WATER QUALITY MONITORING PROGRAM
CHATFIELD BASIN AND RESERVOIR
ANNUAL DATA REPORT
Calendar Year 2002

Chatfield Watershed Authority

Prepared By:

COMMODORE
ADVANCED SCIENCES, INC.

COMMODORE
ADVANCED SCIENCES, INC.

April 18, 2003

Chatfield Basin Authority
c/o RNC Consulting
1529 South Telluride Street
Aurora, CO 80017-4333

Subject: Water Quality Monitoring Program, Chatfield Basin and Reservoir Annual Data Report, Calendar Year 2002

Dear Mr. Clayshulte:

This final 2002 Annual Basic-Data Report is being submitted by Commodore Advanced Sciences, Inc. (CAS) in fulfillment of CT 2002 Chatfield Monitoring Program reporting requirements. The data provided in this report were collected according to the "2002 Chatfield Watershed Authority Water Quality Monitoring Program." ACZ Laboratories, performed organic and inorganic analytical chemistry, and biological analysis were performed by Plateau Ecosystems Consulting Inc. (PEC), Arvada, CO, Chadwick and Associates,Englewood, CO, and the University of Colorado (CU) Limnology Laboratory.

The report is organized into four primary sections, separated by colored dividers:

1. Sampling
2. Basic Data Tables
3. Summary Data Tables
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 21 provide the field measurements and laboratory analytical data for samples collected by CAS during 2002. Tables 2 through 17 contain data for the three 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. The sample is taken at the in-reservoir location shown on Figure 1.

Table 18 includes tabular in-reservoir water quality profiles for March through December water-quality surveys. Field parameters are presented at one-meter increments for pH, specific conductance, dissolved oxygen and temperature. These data are shown graphically in Figures 15 through 27.

Phytoplankton and zooplankton results are provided in both tabular (Tables 20 and 21) and graphical format (Figures 10 through 14). Phytoplankton data is available for four events instead of the planned six events. The sample collected in March was dropped and broken at the lab, and the November sample was not analyzed before the holding

time expired. Zooplankton was sampled once, in accordance with the 2002 Monitoring Plan, in September 2002.

Tables 22 through 24 provide the data collected during the supplemental field screening surveys performed during April - June, 2002 at 23 locations throughout the watershed. Figures 2A, 2B, and 2C are maps of the sampling locations. Basin-wide field screening surveys ended early, after June 5, due to closed access to sample sites caused by the Hayman Fire. Figures 30 through 34 provide graphical summaries of nitrate and phosphorous for the field screening locations. Results of three storm-water runoff sampling events in Massey Draw are presented in Table 25. Three stormwater events were sampled three times each, at the beginning, middle, and near the end of each runoff event. Groundwater samples were collected five times during April-June 2002, from four alluvial monitoring wells in the Plum Creek drainage. Laboratory data from groundwater analyses appear in Table 26.

Table 27 provides a summary of the growing season total phosphorous and chloeophyll_a concentrations in the reservoir for the period 1982 to 2002. As indicated on this table, the average growing season concentrations of total phosphorous decreased dramatically, from 23ug/L in 2001 to 8 ug/L in 2002. This drop is probably a drought effect of substantially reduced inflow. Both of these constituents have been steadily increasing since 1997. The total phosphorus growing season average in 2002 was the lowest level recorded since the Chatfield Reservoir monitoring program began in 1982. The average total phosphorous concentration during the 2002 growing season was well below the standard of 27 ug/L, and the average chlorophyll_a concentration (9.1 ug/L) remained less than the growing season goal of 17 ug/L established for Chatfield Reservoir. The peak chlorophyll_a concentration doubled from 2001-2002 (13-26 ug/L).

Table 28 provides a summary of the data for trace metals analyses from the inflow/outflow and reservoir sites for the past 6 years (1997-2002). Since 2001, metals sampling events have been greatly reduced from previous years, to one event per site for the entire year. Plum Creek was dry from July – October, during which time metals were sampled at the other sites, so Plum Creek was not sampled for metals in 2002. 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 ml/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 during 2002 were consistent with the concentrations in samples from the previous 5 years. Manganese concentration exceeded the chronic water quality standard of 50 ug/L. (181 ug/L). This is the only metal that exceeded the standard.

COMMODORE
ADVANCED SCIENCES, INC.

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. Since 1997, the time series plots depect a point value, rather than an average value from three reservoir locations (field codes RM-1, RM-2, and RM-3). Comparison of growing-season total-phosphorus versus chlorophyll_a concentrations is shown in Figure 9.

This report constitutes fulfillment of reporting requirements for the 2002 Chatfield Basin and Reservoir Monitoring Program. Commodore Advanced Sciences, Inc. and our new, local laboratory partner, Chadwick and Associates, appreciate having the opportunity to provide the Chatfield Watershed Authority with continuing water-quality monitoring and data compilation services. Please address questions and comment to Walt Foutz at 303.421.1511, or wfoutz@commodore.com.

Sincerely,

W Foutz

Walt Foutz, CPG
Senior Project Manager
COMMODORE ADVANCED SCIENCES, INC.

Attachments - "Water Quality Monitoring Program
Chatfield Basin and Reservoir
Annual Data Report
Calendar Year 2002"

25 copies

4251 Kipling Street, Suite 575 Wheat Ridge, CO 80033 303.421.1511 FAX: 303.463.4833

TABLE OF CONTENTS

Sampling Site Descriptions and Locations

Basic Data Tables

Summary Data Tables

TABLE OF CONTENTS (Continued)

Figures (Continued)

Attachment A – Analytical Methods and Units

SAMPLING SITE DESCRIPTIONS AND LOCATIONS

TABLE 1
2001 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
2001 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

Alluvial Groundwater Monitoring Wells (Figure 2)

Field Code	**Description**
1W	At Plum Creek Wastewater Treatment Plant
2W	Town of Sedalia Cistern
3W	Town of Castle Rock Well Located at Douglas County Fairgrounds
4W	Residential Well on Airport Road Southwest of Louviers - Flying C Ranch
5W	Residential Well Located West of Louviers

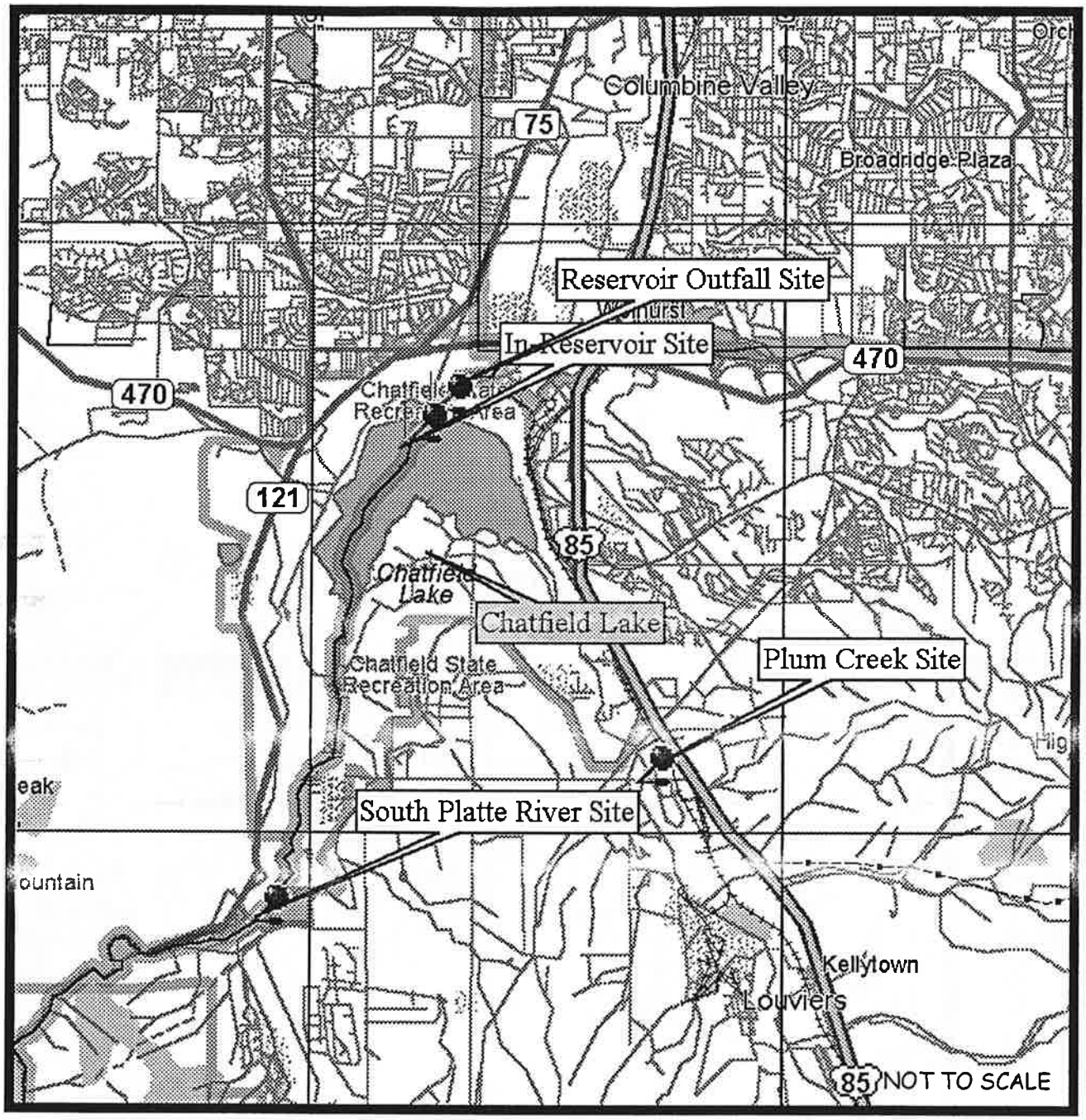


FIGURE 1
IN-RESERVOIR AND INFLOW/OUTFLOW SAMPLING LOCATIONS

CHATFIELD BASIN AND RESERVOIR
WATER-QUALITY MONITORING PROGRAM

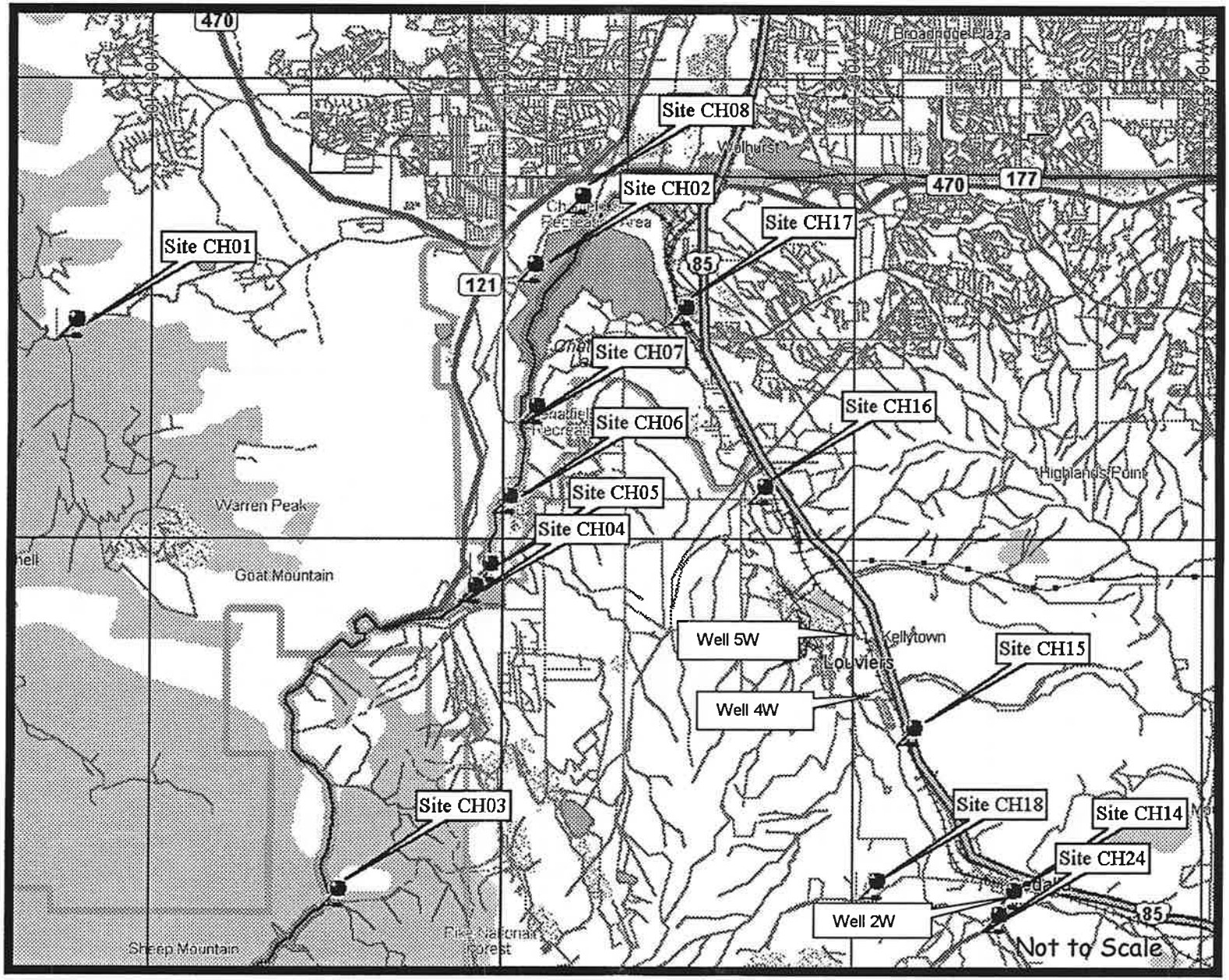


FIGURE 2A

BASIN-WIDE SCREENING SURVEY SAMPLING LOCATIONS

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

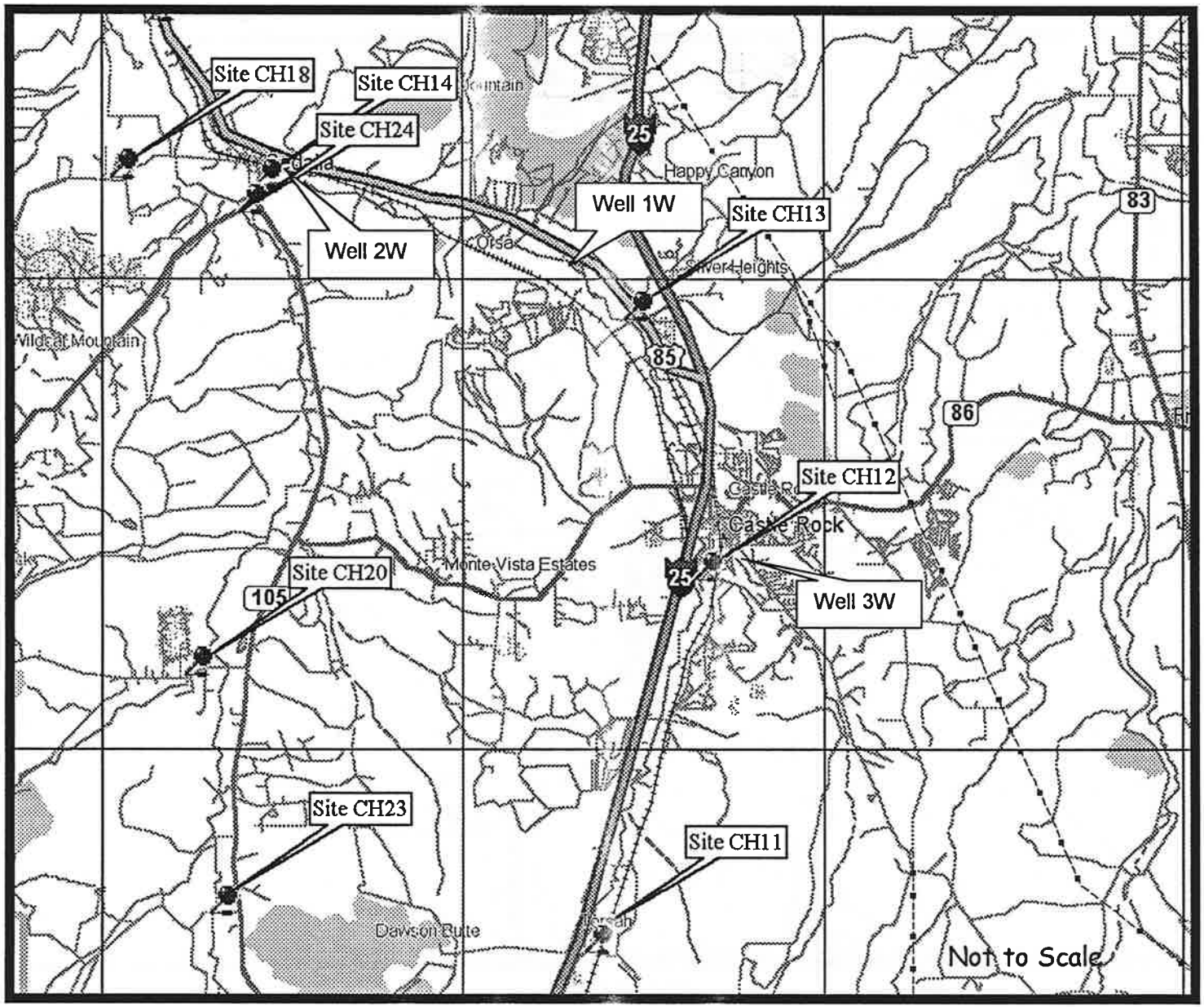


FIGURE 2B

BASIN-WIDE SCREENING SURVEY LOCATIONS

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

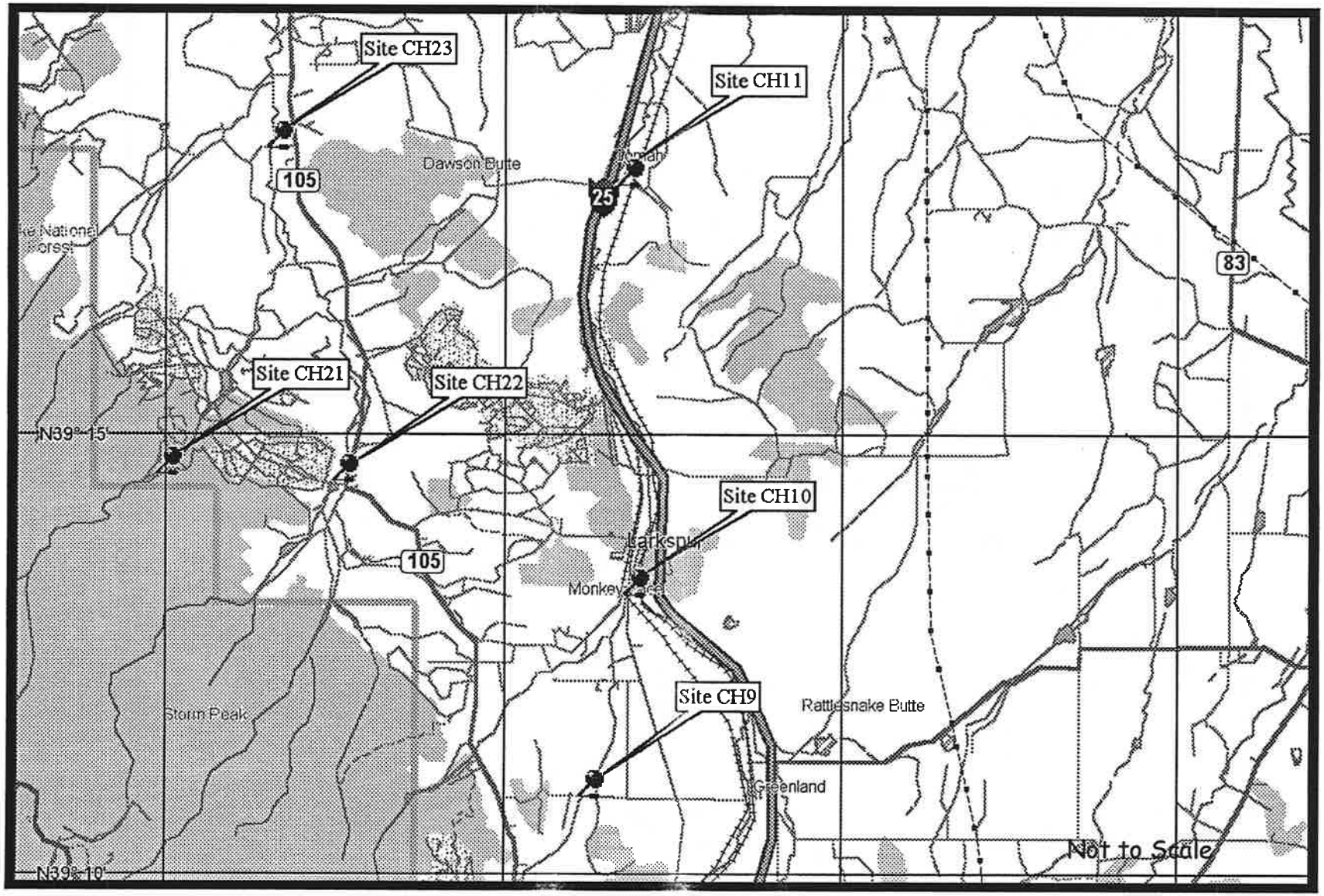


FIGURE 2C
BASIN-WIDE SCREENING SURVEY LOCATIONS
CHATFIELD BASIN AND RESERVOIR
WATER-QUALITY MONITORING PROGRAM

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)]	Specific Conductance Field (uS/cm)	Oxygen, Dissolved (mg/l)	pH Field (Std. Units)	Temperature (Deg C)
01-23-2002	745	42.4	312	14.37	6.2	0.4
02-20-2002	800	41.0	315	14.02	7.0	0.2
03-20-2002	655	34.0	311	14.80	6.7	0.6
04-17-2002	715	34.0	283	12.15	7.2	4.9
05-08-2002	715	32.4	308	8.76	7.5	7.9
06-13-2002	655	49.9	287	10.12	6.7	12.9
07-11-2002	655	47.8	299	10.19	7.2	14.2
07-25-2002	655	45.7	304	8.71	7.1	17.3
08-14-2002	745	34.2	312	9.81	7.0	13.6
08-28-2002	910	34.2	344	10.80	7.5	16.1
09-12-2002	910	32.5	344	10.80	7.5	16.1
09-26-2002	710	32.5	267	10.30	6.5	11.2
10-08-2002	905	32.5	351	11.55	7.9	9.8
11-19-2002	820	21.2	377	14.88	8.3	1.4
12-12-2002	900	18.9	345	14.82	7.6	0.1

1) STREAMFLOW DATA SOURCE: Colorado Division of Water Resources (written comm. D. Dzurovchin, February 11, 2003)

TABLE 3
SOUTH PLATTE RIVER AT WATERTON, CO
(FIELD CODE - SP; USGS STATION 06708000)
MISCELLANEOUS ANALYSES

Date	Bicarbonate as CaCO3 (mg/L)	E. Coli Colonies (#/100 ML)	Cyanide, WAD (mg/L)	Total Suspended Solids (TSS) (gm/M^3)	Total Alkalinity (mg/L)
MDL [1)]	2	1	0.01	5	2
PQL[2)]	10	1	0.05	20	10
23-Jan-02		4		5	
20-Feb-02	65	1	0.01	5	65
duplicate	69	1	0.01	5	69
20-Mar-02		1		5	
17-Apr-02		13		5	
8-May-02	57	1	0.01	8	57
13-Jun-02		4		5	
duplicate		4		5	
11-Jul-02	71	30	0.01	5	71
duplicate	72	11	0.01	10	72
24-Jul-02		13		18	
14-Aug-02		23		5	
28-Aug-02		23		5	
12-Sep-02		8		5	
26-Sep-02		4		8	
8-Oct-02		2		5	
19-Nov-02	79	2	0.01	6	79
12-Dec-02		13		6	

VALUES EQUAL TO MDL INDICATE DETECTION AT OR BELOW MDL

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

1) MDL = METHOD DETECTION LIMIT (based on lab method used).

2) PQL = PRACTICAL QUANTITATION LIMIT (based on lab method used).

TABLE 4
SOUTH PLATTE RIVER AT WATERTON, CO
(FIELD CODE - SP; USGS STATION 06708000)
NUTRIENT ANALYSES

DATE	Nitrate (ug/L as N)	Nitrate/ Nitrite (ug/L as N)	Nitrite (ug/L as N)	Nitrogen, ammonia (ug/L)	Nitrogen, total (ug/L)	Phosphorus ortho, total (ug/L as P)	Phosphorus, total (ug/L as P)
MDL [1]	20	20	10	50	100	5	20
PQL [2]	100	100	50	300	500	30	100
23-Jan-02	550	550	10	100		22	20
20-Feb-02	360	360	10	110	400	5	20
duplicate	*340*	*340*	*10*	*60*	*500*	*10*	*20*
20-Mar-02	310	310	10	60		5	20
17-Apr-02	450	450	10	60		13	20
8-May-02	170	170	10	110	300	10	20
13-Jun-02	30	30	10	50		0	20
duplicate	*50*	*50*	*10*	*50*		*21*	*10*
11-Jul-02	200	200	0	50	600	15	30
duplicate	*220*	*220*	*0*	*50*	*400*	*16*	*30*
24-Jul-02	260	270	10	50		66	130
14-Aug-02	280	290	10	100		44	50
28-Aug-02	150	150	10	50		10	20
12-Sep-02	440	440	10	90		40	30
26-Sep-02	120	120	0	90		0	50
8-Oct-02	20	20	0	70		0	20
19-Nov-02	20	20	10	50	900	10	30
12-Dec-02	840	850	10	50		20	30

VALUES EQUAL TO MDL INDICATE DETECTION AT OR BELOW MDL

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

1) MDL = METHOD DETECTION LIMIT (based on lab method used).

2) PQL = PRACTICAL QUANTITATION LIMIT (based on lab method used).

"duplicate" is a duplicate of the sample immediately above

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

DATE	Arsenic, total (mg/l)	Cadmium, dissolved (mg/l)	Calcium, dissolved (mg/l)	Copper, dissolved (mg/l)	Hardness dissolved (mg/l)	Iron, dissolved (mg/l)
MDL [1]	0.001	0.003	0.2	0.01	1	0.01
PQL [2]	0.005	0.02	1.0	0.05	7	0.05
23-Jan-02			36.3		124	
20-Feb-02			38.4		129	
20-Feb-02			37.1		125	
20-Mar-02			36.3		121	
17-Apr-02			33.9		113	
8-May-02			36.2		124	
13-Jun-02			36.4		129	
duplicate			*34.3*		*125*	
11-Jul-02			36.3		122	
duplicate			*40.3*		*135*	
24-Jul-02						
14-Aug-02	0.001	0.003	43.9	0.01	148	0.03
28-Aug-02			41.9		143	
12-Sep-02						
26-Sep-02			36.7		133	
8-Oct-02			37.9		141	
19-Nov-02			36.8		129	
12-Dec-02			42.7		144	

VALUES EQUAL TO MDL INDICATE DETECTION AT OR BELOW MDL

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

1) MDL = METHOD DETECTION LIMIT (based on lab method used).

2) PQL = PRACTICAL QUANTITATION LIMIT (based on lab method used).

"duplicate" is a duplicate of the sample immediately above

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

DATE	Lead, dissolved (mg/l)	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)	Chromium, dissolved (mg/l)
MDL [1]	0.04	0.2	0.005	0.0002	0.01	0.001	0.005	0.01	0.01
PQL [2]	0.2	1.0	0.03	0.001	0.05	0.005	0.03	0.05	0.05
23-Jan-02		8.1							
20-Feb-02		8.0							
20-Feb-02		7.8							
20-Mar-02		7.4							
17-Apr-02		6.8							
8-May-02		8.1							
13-Jun-02		9.3							
duplicate		*9.6*							
11-Jul-02		7.7							
duplicate		*8.4*							
24-Jul-02									
14-Aug-02	0.04	9.4	0.011	0.0002	0.01	0.001	0.005	0.01	0.01
28-Aug-02		9.4							
12-Sep-02									
26-Sep-02		10.0							
8-Oct-02		11.2							
19-Nov-02		9.0							
12-Dec-02		9.1							

VALUES EQUAL TO MDL INDICATE DETECTION AT OR BELOW MDL

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

1) MDL = METHOD DETECTION LIMIT (based on lab method used).

2) PQL = PRACTICAL QUANTITATION LIMIT (based on lab method used).

"duplicate" is a duplicate of the sample immediately above

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

DATE	TIME	Instantaneous Streamflow (CFS) [1)]	Specific Conductance Field (uS/cm)	Oxygen, Dissolved (mg/l)	pH Field (Std. Units)	Temperature (Deg C)
02-20-2002	730	17.0	490	12.96	6.4	0.7
03-20-2002	720	15.0	480	13.20	7.0	2.0
04-17-2002	745	11.0	469	10.53	7.2	8.0
05-08-2002	740	5.0	452	8.69	7.5	10.9
06-13-2002	1525	3.0	471	4.75	6.5	17.1
07-11-2002	725	2.0	489	7.09	7.2	17.6
07-25-2002		no flow				
08-14-2002		no flow				
08-28-2002		no flow				
09-12-2002		no flow				
09-26-2002		no flow				
10-08-2002		no flow				
11-19-2002	1235	3.8	555	12.95	7.9	6.2
12-12-2002	925	2.9	578	12.34	7.2	0.9

1) STREAMFLOW DATA SOURCE: U.S. Geological Survey (written comm., G. Smith, February 24, 2003)

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

Date	Bicarbonate as CaCO3 (mg/L)	E. Coli Colonies (#/100 ML)	Cyanide, WAD (mg/L)	Total Suspended Solids (TSS) (gm/M^3)	Total Alkalinity (mg/L)
MDL [1]	2	1	0.01	5	2
PQL[2]	10	1	0.05	20	10
23-Jan-02		8		6	
20-Feb-02	101	8	0.01	12	101
20-Mar-02		8		5	
17-Apr-02		23		8	
8-May-02	95	30	0.01	24	95
13-Jun-02		30		20	
11-Jul-02	127	240	0.01	54	127
19-Nov-02	107	8	0.01	5	107
12-Dec-02		8		5	

VALUES EQUAL TO MDL INDICATE DETECTION AT OR BELOW MDL

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

1) MDL = METHOD DETECTION LIMIT (based on lab method used).

2) PQL = PRACTICAL QUANTITATION LIMIT (based on lab method used).

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

DATE	Nitrate (ug/L as N)	Nitrate/ Nitrite (ug/L as N)	Nitrite (ug/L as N)	Nitrogen, ammonia (ug/L)	Nitrogen, total (ug/L)	Phosphorus ortho, total (ug/L as P)	Phosphorus, total (ug/L as P)
MDL [1]	20	20	10	50	100	5	20
PQL [2]	100	100	50	300	500	30	100
23-Jan-02	1330	1340	10	120		56	30
20-Feb-02	1350	1360	10	70	1500	22	40
20-Mar-02	2340	2340	10	50		13	40
17-Apr-02	300	300	10	60		19	40
8-May-02	180	180	10	60	300	24	50
13-Jun-02	20	40	20	220		37	90
11-Jul-02	490	500	10	80	1000	39	120
19-Nov-02	810	820	10	50	1200	0	30
12-Dec-02	940	940	0	50		0	20

VALUES EQUAL TO MDL INDICATE DETECTION AT OR BELOW MDL

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

1) MDL = METHOD DETECTION LIMIT (based on lab method used).

2) PQL = PRACTICAL QUANTITATION LIMIT (based on lab method used).

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

DATE	Arsenic, total (mg/l)	Cadmium, dissolved (mg/l)	Calcium, dissolved (mg/l)	Copper, dissolved (mg/l)	Hardness dissolved (mg/l)	Iron, dissolved (mg/l)
MDL [1]	0.001	0.003	0.2	0.01	1	0.01
PQL [2]	0.005	0.02	1.0	0.05	7	0.05
23-Jan-02			54.4		167	
20-Feb-02			52.4		161	
20-Mar-02			51.0		158	
17-Apr-02			51.6		159	
8-May-02			49.9		155.0	
13-Jun-02			55.8		176.0	
11-Jul-02			56.4		173.0	
19-Nov-02			64.4		198	
12-Dec-02			69.0		210	

VALUES EQUAL TO MDL INDICATE DETECTION AT OR BELOW MDL

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

1) MDL = METHOD DETECTION LIMIT (based on lab method used).

2) PQL = PRACTICAL QUANTITATION LIMIT (based on lab method used).

"duplicate" is a duplicate of the sample immediately above

2) PQL = PRACTICAL QUANTITATION LIMIT.

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

DATE	Lead, dissolved (mg/l)	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)	Chromium, dissolved (mg/l)
MDL [1)]	0.04	0.2	0.005	0.0002	0.01	0.001	0.005	0.01	0.01
PQL [2)]	0.2	1	0.03	0.001	0.05	0.005	0.03	0.05	0.05
23-Jan-02		7.5							
20-Feb-02		7.3							
20-Mar-02		7.5							
17-Apr-02		7.3							
8-May-02		7.3							
13-Jun-02		8.8							
11-Jul-02		7.9							
19-Nov-02		8.9							
12-Dec-02		9.2							

VALUES EQUAL TO MDL INDICATE DETECTION AT OR BELOW MDL

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

1) MDL = METHOD DETECTION LIMIT (based on lab method used).

2) PQL = PRACTICAL QUANTITATION LIMIT (based on lab method used).

"duplicate" is a duplicate of the sample immediately above

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]	Specific Conductance Field (uS/cm)	Oxygen, Dissolved (mg/l)	pH Field (Std. Units)	Temperature (Deg C)
01-23-2002	915	1.4	193	11.63	7.7	3.1
02-20-2002	850	40.2	381	13.08	7.8	2.3
03-20-2002	810	46.1	377	12.86	8.4	3.4
04-17-2002	820	2.0	360	9.59	7.9	6.5
05-08-2002	825	2.3	369	9.09	8.3	10.9
06-13-2002	800	2.0	363	9.52	7.2	17.1
07-11-2002	800	1.8	382	5.23	7.8	18.1
07-25-2002	730	2.0	386	5.90	8.0	19.7
08-14-2002	825	1.8	383	7.98	7.7	15.5
08-28-2002	740	1.6	372	10.80	7.8	17.4
09-12-2002	740	1.8	372	8.28	7.8	17.4
09-26-2002	740	1.3	376	8.35	7.4	12.6
10-08-2002	1230	1.3	374	8.68	8.5	13.9
11-19-2002	1145	1.4	312	11.52	9.0	4.7
12-12-2002	825	1.3	421	12.71	7.4	2.7

1) STREAMFLOW DATA SOURCE: U.S. ARMY CORPS OF ENGINEERS (written commun., K. Grode February 24, 2003)

uS = micro Siemens

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

Date	Bicarbonate as CaCO3 (mg/L)	E. Coli Colonies (#/100 ML)	Cyanide, WAD (mg/L)	Total Suspended Solids (TSS) (gm/M^3)	Total Alkalinity (mg/L)
MDL [1]	2	1	0.01	5	2
PQL[2]	10	1	0.05	20	10
23-Jan-02		1		5	
20-Feb-02	93	1	0.01	5	93
20-Mar-02		1		12	
17-Apr-02		1		5	
8-May-02	77	13	0.01	5	77
13-Jun-02		1		5	
11-Jul-02	100	23	0.01	16	100
24-Jul-02		4		8	
14-Aug-02		1		5	
28-Aug-02		1		6	
12-Sep-02		1		5	
12-Sep-02		1		5	
26-Sep-02		8		6	
8-Oct-02		2		8	
19-Nov-02	79	1	0.01	8	79
19-Nov-02	98	1	0.01	5	98
12-Dec-02		1		5	

VALUES EQUAL TO MDL INDICATE DETECTION AT OR BELOW MDL

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

1) MDL = METHOD DETECTION LIMIT (based on lab method used).

2) PQL = PRACTICAL QUANTITATION LIMIT (based on lab method used).

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

DATE	Nitrate (ug/L as N)	Nitrate/ Nitrite (ug/L as N)	Nitrite (ug/L as N)	Nitrogen, ammonia (ug/L)	Nitrogen, total (ug/L)	Phosphorus ortho, total (ug/L as P)	Phosphorus, total (ug/L as P)
MDL [1]	20	20	10	50	100	5	20
PQL [2]	100	100	50	300	500	30	100
23-Jan-02	100	100	10	70		20	20
20-Feb-02	60	60	10	50	300	5	20
20-Mar-02	20	20	10	50		5	20
17-Apr-02	40	40	10	140		5	20
8-May-02	20	20	10	50	1300	9	20
13-Jun-02	20	20	10	50		10	20
11-Jul-02	20	0	0	80	600	6	50
24-Jul-02	40	50	10	50		27	50
14-Aug-02	20	20	10	120		9	20
28-Aug-02	20	20	10	50		6	20
12-Sep-02	20	0	0	140		40	20
duplicate	20	20	10	*80*		*40*	*20*
26-Sep-02	20	0	0	80		0	20
8-Oct-02	20	0	0	50		0	20
19-Nov-02	20	20	10	50	300	0	20
duplicate	20	20	10	*80*	*300*	*0*	*20*
12-Dec-02	20	0	0	50		0	20

VALUES EQUAL TO MDL INDICATE DETECTION AT OR BELOW MDL

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

1) MDL = METHOD DETECTION LIMIT (based on lab method used).

2) PQL = PRACTICAL QUANTITATION LIMIT (based on lab method used).

"duplicate" is a duplicate of the sample immediately above

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

DATE	Arsenic, total (mg/l)	Cadmium, dissolved (mg/l)	Calcium, dissolved (mg/l)	Copper, dissolved (mg/l)	Hardness dissolved (mg/l)	Iron, dissolved (mg/l)
MDL [1)]	0.001	0.003	0.2	0.01	1	0.01
PQL [2)]	0.005	0.02	1.0	0.05	7	0.05
23-Jan-02			43.9		152	
20-Feb-02			45.7		158	
20-Mar-02			42.8		150	
17-Apr-02			42.0		145	
8-May-02			41.2		143	
13-Jun-02			42.9		155	
11-Jul-02			45.2		157	
24-Jul-02						
14-Aug-02	0.001	0.003	49.0	0.01	172	0.06
28-Aug-02			48.0		167	
12-Sep-02						
duplicate						
26-Sep-02			44.7		157	
8-Oct-02			47.1		164	
19-Nov-02			46.8		162	
duplicate			*46.9*		*162*	
12-Dec-02			52.9		182	

VALUES EQUAL TO MDL INDICATE DETECTION AT OR BELOW MDL

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

1) MDL = METHOD DETECTION LIMIT (based on lab method used).

2) PQL = PRACTICAL QUANTITATION LIMIT (based on lab method used).

"duplicate" is a duplicate of the sample immediately above

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

DATE	Lead, dissolved (mg/l)	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)	Chromium, dissolved (mg/l)
MDL [1]	0.04	0.2	0.005	0.0002	0.01	0.001	0.005	0.01	0.01
PQL [2]	0.2	1	0.03	0.001	0.05	0.005	0.03	0.05	0.05
23-Jan-02		10.3							
20-Feb-02		10.6							
20-Mar-02		10.4							
17-Apr-02		9.7							
8-May-02		9.7							
13-Jun-02		11.7							
11-Jul-02		10.8							
24-Jul-02									
14-Aug-02	0.04	12	0.181	0.0002	0.01	0.001	0.005	0.01	0.01
28-Aug-02		11.5							
12-Sep-02									
12-Sep-02									
26-Sep-02		11							
8-Oct-02		11.3							
19-Nov-02		10.9							
19-Nov-02		*11*							
12-Dec-02		12							

VALUES EQUAL TO MDL INDICATE DETECTION AT OR BELOW MDL

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

1) MDL = METHOD DETECTION LIMIT (based on lab method used).

2) PQL = PRACTICAL QUANTITATION LIMIT (based on lab method used).

"duplicate" is a duplicate of the sample immediately above

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 (Std. Units)	Specific Conductance (us/cm)	Oxygen, dissolved (mg/l)	Temperature (deg. C)
MDL [1]								
PQL [2]								
20-Mar-02	930	1			8.50	372	15.12	4.1
20-Mar-02	945	0.75		1.5	8.50	372	15.12	4.1
20-Mar-02	1000	10	11		8.54	364	15.25	4.1
17-Apr-02	915	1			8.62	362	11.34	11.0
17-Apr-02	930	1		2	8.62	362	11.34	11.0
17-Apr-02	945	10	11		8.12	361	11.31	9.8
8-May-02	915	1			8.67	364	10.77	13.3
8-May-02	930	1		2	8.67	364	10.77	13.3
8-May-02	945	10	11		8.54	363	10.16	12.7
13-Jun-02	1015	1			7.60	359	9.55	19.0
13-Jun-02	1000	2.5		5	7.57	360	9.87	18.9
13-Jun-02	945	10	11		6.93	349	6.83	16.7
11-Jul-02	1015	1			7.97	381	8.54	22.9
11-Jul-02	1000	1.5		3	7.94	381	9.02	22.9
11-Jul-02	945	10	11		7.16	380	4.03	20.6
25-Jul-02	945	1			8.49	377	8.72	24.0
25-Jul-02	930	1		2	8.48	377	8.92	23.9
25-Jul-02	915	9	10		7.59	366	0.71	22.0
14-Aug-02	920	1			7.60	380	7.45	21.3
14-Aug-02	930	0.75		1.25	7.55	381	7.73	21.2
14-Aug-02	945	9	10		7.38	380	8.46	21.1
28-Aug-02	1045	1			7.98	379	9.33	20.7
28-Aug-02	1030	1		2	7.95	379	9.33	20.6
28-Aug-02	1015	10	11		7.44	365	7.56	20.4
12-Sep-02	1045	1			7.45	379	9.05	20.2
12-Sep-02	1100	1		2	7.45	379	9.05	20.2
12-Sep-02	1115	9	10		7.07	368	8.60	19.7
26-Sep-02	1100	1			7.24	377	8.83	16.7
26-Sep-02	1045	1		2	7.19	377	9.23	16.7
26-Sep-02	1030	10	10		7.14	377	9.61	16.5
8-Oct-02	1115	1			8.15	377	10.15	14.6
8-Oct-02	1105	1		1.5	8.16	377	10.29	14.6
8-Oct-02	1050	10	13		7.91	374	9.82	14.5
19-Nov-02	1020	1			8.88	391	12.63	5.2
19-Nov-02	1000	1.5		2.5	8.89	391	13.03	5.2
19-Nov-02	945	10	11		8.80	386	13.83	5.1
12-Dec-02	1050	1			8.15	400	13.82	2.4
12-Dec-02	1040	1.5		3	8.16	400	13.83	2.4
12-Dec-02	1030	11	13		8.16	396	15.23	2.3

VALUES EQUAL TO MDL INDICATE DETECTION AT OR BELOW MDL
BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.
1) MDL = METHOD DETECTION LIMIT (based on lab method used).
2) PQL = PRACTICAL QUANTITATION LIMIT (based on lab method used).
"duplicate" is a duplicate of the sample immediately above

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

DATE	Sampling depth (Meters)	Total Oranic Carbon mg/L	Chlorophyll_a (ug/L)	Coliform, Fecal (#/100 ML)	Cyanide, WAD (mg/L)	Total Suspended Solids (TSS) (gm/M^3)	Total Alkalinity (mg/L)
MDL [1]		5	0.3	1	0.01	5	2
PQL [2]		20		1	0.05	20	10
20-Mar-02	1		25.1	1		6	
duplicate	1			1		8	
20-Mar-02	1			1		8	
20-Mar-02	10			1		20	
17-Apr-02	1		12.4	1		5	
17-Apr-02	1			1		5	
17-Apr-02	10			1		6	
duplicate	10			1		12	
8-May-02	1	75	8.1	2	0.01	14	75
duplicate	1		7.3	1			
8-May-02	1	82		1	0.01	12	82
8-May-02	10	77		1	0.01	14	77
13-Jun-02	1		2.6	1		5	
duplicate	3			1		5	
13-Jun-02	3			1		5	
13-Jun-02	10			1		5	
11-Jul-02	1	97	3.9	1	0.01	6	97
11-Jul-02	2	96		1	0.01	5	96
11-Jul-02	10	100		1	0.01	5	100
24-Jul-02	1		8.0	1		8	
duplicate	1			1		6	
24-Jul-02	1			1		5	
24-Jul-02	9			1		6	
14-Aug-02	1		7.8	1		5	
14-Aug-02	1			1		5	
14-Aug-02	9			1		5	
28-Aug-02	1		15.3	1		6	
28-Aug-02	1			8		5	
28-Aug-02	10			1		5	
12-Sep-02	1		10.3	1		5	
12-Sep-02	1			1		5	
12-Sep-02	9			1		5	
26-Sep-02	1		9.1	2		5	
26-Sep-02	1			4		5	
26-Sep-02	10			1		5	
8-Oct-02	1		13.8	1			
duplicate	1		14.0	1		8	
8-Oct-02	1			1		5	
8-Oct-02	10			1		5	
8-Oct-02	10			1		5	
19-Nov-02	1	98	9.8	1	0.01	5	98
19-Nov-02	2	100		1	0.01	5	100
duplicate	2	98		1	0.01	8	98
19-Nov-02	10	98		1	0.01	5	98
12-Dec-02	1		8.8	1		5	
duplicate	1		9.5	1			
12-Dec-02	2			1		5	
12-Dec-02	11			1		5	

VALUES EQUAL TO MDL INDICATE DETECTION AT OR BELOW MDL
BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.
1) MDL = METHOD DETECTION LIMIT (based on lab method used).
2) PQL = PRACTICAL QUANTITATION LIMIT (based on lab method used).
"duplicate" is a duplicate of the sample immediately above

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

DATE	Sampling depth (Meters)	Nitrogen, total (ug/L)	Phosphorus ortho, total (ug/L as P)	Phosphorus, total (ug/L as P)
MDL [1]		100	5	20
PQL [2]		500	30	100
20-Mar-02	1	300	5	20
duplicate	1	100	5	20
20-Mar-02	0.75	300	5	20
20-Mar-02	10	400	5	20
17-Apr-02	1	200	5	50
17-Apr-02	1	200	8	20
17-Apr-02	10	200	5	40
duplicate	10	300	5	30
8-May-02	1	200	7	30
8-May-02	1	200	6	20
8-May-02	10	100	6	20
13-Jun-02	1	100	7	20
13-Jun-02	2.5	300	9	30
duplicate	2.5	200	6	20
13-Jun-02	10	600	7	40
11-Jul-02	1	300	5	20
11-Jul-02	1.5	300	5	20
11-Jul-02	10	600	5	20
24-Jul-02	1	300	5	20
duplicate	1	300	5	20
24-Jul-02	1	400	5	20
24-Jul-02	9	500	12	20
14-Aug-02	1	300	6	50
14-Aug-02	0.75	300	6	20
14-Aug-02	9	300	5	20
28-Aug-02	1	300	5	20
28-Aug-02	1	400	5	20
28-Aug-02	10	400	6	20
12-Sep-02	1	400	50	30
12-Sep-02	1	400	40	20
12-Sep-02	9	300	40	30
26-Sep-02	1	400	5	20
26-Sep-02	1	400	5	20
26-Sep-02	10	400	5	20
8-Oct-02	1	300	5	20**
8-Oct-02	1	300	5	20**
8-Oct-02	10	400	5	20**
duplicate	10	300	5	20**
19-Nov-02	1	300	5	20
19-Nov-02	2	300	5	20
duplicate	2	400	5	20
19-Nov-02	10	300	5	20
12-Dec-02	1	1100	5	20
12-Dec-02	1.5	300	5	20
12-Dec-02	11	1200	5	20

VALUES EQUAL TO MDL INDICATE DETECTION AT OR BELOW MDL
BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.
1) MDL = METHOD DETECTION LIMIT (based on lab method used).
2) PQL = PRACTICAL QUANTITATION LIMIT (based on lab method used).
"duplicate" is a duplicate of the sample immediately above
* Samples were analyzed or required re-analysis after hold times expired.
**values estimated due to matrix interference
*** Analyses not performed due to lab error

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

DATE	Sampling depth (Meters)	Arsenic, total (mg/l)	Cadmium, dissolved (mg/l)	Calcium, dissolved (mg/l)	Chromium, dissolved (mg/l)	Copper, dissolved (mg/l)	Cyanide, WAD (mg/l)	Hardness dissolved (mg/l)
MDL [1]		0.001	0.003	0.2	0.01	0.01	0.01	1
PQL [2]		0.005	0.02	1.0	0.05	0.05	0.05	7
20-Mar-02	1			40.4				145
duplicate	1			43.4				152
20-Mar-02	0.75			42.5				149
20-Mar-02	10			40.7				146
17-Apr-02	1			41.9				145
17-Apr-02	1			42.9				148
17-Apr-02	10			42.5				147
duplicate	10			38.9				134
8-May-02	1			41.9			0.01	145
8-May-02	1			42.0			0.01	146
8-May-02	10			40.8			0.01	142
13-Jun-02	1			44.0				158
13-Jun-02	2.5			47.3				163
duplicate	2.5			44.2				159
13-Jun-02	10			47.6				164
11-Jul-02	1			45.6			0.01	158
11-Jul-02	1.5			45.1			0.01	156
11-Jul-02	10			42.5			0.01	148
14-Aug-02	1	0.001	0.003	49.4	0.01	0.01		172
14-Aug-02	0.75	0.001	0.003	49.7	0.01	0.01		173
14-Aug-02	9	0.001	0.003	49.7	0.01	0.01		173
28-Aug-02	1			49.0				169
28-Aug-02	1			48.1				166
28-Aug-02	10			48.9				169
26-Sep-02	1			46.8				162
26-Sep-02	1			46.1				160
26-Sep-02	10			46.3				161
8-Oct-02	1			47.0				162
8-Oct-02	1			51.3				176
8-Oct-02	10			51.4				177
duplicate	10			50.3				172
19-Nov-02	1			45.4			0.01	164
19-Nov-02	2			44.8			0.01	162
duplicate	2			45.1			0.01	162
19-Nov-02	10			44.6			0.01	161
12-Dec-02	1			49.9				171
12-Dec-02	1.5			46.9				163
12-Dec-02	11			47.8				166

VALUES EQUAL TO MDL INDICATE DETECTION AT OR BELOW MDL

BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.

1) MDL = METHOD DETECTION LIMIT (based on lab method used).

2) PQL = PRACTICAL QUANTITATION LIMIT (based on lab method used).

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

DATE	Sampling depth (Meters)	Iron, dissolved (mg/l)	Lead, dissolved (mg/l)	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]		0.01	0.04	0.2	0.005	0.0002	0.01	0.001	0.005	0.01
PQL [2]		0.05	0.2	1	0.03	0.001	0.05	0.005	0.03	0.05
20-Mar-02	1			10.6						
duplicate	1			10.7						
20-Mar-02	0.75			10.4						
20-Mar-02	10			10.7						
17-Apr-02	1			9.7						
17-Apr-02	1			9.9						
17-Apr-02	10			9.8						
duplicate	10			9						
8-May-02	1			9.9						
8-May-02	1			10						
8-May-02	10			9.7						
13-Jun-02	1			11.7						
13-Jun-02	2.5			11						
duplicate	2.5			11.7						
13-Jun-02	10			11						
11-Jul-02	1			10.7						
11-Jul-02	1.5			10.6						
11-Jul-02	10			10.1						
14-Aug-02	1	0.01	0.04	11.8	0.005	0.0002	0.01	0.001	0.005	0.02
14-Aug-02	0.75	0.03	0.04	11.9	0.005	0.0002	0.01	0.001	0.005	0.02
14-Aug-02	9	0.02	0.04	11.9	0.006	0.0002	0.01	0.001	0.005	0.02
28-Aug-02	1			11.4						
28-Aug-02	1			11.1						
28-Aug-02	10			11.3						
26-Sep-02	1			11						
26-Sep-02	1			10.8						
26-Sep-02	10			10.9						
8-Oct-02	1			10.8						
8-Oct-02	1			11.6						
8-Oct-02	10			11.8						
duplicate	10			11.3						
19-Nov-02	1			12.2						
19-Nov-02	2			12.1						
duplicate	2			12.1						
19-Nov-02	10			12						
12-Dec-02	1			11.2						
12-Dec-02	1.5			11.1						
12-Dec-02	11			11.3						

VALUES EQUAL TO MDL INDICATE DETECTION AT OR BELOW MDL
BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.
1) MDL = METHOD DETECTION LIMIT (based on lab method used).
2) PQL = PRACTICAL QUANTITATION LIMIT (based on lab method used).

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

MARCH 20, 2002, 0930 hours

DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	8.5	372	15.1	4.1
2	8.5	373	15.3	4.0
3	8.6	372	15.4	3.9
4	8.5	372	15.7	4.0
5	8.5	372	15.7	3.9
6	8.5	375	15.7	4.0
7	8.5	372	14.2	4.1
8	8.6	372	14.7	4.1
9	8.6	366	15.3	4.0
10	8.5	364	15.3	4.1

APRIL 17, 2002, 0900 hours

DEPTH (meters)	pH	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	8.6	364	10.8	13.2
2	8.7	362	11.4	10.9
3	8.6	362	11.3	10.9
4	8.5	362	11.8	10.9
5	8.5	362	11.7	10.9
6	8.3	362	11.9	10.8
7	8.3	363	11.2	10.8
8	8.2	360	11.0	10.3
9	8.1	361	11.0	10.1
10	8.1	361	11.3	9.8

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

MAY 8, 2002, 0915 hours				
DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	8.7	364	10.8	13.3
2	8.7	364	10.6	13.2
3	8.6	364	11.2	13.1
4	8.6	364	10.8	13.1
5	8.7	364	9.9	13.1
6	8.6	364	10.7	13.1
7	8.6	362	10.4	13.0
8	8.6	363	9.9	12.8
9	8.5	364	10.2	12.8
10	8.5	363	10.2	12.7

JUNE 13, 2002, 0945 hours				
DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	7.6	359	9.6	19.0
2	7.6	360	9.9	18.9
3	7.5	350	9.9	18.7
4	7.4	360	9.8	18.4
5	7.4	360	9.5	18.3
6	7.3	361	9.7	18.2
7	7.2	359	9.4	18.0
8	7.0	359	7.9	17.4
9	6.9	359	6.8	16.8
10	6.9	349	6.8	16.7

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

JULY 11, 2002, 0945 hours				
DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	8.0	381	8.5	22.9
2	7.9	381	9.0	22.9
3	8.0	381	9.0	22.8
4	7.9	381	9.1	22.8
5	7.8	382	8.9	22.7
6	7.5	383	7.2	22.1
7	7.4	381	5.4	21.4
8	7.3	381	4.4	20.7
9	7.2	381	3.8	20.4
10	7.2	380	4.0	20.6

JULY 25, 2002, 0915 hours				
DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	8.5	377	8.7	24.0
2	8.5	377	8.9	23.9
3	8.5	377	8.6	23.8
4	8.4	378	8.5	23.7
5	8.3	379	8.4	23.6
6	8.2	380	8.1	23.4
7	8.1	368	7.7	23.3
8	7.7	367	2.5	22.3
9	7.6	366	0.7	22.0

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

AUGUST 14, 2002, 0920 hours				
DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	7.6	380	7.5	21.3
2	7.6	381	7.7	21.2
3	7.5	387	7.9	21.2
4	7.5	381	7.9	21.2
5	7.4	381	8.1	21.2
6	7.3	378	8.1	21.1
7	7.3	379	8.2	21.1
8	7.3	379	8.1	21.1
9	7.4	380	8.5	21.1

AUGUST 28, 2002, 1045 hours				
DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	8.0	379	9.3	20.7
2	8.0	379	9.3	20.6
3	7.9	379	9.0	20.5
4	7.9	380	9.1	20.5
5	7.9	379	9.1	20.5
6	7.8	379	9.0	20.5
7	7.7	376	8.7	20.5
8	7.6	377	8.1	20.4
9	7.5	377	7.5	20.3
10	7.4	365	7.6	20.4

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

SEPTEMBER 12, 2002, 1045 hours

DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	7.5	379	9.1	20.2
2	7.4	379	9.5	19.8
3	7.3	379	9.1	19.8
4	7.2	380	8.9	19.7
5	7.1	380	8.7	19.7
6	7.1	381	8.5	19.7
7	7.1	378	8.4	19.7
8	7.1	378	8.6	19.7
9	7.1	368	8.6	19.7

DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	7.4	319	7.8	20.6
2	7.4	319	7.7	20.5
3	7.4	319	7.6	20.5
4	7.4	319	7.7	20.4
5	7.4	319	7.5	20.4
6	7.4	319	7.5	20.4
7	7.3	316	7.4	20.4
8	7.3	316	7.5	20.5
9	7.1	329	7.2	20.4
10	6.8	338	7.2	20.5

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

SEPTEMBER 26, 2003, 1100 hours				
DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	7.2	377	8.8	16.7
2	7.2	377	9.2	16.7
3	7.1	378	9.3	16.7
4	7.2	378	9.1	16.7
5	7.2	379	9.4	16.6
6	7.2	379	9.3	16.6
7	7.1	376	9.6	16.6
8	7.1	376	9.5	16.6
9	7.1	377	9.6	16.5

OCTOBER 8, 2002, 1050 hours				
DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	8.2	377	10.2	14.6
2	8.2	377	10.3	14.6
3	8.2	377	10.5	14.5
4	8.2	377	11.0	14.4
5	8.1	377	10.5	14.4
6	8.2	378	9.9	14.4
7	8.2	379	9.6	14.4
8	8.1	373	9.9	14.5
9	8.0	374	10.6	14.5
10	7.9	374	9.8	14.5

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

NOVEMBER 19, 2002, 1020 hours				
DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	8.8	391	12.6	5.2
2	8.9	391	13.0	5.2
3	8.9	391	13.1	5.1
4	8.9	391	13.3	5.1
5	8.7	391	13.5	5.1
6	8.9	391	13.7	5.1
7	8.9	391	13.8	5.1
8	8.9	386	13.7	5.1
9	8.9	385	13.9	5.1
10	8.9	386	14.1	5.1
11	8.8	386	13.8	5.1

DECEMBER 12, 2002, 1030 hours				
DEPTH (meters)	pH (s.u.)	SC (uS/cm)	DO (mg/L)	TEMP. (deg C)
1	8.2	400	13.8	2.3
2	8.2	400	13.8	2.4
3	8.2	401	13.5	2.4
4	8.2	400	14.1	2.3
5	8.2	400	13.9	2.3
6	8.2	401	14.1	2.3
7	8.2	395	13.7	2.3
8	8.2	395	14.9	2.3
9	8.2	396	14.6	2.3

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

DATE	Arsenic, total mg/Kg	Cadmium, total (mg/Kg)	Copper, total (mg/Kg)	Lead, total (mg/Kg)	Mercury, total (mg/Kg)	Phosphorus, total %	Selenium, total (mg/Kg)
MDL [1]	4	1	2	4	0.05	0.0004	0.4
PQL [2]	20	4	10	20	0.2	0.002	4
14-Aug-02	79.0	1	14.9	22	0.05	0.0916	3.1

		Texture by Hydrometer			
DATE	Carbon, total organic (TOC) %	Silt %	Clay %	Solids (percent)	
MDL [1]	0.02	0.1	0.1	0.1	
PQL [2]	0.1	5	5	0.5	
14-Aug-02	2.14	25	70	22.7	

VALUES EQUAL TO MDL INDICATE DETECTION AT OR BELOW MDL
BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.
1) MDL = METHOD DETECTION LIMIT (based on lab method used).
2) PQL = PRACTICAL QUANTITATION LIMIT (based on lab method used).

TABLE 20
PHYTOPLANKTON DATA, 2002 SURVEY RESULTS
CHATFIELD RESERVOIR (Field Code RM)

Date	6/13/02	7/24/02	8/14/02	9/12/02
BACILLARIOPHYTA				
Asterionella formosa		8		
Aulacoseira granulata var. angustissima		108		
Aulacoseira granulata		30	20	
Aulacoseira italica var. tenuissima				
Cyclotella bodanica	8		3	
Cyclotella distinguenda		20	720	95
Fragilaria crotonensis	73	3		
Nitzschia acicularis	5	5	440	
Nitzschia nana		1		
Nitzschia paleacea			400	
Nitzschia reversa			2	
Nitzschia sp.		120	400	40
Stephanodiscus hantzschii				5
Stephanodiscus niagarae	1			
Synedra acus		10		
Synedra cyclopum	70			
Synedra delicatissima		1		1
Synedra rumpens var. familiaris			1	
Synedra ulna var. chaseana		3		
CHLOROPHYTA				
Ankistrodesmus falcatus			30	15
Ankistrodesmus gracilis				
Ankyra judayi	1,160	40	10	
Chlamydomonas angulosa				
Chlamydomonas sp.				80
Chlorella minutissima	12,500	6,000	17,500	35,000
Chlorella vulgaris				
Chlorogonium sp.			200	
Choricystis minor	250	250	2,000	5,000
Closterium sp.				
Coenochloris polycocca	280			
Crucigenia smithii				
Crucigenia tetrapedia				160
Crucigeniella apiculata				40
Dictyosphaerium ehrenbergianum			160	
Eudorina elegans		40		

TABLE 20
PHYTOPLANKTON DATA, 2002 SURVEY RESULTS
CHATFIELD RESERVOIR (Field Code RM)

Date	6/13/02	7/24/02	8/14/02	9/12/02
Fusola viridis			5	5
Kirchneriella lunaris		10	200	560
Lagerheimia genevensis		5	160	1,120
Micractinium pusillum				
Monoraphidium contortum			120	
Monoraphidium minutum			80	920
Monoraphidium sp.		1		
Oocystis lacustris	45			
Oocystis sp.	15			
Pandorina morum				
Raphidocelis contorta			480	100
Scenedesmus acuminatus				10
Scenedesmus communis			40	10
Scenedesmus intermedius			40	360
Scenedesmus linearis		5	25	
Tetrastrum elegans				
Treubaria triappendiculata				10
CHRYSOPHYTA				
Chromulina sp.			2,000	250
Dinobryon bavaricum		3,920		
Dinobryon cylindricum				
Dinobryon divergens	75	80	120	5
Dinobryon sociale var.A25 americanum				
Ochromonas minuscula				
CRYPTOPHYTA				
Campylomonas reflexa	130		58	475
Campylomonas sp.				1
Cryptomonas rostratiformis	15	1	3	8
Cyathomonas truncata				
Plagioselmis nannoplanctica	160	120	200	3,920
Storeatula rhinosa	3			

TABLE 20
PHYTOPLANKTON DATA, 2002 SURVEY RESULTS
CHATFIELD RESERVOIR (Field Code RM)

Date	6/13/02	7/24/02	8/14/02	9/12/02
CYANOPHYTA				
Ananbaena flos-aquae		12		
Anabaena perturbata			60	
Anabaenopsis elenkinii			310	20
Aphanizomenon flos-aquae		20		20
Aphanocapsa delicatissima		25,000	2,500	
Aphanothece clathrata			1,600	320
Aphanothece minutissima	2,500	132,500	106,750	38,250
Cyanobium sp.			1,750	
Dactylococcopsis fascicularis		200	4,640	600
Dactylococcopsis sp.				
Planktolyngbya (Lyngbya limnetica) subtilis	12			
Merismopedia tenuissima				
Oscillatoria sp.		130	150	
Pseudanabaena sp.				
Rhabdogloea smithii				
Synechococcus sigmoideus				
EUGLENOPHYTA				
Euglena acus				1
Euglena sp.				15
Euglena viridis				5
Trachelomonas sp.			3	1
HAPTOPHYTA				
Chrysochromulina sp.		440		5
PYRROPHYTA				
Ceratium hirundinella				5
Peridiniopsis penardiforme			1	1
Peridiniopsis sp.				1
Peridinium aciculiferum			5	28
Peridinium umbonatum				
TOTAL DENSITY (cells/mL)	17,301	169,081	143,184	87,462

TABLE 21
ZOOPLANKTON DATA, 2002 SURVEY RESULTS
CHATFIELD RESERVOIR (FIELD CODE RM) - September 25, 2002

Taxa	Mean Density in Concentrate (organisms/ml)	Specific Density in Lake (organisms/ml)	General Density in Lake (organisms/ml)
ROTIFERA (rotifers)			
Asplanchna sp.	46	10	10
Conochilus sp.	7	2	2
Kellicottia sp.	3	1	1
Keratella sp.	9	2	2
Polyarthra sp.	711	160	160
CLADOCERA (water fleas)			
Bosmina longirostris	8	2	2
Daphnia pulex	1	0	1
COPEPODA (copepods)			
Cyclops sp.	20	5	5
Diaptomus sp.	48	11	11
TOTAL DENSITY	854	193	194
TOTAL NUMBER OF TAXA	9	9	13

TABLE 22
BASIN-WIDE SCREENING SURVEYS
CHATFIELD WATERSHED - APRIL 2002

DATE	Screening Location	TIME	Field Measurements: Instantaneous Flow (est.) (cfs) [1]	Specific Conductance Field (uS/cm)	Oxygen, dissolved (mg/l)	pH (std. Units)	Temperature (Deg C)	Nitrate, Field (ug/l)	Total Phosphorous Field (ug/l)	Lab Analyses: Total Suspended Solids (TSS) (gm/M^3)
MDL [1]										5
PQL [2]										20
04-03-2002	CH01	640	2	284	12.27	5.9	1.3	2600	400	20
04-03-2002	CH02	840	4	193	7.64	7.4	2.7	2300	300	12
04-03-2002	CH04	720	3	324	11.31	7.6	1.3	2500	0	5
04-03-2002	CH05	705	1	131	12.27	7.5	0.3	2800	100	5/5
04-03-2002	CH06	820	32	333	11.47	7.4	2.2	2900	0	5
04-03-2002	CH07	800	32	335	11.07	7.3	1.7	2000	0	5
04-03-2002	CH08	850	1	156	12.92	7.9	3.2	2800	200	5
04-03-2002	CH09	1435	1	116	7.98	7.1	7.7	1200	0	5
04-03-2002	CH10	1420	10	111	9.77	7.3	5.7	1400	0	5
04-03-2002	CH11	1400	5	263	9.58	7.8	7.2	2500	200	8
04-03-2002	CH12	1250	7	319	9.05	8.0	11.9	1900	100	5/5
04-03-2002	CH13	1220	8	433	9.50	8.3	12.1	1400	900	12
04-03-2002	CH14	1120	17	507	9.81	8.6	10.1	3500	1300	28
04-03-2002	CH15	950	15	450	9.72	7.8	5.3	2800	300	5
04-03-2002	CH16	920	17	492	10.42	7.4	3.8	2000	300	6
04-03-2002	CH17	740	18	480	9.70	7.1	1.5	4000	200	5
04-03-2002	CH18	1040	2	500	9.51	7.7	6.1	1500	100	5
04-03-2002	CH20	1550	5	113	8.18	8.0	10.0	1300	200	5
04-03-2002	CH22	1455	5	169	9.13	7.2	6.4	1700	400	6
04-03-2002	CH23	1530	3	352	8.67	8.0	8.6	1200	200	5
04-03-2002	CH24	1110	8	294	9.19	7.7	8.8	1400	200	5
04-11-2002	CH01	650	2	317	10.53	5.9	3.1	1800	300	5
04-11-2002	CH02	830	3	181	6.59	7.4	8.3	2200	500	8
04-11-2002	CH03	815	95	281	9.29	7.7	4.4	900	400	5
04-11-2002	CH04	730	32	293	9.35	7.7	5.8	1300	100	5
04-11-2002	CH05	720	1	744	8.30	7.0	6.9	2600	1800	30
04-11-2002	CH06	925	33	311	9.84	8.1	8.1	400	100	5
04-11-2002	CH07	935	33	309	8.98	8.0	7.9	1100	200	5
04-11-2002	CH08	900	1	148	8.91	7.8	9.4	1100	500	10
04-11-2002	CH09	1330	1	108	7.27	7.0	12.2	1000	300	5
04-11-2002	CH10	1310	8	102	8.01	7.6	12.2	1500	100	5
04-11-2002	CH11	1240	9	243	8.29	7.6	12.1	1700	200	5/5
04-11-2002	CH12	1210	9	306	7.78	7.7	15.7	2600	400	10
04-11-2002	CH13	1145	9	415	7.03	7.7	15.7	1200	1000	30
04-11-2002	CH14	1120	17	488	9.31	7.8	15.2	4800	3600	250
04-11-2002	CH15	1015	16	447	8.61	7.6	12.5	2700	500	18
04-11-2002	CH16	1015	17	456	7.24	7.3	9.9	1000	100	5

TABLE 22
BASIN-WIDE SCREENING SURVEYS
CHATFIELD WATERSHED - APRIL 2002

DATE	Screening Location	TIME	Field Measurements: Instantaneous Flow (est.) (cfs) [1]	Specific Conductance Field (uS/cm)	Oxygen, dissolved (mg/l)	pH (std. Units)	Temperature (Deg C)	Nitrate, Field (ug/l)	Total Phosphorous Field (ug/l)	Lab Analyses: Total Suspended Solids (TSS) (gm/M^3)
MDL [1]										5
PQL [2]										20
04-11-2002	CH17	955	18	457	8.51	7.3	9.1	1600	900	5
04-11-2002	CH18	1055	3	472	8.66	7.7	10.9	600	100	5
04-11-2002	CH20	1500	4	119	7.35	7.7	15.0	1800	100	5
04-11-2002	CH22	1350	3	157	8.10	6.9	13.6	1300	300	10
04-11-2002	CH23	1440	3	323	6.98	7.6	16.2	700	200	5
04-11-2002	CH24	1110	8	290	7.31	7.8	13.9	2100	100	5/5
04-17-2002	CH01	645	2	325	10.39	6.3	2.0	1800	100	5
04-17-2002	CH02	1100	2	180	6.83	7.9	11.4	1400	1300	40
04-17-2002	CH04	715	34	283	12.15	7.2	4.9	2000	100	5
04-17-2002	CH05	1135	3	138	7.23	8.3	15.6	100	400	5
04-17-2002	CH06	1045	35	294	10.83	8.5	9.7	1400	100	5
04-17-2002	CH07	1030	35	301	11.08	8.5	9.4	1400	200	5
04-17-2002	CH08	1120	1	148	9.64	8.2	15.5	500	1200	40
04-17-2002	CH09	1425	1	106	5.87	7.5	14.4	700	0	5
04-17-2002	CH10	14100	5	102	7.27	8.1	12.9	1300	100	8
04-17-2002	CH11	1350	5	246	8.10	8.0	13.1	1200	200	5
04-17-2002	CH12	13350	70	307	6.37	7.9	17.4	1200	200	5
04-17-2002	CH13	1320	70	417	6.57	8.3	17.8	1000	900	10
04-17-2002	CH14	1300	18	492	8.06	8.2	16.8	1500	4300	228
04-17-2002	CH15	1550	8	458	7.36	8.2	17.1	100	1700	14/6
04-17-2002	CH16	745	7	469	10.53	7.2	8.0	1600	400	10
04-17-2002	CH17	1015	7	454	8.65	8.1	10.3	1200	500	5
04-17-2002	CH18	12400	2	453	8.74	8.1	15.5	1000	100	5
04-17-2002	CH20	1600	4	128	6.41	8.7	16.8	1300	100	5
04-17-2002	CH22	14450	50	157	7.67	7.8	14.2	1600	100	5/5
04-17-2002	CH23	1540	2	332	6.78	8.7	17.2	1200	200	10
04-17-2002	CH24	1250	6	299	7.26	8.0	17.2	1200	0	5
04-24-2002	CH01	700	1	349	9.71	5.9	3.1	1200	200	5
04-24-2002	CH02	900	2	184	9.51	8.2	6.6	2500	0	5
04-24-2002	CH03	820	95	282	8.65	7.9	4.6	1300	100	5
04-24-2002	CH04	745	31	287	9.51	8.1	5.7	700	200	5
04-24-2002	CH05	725	1	125	9.63	8.2	4.6	2200	200	5
04-24-2002	CH06	945	32	314	9.89	8.6	7.8	1200	100	5
04-24-2002	CH07	1000	32	303	9.88	8.5	8.1	1500	100	5
04-24-2002	CH08	920	1	146	10.01	8.4	8.7	0	600	28
04-24-2002	CH09	1450	1	105	5.92	7.1	13.9	1100	0	6
04-24-2002	CH10	1440	4	111	7.71	7.8	13.3	1300	200	6
04-24-2002	CH11	1420	4	250	8.25	8.1	13.1	1000	200	8

Filename: tables 22, 23, 24, 25

Status Date: 6/11/03

TABLE 22
BASIN-WIDE SCREENING SURVEYS
CHATFIELD WATERSHED - APRIL 2002

DATE	Screening Location	TIME	Field Measurements: Instantaneous Flow (est.) (cfs) [1]	Specific Conductance Field (uS/cm)	Oxygen, dissolved (mg/l)	pH (std. Units)	Temperature (Deg C)	Nitrate, Field (ug/l)	Total Phosphorous Field (ug/l)	Lab Analyses: Total Suspended Solids (TSS) (gm/M^3)
MDL [1]										5
PQL [2]										20
04-24-2002	CH12	1400	5	316	7.79	8.0	17.0	900	100	8
04-24-2002	CH13	1300	6	426	8.73	8.4	17.0	1700	200	10
04-24-2002	CH14	1155	13	484	8.51	8.6	14.5	3000	400	10
04-24-2002	CH15	1105	6	444	8.39	8.2	13.1	1800	100	5
04-24-2002	CH16	1030	5	463	7.69	7.8	11.3	1200	400	14/8
04-24-2002	CH17	1015	5	465	7.61	7.8	9.0	1100	300	6
04-24-2002	CH18	1130	2	456	9.21	8.1	10.8	1100	100	5
04-24-2002	CH20	1625	1	141	6.76	8.3	0.0	1400	200	6/5
04-24-2002	CH21	1540	3	580	9.13	8.0	7.7	800	900	5
04-24-2002	CH22	1510	2	162	7.07	7.4	14.7	900	200	16
04-24-2002	CH23	1610	2	361	7.42	8.1	17.5	500	200	8
04-24-2002	CH24	1145	4	299	7.85	8.0	13.7	1100	100	5

VALUES EQUAL TO MDL INDICATE DETECTION AT OR BELOW MDL
BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.
1) MDL = METHOD DETECTION LIMIT (based on lab method used).
2) PQL = PRACTICAL QUANTITATION LIMIT (based on lab method used).
3) DOUBLE NUMBERS INDICATE DUPLICATE/ORIGINAL SAMPLE DATA

TABLE 23
BASIN-WIDE SCREENING SURVEYS
CHATFIELD WATERSHED -MAY 2002

DATE	Screening Location	TIME	Field Measurements: Instantaneous Flow (est.) (cfs) [1]	Specific Conductance Field (uS/cm)	Oxygen, dissolved (mg/l)	pH (std. Units)	Temperature (Deg C)	Nitrate, Field (ug/l)	Total Phosphorous Field (ug/l)	Lab Analyses: Total Suspended Solids (TSS) (gm/M^3)
MDL [1]										5
PQL [2]										20
05-02-2002	CH01	700	1	354	9.42	5.8	4.4	1500	100	5
05-02-2002	CH02	845	2	184	9.12	7.5	6.4	2500	0	5
05-02-2002	CH03	805	120	301	9.20	7.2	5.2	1200	200	5
05-02-2002	CH04	740	39	311	9.50	7.0	5.5	1200	200	5
05-02-2002	CH05	725	1	95	9.36	6.8	5.9	1200	700	5
05-02-2002	CH06	915	40	353	9.70	8.0	6.3	200	200	5/5
05-02-2002	CH07	930	40	326	9.64	7.8	6.6	300	100	5/5
05-02-2002	CH08	855	1	164	9.15	7.8	6.4	1400	3800	110
05-02-2002	CH09	1440	1	105	5.79	5.4	11.2	400	100	5
05-02-2002	CH10	1430	3	114	7.49	7.7	12.0	900	100	5
05-02-2002	CH11	1410	4	255	7.73	7.9	12.7	1700	400	22
05-02-2002	CH12	1400	4	323	8.06	8.2	17.3	1500	200	5
05-02-2002	CH13	1220	6	439	9.15	8.4	17.1	1000	200	5
05-02-2002	CH14	1130	10	479	10.17	8.5	14.1	3100	200	5
05-02-2002	CH15	1040	6	432	8.46	7.7	8.8	2500	400	8
05-02-2002	CH16	1000	4	465	7.00	7.3	7.8	800	300	5
05-02-2002	CH17	945	4	474	8.65	7.2	7.7	2500	300	5
05-02-2002	CH18	1100	2	467	9.38	7.9	8.7	1300	100	5
05-02-2002	CH20	16100	2	151	6.94	8.0	13.4	1800	0	5
05-02-2002	CH21	1520	2	661	8.98	7.3	6.6	600	0	5
05-02-2002	CH22	1500	2	167	7.10	6.6	11.6	1100	200	5
05-02-2002	CH23	1550	2	364	8.15	7.7	13.8	900	0	8
05-02-2002	CH24	1115	6	306	8.31	7.7	12.7	1200	0	5
05-08-2002	CH01	650	1	393	9.48	5.7	5.5	1200	100	8
05-08-2002	CH02	1100	2	179	8.91	8.5	11.1	1700	100	8
05-08-2002	CH03	1200	120	303	10.27	8.9	8.0	1300	100	5/5
05-08-2002	CH04	715	34	308	8.76	7.5	7.9	600	100	5
05-08-2002	CH05	1135	4	95	7.60	8.8	14.2	14500	500	10
05-08-2002	CH06	1045	35	321	9.43	8.5	11.9	1200	200	5
05-08-2002	CH07	1030	35	324	9.29	8.7	11.8	1600	200	6
05-08-2002	CH08	1115	1	141	10.26	8.8	14.2	3900	600	8
05-08-2002	CH09	1450	1	111	5.29	7.5	9.9	3200	100	6
05-08-2002	CH10	1440	4	113	8.77	8.2	11.4	1900	200	8
05-08-2002	CH11	1420	4	258	7.58	8.3	12.2	3900	500	6
05-08-2002	CH12	1400	4	332	10.22	8.5	12.9	1600	100	5
05-08-2002	CH13	1345	6	456	7.83	8.5	12.5	1400	200	5
05-08-2002	CH14	1330	12	491	8.77	8.5	12.1	2200	300	8
05-08-2002	CH15	1250	6	427	7.29	8.5	14.0	1700	300	12
05-08-2002	CH16	740		452	8.69	7.5	10.4	1500	700	20
05-08-2002	CH17	1015	5	456	7.98	8.4	11.7	1500	300	5
05-08-2002	CH18	1310	2	463	8.42	8.6	12.3	1500	100	5

TABLE 23
BASIN-WIDE SCREENING SURVEYS
CHATFIELD WATERSHED -MAY 2002

DATE	Screening Location	TIME	Field Measurements: Instantaneous Flow (est.) (cfs) [1]	Specific Conductance Field (uS/cm)	Oxygen, dissolved (mg/l)	pH (std. Units)	Temperature (Deg C)	Nitrate, Field (ug/l)	Total Phosphorous Field (ug/l)	Lab Analyses: Total Suspended Solids (TSS) (gm/M^3)
MDL [1]										5
PQL [2]										20
05-08-2002	CH20	1610	2	155	8.37	8.5	10.8	2300	200	8
05-08-2002	CH21	1525	2	62	9.94	8.3	7.4	4200	0	5
05-08-2002	CH22	1510	2	167	7.10	7.7	11.7	1900	300	6
05-08-2002	CH23	1555	2	373	8.60	8.3	11.7	3500	100	8
05-08-2002	CH24	1320	6	304	8.07	8.5	12.1	2000	200	6
05-15-2002	CH01	640	1	411	9.54	5.7	5.0	1300	200	5
05-15-2002	CH02	820	3	186	8.66	7.4	8.7	2200	200	8
05-15-2002	CH03	745	190	284	10.12	7.2	6.9	900	100	5
05-15-2002	CH04	720	30	300	9.28	7.2	7.6	1100	100	5/8
05-15-2002	CH05	705	1	116	9.26	7.4	8.6	200	800	6
05-15-2002	CH06	905	32	314	9.50	7.6	10.9	500	300	8
05-15-2002	CH07	920	32	288	9.34	7.5	10.3	1700	200	6
05-15-2002	CH08	835	1	136	10.44	7.7	11.0	1500	400	5/10
05-15-2002	CH09	1315	2	108	5.93	7.0	10.9	900	100	5
05-15-2002	CH10	1300	3	116	8.37	7.4	13.0	1000	200	5
05-15-2002	CH11	1230	4	253	8.15	7.6	13.4	400	200	14
05-15-2002	CH12	1215	4	316	8.33	7.8	18.6	1200	300	5
05-15-2002	CH13	1120	5	434	7.38	7.6	13.3	1200	300	6
05-15-2002	CH14	1100	16	493	6.65	7.5	17.9	3600	300	12
05-15-2002	CH15	1010	10	441	7.30	7.4	15.6	3400	500	18
05-15-2002	CH16	950	10	455	7.39	7.0	13.1	1500	600	26
05-15-2002	CH17	935	12	453	8.70	7.0	11.7	1700	200	5
05-15-2002	CH18	1035	2	453	9.35	7.5	13.0	1000	100	5
05-15-2002	CH20	1445	2	149	7.33	7.9	17.7	1500	100	5
05-15-2002	CH21	1355	2	62	8.82	7.6	9.5	300	0	5
05-15-2002	CH22	1330	2	168	7.47	6.8	14.9	1400	500	12
05-15-2002	CH23	1425	1	371	7.60	7.9	17.8	900	100	5
05-15-2002	CH24	1050	6	303	7.15	7.4	16.8	1200	100	5
05-22-2002	CH01	645	1	372	9.54	6.0	4.5	2000	0	6
05-22-2002	CH02	820	4	185	9.15	8.1	8.3	1900	100	8
05-22-2002	CH03	745	190	293	8.52	7.9	7.3	1700	200	5
05-22-2002	CH04	720	60	289	8.85	7.8	7.0	1500	200	5
05-22-2002	CH05	710	2	117	9.61	8.0	6.8	1800	200	5
05-22-2002	CH06	850	62	307	9.32	8.4	8.7	1700	300	6
05-22-2002	CH07	905	62	295	9.15	8.2	8.3	1900	300	5
05-22-2002	CH08	840	1	146	9.60	8.4	9.2	1400	400	5
05-22-2002	CH09	1420	1	117	4.70	7.5	13.1	1500	100	5
05-22-2002	CH10	1405	4	112	7.35	8.5	15.3	1700	200	5
05-22-2002	CH11	1345	7	256	6.83	8.3	15.5	500	300	5
05-22-2002	CH12	1320	8	328	7.91	8.5	17.4	1600	100	5
05-22-2002	CH13	1150	10	442	7.64	8.2	18.0	1400	200	5

TABLE 23
BASIN-WIDE SCREENING SURVEYS
CHATFIELD WATERSHED -MAY 2002

DATE	Screening Location	TIME	Field Measurements: Instantaneous Flow (est.) (cfs) [1]	Specific Conductance Field (uS/cm)	Oxygen, dissolved (mg/l)	pH (std. Units)	Temperature (Deg C)	Nitrate, Field (ug/l)	Total Phosphorous Field (ug/l)	Lab Analyses: Total Suspended Solids (TSS) (gm/M^3)
MDL [1]										5
PQL [2]										20
05-22-2002	CH14	1050	13	501	7.28	8.2	15.1	3500	200	5
05-22-2002	CH15	1005	14	448	7.19	8.1	12.9	2900	300	10
05-22-2002	CH16	935	14	457	7.00	7.9	11.9	2300	900	24
05-22-2002	CH17	915	15	452	7.59	7.8	9.5	1300	200	5/6
05-22-2002	CH18	1025	2	465	10.40	8.3	10.3	2000	200	5
05-22-2002	CH20	1550	2	151	6.41	8.5	17.3	2400	0	5
05-22-2002	CH21	1500	1	630	8.98	8.4	10.7	2200	0	5
05-22-2002	CH22	1440	3	162	6.67	7.6	15.3	1600	200	6
05-22-2002	CH23	1530	2	377	7.22	8.6	17.1	1100	200	5/6
05-22-2002	CH24	1035	6	303	7.41	8.2	14.3	1600	100	5
05-29-2002	CH01	650	1	317	8.91	6.2	8.0	1700	200	5
05-29-2002	CH02	825	0	187	7.93	8.4	11.1	2100	200	5
05-29-2002	CH03	750		305	9.01	8.5	9.0	900	200	5
05-29-2002	CH04	725		304	8.77	8.6	9.9	800	700	6
05-29-2002	CH05	715	0	115	7.97	8.1	11.3	2600	300	8
05-29-2002	CH06	900		307	9.42	9.0	12.1	800	400	5
05-29-2002	CH07	915		302	9.03	8.7	11.7	1300	300	8
05-29-2002	CH08	840	6	101	8.25	8.8	14.4	1500	500	5
05-29-2002	CH09	1220	0	119	4.53	7.4	14.4	1400	200	5/8
05-29-2002	CH10	1200	6	112	7.03	8.2	18.3	1000	200	5
05-29-2002	CH11	1145	6	257	6.55	8.1	17.1	1000	1000	5
05-29-2002	CH12	1125	4	332	6.78	8.6	20.3	1300	200	8
05-29-2002	CH13	1105	6	446	6.39	8.4	20.8	1200	300	5/5
05-29-2002	CH14	10500	7	493	6.56	8.4	20.0	3700	300	5
05-29-2002	CH15	1000		457	6.43	8.4	18.0	2100	400	6
05-29-2002	CH16	950		454	5.66	8.2	16.3	2000	700	18
05-29-2002	CH17	930		445	8.55	8.1	13.4	1400	300	5
05-29-2002	CH18	1020	0	456	9.43	8.6	14.5	1200	200	5
05-29-2002	CH20	1400	3	148	6.85	8.5	19.9	1300	200	5
05-29-2002	CH21	1300	0	630	8.39	8.4	12.5	600	200	5
05-29-2002	CH22	1240	5	165	6.37	7.7	17.8	1000	300	8
05-29-2002	CH23	1330		371	6.95	8.6	22.1	1000	400	14
05-29-2002	CH24	1024	5	305	6.94	8.4	19.3	1500	100	5

VALUES EQUAL TO MDL INDICATE DETECTION AT OR BELOW MDL
BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.
1) MDL = METHOD DETECTION LIMIT (based on lab method used).
2) PQL = PRACTICAL QUANTITATION LIMIT (based on lab method used).

TABLE 24
BASIN-WIDE SCREENING SURVEYS
CHATFIELD WATERSHED - JUNE 2002

DATE	Screening Location	TIME	Field Measurements: Instantaneous Flow (est.) (cfs) [1]	Specific Conductance Field (uS/cm)	Oxygen, dissolved (mg/l)	pH (std. Units)	Temperature (Deg C)	Nitrate, Field (ug/l)	Total Phosphorous Field (ug/l)	Lab Analyses: Total Suspended Solids (TSS) (gm/M^3)
MDL [1]										5
PQL [2]										20
06-05-2002	CH01	725	1	399	8.78	5.9	7.1	1000	100	5/5
06-05-2002	CH02	900	0	185	7.54	7.7	11.0	4100	300	6
06-05-2002	CH03	830		291	8.74	7.8	9.4	1700	100	5
06-05-2002	CH04	800		306	8.76	7.8	9.7	1100	200	5
06-05-2002	CH05	745	0	106	8.14	7.6	10.9	2400	400	5
06-05-2002	CH06	935		321	9.33	8.0	12.8	700	200	6
06-05-2002	CH07	950		311	9.07	7.7	12.3	1500	200	5
06-05-2002	CH08	915	3	789	7.95	8.0	15.0	1100	600	12
06-05-2002	CH10	1425	2	113	6.47	7.4	19.9	1000	200	16
06-05-2002	CH11	1410	7	258	5.93	7.5	19.7	700	700	8
06-05-2002	CH12	1350	4	327	5.74	7.4	23.2	1100	400	14
06-05-2002	CH13	1210	9	397	6.25	6.5	20.2	100	1700	32
06-05-2002	CH14	1130	16	436	5.79	7.5	20.0	3500	2600	106
06-05-2002	CH15	1045		417	6.33	7.4	18.0	2400	1300	34
06-05-2002	CH16	1020		431	5.84	7.3	15.1	2700	1100	30
06-05-2002	CH17	1005		438	8.71	7.3	13.7	1600	500	5
06-05-2002	CH18	1105	0	442	9.62	7.9	14.5	1200	200	6
06-05-2002	CH20	1620	1	153	6.50	7.9	20.4	800	100	5
06-05-2002	CH21	1520	0	640	8.14	7.6	13.5	800	100	5/5
06-05-2002	CH22	1455	0	169	5.69	7.2	19.7	1100	300	12
06-05-2002	CH23	1605		366	6.33	7.9	24.4	500	300	10
06-05-2002	CH24	1115	6	299	6.84	7.5	19.9	900	100	5

NOTE: BASIN-WIDE SCREENING WAS DISCONTINUED AFTER JUNE 5, 2002 DUE TO RESTRICTED ACCESS DUE TO HAYMAN FOREST FIRE

VALUES EQUAL TO MDL INDICATE DETECTION AT OR BELOW MDL
BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.
1) MDL = METHOD DETECTION LIMIT (based on lab method used).
2) PQL = PRACTICAL QUANTITATION LIMIT (based on lab method used).
3) DOUBLE NUMBERS INDICATE DUPLICATE/ORIGINAL SAMPLE DATA

SUMMARY DATA TABLES

TABLE 25
MASSEY DRAW STORMWATER SAMPLING
AUGUST - SEPTEMBER 2002

DATE	TIME	Lab Analyses Total Nitrogen (ug/L)	Total Phosphorus (ug/L)	Total Suspended Solids (TSS) (mg/L)
MDL [1]		100	20	5
PQL [2]		500	100	20
August 27, 2002	1630	500	80	12
August 27, 2002	1710	300	60	20
August 27, 2002	1740	400	30	6
average		400	57	13
September 9, 2002	1015	400	60	14
September 9, 2002	1045	500	60	8
September 9, 2002	1120	500	50	8
average		467	57	10
September 18, 2002	1845	3100	1240	790
September 18, 2002	2045	1400	330	216
September 18, 2002	2200	1200	250	112
average		1900	607	373

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

TABLE 26
ALLUVIAL GROUNDWATER MONITORING WELLS
(FIELD CODE - 1W, 2W, 3W, 5W)
FIELD MEASUREMENTS

DATE	WELL NUMBER	TIME	SPECIFIC CONDUCTANCE FIELD (mS/cm)	OXYGEN, DISSOLVED (mg/l)	pH FIELD (std. Units)	TEMPERATURE (Deg C)
MDL [1]						
PQL [2]						
04-03-2002	CH1W	1200	433	5.94	7.0	10.7
04-03-2002	CH3W	1330	426	6.85	7.3	11.6
04-03-2002	CH5W	1015	384	6.47	6.9	9.6
04-24-2002	CH1W	1240	417	5.62	7.0	11.6
04-24-2002	CH2W	1215	347	5.02	7.4	11.2
04-24-2002	CH3W	1325	410	5.81	7.3	11.4
04-24-2002	CH5W	1055	373	7.69	7.8	10.7
05-02-2002	CH1W	1210	425	6.45	7.0	11.3
05-02-2002	CH2W	1145	348	5.02	7.5	11.4
05-02-2002	CH3W	1340	412	6.56	7.4	12.0
05-02-2002	CH5W	1025	378	4.79	7.1	10.6
05-22-2002	CH1W	1130	393	6.17	7.1	12.0
05-22-2002	CH2W	1105	337	4.88	7.6	12.2
05-22-2002	CH3W	1310	398	5.41	7.9	12.5
05-22-2002	CH5W	950	370	4.30	7.8	11.6
06-05-2002	CH1W	1210	411	5.68	6.5	12.7
06-05-2002	CH2W	1145	336	4.90	6.9	13.2
06-05-2002	CH3W	1330	394	6.35	7.7	12.8
06-05-2002	CH5W	1030	362	6.65	7.4	12.1

TABLE 27
ALLUVIAL GROUNDWATER MONITORING WELLS
(FIELD CODE - 1W, 2W, 3W, 5W)
NUTRIENT ANALYSES

DATE	WELL NUMBER	TIME	Nitrate (ug/L as N)	Nitrate/ Nitrite (ug/L as N)	Nitrite (ug/L as N)	Nitrogen, total (ug/L)	Phosphorus ortho, total (ug/L as P)	Phosphorus, total (ug/L as P)
MDL [1]			20	20	10	100	5	20
PQL [2]			100	100	50	500	30	100
04-03-2002	CH1W	1200	2540	2540	10	2700	76	120
04-03-2002	CH3W	1330	3470	3470	10	3700	333	440
duplicate	CH3W	1330	3710	3710	10	3700	338	430
04-03-2002	CH5W	1015	30	30	10	100	13	20
04-24-2002	CH1W	1240	2160	2160	10	2200	88	150
04-24-2002	CH2W	1215	2760	2760	10	3000	126	100
04-24-2002	CH3W	1325	3060	3060	10	3500	330	530
04-24-2002	CH5W	1055	20	20	10	100	12	20
05-02-2002	CH1W	1210	2500	2500	10	2500	77	150
05-02-2002	CH2W	1145	3220	3220	10	3600	65	60
05-02-2002	CH3W	1340	3430	3430	10	3500	360	610
05-02-2002	CH5W	1025	40	40	10	100	12	20
05-22-2002	CH1W	1130	2030	2030	10	1800	82	120
duplicate	CH1W	1130	2020	2020	10	1800	84	110
05-22-2002	CH2W	1105	2770	2770	10	2300	68	50
05-22-2002	CH3W	1310	3140	3140	10	2600	328	480
05-22-2002	CH5W	950	60	60	10	100	10	20
06-05-2002	CH1W	1210	2630	2630	10	2900	82	120
06-05-2002	CH2W	1145	3240	3240	10	3400	58	50
06-05-2002	CH3W	1330	3550	3550	10	4000	385	640
06-05-2002	CH5W	1030	50	50	10	100	5	20

VALUES EQUAL TO MDL INDICATE DETECTION AT OR BELOW MDL
BLANK RANGES INDICATE NO ANALYSES WERE REQUESTED.
1) MDL = METHOD DETECTION LIMIT (based on lab method used).
2) PQL = PRACTICAL QUANTITATION LIMIT (based on lab method used).
"duplicate" is a duplicate of the sample immediately above

TABLE 28
GROWING SEASON (JULY-THROUGH-SEPTEMBER)*
TOTAL-PHOSPHORUS AND CHLOROPHYLL-a CONCENTRATIONS
CHATFIELD RESERVOIR

Year	Total-Phosphorus Concentration (ug/L)[1)2)]	Chlorophyll-a Concentration (ug/L)[1)3)]
1982	23	15
1983	50	16
1984	35	7
1985	28	9
1986	4)	4)
1987	77	6
1988	23	8
1989	11	4
1990	15	7
1991	25	3
1992	15	4
1993	15	4
1994	13	3
1995	10	4
1996	34	4
1997	12	2
1998	16	4
1999	21	5
2000	12	8
2001	23	10
2002	8	9
Mean	23	6
Std. Dev.	16	4
Maximum	77	16
Minimum	8	2
N	20	20

* growing season defined as July-Sept
1) Average Reservoir values.
2) Growing-season standard = 27 ug/L.
3) Growing-season goal = 17 ug/L.
4) No data.

TABLE 29
CHATFIELD WATERSHED
SUMMARY OF METALS DATA, 1997 - 2002

Site RM - Reservoir

Metal	Water Quality Standards (ug/l)* Acute	Chronic	Summary 1997 - 2001 Maximum (ug/l)	2002** % Detect	Maximum (ug/l)
Arsenic (Total)	360	150	1.5	0%	nd
Cadmium	10	1	4	0%	nd
Chromium VI	16	11	7	0%	nd
Copper	18	12	15	0%	nd
Iron	300	300	590	100%	240
Lead	96	4	200	0%	nd
Manganese	3110	50	486	33%	6
Mercury	2	0.1	171	0%	nd
Nickel	925	96	0	0%	nd
Selenium	140	10	18	0%	nd
Silver	2	3	0	0%	nd
Zinc	117	106	60	100%	20

nd = non-detect

* 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.

**Metals were sampled once in 2002, at three reservoir depths, resulting in 0%, 33%, 66%, or 100% detection.

Site SO - Reservoir Outfall

Metal	Water Quality Standards (ug/l)* Acute	Chronic	Summary 1997 - 2001 Maximum (ug/l)	2002** % Detect	Maximum (ug/l)
Arsenic (Total)	360	150	2	0%	nd
Cadmium	10	1	4	0%	nd
Chromium VI	16	11	8	0%	nd
Copper	18	12	10	0%	nd
Iron	300	300	370	100%	60
Lead	96	4	N/A	0%	nd
Manganese	3110	50	198	100%	181
Mercury	2	0.1	N/A	0%	nd
Nickel	925	96	N/A	0%	nd
Selenium	140	10	1	0%	nd
Silver	2	3	N/A	0%	nd
Zinc	117	106	40	0%	nd

nd = non-detect

* 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.

**Reservoir outflow was sampled for metals once in 2002, resulting in detection rates of 0% or 100%.

TABLE 29 (Continued)
CHATFIELD WATERSHED
SUMMARY OF METALS DATA, 1997 - 2002

Site PC - Plum Creek at Titan Road

	Water Quality Standards (ug/l)*		Summary 1997 - 2001	2002**	
Metal	Acute	Chronic	Maximum (ug/l)	% Detect	Maximum (ug/l)
Arsenic (Total)	360	150	3	NO FLOW	NO FLOW
Cadmium	10	1	4		
Chromium III	50	50	5		
Chromium VI	16	11	5		
Copper	18	12	10		
Iron	300	300	600		
Lead	96	4	nd		
Manganese	3110	50	1120		
Mercury	2	0.1	nd		
Nickel	925	96	nd		
Selenium	140	10	2		
Silver	2	3	nd		
Zinc	117	106	200		

There was no flow in Plum Creek on the date metals were sampled

nd = non-detect

* 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.

**No flow in Plum Creek when metals were sampled, resulting in detection rates of 0%.

Site SP - South Platte at Waterton

	Water Quality Standards (ug/l)*		Summary 1997 - 2001	2002**	
Metal	Acute	Chronic	Maximum (ug/l)	% Detect	Maximum (ug/l)
Arsenic (Total)	360	150	1	100%	1
Cadmium	10	1	nd	0%	nd
Chromium VI	16	11	7	0%	nd
Copper	18	12	10	0%	nd
Iron	300	300	240	100%	30
Lead	96	4	nd	0%	nd
Manganese	3110	50	42	100%	11
Mercury	2	0.1	0.2	0%	nd
Nickel	925	96	nd	0%	nd
Selenium	140	10	2	0%	nd
Silver	2	3	nd	0%	nd
Zinc	117	106	40	100%	10

nd = non-detect

* 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.

**South Platte River inflow was sampled once for metals, resulting in detection rates of 0% or 100%.

FIGURES

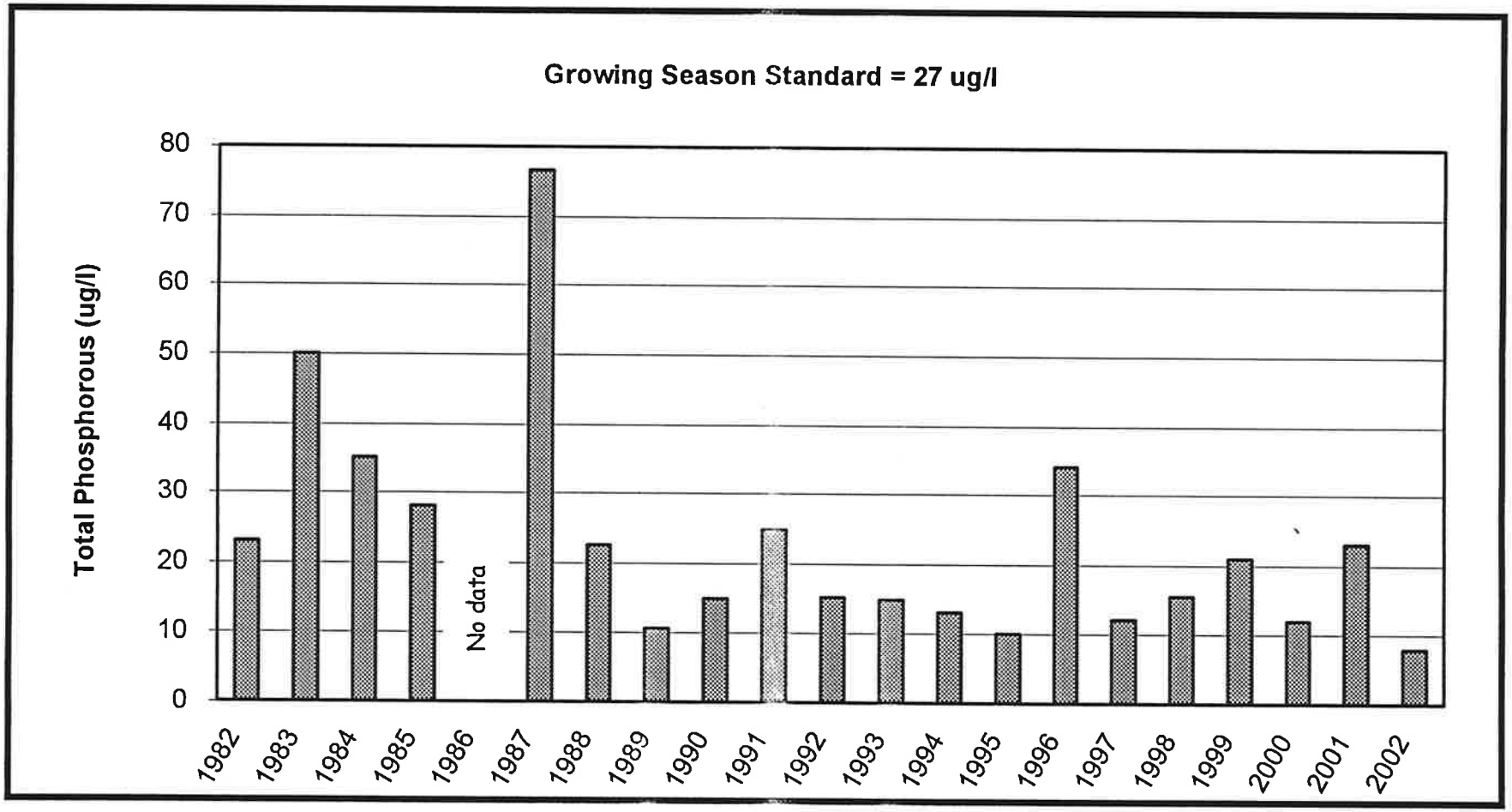


FIGURE 3
AVERAGE GROWING-SEASON TOTAL PHOSPHOROUS CONCENTRATION IN RESERVOIR, 1982-2002

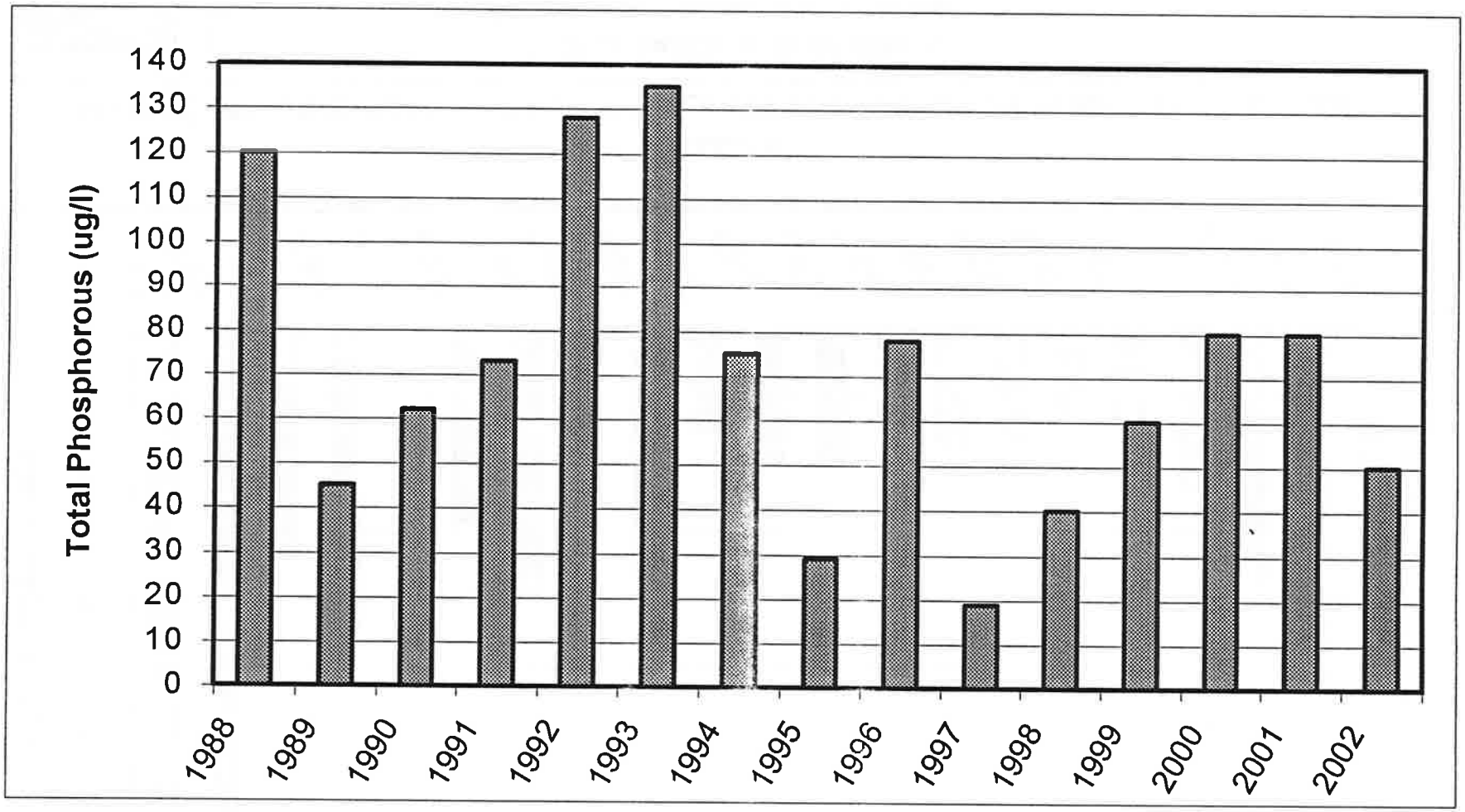


FIGURE 4
PEAK TOTAL PHOSPHOROUS CONCENTRATION IN RESERVOIR, 1988-2002

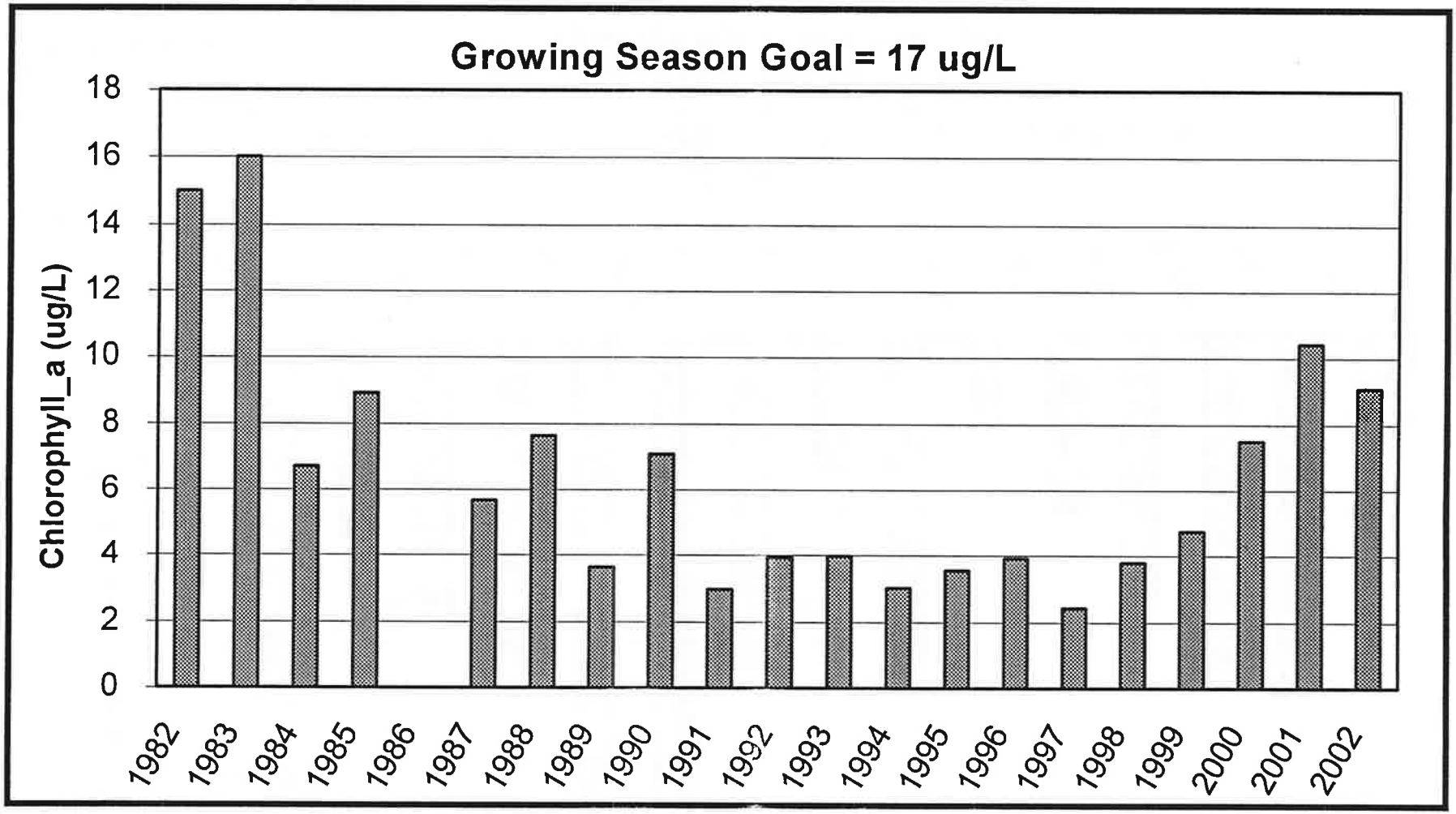


FIGURE 5
AVERAGE GROWING-SEASON CHLOROPHYLL_a CONCENTRATION IN RESERVOIR, 1982-2002

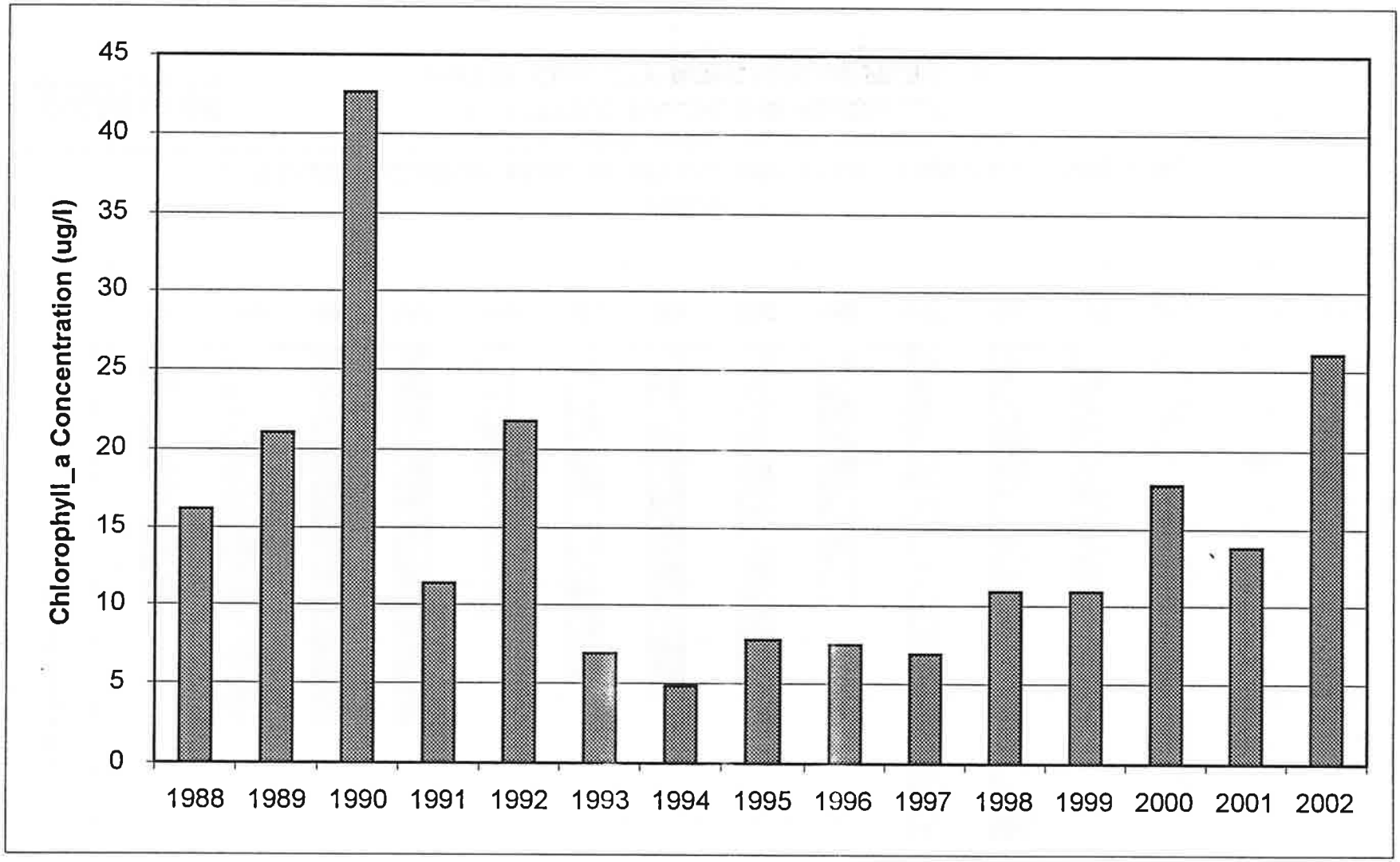


FIGURE 6
PEAK CHLOROPHYLL_a CONCENTRATION IN RESERVOIR, 1988-2002

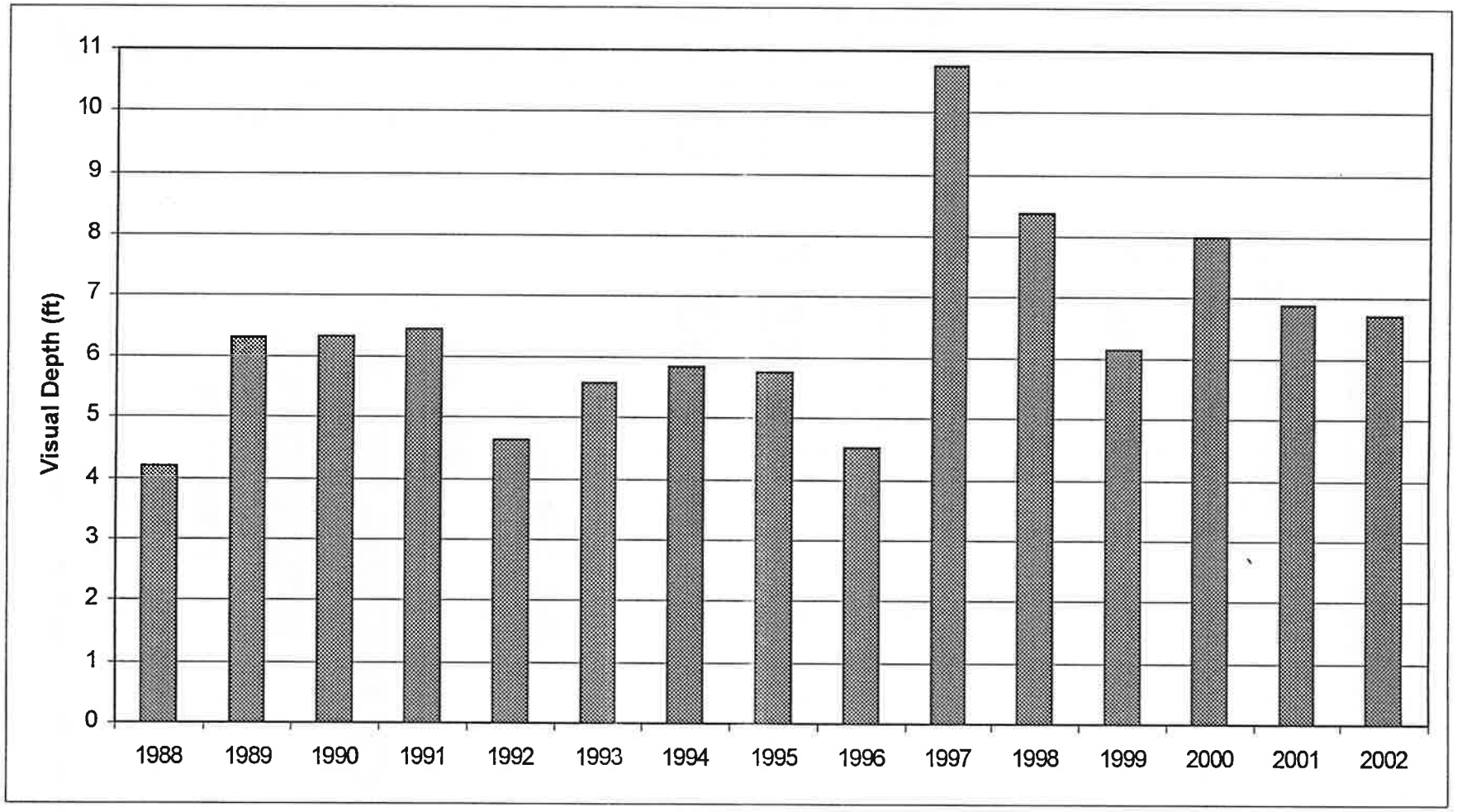


FIGURE 7
AVERAGE GROWING-SEASON SECCHI DEPTH IN RESERVOIR, 1988-2002

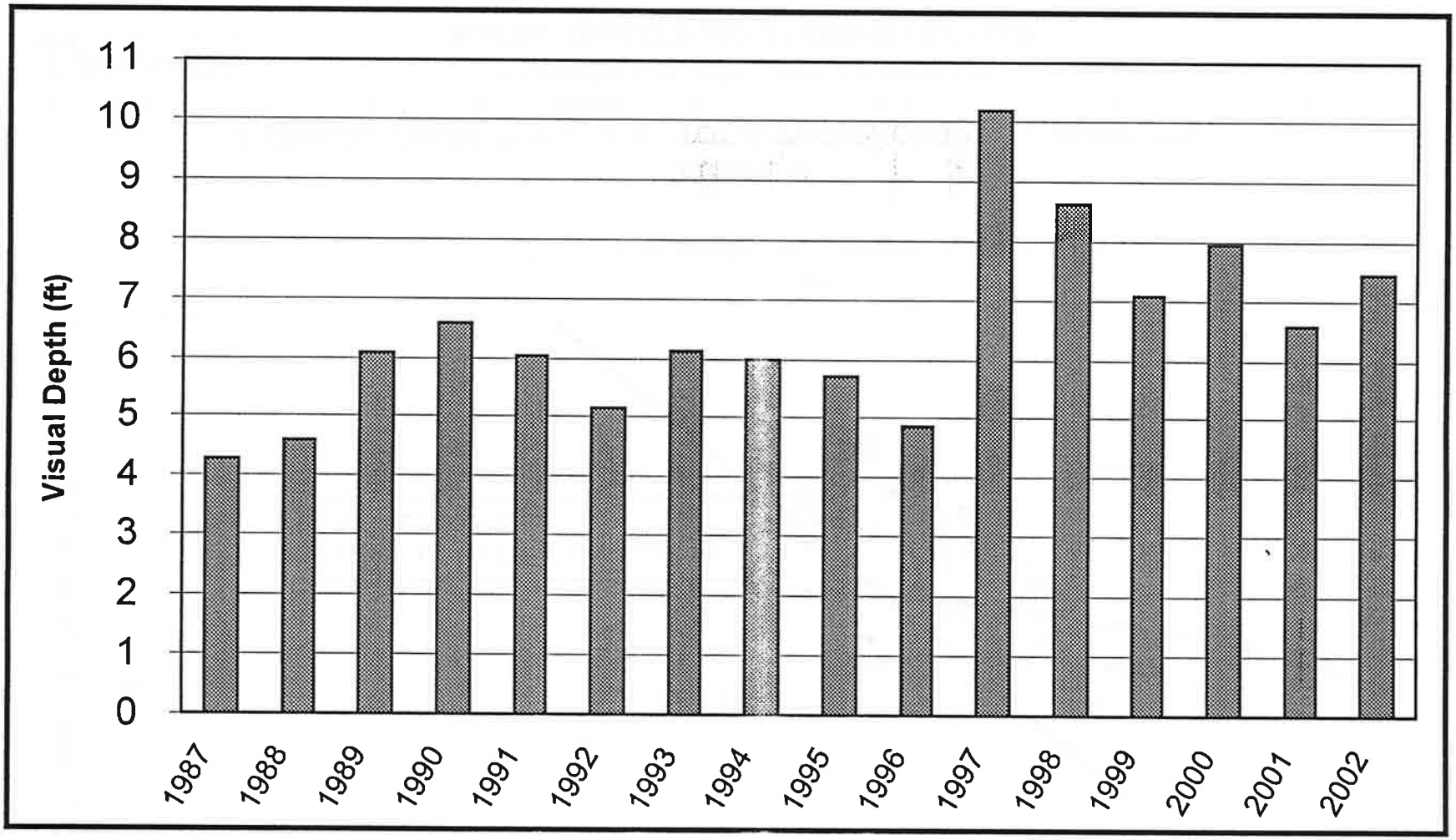


FIGURE 8
AVERAGE ANNUAL SECCHI DEPTH IN RESERVOIR, 1987-2002

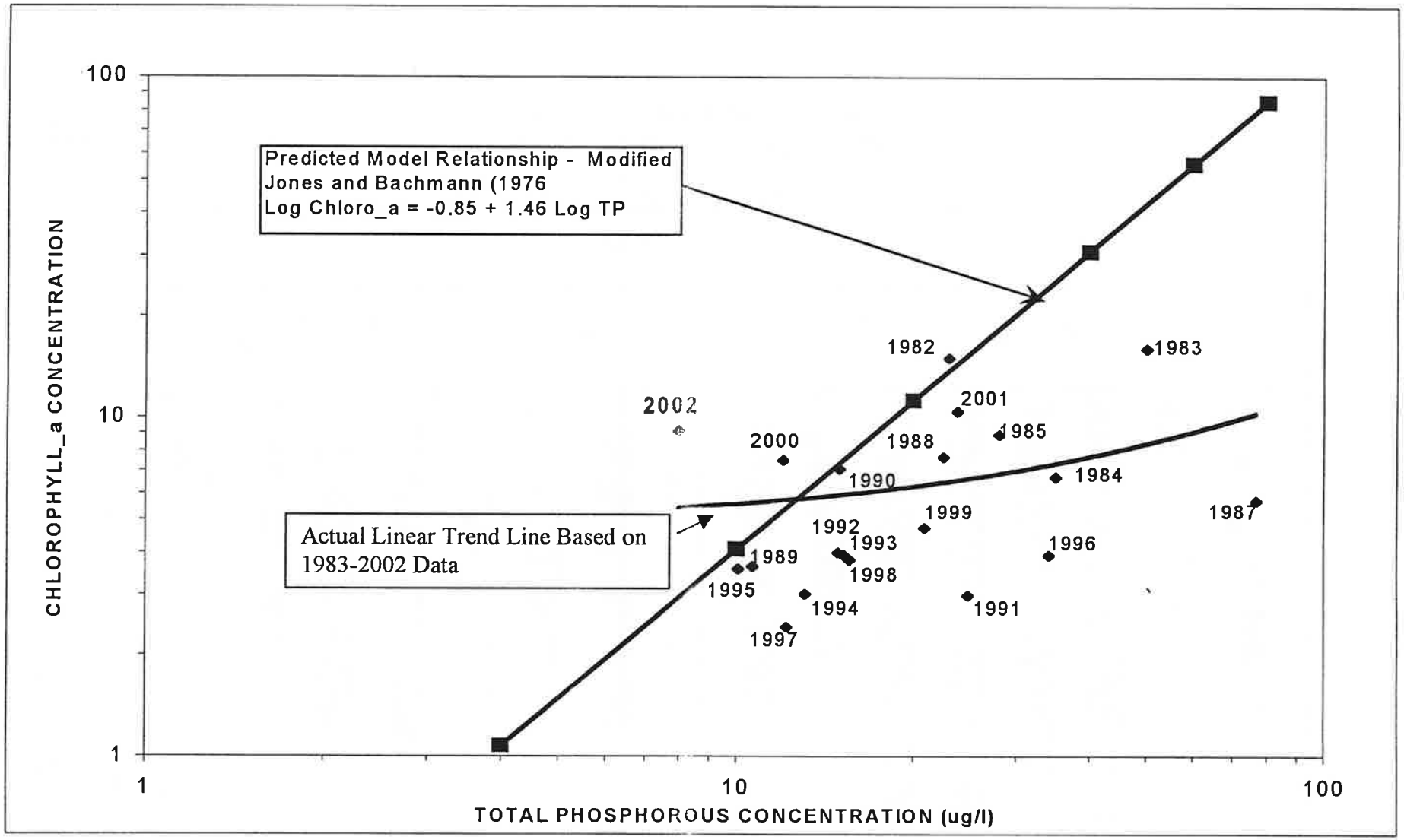


FIGURE 9
GROWING SEASON CHLOROPHYLL_a vs. TOTAL PHOSPHOROUS IN RESERVOIR, 1982-2002

Chatfield Reservoir Phytoplankton
June 2002

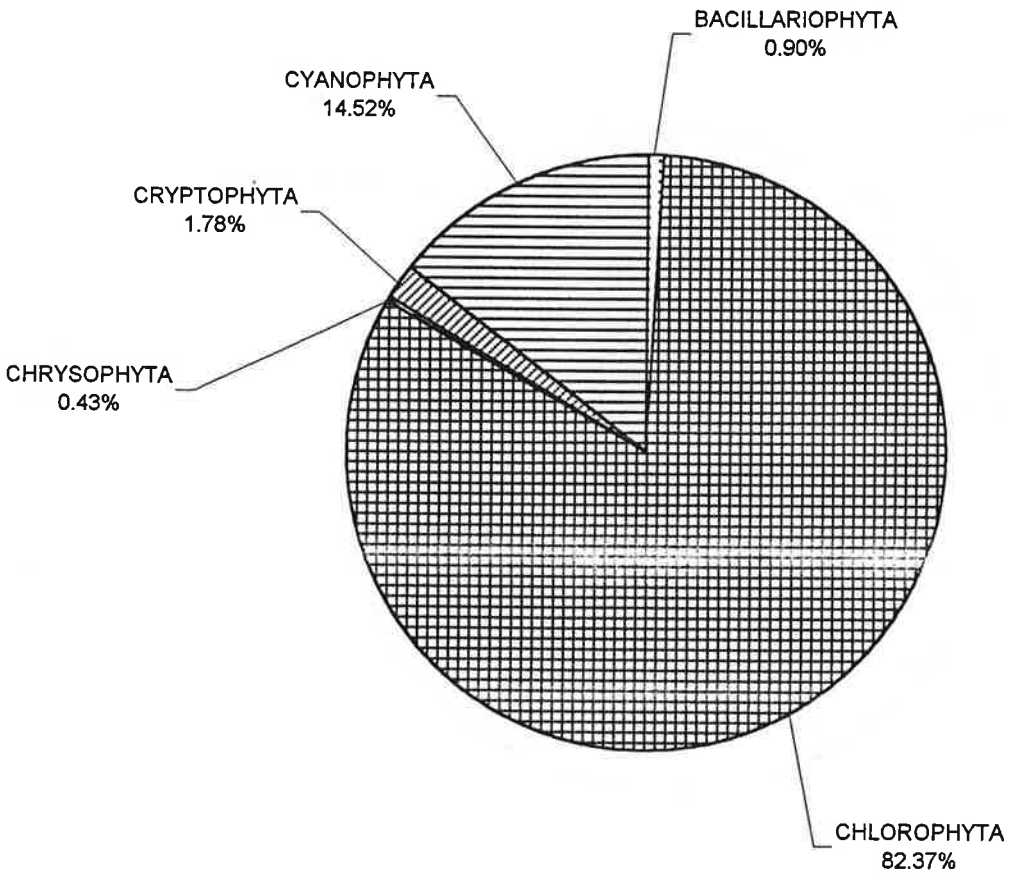


FIGURE 10
SUMMARY OF RESULTS OF PHYTOPLANKTON ANALYSES CONDUCTED FOR A SAMPLE COLLECTED AT SITE RM-1, CHATFIELD RESERVOIR, JUNE 13, 2002

Chatfield Reservoir Phytoplankton
July 2002

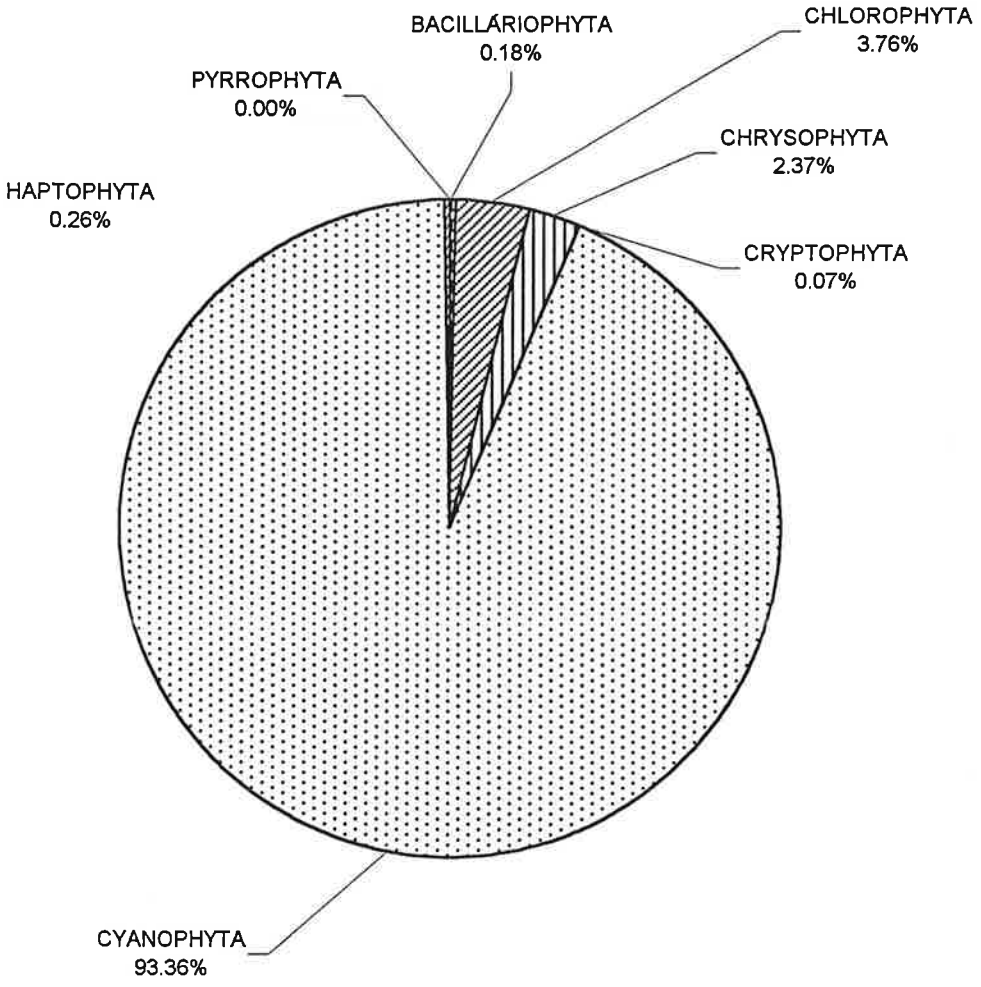


FIGURE 11

SUMMARY OF RESULTS OF PHYTOPLANKTON ANALYSES CONDUCTED FOR A SAMPLE COLLECTED AT SITE RM-1, CHATFIELD RESERVOIR, JULY 24, 2002

Chatfield Reservoir Phytoplankton
August 2002

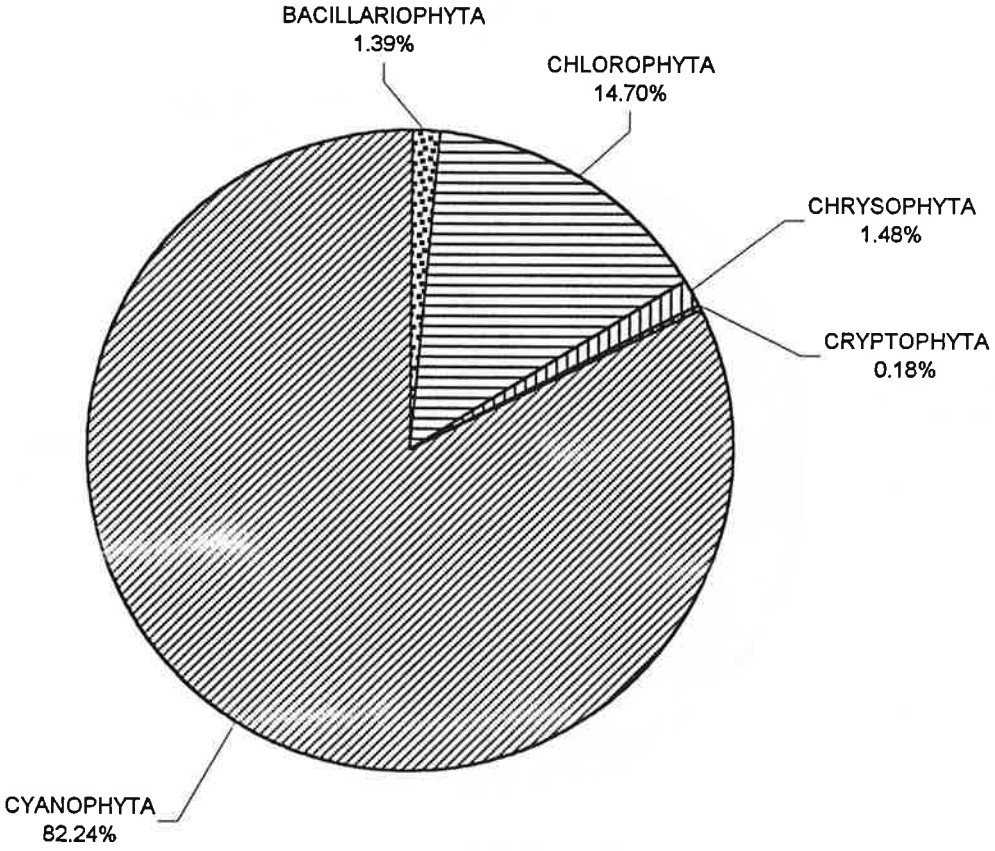


FIGURE 12
SUMMARY OF RESULTS OF PHYTOPLANKTON ANALYSES CONDUCTED FOR A SAMPLE COLLECTED AT SITE RM-1, CHATFIELD RESERVOIR, AUGUST 14, 2002

Chatfield Reservoir Phytoplankton
September 2002

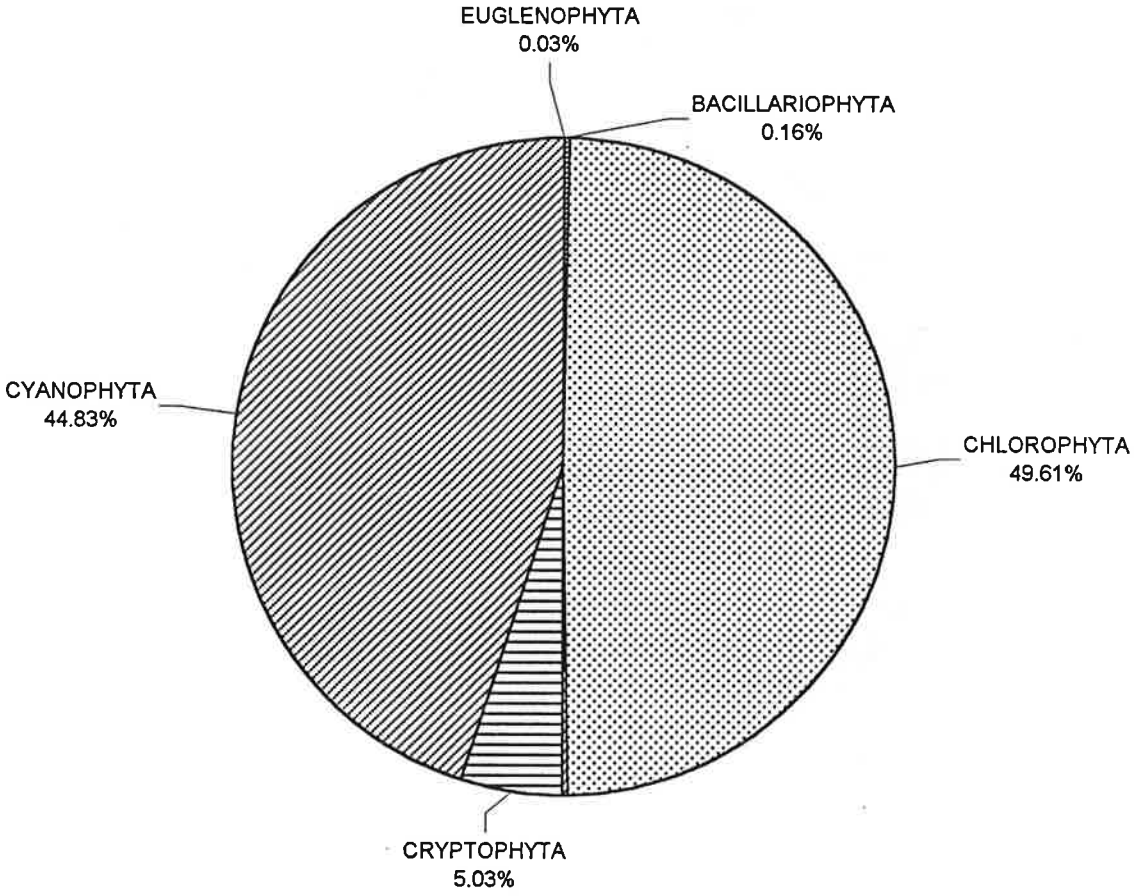


FIGURE 13
SUMMARY OF RESULTS OF PHYTOPLANKTON ANALYSES CONDUCTD FOR A SAMPLE COLLECTED AT SITE RM-1, CHATFIELD RESERVOIR, SEPTEMBER 12, 2002

Chatfield Reservoir Zooplankton
September 2002

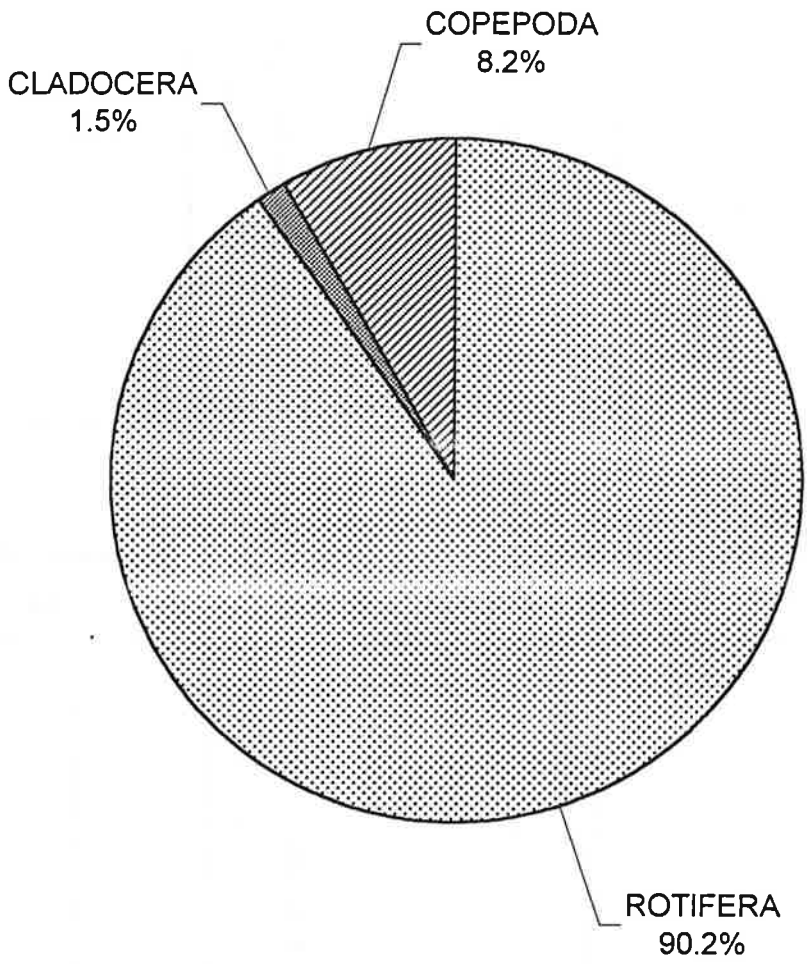
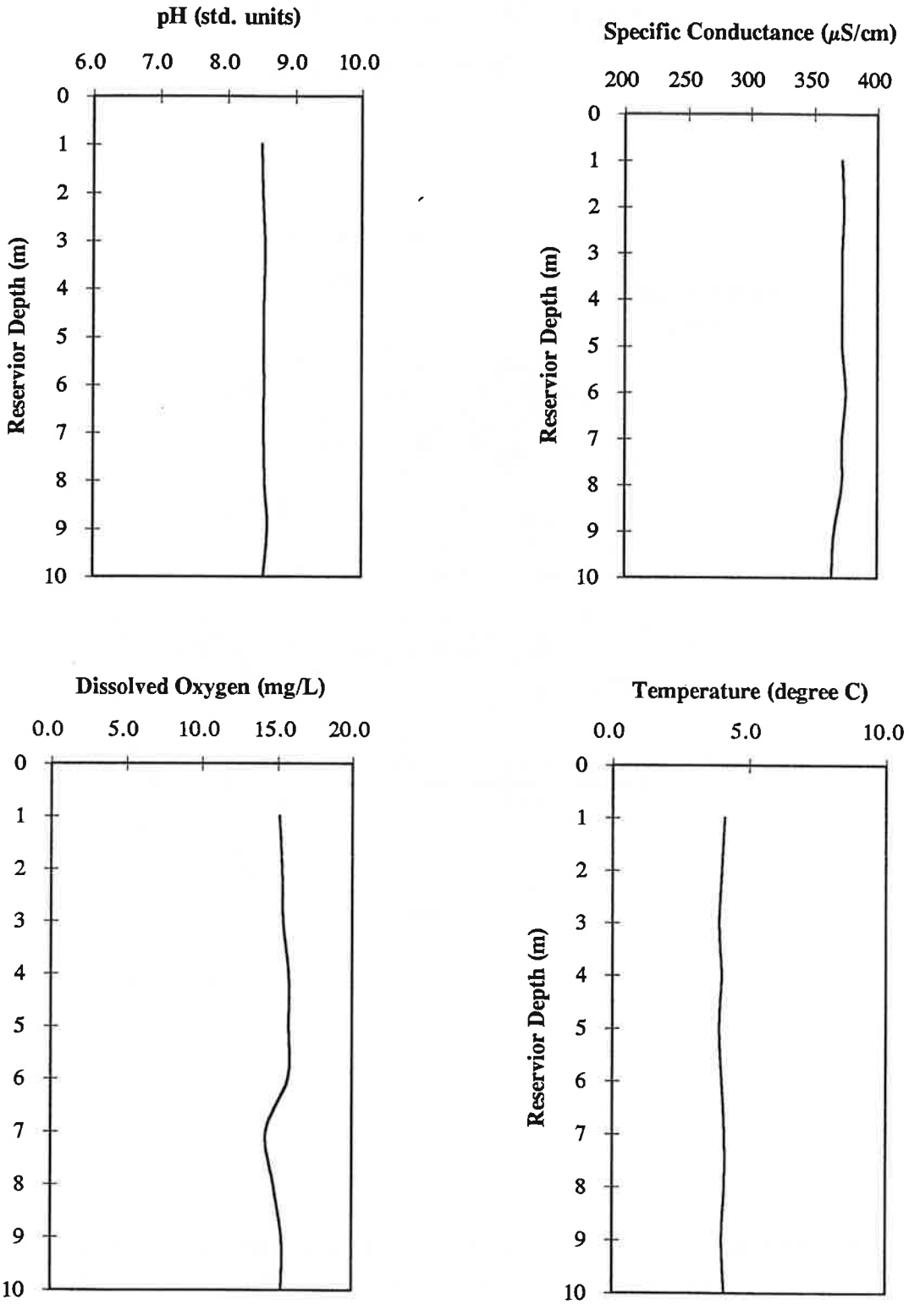
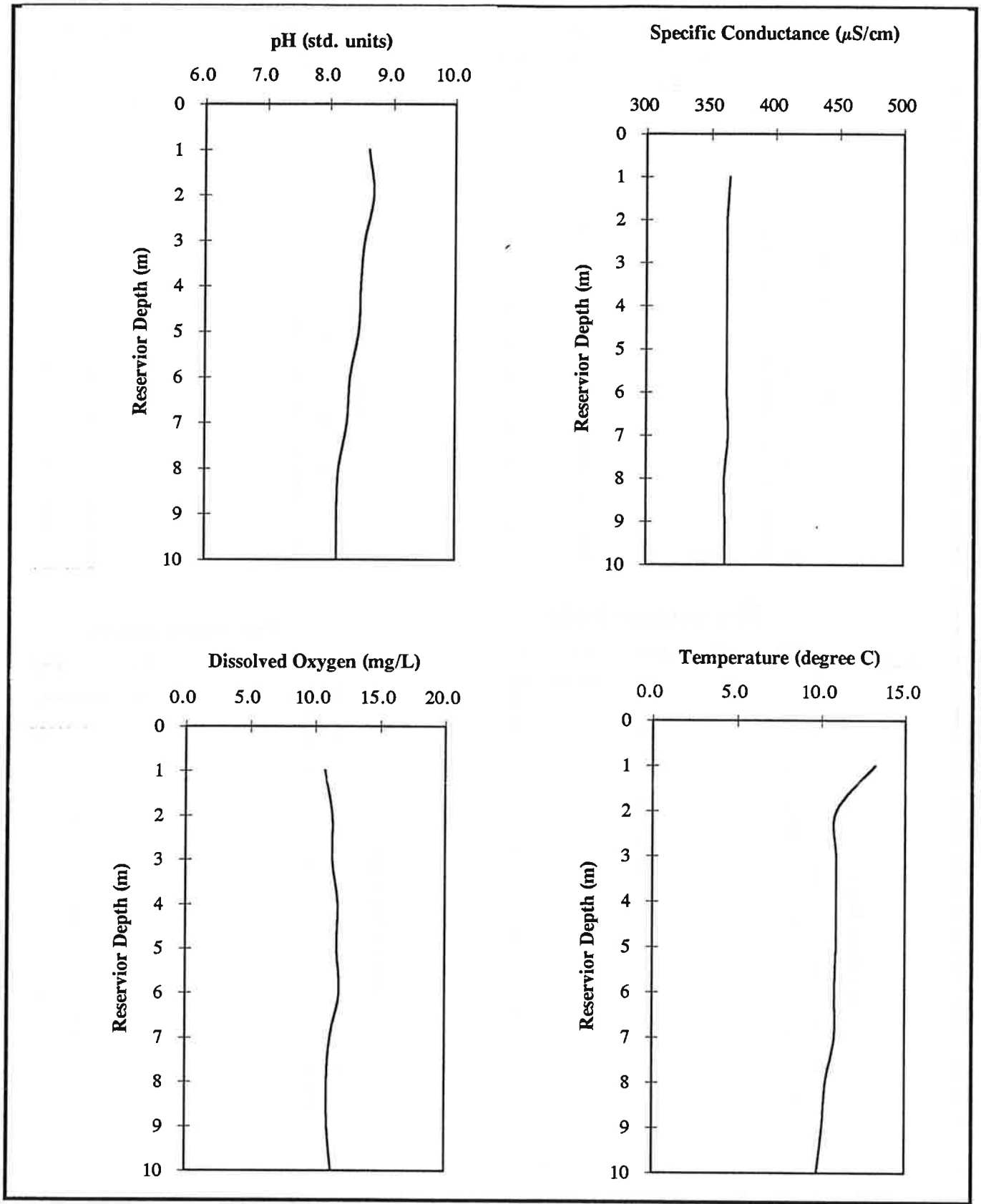


FIGURE 14
SUMMARY OF RESULTS OF ZOOPLANKTON ANALYSES CONDUCTED FOR A SAMPLE COLLECTED AT SITE RM, CHATFIELD RESERVOIR, SEPTEMBER 25, 2002



IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - March 20, 2002



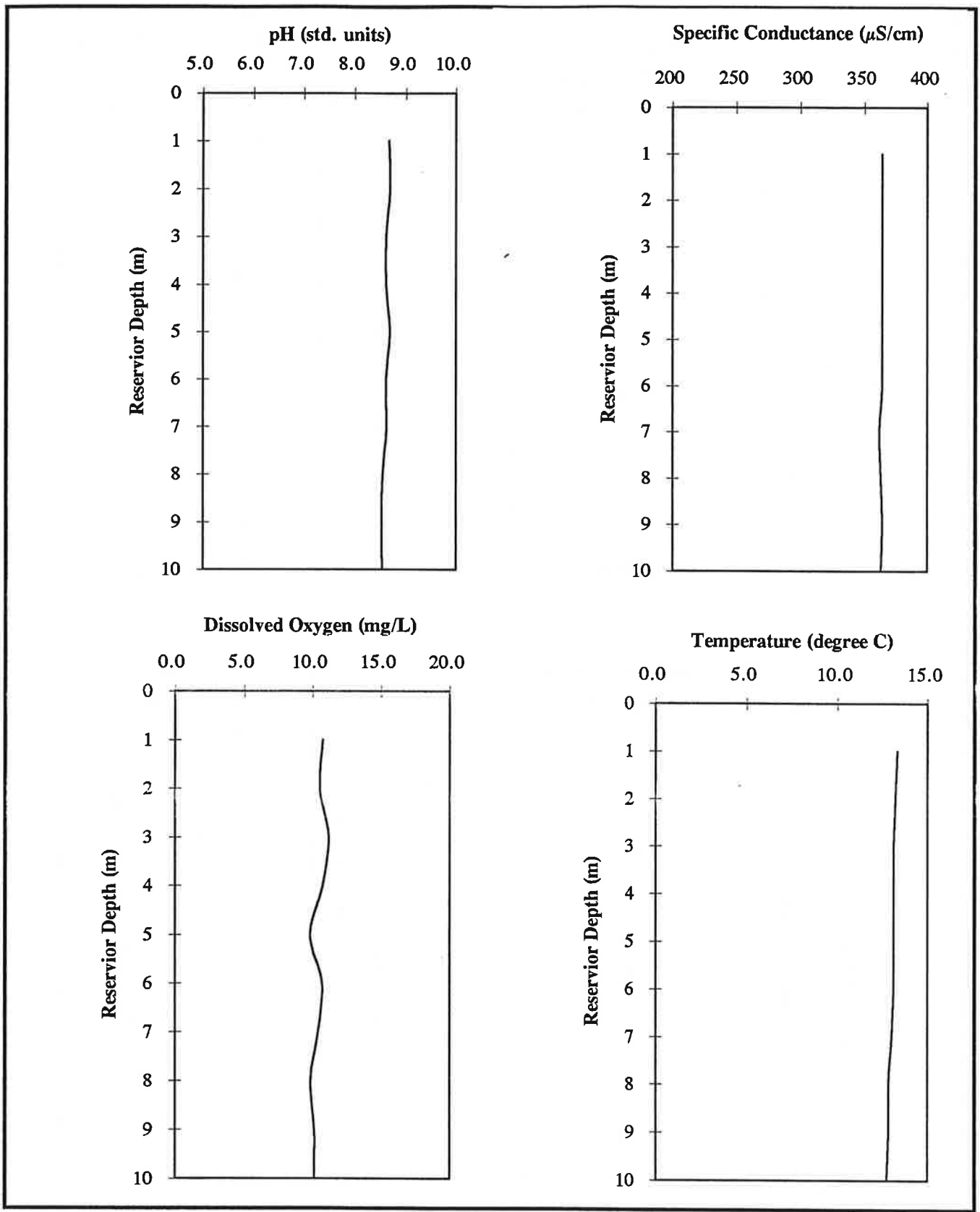
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - April 17, 2002

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

Figure 16



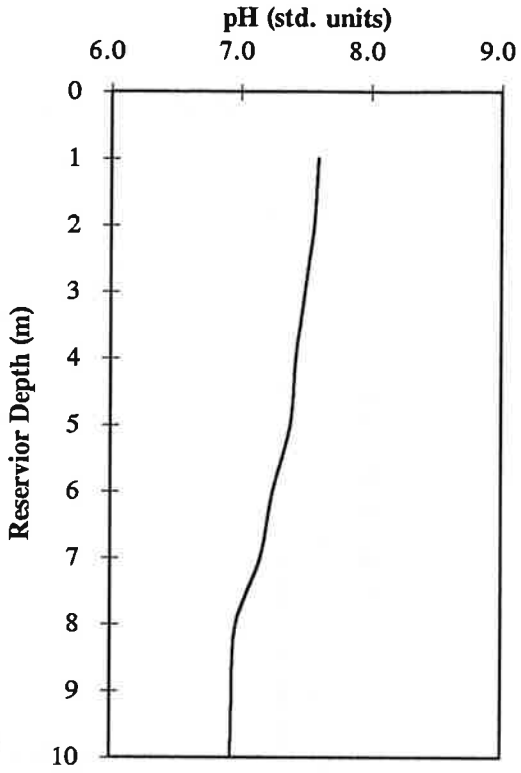
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

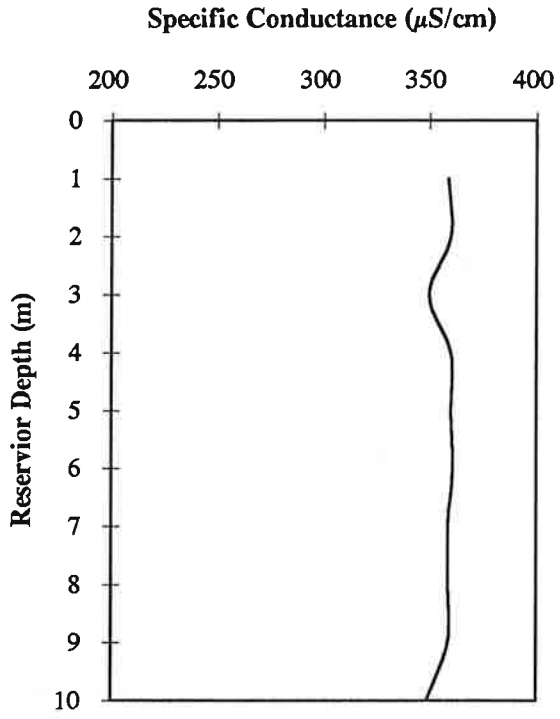
CHATFIELD RESERVOIR - May 8, 2002

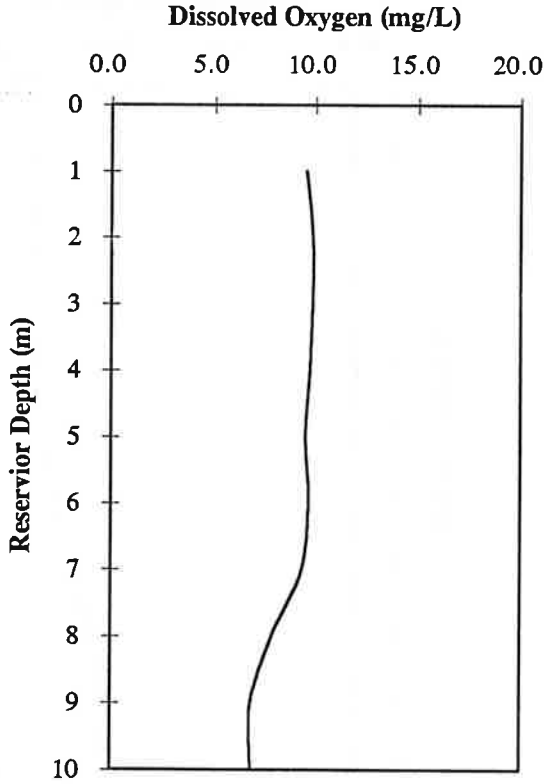
CHATFIELD BASIN AND RESERVOIR

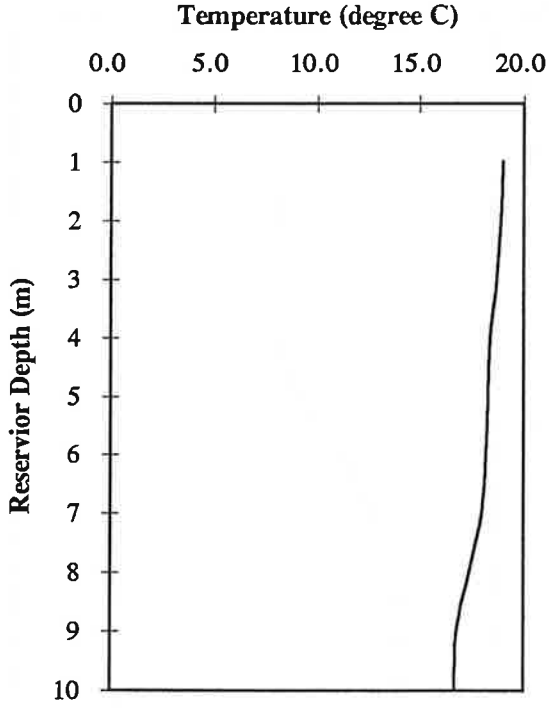
WATER-QUALITY MONITORING PROGRAM

Figure 17









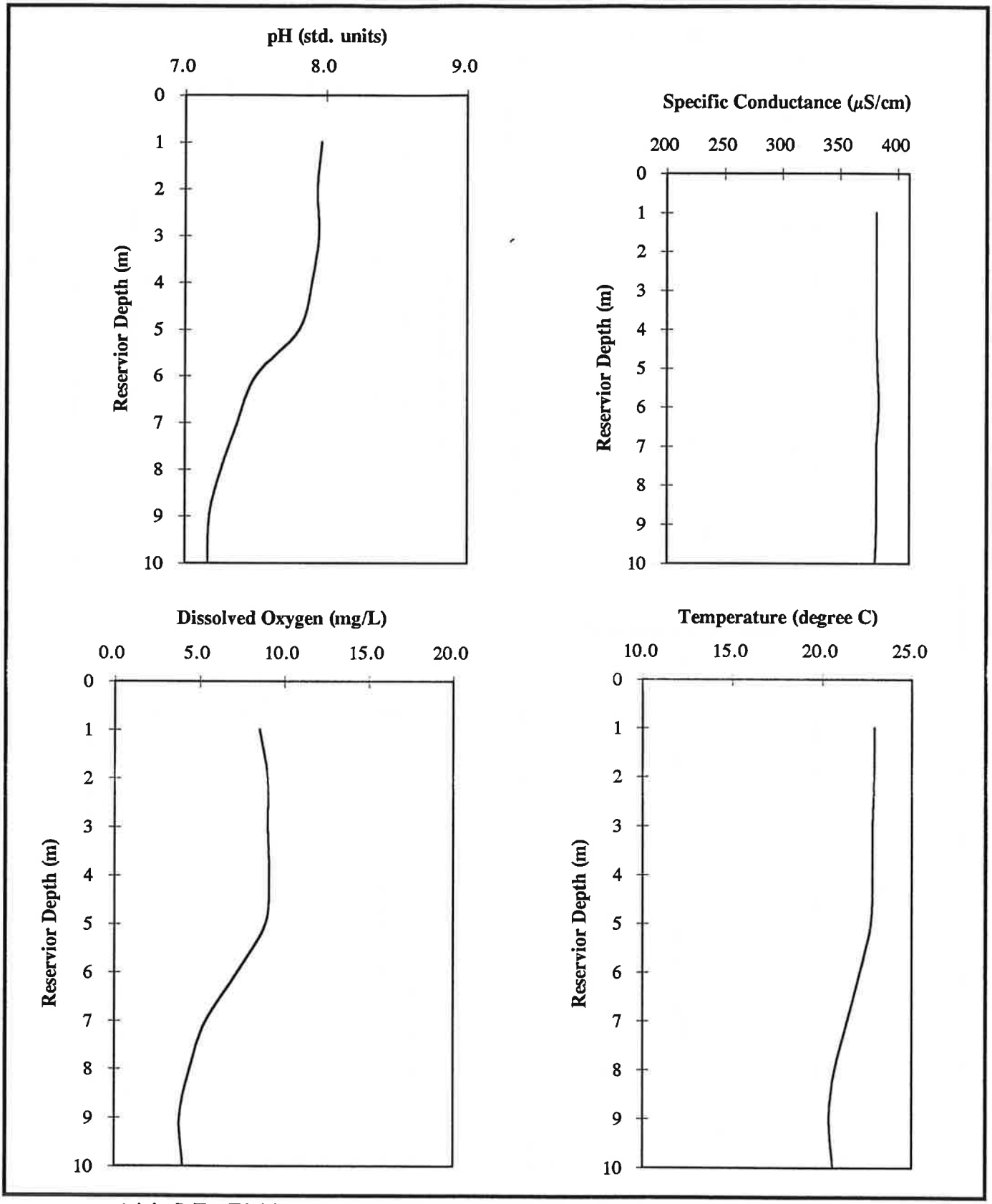
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - June 13, 2002

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

Figure 18



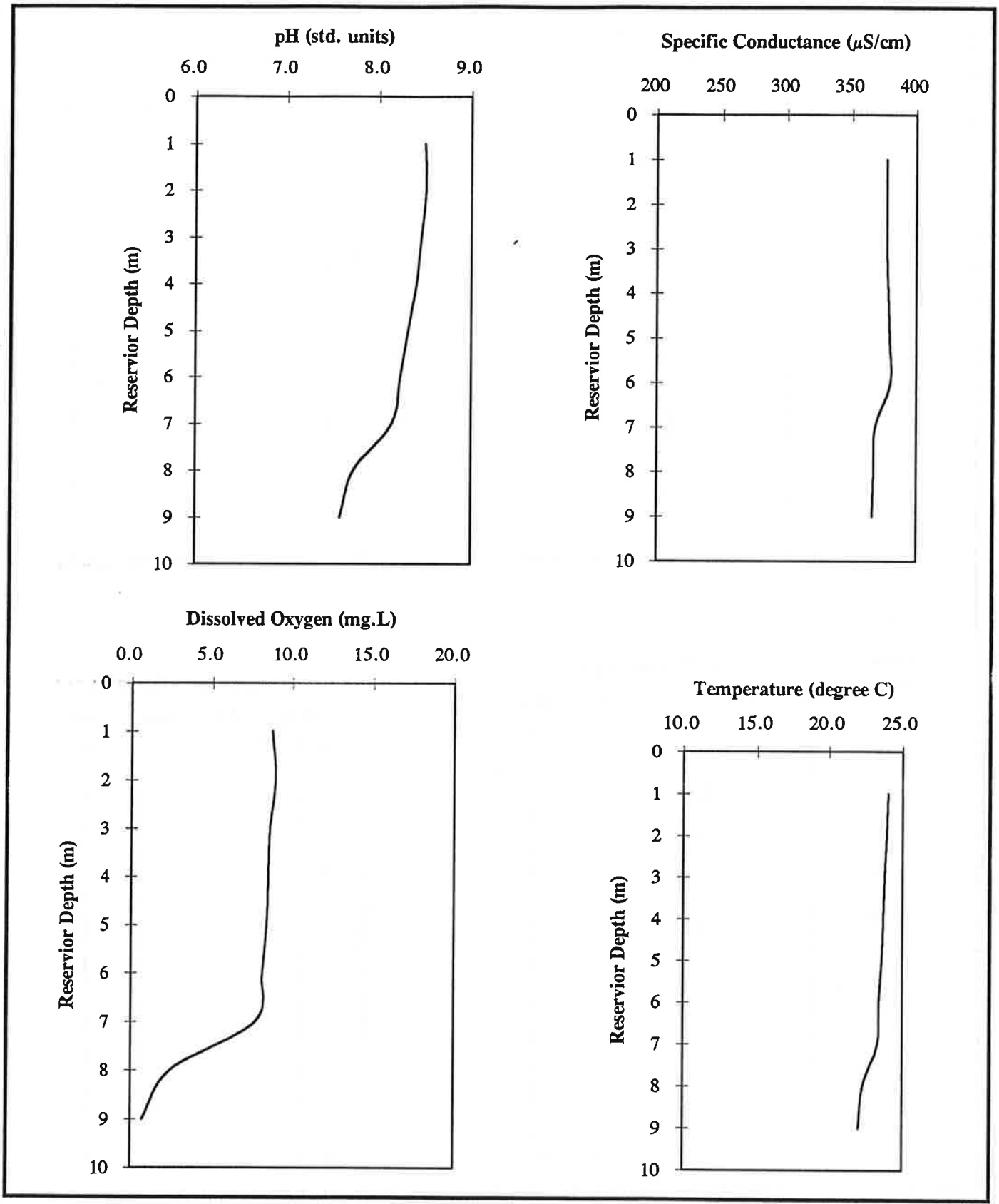
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - JULY 11, 2002

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

Figure 19



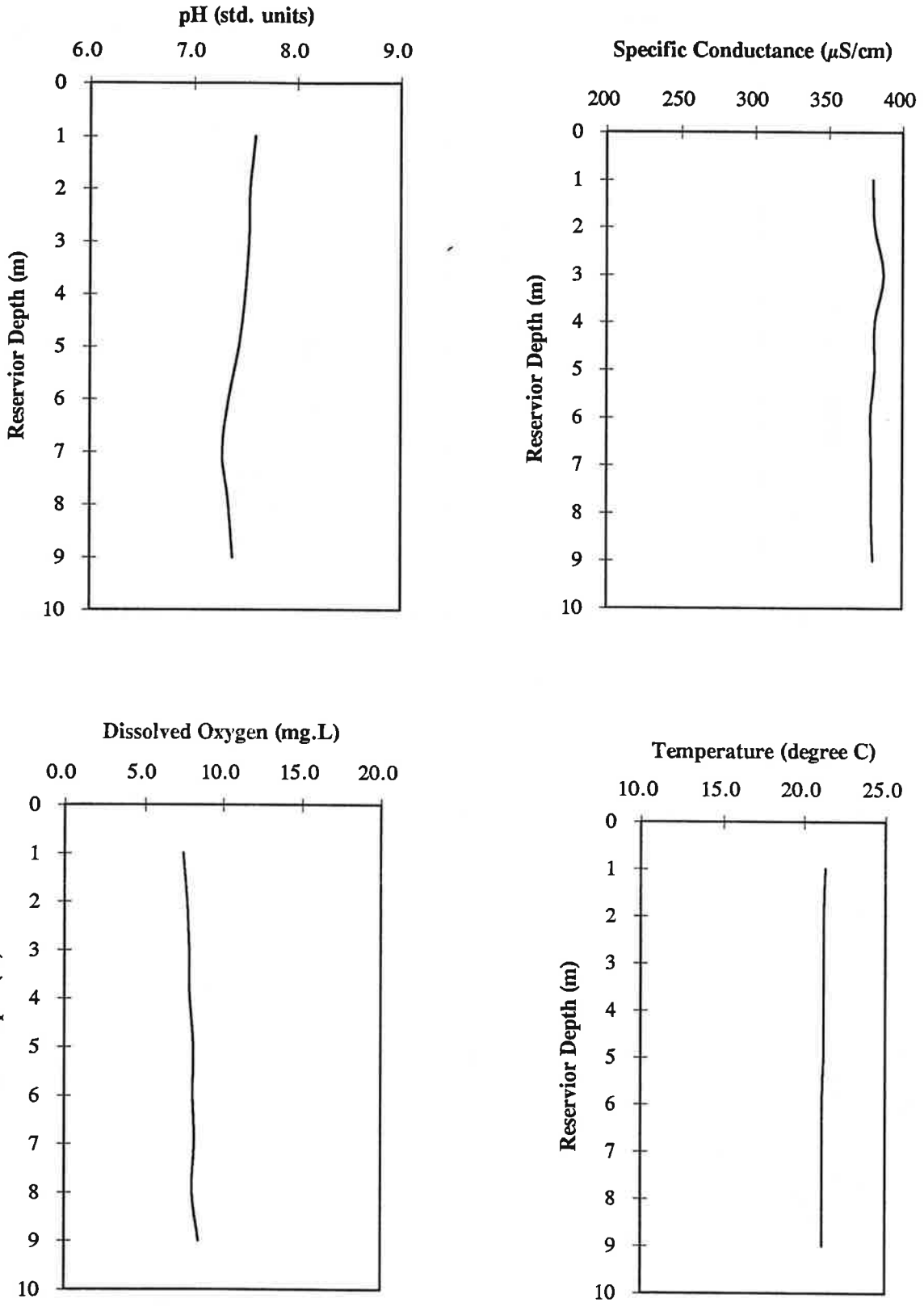
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - July 25, 2002

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

Figure 20



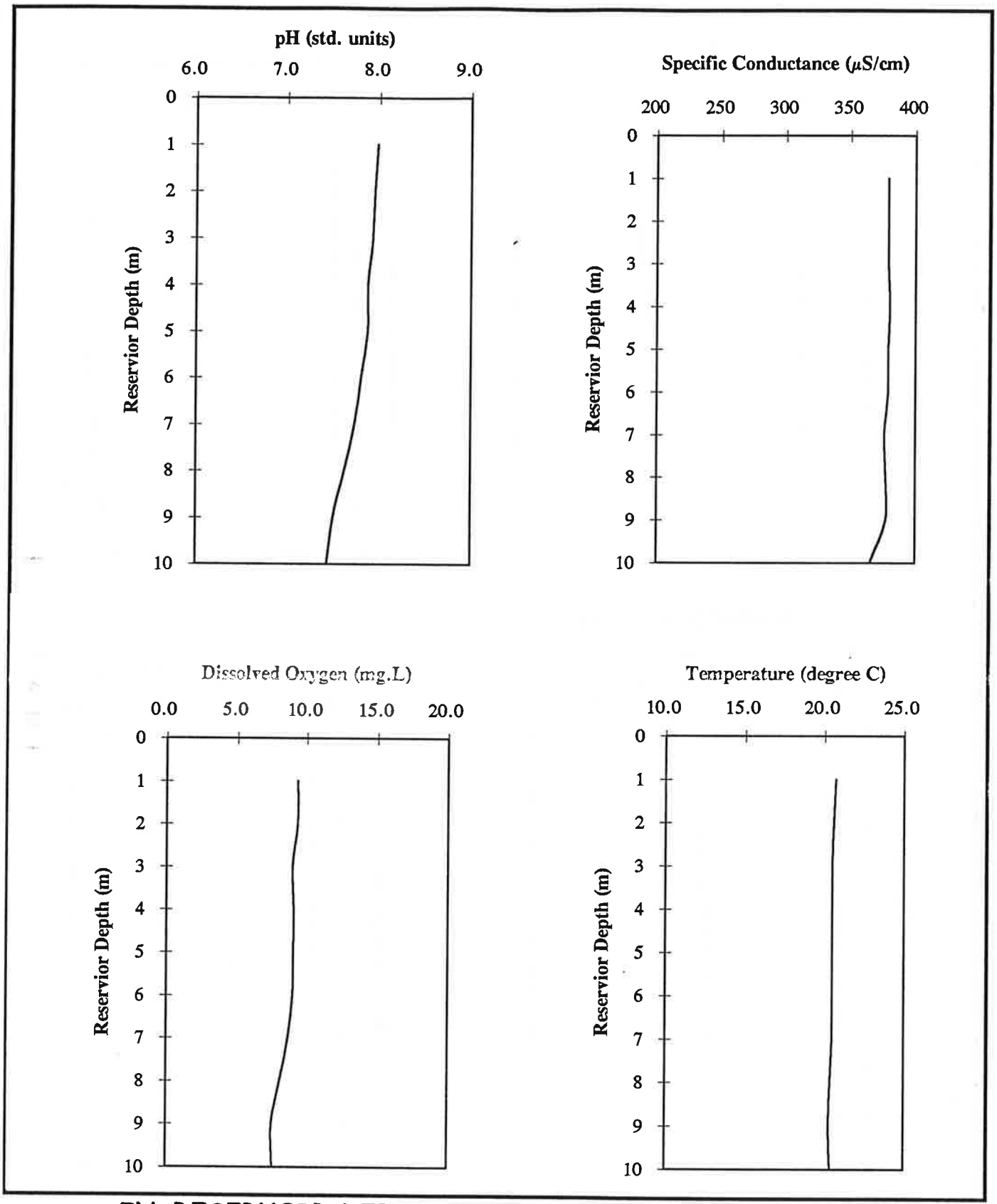
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - AUGUST 14, 2002

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

Figure 21



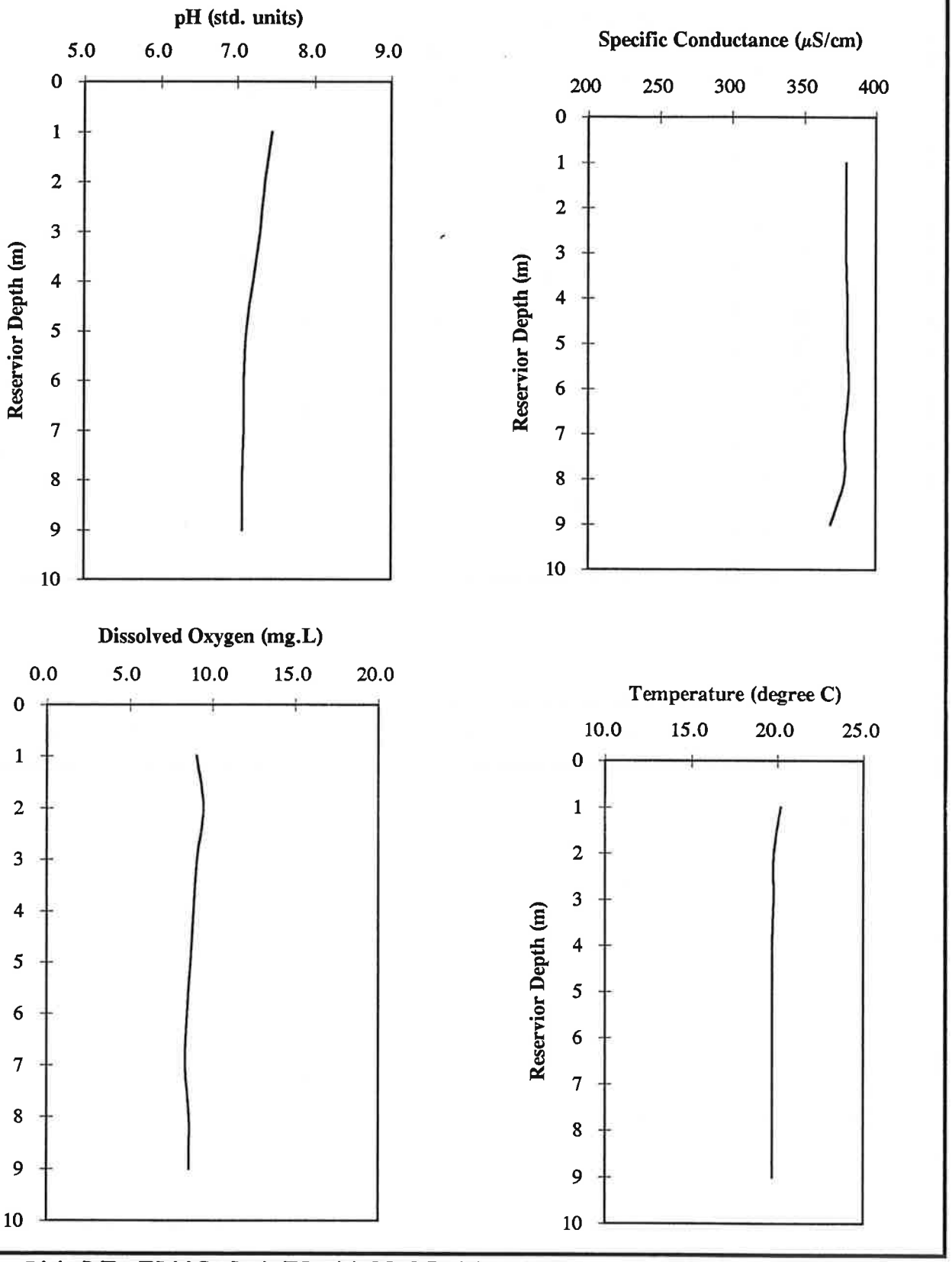
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - AUGUST 28, 2002

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

Figure 22



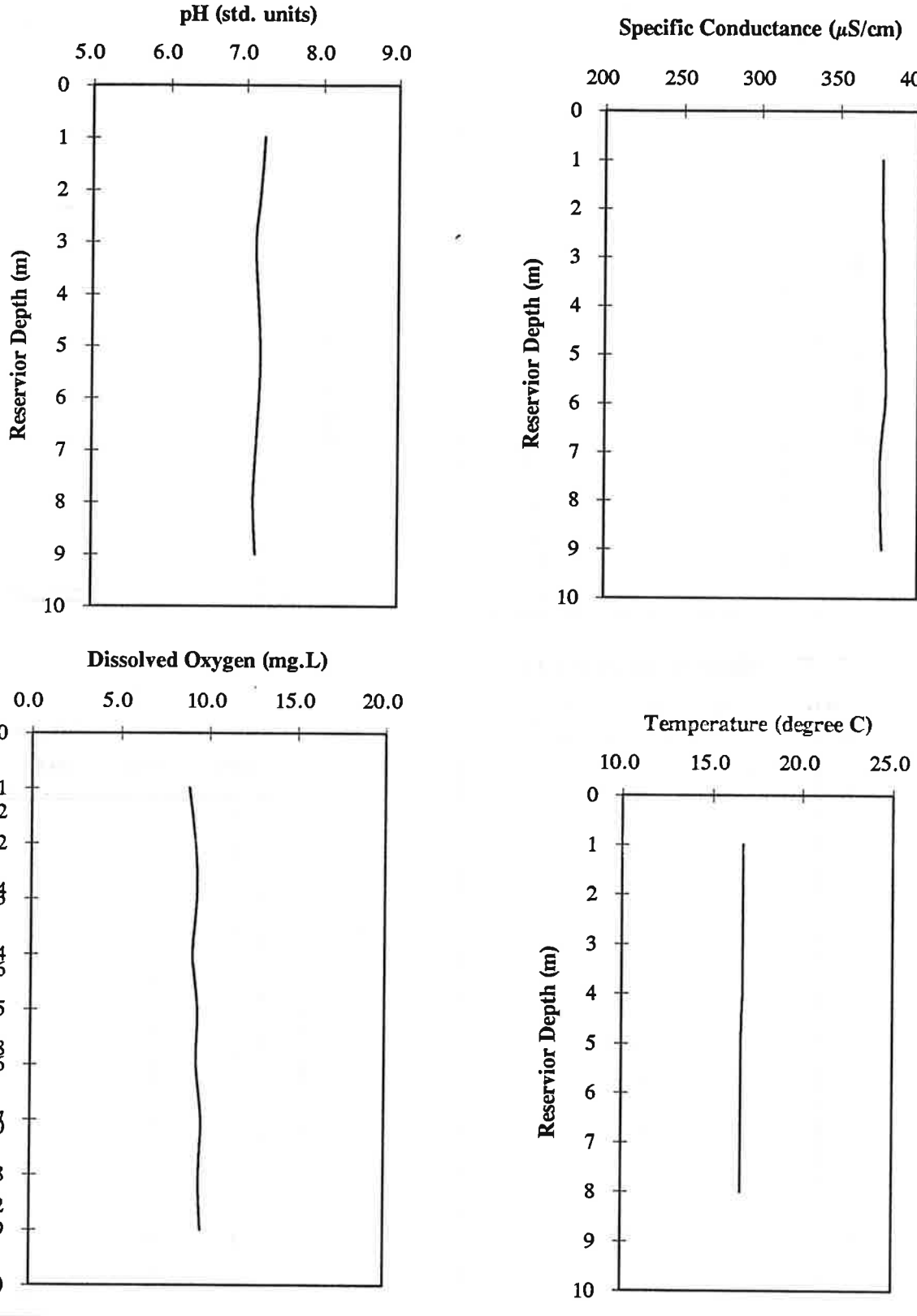
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - SEPTEMBER 12, 2002

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

Figure 23



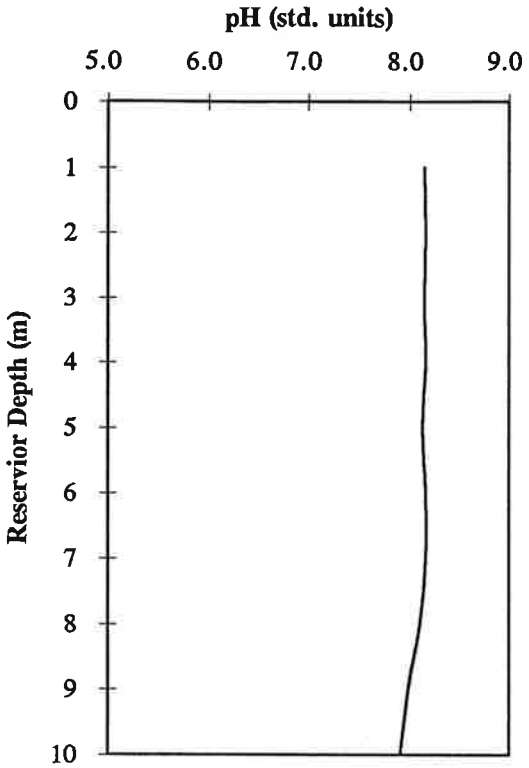
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

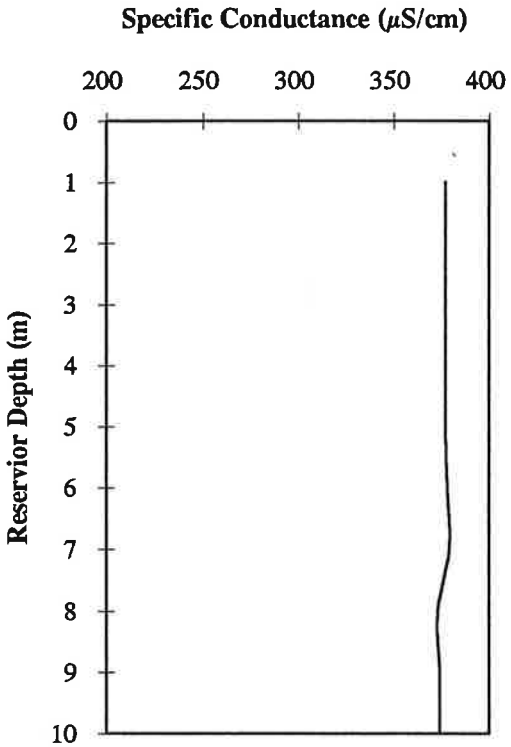
CHATFIELD RESERVOIR - SEPTEMBER 26, 2002

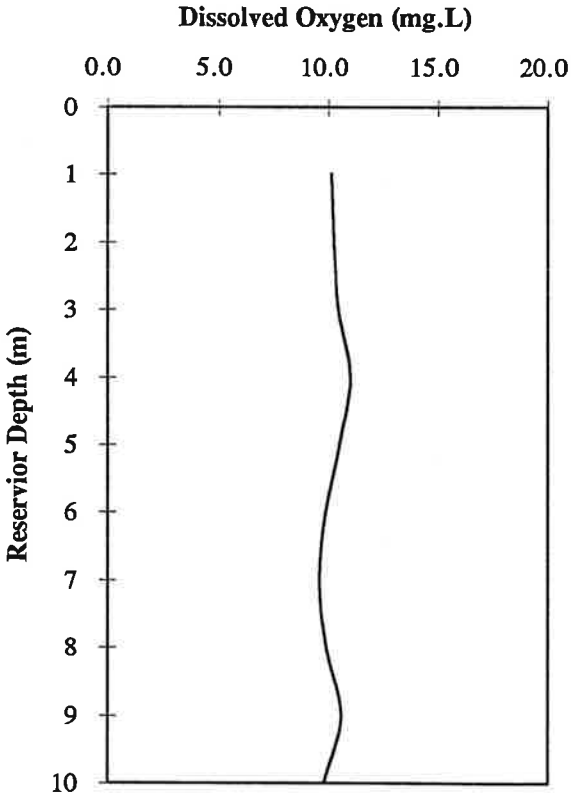
CHATFIELD BASIN AND RESERVOIR

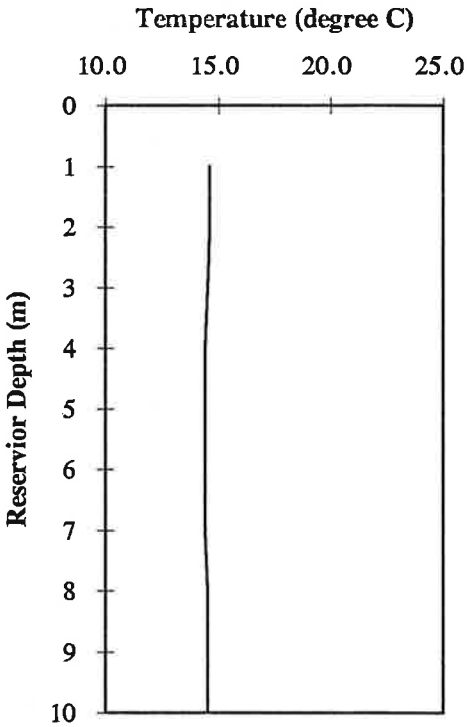
WATER-QUALITY MONITORING PROGRAM

Figure 24









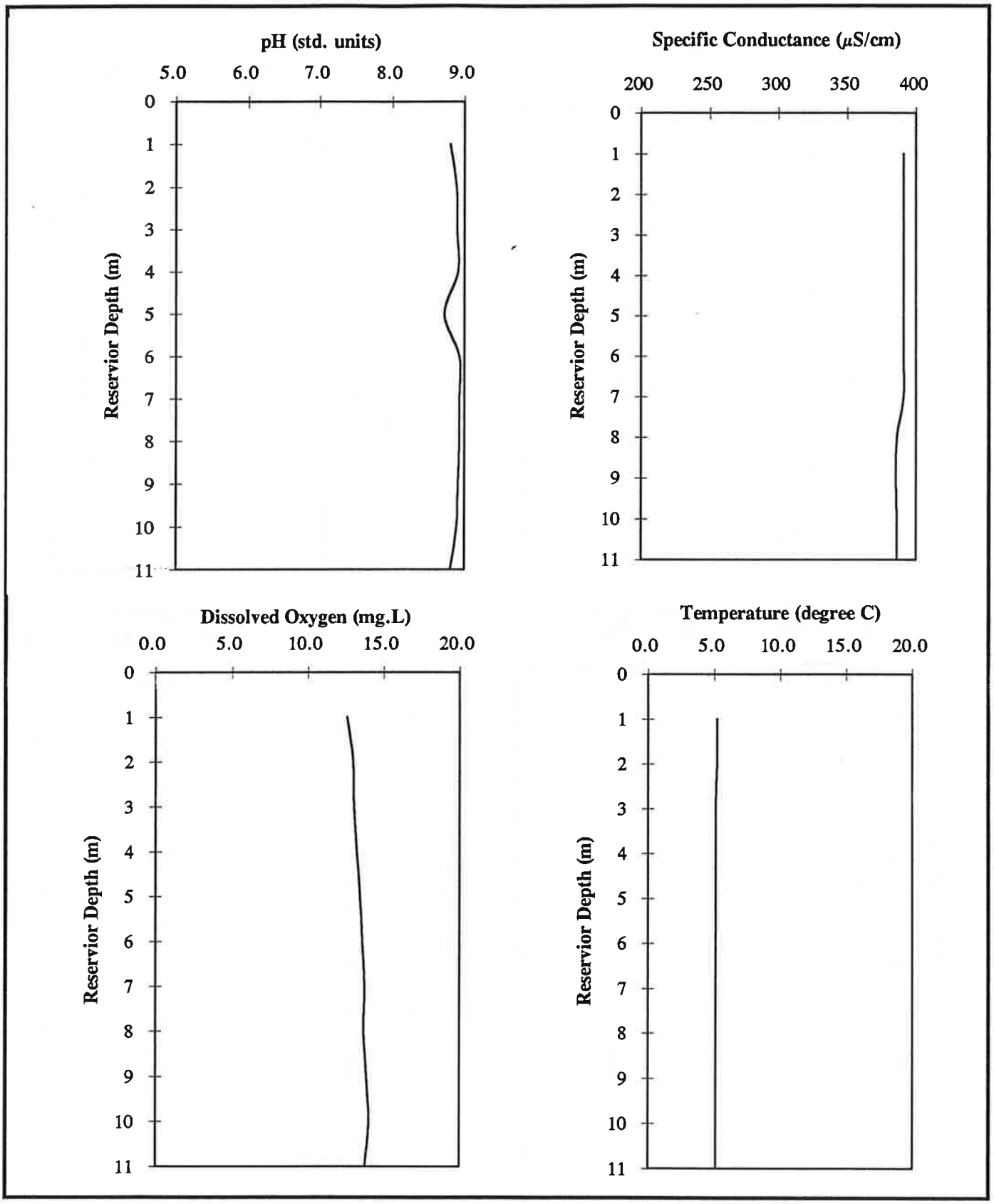
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - OCTOBER 8, 2002

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

Figure 25



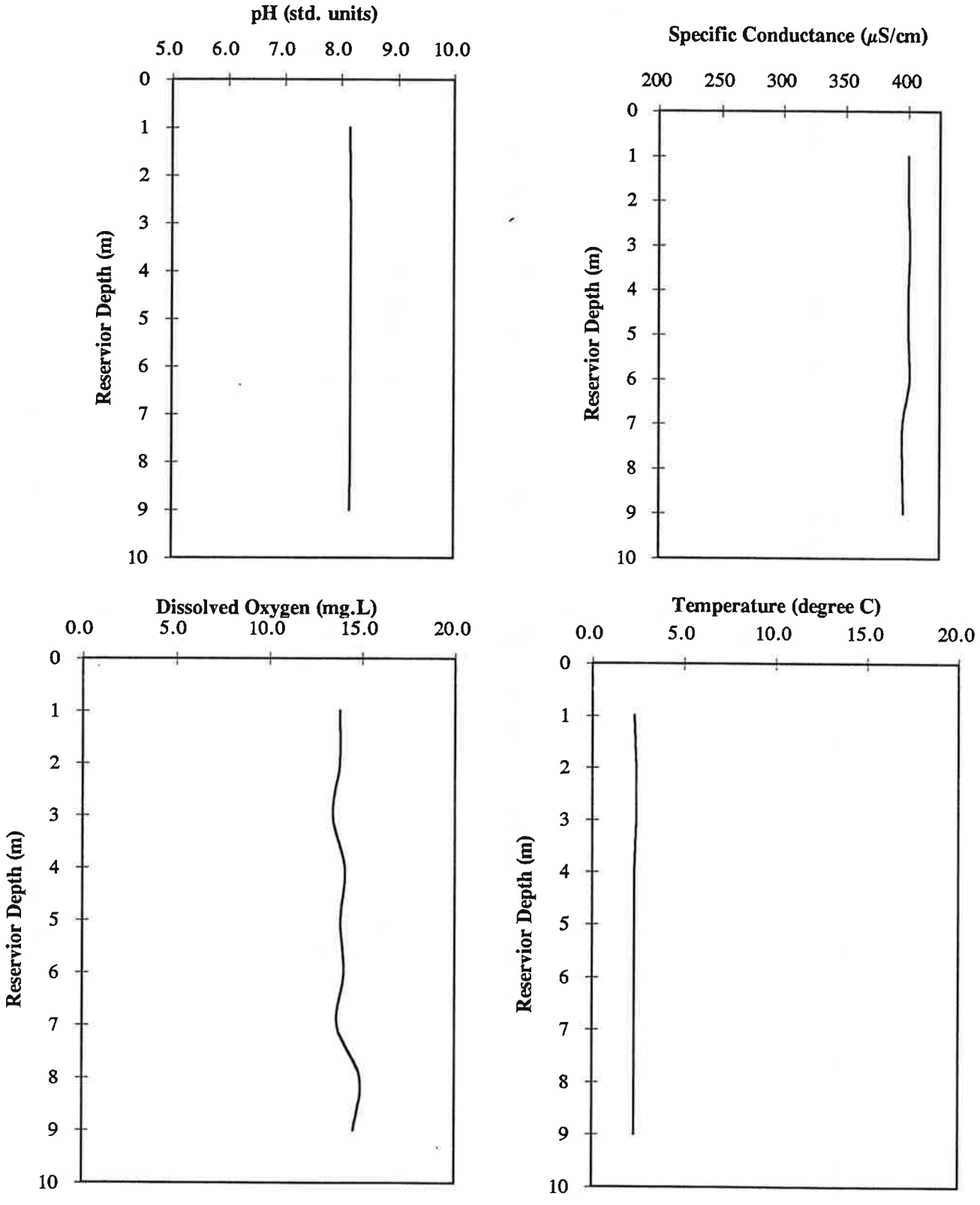
IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - NOVEMBER 19, 2002

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

Figure 26



IN-RESERVOIR DEPTH PROFILE DATA, SITE RM

CHATFIELD RESERVOIR - DECEMBER 12, 2002

CHATFIELD BASIN AND RESERVOIR

WATER-QUALITY MONITORING PROGRAM

Figure 27

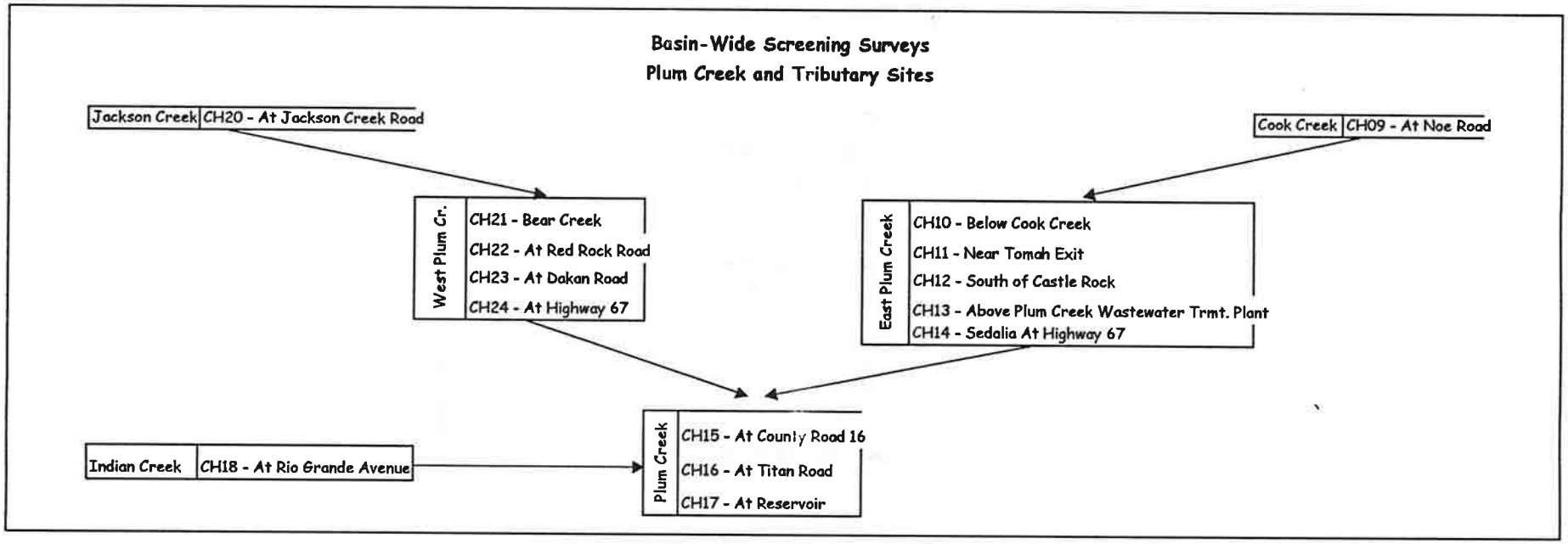
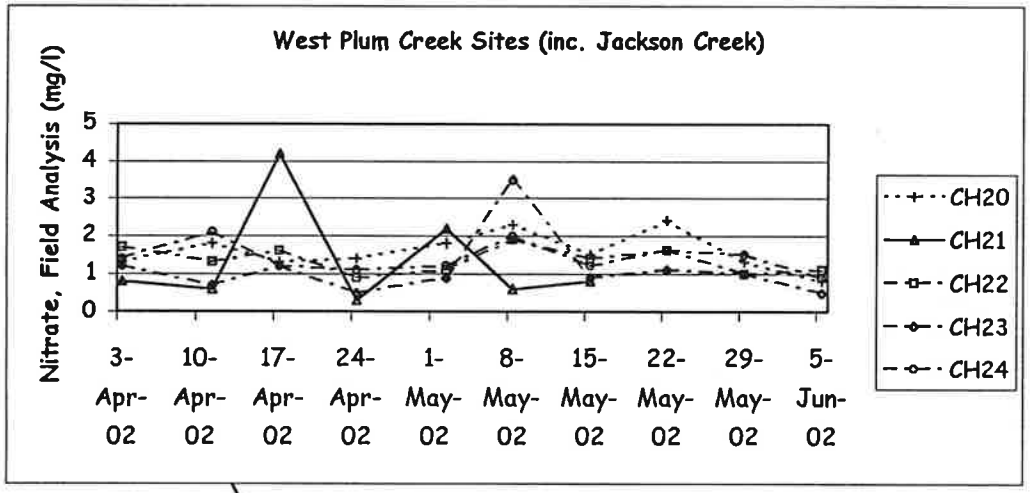
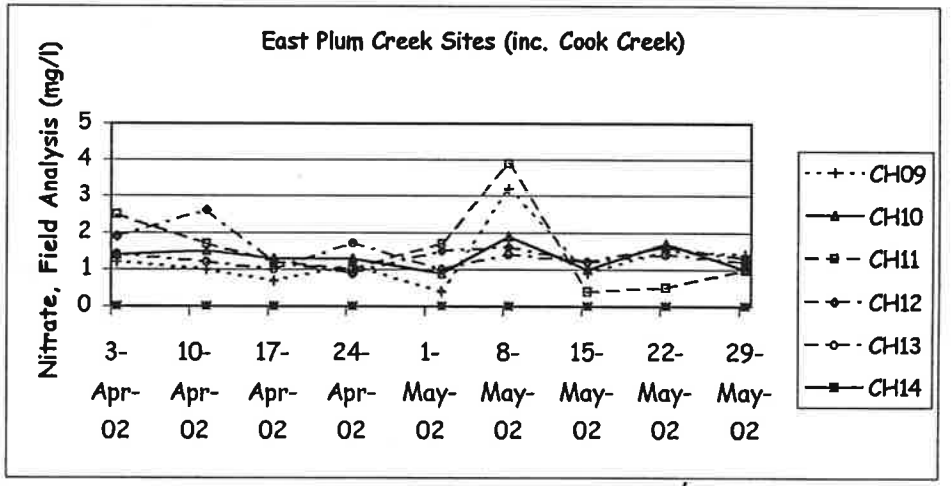
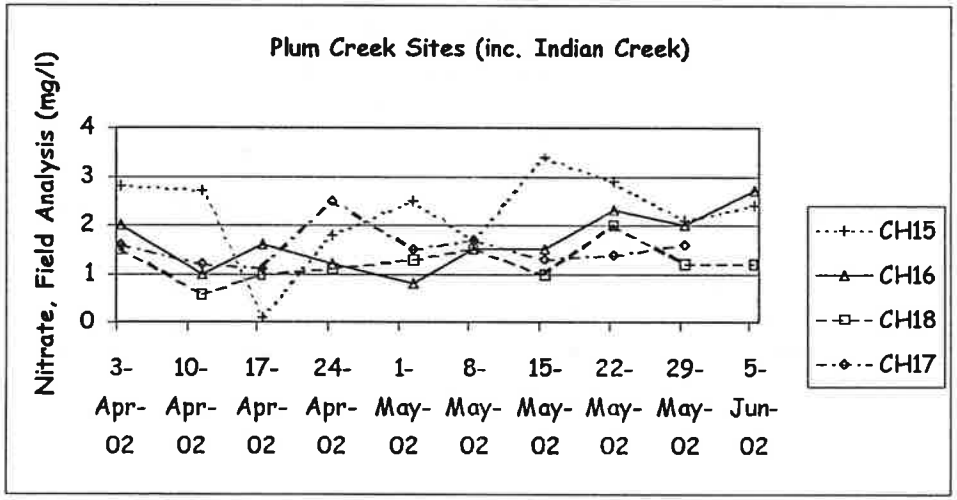


FIGURE 29
SCHEMATIC DIAGRAM OF PLUM CREEK AND TRIBUTARY BASIN-WIDE SCREENING SURVEY SITES







CHATFIELD RESERVOIR

FIGURE 30

SUMMARY OF NITRATE DATA FOR PLUM CREEK AND TRIBUTARY SCREENING SURVEY SITES, APRIL - JUNE, 2002

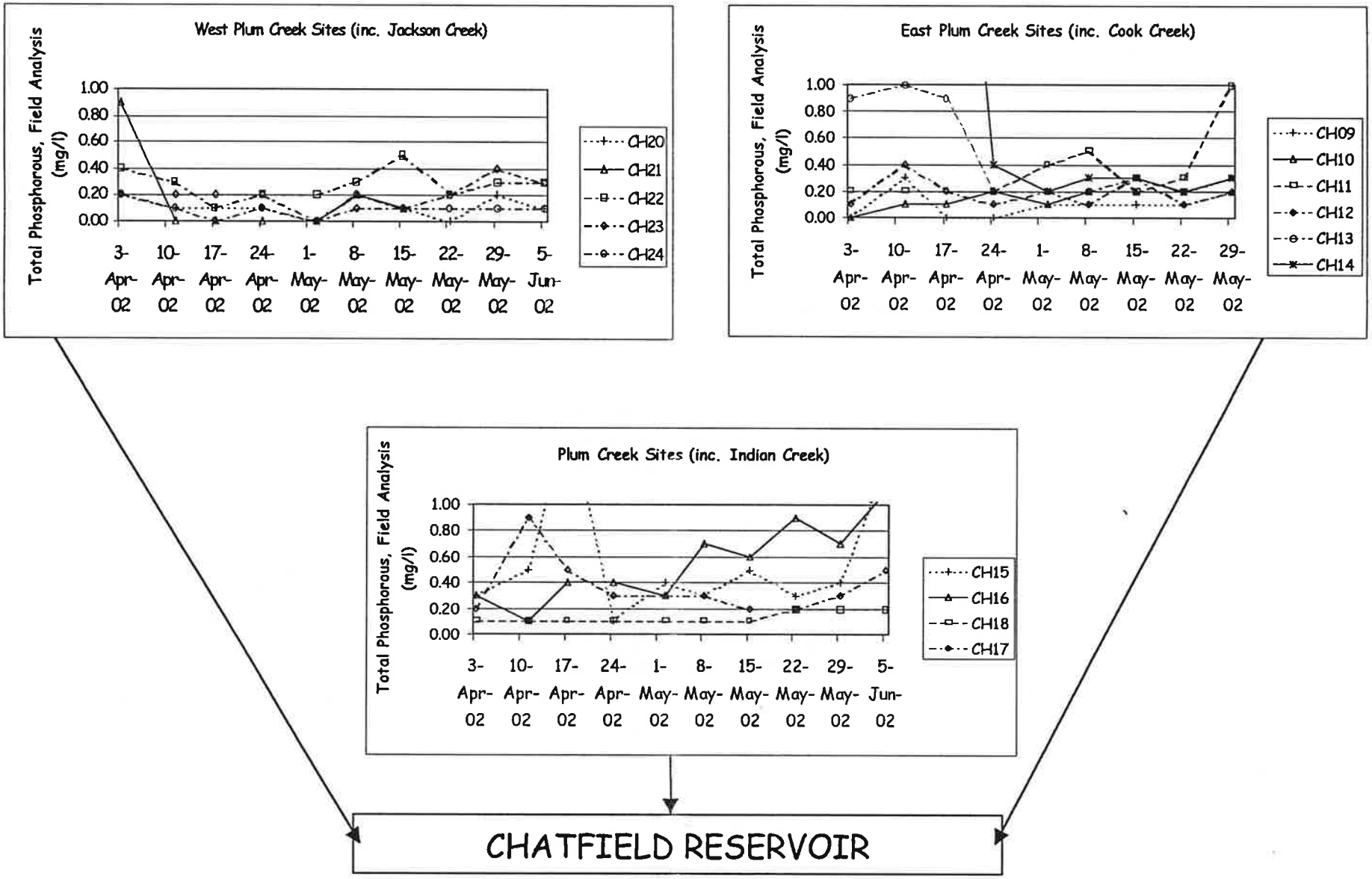


FIGURE 31
SUMMARY OF TOTAL PHOSPHORUS DATA FOR PLUM CREEK AND TRIBUTARY SCREENING SURVEY SITES, APRIL – JUNE, 2002

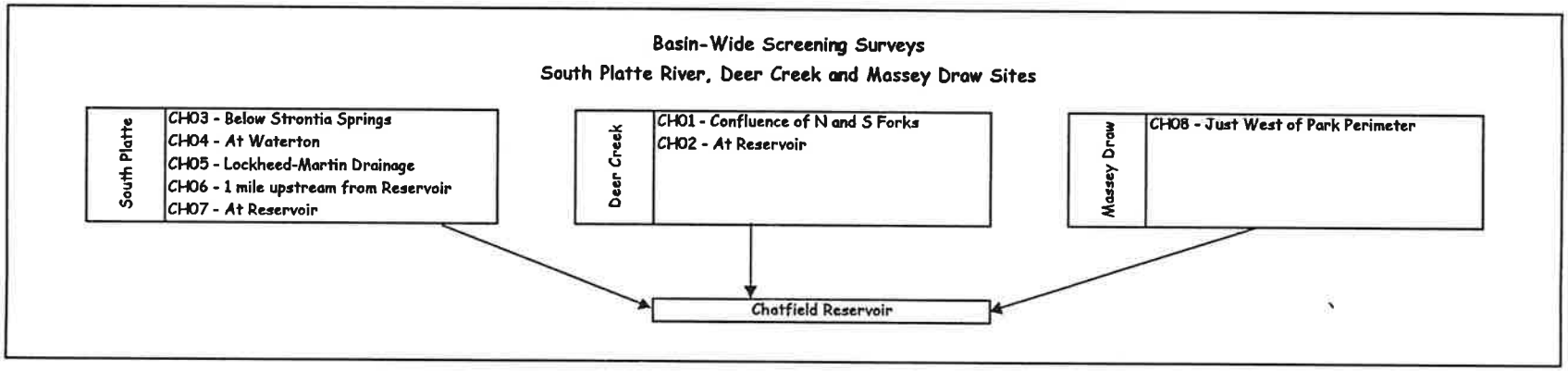


FIGURE 32

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

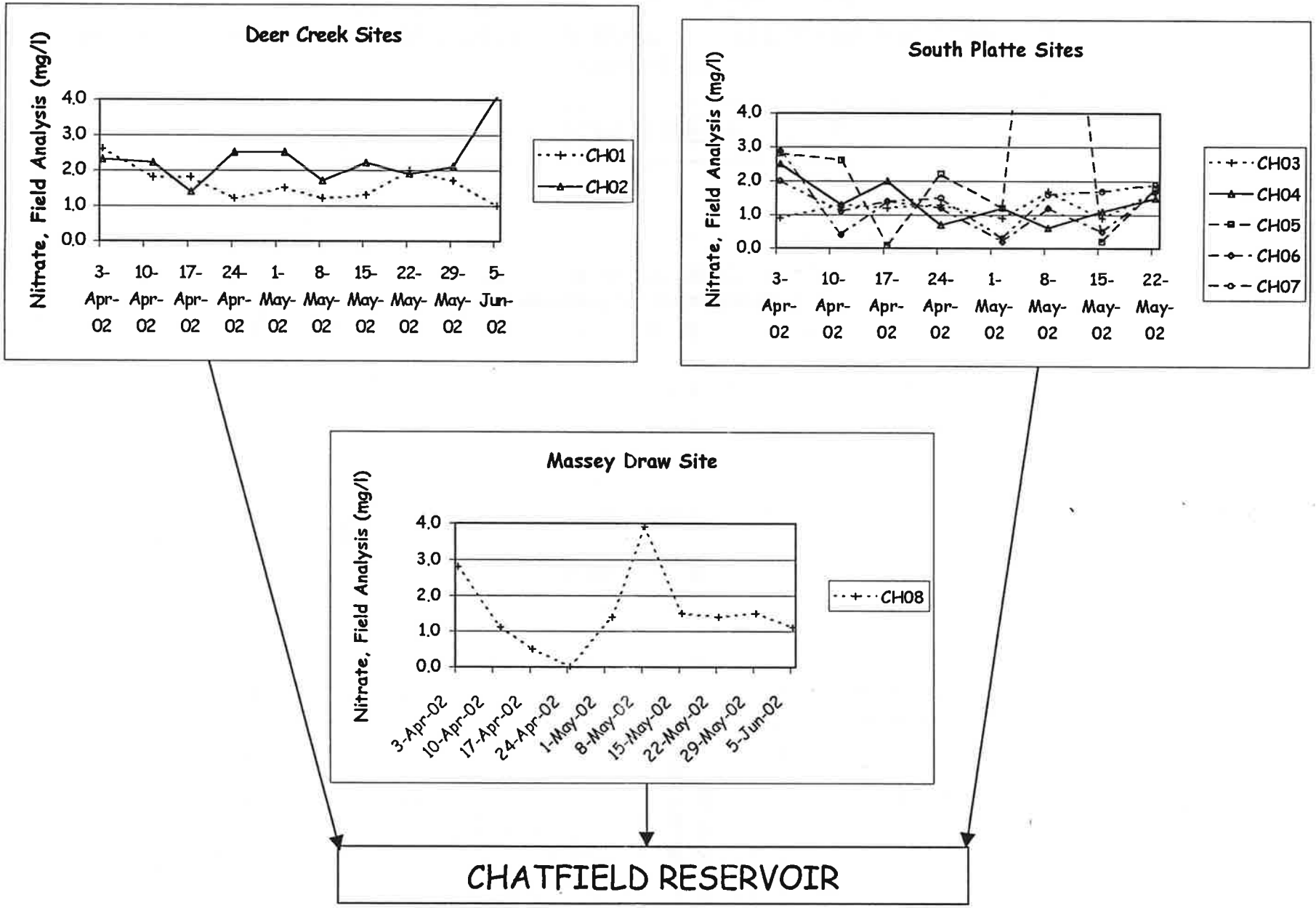


FIGURE 33
SUMMARY OF NITRATE DATA FOR SOUTH PLATTE RIVER, DEER CREEK, AND MASSEY DRAW SCREENING SURVEY SITES, APRIL – JUNE, 2002

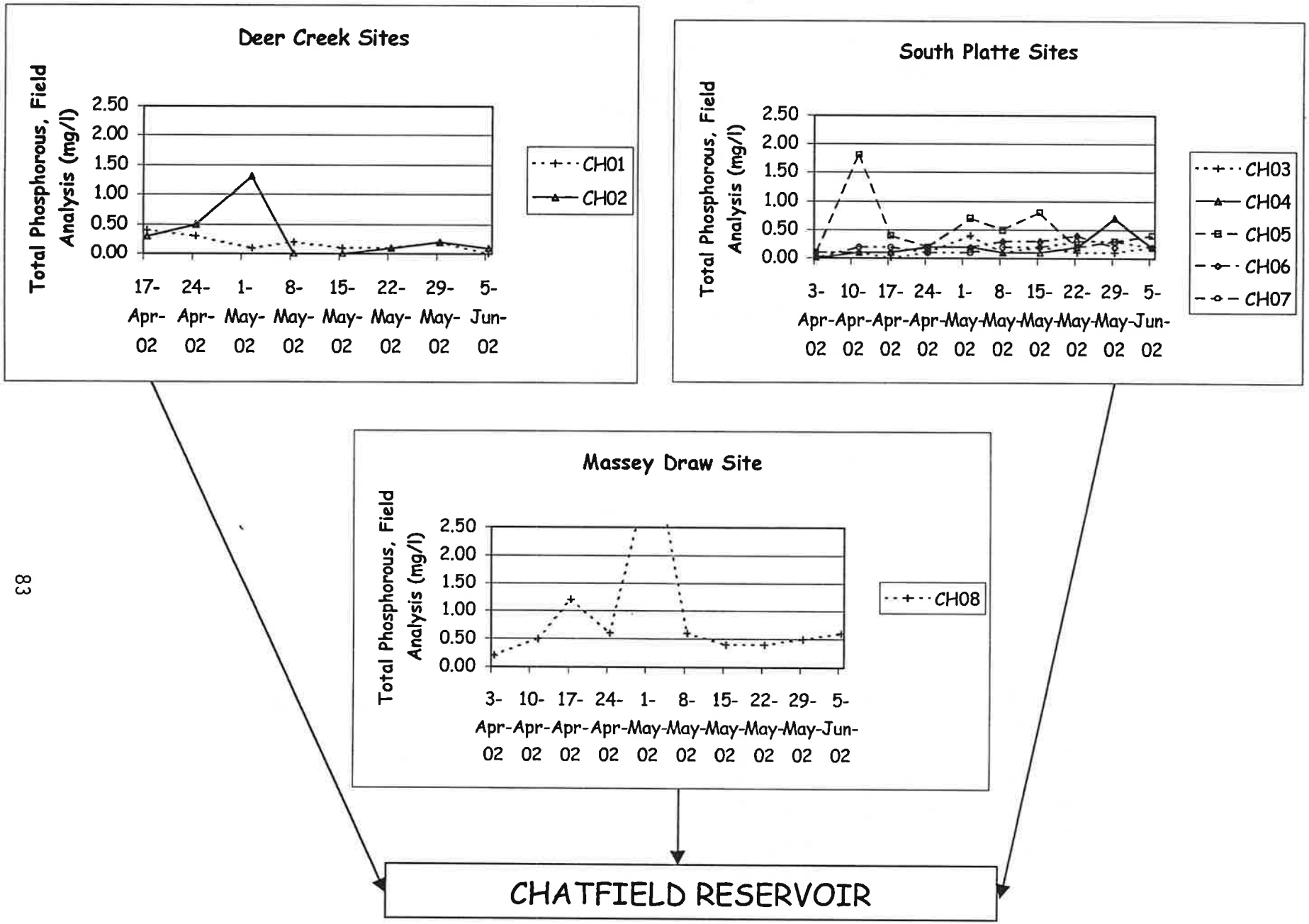


FIGURE 34
SUMMARY OF TOTAL PHOSPHOROUS DATA FOR SOUTH PLATTE RIVER, DEER CREEK, AND MASSEY DRAW SCREENING SURVEY SITES, APRIL - JUNE, 2002

ATTACHEMENT A
ANALYTICAL METHODS AND UNITS

Acronym	Characteristic	Units	Sample	Value Type	Statistic Type	Analytical Procedure
As(tot)	Arsenic, total	mg/l	Total	Actual	N/A	M206.2 GFAA
Bicarb	Bicarbonate as CaCO3	mg/l	Total	Actual	N/A	M310.1
BOD5	Biological Oxygen Demand (5 da	mg/l	Total	Actual	N/A	M405.1
Cd(diss)	Cadmium, dissolved	mg/l	Dissolved	Actual	N/A	M200.7 ICP
Cd(tot)	Cadmium, total (3050)	mg/Kg	Total	Actual	N/A	M6010B ICP
Ca(diss)	Calcium, dissolved	mg/l	Dissolved	Actual	N/A	M200.7, ICP
C(TOC)	Carbon, total organic (TOC)	%	Total	Actual	N/A	ASA No.9 29-2.2.4 Co
CO3	Carbonate as CaCO3	mg/l	Total	Actual	N/A	M310.1
CHLORa	Chlorophyll a	mg/m3	Total	Actual	N/A	
Clay	Clay	%	Total	Actual	N/A	ASTM D 422 Hydromete
COLFEC	Coliform, Fecal	(colonies/100ml)	Total	Actual	N/A	9222 B,D
Cond	Conductivity	ms/cm	Total	Actual	N/A	Horriba U-10
LabCond	Conductivity @25C	umhos/cm	Total	Actual	N/A	M120.1 - Meter
Cu(diss)	Copper, dissolved	mg/l	Dissolved	Actual	N/A	M200.7 ICP
Cu(tot)	Copper, total (3050)	mg/Kg	Total	Actual	N/A	M6010B ICP
Cyanide	Cyanide, WAD	mg/l	Total	Actual	N/A	SM4500-CN
Flow-est	Estimated instantaneous flow	cfs	N/A	Estimated	N/A	visual estimation
Hardness	Hardness as CaCO3	mg/l	Total	Calculated	N/A	SM2340B - Calculation
Cr(hex)	Hexavalent Chromium	mg/l	Total	Actual	N/A	3500 CR-D
Hydroxid	Hydroxide as CaCO3	mg/l	Total	Actual	N/A	M310.1
Flow	Instantaneous Streamflow	cfs	N/A	Actual	N/A	N/A
Fe(diss)	Iron, dissolved	mg/L	Dissolved	Actual	N/A	M200.7 ICP
Pb(diss)	Lead, dissolved	mg/l	Dissolved	Actual	N/A	M200.7 ICP
Pb(tot)	Lead, total (3050)	mg/Kg	Total	Actual	N/A	M6010B ICP
Mg(diss)	Magnesium, dissolved	mg/l	Dissolved	Actual	N/A	M200.7 ICP
Mn(diss)	Manganese, dissolved	mg/L	Dissolved	Actual	N/A	M200.7 ICP
Hg(diss)	Mercury, dissolved	mg/l	Dissolved	Actual	N/A	M245.1 CVAA
Hg(tot)	Mercury, total	mg/Kg	Total	Actual	N/A	M7471 CVAA
Ni(diss)	Nickel, dissolved	mg/L	Dissolved	Actual	N/A	M200.7 ICP
NO3(N)	Nitrate as N, dissolved	mg/l	Dissolved	Calculated	N/A	Calc: NO3NO2 minus NO2

NO3 Fld	Nitrate, field measurement	mg/l	Total	Actual	N/A	Hach 8039
NO3NO2	Nitrate/Nitrite as N, dissolve	mg/l	Dissolved	Actual	N/A	M353.2 - Automated
NO2(N)	Nitrite as N, dissolved	mg/l	Dissolved	Actual	N/A	M353.2 - Automated
N(NH3)	Nitrogen, ammonia	mg/l	Total	Actual	N/A	M350.1 - Automated
N total	Nitrogen, total	mg/l	Total	Actual	N/A	Persulfate digestion
DO	Oxygen, dissolved	mg/l	Total	Actual	N/A	Horriba U-10
pH	pH	standard units	Total	Actual	N/A	Horriba U-10
P4(diss)	Phosphorus, ortho dissolved	mg/L	Dissolved	Actual	N/A	M365.1 - Automated A
P4(tot)	Phosphorus, ortho total	mg/l	Total	Actual	N/A	M365.1 - Automated
P(total)	Phosphorus, total	mg/l	Total	Actual	N/A	M365.1 - Auto Ascorbic
Phyto	Phytoplankton	organisms/ml	Total	Actual	N/A	
TSS	Residue, Non-Filterable (TSS)	mg/l	Non-filterable	Actual	N/A	M160.2-Gravimetric
Depth	Sampling depth	m	N/A	Actual	N/A	
Sand	Sand	%	Total	Actual	N/A	ASTM D 422 Hydromete
Secchi	Secchi depth	m	N/A	Actual	N/A	Secchi
Se(diss)	Selenium, dissolved	mg/l	Dissolved	Actual	N/A	SM3500-Se C, AA-Hydride
Se(tot)	Selenium, total (3050)	mg/Kg	N/A	N/A	N/A	M7742 Modified, AA-H
Silt	Silt	%	Total	Actual	N/A	ASTM D 422 Hydromete
Ag(diss)	Silver, dissolved	mg/L	Dissolved	Actual	N/A	M200.7 ICP
PercSol	Solids, Percent	%	Total	Actual	N/A	CLPSOW390, PART F, D
Temp	Temperature	C	Total	Actual	N/A	Horriba U-10
TxtClass	Texture Classification	UNKNOWN	N/A	Actual	N/A	ASTM D 422 Hydromete
Time	Time	hours/minutes	N/A	N/A	N/A	
TotAlk	Total Alkalinity	mg/l	Total	Actual	N/A	M310.1
Cr(tot)	Total Chromium	mg/l	Total	Actual	N/A	200.7
T Depth	Total Depth	m	N/A	Actual	N/A	
P Field	Total Phosphorous, field	mg/l	Total	Actual	N/A	Hach 8048
Cr(tri)	Trivalent Chromium	mg/l	Total	Actual	N/A	3500 CR-D
Zn(diss)	Zinc, dissolved	mg/L	Dissolved	Actual	N/A	M200.7 ICP
Zooplank	Zooplankton	organisms/ml	Total	Actual	N/A	