1	329	11.3	8.2
7	7.9	330	11.2	8.1
8	7.8	330	11.4	8.1
9	7.8	331	11.3	8.0
10	7.7	332	10.9	7.9

TABLE 18 (Continued)
CHATFIELD IN-RESERVOIR DEPTH-PROFILE DATA
(FIELD CODE RM)

May 19, 1999, 1040 hours				
DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	7.6	262	15.7	13.7
2	7.6	263	15.7	13.6
3	7.5	263	16.0	13.6
4	7.5	262	16.0	13.4
5	7.4	264	16.0	13.2
6	7.4	262	15.7	11.9
7	7.3	258	15.4	11.7
8	7.3	337	14.4	11.5
9	7.3	404	13.5	11.6
10	7.5	349	13.8	11.6

June 9, 1999, 1115 hours				
DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	8.0	200	10.5	16.6
2	7.8	200	10.4	16.2
3	7.5	199	10.0	15.7
4	7.3	197	9.8	14.5
5	7.2	197	9.6	13.9
6	7.2	195	9.9	13.5
7	7.1	193	10.0	13.1
8	7.1	193	10.0	13.1
9	7.1	194	9.6	13.1
10	7.0	195	9.5	13.1

TABLE 18 (Continued)
CHATFIELD IN-RESERVOIR DEPTH-PROFILE DATA
(FIELD CODE RM)

July 7, 1999, 0915 hours				
DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	8.0	221	8.9	21.6
2	7.9	222	8.8	21.3
3	7.8	223	8.7	21.0
4	7.8	222	8.7	20.4
5	7.8	221	8.2	18.7
6	7.7	220	8.2	18.1
7	7.6	220	7.8	18.0
8	7.6	219	7.7	17.7
9	7.5	217	7.4	16.9
10	7.4	214	6.4	16.3

July 21, 1999, 1010 hours				
DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	7.8	229	9.0	21.3
2	7.7	227	8.7	21.1
3	7.6	227	8.4	20.9
4	7.5	232	7.7	20.1
5	7.4	239	6.9	19.9
6	7.3	226	6.9	19.5
7	7.2	230	6.4	19.1
8	7.2	231	5.5	19.0
9	7.3	229	5.1	18.6
10	7.4	225	4.8	18.6

TABLE 18 (Continued)
CHATFIELD IN-RESERVOIR DEPTH-PROFILE DATA
(FIELD CODE RM)

August 4, 1999, 1000 hours

DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	8.1	216	8.7	20.6
2	8.0	214	8.6	20.5
3	7.9	213	8.5	20.1
4	7.7	213	7.3	19.1
5	7.6	201	7.2	18.8
6	7.5	201	7.5	18.6
7	7.5	201	7.6	18.5
8	7.3	200	7.5	18.4
9	7.3	200	7.2	18.3
10	7.4	200	7.1	18.2

August 18, 1999, 1000 hours

DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	8.1	215	8.6	20.3
2	8.1	215	8.6	20.2
3	8.1	214	8.5	20.1
4	8.0	215	8.6	20.1
5	7.8	216	8.7	20.0
6	7.6	218	8.6	19.9
7	7.4	214	6.9	19.1
8	7.4	212	6.1	18.5
9	7.4	213	6.2	18.5
10	7.3	212	6.2	18.4

TABLE 18 (Continued)
CHATFIELD IN-RESERVOIR DEPTH-PROFILE DATA
(FIELD CODE RM)

September 3, 1998, 0945 hours				
DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	8.1	218	8.9	21.1
2	8.1	218	8.9	21.0
3	8.1	218	8.8	21.0
4	8.0	218	8.8	21.0
5	7.9	218	8.7	20.9
6	7.8	219	8.6	20.8
7	7.6	220	8.1	20.4
8	7.5	217	7.1	20.2
9	7.4	210	4.5	18.9
10	7.5	209	4.2	18.5

September 15, 1999, 0945 hours				
DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	7.4	226	7.5	17.8
2	7.2	226	7.5	17.8
3	7.2	227	7.6	17.8
4	7.1	227	7.5	17.8
5	7.0	227	7.4	17.8
6	6.9	227	7.5	17.7
7	6.7	227	7.2	17.7
8	6.5	227	7.4	17.7
9	6.2	227	7.5	17.7
10	5.9	227	7.5	17.6

TABLE 18 (Continued)
CHATFIELD IN-RESERVOIR DEPTH-PROFILE DATA
(FIELD CODE RM)

October 13, 1999, 0950 hours				
DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	8.0	243	10.6	13.3
2	7.9	244	10.4	13.3
3	7.9	244	10.8	13.2
4	7.9	245	10.9	13.2
5	7.8	245	10.9	13.2
6	7.8	245	10.9	13.2
7	7.7	245	10.9	13.2
8	7.6	246	10.5	13.2
9	7.4	246	10.6	13.2
10	7.2	246	10.6	13.2

November 10, 1999, 1015 hours				
DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	7.6	254	11.1	8.8
2	7.6	255	11.1	8.7
3	7.5	255	11.1	8.7
4	7.3	261	11.4	8.7
5	7.2	261	11.6	8.7
6	7.2	261	11.5	8.7
7	7.2	262	11.4	8.6
8	7.1	262	11.7	8.6
9	7.0	263	11.8	8.6
10	7.0	263	11.7	8.6

TABLE 18 (Continued)
CHATFIELD IN-RESERVOIR DEPTH-PROFILE DATA
(FIELD CODE RM)

December 15, 1999, 1015 hours				
DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	7.5	291	11.3	2.0
2	7.6	291	11.3	2.0
3	7.5	291	11.3	2.0
4	7.5	291	11.3	2.0
5	7.5	291	11.3	2.0
6	7.4	291	11.2	2.1
7	7.4	291	11.2	2.1
8	7.1	291	11.1	2.1
9	6.9	291	10.8	2.1
10	6.7	291	10.6	2.1

TABLE 19
CHATFIELD RESERVOIR NEAR DAM
(FIELD CODE - RM)
SEDIMENT-QUALITY DATA

DATE	TIME	PHOSPHORUS, TOTAL (percent)	CADMIUM, TOTAL (mg/Kg)	COPPER, TOTAL (mg/Kg)	LEAD, TOTAL (mg/Kg)	MERCURY, TOTAL (mg/Kg)	SELENIUM, TOTAL (mg/Kg)
MDL [1]		0.1	1	4	20	0.02	0.4
PQL [2]		0.5	6	20	80	0.1	2
20-Aug-97	10:15	0.07	8.8	37	48	0.0136	1.2
19-Aug-98	9:55	0.12	8.1	23	40	-0.02	1.9
18-Aug-99	10:00	-0.1	-1	25	30	0.06	2

		CARBON			TEXTURE by HYDROMETER			
DATE	TIME	TOTAL ORGANIC (mg/Kg)	TOTAL (mg/Kg)	TOTAL INORGANIC (mg/Kg)	Sand (percent)	Silt (percent)	Clay (percent)	Solids (percent)
MDL [1]		20	20	20	1	1	1	0.1
PQL [2]		100	100	100	5	5	5	0.5
20-Aug-97	10:15	29500			17.5	40	42.5	18.6
19-Aug-98	9:55	26100			5	52.5	42.5	19.9
18-Aug-99	10:00	20100	20200	120	10.0	30.0	60.0	25.6

MINUS SIGN MEANS "LESS THAN" INDICATED VALUE.
BLANK RANGES INDICATE NO DATA WERE AVAILABLE.

1) MDL= METHOD DETECTION LIMIT.

2) PQL=PRACTICAL QUANTITATION LIMIT.

TABLE 20
PHYTOPLANKTON DATA, 1999 SURVEY RESULTS
CHATFIELD RESERVOIR (Field Code RM)

Date	03/23/1999	05/19/1999	07/21/1999	08/18/1999	09/15/1999	11/10/1999
BACILLARIOPHYCEAE (cells/ml)						
Asterionella formosa	3925	110	46	160	4	360
Aulacoseira ambigua					3.6	
Aulacoseira granulata var. angustissima				55	38	1183
Aulacoseira granulata var. granulata				15	79.2	
Aulacoseira sp.	348					
Cyclotella stelligera	10	15				90
Fragilaria crotonensis	10			230	78.8	40
Nitzschia gracilis	5	6				
Nitzschia hungarica					0.2	
Stephanodiscus niagarae	5		0.2	0.2	0.2	1
Synedra delicatissima	15					
Syendra ulna	3				0.4	
Tabellaria fenestrata	3					10
CHLOROPHYCEAE (cells/ml)						
Ankyra judayi	10	40	190	8	20	
Chlamydomonas sp.	128		5			
Chlorella minutissima			1500	250	8500	6500
Chlorella vulgaris		500				1000
Chlorococcum sp.					16	
Choricystis minor	6405	875	1250	500	2000	6625
Closterium acutum var. variabile					0.2	
Coelastrum microporum						20
Eutetramorus fottii			140			
Monoraphidium contortum			10			
Monoraphidium griffithii	5					
Oocystis lacustris					1.6	
Pandoria morum					3.6	
Staurastrum sp.					0.2	
CHRYSOPHYCEAE (cells/ml)						
Chromulina sp.		8				375
Dinobryon cylindricum				4	2	98
Dinobryon divergens	31		57	115	18.8	
Mallomonas akrokomos var. parvula				5	0.4	
Mallomonas sp.		3				
Ochromonas minuscula			8		375	625
CRYPTOPHYCEAE (cells/ml)						
Campylomonas reflexa	21	210	18	123	42.4	145
Campylomonas rostratiformis		30	3	5	4.8	8
Plagioselmis nannoplanctica	8	238	1320	470	237.4	60
CYANOPHYCEAE (cells/ml)						
Anabaena affinis				10		
Anabaena flos-aquae			4			
Aphanizomenon flos-aquae					607.2	10
Aphanocapsa conferta					1500	
Aphanothece smithii	1025	1000	1250	16000	11375	3250
Cyanobium sp.			125	63		
Mersmopedia tenuissima			391000	43500		
Myxobaktron sp.					0.4	3
Synechococcus sigmoideus						375
DINOPHYCEAE (cells/ml)						
Ceratium hirundinella type scotticum				3	35.2	
Peridinium cinctum	0.4					
TOTAL DENSITY	11958	3034	396926	61514	24945	20776
Number of Species	18	12	17	19	28	20

TABLE 21
ZOOPLANKTON DATA, 1999 SURVEY RESULTS
CHATFIELD RESERVOIR (FIELD CODE RM) - August 18, 1999

Taxa	Mean Density in Concentrate (organisms/ml)	Specific Density in Lake (organisms/ml)	General Density in Lake (organisms/ml)
ROTIVERA (rotifers)			
Asplanchna sp.	9.00	8.90	9
Conochiloides sp.	0.33	0.30	<1
Kellicottia sp.	1.00	0.90	1
Keratella sp.	2.67	2.40	2
CLADOCERA (water fleas)			
Bosmina longirostris	4.67	4.20	4
Daphnia rosea	0.33	0.30	<1
COPEPODA (copepods)			
Canthocamptus sp.	1.00	0.90	1
Cyclops sp.	33.33	29.96	30
Leptodiaptomus sp.	0.33	0.30	<1
Tropocyclops prasinus	2.00	1.80	2
TOTAL DENSITY		49.96	49
TOTAL NUMBER OF TAXA		10	10

TABLE 22
BASIN-WIDE SCREENING RESULTS
CHATFIELD WATERSHED - JUNE 1999

Site	Date	Time	Flow (cfs)*	pH	SC	DO (mg/l)	NO3 (mg/l)	Phos (mg/l)	Temp (C)	TSS		Comments
										Result (mg/l)	Qualifier**	
CH01	06/07/1999	750	10	6.65	0.160	8.64	1.6	0.10	8.7	8	B	High turbidity on East & West Plum Creeks on 6/7/99 may impact readings.
	06/17/1999	800	12	6.75	0.199	9.50	1.8	0.12	10.4	<5	U	
	06/24/1999	745	10	6.32	0.214	9.59	2.8	0.15	11.2	6	B	
CH02	06/07/1999	850	20	7.13	0.323	8.31	0.7	0.83	11.2	28		
	06/17/1999	855	20	7.70	0.427	7.83	2.7	0.10	12.8	<5	U	
	06/24/1999	930	10	7.74	0.864	6.76	3.2	0.08	16.9	<5	U	Lined out phos readings on 6/7/99 were cross contaminated with NO3 reagemt.
CH03	06/07/1999											
	06/17/1999	1500	2400	7.90	0.177	9.36	2.0	0.07	13.0	10	B	
	06/24/1999	900	1400	7.98	0.186	8.74	2.3	0.10	14.8	<5	U	
CH04	06/07/1999	820	750	6.95	0.180	8.43	0.3	0.06	10.4	<5	U	
	06/17/1999	840	2000	8.00	0.194	8.25	1.9	0.09	12.7	10	B	
	06/24/1999	830	1400	8.08	0.192	7.55	2.9	0.03	14.2	<5	U	
CH05	06/07/1999	1835	2	8.13	0.392	7.06	0.7	—	18.1	6	B	
	06/17/1999	825	3	7.48	0.490	8.18	3.0	0.03	12.5	<5	U	
	06/24/1999	815	2	7.52	0.679	7.30	3.0	0.11	14.2	<5	U	
CH06	06/07/1999	935	750	7.95	0.194	9.30	0.4	—	13.9	6	B	
	06/17/1999	920	2000	8.18	0.215	7.40	3.5	0.10	13.6	<5	U	
	06/24/1999	1000	1400	8.52	0.202	8.02	1.4	0.11	16.6	10	B	
CH07	06/07/1999	950	750	7.96	0.186	8.60	0.8	—	12.3	14	B	
	06/17/1999	935	2000	7.88	0.216	7.41	3.1	0.04	13.7	<5	U	
	06/24/1999	1015	1400	8.50	0.188	7.52	3.2	0.08	16.0	10	B	
CH08	06/07/1999	905	2	7.77	0.944	8.66	3.0	0.18	14.9	<5	U	
	06/17/1999	910	3	8.12	0.690	8.91	1.7	0.13	15.2	<5	U	
	06/24/1999	945	1	8.16	1.050	9.46	4.1	0.22	19.6	<5	U	
CH09	06/07/1999	1345	8	8.26	0.089	7.20	0.6	—	18.3	<5	U	
	06/17/1999	1230	8	7.72	0.177	7.60	1.0	0.05	15.9	6	B	
	06/24/1999	1250	4	7.79	0.110	5.27	3.3	0.09	21.1	<5	U	
CH10	06/07/1999	1320	14	8.04	0.105	6.47	2.1	—	19.3	12	B	
	06/17/1999	1215	16	7.80	0.123	7.42	1.2	0.07	17.7	58		
	06/24/1999	1240	10	8.17	0.100	5.76	3.1	0.13	22.3	<5	U	
CH11	06/07/1999	1300	42	8.16	0.171	6.52	3.7	—	20.7	22		
	06/17/1999	1200	38	8.28	0.182	7.08	0.9	0.04	18.2	60		
	06/24/1999	1220	30	8.15	0.197	6.19	1.5	0.32	22.8	22		
CH12	06/07/1999	1235	50	8.16	0.180	6.06	4.2	—	20.0	58		
	06/17/1999	1140	43	8.22	0.189	7.47	1.0	0.04	18.4	64		
	06/24/1999	1210	30	8.09	0.210	6.33	1.7	0.11	24.7	38		

TABLE 22 (Continued)
BASIN-WIDE SCREENING RESULTS
CHATFIELD WATERSHED - JUNE 1999

Site	Date	Time	Flow (cfs)*	pH	SC	DO (mg/l)	NO3 (mg/l)	Phos (mg/l)	Temp (C)	TSS		Comments
										Result (mg/l)	Qualifier**	
CH13	06/07/1999	1155	52	8.17	0.205	6.39	11.3	—	20.5	188		
	06/17/1999	1115	45	8.16	0.212	7.30	6.2	0.06	18.5	78		
	06/24/1999	1150	35	8.06	0.244	6.34	2.2	0.09	24.6	10	B	
CH14	06/07/1999	1120	70	7.80	0.234	6.55	3.6	—	20.0	788		
	06/17/1999	1100	60	8.00	0.257	7.57	4.4	0.04	18.6	516		
	06/24/1999	1140	40	8.06	0.207	6.69	0.5	0.77	24.8	282		
CH15	06/07/1999	1100	180	7.95	0.189	7.08	2.4	—	17.3	440		
	06/17/1999	1020	140	8.09	0.225	7.18	2.3	0.18	16.2	262		
	06/24/1999	1045	120	8.13	0.256	6.03	1.0	0.24	21.7	188		
CH16	06/07/1999	1030	190	7.85	0.197	7.88	3.8	0.59	15.2	536		
	06/17/1999	1000	160	7.94	0.235	8.04	1.5	0.20	14.6	250		
	06/24/1999	1035	125	8.21	0.259	6.01	1.6	0.20	20.4	182		
CH17	06/07/1999	1010	190	7.68	0.214	7.50	3.7	—	14.8	448		
	06/17/1999	940	160	7.75	0.255	7.42	2.3	0.04	14.4	168		
	06/24/1999	1020	125	8.14	0.289	6.67	3.1	0.11	19.9	54		
CH18	06/07/1999	1800	2	8.02	0.265	6.00	0.7	—	19.4	<5	U	
	06/17/1999	1040	3	8.16	0.237	7.99	3.0	0.12	15.5	<5	U	
	06/24/1999	1115	2	8.17	0.285	6.64	3.8	0.22	20.4	<5	U	
CH20	06/07/1999	1600	2	7.95	0.056	7.16	1.6	—	17.1	<5	U	
	06/17/1999	1350	6	7.74	0.169	7.74	0.7	0.10	14.2	12	B	
	06/24/1999	1400	4	8.28	0.101	5.71	3.0	0.11	24.4	10	B	
CH21	06/07/1999	1430	1	8.16	0.081	8.88	1.2	—	12.1	<5	U	
	06/17/1999	1300	1	7.81	0.090	9.91	2.3	0.05	10.5	<5	U	
	06/24/1999	1330	0.8	7.94	0.090	7.99	3.4	0.04	14.1	<5	U	
CH22	06/07/1999	1410	17	8.21	0.094	7.13	1.0	—	18.7	<5	U	
	06/17/1999	1245	15	7.47	0.169	7.24	2.0	0.17	15.9	<5	U	
	06/24/1999	1315	12	7.87	0.139	6.40	2.9	0.04	22.0	<5	U	
CH23	06/07/1999	1455	50	7.95	0.152	6.40	3.0	—	20.4	50		
	06/17/1999	1330	37	7.75	0.203	6.88	2.9	0.10	16.2	20		
	06/24/1999	1345	25	8.32	0.217	6.83	3.9	0.09	25.3	8	B	
CH24	06/07/1999	1740	88	7.91	0.159	6.17	3.9	—	22.2	84		
	06/17/1999	1050	70	8.09	0.189	7.54	1.7	0.08	17.2	64		
	06/24/1999	1130	50	8.16	0.207	6.69	3.5	0.11	22.6	44		

NOTES:

* Flow was estimated by observation in the field.

** U = Analyte was analyzed for but not detected at the MDL (5 mg/l)

B = Analyte concentration detected at a value between MDL and Practical Quantitation Limit (PQL; 20 mg/l)

SUMMARY DATA TABLES

TABLE 23
GROWING SEASON (MAY-THROUGH-SEPTEMBER)
TOTAL-PHOSPHORUS AND CHLOROPHYLL-a CONCENTRATIONS
CHATFIELD RESERVOIR

Year	Total-Phosphorus Concentration (mg/L)[1)2)]	Chlorophyll-a Concentration (ug/L)[1)3)]
1982	0.023	15
1983	0.050	16
1984	0.035	6.7
1985	0.028	8.9
1986	4)	4)
1987	0.077	5.7
1988	0.023	7.6
1989	0.011	3.6
1990	0.015	7.1
1991	0.025	3.0
1992	0.015	3.9
1993	0.015	4.0
1994	0.013	3.0
1995	0.010	3.6
1996	0.034	3.9
1997	0.012	2.4
1998	0.016	3.8
1999	0.021	4.7
Mean	0.025	6.1
Std. Dev.	0.017	3.9
Maximum	0.077	16.0
Minimum	0.010	2.4
N	17	17

1) Average Reservoir values.
2) Growing-season standard = 0.027 mg/L.
3) Growing-season goal = 17 ug/L.
4) No data.

TABLE 24
CHATFIELD WATERSHED
SUMMARY OF METALS DATA, 1997 - 1999

Site RM - Reservoir

Metal	Water Quality Standards (mg/l)*		1997			1998			1999			Summary 1997 - 1999	
	Acute	Chronic	Analyses	Detects	Maximum (mg/l)	Analyses	Detects	Maximum (mg/l)	Analyses	Detects	Maximum (mg/l)	% Detect	Maximum (mg/l)
Arsenic (Total)	0.36	0.15	14	7	0.001	14	1	0.001	14	1	0.001	21.43%	0.001
Cadmium	0.01	0.001	39	0	N/A	40	0	N/A	37	2	0.004	1.72%	0.004
Chromium III	0.05	0.05	14	0	N/A	14	0	N/A	14	0	N/A	0.00%	N/A
Chromium VI	0.016	0.011	14	1	0.007	14	0	N/A	14	0	N/A	2.38%	0.007
Copper	0.018	0.012	39	11	0.01	40	2	N/A	37	0	N/A	11.21%	0.01
Iron	0.3	0.3	14	13	0.06	14	12	0.28	14	14	0.59	92.86%	0.59
Lead	0.096	0.004	39	1	0.2	40	0	N/A	37	0	N/A	0.86%	0.2
Manganese	3.11	0.05	14	14	0.156	14	14	0.075	14	10	0.074	90.48%	0.156
Mercury	0.002	0.0001	39	16	0.0011	40	19	0.0007	37	9	0.0006	37.93%	0.0011
Nickel	0.925	0.096	14	0	N/A	14	0	N/A	14	0	N/A	0.00%	N/A
Selenium	0.14	0.01	39	0	N/A	40	1	0.001	37	1	0.018	1.72%	0.018
Silver	0.002	0.003	14	0	N/A	14	0	N/A	14	0	N/A	0.00%	N/A
Zinc	0.117	0.106	14	10	0.06	14	14	0.05	14	8	0.04	76.19%	0.06

* Numerical standards based on hardness of 100 mg/l (as CaCO3) for South Platte River segment 6 or, if such standards are not applicable, the standard is the basic standard established by the WQCC.

Site SO - Reservoir Outfall

Metal	Water Quality Standards (mg/l)*		1997			1998			1999			Summary 1997 - 1999	
	Acute	Chronic	Analyses	Detects	Maximum (mg/l)	Analyses	Detects	Maximum (mg/l)	Analyses	Detects	Maximum (mg/l)	% Detect	Maximum (mg/l)
Arsenic (Total)	0.36	0.15	5	3	0.001	5	2	0.002	5	1	0.001	40.00%	0.002
Cadmium	0.01	0.001	14	1	0.003	14	1	0.003	14	1	0.004	7.14%	0.004
Chromium III	0.05	0.05	5	0	N/A	4	0	N/A	5	0	N/A	0.00%	N/A
Chromium VI	0.016	0.011	5	1	0.008	4	0	N/A	5	0	N/A	7.14%	0.008
Copper	0.018	0.012	14	4	0.01	14	2	0.01	14	0	N/A	14.29%	0.01
Iron	0.3	0.3	5	5	0.37	5	5	0.28	5	5	0.32	100.00%	0.37
Lead	0.096	0.004	14	0	N/A	14	0	N/A	14	0	N/A	0.00%	N/A
Manganese	3.11	0.05	5	5	0.198	5	5	0.071	5	5	0.06	100.00%	0.198
Mercury	0.002	0.0001	14	0	N/A	14	0	N/A	14	0	N/A	0.00%	N/A
Nickel	0.925	0.096	5	0	N/A	5	0	N/A	5	0	N/A	0.00%	N/A
Selenium	0.14	0.01	14	1	0.001	14	0	N/A	14	0	N/A	2.38%	0.001
Silver	0.002	0.003	5	0	N/A	5	0	N/A	5	0	N/A	0.00%	N/A
Zinc	0.117	0.106	5	5	0.02	5	4	0.04	5	3	0.04	80.00%	0.04

* Numerical standards based on hardness of 100 mg/l (as CaCO3) for South Platte River segment 6 or, if such standards are not applicable, the standard is the basic standard established by the WQCC.

TABLE 24 (Continued)
CHATFIELD WATERSHED
SUMMARY OF METALS DATA, 1997 - 1999

Site PC - Plum Creek at Titan Road

Metal	Water Quality Standards (mg/l)*		1997			1998			1999			Summary 1997 - 1999	
	Acute	Chronic	Analyses	Detects	Maximum (mg/l)	Analyses	Detects	Maximum (mg/l)	Analyses	Detects	Maximum (mg/l)	% Detect	Maximum (mg/l)
Arsenic (Total)	0.36	0.15	5	3	0.001	5	3	0.003	5	3	0.002	60.00%	0.003
Cadmium	0.01	0.001	14	0	N/A	14	0	N/A	13	1	0.004	2.44%	0.004
Chromium III	0.05	0.05	5	0	N/A	5	1	0.005	5	0	N/A	6.67%	0.005
Chromium VI	0.016	0.011	5	1	0.005	5	0	N/A	5	0	N/A	6.67%	0.005
Copper	0.018	0.012	14	2	0.01	14	0	N/A	13	0	N/A	4.88%	0.01
Iron	0.3	0.3	5	4	0.11	5	5	0.60	5	5	0.13	93.33%	0.6
Lead	0.096	0.004	14	0	N/A	14	0	N/A	13	0	N/A	0.00%	N/A
Manganese	3.11	0.05	5	5	1.12	5	5	0.153	5	5	0.299	100.00%	1.12
Mercury	0.002	0.0001	14	0	N/A	14	0	N/A	13	0	N/A	0.00%	N/A
Nickel	0.925	0.096	5	0	N/A	5	0	N/A	5	0	N/A	0.00%	N/A
Selenium	0.14	0.01	14	4	0.002	14	3	0.001	13	5	0.002	29.27%	0.002
Silver	0.002	0.003	5	0	N/A	5	0	N/A	7	0	N/A	0.00%	N/A
Zinc	0.117	0.106	5	4	0.03	5	5	0.20	7	3	0.05	70.59%	0.2

* Numerical standards based on hardness of 100 mg/l (as CaCO3) for South Platte River segment 6 or, if such standards are not applicable, the standard is the basic standard established by the WQCC.

Site SP - South Platte at Waterton

Metal	Water Quality Standards (mg/l)*		1997			1998			1999			Summary 1997 - 1999	
	Acute	Chronic	Analyses	Detects	Maximum (mg/l)	Analyses	Detects	Maximum (mg/l)	Analyses	Detects	Maximum (mg/l)	% Detect	Maximum (mg/l)
Arsenic (Total)	0.36	0.15	4	1	0.001	4	1	0.001	4	0	N/A	16.67%	0.001
Cadmium	0.01	0.001	14	0	N/A	14	0	N/A	15	0	N/A	0.00%	N/A
Chromium III	0.05	0.05	4	0	N/A	4	0	N/A	4	0	N/A	0.00%	N/A
Chromium VI	0.016	0.011	4	1	0.007	4	0	N/A	4	0	N/A	8.33%	0.007
Copper	0.018	0.012	14	4	0.01	14	0	N/A	15	0	N/A	9.30%	0.01
Iron	0.3	0.3	4	4	0.13	4	4	0.23	4	4	0.24	100.00%	0.24
Lead	0.096	0.004	14	0	N/A	14	0	N/A	15	0	N/A	0.00%	N/A
Manganese	3.11	0.05	4	4	0.027	4	4	0.042	4	4	0.028	100.00%	0.042
Mercury	0.002	0.0001	14	0	N/A	14	1	0.0002	15	0	N/A	2.33%	0.0002
Nickel	0.925	0.096	4	0	N/A	4	0	N/A	4	0	N/A	0.00%	N/A
Selenium	0.14	0.01	14	0	N/A	14	1	0.002	15	0	N/A	2.33%	0.002
Silver	0.002	0.003	4	0	N/A	4	0	N/A	4	0	N/A	0.00%	N/A
Zinc	0.117	0.106	4	3	0.02	4	2	0.04	4	2	0.02	58.33%	0.04

* Numerical standards based on hardness of 100 mg/l (as CaCO3) for South Platte River segment 6 or, if such standards are not applicable, the standard is the basic standard established by the WQCC.

FIGURES

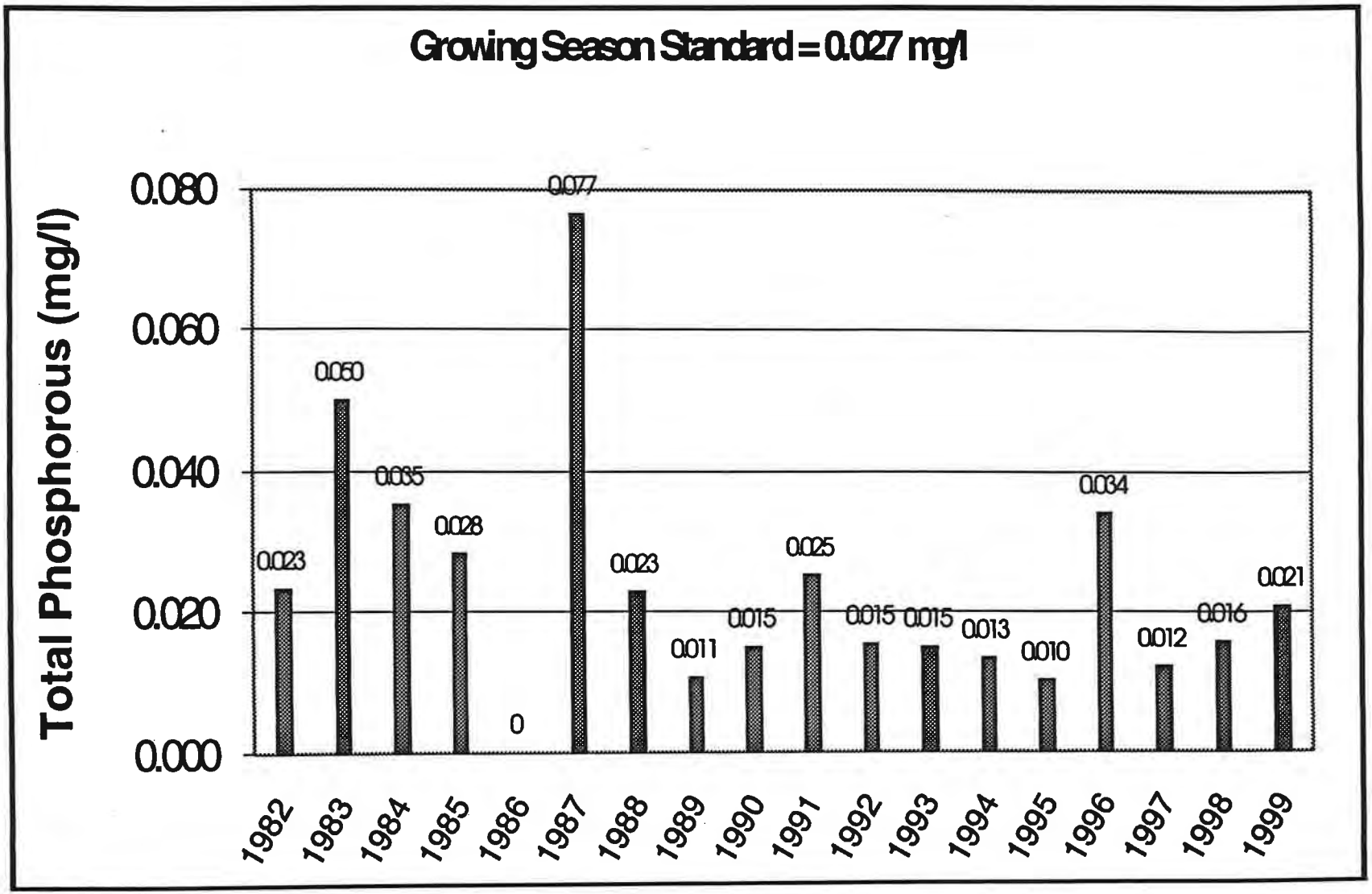


FIGURE 3

AVERAGE GROWING-SEASON TOTAL PHOSPHOROUS CONCENTRATION IN RESERVOIR, 1982-1999

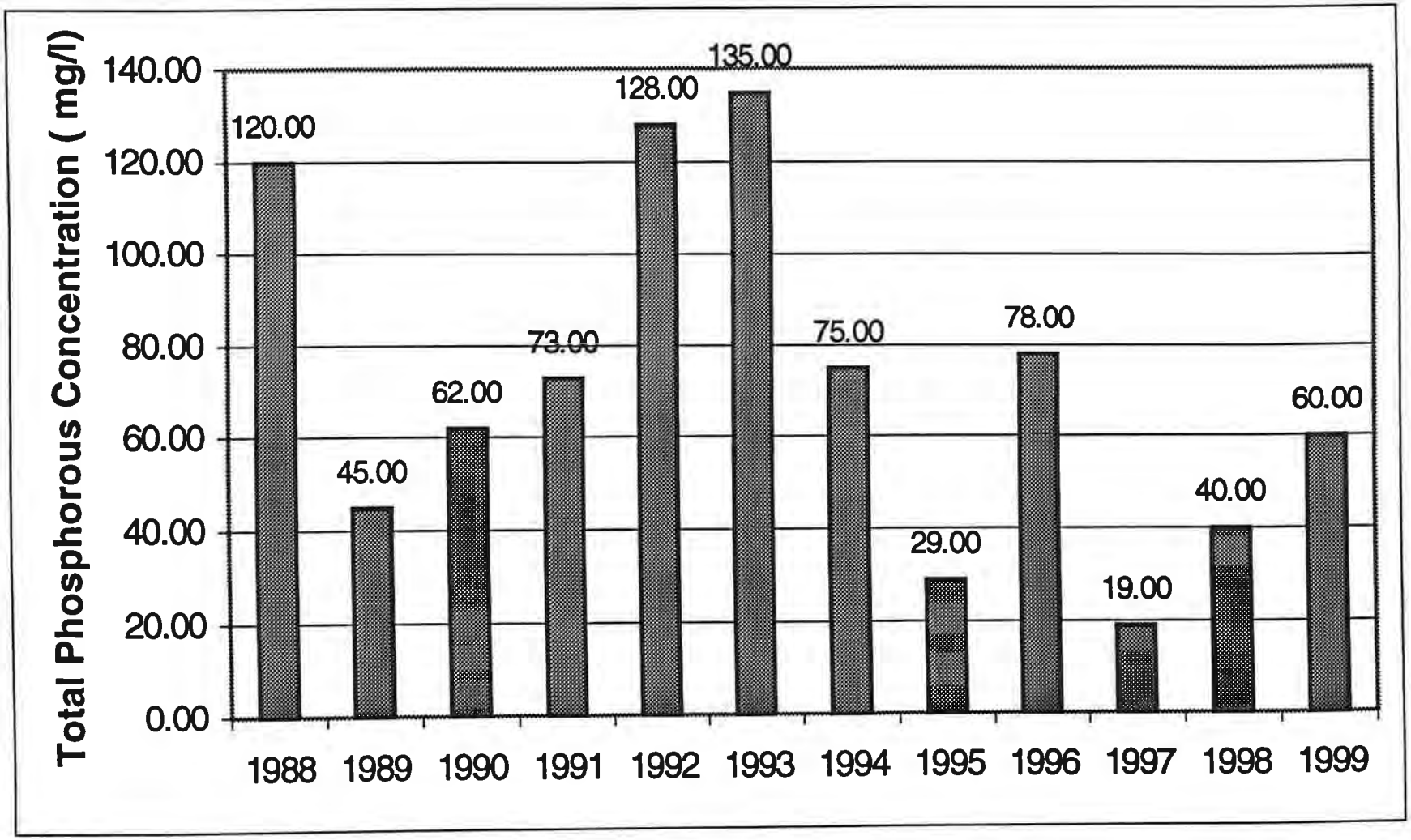


FIGURE 4

PEAK TOTAL PHOSPHOROUS CONCENTRATION IN RESERVOIR, 1988-1999

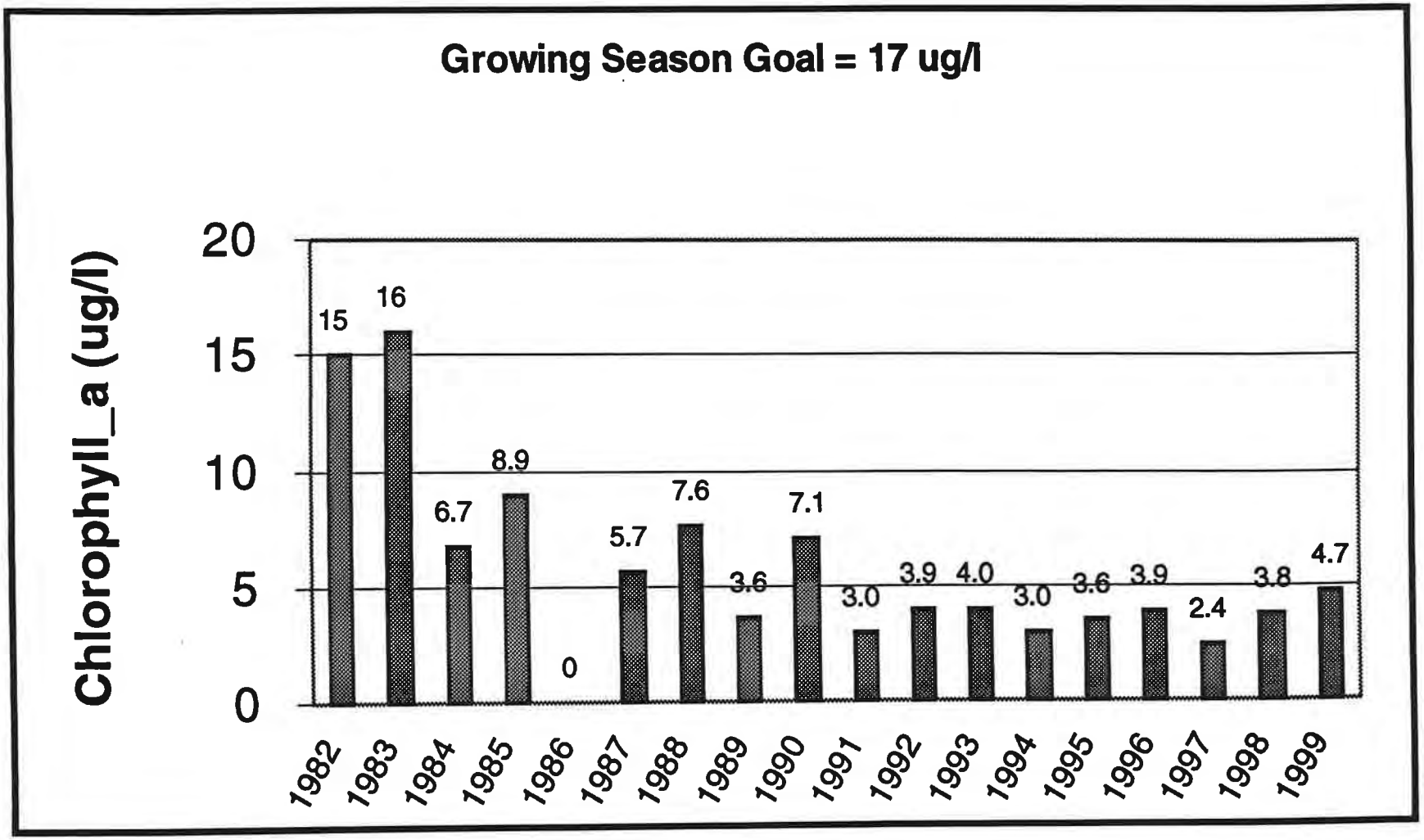


FIGURE 5

AVERAGE GROWING-SEASON CHLOROPHYLL_a CONCENTRATION IN RESERVOIR, 1982-1999

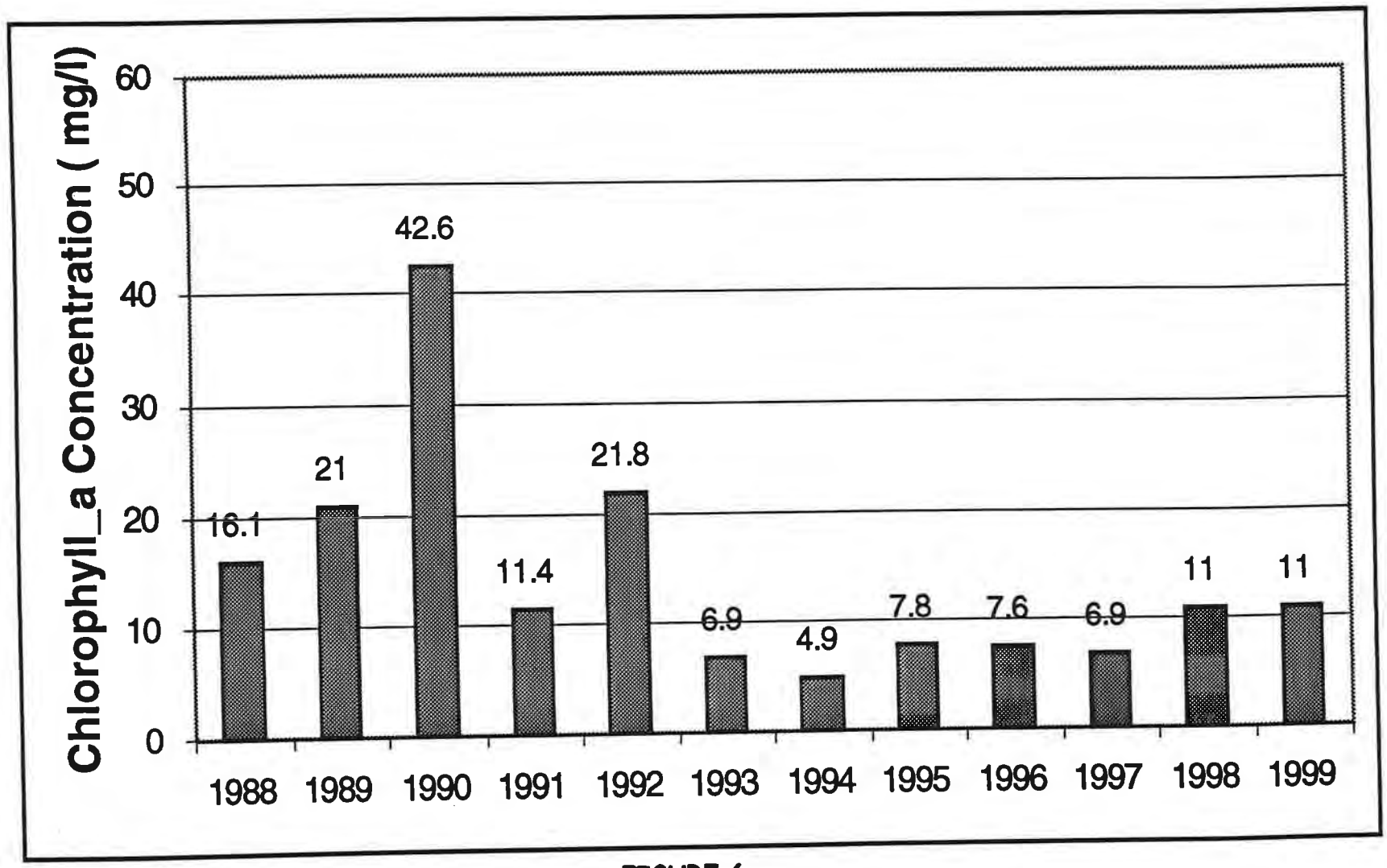


FIGURE 6

PEAK CHLOROPHYLL_a CONCENTRATION IN RESERVOIR, 1988-1999

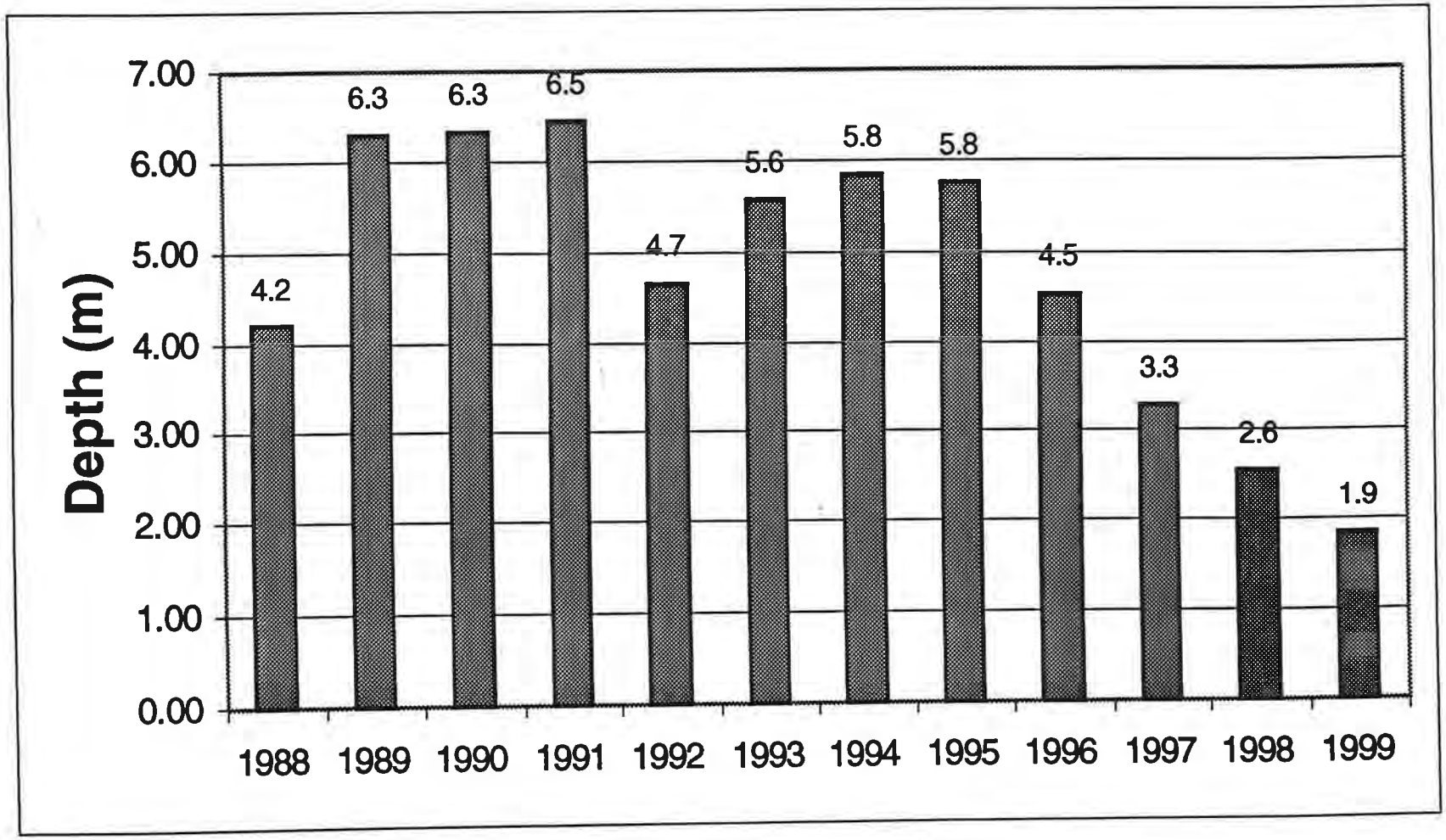


FIGURE 7
AVERAGE GROWING-SEASON SECCHI DEPTH IN RESERVOIR, 1988-1999

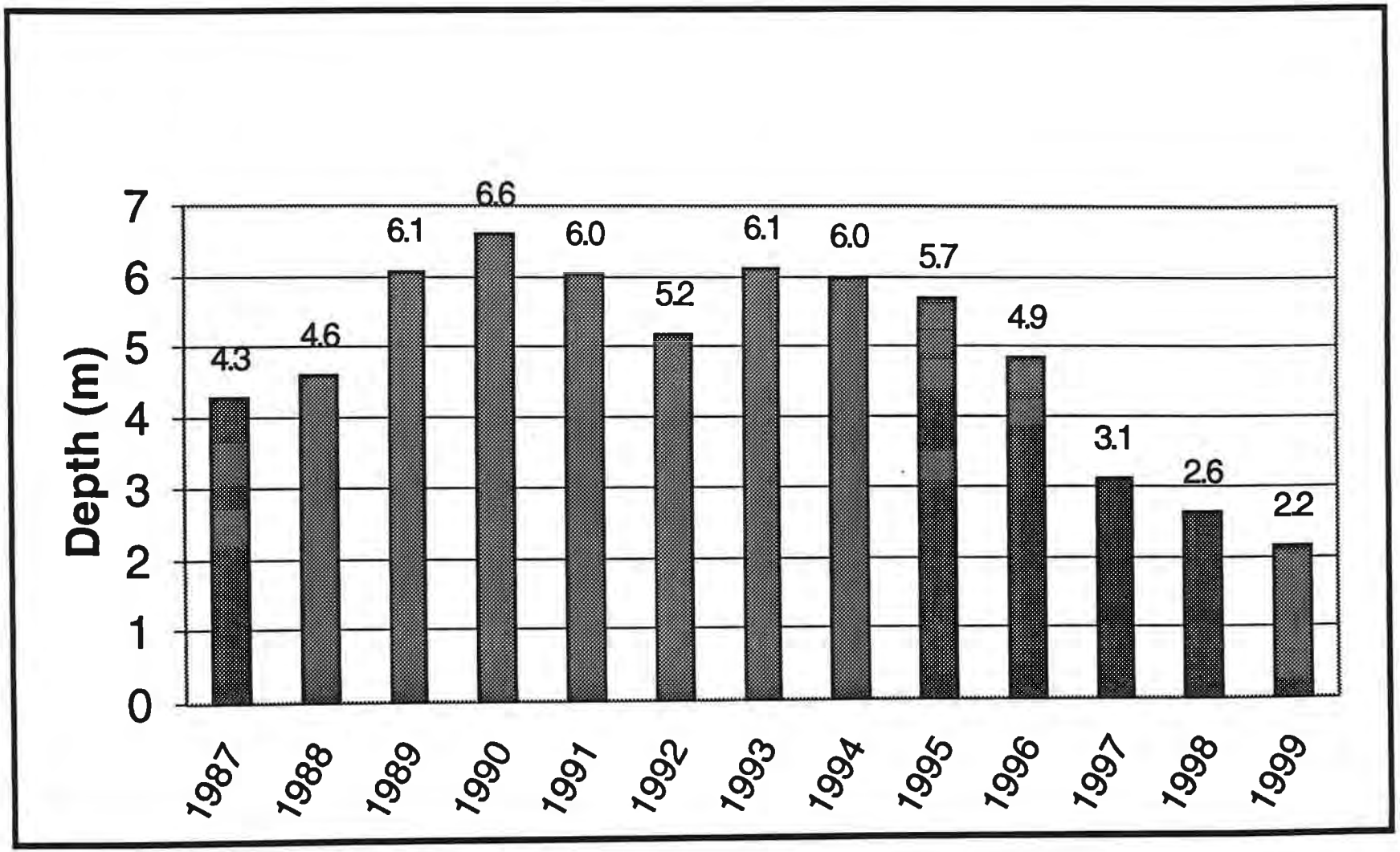


FIGURE 8
AVERAGE ANNUAL SECCHI DEPTH IN RESERVOIR, 1982-1999

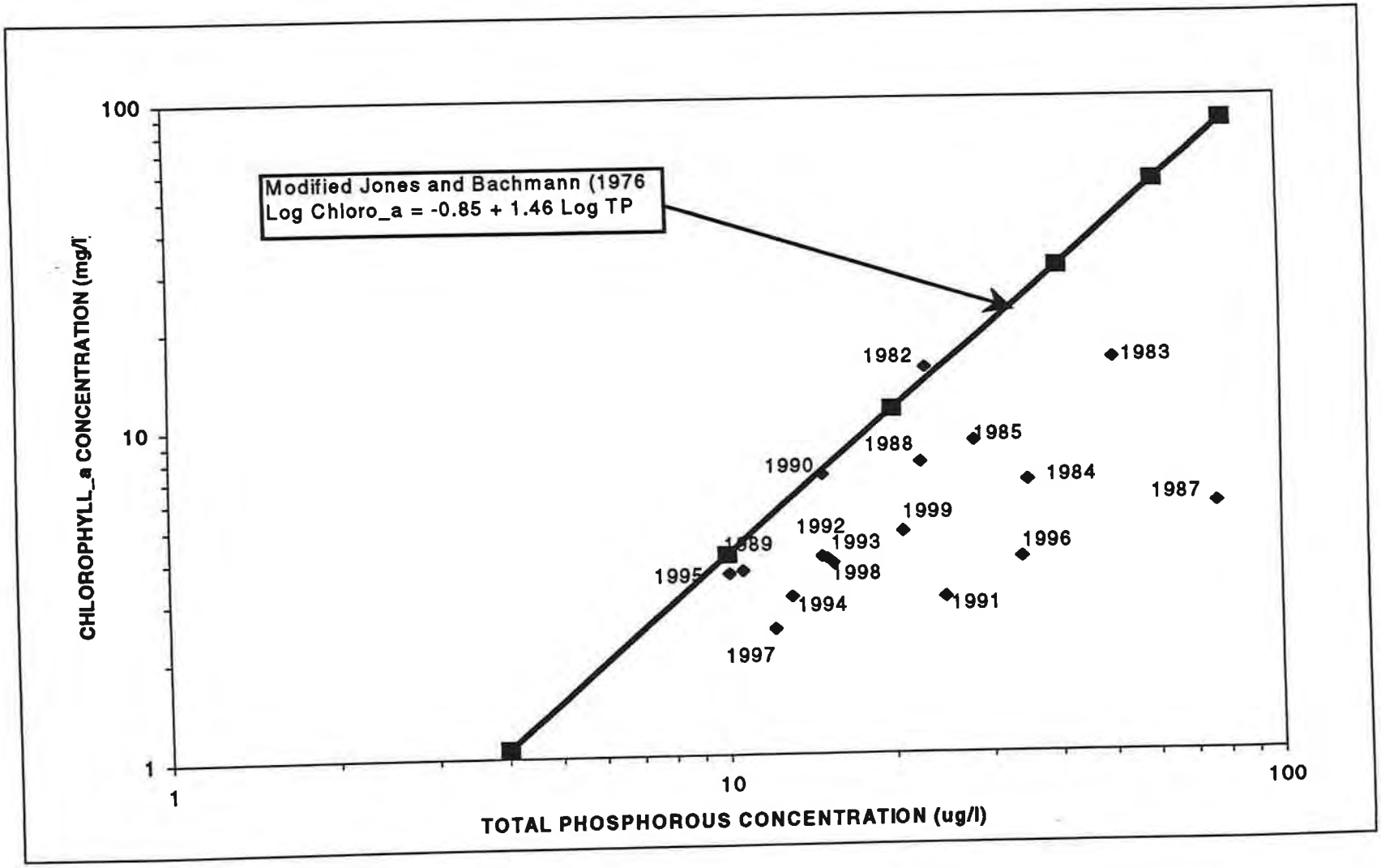
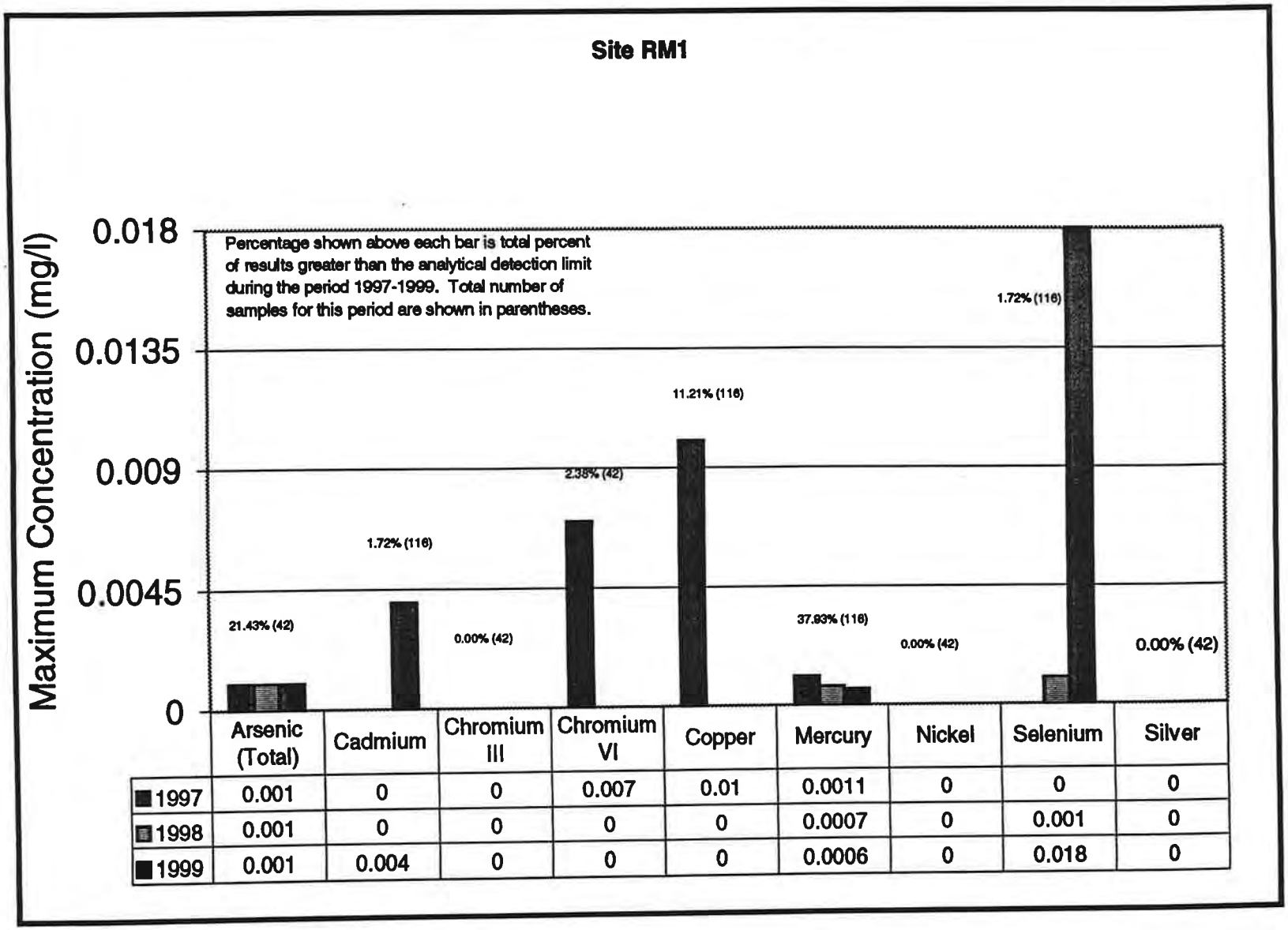


FIGURE 9

GROWING SEASON CHLOROPHYLL_a vs. TOTAL PHOSPHOROUS IN RESERVOIR, 1982-1999



	Arsenic (Total)	Cadmium	Chromium III	Chromium VI	Copper	Mercury	Nickel	Selenium	Silver
1997	0.001	0	0	0.007	0.01	0.0011	0	0	0
1998	0.001	0	0	0	0	0.0007	0	0.001	0
1999	0.001	0.004	0	0	0	0.0006	0	0.018	0

FIGURE 10A

SUMMARY OF TRACE METAL DATA FOR IN-RESERVOIR SITE RM1, 1997-1999

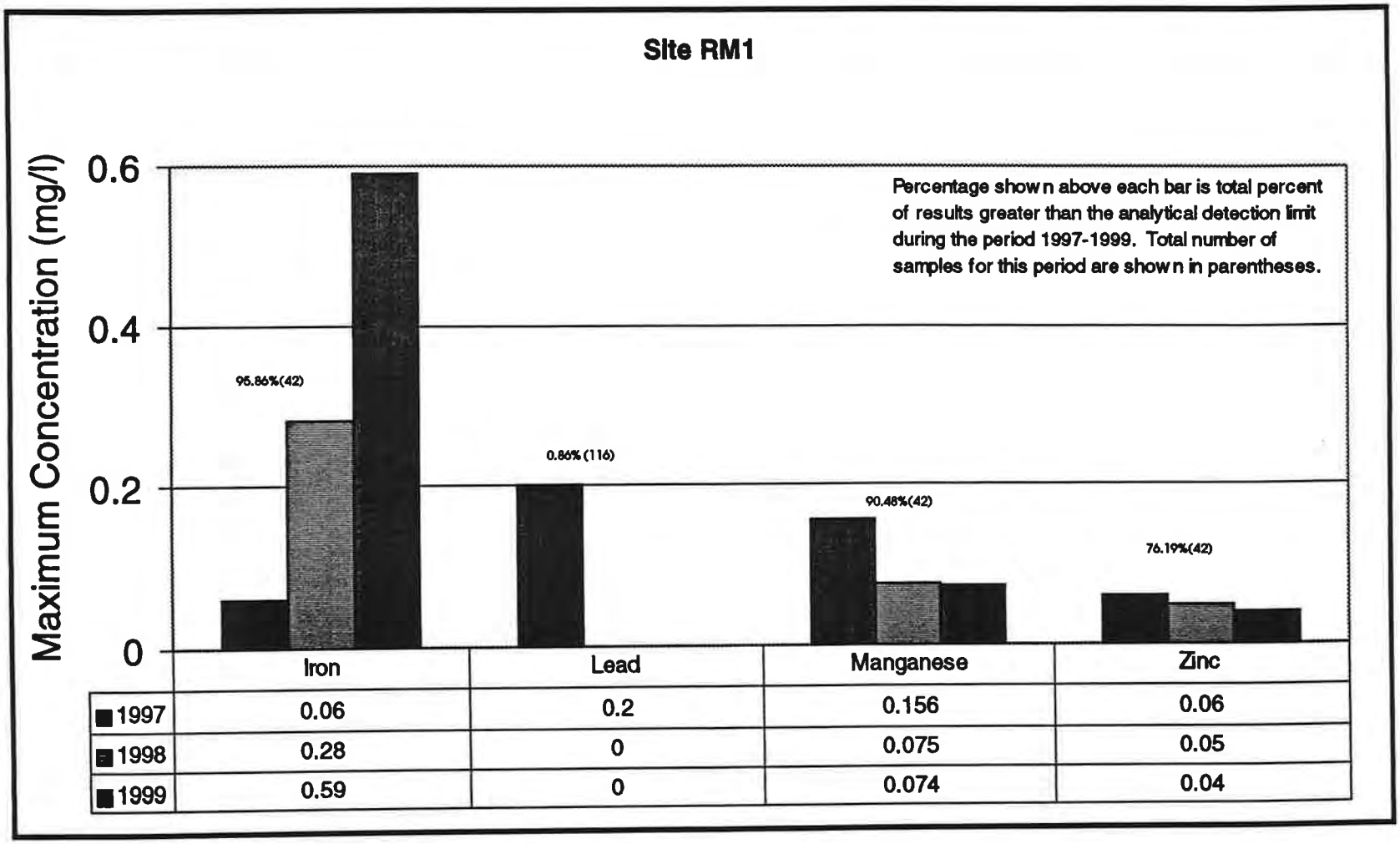


FIGURE 10B

SUMMARY OF TRACE METAL DATA FOR IN-RESERVOIR SITE RM1, 1997-1999

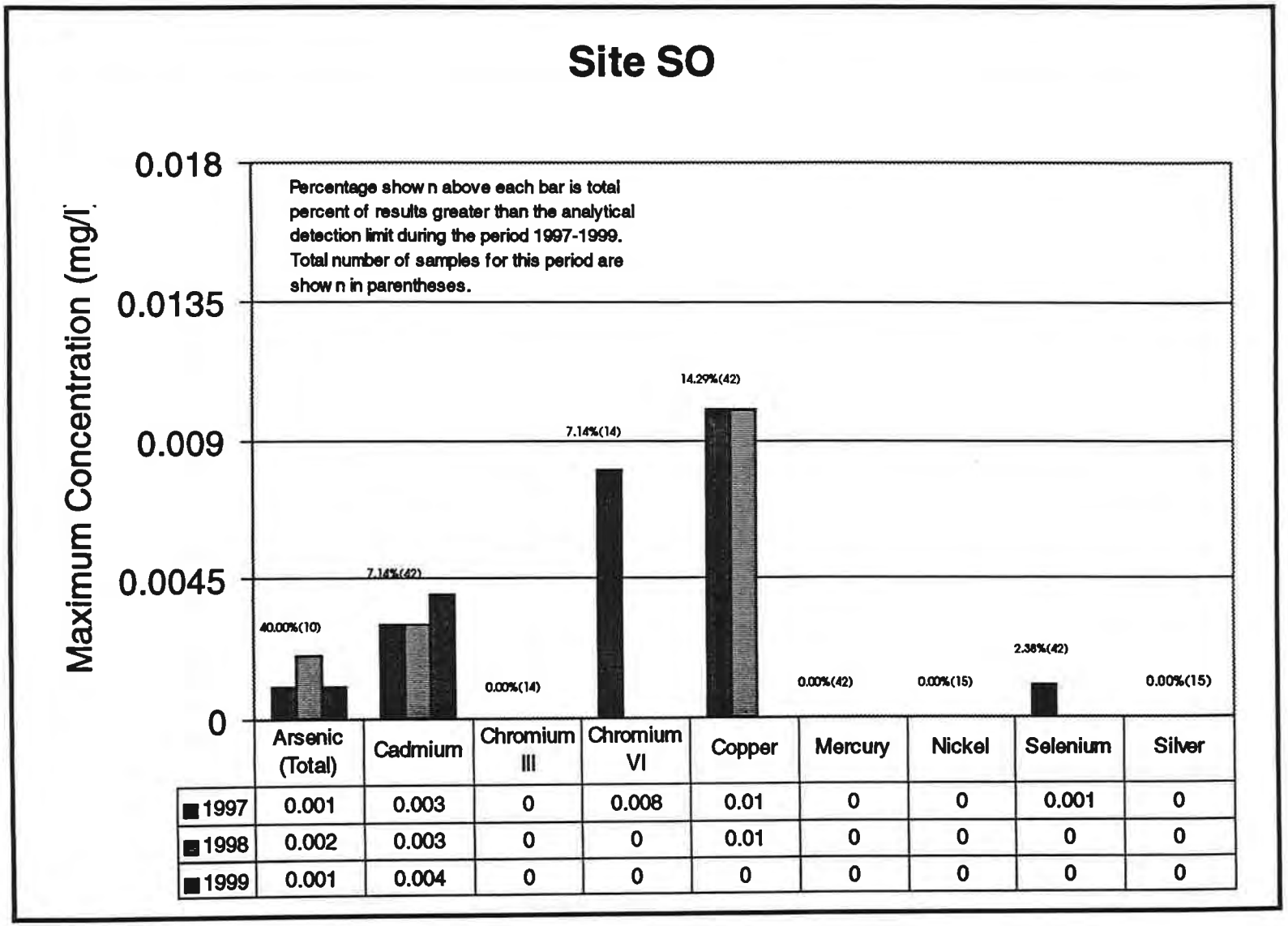
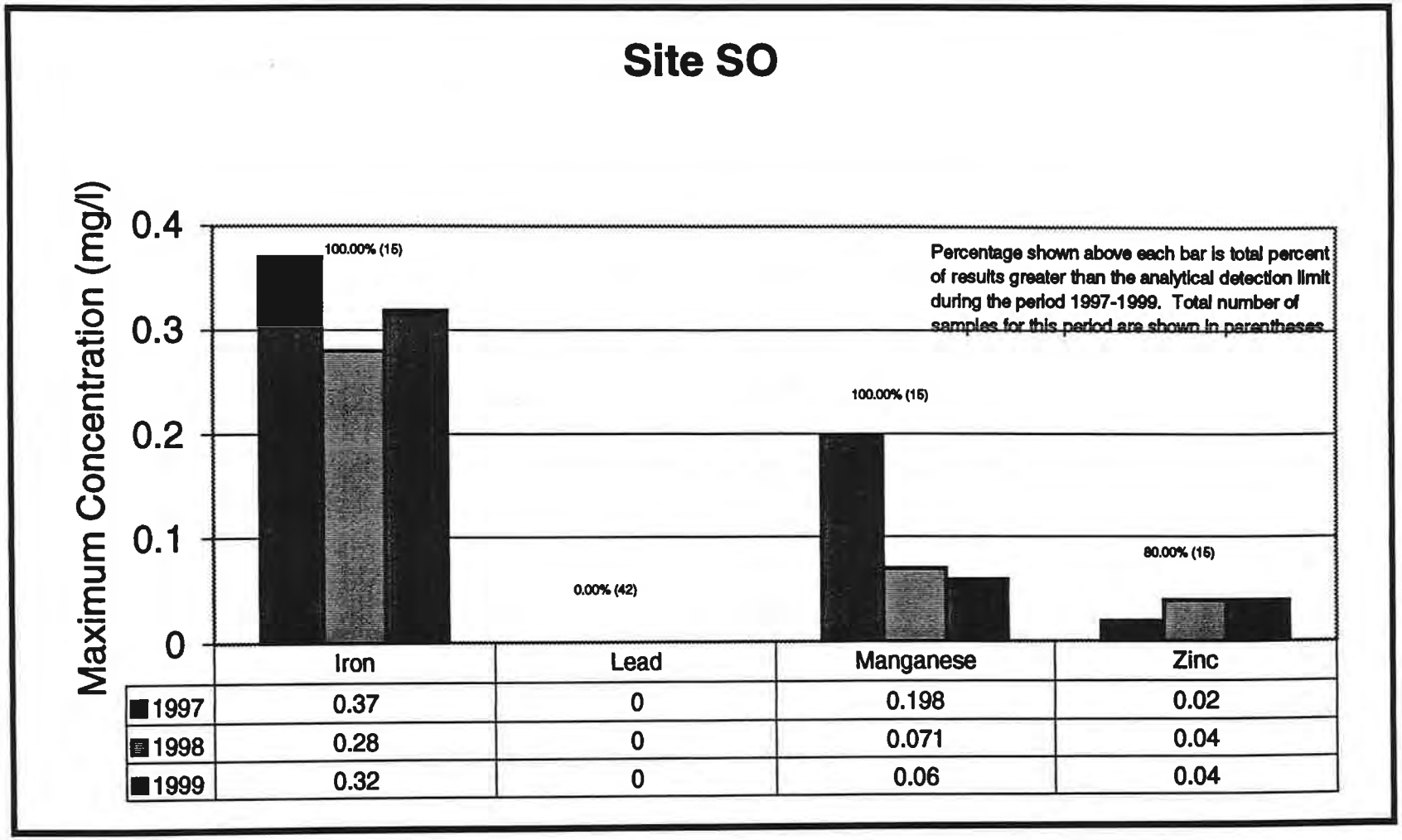


FIGURE 11A

SUMMARY OF TRACE METAL DATA FOR OUTFLOW SITE SO, 1997-1999

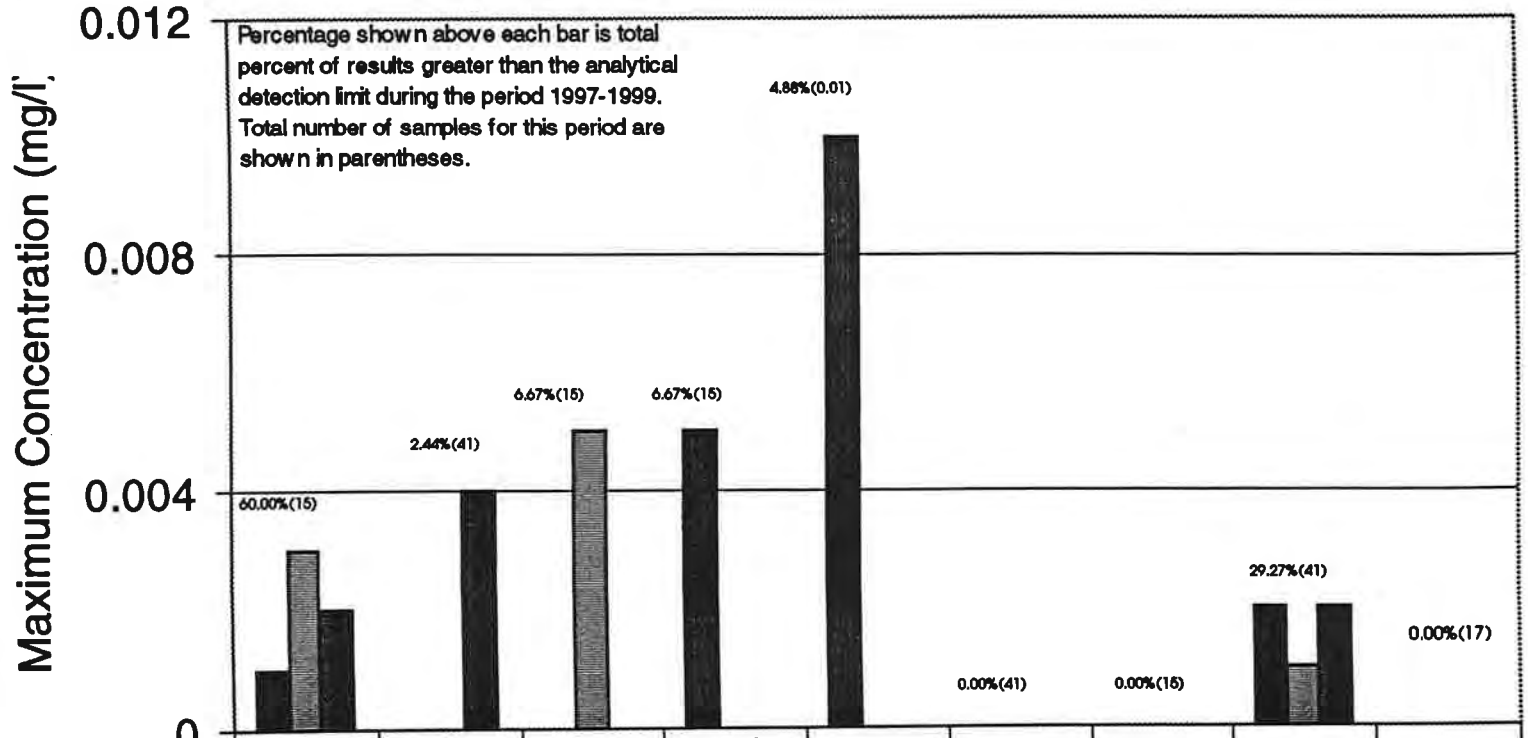


	Iron	Lead	Manganese	Zinc
1997	0.37	0	0.198	0.02
1998	0.28	0	0.071	0.04
1999	0.32	0	0.06	0.04

FIGURE 11B

SUMMARY OF TRACE METAL DATA FOR OUTFLOW SITE SO, 1997-1999

Site PC



	Arsenic (Total)	Cadmium	Chromium III	Chromium VI	Copper	Mercury	Nickel	Selenium	Silver
1997	0.001	0	0	0.005	0.01	0	0	0.002	0
1998	0.003	0	0.005	0	0	0	0	0.001	0
1999	0.002	0.004	0	0	0	0	0	0.002	0

FIGURE 12A

SUMMARY OF TRACE METAL DATA FOR PLUM CREEK INFLOW SITE, 1997-1999

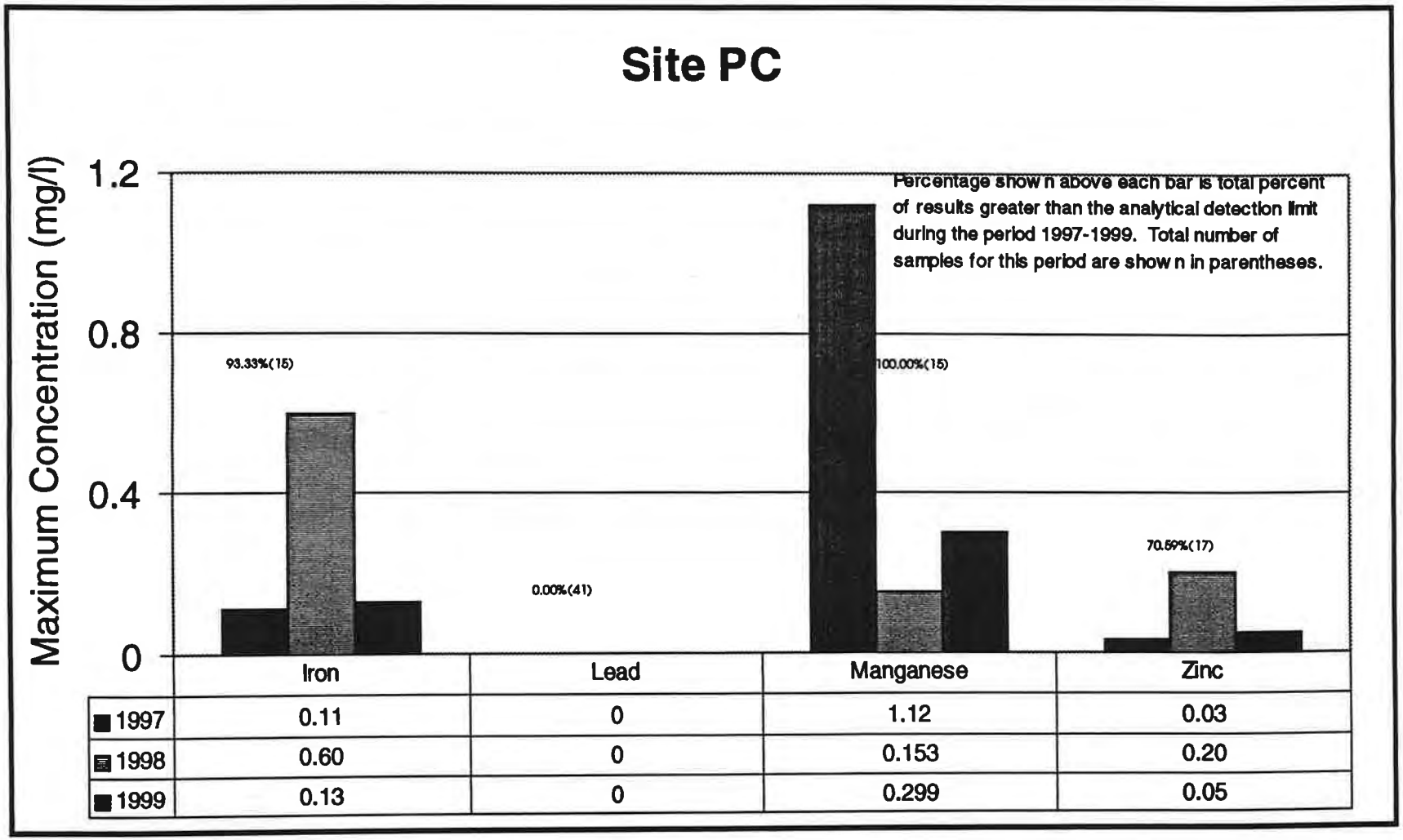
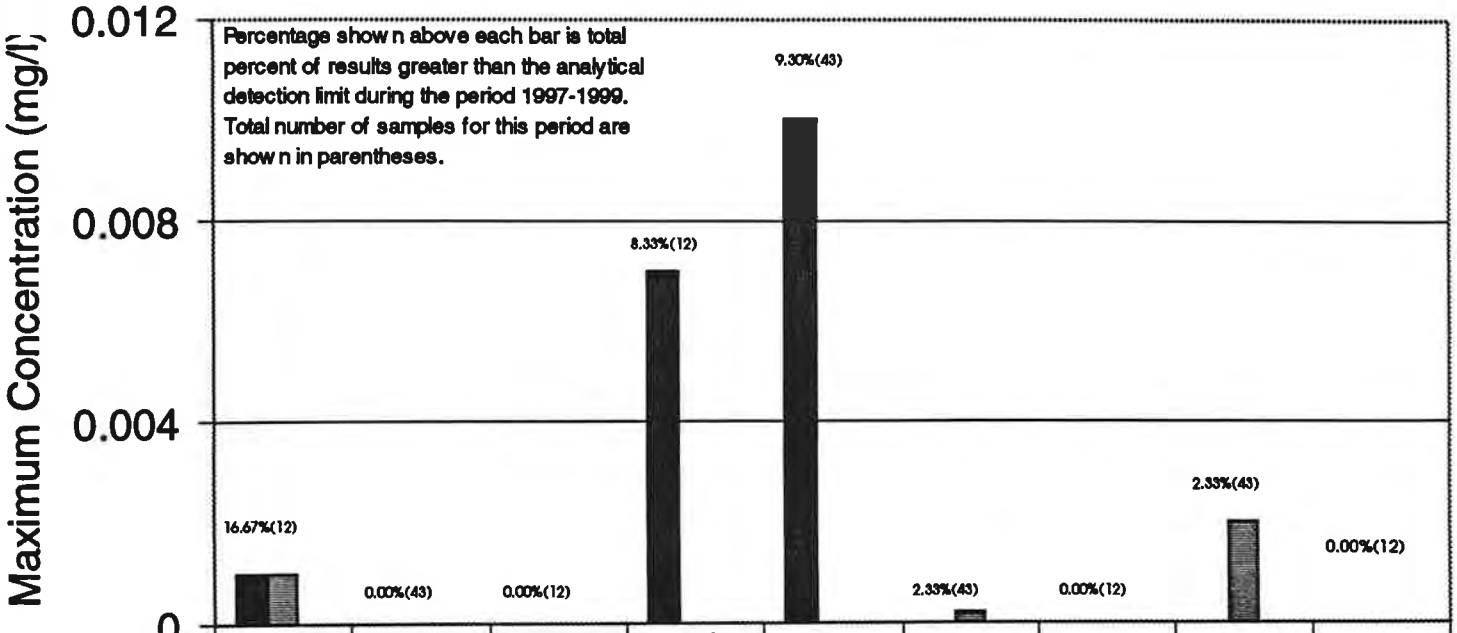


FIGURE 12B

SUMMARY OF TRACE METAL DATA FOR PLUM CREEK INFLOW SITE, 1997-1999

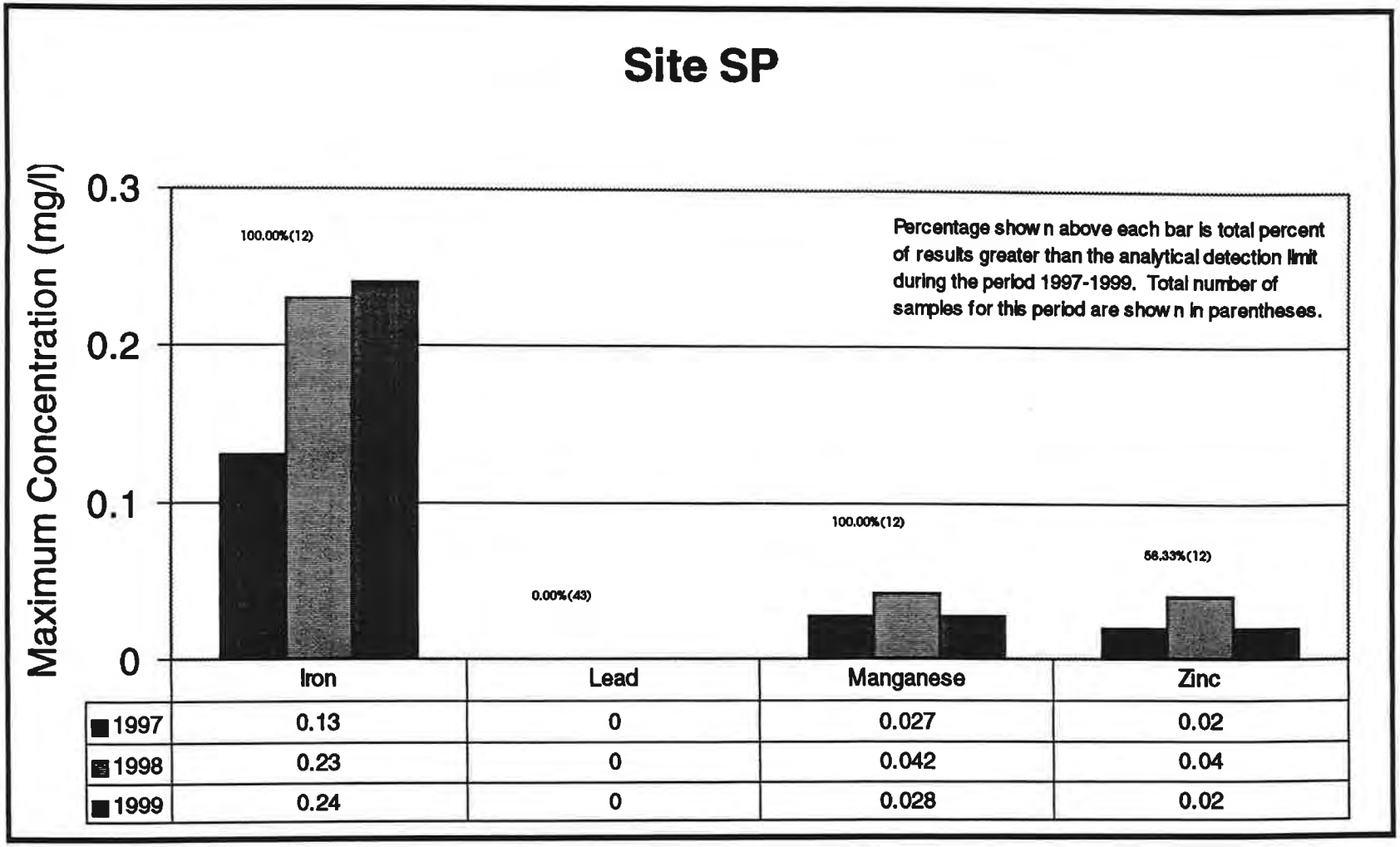
Site SP



	Arsenic (Total)	Cadmium	Chromium III	Chromium VI	Copper	Mercury	Nickel	Selenium	Silver
1997	0.001	0	0	0.007	0.01	0	0	0	0
1998	0.001	0	0	0	0	0.0002	0	0.002	0
1999	0	0	0	0	0	0	0	0	0

FIGURE 13A

SUMMARY OF TRACE METAL DATA FOR SOUTH PLATTE INFLOW SITE, 1997-1999



	Iron	Lead	Manganese	Zinc
1997	0.13	0	0.027	0.02
1998	0.23	0	0.042	0.04
1999	0.24	0	0.028	0.02

FIGURE 13B

SUMMARY OF TRACE METAL DATA FOR SOUTH PLATTE INFLOW SITE, 1997-1999

Chatfield Reservoir Phytoplankton
March 1999

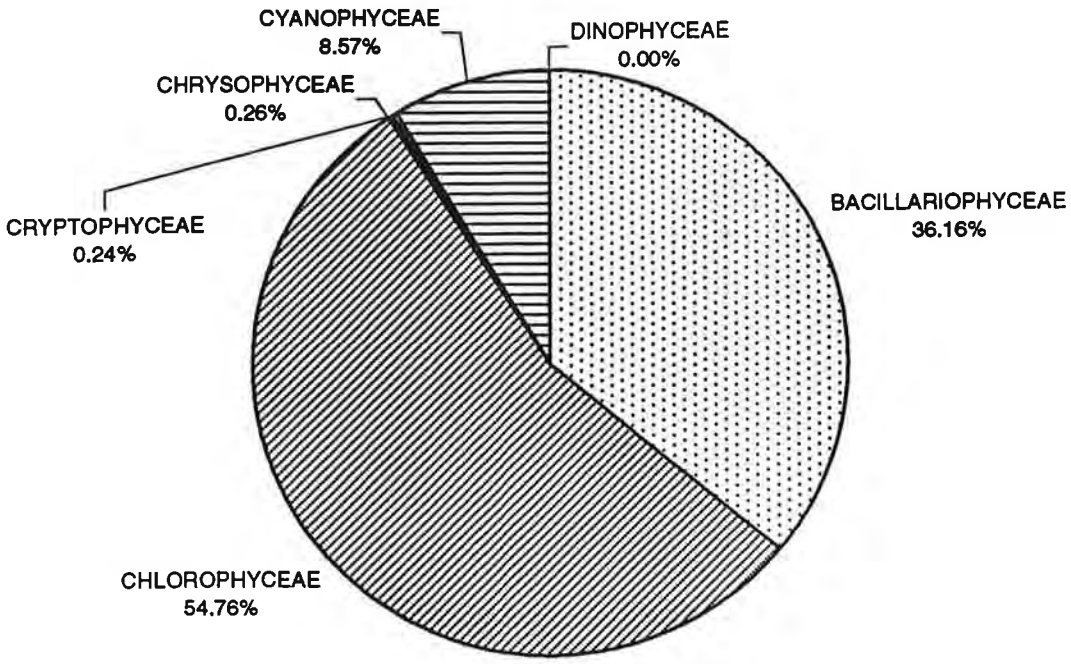


FIGURE 14

SUMMARY OF RESULTS OF PHYTOPLANKTON ANALYSES CONDUCTED FOR A SAMPLE COLLECTED AT SITE RM-1, CHATFIELD RESERVOIR, MARCH 23, 1999

Chatfield Reservoir Phytoplankton
May 1999

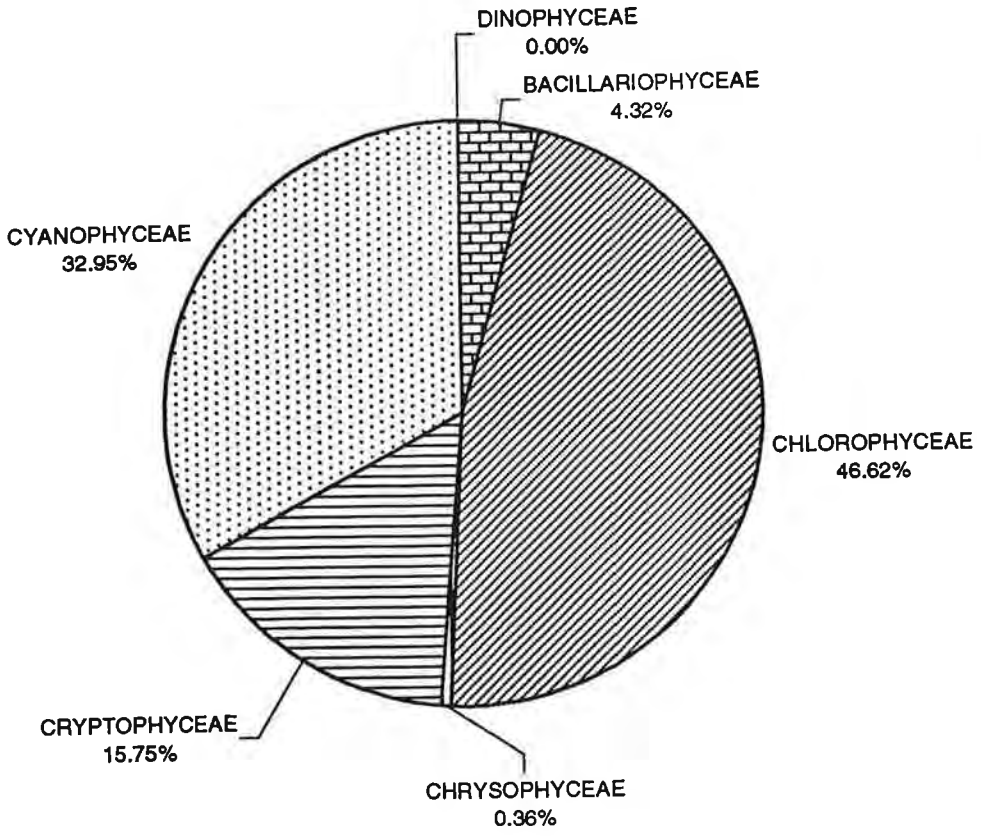


FIGURE 15
SUMMARY OF RESULTS OF PHYTOPLANKTON ANALYSES CONDUCTED FOR A SAMPLE COLLECTED AT SITE RM-1, CHATFIELD RESERVOIR, MAY 19, 1999

Chatfield Reservoir Phytoplankton
July 1999

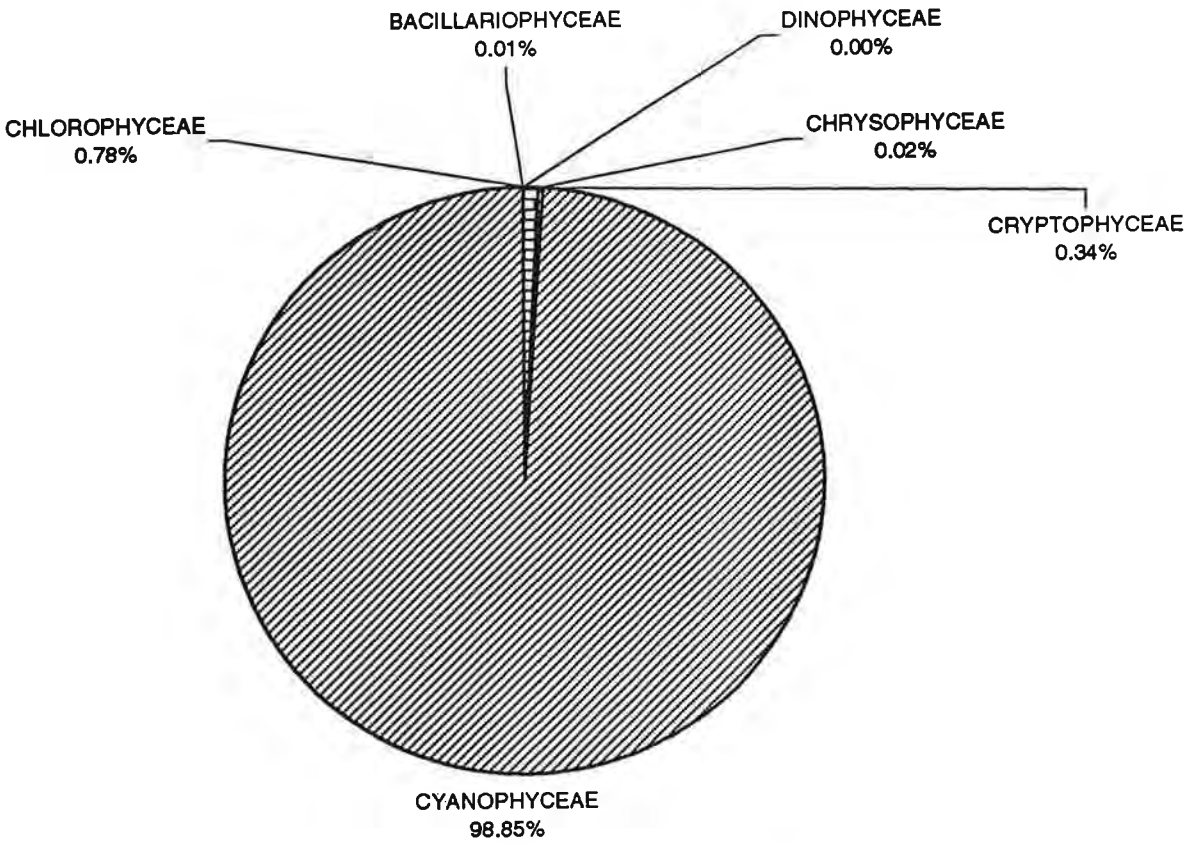


FIGURE 16
SUMMARY OF RESULTS OF PHYTOPLANKTON ANALYSES CONDUCTED FOR A SAMPLE COLLECTED AT SITE RM-1, CHATFIELD RESERVOIR, JULY 21, 1999

Chatfield Reservoir Phytoplankton
August 1999

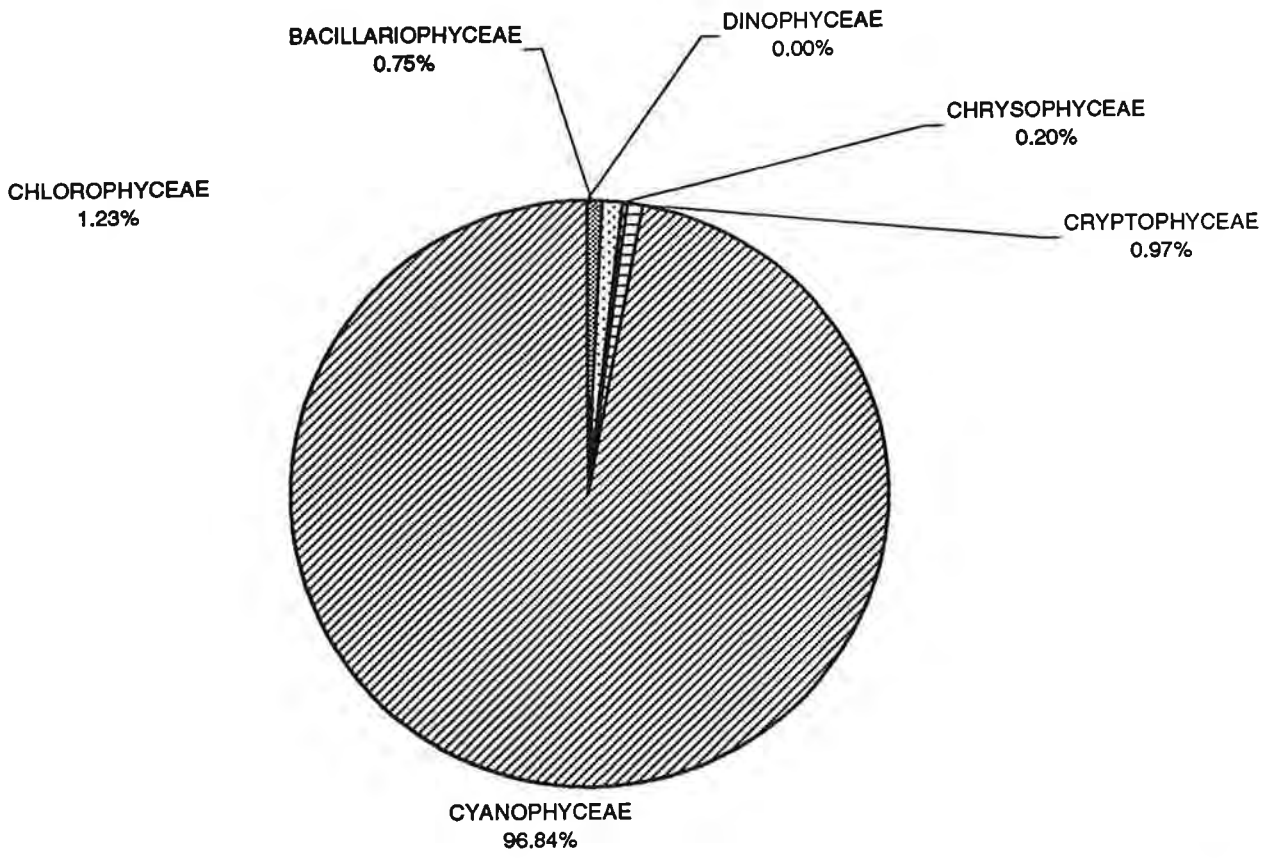


FIGURE 17
SUMMARY OF RESULTS OF PHYTOPLANKTON ANALYSES CONDUCTD FOR A SAMPLE COLLECTED AT SITE RM-1, CHATFIELD RESERVOIR, AUGUST 18, 1999

Chatfield Reservoir Phytoplankton
September 1999

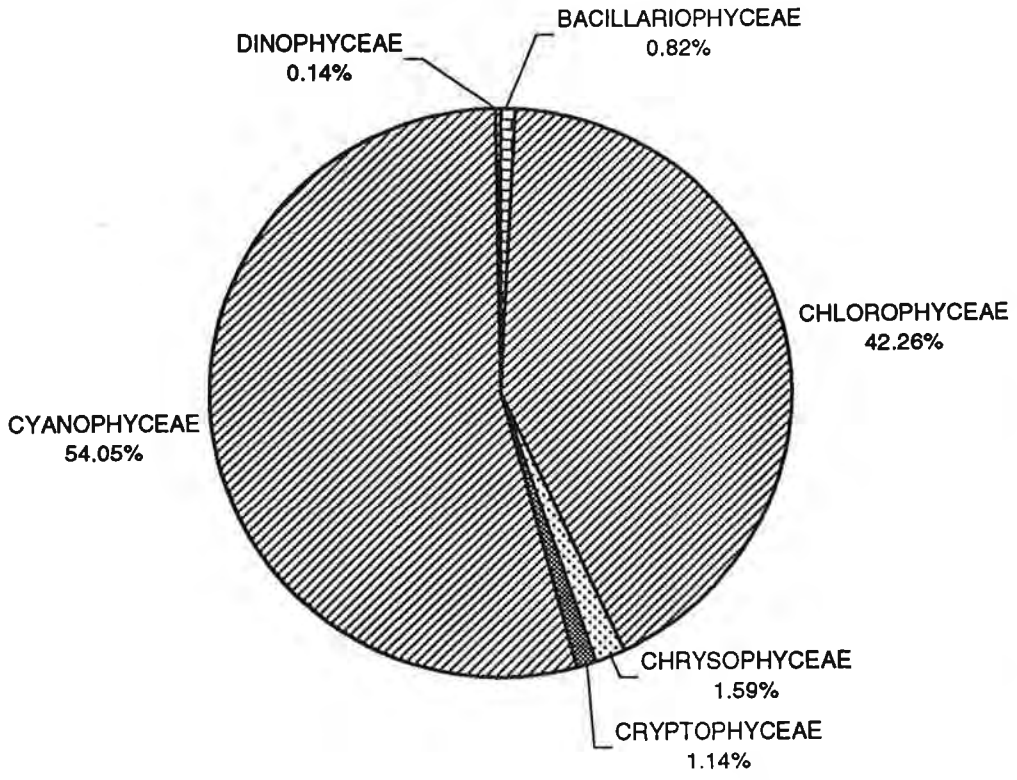


FIGURE 18

SUMMARY OF RESULTS OF PHYTOPLANKTON ANALYSES CONDUCTED FOR A SAMPLE COLLECTED AT SITE RM-1, CHATFIELD RESERVOIR, SEPTEMBER 15, 1999

Chatfield Reservoir Phytoplankton
November 1999

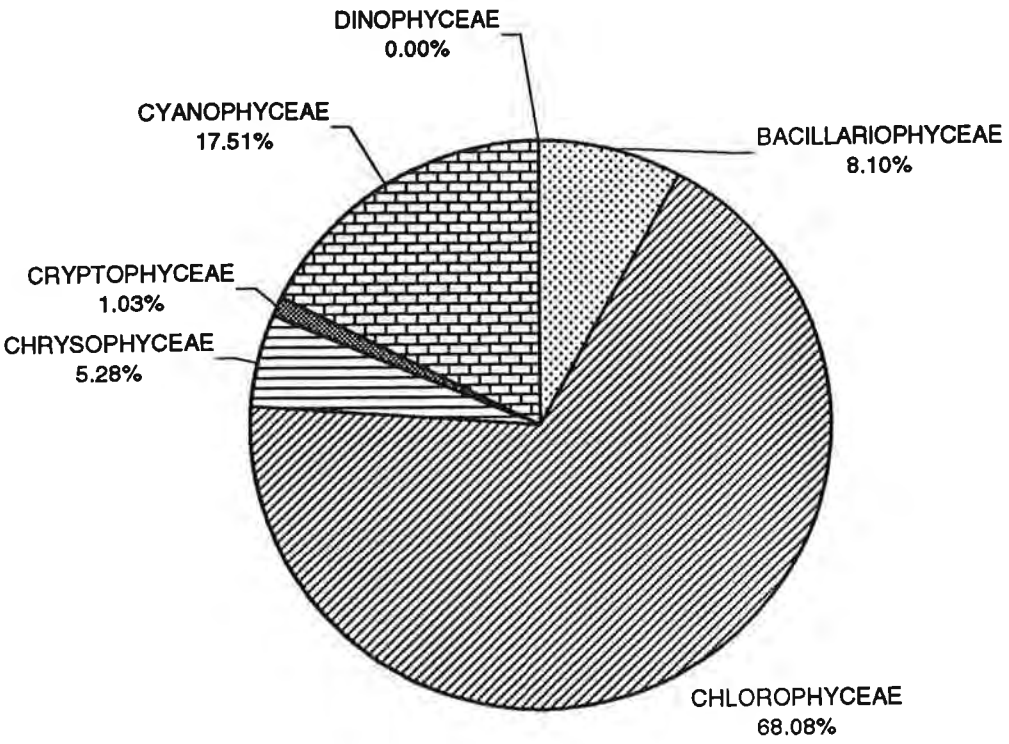


FIGURE 19

SUMMARY OF RESULTS OF PHYTOPLANKTON ANALYSES CONDUCTED FOR A SAMPLE COLLECTED AT SITE RM-1, CHATFIELD RESERVOIR, NOVEMBER 10, 1999

Chatfield Reservoir Zooplankton
August 1999

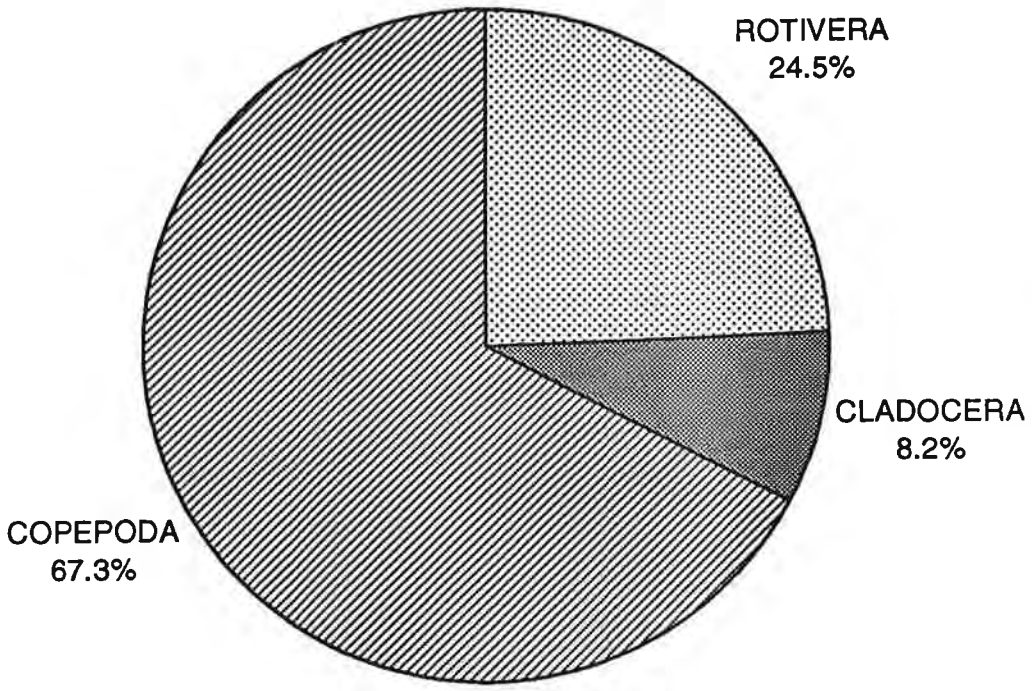
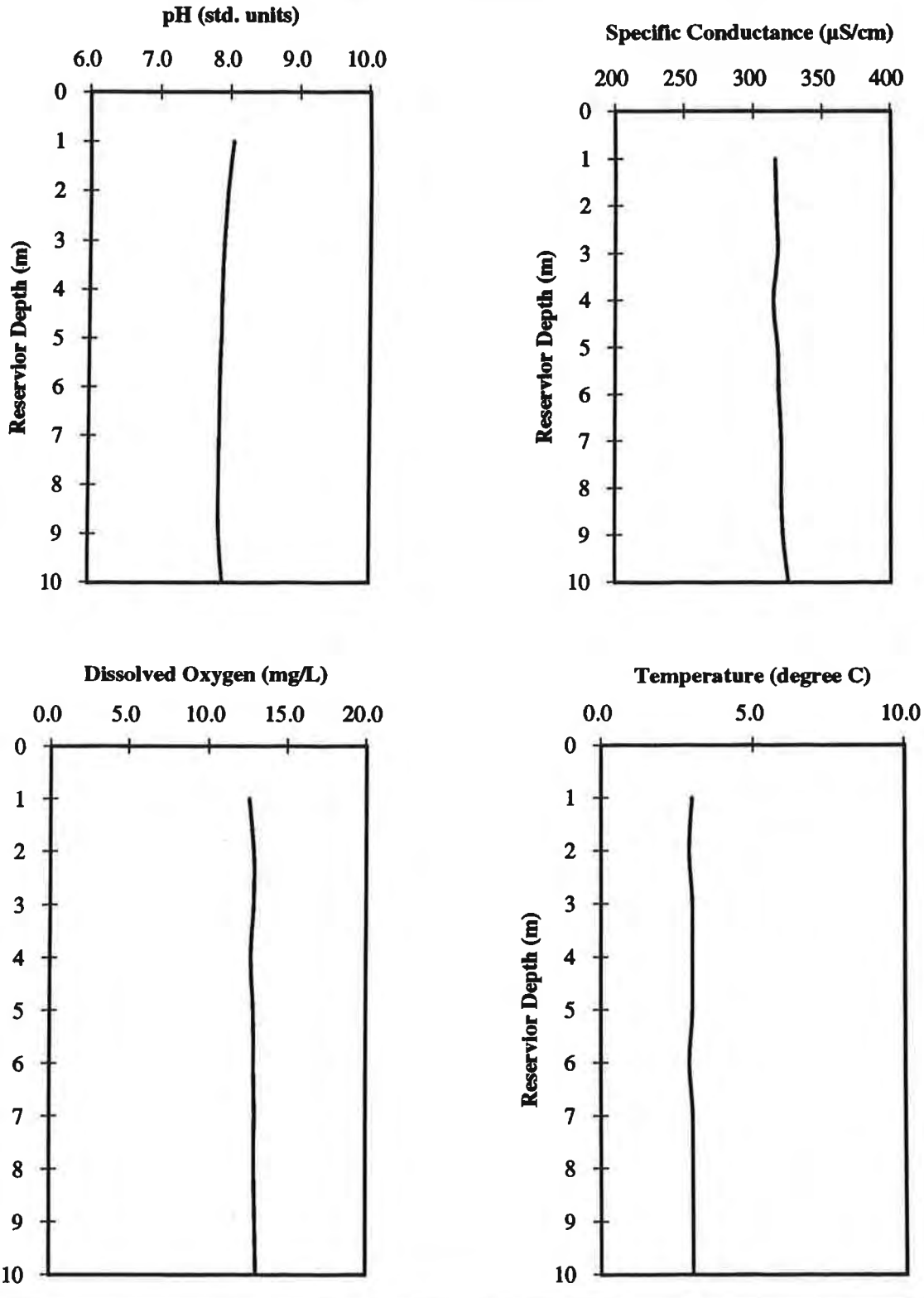


FIGURE 20
SUMMARY OF RESULTS OF ZOOPLANKTON ANALYSES CONDUCTED FOR A SAMPLED COLLECTED AT SITE RM, CHATFIELD RESERVOIR, AUGUST 18, 1999



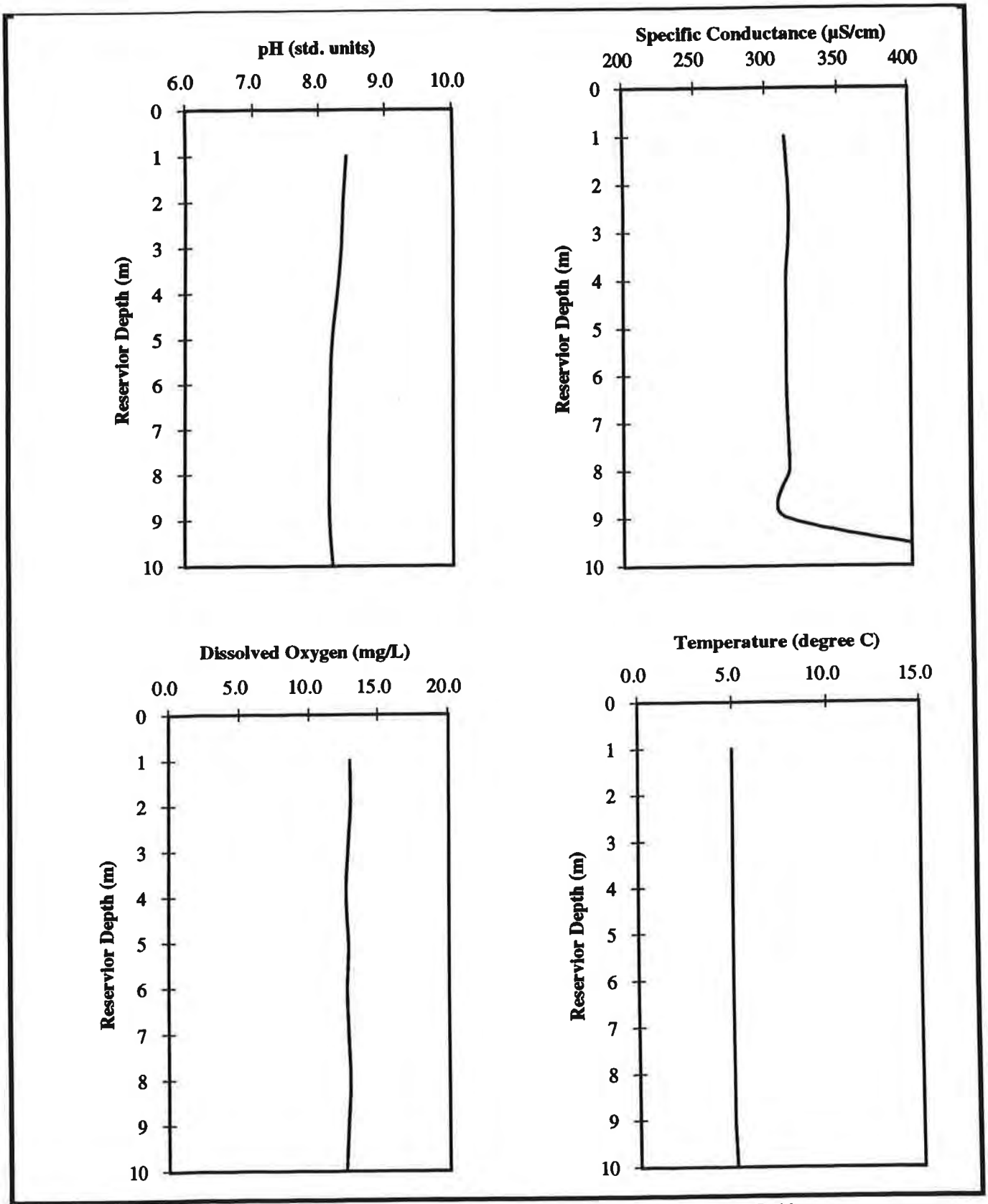
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - FEBRUARY 18, 1999

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

Figure 21



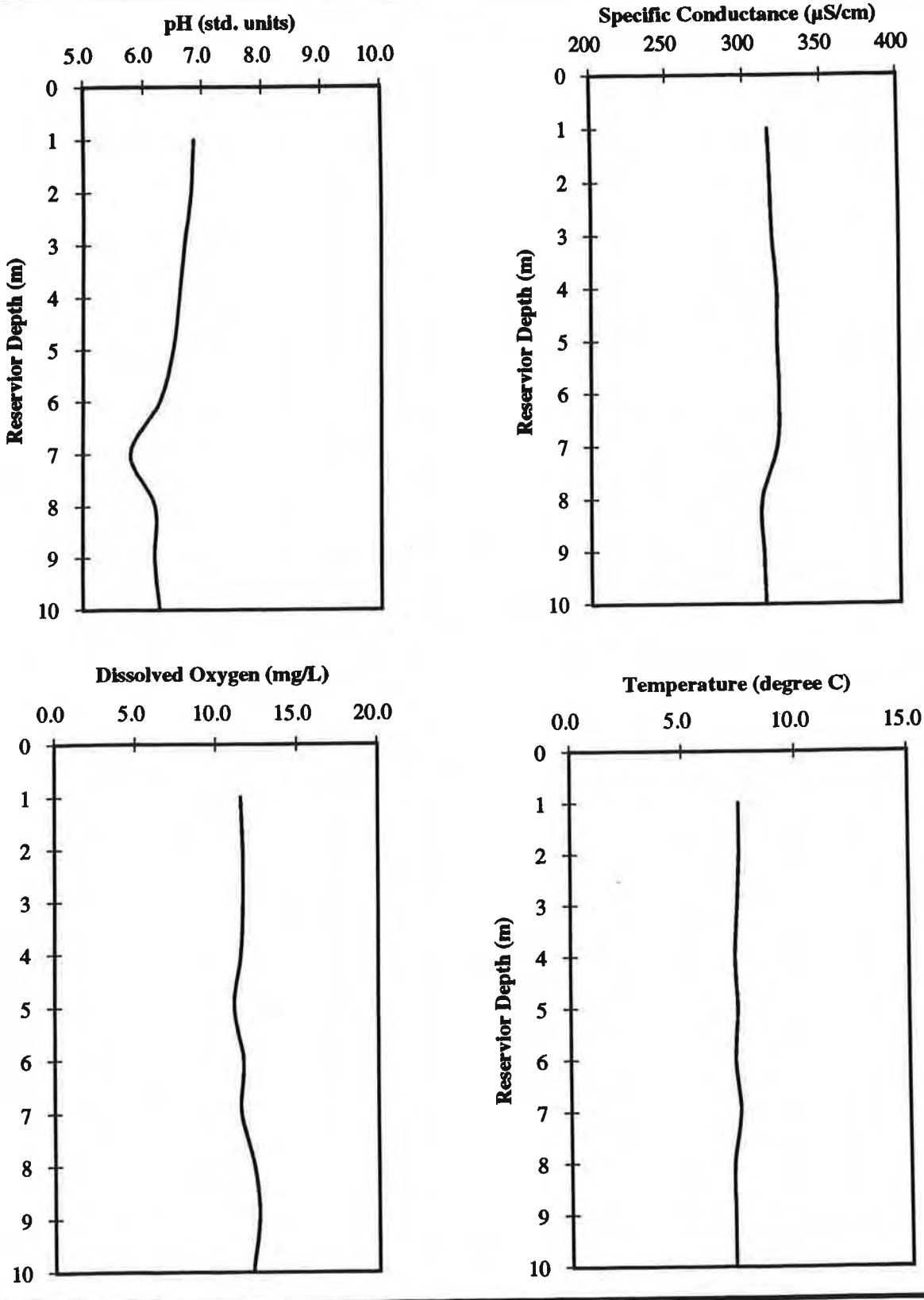
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - MARCH 10, 1999

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

Figure 22



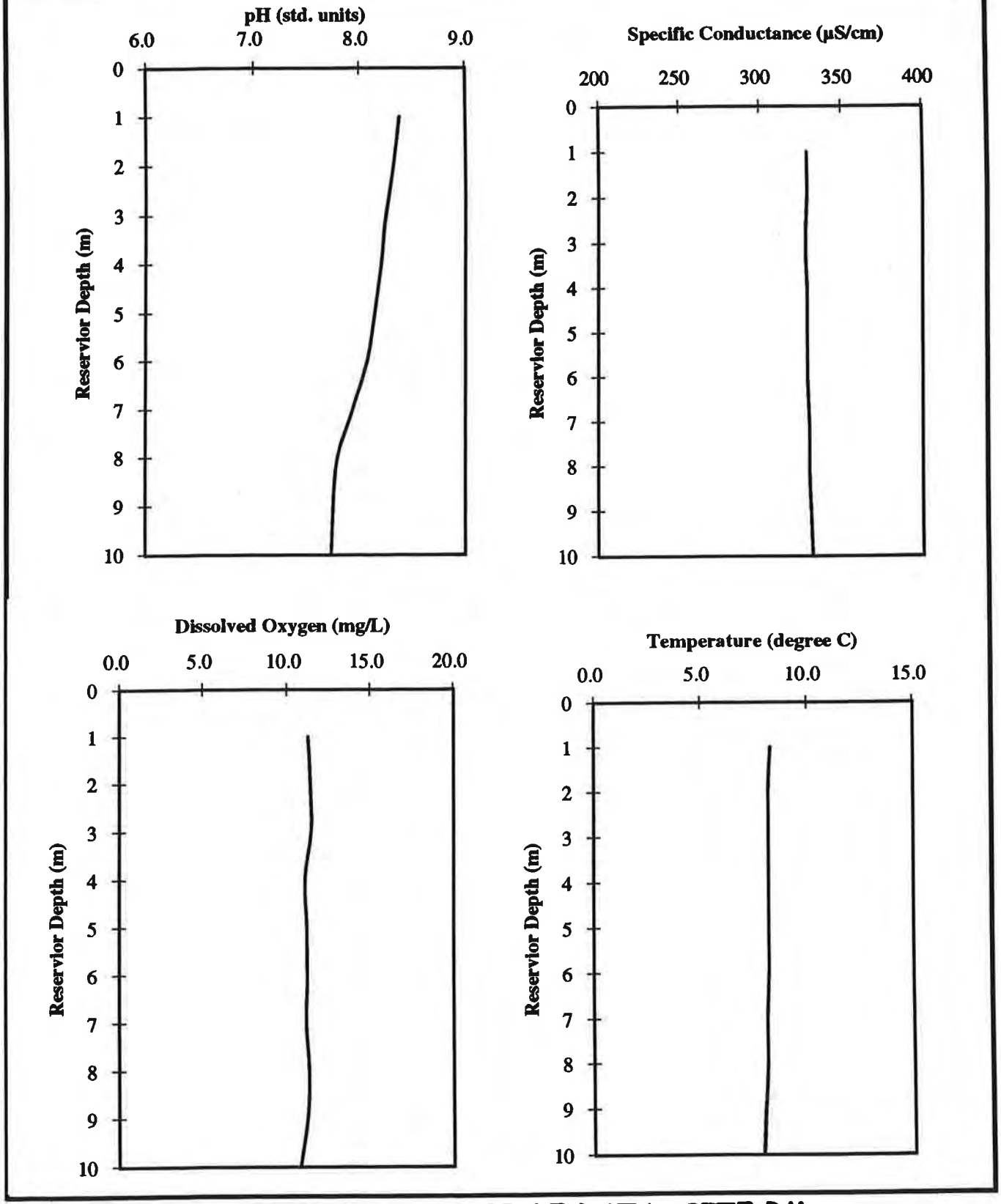
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - MARCH 24, 1999

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

Figure 23



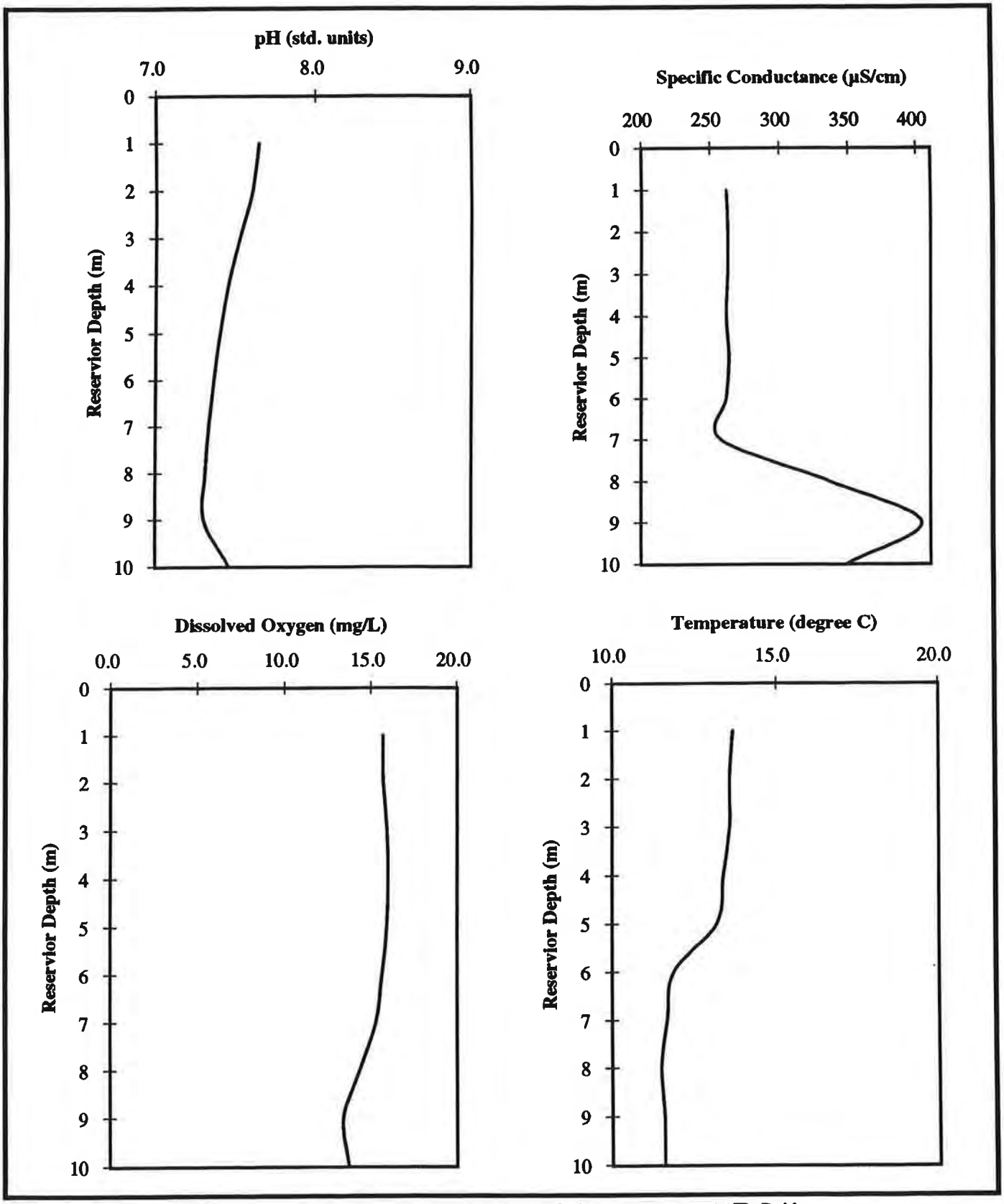
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - APRIL 15, 1999

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

Figure 24



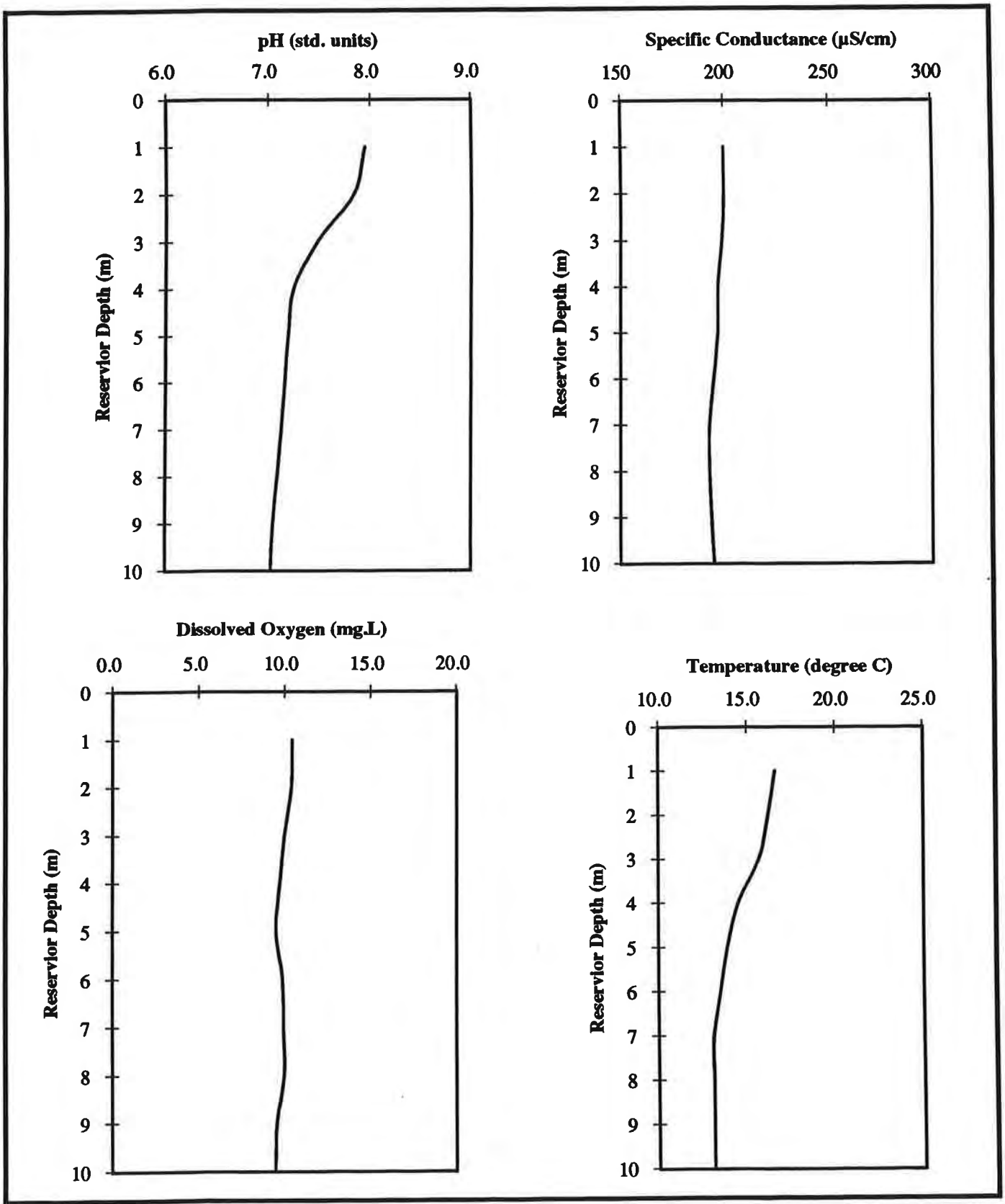
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - MAY 19, 1999

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

Figure 25



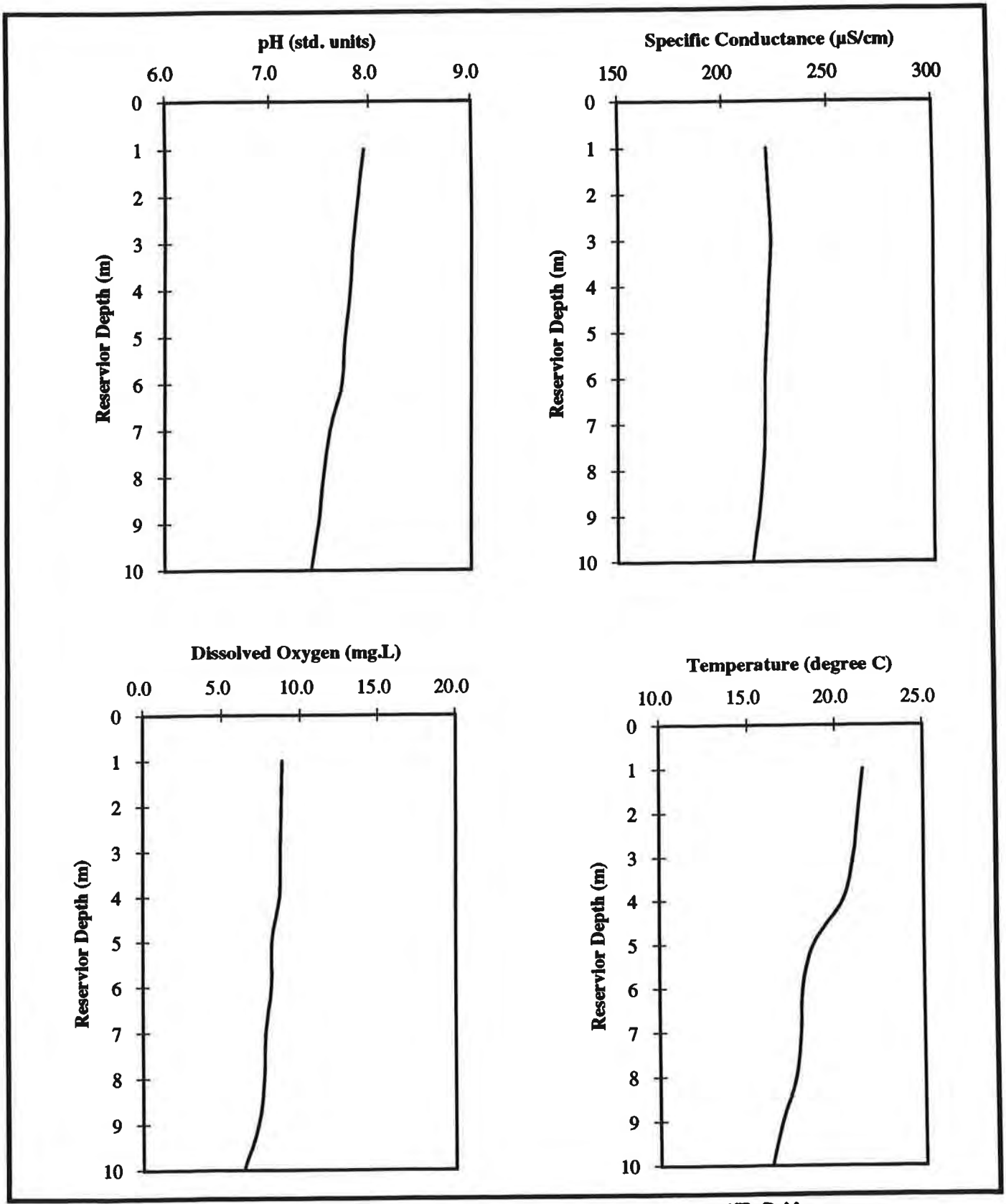
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - JUNE 9, 1999

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

Figure 26



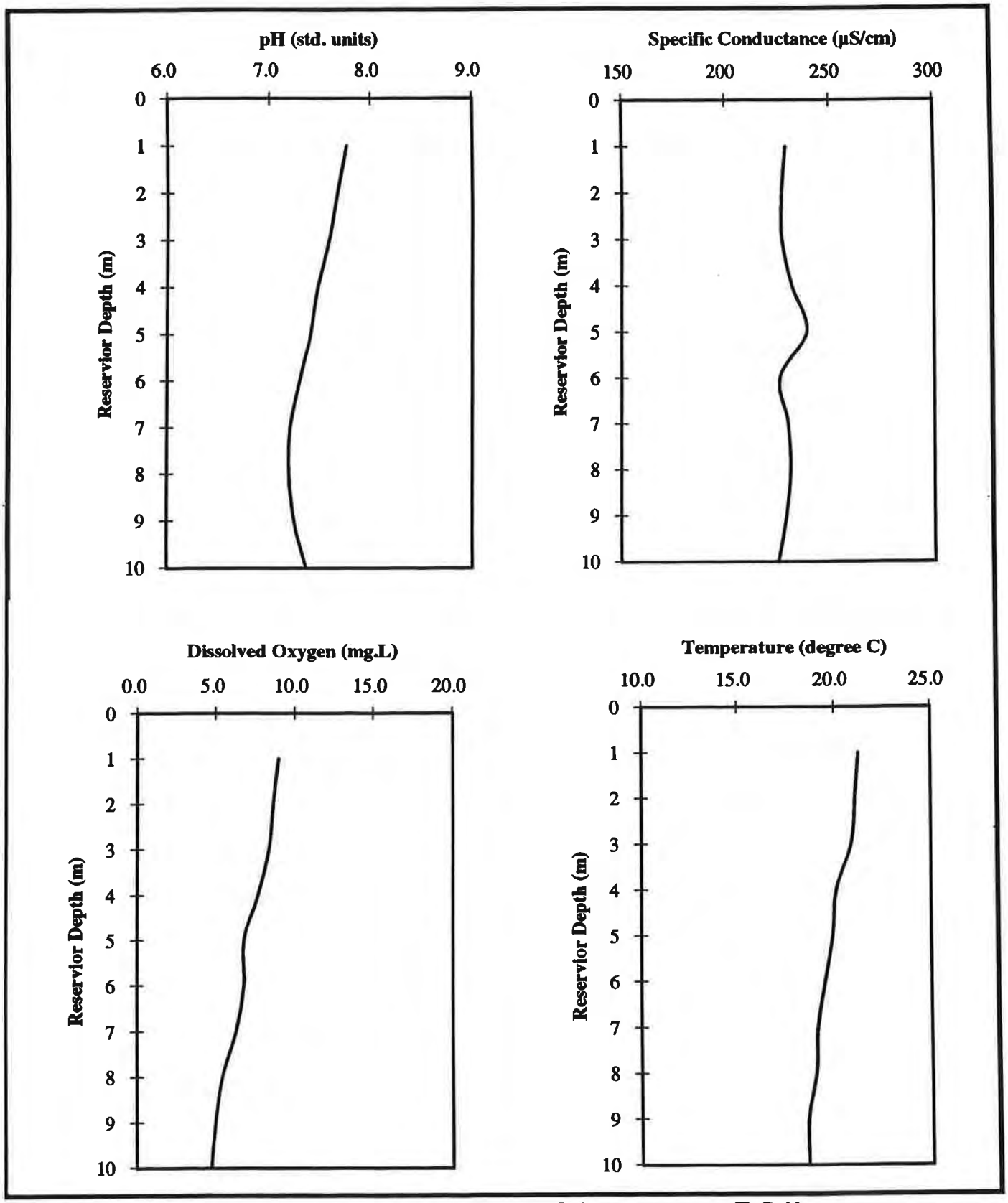
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - JULY 7, 1999

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

Figure 27



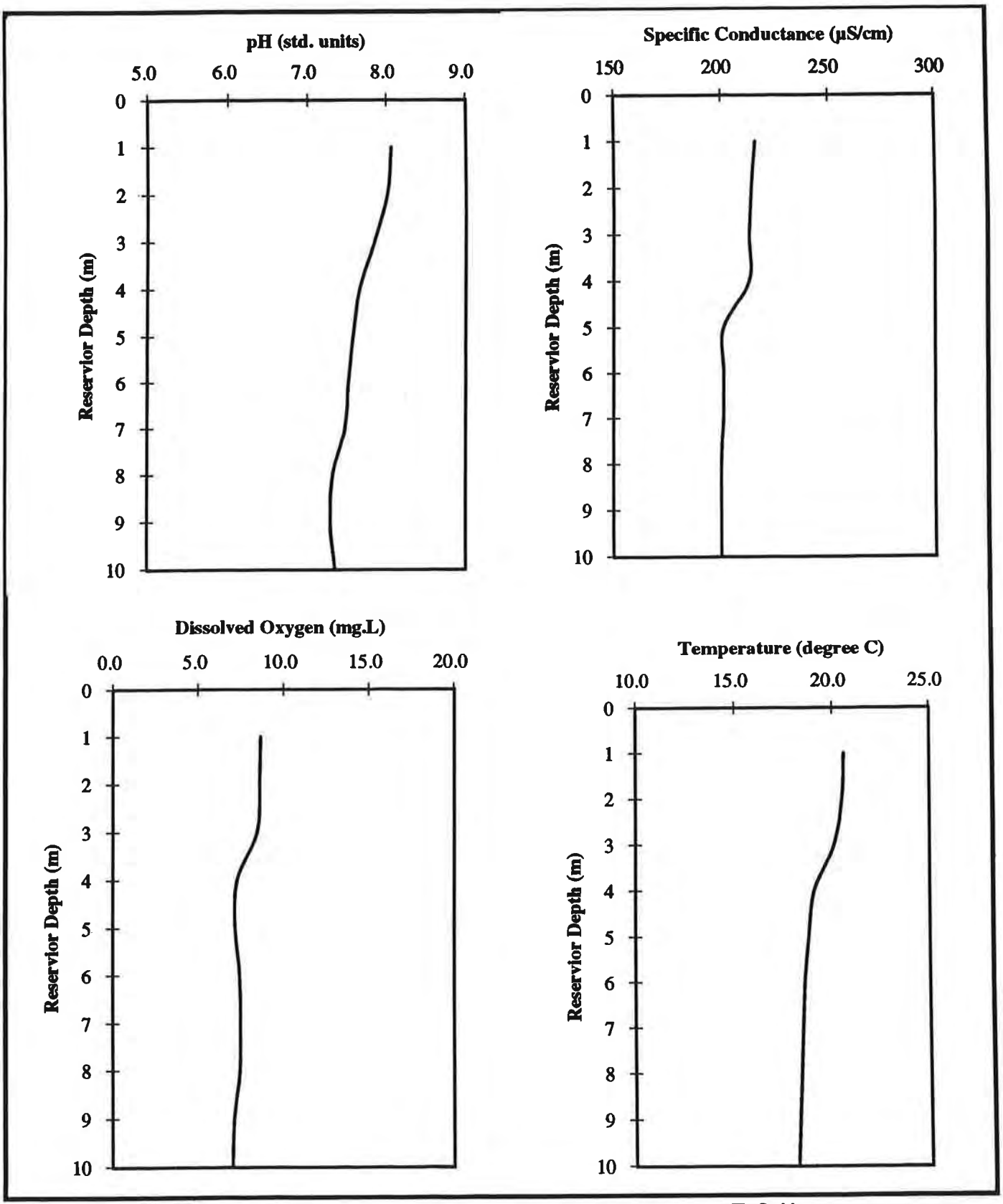
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - JULY 21, 1999

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

Figure 28



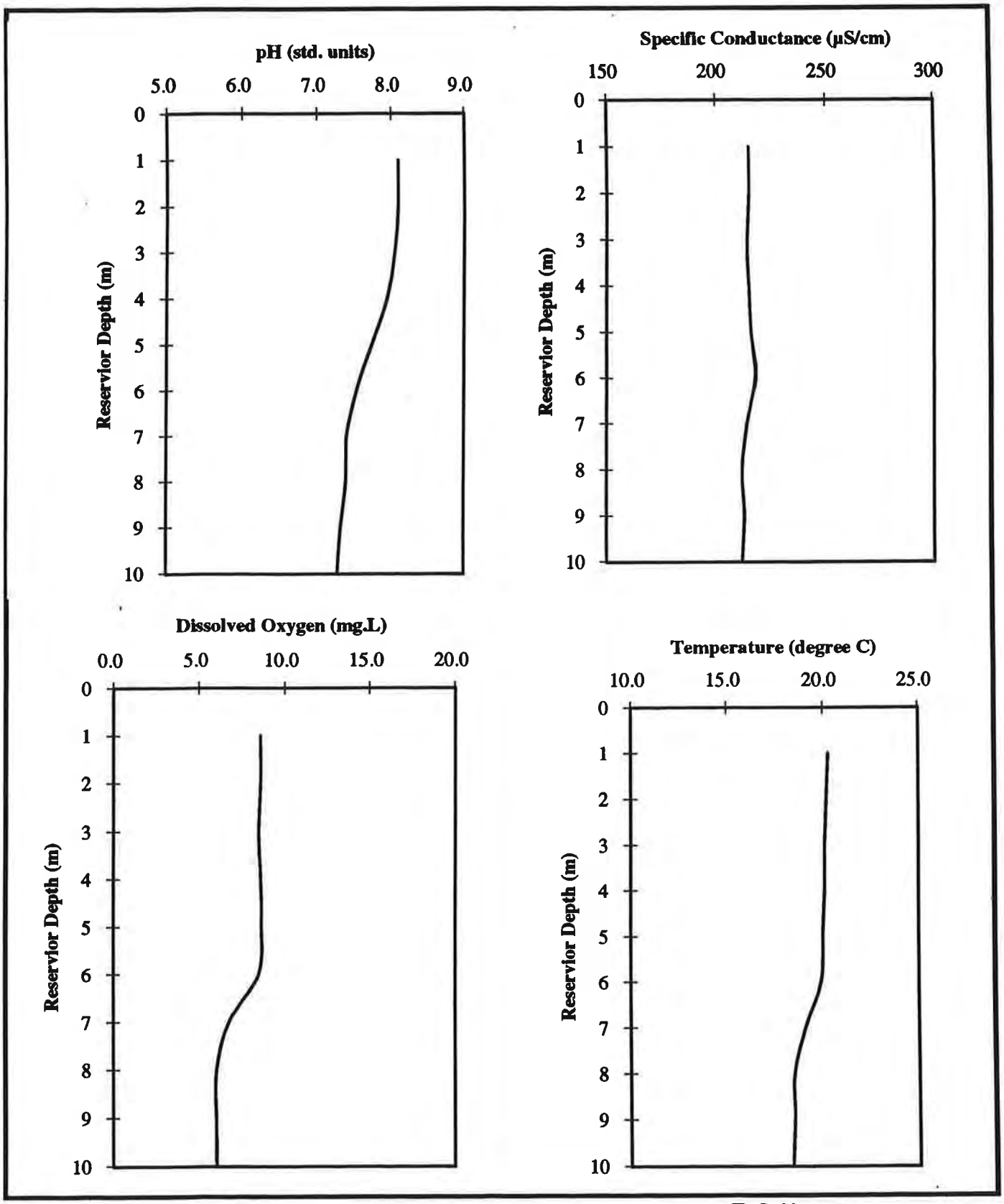
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - AUGUST 4, 1999

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

Figure 29



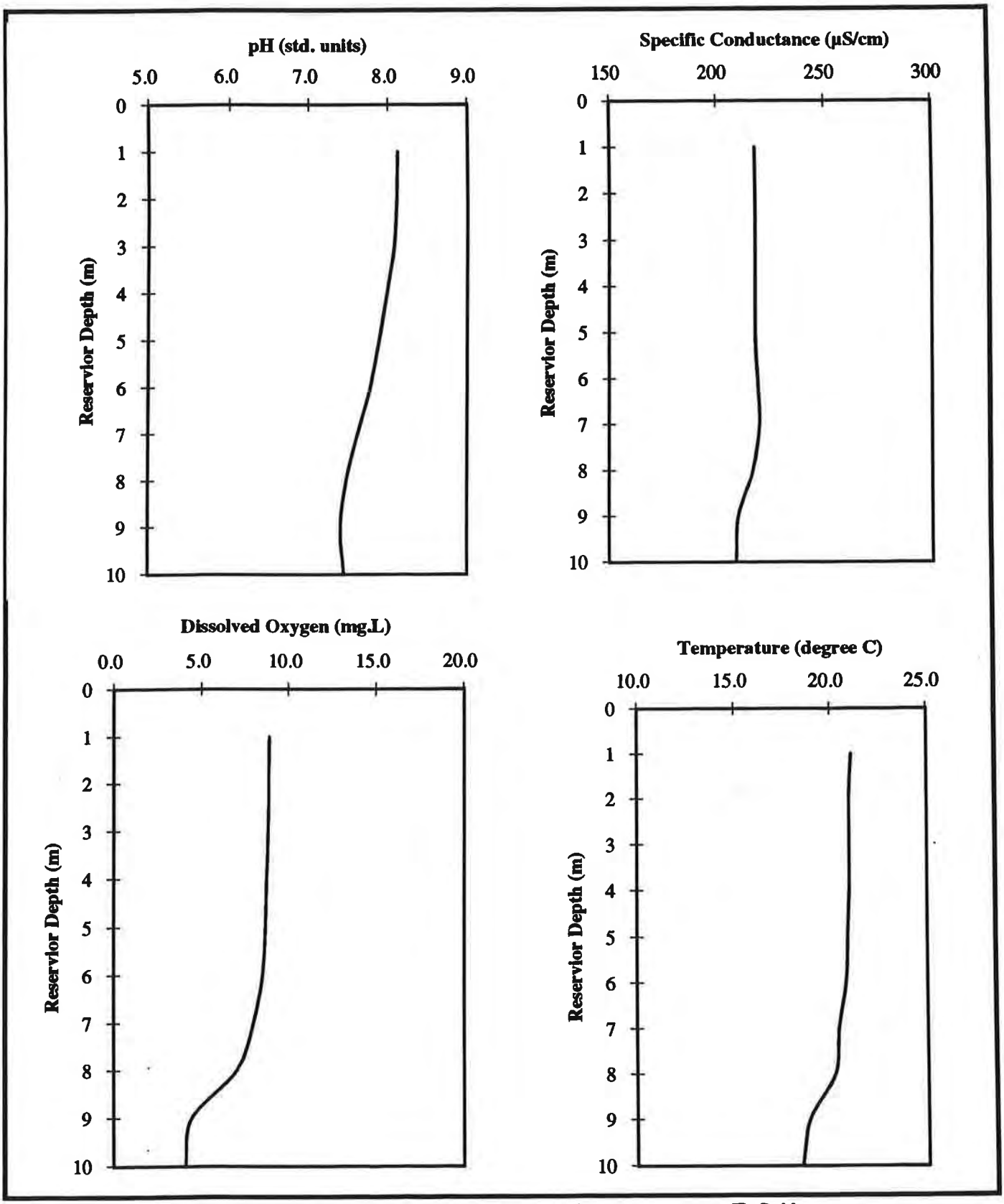
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - AUGUST 18, 1999

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

Figure 30



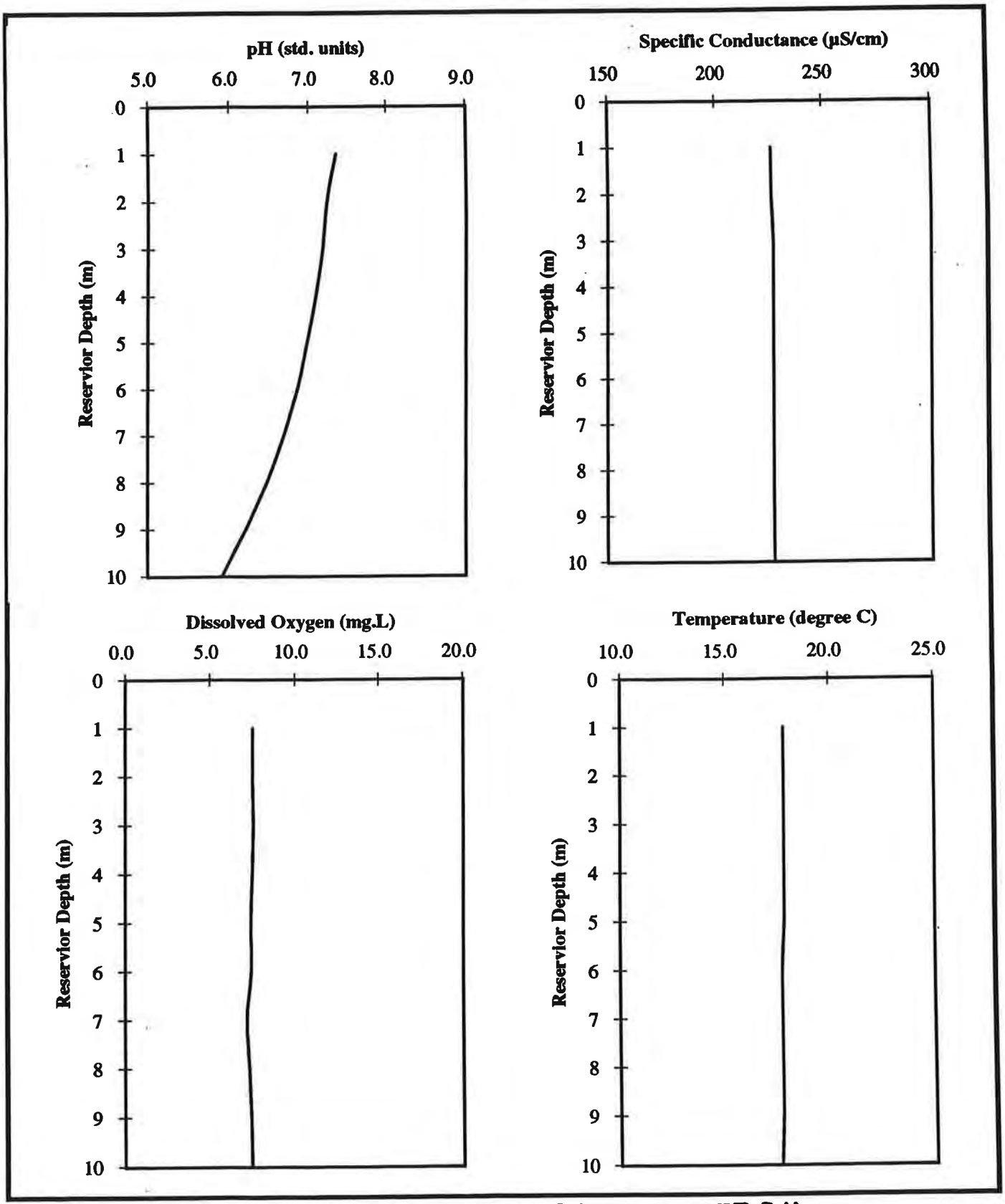
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - SEPTEMBER 3, 1999

CHATFIELD BASIN AND RESERVOIR

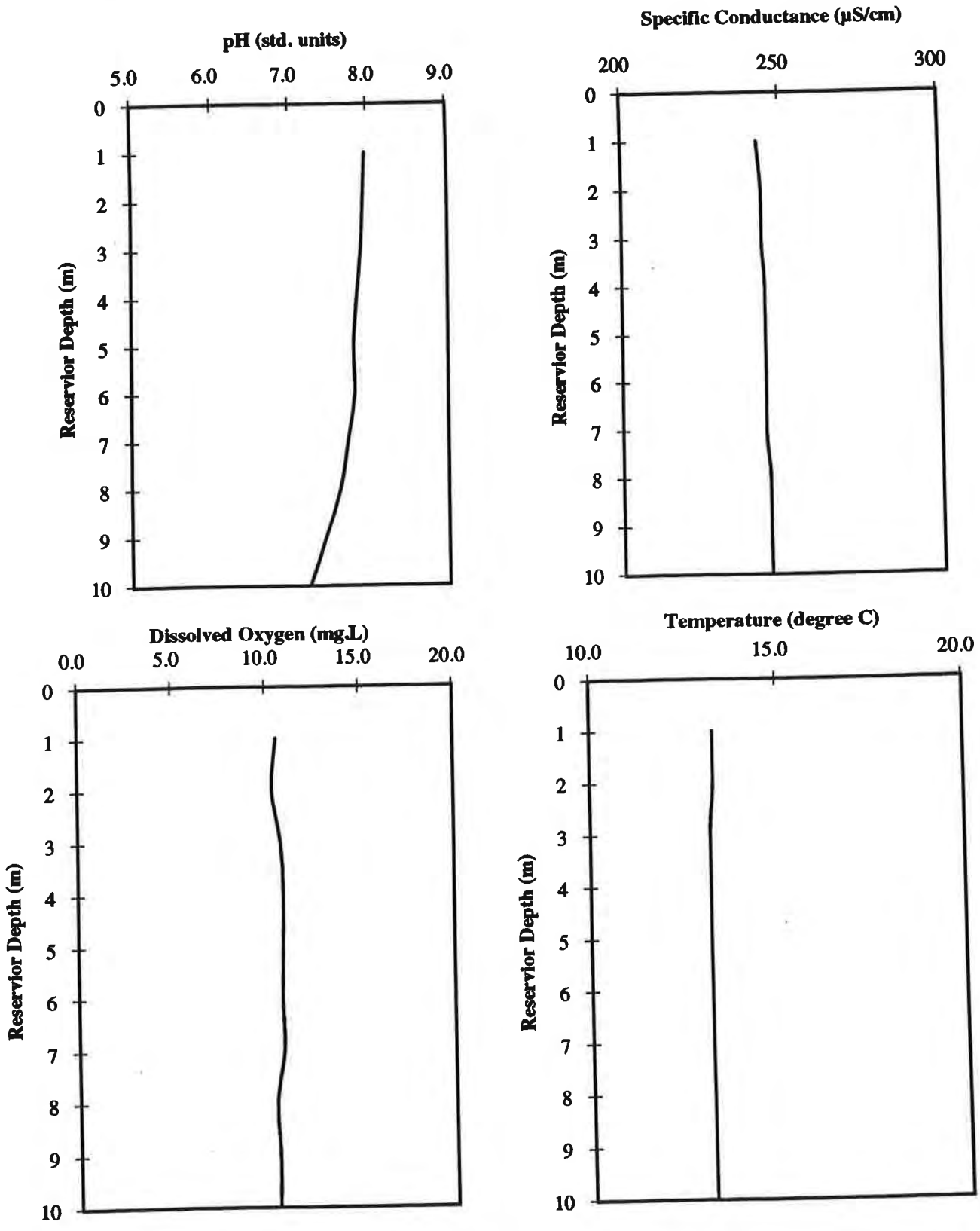
WATER-QUALITY MONITORING PROGRAM

Figure 31



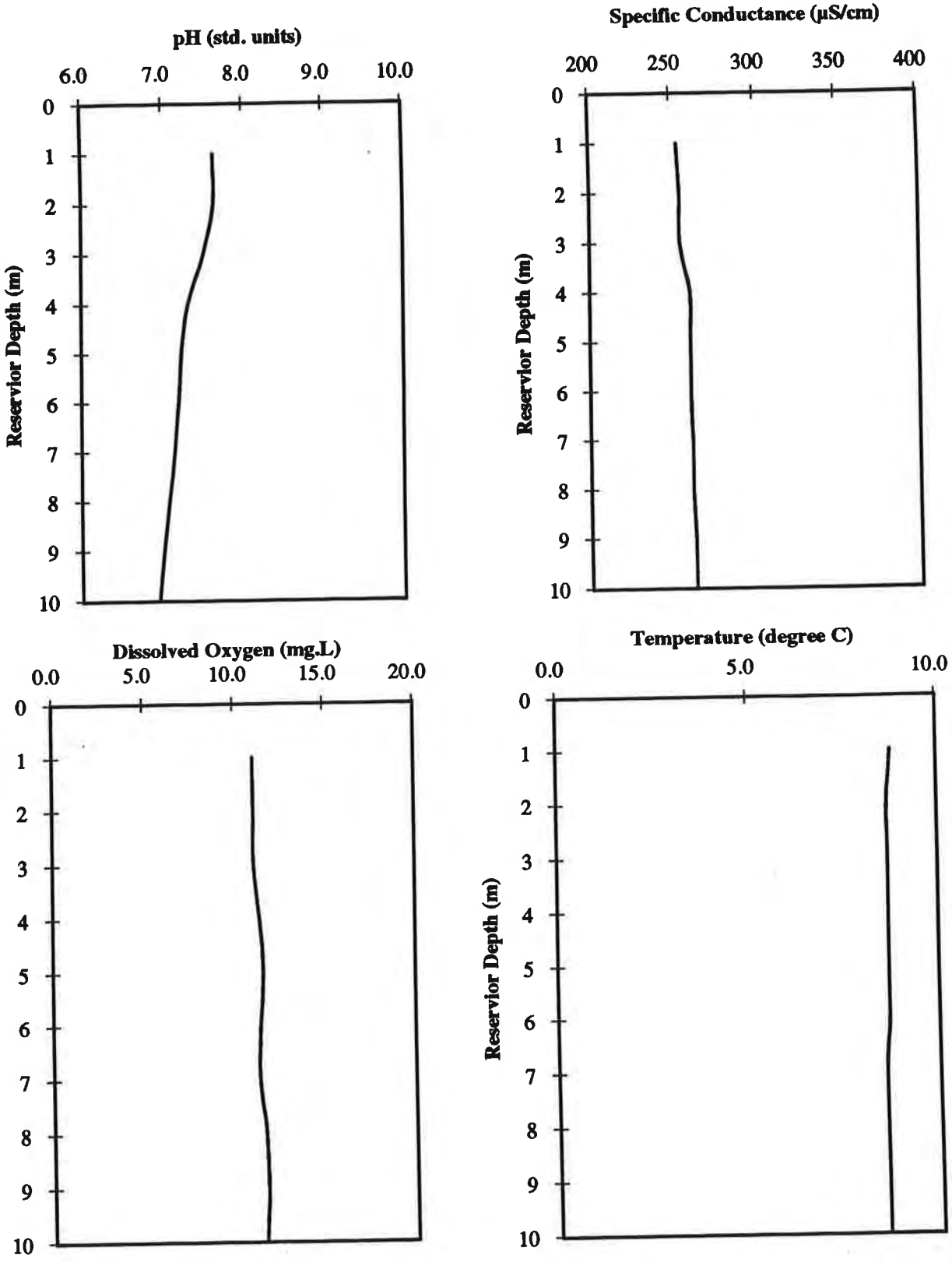
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - SEPTEMBER 15, 1999



IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - OCTOBER 13, 1999



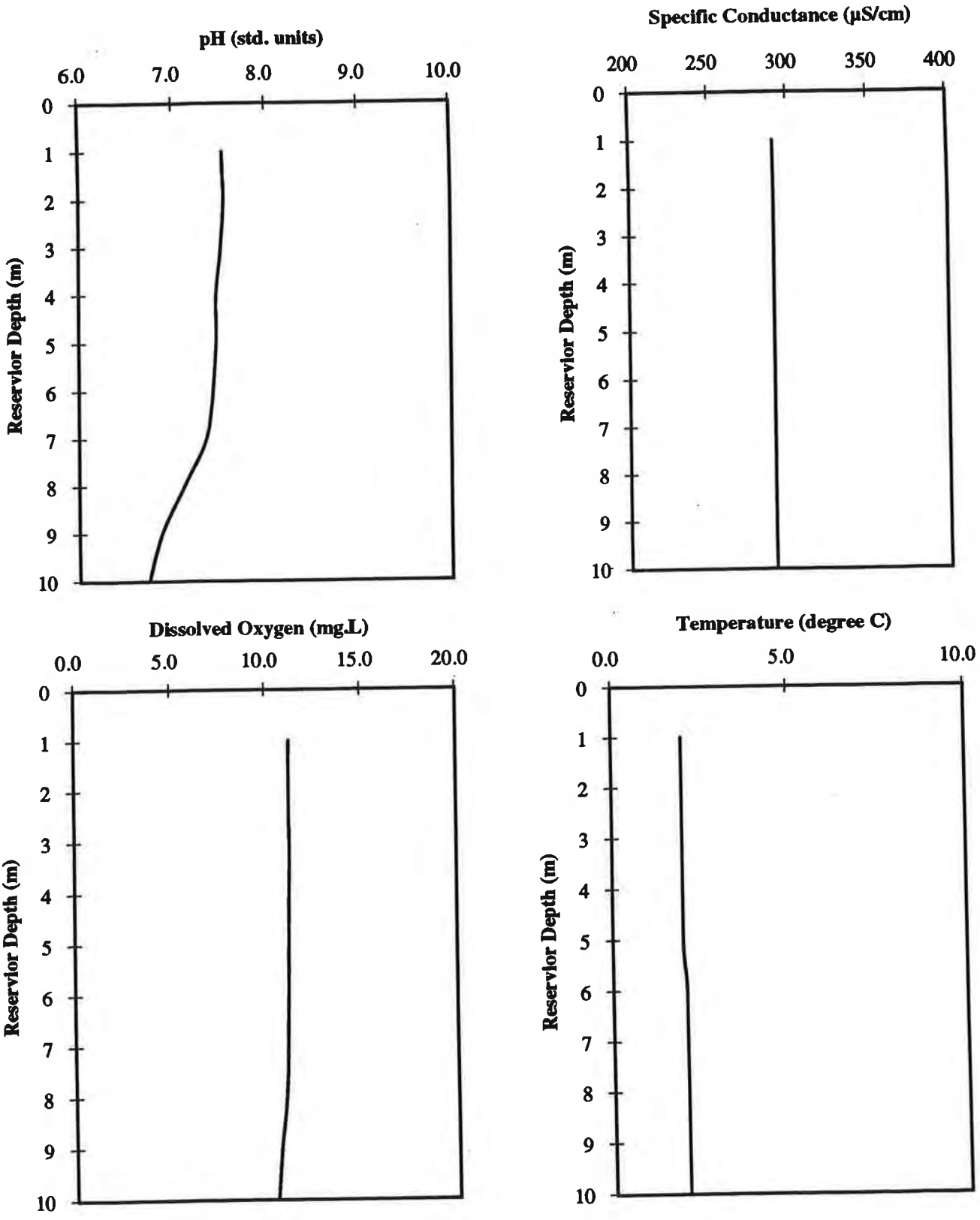
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - NOVEMBER 10, 1999

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

Figure 34



IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - DECEMBER 15, 1999

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

Figure 35

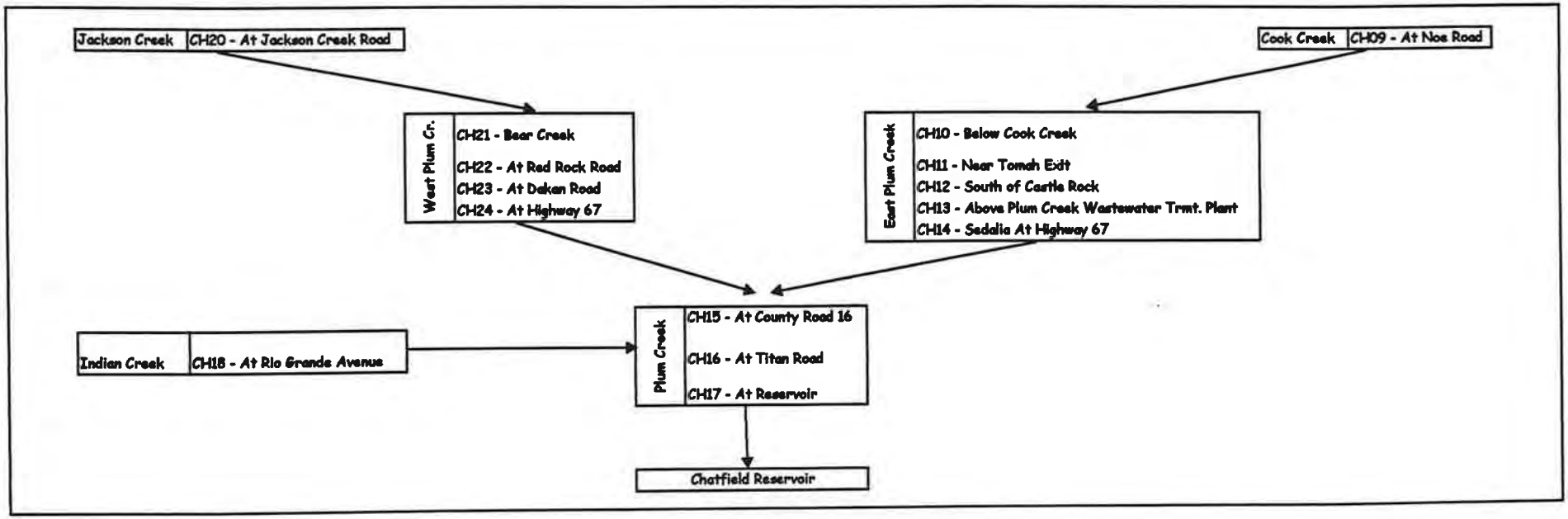


FIGURE 36

SCHEMATIC DIAGRAM OF PLUM CREEK AND TRIBUTARY BASIN-WIDE SCREENING SURVEY SITES

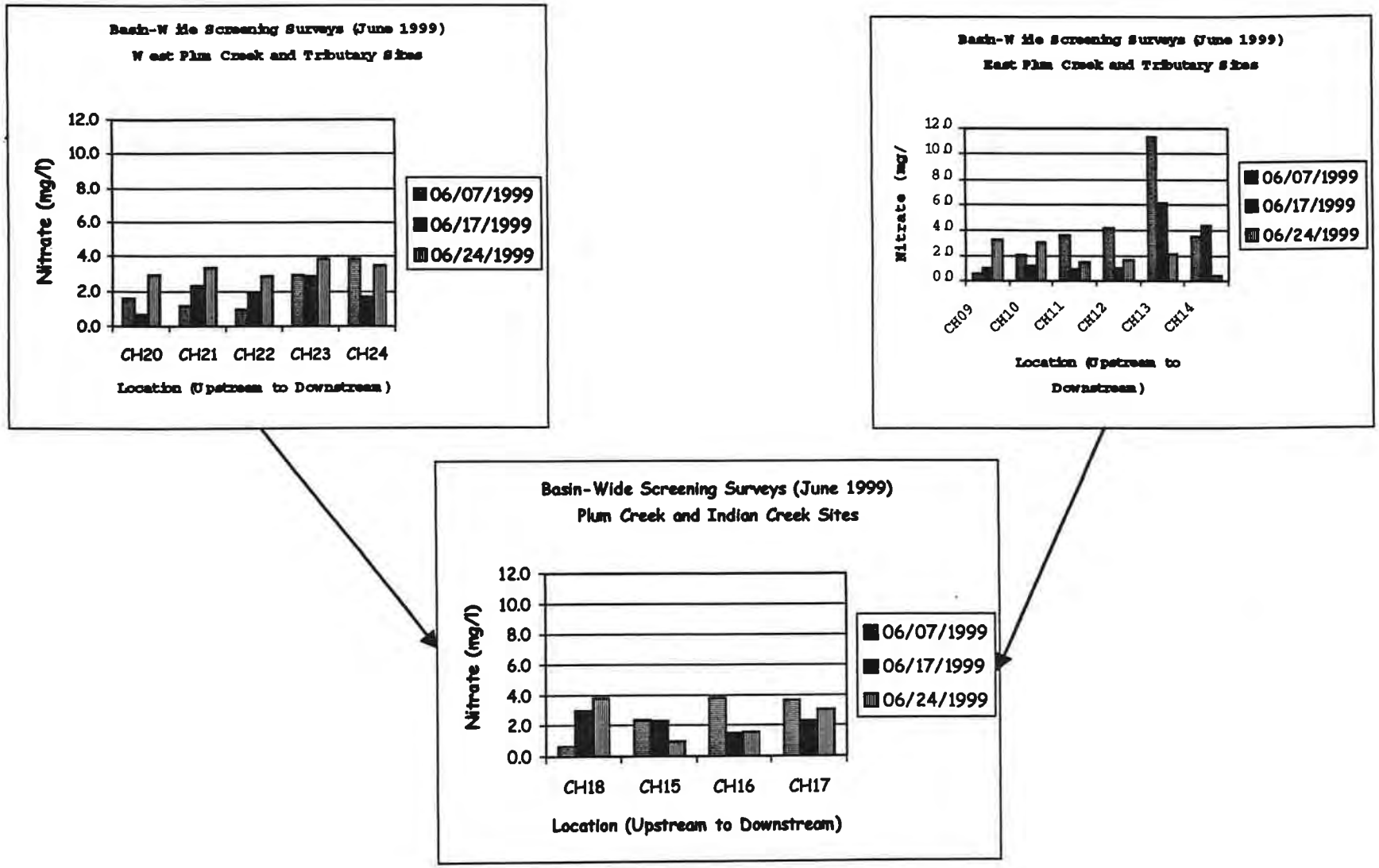
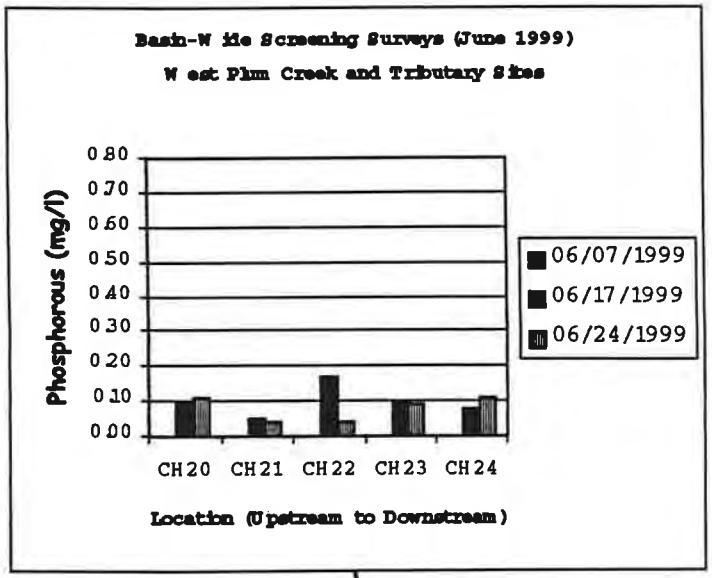
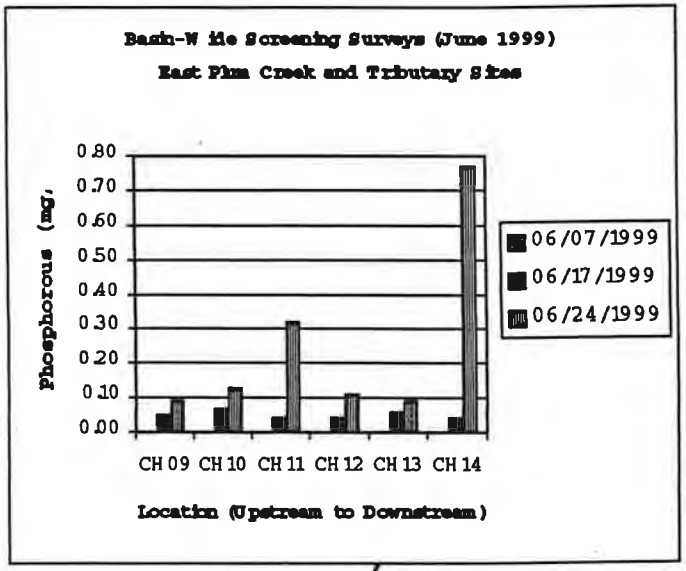


FIGURE 37

SUMMARY OF NITRATE DATA FOR PLUM CREEK AND TRIBUTARY SCREENING SURVEY SITES





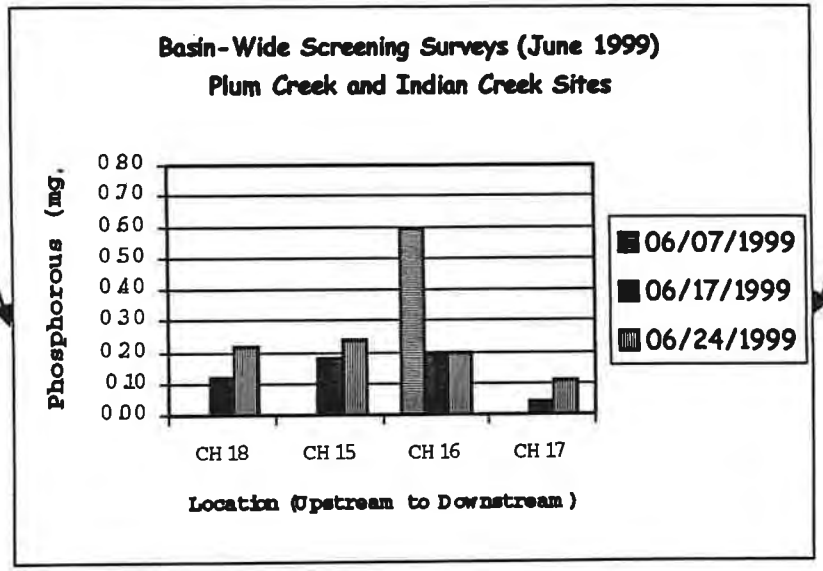


FIGURE 38

SUMMARY OF PHOSPHOROUS DATA FOR PLUM CREEK AND TRIBUTARY SCREENING SURVEY SITES

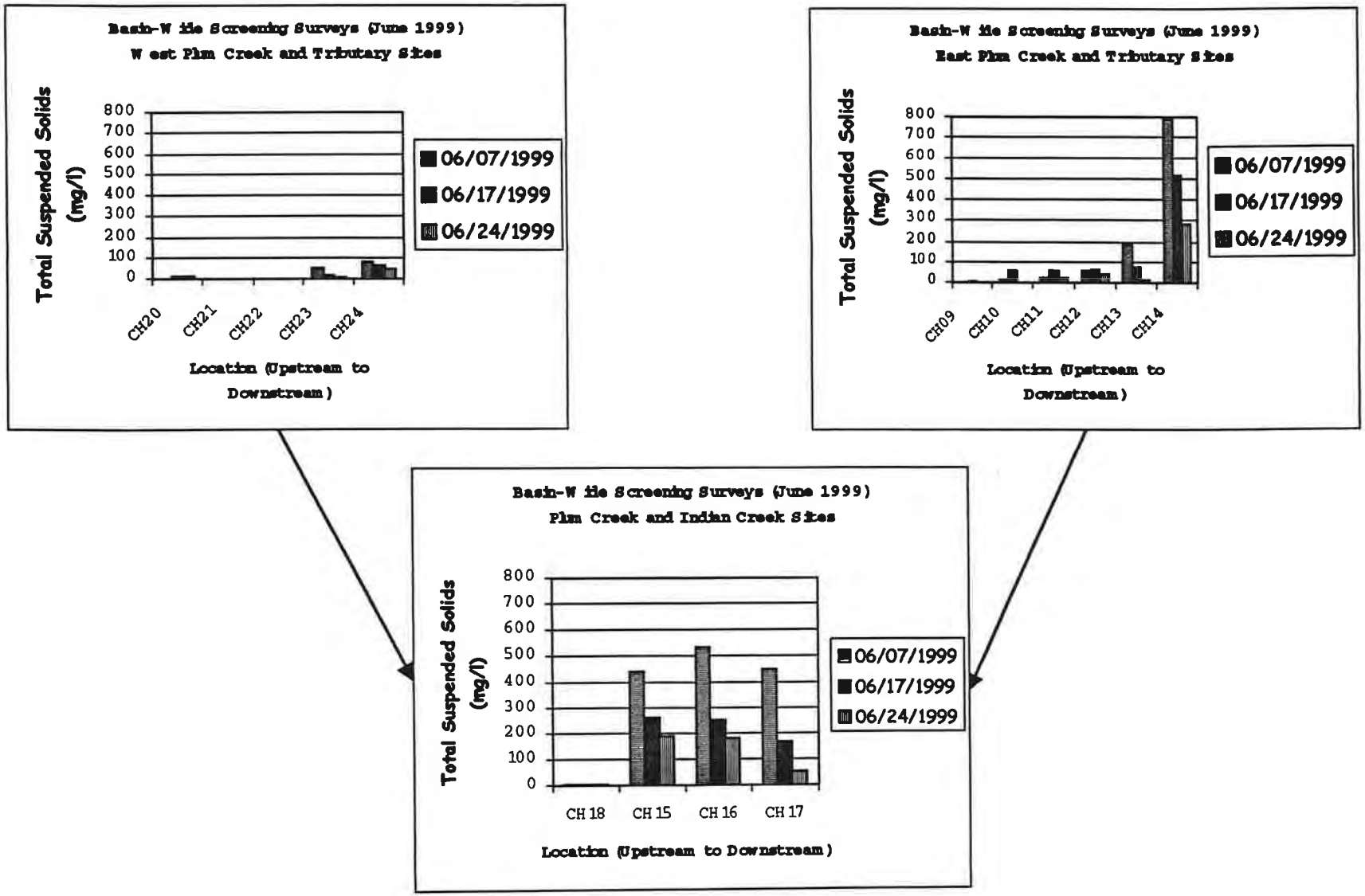


FIGURE 39

SUMMARY OF TOTAL SUSPENDED SOLIDS (TSS) DATA FOR PLUM CREEK AND TRIBUTARY SCREENING SURVEY SITES

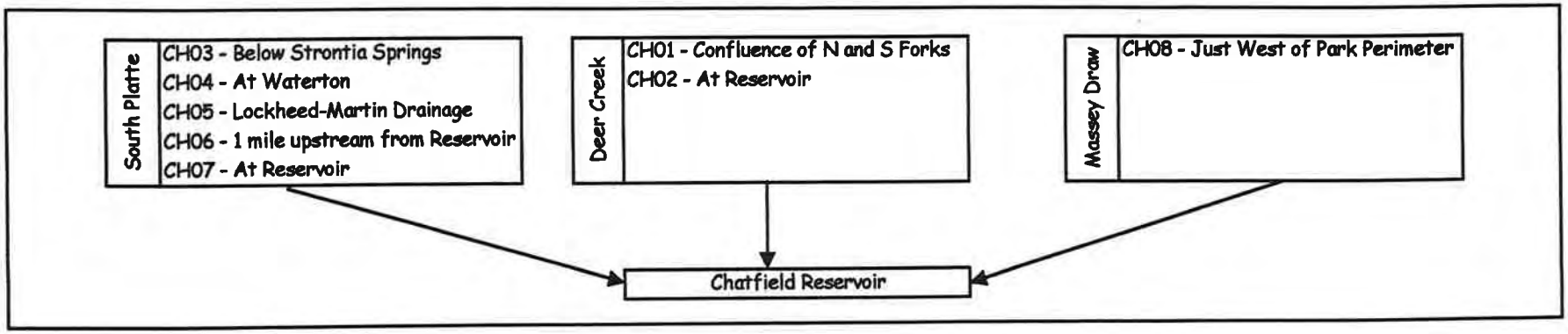


FIGURE 40

SCHEMATIC DIAGRAM OF SOUTH PLATTE RIVER, DEER CREEK, AND MASSEY DRAW BASIN-WIDE SCREENING SURVEY SITES

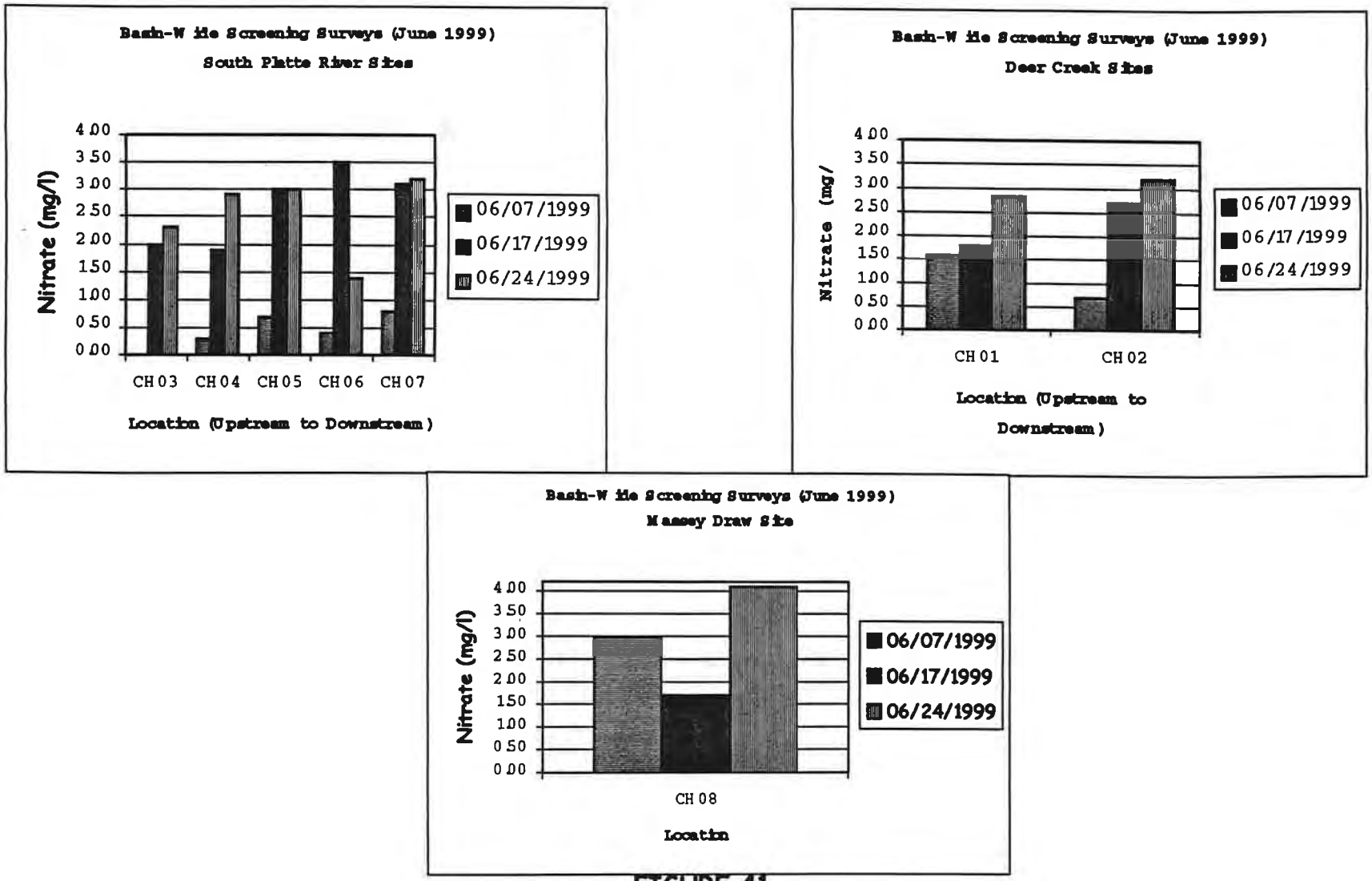
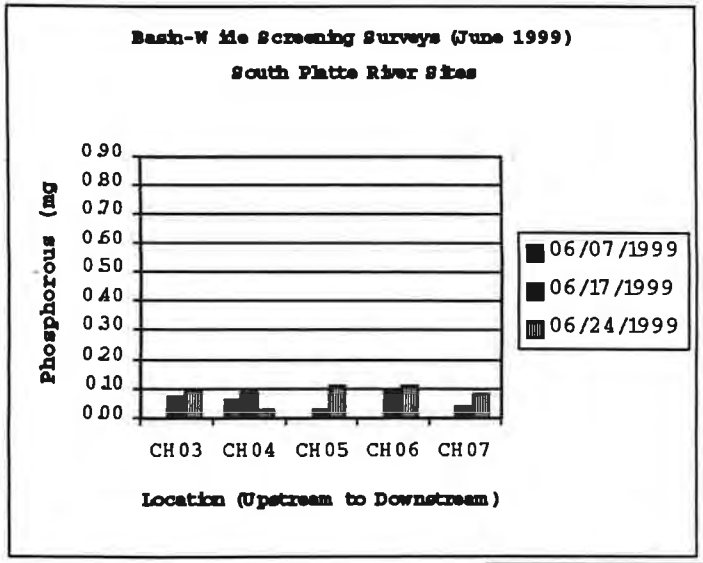
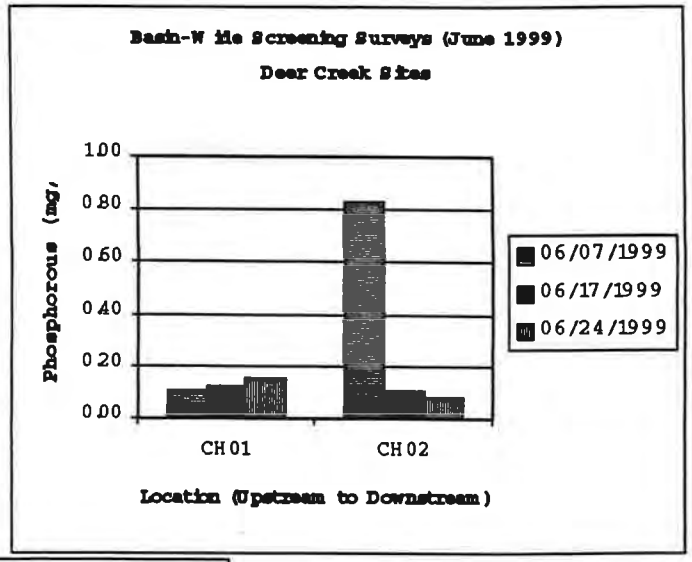


FIGURE 41

SUMMARY OF NITRATE DATA FOR SOUTH PLATTE RIVER, DEER CREEK, AND MASSEY DRAW SCREENING SURVEY SITES





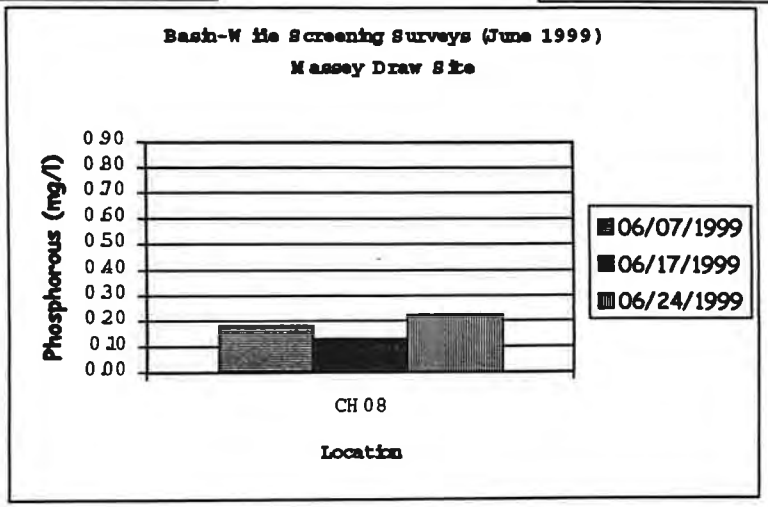
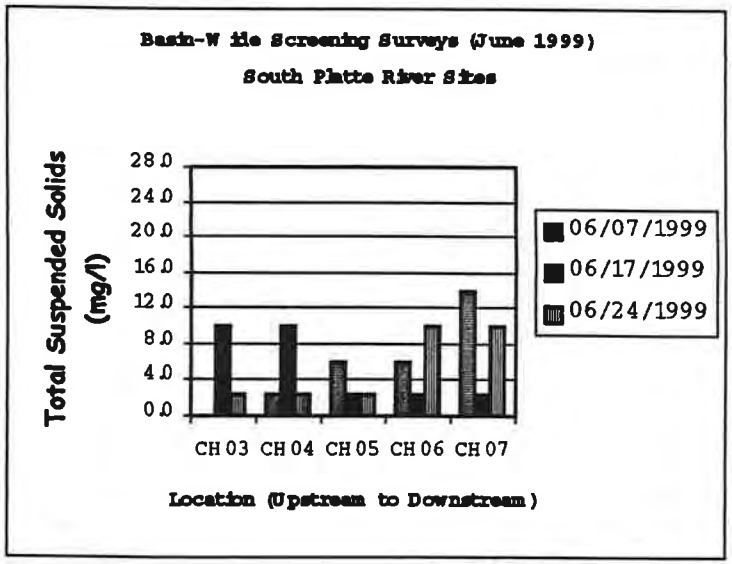
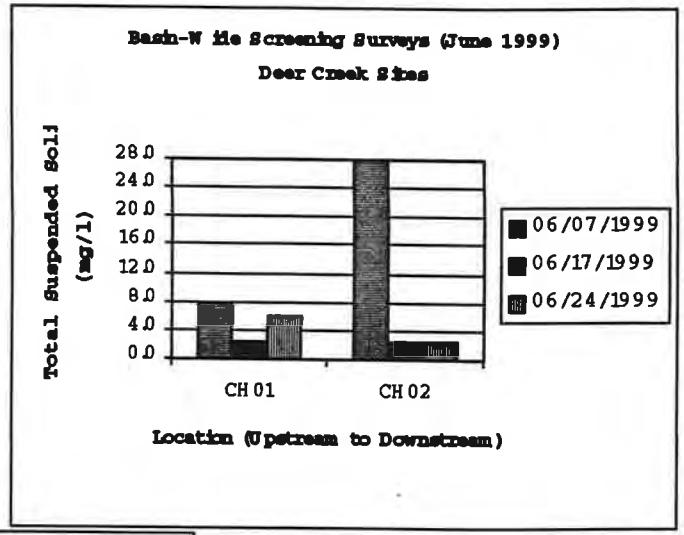


FIGURE 42

SUMMARY OF PHOSPHOROUS DATA FOR SOUTH PLATTE RIVER, DEER CREEK, AND MASSEY DRAW SCREENING SURVEY SITES





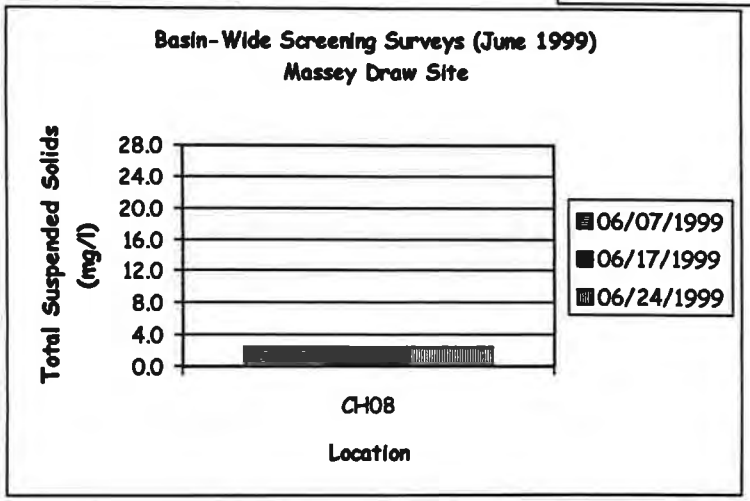


FIGURE 43

SUMMARY OF TOTAL SUSPENDED SOLIDS (TSS) DATA FOR SOUTH PLATTE RIVER, DEER CREEK, AND MASSEY DRAW SCREENING SURVEY SITES