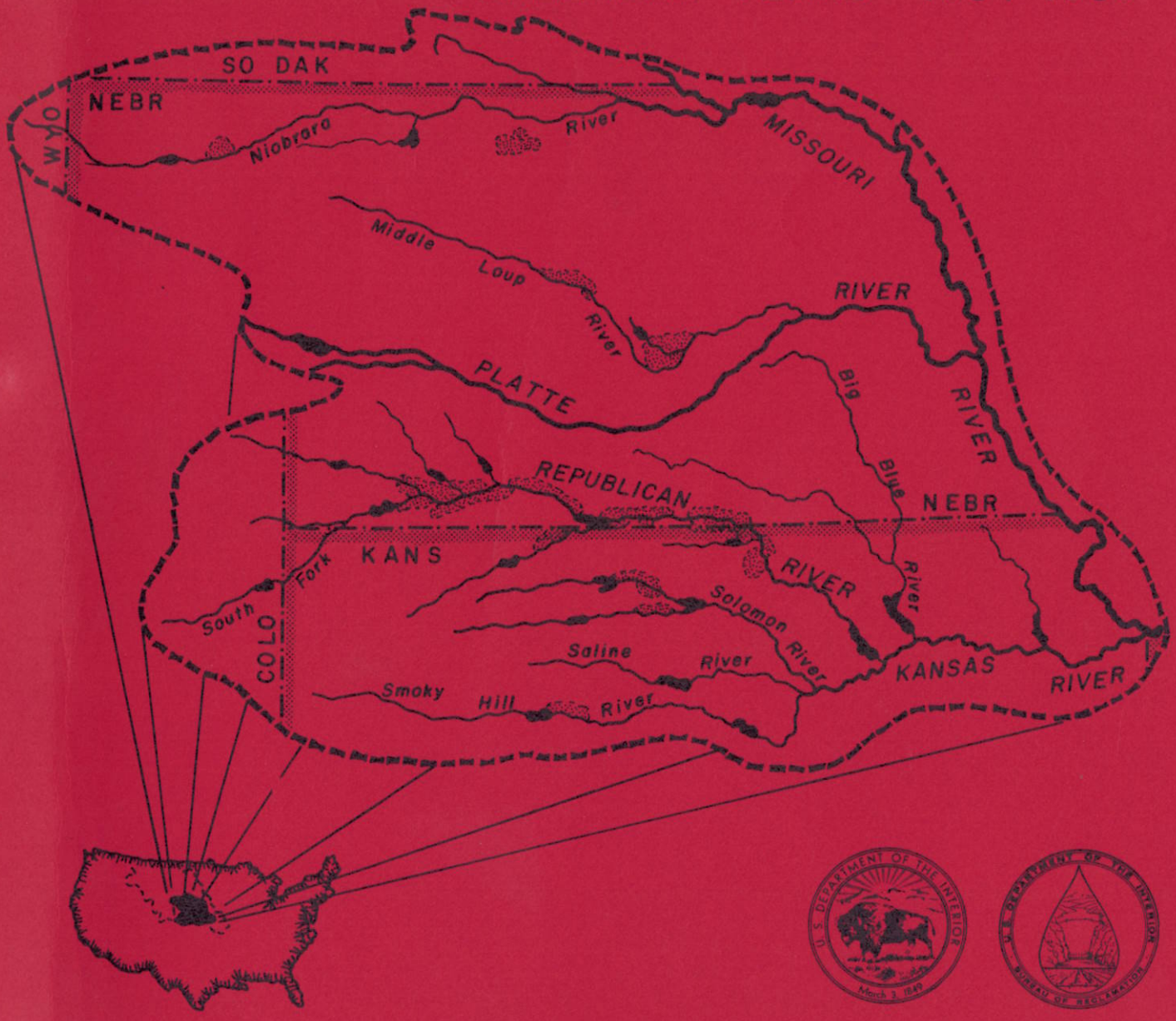
ANNUAL OPERATING PLAN

NIOBRARA, LOWER PLATTE, AND KANSAS RIVER BASINS

CALENDAR YEARS - 1984-1985



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Department of the Interior

BUREAU OF RECLAMATION

Lower Missouri Region • Denver, Colorado

ANNUAL OPERATING PLAN

NIOBRARA LOWER PLATTE AND KANSAS RIVER BASINS

CALENDAR YEAR OPERATIONS-1983

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SYNOPSIS

General

This year is the thirty-first consecutive year that an Annual Operating Plan (AOP) has been prepared for the federally owned dams and reservoirs serving an irrigation function in the Niobrara, Lower Platte, and Kansas River Basins. The 15 dams and reservoirs are located in Colorado, Nebraska, and Kansas. These reservoirs, together with 10 diversion dams, 10 pumping plants, and 22 canal systems, serve approximately 271,000 acres of project lands in Nebraska and Kansas. In addition to irrigation, municipal, and industrial water, these features serve flood control, recreation, and fish and wildlife purposes. A map in the appendix of this report shows the location of these features. The reservoirs in the Niobrara and Lower Platte River Basins are operated by either irrigation or reclamation districts, and the reservoirs in the Kansas River Basin are operated by either the Bureau of Reclamation (Bureau), State of Colorado, or the Corps of Engineers. The diversion dams, pumping plants, and canal systems are operated by either irrigation or reclamation districts.

A Programmable Master-Station Supervisory Control System is used to assist in operational management of all eleven dams under the Bureau's jurisdiction that are located in the Kansas River Basin.

The Headlines 83 that follows this synopsis is indicative of the awareness of the local people of the natural resource development and conservation in the Niobrara, Lower Platte, and Kansas River Basins.

1983 Summary

Climatic Conditions

The total precipitation over the operating area during 1983 ranged from 63 percent of normal at Cedar Bluff Reservoir to 161 percent of normal at Merritt Reservoir. The temperatures were generally slightly below normal during the early part of the growing season and above normal in the summer.

Storage Reservoirs

1. Conservation Operations. The 1983 inflows were below the dry-year forecast at Bonny, Cedar Bluff, Enders, Kirwin, and Webster Reservoirs and Keith Sebelius Lake. Hugh Butler, Harry Strunk, Swanson, and Waconda Lakes and Lovewell Reservoir had inflows between the dry- and normal-year forecasts. Box Butte and Sherman Reservoirs and Harlan County Lake had inflows between normal- and wet-year forecasts. Merritt Reservoir had inflows above the wet-year forecast.

The following table shows a comparison of 1982 and 1983 carryover storage for all reservoirs in the Niobrara, Lower Platte, and Kansas River Basins.

Reservoir	RESERVOIR DATA SEPTEMBER 30 1982 Elevation (feet)	1982 Storage (acre-ft)	1983 Elevation (feet)	1983 Storage (acre-ft)	Conserv. Capacity Elevation (feet)	Conserv. Capacity Storage (acre-ft)
Box Butte	3982.52	5,031	3986.96	7,826	4007.00	31,060
Merritt	2937.30	52,109	2939.00	56,005	2946.00	74,486
Sherman	2157.60	56,424	2156.50	53,698	2162.30	69,076
Bonny	3669.64	36,707	3668.87	35,264	3672.00	41,340
Enders	3093.96	19,654	3090.48	16,273	3112.30	44,480
Swanson	2748.33	102,680	2741.30	72,750	2752.00	112,214*
Hugh Butler	2573.30	25,664	2573.55	25,972	2581.80	37,776
Harry Strunk	2361.71	29,676	2356.03	20,831	2366.10	35,705
Keith Sebelius	2277.36	3,721	2279.33	4,685	2304.30	35,935
Harlan County	1943.15	291,528	1939.63	251,545	1946.00	327,639
Lovewell	1573.59	20,150	1578.08	29,670	1582.60	41,690
Kirwin	1700.95	14,445	1697.16	9,945	1729.25	99,435
Webster	1869.97	18,052	1861.61	6,851	1892.45	77,371
Waconda	1453.40	214,758	1452.35	202,756	1455.60	241,460
Cedar Bluff	2104.37	28,543	2101.30	23,080	2144.00	185,090

* Swanson Lake data revised and placed in use January 1, 1984.

2. Flood Control Operations. The total 1983 flood control benefits accrued by the operation of the Nebraska-Kansas Projects dams was $2,747,000. The accumulative total of flood control benefits for the years 1951 through 1983 by facilities in this report total $48,623,000 (see table 5). To date no benefits have been accrued by the operation of Box Butte, Merritt, or Sherman Dams.

Water Service

There were 427,366 acre-feet of water diverted to irrigate 169,828 acres of project lands in 11 of the 13 irrigation districts (see tables 3 and 6). The project water supply was inadequate for 65,250 acres of the total project lands. This includes lands in Mirage Flats, Frenchman Valley, H&RW, Almena, Kirwin, Webster, and Cedar Bluff Irrigation Districts. No project water was available for delivery to Almena and Cedar Bluff Irrigation Districts. The project water supplies for the other units mentioned in this report were adequate in 1983.

The Payment-In-Kind (PIK) Program had a significant impact on the acreage planted to corn in 1983. The 1983 acreages were reduced by approximately 27 percent from the previous 10-year average in the districts with a continuous water supply. The reductions in the districts varied from 18 to 41 percent.

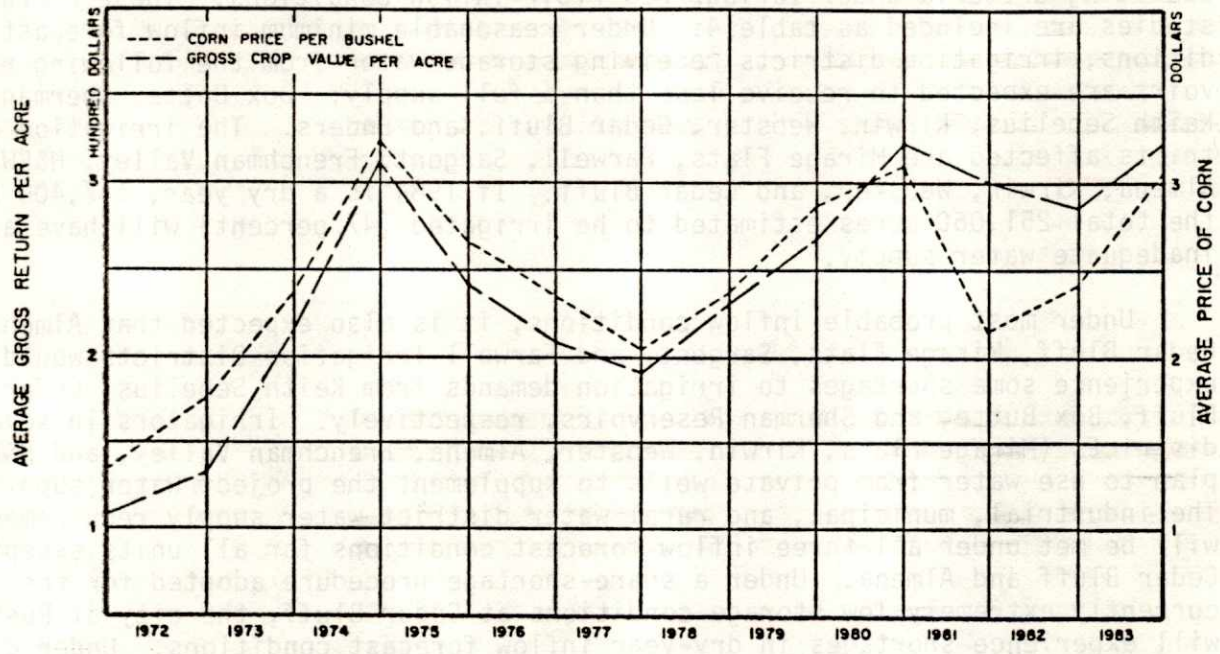
The water requirements of three municipalities, one rural water district, two industrial companies, and a federal fish hatchery were furnished from storage releases or natural flows.

Under a long-term contract with the Bureau for use of the Arcadia Diversion Dam, the Middle Loup Public Power and Irrigation District diverted 27,769 acre-feet to irrigate 14,395 acres of non-project lands. These diversions were made under natural flow water rights granted by the State of Nebraska.

Irrigation Production

The 1983 crop yields from lands receiving project water were lower than 1982 for all units except Mirage Flats and Sargent. Corn, the principal crop, decreased from an average of 112 bushels per acre to about 111 bushels per acre. Unit prices for all commodities were generally higher than those in 1982. The average gross crop value per acre increased from $283.20 to $322.45 during 1983. Figure 1 is a graph which compares corn prices with the gross crop value per acre.

Figure 1. COMPARISON OF PRICE OF CORN WITH GROSS CROP VALUE PER ACRE



The following table shows a comparison of corn yields for each irrigation district.

Irrigation District	Corn Yield (bu/acre) 1982	1983
Ainsworth	128	103
Mirage Flats	56	117
Sargent	106	112
Farwell	116	106
Frenchman Valley	126	123
H&RW	123	121
Frenchman-Cambridge	132	113
Bostwick in Nebraska	117	106
Kansas-Bostwick	108	106
Kirwin	*	107
Webster	*	102
Cedar Bluff	*	*
Almena	*	*
Average of Districts reporting	112	111

* No project water supplied; not included in averages.

Fish and Wildlife and Recreation Benefits

During the early part of the 1983 season, normal reservoir operations were favorable for recreation and fish and wildlife uses. Late in the season, irrigation operations lowered reservoir levels at some reservoirs, thereby limiting the recreation benefits.

1984 Outlook

Three detailed studies have been developed for each of the reservoirs in the Niobrara, Lower Platte, and Kansas River Basins conforming with established operating criteria under various reservoir inflow conditions. These operation studies are included as table 4. Under reasonable minimum inflow forecast conditions, irrigation districts receiving storage water from the following reservoirs are expected to receive less than a full supply: Box Butte, Sherman, Keith Sebelius, Kirwin, Webster, Cedar Bluff, and Enders. The irrigation districts affected are Mirage Flats, Farwell, Sargent, Frenchman Valley, H&RW, Almena, Kirwin, Webster, and Cedar Bluff. If 1984 is a dry year, 117,400 of the total 251,060 acres estimated to be irrigated (47 percent) will have an inadequate water supply.

Under most probable inflow conditions, it is also expected that Almena, Cedar Bluff, Mirage Flats, Sargent, and Farwell Irrigation Districts would experience some shortages to irrigation demands from Keith Sebelius, Cedar Bluff, Box Butte, and Sherman Reservoirs, respectively. Irrigators in several districts (Mirage Flats, Kirwin, Webster, Almena, Frenchman Valley, and H&RW) plan to use water from private wells to supplement the project water supply. The industrial, municipal, and rural water district water supply requirements will be met under all three inflow forecast conditions for all units except Cedar Bluff and Almena. Under a share-shortage procedure adopted for the currently extremely low storage conditions at Cedar Bluff, the city of Russell will experience shortages in dry-year inflow forecast conditions. Under dry-year conditions, the city of Norton will not receive a full water supply.

During 1984, under all inflow forecast conditions, storage water will be in excess of project needs at Bonny Reservoir and Waconda Lake. The State of Colorado will make Bonny storage water available to downstream water right appropriators. The Bureau will also make Waconda Lake storage water available under temporary water service contracts.

Even under reasonable minimum inflow conditions, the conservation pools at Merritt, Sherman, and Lovewell Reservoirs and Harry Strunk Lake will fill during 1984. Bonny Reservoir and Swanson, Harlan County and Waconda Lakes will also fill under most probable inflow conditions.

Even with low reservoir levels and inadequate water supplies for some project lands, the recommendations of various state agencies will be considered. As in the past, irrigation and reclamation districts will advise state agencies regarding aquatic weed control and canal operations. The Bureau will continue to operate the reservoirs and other facilities under its jurisdiction in the best interests of all project functions and for the optimum public benefit.

HEADLINES 83

Irrigators Expect Adequate Water Supply

H&RW Charges Bill Reintroduced

Water Task Force Told To Avoid Bitter Fighting

Water Transfer May Be Reviewed

Hot, Dry August Drops Area Reservoir Levels

Reagan's Policy: Water Shortages A Local Concern

State's River Irrigators Generally Faring Well

State Official: Water Plan Has Arrived at Crossroad

Bureau, Corps Releasing Water from Reservoirs

Irrigation Drops Water Levels

Managing Of Water Is Lauded

Cooperative Efforts Urged In Solving Water Problems

Summer Drought May Whet Votes For Water Bills

McCOOK DAILY GAZETTE

Water Levels Decrease At All Area Reservoirs

For Holiday Weekend

Area Recreation Centers Report Record Crowds

Governor Says Water One of Top 3 Priorities

Hearing Empty On Water Rules

Experts Say Irrigation Surge Limited Only by Conditions

Study Suggests U.S. Water Role to Shrink

Irrigators, Bureau Hold Negotiations

Water Policy Is Urged

Study Sees Significant Depletion of Streams

Work on Lovewell Lake Dam Face Now Complete

Rain Finally Ends 25-Day Dry Spell

Study Says Irrigators, Wildlife Can Share Platte

Water Legislation Tops Items Before Unicameral

Flooding Threatened As Rain Strikes Harlan

Water Higher At Reservoirs

Corn Trigger Price Reached

Rain Slows Harvest Of Wheat

Frigid Weather and Snow Continues to Take Toll

State Committee Seeks Ways For Developing Water Projects

Rep. River Compact To Meet in McCook

Up to Five Inches of Rain Falls

Heavy Rains Feed Swollen Rivers

CHAPTER I - INTRODUCTION

Purpose of This Report

This AOP advises water users, cooperating agencies, and other interested groups or persons of the actual operations during 1983 and serves as a guideline for the 1984 operations. This report also describes the responsibilities of the Bureau, Corps of Engineers, and the irrigation and reclamation districts in the Niobrara, Lower Platte and Kansas River Basins.

Operational Responsibilities

The Bureau is responsible for irrigation operations at all Federal reservoirs in the Nebraska-Kansas Projects area. The Bureau is also responsible for the operation and maintenance, safety of the structure, and reservoir operations not specifically associated with regulation of the flood control storage at the reservoirs constructed by the Bureau. In addition to irrigation and flood control, these reservoirs provide recreation, fish and wildlife, municipal, and industrial benefits.

By contractual arrangements with the Bureau, the irrigation or reclamation districts in the Niobrara, Lower Platte, and Kansas River Basins are responsible for the operation and maintenance of the canals and irrigation distribution facilities constructed or rehabilitated by the Bureau. In addition, the appropriate irrigation or reclamation districts are responsible for operating and maintaining Box Butte, Merritt, and Sherman Reservoirs. The Corps of Engineers operates and maintains Harlan County Dam and Lake. The State of Colorado provides operational guidelines for Bonny Reservoir. The Bureau operates and maintains 11 dams and reservoirs in the Republican, Solomon, and Smoky Hill River Basins.

The states of Nebraska, Colorado, and Kansas are responsible for the administration and enforcement of the laws of their respective states pertaining to the water rights and priorities of all parties concerned with the use of water.

The Bureau cooperates with all state agencies and compact commissions to ensure that all operations are in compliance with state laws and compact requirements.

Tables and Exhibits

Records for the facilities reported in this AOP are included as tables and exhibits and are located in the appendix.

Water Supply

For forecasting purposes, values of annual inflows that will be statistically equalled or exceeded 10, 50, and 90 percent of the time were selected from the probability curve to be reasonable maximum (wet year), most probable (normal year), and reasonable minimum (dry year) inflow conditions, respectively.

Inflow records from 1956 through 1980 were used for the analysis.

Reservoir Operations

All operations are scheduled for optimum benefits of the authorized project functions. Monthly, or as often as runoff and weather conditions dictate, the Bureau evaluates the carryover storage and estimated inflow at each reservoir to determine whether excess water is anticipated. If excess inflow is apparent, controlled releases will be made to maximize the downstream benefits, including flood control.

Major Features

The Mirage Flats Project was constructed under the Water Conservation and Utilization Act and includes an irrigation storage reservoir, diversion dam, and canal system. The other features discussed in this report are a part of the Pick-Sloan Missouri Basin Program and include multipurpose reservoirs, diversion dams, pump stations, and canal systems. The 15 storage facilities now in operation are listed below.

Constructed by the Bureau

1. Operated by irrigation or reclamation districts--Box Butte and Merritt Dam in the Niobrara River Basin and Sherman Dam in the Lower Platte River Basin.

2. Operated by the Bureau--Bonny, Trenton, Enders, Red Willow, Medicine Creek, Norton, Lovewell, Kirwin, Webster, Glen Elder, and Cedar Bluff Dams in the Kansas River Basin.

Constructed and Operated by the Corps of Engineers

1. Harlan County Dam in the Kansas River Basin.

Irrigation and Reclamation Districts

Thirteen irrigation districts and one reclamation district in the Niobrara, Lower Platte, and Kansas River Basins have contracted with the Bureau for water supply and irrigation facilities. The Sargent and Farwell Irrigation Districts have contracted their operation and maintenance responsibilities to the Loup Basin Reclamation District.

The contracted irrigation season for the Mirage Flats Irrigation District is April through September. The contracted irrigation season for Frenchman Valley, H&RW, Frenchman-Cambridge, and Cedar Bluff Irrigation Districts is from May 1 through October 15. For all other districts, the contracted irrigation season is from May 1 through September 30.

Municipal and Industrial Water

Three municipalities, one oil company, and one rural water district have executed water service contracts for full or supplemental water supplies.

Fish and Wildlife

The Fish and Wildlife Service discontinued the operation of a warm-water fish hatchery below Cedar Bluff Reservoir on March 31, 1983. The State of Kansas is presently using the facility for their operation in the Cedar Bluff area.

State of Colorado Division of Wildlife

The Division of Wildlife provides operational guidelines for Bonny Reservoir. The entire conservation pool storage was purchased on June 24, 1982.

Environmental Considerations

A "Statement of Operational Objectives" for Harlan County Lake sets forth the general operational objectives and the specific reservoir uses that are desirable. The operational objectives indicate that fish and wildlife interests are best served by high reservoir levels with minimum fluctuations and regulation of the outflow in excess of the minimum desired flows. Although the statement recognizes flood control and irrigation as primary purposes, it indicates that comprehensive operational plans should be developed for maximum integration of the secondary uses.

These objectives are also considered in the operation of all reservoirs in the Kansas River Basin, Merritt and Box Butte Reservoirs in the Niobrara River Basin, and Sherman Reservoir in the Lower Platte River Basin. The regulated outflow will also benefit farmers, ranchers, industries, cities, and other interests below the reservoirs.

Mirage Flats Project in Nebraska

General

The flow of the Niobrara River and Box Butte Reservoir storage provide a water supply for the 11,662-acre Mirage Flats Project. During the 10-year period from 1974 to 1983, the project water supply averaged 15,345 acre-feet, which is about 1.32 acre-foot per acre. This amount is 1.00 acre-foot per acre short of the average diversion requirement of 2.32 acre-feet per acre. The March 1965 report on the project estimated this amount to be necessary for a full water supply. Records of farm deliveries for several previous years indicate a gradual decline in project water supply. Many irrigators supplement their water supply by private wells.

The Mirage Flats Irrigation District cooperates with the Nebraska Game and Parks Commission by operating the Box Butte Dam outlet works gates and the Dunlap Diversion Dam gates in a manner to avoid sudden large changes in the flows of the Niobrara River.

1983 Summary

The flows of the Niobrara River plus the carryover storage in Box Butte Reservoir were not adequate to provide a full water supply for the project lands. The total precipitation in the Mirage Flats area was 19.72 inches, which is 129 percent of normal. The total inflow (22,019 acre-feet) was between the normal-year and the wet-year forecasts.

From July through September, diversions of 16,126 acre-feet to the Mirage Flats Canal provided irrigation water for 8,640 acres, 74 percent of the service available acreage. The farm deliveries from the project water supply were 7,608 acre-feet (0.88 acre-foot per acre), which is a delivery efficiency of 47 percent. Privately owned irrigation wells supplemented the project water supply. The gross crop value was $2,603,383, which is $1,544,438 more than the 1982 value.

1984 Outlook

The project water supply is expected to be inadequate in 1984 like it has been for the last several years. The water supply will be inadequate although there was approximately 5,500 acre-feet of carryover storage at the end of last irrigation season, and inflow has been between normal- and wet-year levels since the end of the 1983 irrigation season. In the spring, the district will announce to their water users the amount of water that will be available from storage in Box Butte Reservoir. However, the district plans for the irrigators to continue the use of water from privately owned irrigation wells as a supplemental supply. In 1984 11,000 acres are expected to be irrigated.

Ainsworth Unit, Sandhills Division in Nebraska

General

Within the Ainsworth Irrigation District, there are 34,539 acres with service available. The project water supply is provided by storage of Snake River flows in Merritt Reservoir. The reservoir is filled each fall after the irrigation season to elevation 2944.0 feet. This level is approximately 2 feet below the top of conservation capacity. The reservoir is regulated to maintain this level until the ice clears each spring and then slowly filled. This operation greatly enhances the spring fish spawn. Although not required by law, releases up to 15 ft^3/s are made into the Snake River below Merritt Dam for fish, wildlife, and recreational purposes.

The basic water supply for the district is 63,712 acre-feet. If available, additional water can be purchased by the district as a supplemental supply.

1983 Summary

Precipitation, as recorded near Merritt Dam, totaled 28.22 inches of rainfall, which was 161 percent of normal. The water supply was more than adequate to meet the project's irrigation requirement. There were 48,459 acre-feet diverted from Merritt Reservoir into the Ainsworth Canal, with 29,580 acre-feet delivered to the farm headgates (delivery efficiency of 61 percent). There were 25,488 acres of land irrigated in 1983. The gross crop value was $7,949,810, which is $3,300,058 less than the previous year.

The district executed several temporary water service contracts which provided a total of 84.52 acre-feet of irrigation water from holding ponds located within the district's service area.

1984 Outlook

Merritt Reservoir will be regulated to maintain an elevation 2.0 feet below the top of conservation capacity during the 1983-84 winter months.

In 1983-1984 winter months and future years, the reservoir will be regulated to maintain elevation 2944.0 feet. This elevation is within the newly repaired area. Holding the reservoir at this elevation during the winter will help avoid ice damage to the older existing soil cement at lower elevations.

Releases from Merritt Reservoir will be regulated to slowly fill the conservation capacity during the spring months. The water supply is expected to be adequate in 1984 for the irrigation of 34,000 acres.

Sargent Unit, Middle Loup Division in Nebraska

General

The Sargent Irrigation District has contracted with the Loup Basin Reclamation District for the operation and maintenance of the Milburn Diversion Dam and

the Sargent Canal system which serves 13,363 acres. The water supply is diverted from the Middle Loup River into the Sargent Canal under an appropriated natural flow water right from the State of Nebraska. These diversions may exceed the natural flow water appropriation of 198 ft^3/s by an exchange of storage from Sherman Reservoir, provided that water is available after all senior appropriations are satisfied, and the excess is not greater than the storage releases from Sherman Reservoir.

1983 Summary

The precipitation over the Sargent Unit (24.22 inches at district headquarters) was 104 percent of normal. The irrigation diversions into the Sargent Canal totaled 24,793 acre-feet (12,529 acre-feet were delivered to the farm headgates--delivery efficiency 51 percent). The diversions exceeded the direct flow water right for 2 days prior to August 23, 1983. Between August 23 and November 4, flows from the Middle Loup River were diverted into Sargent Canal to aid in the repair of Milburn Diversion Dam. The records were adjusted by 22,576 acre-feet to account for the excess diversions. There were 7,363 acres irrigated and the gross crop value totaled $2,362,631, which is $685,982 less than in 1982. The irrigators grow corn as the principal crop, creating very high water demands in July and August. The demands cannot be met within canal capacity, so the district has instituted a rationing process through the peak period.

1984 Outlook

The Loup Basin Reclamation District estimates that 13,000 acres in the Sargent Unit will be irrigated in 1984. Under dry-year conditions, some shortages could occur. The Farwell and Sargent Irrigation Districts are required to share shortages in accordance with their contract.

Farwell Unit, Middle Loup Division in Nebraska

General

The Loup Basin Reclamation District operates and maintains the Arcadia Diversion Dam, Sherman Feeder Canal, Sherman Dam and Reservoir, and the Farwell Canal system, which serves 50,051 acres of land. Diversions are also made through the Arcadia Diversion Dam to 15,000 acres of non-project lands in the Middle Loup Public Power and Irrigation District under appropriated natural flow water rights.

During the winter months, Sherman Reservoir is normally regulated to 5 feet or more below the top of the conservation capacity. Doing so minimizes seepage from the reservoir into the groundwater table. Maintenance of the pool below the top of conservation provides time for seeding of exposed shore areas. This seeding prevents wind erosion. It also provides winter food and cover for wildlife and spawning habitat for fish in the spring when these areas are inundated. Each spring, diversions into Sherman Feeder Canal from the Middle Loup River are regulated to fill the conservation capacity of Sherman Reservoir by mid-June. The gradually rising water surface in spring is desirable for fish spawning.

Whenever the flows in the Middle Loup River at Arcadia, Nebraska, exceed 6,000 ft^3/s, flows will be diverted through Sherman Feeder Canal into Sherman Reservoir. Flood control benefits can be accrued to Sherman Reservoir by such operations.

1983 Summary

The diversions from the Middle Loup River at Arcadia Diversion Dam were 27,769 acre-feet to the Middle Loup Public Power and Irrigation District and 107,310 acre-feet into the Sherman Feeder Canal.

Sherman Feeder Canal diversions into Sherman Reservoir were started on April 20, and the conservation capacity was filled on June 8. The precipitation at Sherman Dam was 23.10 inches, which is 111 percent of normal. Releases into the Farwell Canals totaled 77,431 acre-feet (41,748 acre-feet were delivered to the farm headgates--delivery efficiency 54 percent). The Farwell Irrigation District reported that 31,579 acres of land were irrigated in 1983. The gross crop value was $10,424,602, which is $2,739,384 less than in 1982. Sherman Feeder Canal was shut off October 10th.

The Farwell Irrigation District installed 6.2 miles of pipe to replace open lateral. This work was accomplished under the provisions of the D&MC contract.

1984 Outlook

Diversions from the Middle Loup River into the Sherman Feeder Canal are expected to start in the spring for the normal filling of the conservation capacity of Sherman Reservoir prior to the irrigation season.

Under normal- and dry-year inflow conditions, irrigation shortages are expected in 1984. These shortages are attributable to large irrigation requirements for corn production during the months of July and August. Farwell and Sargent Irrigation Districts are required to share shortages in accordance with their contract.

CHAPTER III - REPUBLICAN RIVER BASIN

Armel Unit, Upper Republican Division in Colorado

General

Normal reservoir operations for Bonny Reservoir are primarily for recreation and fish and wildlife support, although water will be available for water right administration, municipal, industrial, and irrigation purposes.

Bonny Reservoir storage is transferred as required to Swanson Lake where releases into the Republican River are regulated to meet the industrial needs of the AMOCO Production Company and Rex Monahan for their waterflood operations in the Sleepy Hollow Oil Field south of Bartley, Nebraska. The water service contract with AMOCO Production Company was terminated on April 4, 1983.

Bonny Reservoir inflows from the South Fork of the Republican River and Landsman Creek are released into Hale Ditch as requested by the Colorado State Engineer. The state will make Bonny storage water available to Hale Ditch and other natural flow appropriators under short-term water service contracts. Most of the 700 acres served by Hale Ditch are now owned and operated by the Colorado Department of Natural Resources' Division of Wildlife.

The normal operation pattern of Bonny Reservoir, with a slowly rising or stable pool, enhances fish spawning in the spring and affords excellent hunting conditions each fall.

1983 Summary

The 18.32 inches of precipitation during 1983 was 112 percent of normal. The inflow (16,560 acre-feet) to Bonny Reservoir was a little less than the dry-year forecast. Normal releases to maintain a constant water surface elevation during the icing season were made between January 6 and March 6. The reservoir reached the top of conservation on May 11, 1983. The water supply was adequate to furnish 91 acre-feet to AMOCO Production Company and 1 acre-foot to Rex Monahan. As directed by the Colorado Water Commissioner, 535 acre-feet of reservoir inflows from the South Fork of the Republican River and Landsman Creek were passed through Bonny Reservoir into Hale Ditch.

In cooperation with the Division of Wildlife, releases were made during September to draw the water surface elevation down to 3669.00 feet. This action was necessary to facilitate repair of a boat ramp. Releases were discontinued during the winter months to aid the Division of Wildlife in duck-trapping activities.

The Colorado Department of Natural Resources requested storage releases of 1,936 acre-feet for industrial or irrigation purposes.

1984 Outlook

Rex Monahan will have an adequate water supply in 1984. Water stored in Bonny Reservoir will also be available for sale to Hale Ditch and other private irrigators under short-term water service contracts executed with the state.

Releases will be made each winter to maintain a constant elevation during the period when the reservoir has ice along the face of the dam.

Frenchman Unit, Frenchman-Cambridge Division in Nebraska

General

The Culbertson Canal and the Culbertson Extension Canal systems serve 9,600 acres in the Frenchman Valley Irrigation District and 11,490 acres in the H&RW Irrigation District. The water supply for these lands is furnished by flows from Frenchman and Stinking Water Creeks and off-season storage in Enders Reservoir.

The normal operation of Enders Reservoir, with the gradual rise in water surface during the spring months, provides desirable fish spawning conditions. Irrigation releases will normally deplete the conservation storage by late summer, thereby limiting the fishing and recreational usage.

1983 Summary

The 16.20 inches of precipitation at Enders Dam was 86 percent of normal. The 1983 inflow into Enders Reservoir (30,110 acre-feet) was below the dry-year forecast. Due to extensive groundwater pumping above the reservoir, the inflow was only 50 percent of the average historical preconstruction runoff at the Enders damsite (60,700 acre-feet from 1929-1947). This year was the sixteenth consecutive year with below-normal inflows in which the conservation pool did not fill. A total of 3,006 acre-feet of water was conserved between the 1982 and 1983 irrigation seasons by pumping seepage back into the reservoir. Irrigation releases were stopped on September 14.

The farm delivery averaged about 1.12 acre-foot per acre for the two districts. Some farmers were able to supplement their project water supply from private irrigation wells. The Frenchman Valley Irrigation District reports that 5,560 acres received water in 1983, and the H&RW Irrigation District reports 7,513 acres, which are 58 and 65 percent, respectively, of the lands with service available. The gross crop value for Frenchman Valley Irrigation District was $1,926,569, which is a decrease of $408,503 from the previous year. The gross crop value for the H&RW Irrigation District was $2,578,607, which is a decrease of $139,787 from the previous year.

1984 Outlook

The fall and early winter inflows into Enders Reservoir were a little below the dry-year forecast. If reasonable minimum runoff conditions prevail,

the project water supply is expected to be inadequate to irrigate 9,000 acres in the Frenchman Valley Irrigation District and 10,400 acres in the H&RW Irrigation District. As much as 3,000 acre-feet are expected to be conserved by pumping seepage water back into the Enders Reservoir.

Meeker-Driftwood, Red Willow, and Cambridge Units, Frenchman-Cambridge Division in Nebraska

General

During the spring months, Swanson, Hugh Butler, and Harry Strunk Lakes normally have a rising or stable pool which enhances the spawning of northern pike and walleye. These lakes provide excellent opportunities for fishing, water sports, and recreation.

Service is provided for Frenchman-Cambridge Irrigation District by Meeker-Driftwood Canal to 16,476 acres; Red Willow Canal to 4,932 acres; Bartley Canal to 6,539 acres; and Cambridge Canal to 17,053 acres. The water supply for these lands is provided by storage in Swanson, Hugh Butler, and Harry Strunk Lakes, and flows of the Republican River and Red Willow and Medicine Creeks.

The revised area-capacity data for the May 1982 resurvey of Swanson Lake was placed in use January 1, 1984.

1983 Summary

The precipitation of 19.40 inches at Trenton Dam was slightly above normal. The inflow of 70,938 acre-feet to Swanson Lake was between dry- and normal-year forecasts. Since major maintenance work was scheduled for midsummer, releases were started January 18, 1983, to avoid encroachment in the flood pool in excess of 2 to 2½ feet. Releases varied between 50 ft^3/s and 240 ft^3/s. The reservoir reached the top of the conservation pool on March 15. Releases were scheduled so that the reservoir was at least a foot below the top of conservation on July 25. On July 25, work began on replacement of the cables on the spillway gates. This work was completed September 9. The maximum water surface elevation was 2754.13 feet, which was reached on June 18. At the beginning of the 1983 irrigation season (June 7), there was 120,050 acre-feet of water stored in Swanson Lake, which is 8,890 acre-feet above the top of conservation capacity. This storage, river flows, and the inflows furnished full water supplies to project lands served by the Meeker-Driftwood and Bartley Canal systems. The Frenchman-Cambridge Irrigation District diverted 30,304 acre-feet into Meeker-Driftwood Canal to irrigate 9,540 acres and 9,796 acre-feet into Bartley Canal for 6,056 acres.

The precipitation of 18.89 inches at Red Willow Dam was 96 percent of normal, while the inflow of 19,091 acre-feet into Hugh Butler Lake was between the dry- and normal-year forecast. The reservoir's conservation pool was filled on June 18, with the maximum water surface elevation of 2581.89 feet reached on June 20. The water supply was adequate to meet the diversion requirements for Red Willow Canal. The district diverted 7,832 acre-feet of water to irrigate 3,266 acres of land served by Red Willow Canal.

The precipitation of 20.70 inches was 108 percent of normal at Medicine Creek Dam, while the inflow of 39,795 acre-feet was slightly above the dry-year forecast. Releases began on December 17, 1982, when the water surface was approximately 1/2 foot below the uncontrolled spillway notch. This operational procedure avoids icing conditions on the spillway. The reservoir's conservation pool was filled on March 6. The maximum water surface of 2367.96 feet was reached on May 22. The water supply was adequate and 27,530 acre-feet of water was diverted to irrigate 12,665 acres of land served by the Cambridge Canal.

The Frenchman-Cambridge Rehabilitation and Betterment Program for placing laterals in pipe was continued during 1983. Pipe lateral installations on the Bartley and Red Willow Canal systems have been completed. Work is in progress on the Cambridge and Meeker-Driftwood Canal systems and 79 miles of pipe have been placed through 1983. The pipe lateral installations reduce system losses and the time required for operation and maintenance activities.

The 1983 gross crop value from the lands served by Meeker-Driftwood, Bartley, Red Willow, and Cambridge Canals was $10,924,627, which is $3,940,140 less than in 1982.

1984 Outlook

Forecasts show that carryover storage, streamflow gains, plus reasonable minimum inflows for the three lakes supplying the Frenchman-Cambridge Irrigation District is adequate to meet the full dry-year irrigation requirement.

It is estimated that 16,160 acres will be served from the Meeker-Driftwood Canal; 16,720 acres will be served from the Cambridge Canal; 4,790 acres will be served from the Red Willow Canal; and 6,290 acres will be served from the Bartley Canal.

No surplus storage is expected to be available for sale as a supplemental supply to non-project lands in 1984.

Almena Unit, Kanaska Division in Kansas

General

Service is available to 5,763 acres in the Almena Irrigation District. The project water supply is provided by Prairie Dog Creek flows and Keith Sebelius Lake storage.

The water service contract for the city of Norton, Kansas, provides for a maximum annual use of 1,600 acre-feet from Keith Sebelius Lake.

1983 Summary

The precipitation at Norton Dam was 27.25 inches, which is 134 percent of normal. The total inflow was 3,722 acre-feet, which is about 700 acre-feet less than the dry-year forecast. The district did not request any irrigation

releases from storage; however, the district used water from privately owned irrigation wells for the thirteenth consecutive year.

The city of Norton used 525 acre-feet of municipal water during 1983.

The maximum content of Keith Sebelius Lake was 6,116 acre-feet, which was reached on June 18, 1983.

1984 Outlook

The district expects to deliver water to 5,200 acres if an adequate water supply is available. If 1984 is a dry year without significant run-off producing storms above Keith Sebelius Lake, it is anticipated that no irrigation releases will be made. If normal inflow into the lake and normal rainfall over the irrigated area occur in 1984, a shortage of 3,800 acre-feet may be experienced.

Requirements for the city of Norton are expected to be met in full in 1984 under all forecast conditions except dry-year.

Franklin, Superior-Courtland, and Courtland Units, Bostwick Division in Nebraska and Kansas

General

Harlan County Lake storage and Republican River flows provide a project water supply for 22,787 acres in the Bostwick Irrigation District in Nebraska, and 12,771 acres in the Kansas-Bostwick Irrigation District No. 2 above Lovewell Reservoir. These flows, together with White Rock Creek flows and Lovewell Reservoir storage, furnished a water supply for 27,329 acres below Lovewell Reservoir in the Kansas-Bostwick Irrigation District.

The lands in the Franklin and Superior-Courtland Units are in the Bostwick Irrigation District in Nebraska. The lands in the Courtland Unit are in the Kansas-Bostwick Irrigation District.

The Bureau prepared an environmental assessment to identify various proposed alternative release schedules. Alternatives were evaluated to determine the environmental effects on wildlife and fisheries resources associated with Harlan County Lake and the Republican River. Based on this analysis, the Bureau has requested the off-season flow criteria be followed as outlined in the final environmental assessment dated December 16, 1983. Releases will be 10 ft^3/s during the months of December, January, and February, except when the reservoir is at low levels. During water-short years releases for these three months will be 5 ft^3/s or zero. Releases of up to 30 ft^3/s may be made for special circumstances.

Natural gain in streamflow, plus irrigation return flows, and operational bypass at Superior-Courtland Diversion Dam will provide some flow downstream.

The Kansas Fish and Game Commission has requested that the Kansas-Bostwick Irrigation District and the Bureau maintain, when possible, a flow of 20 ft^3/s into Lovewell Reservoir when the Courtland Canal is in operation and the conservation pool is below capacity. This recommended inflow provides excellent fishing around the canal inlet to the reservoir. The seepage below Lovewell Dam into White Rock Creek maintains a small live stream throughout the year.

1983 Summary - Bostwick Division - Harlan County Lake Operations

The precipitation at Harlan County Dam totaled 23.59 inches of rainfall, which is 113 percent of normal, while the inflow (271,229 acre-feet) was between the normal- and wet-year forecasts. Following the annual operating plan, the Bureau requested that no releases be made after the 1982 operation season. Therefore, no releases were made from the lake between October 25, 1982, and mid-January 1983. A 15 ft^3/s release was started in mid-January. The conservation pool filled on February 8, with flood control releases beginning on February 11. Releases varied between 150 ft^3/s and 1,500 ft^3/s between February 11 and the start of the irrigation season. On March 3, the Bureau requested the Corps of Engineers contain 2 feet of water in the Harlan County Lake flood pool since Lovewell Reservoir had not recovered from the historic low reached to facilitate riprap repair. The reservoir level was 2 feet into the flood pool (elevation 1948.00 feet) on May 19, and the maximum water surface elevation of 1948.99 feet was reached on June 19.

The 23,788 irrigated acres in the Bostwick Division in Nebraska and Kansas above Lovewell Dam were furnished a full water supply. In addition, 57,714 acre-feet were delivered to Lovewell Reservoir through the Courtland Canal.

Following the recommendations in the draft environmental assessment, a minimum flow of 10 ft^3/s was started on December 1, 1983. Small short-duration releases were not required to meet established state water quality criteria in the stilling basin.

1983 Summary - Bostwick Division - Nebraska

The Bostwick Irrigation District in Nebraska diverted 52,238 acre-feet for the irrigation of 15,964 acres. The gross crop value was $5,405,544, which is $787,427 less than in 1982.

1983 Summary - Bostwick Division - Kansas

The 1983 precipitation at Lovewell Dam totaled 25.64 inches of rainfall, which was 104 percent of normal. Drawdown for riprap repair caused the reservoir water level to be at a historic low of elevation 1573.18 feet on November 17, 1982. This elevation is 9.42 feet below the top of conservation (elevation 1582.60). The reservoir's conservation space filled on May 17. On May 27 the reservoir was 2 feet into the flood pool. The maximum elevation of the water surface was 1585.33 feet, which was reached on June 9. Flood control releases were made June 10 to 16 to avoid encroachment of greater than 2 feet into the flood pool.

The Kansas-Bostwick Irrigation District diverted a total of 83,964 acre-feet to serve 7,824 acres above Lovewell Dam and 18,398 acres below Lovewell Dam. The gross crop value was $8,293,717, which is $18,713 less than the previous year.

1984 Outlook - Bostwick Division

The Bostwick Irrigation District in Nebraska and the Kansas-Bostwick Irrigation District No. 2 expect to deliver water to 20,600 and 35,100 acres, respectively. The storage in Harlan County Lake and Lovewell Reservoir and flows of the Republican River and White Rock Creek are expected to furnish an adequate water supply for the Bostwick lands.

Inflow to Lovewell Reservoir from the Courtland Canal will start as necessary to allow for filling the reservoir from natural flow in the Republican River without storage releases from Harlan County Lake.

Kirwin Unit, Solomon Division in Kansas

General

The water supply for the 11,435 acres of land in the Kirwin Irrigation District is furnished by storage from Kirwin Reservoir and inflows from the North Fork of the Solomon River and Bow Creek.

The operation of Kirwin Dam and Reservoir affords many opportunities for recreation, fishing, hunting, water sports, fish spawning, and preservation of waterfowl species.

1983 Summary

The precipitation totaled 23.32 inches, which was 104 percent of normal. The inflow (9,667 acre-feet) was less than the dry-year forecast. Irrigators in the district continued to pump water from private wells to supplement irrigation of project lands. Kirwin Canal was operated from July 18 until August 17. The district diverted 8,392 acre-feet for irrigation of 5,315 acres. The district reported a gross crop value of $1,230,963.

1984 Outlook

The district estimates that 8,000 acres may be irrigated in 1984 if irrigation water is available. Normal precipitation and normal forecasted inflows from the North Fork of the Solomon River would be adequate to irrigate these lands. However, under dry-year forecasts, a shortage of about 14,000 acre-feet may be experienced. Less than dry-year inflow has been experienced since May 1983. If inflows do not increase above these levels, no reservoir releases will be made.

Webster Unit, Solomon Division in Kansas

General

The Webster Irrigation District has service available to 8,500 acres. The project water supply is provided by Webster Reservoir storage and flows of the South Fork of the Solomon River.

1983 Summary

In 1983, the precipitation at Webster Dam was 82 percent of normal (19.54 inches). The inflow of 8,819 acre-feet was less than the dry-year forecast.

On September 30, there were 1,551 acre-feet of active conservation storage remaining in the reservoir. The district diverted 9,350 acre-feet for irrigation of 4,657 acres. The district reported a gross crop value of $1,060,923.

Irrigators with private wells provided water for part of the project lands as a supplemental supply.

1984 Outlook

The carryover storage and the flows in the South Fork of the Solomon River are expected to be adequate under normal- or wet-year forecasts to irrigate 5,000 acres in the district in 1984. Under dry-year forecasts, a severe shortage may be experienced. Less than dry-year inflow has been experienced since June 1983.

Glen Elder Unit, Solomon Division in Kansas

General

Releases from Waconda Lake will be regulated as outlined in two memorandums of understanding between the State of Kansas and the Bureau. Releases are made for the city of Beloit, temporary short-term water service contracts, and water right administration. The water service contract with Beloit, Kansas, provides for the annual use of up to 2,000 acre-feet of Waconda Lake storage. Water is measured at the Glen Elder Dam river outlet works. In any water year that the City's water supply is insufficient and there is surplus water in Waconda Lake, such additional water may be released for the city at a rate of $15.00 per acre-foot.

The water service contract with the WCH&T Rural Water District No. 2 provides for use of storage water as available from Waconda Lake. Water usage is not to exceed 1,009 acre-feet per calendar year.

To lessen ice damage to the upstream face of Glen Elder Dam during winter months, releases from Waconda Lake will be regulated each year to maintain a constant water surface level while the lake is ice-covered. This level will be varied from 0 to 5 feet below the top of conservation capacity.

The available facilities along the shores of Waconda Lake and the large water surface area afford opportunities to thousands of people for picnics, sightseeing, recreation, water sports, hunting, and fishing.

When compatible with flood control operations, the operating criteria for Waconda Lake provide for a stable or rising pool level during the fish spawning period each spring.

When possible, drawdowns will be scheduled for late summer and early fall so that exposed shore areas can be seeded. This seeding prevents wind erosion and provides winter food and cover for wildlife and fish with spawning habitat in the spring when these areas are inundated.

Repairs to the soil cement on the upstream face of the dam are planned for 1984.

1983 Summary

The precipitation at Glen Elder Dam was 85 percent of normal (21.67 inches). The inflow (85,938 acre-feet) was between dry- and normal-year forecasts. Storage releases of 352 acre-feet were made for Beloit, although no releases were made for quality control. Other controlled releases were 41,150 acre-feet. This amount includes 3,770 acre-feet purchased by irrigators under temporary contracts and releases of 686 acre-feet to the WCH&T Rural Water District No. 2.

1984 Outlook

The municipal requirements of Beloit and the requirements of the WCH&T Rural Water District No. 2 will be met in full with releases as required from Waconda Lake. It is expected that a Kansas Water Commissioner will request that inflows be passed through the lake for water right administration. Waconda Lake storage water will be available to natural flow appropriators under short-term water service contracts. To minimize ice damage, the reservoir will be regulated to maintain a constant level during the months the reservoir is ice-covered. During 1984, Waconda Lake will be operated with a stable or slowly rising pool early in the year. To facilitate repair of the soil cement, the reservoir will be at an approximate water surface elevation of 1453.00 feet or below by the end of September. Under dry- or normal-year conditions, the lake will be maintained at about 3.0 to 4.0 feet below the top of the conservation pool for next winter.

Cedar Bluff Unit, Smoky Hill Division in Kansas

General

Cedar Bluff Reservoir storage and Smoky Hill River flows provide a water supply for the 6,800 acres in the Cedar Bluff Irrigation District. If required Cedar Bluff storage also furnishes a maximum of 2,000 acre-feet each year for the city of Russell, Kansas.

Following several years of below-normal inflow, a share-shortage procedure was adopted July 31, 1981. Separate pools were established for each user with inflow, outflow, and evaporation allocated on a monthly basis. Inflow and initial pool allocations were made on the basis of perfected maximum annual usage with the maximum accumulated storage being that allowed by each user's water right.

The Cedar Bluff National Fish Hatchery discontinued their operation March 31, 1983, and the State of Kansas began using the facility April 1, 1983.

1983 Summary

The precipitation was 63 percent of normal (13.91 inches). The inflow (3,801 acre-feet) was far below the dry-year forecast. The year's high content of 27,795 acre-feet was reached on April 12 and was 7,525 acre-feet below the bottom of active storage. Due to continuing low water levels, no irrigation releases were made in 1983 (fifth consecutive year). The fish hatchery diverted 155 acre-feet, most of which were passed through the facilities and returned to the Smoky Hill River below Cedar Bluff Dam. No releases were made for the city of Russell.

1984 Outlook

The reservoir elevation of 2103.03 feet on December 31, 1983, is in the inactive pool. With dry-year inflows, the total irrigation demand of 21,100 acre-feet would be shorted. However, with normal-year conditions, a moderate shortage may be experienced of only 4,300 acre-feet.

APPENDIX

TABLE 1
RESERVOIR DATA - NIOBRARA, LOWER PLATTE AND KANSAS RIVER BASINS

RESERVOIR		CAPACITY ALLOCATIONS 1/ DEAD	LIVE CONSERVATION Inactive	LIVE CONSERVATION Active	FLOOD CONTROL
Box Butte	- Elevation Ft.	3969.0	3976.5	4007.0	---
	Total Acre-feet	640	2,275	31,060	---
	Net Acre-feet	640	1,635	28,785	---
Merritt	- Elevation Ft.	2875.0	2896.0	2946.0	---
	Total Acre-feet	1,614	6,800	74,486	---
	Net Acre-feet	1,614	5,186	67,686	---
Sherman	- Elevation Ft.	2118.5	2129.0	2162.3	---
	Total Acre-feet	3,839	10,496	69,076	---
	Net Acre-feet	3,839	6,657	58,580	---
Bonny	- Elevation Ft.	3635.5	3638.0	3672.0	3710.0
	Total Acre-feet	1,418	2,134	41,340	170,160
	Net Acre-feet	1,418	716	39,206	128,820
Swanson	- Elevation Ft.	2710.0	2720.0	2752.0	2773.0
Lake 2/	Total Acre-feet	2,118	12,430	112,214	246,291
	Net Acre-feet	2,118	10,312	99,784	134,077
Enders	- Elevation Ft.	3080.0	3082.4	3112.3	3127.0
	Total Acre-feet	8,467	9,968	44,480	74,520
	Net Acre-feet	8,467	1,501	34,512	30,040
Hugh Butler	- Elevation Ft.	2552.0	2558.0	2581.8	2604.9
Lake	Total Acre-feet	6,313	10,450	37,776	86,630
	Net Acre-feet	6,313	4,137	27,326	48,854
Harry Strunk	- Elevation Ft.	2335.0	2343.0	2366.1	2386.2
Lake	Total Acre-feet	4,160	8,859	35,705	88,420
	Net Acre-feet	4,160	4,699	26,846	52,715
Keith Sebelius	- Elevation Ft.	2275.0	2280.4	2304.3	2331.4
Lake	Total Acre-feet	2,718	5,284	35,935	134,740
	Net Acre-feet	2,718	2,566	30,651	98,805
Harlan County	- Elevation Ft.	1885.0	1927.0	1946.0	1973.5
Lake	Total Acre-feet	0	134,661	327,639	825,782
	Net Acre-feet	0	134,661	192,978	498,143
Lovewell	- Elevation Ft.	1562.0	1571.7	1582.6	1595.3
	Total Acre-feet	5,054	16,760	41,690	92,150
	Net Acre-feet	5,054	11,706	24,930	50,460
Kirwin	- Elevation Ft.	1693.0	1697.0	1729.25	1757.3
	Total Acre-feet	6,385	9,785	99,435	314,550
	Net Acre-feet	6,385	3,400	89,650	215,115
Webster	- Elevation Ft.	1855.5	1860.0	1892.45	1923.7
	Total Acre-feet	2,184	5,300	77,371	260,740
	Net Acre-feet	2,184	3,116	72,071	183,369
Waconda Lake	- Elevation Ft.	1407.8	1428.0	1455.6	1488.3
	Total Acre-feet	1,236	36,671	241,460	963,775
	Net Acre-feet	1,236	35,435	204,789	722,315
Cedar Bluff	- Elevation Ft.	2090.0	2107.8	2144.0	2166.0
	Total Acre-feet	8,261	35,320	185,090	376,950
	Net Acre-feet	8,261	27,059	149,770	191,860
Total Storage (A.F.)		54,407	307,193	1,454,757	3,634,708
Total Net Acre-feet		54,407	252,786	1,147,564	2,354,573

1/ Includes space for sediment storage.
2/ Swanson Lake data revised and placed in use January 1, 1984.

TABLE 2
SUMMARY OF 1983 OPERATIONS

MIRAGE FLATS PROJECT
BOX BUTTE RESERVOIR

MONTH	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	MIRAGE FLATS CANAL Diversions To Canal (AF)	MIRAGE FLATS CANAL Delivered To Farms (AF)
Jan.	1,488	52	76	0.15	12,272	0	0
Feb.	1,897	52	86	0	14,031	0	0
Mar.	2,451	56	169	1.27	16,257	0	0
Apr.	2,599	48	331	2.21	18,477	0	0
May	3,072	55	403	4.52	21,091	0	0
June	1,816	48	384	6.13	22,475	0	0
July	0	5,629	831	3.05	16,015	5,432	2,067
Aug.	1,624	9,279	461	0.80	7,899	8,890	4,530
Sep.	2,191	1,956	308	0.23	7,826	1,804	1,011
Oct.	997	54	261	0.43	8,508	0	0
Nov.	2,381	52	186	0.61	10,651	0	0
Dec.	1,503	51	96	0.32	12,005	0	0
TOTAL	22,019	17,334	3,592	19.72	---	16,126	7,608

NOTE.--Mirage Flats Canal:
Acres irrigated 1983 -- 8,640

SANDHILLS DIVISION
AINSWORTH UNIT
MERRITT RESERVOIR

MONTH	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	AINSWORTH CANAL Diversions To Canal (AF)	AINSWORTH CANAL Delivered To Farms (AF)
Jan.	15,519	15,273	246	0.20	68,831	0	0
Feb.	13,681	13,375	306	0.07	68,831	0	0
Mar.	15,304	14,876	428	1.57	68,831	0	0
Apr.	17,729	10,752	733	1.07	75,075	0	0
May	20,242	19,000	947	5.71	75,370	1,040	70
June	17,657	16,013	1,054	7.95	75,960	4,125	635
July	18,183	23,580	1,453	6.01	69,110	13,061	7,663
Aug.	17,020	27,189	1,248	1.36	57,693	22,745	16,615
Sep.	13,766	14,612	842	0.90	56,005	7,488	4,597
Oct.	16,364	5,240	741	0.96	66,388	0	0
Nov.	14,908	12,278	458	1.65	68,560	0	0
Dec.	16,433	15,840	322	0.69	68,831	0	0
TOTAL	196,806	188,028	8,778	28.22	---	48,459	29,580

NOTE.--Ainsworth Canal:
Acres irrigated 1983 -- 25,488

MIDDLE LOUP DIVISION

MONTH	SARGENT UNIT SARGENT CANAL Diversions To Canal (AF)	SARGENT UNIT SARGENT CANAL Delivered To Farms (AF)	MIDDLE LOUP UNIT 1/ MIDDLE LOUP PUBLIC POWER CANALS Diversions To Canals (AF)	Diversion To Sherman Feeder Canal (AF)	FARWELL UNIT SHERMAN RESERVOIR Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	FARWELL CANALS Release To Canals (AF)	FARWELL CANALS Delivered To Farms (AF)
Jan.	0	0	0	0	663	1,309	86	0.46	52,478	0	0
Feb.	0	0	0	0	701	1,291	120	0.33	51,768	0	0
Mar.	0	0	0	0	1,308	1,309	236	3.06	51,531	0	0
Apr.	0	0	0	5,050	3,887	1,303	417	1.17	53,698	0	0
May	0	0	0	18,020	15,908	1,533	784	3.64	67,369	0	0
June	2,695	0	3,454	13,870	10,066	6,762	1,020	6.85	69,653	7,662	25
July	6,565	3,416	8,989	21,420	20,292	30,938	1,579	1.19	57,428	29,377	15,631
Aug.	9,626	6,887	10,556	20,490	19,892	30,075	1,216	1.43	46,029	29,080	18,152
Sep.	4,667	2,189	4,770	23,600	21,207	12,486	1,052	0.97	53,698	11,312	7,940
Oct.	1,240	37	0	4,860	3,586	1,083	782	1.15	55,419	0	0
Nov.	0	0	0	0	675	1,303	362	1.98	54,429	0	0
Dec.	0	0	0	0	698	1,309	120	0.87	53,698	0	0
TOTAL	24,793	12,529	27,769	107,310	98,963	90,701	7,774	23.10	---	77,431	41,748

1/ Non-Project.

NOTE.--Sargent Canal:
Acres irrigated 1983 -- 7,363

Middle Loup P. P. Canals:
Acres irrigated 1983 -- 14,395

Farwell Canals:
Acres irrigated 1983 -- 31,579

UPPER REPUBLICAN DIVISION
ARMEL UNIT
BONNY RESERVOIR

MONTH	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Outflow To Hale Ditch (AF)	Industrial Uses 2/ (AF)
Jan.	1,631	1,076	174	0.08	37,999	0	29
Feb.	1,742	1,401	208	0.56	38,132	0	31
Mar.	2,180	526	316	2.05	39,470	0	32
Apr.	2,346	383	422	2.77	41,011	0	0
May	2,464	448	762	4.30	42,265	0	0
June	1,608	575	808	2.44	42,490	119	0
July	1,157	1,340	1,497	2.51	40,810	731	0
Aug.	0	1,079	1,324	0.59	38,407	734	0
Sep.	0	1,958	1,185	0.21	35,264	600	0
Oct.	556	438	470	1.08	34,912	52	0
Nov.	1,491	575	346	1.44	35,482	222	0
Dec.	1,385	331	190	0.29	36,346	13	0
TOTAL	16,560	10,130	7,702	18.32	---	2,471	92

2/ AMOCO contract was terminated April 4, 1983.

TABLE 2
SUMMARY OF 1983 OPERATIONS

FRENCHMAN-CAMBRIDGE DIVISION
FRENCHMAN UNIT

	ENDERS RESERVOIR					CULBERTSON CANAL		CULBERTSON EXT. CANAL	
MONTH	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	2,684	77	80	0.10	28,232	0	0	0	0
Feb.	2,087	66	109	0.38	30,144	0	0	0	0
Mar.	2,373	96	198	2.80	32,223	0	0	0	0
Apr.	2,243	74	297	2.75	34,095	0	0	0	0
May	2,435	79	531	2.92	35,920	769	0	162	0
June	2,140	103	591	2.59	37,366	591	0	3,010	0
July	3,397	12,349	982	1.20	27,432	4,242	2,624	6,732	3,121
Aug.	2,746	10,352	706	1.48	19,120	3,729	2,245	6,866	3,716
Sep.	2,362	4,764	445	0.10	16,273	1,811	1,211	3,239	1,696
Oct.	2,510	61	222	0.18	18,500	0	0	0	0
Nov.	2,358	59	169	1.36	20,630	0	0	0	0
Dec.	2,775	61	83	0.34	23,256	0	0	0	0
TOTAL	30,110	28,141	4,418	16.20	---	11,142	6,080	20,009	8,533

NOTE.--Culbertson Canal: Acres irrigated 1983 -- 5,560 Culbertson Extension Canal: Acres irrigated 1983 -- 7,513

FRENCHMAN-CAMBRIDGE DIVISION (Continued)
MEEKER-DRIFTWOOD UNIT

	SWANSON LAKE					MEEKER-DRIFTWOOD		BARTLEY CANAL	
MONTH	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	7,109	1,668	351	0.24	119,270	0	0	0	0
Feb.	9,008	9,031	427	0.50	118,820	0	0	0	0
Mar.	12,858	7,476	732	3.73	123,470	0	0	0	0
Apr.	13,916	7,862	1,044	2.15	128,480	0	0	0	0
May	12,848	10,393	1,885	4.38	129,050	0	0	0	0
June	8,438	8,291	2,207	3.48	126,990	1,470	0	489	0
July	1,405	25,829	3,066	1.36	99,500	12,471	7,148	4,164	3,024
Aug.	0	16,401	3,869	0.47	79,230	12,875	8,318	3,962	3,204
Sep.	1	3,712	2,769	0.85	72,750	3,488	1,708	1,181	804
Oct.	0	107	1,183	0.18	71,460	0	0	0	0
Nov.	2,515	60	655	1.91	73,260	0	0	0	0
Dec.	2,840	61	319	0.15	75,720	0	0	0	0
TOTAL	70,938	90,891	18,507	19.40	---	30,304	17,174	9,796	7,032

NOTE.--Meeker-Driftwood Canal: Acres irrigated 1983 -- 9,540 Bartley Canal: Acres irrigated 1983 -- 6,056

FRENCHMAN-CAMBRIDGE DIVISION (Continued)
RED WILLOW UNIT

	HUGH BUTLER LAKE					RED WILLOW CANAL	
MONTH	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	1,713	243	95	0.12	29,254	0	0
Feb.	1,548	215	102	0.23	30,485	0	0
Mar.	2,695	252	198	4.69	32,730	0	0
Apr.	1,610	219	285	0.96	33,836	0	0
May	4,459	228	679	5.70	37,388	0	0
June	1,633	1,118	645	3.19	37,258	422	0
July	983	3,489	1,114	1.73	33,638	2,852	1,788
Aug.	325	4,376	905	0.12	28,682	3,210	2,326
Sep.	725	2,747	688	0.55	25,972	1,348	932
Oct.	867	243	290	0.18	26,306	0	0
Nov.	1,147	252	202	1.07	26,999	0	0
Dec.	1,386	241	94	0.35	28,050	0	0
TOTAL	19,091	13,623	5,297	18.89	---	7,832	5,046

NOTE.--Red Willow Canal: Acres irrigated 1983 -- 3,266

FRENCHMAN-CAMBRIDGE DIVISION (Continued)
CAMBRIDGE UNIT

	HARRY STRUNK LAKE					CAMBRIDGE CANAL	
MONTH	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	3,456	3,392	118	0.10	36,330 1/	0	0
Feb.	2,332	3,420	130	0.44	35,120	0	0
Mar.	4,888	2,484	246	4.50	37,278	0	0
Apr.	3,899	2,756	433	0.84	37,988	0	0
May	6,122	4,790	729	4.69	38,591	0	0
June	4,188	3,860	834	3.44	38,085	849	0
July	2,390	6,108	1,318	1.02	33,049	11,726	7,254
Aug.	3,097	11,326	1,069	2.26	23,751	11,606	7,972
Sep.	1,395	3,645	670	0.90	20,831	3,349	1,926
Oct.	2,573	193	306	0.15	22,905	0	0
Nov.	2,630	57	206	1.86	25,272	0	0
Dec.	2,825	35	97	0.42	27,965	0	0
TOTAL	39,795	42,066	6,156	20.70	---	27,530	17,152

1/ Area-capacity data revised and placed in use February 1, 1983.

NOTE.--Cambridge Canal: Acres irrigated 1983 -- 12,665

TABLE 2
SUMMARY OF 1983 OPERATIONS

KANASKA DIVISION
ALMENA UNIT
KEITH SEBELIUS LAKE

MONTH	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release To City Of Norton (AF)
Jan.	152	26	30	0.07	3,743	26
Feb.	183	22	37	1.00	3,867	23
Mar.	439	18	68	3.51	4,220	20
Apr.	404	26	146	2.05	4,452	26
May	1,770	34	239	5.29	5,949	34
June	479	67	264	5.15	6,097	67
July	0	56	467	0.74	5,574	58
Aug.	0	65	426	3.63	5,083	81
Sep.	1	62	337	1.49	4,685	62
Oct.	0	58	165	0.80	4,462	58
Nov.	187	38	83	3.00	4,528	38
Dec.	107	34	41	0.52	4,560	32
TOTAL	3,722	506	2,303	27.25	---	525

NOTE.--Almena Canal:
Due to the shortage of storage water in Keith Sebelius Lake, Almena Canal was not in operation during the 1983 irrigation season.

BOSTWICK DIVISION
FRANKLIN UNIT
HARLAN COUNTY LAKE

	Data from Corps of Engineers					FRANKLIN CANAL		NAPONEE CANAL	
MONTH	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release To Canal (AF)	Delivered To Farms (AF)	Release To Canal (AF)	Delivered To Farms (AF)
Jan.	12,952	408	756	0.40	322,980	0	0	0	0
Feb.	22,929	8,022	381	0.63	337,506	0	0	0	0
Mar.	40,136	30,953	1,232	3.05	345,457	0	0	0	0
Apr.	28,393	31,376	2,521	0.99	339,953	0	0	0	0
May	53,990	31,593	3,967	4.83	358,383	0	0	0	0
June	62,717	60,176	5,056	2.63	355,868	120	0	7	0
July	13,884	57,498	8,461	0.38	303,793	13,288	5,786	1,583	985
Aug.	9,818	48,558	8,275	1.58	256,778	12,346	5,978	1,563	946
Sep.	7,686	6,185	6,734	5.88	251,545	2,136	616	119	54
Oct.	4,691	0	3,031	0.89	253,205	0	0	0	0
Nov.	8,281	0	1,888	1.75	259,598	0	0	0	0
Dec.	5,752	593	1,613	0.51	263,144	0	0	0	0
TOTAL	271,229	275,362	43,915	23.52	---	27,890	12,380	3,272	1,985

NOTE.--Franklin Canal:
Acres irrigated 1983 -- 7,591
Naponee Canal:
Acres irrigated 1983 -- 1,260

BOSTWICK DIVISION (Continued)
SUPERIOR-COURTLAND UNIT

	FRANKLIN PUMP CANAL		SUPERIOR CANAL		COURTLAND CANAL - ABOVE LOVEWELL				
						NEBRASKA USE		KANSAS USE	
MONTH	Diversions To Canal (AF)	Delivered To Farms (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)	Total Diversion (AF)	Total (AF)	Delivered To Farms (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	0	0	0	0	0	0	0	0	0
Feb.	0	0	0	0	0	0	0	0	0
Mar.	0	0	0	0	0	0	0	0	0
Apr.	0	0	0	0	4,999	0	0	0	0
May	0	0	0	0	14,171	0	0	0	0
June	0	0	439	0	8,220	0	0	1,783	35
July	1,687	1,243	8,122	4,495	31,021	1,164	1,030	14,117	8,674
Aug.	1,468	1,072	6,448	2,577	29,456	887	756	8,184	5,168
Sep.	207	110	569	132	8,316	85	65	1,190	565
Oct.	0	0	0	0	307	0	0	0	0
Nov.	0	0	0	0	0	0	0	0	0
Dec.	0	0	0	0	0	0	0	0	0
TOTAL	3,362	2,425	15,578	7,204	96,490	2,136	1,851	25,274	14,442

NOTE.--Franklin Pump Canal:
Acres irrigated 1983 -- 1,456
Superior Canal:
Acres irrigated 1983 -- 4,421

NOTE.--Courtland Canal--Nebraska Use:
Acres irrigated 1983 -- 1,236
Courtland Canal--Kansas Use:
Acres irrigated 1983 -- 7,824

BOSTWICK DIVISION (Continued)
COURTLAND UNIT
LOVEWELL RESERVOIR

						COURTLAND (Below)	
MONTH	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release To Canal (AF)	Delivered To Farms (AF)
Jan.	1,308	4	114	0.59	23,300	0	0
Feb.	2,512	3	149	0.68	25,660	0	0
Mar.	1,279	6	283	2.39	26,650	0	0
Apr.	5,205	4	511	1.52	31,340	0	0
May	18,835	10	905	4.14	49,260	0	0
June	7,760	7,382	1,148	5.12	48,490	2,731	177
July	13,892	29,112	2,030	0.44	31,240	30,434	19,573
Aug.	16,881	19,143	1,298	2.42	27,680	21,899	12,072
Sep.	6,117	3,082	1,045	3.40	29,670	3,626	1,487
Oct.	5,942	8	454	2.34	35,150	0	0
Nov.	1,231	8	403	2.15	35,970	0	0
Dec.	854	5	179	0.45	36,640	0	0
TOTAL	81,816	58,767	8,519	25.64	---	58,690	33,309

NOTE.--Courtland Canal below Lovewell:
Acres irrigated 1983 -- 18,398

TABLE 2
SUMMARY OF 1983 OPERATIONS

SOLOMON DIVISION
KIRWIN UNIT
KIRWIN RESERVOIR

MONTH	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	KIRWIN CANAL Release To Canal (AF)	KIRWIN CANAL Delivered To Farms (AF)
Jan.	199	0	82	0.58	14,084	0	0
Feb.	635	0	111	1.51	14,608	0	0
Mar.	1,450	0	192	2.97	15,866	0	0
Apr.	1,197	0	319	1.70	16,744	0	0
May	3,954	0	598	5.07	20,100	0	0
June	1,639	0	647	4.53	21,092	0	0
July	89	3,844	981	0.14	16,356	3,546	1,755
Aug.	188	5,292	802	0.61	10,450	4,846	2,659
Sep.	0	0	505	1.31	9,945	0	0
Oct.	1	0	281	1.45	9,665	0	0
Nov.	280	0	160	2.77	9,785	0	0
Dec.	35	0	75	0.68	9,745	0	0
TOTAL	9,667	9,136	4,753	23.32	---	8,392	4,414

NOTE.--Kirwin Canal:
Acres irrigated 1983 -- 5,315

SOLOMON DIVISION (Continued)
WEBSTER UNIT
WEBSTER RESERVOIR

MONTH	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	OSBORNE CANAL Diversions To Canal (AF)	OSBORNE CANAL Delivered To Farms (AF)
Jan.	345	0	117	0.21	17,330	0	0
Feb.	1,136	0	136	1.31	18,338	0	0
Mar.	1,572	0	252	2.11	19,658	0	0
Apr.	2,255	0	464	1.42	21,449	0	0
May	2,046	0	737	2.85	22,758	0	0
June	866	0	866	2.01	22,758	0	0
July	8	8,678	1,279	0.26	12,809	5,115	2,210
Aug.	245	4,840	885	3.06	7,329	4,235	2,518
Sep.	0	0	478	1.22	6,851	0	0
Oct.	151	0	292	2.28	6,710	0	0
Nov.	195	0	165	2.27	6,740	0	0
Dec.	0	0	595	0.54	6,145	0	0
TOTAL	8,819	13,518	6,266	19.54	---	9,350	4,728

NOTE.--Osborne Canal:
Acres irrigated 1983 -- 4,657

SOLOMON DIVISION (Continued)
GLEN ELDER UNIT
WAGONDA LAKE

MONTH	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	OUTFLOW TO RIVER City of Beloit Storage Release (AF)	City of Beloit Quality Bypass (AF)	Other Controlled Releases 2/ (AF)	Release To W.C.H.&T. R.W.D. No. 2 (AF)
Jan.	5,485	5,339	709	0.67	206,473	0	0	5,293	46
Feb.	9,051	4,237	859	0.66	210,428	0	0	4,195	42
Mar.	9,809	4,700	1,598	1.59	213,939	0	0	4,649	51
Apr.	12,213	4,553	2,979	1.07	218,620	0	0	4,500	53
May	20,803	4,709	5,285	4.20	229,429	0	0	4,657	52
June	11,593	4,457	5,557	2.05	231,008	0	0	4,400	57
July	2,256	4,055	10,472	0.10	218,737	46	0	3,927	82
Aug.	2,066	4,091	9,451	1.43	207,261	190	0	3,827	74
Sep.	4,363	2,457	6,411	5.00	202,756	116	0	2,281	60
Oct.	2,880	975	3,031	2.68	201,630	0	0	920	55
Nov.	3,832	946	1,760	1.64	202,756	0	0	893	53
Dec.	1,587	983	829	0.58	202,531	0	0	922	61
TOTAL	85,938	41,502	48,941	21.67	---	352	0	40,464	666

2/ Includes releases for water right administration and 3,770 acre-feet sold under temporary contracts.

SMOKY HILL DIVISION
ELLIS UNIT
CEDAR BLUFF RESERVOIR

MONTH	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	STORAGES 3/ Fish & Wildlife (AF)	STORAGES 3/ City of Russell (AF)	STORAGES 3/ Irrigation (AF)	Release To Fish Hatchery (AF)
Jan.	181	92	143	0.29	27,174	2,136	1,594	15,183	92
Feb.	369	50	175	1.17	27,318	2,125	1,608	15,324	50
Mar.	516	1	296	1.96	27,537	2,174	1,624	15,478	1
Apr.	640	0	526	1.30	27,651	2,217	1,631	15,542	2
May	738	0	890	1.30	27,499	2,233	1,615	15,390	1
June	521	0	918	1.64	27,102	2,209	1,580	15,052	2
July	80	0	1,628	0.09	25,554	2,031	1,450	13,812	1
Aug.	168	0	1,503	0.65	24,219	1,881	1,337	12,740	2
Sep.	21	0	1,160	1.06	23,080	1,747	1,242	11,830	1
Oct.	65	0	591	1.57	22,554	1,687	1,197	11,409	2
Nov.	349	12 4/	287	2.04	22,604	1,697	1,201	11,445	1
Dec.	153	0	136	0.84	22,621	1,706	1,202	11,452	0
TOTAL	3,801	155	8,253	13.91	---	---	---	---	155

3/ Total storage - 8,261 A.F. + Fish & Wildlife + City of Russell + Irrigation.
4/ Total water usage by Kansas Fish & Game Commission from April through November 1983.

NOTE.--Cedar Bluff Canal:
Due to the shortage of storage water in Cedar Bluff Reservoir, Cedar Bluff Canal was not in operation during the 1983 irrigation season.
No releases were made for the City of Russell, Kansas.

TABLE 3
ACRES IRRIGATED IN 1983 AND ESTIMATES FOR 1984

Irrigation District and Canal	Acres With Service Available	Acres Irrigated in 1983	Estimated Acres to be Irrigated in 1984
Mirage Flats Irrigation District			
Mirage Flats Canal	11,662	8,640	11,000
Ainsworth Irrigation District			
Ainsworth Canal	34,539	25,488	34,000
Sargent Irrigation District			
Sargent Canal	13,363	7,363	13,000
Farwell Irrigation District			
Farwell Canal	50,051	31,579	49,000
Frenchman Valley Irrigation District			
Culbertson Canal	9,600	5,560	9,000
H & RW Irrigation District			
Culbertson Extension Canal	11,490	7,513	10,400
Frenchman-Cambridge Irrigation District			
Meeker-Driftwood Canal	16,476	9,540	16,160
Red Willow Canal	4,932	3,266	4,790
Bartley Canal	6,539	6,056	6,290
Cambridge Canal	17,053	12,665	16,720
Total Frenchman-Cambridge Irrigation Dist.	45,000	31,527	43,960
Almena Irrigation District			
Almena Canal	5,763	0	5,200
Bostwick Irrigation District in Nebraska			
Franklin Canal	11,116	7,591	10,100
Naponee Canal	1,737	1,260	1,700
Franklin Pump Canal	2,091	1,456	2,050
Superior Canal	5,863	4,421	5,150
Courtland Canal (Nebr.)	1,980	1,236	1,600
Total Bostwick Irrigation Dist. in Nebr.	22,787	15,964	20,600
Kansas-Bostwick Irrigation District			
Courtland Canal above Lovewell	12,771	7,824	11,600
Courtland Canal below Lovewell	27,329	18,398	23,500
Total Kansas-Bostwick Irrigation District	40,100	26,222	35,100
Kirwin Irrigation District			
Kirwin Canal	11,435	5,315	8,000
Webster Irrigation District			
Osborne Canal	8,500	4,657	5,000
Cedar Bluff Irrigation District			
Cedar Bluff Canal	6,800	0	6,800
TOTAL PROJECT USES	271,090	169,828	251,060
Non-Project Uses			
Middle Loup Public Power & I.D. Canals	15,000	14,395	14,800
Hale Ditch	700	700	700
TOTAL NON-PROJECT USES	15,700	15,095	15,500
TOTAL PROJECT AND NON-PROJECT	286,790	184,923	266,560

BOX BUTTE RESERVOIR OPERATION ESTIMATES - 1984

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
					REASONABLE MINIMUM INFLOW CONDITIONS						
JAN	24.	1.5	1.09	.1	2.	.1	0.0	0.0	3993.2	13.3	1.3
FEB	34.	1.9	1.15	.1	2.	.1	0.0	0.0	3994.9	15.0	1.7
MAR	41.	2.5	2.07	.2	2.	.1	0.0	0.0	3996.9	17.2	2.2
APR	34.	2.0	3.76	.4	29.	1.7	0.0	0.0	3996.8	17.1	-.1
MAY	23.	1.4	6.32	.6	55.	3.4	0.0	0.0	3994.4	14.5	-2.6
JUN	17.	1.0	7.22	.6	57.	3.4	0.0	0.0	3991.4	11.5	-3.0
JUL	13.	.8	8.60	.5	164.	10.1	0.0	.6	3976.5	2.3	-9.2
AUG	15.	.9	7.98	.2	166.	10.2	0.0	9.5	3976.5	2.3	0.0
SEP	13.	.8	5.81	.2	86.	5.1	0.0	4.5	3976.5	2.3	0.0
OCT	16.	1.0	4.64	.1	2.	.1	0.0	0.0	3978.6	3.1	.8
NOV	27.	1.6	2.97	.1	2.	.1	0.0	0.0	3981.5	4.5	1.4
DEC	28.	1.7	1.39	.1	2.	.1	0.0	0.0	3984.2	6.0	1.5
TOTAL		17.1	53.00	3.2		34.5	0.0	14.6			-6.0
					MOST PROBABLE INFLOW CONDITIONS						
JAN	29.	1.8	.99	.1	2.	.1	0.0	0.0	3993.5	13.6	1.6
FEB	40.	2.2	1.04	.1	2.	.1	0.0	0.0	3995.4	15.6	2.0
MAR	49.	3.0	1.89	.2	2.	.1	0.0	0.0	3997.8	18.3	2.7
APR	40.	2.4	3.41	.3	22.	1.3	0.0	0.0	3998.5	19.1	.8
MAY	26.	1.6	5.71	.6	20.	1.2	0.0	0.0	3998.3	18.9	-.2
JUN	20.	1.2	6.54	.6	42.	2.5	0.0	0.0	3996.7	17.0	-1.9
JUL	16.	1.0	7.80	.6	140.	8.6	0.0	0.0	3988.2	8.8	-8.2
AUG	16.	1.0	7.23	.4	141.	8.7	0.0	1.6	3976.5	2.3	-6.5
SEP	17.	1.0	5.24	.1	40.	2.4	0.0	1.5	3976.5	2.3	0.0
OCT	18.	1.1	4.19	.1	2.	.1	0.0	0.0	3978.9	3.2	.9
NOV	32.	1.9	2.70	.1	2.	.1	0.0	0.0	3982.3	4.9	1.7
DEC	33.	2.0	1.26	.1	2.	.1	0.0	0.0	3985.3	6.7	1.8
TOTAL		20.2	48.00	3.3		25.3	0.0	3.1			-5.3
					REASONABLE MAXIMUM INFLOW CONDITIONS						
JAN	36.	2.2	.91	.1	2.	.1	0.0	0.0	3993.9	14.0	2.0
FEB	50.	2.8	.95	.1	2.	.1	0.0	0.0	3996.3	16.6	2.6
MAR	62.	3.8	1.72	.2	2.	.1	0.0	0.0	3999.3	20.1	3.5
APR	50.	3.0	3.12	.3	10.	.6	0.0	0.0	4000.9	22.2	2.1
MAY	34.	2.1	5.25	.6	13.	.8	0.0	0.0	4001.4	22.9	.7
JUN	25.	1.5	6.00	.7	27.	1.6	0.0	0.0	4000.8	22.1	-.8
JUL	20.	1.2	7.14	.7	107.	6.6	0.0	0.0	3995.8	16.0	-6.1
AUG	21.	1.3	6.63	.5	106.	6.5	0.0	0.0	3990.0	10.3	-5.7
SEP	20.	1.2	4.82	.3	29.	1.7	0.0	0.0	3989.1	9.5	-.8
OCT	23.	1.4	3.85	.3	2.	.1	0.0	0.0	3990.2	10.5	1.0
NOV	40.	2.4	2.46	.2	2.	.1	0.0	0.0	3992.5	12.6	2.1
DEC	41.	2.5	1.15	.1	2.	.1	0.0	0.0	3994.8	14.9	2.3
TOTAL		25.4	44.00	4.1		18.4	0.0	0.0			2.9

MERRITT RESERVOIR OPERATION ESTIMATES - 1984

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
					REASONABLE MINIMUM INFLOW CONDITIONS						
JAN	190.	11.7	1.13	.3	16.	1.0	10.4	0.0	2944.0	68.8	0.0
FEB	211.	11.7	1.43	.3	18.	1.0	10.4	0.0	2944.0	68.8	0.0
MAR	233.	14.3	1.99	.5	16.	1.0	7.1	0.0	2946.0	74.5	5.7
APR	234.	13.9	3.31	.8	17.	1.0	12.1	0.0	2946.0	74.5	0.0
MAY	216.	13.3	4.79	1.2	104.	6.4	5.7	0.0	2946.0	74.5	0.0
JUN	207.	12.3	6.20	1.5	165.	9.8	1.0	0.0	2946.0	74.5	0.0
JUL	208.	12.8	8.03	1.6	719.	44.2	0.0	0.0	2932.0	41.5	-33.0
AUG	208.	12.8	7.33	.7	719.	44.2	0.0	0.0	2901.5	9.4	-32.1
SEP	207.	12.3	5.39	.3	143.	8.5	0.0	0.0	2907.4	12.9	3.5
OCT	207.	12.7	3.76	.3	16.	1.0	0.0	0.0	2920.1	24.3	11.4
NOV	205.	12.2	2.15	.2	17.	1.0	0.0	0.0	2928.3	35.3	11.0
DEC	202.	12.4	1.49	.2	16.	1.0	0.0	0.0	2934.6	46.5	11.2
TOTAL		152.4	47.00	7.9		120.1	46.7	0.0			-22.3
					MOST PROBABLE INFLOW CONDITIONS						
JAN	213.	13.1	1.07	.2	16.	1.0	11.9	0.0	2944.0	68.8	0.0
FEB	236.	13.1	1.34	.3	18.	1.0	11.8	0.0	2944.0	68.8	0.0
MAR	262.	16.1	1.87	.4	16.	1.0	9.0	0.0	2946.0	74.5	5.7
APR	260.	15.5	3.10	.8	17.	1.0	13.7	0.0	2946.0	74.5	0.0
MAY	242.	14.9	4.48	1.1	83.	5.1	8.7	0.0	2946.0	74.5	0.0
JUN	232.	13.8	5.80	1.4	131.	7.8	4.6	0.0	2946.0	74.5	0.0
JUL	233.	14.3	7.50	1.6	530.	32.6	0.0	0.0	2938.4	54.6	-19.9
AUG	233.	14.3	6.85	1.1	530.	32.6	0.0	0.0	2928.3	35.2	-19.4
SEP	232.	13.8	5.04	.7	108.	6.4	0.0	0.0	2932.2	41.9	6.7
OCT	231.	14.2	3.52	.6	16.	1.0	0.0	0.0	2938.3	54.5	12.6
NOV	230.	13.7	2.02	.4	17.	1.0	0.0	0.0	2943.2	66.8	12.3
DEC	224.	13.8	1.41	.3	16.	1.0	10.5	0.0	2944.0	68.8	2.0
TOTAL		170.6	44.00	8.9		91.5	70.2	0.0			.0
					REASONABLE MAXIMUM INFLOW CONDITIONS						
JAN	236.	14.5	.94	.2	16.	1.0	13.3	0.0	2944.0	68.8	0.0
FEB	261.	14.5	1.19	.3	18.	1.0	13.2	0.0	2944.0	68.8	0.0
MAR	288.	17.7	1.65	.4	16.	1.0	10.6	0.0	2946.0	74.5	5.7
APR	287.	17.1	2.75	.7	17.	1.0	15.4	0.0	2946.0	74.5	0.0
MAY	267.	16.4	3.97	1.0	55.	3.4	12.0	0.0	2946.0	74.5	0.0
JUN	257.	15.3	5.15	1.2	86.	5.1	9.0	0.0	2946.0	74.5	0.0
JUL	257.	15.8	6.66	1.6	348.	21.4	0.0	0.0	2943.4	67.3	-7.2
AUG	257.	15.8	6.08	1.3	348.	21.4	0.0	0.0	2940.8	60.4	-6.9
SEP	255.	15.2	4.47	1.0	74.	4.4	1.4	0.0	2944.0	68.8	8.4
OCT	254.	15.6	3.12	.7	16.	1.0	13.9	0.0	2944.0	68.8	0.0
NOV	254.	15.1	1.78	.4	17.	1.0	13.7	0.0	2944.0	68.8	0.0
DEC	247.	15.2	1.24	.3	16.	1.0	13.9	0.0	2944.0	68.8	0.0
TOTAL		188.2	39.00	9.1		62.7	116.4	0.0			-.0

SHERMAN RESERVOIR OPERATION ESTIMATES - 1984

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	0.	0.0	.65	.1	21.	1.3	0.0	0.0	2155.9	52.3	-1.4
FEB	0.	0.0	.71	.1	23.	1.3	0.0	0.0	2155.3	50.9	-1.4
MAR	0.	0.0	1.59	.3	21.	1.3	0.0	0.0	2154.6	49.3	-1.6
APR	240.	14.3	3.85	.8	22.	1.3	0.0	0.0	2159.6	61.5	12.2
MAY	163.	10.0	3.74	.9	24.	1.5	0.0	0.0	2162.3	69.1	7.6
JUN	249.	14.8	4.67	1.1	259.	15.4	0.0	0.0	2161.7	67.4	-1.7
JUL	179.	11.0	7.91	1.3	1210.	74.4	0.0	7.8	2129.0	10.5	-56.9
AUG	120.	7.4	7.12	.5	1205.	74.1	0.0	67.2	2129.0	10.5	0.0
SEP	424.	25.2	4.27	.4	245.	14.6	0.0	0.0	2138.6	20.7	10.2
OCT	546.	33.6	4.16	.7	18.	1.1	0.0	0.0	2156.0	52.5	31.8
NOV	0.	0.0	2.26	.4	22.	1.3	0.0	0.0	2155.3	50.8	-1.7
DEC	0.	0.0	.79	.2	21.	1.3	0.0	0.0	2154.6	49.3	-1.5
TOTAL		116.3	41.72	6.8		188.9	0.0	75.0			-4.4
MOST PROBABLE INFLOW CONDITIONS											
JAN	0.	0.0	.43	.1	21.	1.3	0.0	0.0	2155.9	52.3	-1.4
FEB	0.	0.0	.60	.1	23.	1.3	0.0	0.0	2155.3	50.9	-1.4
MAR	0.	0.0	1.19	.2	21.	1.3	0.0	0.0	2154.7	49.4	-1.5
APR	225.	13.4	2.08	.4	22.	1.3	0.0	0.0	2159.4	61.1	11.7
MAY	163.	10.0	2.22	.5	24.	1.5	0.0	0.0	2162.3	69.1	8.0
JUN	141.	8.4	3.32	.8	128.	7.6	0.0	0.0	2162.3	69.1	0.0
JUL	296.	18.2	5.59	1.1	883.	54.3	0.0	0.0	2146.0	31.9	-37.2
AUG	207.	12.7	5.12	.6	862.	53.0	0.0	19.5	2129.0	10.5	-21.4
SEP	541.	32.2	3.23	.4	129.	7.7	0.0	0.0	2147.5	34.6	24.1
OCT	320.	19.7	3.81	.7	18.	1.1	0.0	0.0	2156.0	52.5	17.9
NOV	0.	0.0	1.76	.3	22.	1.3	0.0	0.0	2155.3	50.9	-1.6
DEC	0.	0.0	.58	.1	21.	1.3	0.0	0.0	2154.7	49.5	-1.4
TOTAL		114.6	29.93	5.3		133.0	0.0	19.5			-4.2
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	0.	0.0	.21	0.0	21.	1.3	0.0	0.0	2156.0	52.4	-1.3
FEB	0.	0.0	.32	.1	23.	1.3	0.0	0.0	2155.4	51.0	-1.4
MAR	0.	0.0	.42	.1	21.	1.3	0.0	0.0	2154.8	49.6	-1.4
APR	210.	12.5	.59	.1	22.	1.3	0.0	0.0	2159.2	60.7	11.1
MAY	163.	10.0	.39	.1	24.	1.5	0.0	0.0	2162.3	69.1	8.4
JUN	97.	5.8	.91	.2	94.	5.6	0.0	0.0	2162.3	69.1	0.0
JUL	384.	23.6	4.82	1.1	605.	37.2	0.0	0.0	2156.8	54.4	-14.7
AUG	207.	12.7	4.02	.7	584.	35.9	0.0	0.0	2145.2	30.5	-23.9
SEP	504.	30.0	2.14	.4	96.	5.7	0.0	0.0	2156.8	54.4	23.9
OCT	0.	0.0	3.37	.7	18.	1.1	0.0	0.0	2156.0	52.6	-1.8
NOV	0.	0.0	.40	.1	22.	1.3	0.0	0.0	2155.5	51.2	-1.4
DEC	0.	0.0	.24	0.0	21.	1.3	0.0	0.0	2154.9	49.9	-1.3
TOTAL		94.6	17.83	3.6		94.8	0.0	0.0			-3.8

BONNY RESERVOIR OPERATION ESTIMATES - 1984

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT HALE 1000 AF	RELEASE REQUIREMENT RIVER 1000 AF	RELEASE REQUIREMENT TOTAL MEAN CFS	RELEASE REQUIREMENT TOTAL 1000 AF	RES SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS													
JAN	21.	1.3	1.45	.2	0.0	1.1	18.	1.1	0.0	0.0	3669.4	36.3	0.0
FEB	22.	1.2	1.55	.2	0.0	1.0	18.	1.0	0.0	0.0	3669.4	36.3	0.0
MAR	26.	1.6	2.45	.4	0.0	.3	5.	.3	0.0	0.0	3669.9	37.2	.9
APR	27.	1.6	4.30	.7	.3	.3	10.	.6	0.0	0.0	3670.1	37.5	.3
MAY	41.	2.5	5.35	.9	.9	.3	20.	1.2	0.0	0.0	3670.3	37.9	.4
JUN	34.	2.0	6.95	1.1	.9	.3	20.	1.2	0.0	0.0	3670.1	37.6	-.3
JUL	24.	1.5	8.30	1.3	.9	.3	20.	1.2	0.0	0.0	3669.6	36.6	-1.0
AUG	16.	1.0	7.00	1.1	.8	.3	18.	1.1	0.0	0.0	3668.9	35.4	-1.2
SEP	12.	.7	5.20	.8	.6	.3	15.	.9	0.0	0.0	3668.4	34.4	-1.0
OCT	16.	1.0	5.05	.8	.5	.3	13.	.8	0.0	0.0	3668.1	33.8	-.6
NOV	22.	1.3	3.05	.5	.3	.3	10.	.6	0.0	0.0	3668.2	34.0	.2
DEC	21.	1.3	1.85	.3	0.0	1.0	16.	1.0	0.0	0.0	3668.2	34.0	0.0
TOTAL		17.0	52.50	8.3	5.2	5.8		11.0	0.0	0.0			-2.3
MOST PROBABLE INFLOW CONDITIONS													
JAN	28.	1.7	1.20	.2	0.0	1.5	24.	1.5	0.0	0.0	3669.4	36.3	0.0
FEB	29.	1.6	1.40	.2	0.0	1.4	25.	1.4	0.0	0.0	3669.4	36.3	0.0
MAR	34.	2.1	1.85	.3	0.0	.3	5.	.3	0.0	0.0	3670.2	37.8	1.5
APR	35.	2.1	2.80	.5	.4	.3	12.	.7	0.0	0.0	3670.7	38.7	.9
MAY	54.	3.3	3.00	.5	.6	.3	15.	.9	0.0	0.0	3671.6	40.6	1.9
JUN	44.	2.6	4.60	.8	.6	.3	15.	.9	.2	0.0	3672.0	41.3	.7
JUL	31.	1.9	6.25	1.1	.4	.3	11.	.7	.1	0.0	3672.0	41.3	0.0
AUG	23.	1.4	6.10	1.0	.4	.3	11.	.7	0.0	0.0	3671.8	41.0	-.3
SEP	15.	.9	4.30	.7	.6	.3	15.	.9	0.0	0.0	3671.5	40.3	-.7
OCT	21.	1.3	4.55	.8	.6	.3	15.	.9	0.0	0.0	3671.3	39.9	-.4
NOV	29.	1.7	2.80	.5	.2	.3	8.	.5	0.0	0.0	3671.6	40.6	.7
DEC	28.	1.7	1.55	.3	0.0	1.4	23.	1.4	0.0	0.0	3671.6	40.6	0.0
TOTAL		22.3	40.40	6.9	3.8	7.0		10.8	.3	0.0			4.3
REASONABLE MAXIMUM INFLOW CONDITIONS													
JAN	46.	2.8	.90	.1	0.0	2.7	44.	2.7	0.0	0.0	3669.4	36.3	0.0
FEB	49.	2.7	1.25	.2	0.0	2.5	45.	2.5	0.0	0.0	3669.4	36.3	0.0
MAR	55.	3.4	1.35	.2	0.0	.3	5.	.3	0.0	0.0	3670.9	39.2	2.9
APR	59.	3.5	2.40	.4	.3	.3	10.	.6	.4	0.0	3672.0	41.3	2.1
MAY	91.	5.6	2.05	.3	.5	.3	13.	.8	4.5	0.0	3672.0	41.3	0.0
JUN	72.	4.3	2.50	.4	.2	.3	8.	.5	3.4	0.0	3672.0	41.3	0.0
JUL	54.	3.3	5.05	.9	.2	.3	8.	.5	1.9	0.0	3672.0	41.3	0.0
AUG	37.	2.3	4.00	.7	.4	.3	11.	.7	.9	0.0	3672.0	41.3	0.0
SEP	25.	1.5	3.20	.5	.4	.3	12.	.7	.3	0.0	3672.0	41.3	0.0
OCT	34.	2.1	3.40	.6	.3	.3	10.	.6	.9	0.0	3672.0	41.3	0.0
NOV	49.	2.9	2.60	.4	.3	.3	10.	.6	1.9	0.0	3672.0	41.3	0.0
DEC	46.	2.8	1.30	.2	0.0	.3	5.	.3	2.3	0.0	3672.0	41.3	0.0
TOTAL		37.2	30.00	4.9	2.6	8.2		10.8	16.5	0.0			5.0

SWANSON LAKE OPERATION ESTIMATES - 1984

MONTH	UNDEPLETED INFLOW 1000 AF	UPSTREAM DEPLETIONS 1000 AF	DEPLETED INFLOW MEAN CFS	DEPLETED INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RES SPILL 1000 AF	REQ SHORT 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RES CHANGE 1000 AF
					REASONABLE MINIMUM INFLOW CONDITIONS								
JAN	3.3	0.0	54.	3.3	1.05	.3	2.	.1	0.0	0.0	2742.8	72.0	2.9
FEB	4.8	0.0	86.	4.8	1.20	.4	2.	.1	0.0	0.0	2743.9	76.3	4.3
MAR	7.2	0.0	117.	7.2	1.95	.7	2.	.1	0.0	0.0	2745.5	82.7	6.4
APR	6.6	0.0	111.	6.6	3.85	1.4	2.	.1	0.0	0.0	2746.7	87.8	5.1
MAY	7.0	0.0	114.	7.0	4.10	1.5	102.	6.3	0.0	0.0	2746.5	87.0	-.8
JUN	6.2	0.0	104.	6.2	5.20	1.8	118.	7.0	0.0	0.0	2745.9	84.4	-2.6
JUL	4.9	0.0	80.	4.9	7.70	2.5	353.	21.7	0.0	0.0	2741.0	65.1	-19.3
AUG	3.3	0.0	54.	3.3	6.90	1.9	346.	21.3	0.0	0.0	2735.0	45.2	-19.9
SEP	1.6	0.0	27.	1.6	5.25	1.2	198.	11.8	0.0	0.0	2730.8	33.8	-11.4
OCT	1.9	0.0	31.	1.9	4.60	.9	63.	3.9	0.0	0.0	2729.7	30.9	-2.9
NOV	3.1	0.0	52.	3.1	2.70	.5	2.	.1	0.0	0.0	2730.7	33.4	2.5
DEC	3.1	0.0	50.	3.1	1.30	.3	2.	.1	0.0	0.0	2731.8	36.1	2.7
TOTAL	53.0	0.0		53.0	45.80	13.4		72.6	0.0	0.0			-33.0
					MOST PROBABLE INFLOW CONDITIONS								
JAN	5.1	0.0	83.	5.1	.75	.2	2.	.1	0.0	0.0	2743.3	73.9	4.8
FEB	7.5	0.0	135.	7.5	1.00	.3	2.	.1	0.0	0.0	2745.1	81.0	7.1
MAR	11.3	0.0	184.	11.3	1.40	.5	2.	.1	0.0	0.0	2747.6	91.7	10.7
APR	10.3	0.0	173.	10.3	2.40	.9	2.	.1	0.0	0.0	2749.6	101.0	9.3
MAY	10.9	0.0	177.	10.9	2.10	.8	23.	1.4	0.0	0.0	2751.5	109.7	8.7
JUN	9.6	0.0	161.	9.6	3.70	1.5	27.	1.6	4.0	0.0	2752.0	112.2	2.5
JUL	7.7	0.0	125.	7.7	6.10	2.4	270.	16.6	0.0	0.0	2749.6	100.9	-11.3
AUG	5.1	0.0	83.	5.1	5.70	2.1	301.	18.5	0.0	0.0	2746.1	85.4	-15.5
SEP	2.5	0.0	42.	2.5	3.40	1.2	89.	5.3	0.0	0.0	2745.2	81.4	-4.0
OCT	3.0	0.0	49.	3.0	4.30	1.5	26.	1.6	0.0	0.0	2745.1	81.3	-.1
NOV	4.9	0.0	82.	4.9	2.10	.7	2.	.1	0.0	0.0	2746.1	85.4	4.1
DEC	4.8	0.0	78.	4.8	1.10	.4	2.	.1	0.0	0.0	2747.1	89.7	4.3
TOTAL	82.7	0.0		82.7	34.05	12.5		45.6	4.0	0.0			20.6
					REASONABLE MAXIMUM INFLOW CONDITIONS								
JAN	9.0	0.0	146.	9.0	.55	.2	2.	.1	0.0	0.0	2744.3	77.8	8.7
FEB	13.2	0.0	238.	13.2	.60	.2	2.	.1	0.0	0.0	2747.3	90.7	12.9
MAR	19.7	0.0	320.	19.7	.60	.2	2.	.1	0.0	0.0	2751.6	110.1	19.4
APR	18.1	0.0	304.	18.1	.60	.2	2.	.1	15.7	0.0	2752.0	112.2	2.1
MAY	19.1	0.0	311.	19.1	.80	.3	13.	.8	18.0	0.0	2752.0	112.2	0.0
JUN	16.8	0.0	282.	16.8	1.90	.8	17.	1.0	15.0	0.0	2752.0	112.2	0.0
JUL	13.5	0.0	220.	13.5	4.00	1.6	146.	9.0	2.9	0.0	2752.0	112.2	0.0
AUG	9.0	0.0	146.	9.0	5.00	2.0	169.	10.4	0.0	0.0	2751.3	108.8	-3.4
SEP	4.3	0.0	72.	4.3	2.40	1.0	30.	1.8	0.0	0.0	2751.6	110.3	1.5
OCT	5.3	0.0	86.	5.3	3.80	1.6	15.	.9	.9	0.0	2752.0	112.2	1.9
NOV	8.5	0.0	143.	8.5	1.60	.7	2.	.1	7.7	0.0	2752.0	112.2	0.0
DEC	8.5	0.0	138.	8.5	.65	.3	2.	.1	8.1	0.0	2752.0	112.2	0.0
TOTAL	145.0	0.0		145.0	22.50	9.1		24.5	68.3	0.0			43.1

ENDERS RESERVOIR OPERATION ESTIMATES - 1984

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	44.	2.7	1.05	.1	0.	0.0	0.0	0.0	3099.5	25.9	2.6
FEB	47.	2.6	1.20	.1	0.	0.0	0.0	0.0	3101.5	28.4	2.5
MAR	44.	2.7	1.95	.2	3.	.2	0.0	0.0	3103.2	30.7	2.3
APR	40.	2.4	4.10	.5	3.	.2	0.0	0.0	3104.5	32.4	1.7
MAY	42.	2.6	4.65	.5	52.	3.2	0.0	0.0	3103.7	31.3	-1.1
JUN	47.	2.8	5.25	.6	61.	3.6	0.0	0.0	3102.6	29.9	-1.4
JUL	42.	2.6	8.60	.8	330.	20.3	0.0	0.0	3084.5	11.4	-18.5
AUG	39.	2.4	6.85	.4	311.	19.1	0.0	15.7	3082.4	10.0	-1.4
SEP	44.	2.6	5.50	.3	118.	7.0	0.0	4.7	3082.4	10.0	0.0
OCT	39.	2.4	4.60	.3	3.	.2	0.0	0.0	3085.2	11.9	1.9
NOV	44.	2.6	2.65	.2	0.	0.0	0.0	0.0	3088.2	14.3	2.4
DEC	42.	2.6	1.20	.1	0.	0.0	0.0	0.0	3091.0	16.8	2.5
TOTAL		31.0	47.60	4.1		53.8	0.0	20.4			-6.5
MOST PROBABLE INFLOW CONDITIONS											
JAN	52.	3.2	.75	.1	0.	0.0	0.0	0.0	3099.9	26.4	3.1
FEB	54.	3.0	.95	.1	0.	0.0	0.0	0.0	3102.2	29.3	2.9
MAR	54.	3.3	1.35	.2	3.	.2	0.0	0.0	3104.3	32.2	2.9
APR	49.	2.9	2.60	.3	3.	.2	0.0	0.0	3106.0	34.6	2.4
MAY	52.	3.2	3.00	.4	11.	.7	0.0	0.0	3107.4	36.7	2.1
JUN	57.	3.4	3.55	.5	15.	.9	0.0	0.0	3108.7	38.7	2.0
JUL	52.	3.2	5.90	.7	236.	14.5	0.0	0.0	3100.1	26.7	-12.0
AUG	47.	2.9	6.50	.6	249.	15.3	0.0	0.0	3087.5	13.7	-13.0
SEP	50.	3.0	3.45	.2	52.	3.1	0.0	0.0	3087.1	13.4	-.3
OCT	49.	3.0	4.30	.3	0.	0.0	0.0	0.0	3090.3	16.1	2.7
NOV	52.	3.1	2.30	.2	0.	0.0	0.0	0.0	3093.3	19.0	2.9
DEC	52.	3.2	.90	.1	0.	0.0	0.0	0.0	3096.2	22.1	3.1
TOTAL		37.4	35.55	3.7		34.9	0.0	0.0			-1.2
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	63.	3.9	.55	.1	0.	0.0	0.0	0.0	3100.4	27.1	3.8
FEB	63.	3.5	.30	0.0	0.	0.0	0.0	0.0	3103.1	30.6	3.5
MAR	63.	3.9	.95	.1	3.	.2	0.0	0.0	3105.7	34.2	3.6
APR	59.	3.5	.80	.1	3.	.2	0.0	0.0	3107.9	37.4	3.2
MAY	60.	3.7	1.25	.2	3.	.2	0.0	0.0	3110.0	40.7	3.3
JUN	67.	4.0	2.40	.3	3.	.2	0.0	0.0	3112.1	44.2	3.5
JUL	59.	3.6	4.35	.6	135.	8.3	0.0	0.0	3108.9	38.9	-5.3
AUG	54.	3.3	4.50	.6	148.	9.1	0.0	0.0	3104.5	32.5	-6.4
SEP	57.	3.4	2.30	.3	24.	1.4	0.0	0.0	3105.7	34.2	1.7
OCT	55.	3.4	3.35	.4	0.	0.0	0.0	0.0	3107.8	37.2	3.0
NOV	61.	3.6	1.90	.2	0.	0.0	0.0	0.0	3110.0	40.6	3.4
DEC	60.	3.7	.65	.1	0.	0.0	0.0	0.0	3112.1	44.2	3.6
TOTAL		43.5	23.30	3.0		19.6	0.0	0.0			20.9

HUGH BUTLER LAKE OPERATION ESTIMATES - 1984

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
					REASONABLE MINIMUM INFLOW CONDITIONS						
JAN	18.	1.1	.92	.1	5.	.3	0.0	0.0	2575.8	28.8	.7
FEB	23.	1.3	1.11	.1	5.	.3	0.0	0.0	2576.4	29.7	.9
MAR	31.	1.9	2.01	.2	5.	.3	0.0	0.0	2577.4	31.1	1.4
APR	29.	1.7	4.39	.5	5.	.3	0.0	0.0	2578.1	32.0	.9
MAY	29.	1.8	4.45	.5	31.	1.9	0.0	0.0	2577.6	31.4	-.6
JUN	35.	2.1	7.01	.8	30.	1.8	0.0	0.0	2577.3	30.9	-.5
JUL	28.	1.7	8.45	.9	80.	4.9	0.0	0.0	2574.2	26.8	-4.1
AUG	18.	1.1	6.73	.7	75.	4.6	0.0	0.0	2570.7	22.6	-4.2
SEP	18.	1.1	6.08	.6	39.	2.3	0.0	0.0	2569.1	20.8	-1.8
OCT	16.	1.0	4.72	.4	11.	.7	0.0	0.0	2569.0	20.7	-.1
NOV	18.	1.1	2.63	.2	5.	.3	0.0	0.0	2569.5	21.3	.6
DEC	18.	1.1	1.20	.1	5.	.3	0.0	0.0	2570.2	22.0	.7
TOTAL		17.0	49.70	5.1		18.0	0.0	0.0			-6.1
					MOST PROBABLE INFLOW CONDITIONS						
JAN	23.	1.4	.70	.1	5.	.3	0.0	0.0	2576.0	29.1	1.0
FEB	31.	1.7	.75	.1	5.	.3	0.0	0.0	2576.9	30.4	1.3
MAR	39.	2.4	1.35	.2	5.	.3	0.0	0.0	2578.3	32.3	1.9
APR	35.	2.1	2.70	.3	5.	.3	0.0	0.0	2579.3	33.8	1.5
MAY	36.	2.2	2.80	.4	16.	1.0	0.0	0.0	2579.8	34.6	.8
JUN	45.	2.7	2.99	.4	15.	.9	0.0	0.0	2580.7	36.0	1.4
JUL	36.	2.2	6.09	.8	68.	4.2	0.0	0.0	2578.9	33.2	-2.8
AUG	23.	1.4	5.52	.7	73.	4.5	0.0	0.0	2576.2	29.4	-3.8
SEP	24.	1.4	3.81	.4	22.	1.3	0.0	0.0	2576.0	29.1	-.3
OCT	20.	1.2	3.88	.4	8.	.5	0.0	0.0	2576.2	29.4	.3
NOV	24.	1.4	1.84	.2	5.	.3	0.0	0.0	2576.8	30.3	.9
DEC	23.	1.4	.87	.1	5.	.3	0.0	0.0	2577.6	31.3	1.0
TOTAL		21.5	33.30	4.1		14.2	0.0	0.0			3.2
					REASONABLE MAXIMUM INFLOW CONDITIONS						
JAN	29.	1.8	.40	0.0	5.	.3	0.0	0.0	2576.3	29.6	1.5
FEB	40.	2.2	.47	.1	5.	.3	0.0	0.0	2577.6	31.4	1.8
MAR	52.	3.2	.85	.1	5.	.3	0.0	0.0	2579.5	34.2	2.8
APR	47.	2.8	1.52	.2	5.	.3	0.0	0.0	2581.0	36.5	2.3
MAY	49.	3.0	1.78	.2	13.	.8	.7	0.0	2581.8	37.8	1.3
JUN	59.	3.5	1.82	.2	13.	.8	2.5	0.0	2581.8	37.8	0.0
JUL	47.	2.9	3.42	.5	47.	2.9	0.0	0.0	2581.5	37.3	-.5
AUG	31.	1.9	4.12	.5	47.	2.9	0.0	0.0	2580.6	35.8	-1.5
SEP	32.	1.9	3.09	.4	15.	.9	0.0	0.0	2580.9	36.4	.6
OCT	28.	1.7	3.21	.4	5.	.3	0.0	0.0	2581.6	37.4	1.0
NOV	30.	1.8	1.15	.2	5.	.3	.9	0.0	2581.8	37.8	.4
DEC	29.	1.8	.77	.1	5.	.3	1.4	0.0	2581.8	37.8	0.0
TOTAL		28.5	22.60	2.9		10.4	5.5	0.0			9.7

HARRY STRUNK LAKE OPERATION ESTIMATES - 1984

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	39.	2.4	.76	.1	2.	.1	0.0	0.0	2362.9	30.2	2.2
FEB	54.	3.0	.89	.1	2.	.1	0.0	0.0	2364.6	33.0	2.8
MAR	65.	4.0	1.87	.3	2.	.1	.9	0.0	2366.1	35.7	2.7
APR	57.	3.4	4.23	.6	2.	.1	2.7	0.0	2366.1	35.7	0.0
MAY	67.	4.1	4.07	.6	60.	3.7	0.0	0.0	2366.0	35.5	-.2
JUN	91.	5.4	5.02	.8	62.	3.7	.7	0.0	2366.1	35.7	.2
JUL	75.	4.6	8.41	1.1	228.	14.0	0.0	0.0	2359.4	25.2	-10.5
AUG	44.	2.7	7.42	.7	224.	13.8	0.0	0.0	2348.8	13.4	-11.8
SEP	34.	2.0	4.64	.3	104.	6.2	0.0	0.0	2343.0	8.9	-4.5
OCT	36.	2.2	4.52	.3	23.	1.4	0.0	0.0	2343.7	9.4	.5
NOV	40.	2.4	2.57	.2	2.	.1	0.0	0.0	2346.5	11.5	2.1
DEC	39.	2.4	1.10	.1	2.	.1	0.0	0.0	2349.1	13.7	2.2
TOTAL		38.6	45.50	5.2		43.4	4.3	0.0			-14.3
MOST PROBABLE INFLOW CONDITIONS											
JAN	49.	3.0	.50	.1	2.	.1	0.0	0.0	2363.2	30.8	2.8
FEB	70.	3.9	.75	.1	2.	.1	0.0	0.0	2365.4	34.5	3.7
MAR	81.	5.0	1.40	.2	2.	.1	3.5	0.0	2366.1	35.7	1.2
APR	72.	4.3	2.29	.4	2.	.1	3.8	0.0	2366.1	35.7	0.0
MAY	85.	5.2	2.41	.4	5.	.3	4.5	0.0	2366.1	35.7	0.0
JUN	114.	6.8	3.57	.5	8.	.5	5.8	0.0	2366.1	35.7	0.0
JUL	94.	5.8	5.95	.8	177.	10.9	0.0	0.0	2362.6	29.8	-5.9
AUG	57.	3.5	5.33	.6	205.	12.6	0.0	0.0	2355.4	20.1	-9.7
SEP	44.	2.6	3.51	.3	37.	2.2	0.0	0.0	2355.5	20.2	.1
OCT	46.	2.8	4.14	.4	5.	.3	0.0	0.0	2357.2	22.3	2.1
NOV	52.	3.1	2.00	.2	2.	.1	0.0	0.0	2359.4	25.1	2.8
DEC	49.	3.0	.81	.1	2.	.1	0.0	0.0	2361.4	27.9	2.8
TOTAL		49.0	32.66	4.1		27.4	17.6	0.0			-.1
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	73.	4.5	.25	0.0	2.	.1	0.0	0.0	2364.2	32.4	4.4
FEB	104.	5.8	.40	.1	2.	.1	2.3	0.0	2366.1	35.7	3.3
MAR	120.	7.4	.49	.1	2.	.1	7.2	0.0	2366.1	35.7	0.0
APR	106.	6.3	.65	.1	2.	.1	6.1	0.0	2366.1	35.7	0.0
MAY	124.	7.6	.42	.1	2.	.1	7.4	0.0	2366.1	35.7	0.0
JUN	168.	10.0	.98	.2	2.	.1	9.7	0.0	2366.1	35.7	0.0
JUL	140.	8.6	5.13	.8	91.	5.6	2.2	0.0	2366.1	35.7	0.0
AUG	83.	5.1	4.19	.6	106.	6.5	0.0	0.0	2365.0	33.7	-2.0
SEP	64.	3.8	2.33	.3	10.	.6	.9	0.0	2366.1	35.7	2.0
OCT	67.	4.1	3.66	.6	2.	.1	3.4	0.0	2366.1	35.7	0.0
NOV	76.	4.5	.46	.1	2.	.1	4.3	0.0	2366.1	35.7	0.0
DEC	73.	4.5	.34	.1	2.	.1	4.3	0.0	2366.1	35.7	0.0
TOTAL		72.2	19.30	3.1		13.6	47.8	0.0			7.7

KEITH SEBELIUS OPERATIONS ESTIMATES - 1984

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
					REASONABLE MINIMUM INFLOW CONDITIONS						
JAN	2.	.1	.95	0.0	2.	.1	0.0	0.0	2279.1	4.6	0.0
FEB	2.	.1	1.00	0.0	2.	.1	0.0	0.0	2279.1	4.6	0.0
MAR	7.	.4	1.98	.1	2.	.1	0.0	0.0	2279.5	4.8	.2
APR	3.	.2	4.34	.2	2.	.1	0.0	0.0	2279.3	4.7	-.1
MAY	7.	.4	4.10	.2	7.	.4	0.0	0.0	2278.9	4.5	-.2
JUN	24.	1.4	7.86	.4	10.	.6	0.0	0.0	2279.7	4.9	.4
JUL	13.	.8	8.77	.4	122.	7.5	0.0	6.2	2278.0	4.0	-.9
AUG	5.	.3	7.38	.3	117.	7.2	0.0	6.2	2275.7	3.0	-1.0
SEP	5.	.3	6.12	.2	47.	2.8	0.0	2.4	2274.9	2.7	-.3
OCT	3.	.2	4.66	.2	20.	1.2	0.0	1.2	2274.9	2.7	.0
NOV	2.	.1	2.62	.1	2.	.1	0.0	.1	2274.9	2.7	.0
DEC	2.	.1	1.22	0.0	2.	.1	0.0	0.0	2274.9	2.7	.0
TOTAL		4.4	51.00	2.1		20.3	0.0	16.1			-1.9
					MOST PROBABLE INFLOW CONDITIONS						
JAN	2.	.1	.80	0.0	2.	.1	0.0	0.0	2279.1	4.6	0.0
FEB	5.	.3	.85	0.0	2.	.1	0.0	0.0	2279.5	4.8	.2
MAR	13.	.8	1.24	.1	2.	.1	0.0	0.0	2280.6	5.4	.6
APR	8.	.5	2.78	.1	2.	.1	0.0	0.0	2281.1	5.7	.3
MAY	15.	.9	2.55	.1	2.	.1	0.0	0.0	2282.2	6.4	.7
JUN	52.	3.1	3.85	.2	2.	.1	0.0	0.0	2285.8	9.2	2.8
JUL	28.	1.7	5.97	.4	75.	4.6	0.0	0.0	2281.4	5.9	-3.3
AUG	11.	.7	5.89	.3	83.	5.1	0.0	3.1	2278.6	4.3	-1.6
SEP	13.	.8	4.38	.2	20.	1.2	0.0	.6	2278.6	4.3	0.0
OCT	7.	.4	4.14	.2	5.	.3	0.0	.1	2278.6	4.3	0.0
NOV	3.	.2	2.12	.1	2.	.1	0.0	0.0	2278.6	4.3	0.0
DEC	3.	.2	1.03	0.0	2.	.1	0.0	0.0	2278.7	4.4	.1
TOTAL		9.7	35.60	1.7		12.0	0.0	3.8			-.2
					REASONABLE MAXIMUM INFLOW CONDITIONS						
JAN	7.	.4	.50	0.0	2.	.1	0.0	0.0	2279.7	4.9	.3
FEB	18.	1.0	.52	0.0	2.	.1	0.0	0.0	2281.2	5.8	.9
MAR	37.	2.3	.54	0.0	2.	.1	0.0	0.0	2284.4	8.0	2.2
APR	22.	1.3	1.43	.1	2.	.1	0.0	0.0	2285.7	9.1	1.1
MAY	42.	2.6	1.16	.1	2.	.1	0.0	0.0	2288.4	11.5	2.4
JUN	143.	8.5	2.52	.2	2.	.1	0.0	0.0	2295.2	19.7	8.2
JUL	78.	4.8	4.42	.6	13.	.8	0.0	0.0	2297.4	23.1	3.4
AUG	33.	2.0	5.23	.7	31.	1.9	0.0	0.0	2297.1	22.5	-.6
SEP	37.	2.2	3.07	.4	2.	.1	0.0	0.0	2298.1	24.2	1.7
OCT	20.	1.2	2.72	.4	2.	.1	0.0	0.0	2298.5	24.9	.7
NOV	7.	.4	1.25	.2	2.	.1	0.0	0.0	2298.6	25.0	.1
DEC	8.	.5	.64	.1	2.	.1	0.0	0.0	2298.8	25.3	.3
TOTAL		27.2	24.00	2.8		3.7	0.0	0.0			20.7

HARLAN COUNTY LAKE OPERATION ESTIMATES - 1984

MONTH	UNDEPLETED INFLOW 1000 AF	UPSTREAM DEPLETIONS 1000 AF	DEPLETED INFLOW MEAN CFS	DEPLETED INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RES SPILL 1000 AF	REQ SHORT 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RES CHANGE 1000 AF
					REASONABLE MINIMUM INFLOW CONDITIONS								
JAN	5.3	0.0	86.	5.3	.90	.9	10.	.6	0.0	0.0	1941.0	266.6	3.8
FEB	8.9	0.0	160.	8.9	.78	.7	11.	.6	0.0	0.0	1941.7	274.2	7.6
MAR	14.6	0.0	237.	14.6	1.74	1.7	0.	0.0	0.0	0.0	1942.8	287.1	12.9
APR	12.9	0.0	217.	12.9	4.70	4.8	0.	0.0	0.0	0.0	1943.4	295.2	8.1
MAY	16.8	0.0	273.	16.8	4.38	4.5	280.	17.2	0.0	0.0	1943.0	290.3	-4.9
JUN	26.3	0.0	442.	26.3	6.60	6.7	195.	11.6	0.0	0.0	1943.7	298.3	8.0
JUL	13.5	0.0	220.	13.5	9.71	9.5	659.	40.5	0.0	0.0	1940.6	261.8	-36.5
AUG	9.0	0.0	146.	9.0	8.41	7.4	722.	44.4	0.0	0.0	1936.5	219.0	-42.8
SEP	6.6	0.0	111.	6.6	5.56	4.6	257.	15.3	0.0	0.0	1935.2	205.7	-13.3
OCT	6.1	0.0	99.	6.1	4.52	3.7	0.	0.0	0.0	0.0	1935.4	208.1	2.4
NOV	5.3	0.0	89.	5.3	2.58	2.1	0.	0.0	0.0	0.0	1935.8	211.3	3.2
DEC	5.1	0.0	83.	5.1	1.12	.9	5.	.3	0.0	0.0	1936.2	215.2	3.9
TOTAL	130.4	0.0		130.4	51.00	47.5		130.5	0.0	0.0			-47.6
					MOST PROBABLE INFLOW CONDITIONS								
JAN	9.6	0.0	156.	9.6	.65	.6	10.	.6	0.0	0.0	1941.4	271.2	8.4
FEB	16.0	0.0	288.	16.0	.61	.6	11.	.6	0.0	0.0	1942.7	286.0	14.8
MAR	26.5	0.0	431.	26.5	1.13	1.2	0.	0.0	0.0	0.0	1944.7	311.3	25.3
APR	23.3	0.0	392.	23.3	1.31	1.4	0.	0.0	5.6	0.0	1946.0	327.6	16.3
MAY	30.4	0.0	494.	30.4	3.27	3.6	24.	1.5	25.3	0.0	1946.0	327.6	0.0
JUN	47.5	0.0	798.	47.5	5.46	6.0	29.	1.7	39.8	0.0	1946.0	327.6	0.0
JUL	24.5	0.0	398.	24.5	7.70	8.4	450.	27.7	0.0	0.0	1945.1	316.0	-11.6
AUG	16.3	0.0	265.	16.3	6.01	6.3	459.	28.2	0.0	0.0	1943.7	297.8	-18.2
SEP	12.0	0.0	202.	12.0	4.47	4.6	97.	5.8	0.0	0.0	1943.8	299.4	1.6
OCT	11.1	0.0	181.	11.1	3.43	3.6	0.	0.0	0.0	0.0	1944.4	306.9	7.5
NOV	9.6	0.0	161.	9.6	1.55	1.6	0.	0.0	0.0	0.0	1945.0	314.9	8.0
DEC	9.3	0.0	151.	9.3	.71	.8	10.	.6	0.0	0.0	1945.6	322.8	7.9
TOTAL	236.1	0.0		236.1	36.30	38.7		66.7	70.7	0.0			60.0
					REASONABLE MAXIMUM INFLOW CONDITIONS								
JAN	19.2	0.0	312.	19.2	0.00	0.0	10.	.6	0.0	0.0	1942.3	281.4	18.6
FEB	32.0	0.0	576.	32.0	.28	.3	11.	.6	0.0	0.0	1944.8	312.5	31.1
MAR	52.9	0.0	860.	52.9	.70	.8	0.	0.0	37.0	0.0	1946.0	327.6	15.1
APR	46.6	0.0	783.	46.6	.21	.2	0.	0.0	46.4	0.0	1946.0	327.6	0.0
MAY	60.6	0.0	986.	60.6	1.78	2.0	13.	.8	57.8	0.0	1946.0	327.6	0.0
JUN	95.0	0.0	1597.	95.0	1.58	1.7	13.	.8	92.5	0.0	1946.0	327.6	0.0
JUL	48.9	0.0	795.	48.9	6.53	7.2	99.	6.1	35.6	0.0	1946.0	327.6	0.0
AUG	32.6	0.0	530.	32.6	3.43	3.8	104.	6.4	22.4	0.0	1946.0	327.6	0.0
SEP	24.0	0.0	403.	24.0	3.84	4.2	25.	1.5	18.3	0.0	1946.0	327.6	0.0
OCT	22.1	0.0	359.	22.1	2.28	2.5	0.	0.0	19.6	0.0	1946.0	327.6	0.0
NOV	19.3	0.0	324.	19.3	1.03	1.1	0.	0.0	18.2	0.0	1946.0	327.6	0.0
DEC	18.6	0.0	303.	18.6	.40	.4	10.	.6	17.6	0.0	1946.0	327.6	0.0
TOTAL	471.8	0.0		471.8	22.06	24.2		17.4	365.4	0.0			64.8

LOVEWELL RESERVOIR OPERATION ESTIMATES - 1984

MONTH	WHITE ROCK CREEK INFLOW 1000 AF	COURTLAND CANAL INFLOW 1000 AF	TOTAL INFLOW MEAN CFS	TOTAL INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RES SPILL 1000 AF	REQ SHORT 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RES CHANGE 1000 AF
					REASONABLE MINIMUM INFLOW CONDITIONS								
JAN	.1	0.0	2.	.1	.77	.2	0.	0.0	0.0	0.0	1580.8	36.5	-.1
FEB	.4	0.0	7.	.4	.75	.2	0.	0.0	0.0	0.0	1580.8	36.7	.2
MAR	.5	0.0	8.	.5	1.69	.4	0.	0.0	0.0	0.0	1580.9	36.8	.1
APR	.5	1.2	29.	1.7	3.79	.9	0.	0.0	0.0	0.0	1581.2	37.6	.8
MAY	1.3	9.8	181.	11.1	3.55	.9	99.	6.1	0.0	0.0	1582.6	41.7	4.1
JUN	2.7	4.9	128.	7.6	5.84	1.5	103.	6.1	0.0	0.0	1582.6	41.7	0.0
JUL	1.8	12.0	224.	13.8	7.75	1.8	294.	18.1	0.0	0.0	1580.4	35.6	-6.1
AUG	1.0	10.6	189.	11.6	6.09	1.2	343.	21.1	0.0	0.0	1576.0	24.9	-10.7
SEP	.9	1.2	35.	2.1	5.15	.8	155.	9.2	0.0	0.0	1571.8	17.0	-7.9
OCT	.5	0.0	8.	.5	3.45	.5	0.	0.0	0.0	0.0	1571.8	17.0	0.0
NOV	.2	0.0	3.	.2	2.37	.3	0.	0.0	0.0	0.0	1571.8	16.9	-.1
DEC	.1	0.0	2.	.1	.96	.1	0.	0.0	0.0	0.0	1571.8	16.9	.0
TOTAL	10.0	39.7		49.7	42.16	8.8		60.6	0.0	0.0			-19.7
					MOST PROBABLE INFLOW CONDITIONS								
JAN	.3	0.0	5.	.3	.50	.1	0.	0.0	0.0	0.0	1580.9	36.8	.2
FEB	1.1	0.0	20.	1.1	.40	.1	0.	0.0	0.0	0.0	1581.2	37.8	1.0
MAR	1.2	0.0	20.	1.2	.92	.2	0.	0.0	0.0	0.0	1581.6	38.8	1.0
APR	1.3	0.0	22.	1.3	1.97	.5	0.	0.0	0.0	0.0	1581.9	39.6	.8
MAY	3.5	1.2	76.	4.7	1.58	.4	34.	2.1	.1	0.0	1582.6	41.7	2.1
JUN	7.0	1.2	138.	8.2	1.75	.4	35.	2.1	5.7	0.0	1582.6	41.7	0.0
JUL	4.6	7.2	192.	11.8	5.22	1.2	283.	17.4	0.0	0.0	1580.2	34.9	-6.8
AUG	2.5	6.0	138.	8.5	4.22	.8	286.	17.6	0.0	0.0	1576.0	25.0	-9.9
SEP	2.4	1.2	61.	3.6	3.36	.6	76.	4.5	0.0	0.0	1575.3	23.5	-1.5
OCT	1.4	0.0	23.	1.4	2.09	.4	0.	0.0	0.0	0.0	1575.8	24.5	1.0
NOV	.4	0.0	7.	.4	1.41	.2	0.	0.0	0.0	0.0	1575.9	24.7	.2
DEC	.3	0.0	5.	.3	.43	.1	0.	0.0	0.0	0.0	1576.0	24.9	.2
TOTAL	26.0	16.8		42.8	23.85	5.0		43.7	5.8	0.0			-11.7
					REASONABLE MAXIMUM INFLOW CONDITIONS								
JAN	.8	0.0	13.	.8	.16	0.0	0.	0.0	0.0	0.0	1581.1	37.4	.8
FEB	2.5	0.0	45.	2.5	.26	.1	0.	0.0	0.0	0.0	1582.0	39.8	2.4
MAR	3.0	0.0	49.	3.0	.35	.1	0.	0.0	1.0	0.0	1582.6	41.7	1.9
APR	3.1	0.0	52.	3.1	.44	.1	0.	0.0	3.0	0.0	1582.6	41.7	0.0
MAY	8.6	0.0	140.	8.6	.54	.1	15.	.9	7.6	0.0	1582.6	41.7	0.0
JUN	16.9	0.0	284.	16.9	-1.08	-.3	20.	1.2	16.0	0.0	1582.6	41.7	0.0
JUL	11.1	1.2	200.	12.3	4.30	1.1	138.	8.5	2.7	0.0	1582.6	41.7	0.0
AUG	6.1	1.2	119.	7.3	3.06	.7	138.	8.5	0.0	0.0	1582.0	39.8	-1.9
SEP	5.8	0.0	97.	5.8	1.78	.4	35.	2.1	1.4	0.0	1582.6	41.7	1.9
OCT	3.4	0.0	55.	3.4	1.49	.4	0.	0.0	3.0	0.0	1582.6	41.7	0.0
NOV	1.1	0.0	18.	1.1	1.00	.2	0.	0.0	.9	0.0	1582.6	41.7	0.0
DEC	.8	0.0	13.	.8	-.15	0.0	0.	0.0	.8	0.0	1582.6	41.7	0.0
TOTAL	63.2	2.4		65.6	12.15	2.9		21.2	36.4	0.0			5.1

KIRWIN RESERVOIR OPERATION ESTIMATES - 1984

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	3.	.2	.91	.1	0.	0.0	0.0	0.0	1697.0	9.8	.1
FEB	11.	.6	1.04	.1	0.	0.0	0.0	0.0	1697.5	10.3	.5
MAR	18.	1.1	1.79	.2	0.	0.0	0.0	0.0	1698.3	11.2	.9
APR	15.	.9	4.60	.4	0.	0.0	0.0	0.0	1698.7	11.7	.5
MAY	31.	1.9	4.77	.4	36.	2.2	0.0	0.0	1698.1	11.0	-.7
JUN	54.	3.2	6.32	.6	37.	2.2	0.0	0.0	1698.5	11.4	.4
JUL	24.	1.5	8.80	.8	104.	6.4	0.0	4.1	1697.0	9.8	-1.6
AUG	20.	1.2	7.74	.7	120.	7.4	0.0	6.9	1697.0	9.8	.0
SEP	12.	.7	5.66	.5	54.	3.2	0.0	3.0	1697.0	9.8	.0
OCT	8.	.5	4.61	.4	0.	0.0	0.0	0.0	1697.1	9.9	.1
NOV	5.	.3	2.54	.2	0.	0.0	0.0	0.0	1697.2	10.0	.1
DEC	3.	.2	1.22	.1	0.	0.0	0.0	0.0	1697.3	10.1	.1
TOTAL		12.3	50.00	4.5		21.4	0.0	14.0			.4
MOST PROBABLE INFLOW CONDITIONS											
JAN	8.	.5	.73	.1	0.	0.0	0.0	0.0	1697.3	10.1	.4
FEB	25.	1.4	.77	.1	0.	0.0	0.0	0.0	1698.5	11.4	1.3
MAR	41.	2.5	1.04	.1	0.	0.0	0.0	0.0	1700.4	13.8	2.4
APR	37.	2.2	1.89	.2	0.	0.0	0.0	0.0	1701.9	15.8	2.0
MAY	73.	4.5	3.60	.4	11.	.7	0.0	0.0	1704.2	19.2	3.4
JUN	126.	7.5	4.65	.7	12.	.7	0.0	0.0	1707.8	25.3	6.1
JUL	60.	3.7	6.33	.9	94.	5.8	0.0	0.0	1706.2	22.3	-3.0
AUG	46.	2.8	5.56	.7	94.	5.8	0.0	0.0	1703.8	18.6	-3.7
SEP	27.	1.6	4.25	.5	24.	1.4	0.0	0.0	1703.7	18.3	-.3
OCT	20.	1.2	3.59	.5	0.	0.0	0.0	0.0	1704.1	19.0	.7
NOV	10.	.6	1.85	.2	0.	0.0	0.0	0.0	1704.4	19.4	.4
DEC	10.	.6	.74	.1	0.	0.0	0.0	0.0	1704.7	19.9	.5
TOTAL		29.1	35.00	4.5		14.4	0.0	0.0			10.2
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	21.	1.3	.45	0.0	0.	0.0	0.0	0.0	1698.1	11.0	1.3
FEB	61.	3.4	.50	.1	0.	0.0	0.0	0.0	1700.8	14.3	3.3
MAR	102.	6.3	.56	.1	0.	0.0	0.0	0.0	1705.1	20.5	6.2
APR	91.	5.4	.53	.1	0.	0.0	0.0	0.0	1708.1	25.8	5.3
MAY	181.	11.1	1.68	.3	7.	.4	0.0	0.0	1712.9	36.2	10.4
JUN	309.	18.4	1.66	.4	8.	.5	0.0	0.0	1718.5	53.7	17.5
JUL	150.	9.2	5.47	1.6	59.	3.6	0.0	0.0	1719.7	57.7	4.0
AUG	111.	6.8	4.67	1.5	59.	3.6	0.0	0.0	1720.1	59.4	1.7
SEP	66.	3.9	2.75	.9	15.	.9	0.0	0.0	1720.7	61.5	2.1
OCT	49.	3.0	2.27	.7	0.	0.0	0.0	0.0	1721.3	63.8	2.3
NOV	25.	1.5	1.02	.3	0.	0.0	0.0	0.0	1721.6	65.0	1.2
DEC	23.	1.4	.54	.2	0.	0.0	0.0	0.0	1721.9	66.2	1.2
TOTAL		71.7	22.10	6.2		9.0	0.0	0.0			56.5

WEBSTER RESERVOIR OPERATION ESTIMATES - 1984

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
					REASONABLE MINIMUM INFLOW CONDITIONS						
JAN	5.	.3	.96	.1	0.	0.0	0.0	0.0	1861.1	6.3	.2
FEB	9.	.5	1.11	.1	0.	0.0	0.0	0.0	1861.4	6.7	.4
MAR	15.	.9	2.08	.2	0.	0.0	0.0	0.0	1862.1	7.4	.7
APR	15.	.9	4.92	.4	0.	0.0	0.0	0.0	1862.6	7.9	.5
MAY	24.	1.5	4.75	.4	37.	2.3	0.0	0.0	1861.4	6.7	-1.2
JUN	37.	2.2	7.50	.6	55.	3.3	0.0	.3	1860.0	5.3	-1.4
JUL	24.	1.5	9.04	.7	106.	6.5	0.0	5.7	1860.0	5.3	.0
AUG	15.	.9	8.08	.6	117.	7.2	0.0	6.9	1860.0	5.3	.0
SEP	7.	.4	6.70	.5	67.	4.0	0.0	4.0	1859.8	5.2	-.1
OCT	7.	.4	4.71	.3	0.	0.0	0.0	0.0	1860.0	5.3	.1
NOV	3.	.2	2.45	.2	0.	0.0	0.0	0.0	1860.0	5.3	.0
DEC	5.	.3	1.20	.1	0.	0.0	0.0	0.0	1860.2	5.5	.2
TOTAL		10.0	53.50	4.2		23.3	0.0	16.9			-.6
					MOST PROBABLE INFLOW CONDITIONS						
JAN	11.	.7	.67	.1	0.	0.0	0.0	0.0	1861.4	6.7	.6
FEB	22.	1.2	.81	.1	0.	0.0	0.0	0.0	1862.5	7.8	1.1
MAR	34.	2.1	1.48	.1	0.	0.0	0.0	0.0	1864.2	9.8	2.0
APR	37.	2.2	2.72	.3	0.	0.0	0.0	0.0	1865.7	11.7	1.9
MAY	62.	3.8	3.13	.4	10.	.6	0.0	0.0	1867.7	14.5	2.8
JUN	94.	5.6	4.40	.6	12.	.7	0.0	0.0	1870.4	18.8	4.3
JUL	62.	3.8	7.02	1.0	94.	5.8	0.0	0.0	1868.6	15.8	-3.0
AUG	37.	2.3	5.72	.7	94.	5.8	0.0	0.0	1865.7	11.6	-4.2
SEP	18.	1.1	4.69	.5	29.	1.7	0.0	0.0	1864.8	10.5	-1.1
OCT	18.	1.1	3.37	.4	0.	0.0	0.0	0.0	1865.4	11.2	.7
NOV	10.	.6	1.61	.2	0.	0.0	0.0	0.0	1865.7	11.6	.4
DEC	11.	.7	.78	.1	0.	0.0	0.0	0.0	1866.1	12.2	.6
TOTAL		25.2	36.40	4.5		14.6	0.0	0.0			6.1
					REASONABLE MAXIMUM INFLOW CONDITIONS						
JAN	36.	2.2	.53	0.0	0.	0.0	0.0	0.0	1863.0	8.3	2.2
FEB	70.	3.9	.48	0.0	0.	0.0	0.0	0.0	1866.1	12.2	3.9
MAR	111.	6.8	.70	.1	0.	0.0	0.0	0.0	1870.5	18.9	6.7
APR	116.	6.9	1.00	.2	0.	0.0	0.0	0.0	1874.1	25.6	6.7
MAY	197.	12.1	1.74	.3	0.	0.0	0.0	0.0	1879.4	37.4	11.8
JUN	296.	17.6	.72	.2	0.	0.0	0.0	0.0	1885.8	54.8	17.4
JUL	198.	12.2	5.63	1.5	44.	2.7	0.0	0.0	1888.3	62.8	8.0
AUG	117.	7.2	4.03	1.1	47.	2.9	0.0	0.0	1889.3	66.0	3.2
SEP	59.	3.5	3.75	1.1	0.	0.0	0.0	0.0	1890.0	68.4	2.4
OCT	57.	3.5	2.83	.8	0.	0.0	0.0	0.0	1890.7	71.1	2.7
NOV	34.	2.0	.99	.3	0.	0.0	0.0	0.0	1891.2	72.8	1.7
DEC	34.	2.1	.60	.2	0.	0.0	0.0	0.0	1891.7	74.7	1.9
TOTAL		80.0	23.00	5.8		5.6	0.0	0.0			68.6

WACONDA LAKE OPERATION ESTIMATES - 1984

MONTH	UNDEPLETED INFLOW 1000 AF	UPSTREAM DEPLETIONS 1000 AF	DEPLETED INFLOW MEAN CFS	DEPLETED INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RES SPILL 1000 AF	REQ SHORT 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RES CHANGE 1000 AF
					REASONABLE MINIMUM INFLOW CONDITIONS								
JAN	2.3	0.0	37.	2.3	.89	.8	11.	.7	0.0	0.0	1452.4	203.3	.8
FEB	2.8	0.0	50.	2.8	1.00	.9	34.	1.9	0.0	0.0	1452.4	203.3	0.0
MAR	6.2	0.0	101.	6.2	1.83	1.7	11.	.7	0.0	0.0	1452.7	207.1	3.8
APR	4.5	0.0	76.	4.5	4.55	4.3	2.	.1	0.0	0.0	1452.7	207.2	.1
MAY	7.6	0.0	124.	7.6	4.48	4.3	2.	.1	0.0	0.0	1453.0	210.4	3.2
JUN	11.2	0.0	188.	11.2	6.57	6.3	35.	2.1	0.0	0.0	1453.3	213.2	2.8
JUL	6.0	0.0	98.	6.0	8.05	7.7	99.	6.1	0.0	0.0	1452.6	205.4	-7.8
AUG	3.6	0.0	59.	3.6	8.50	7.9	99.	6.1	0.0	0.0	1451.6	195.0	-10.4
SEP	5.3	0.0	89.	5.3	6.19	5.6	35.	2.1	0.0	0.0	1451.4	192.6	-2.4
OCT	3.3	0.0	54.	3.3	4.42	4.0	2.	.1	0.0	0.0	1451.3	191.8	-.8
NOV	2.0	0.0	34.	2.0	2.46	2.2	2.	.1	0.0	0.0	1451.3	191.5	-.3
DEC	1.7	0.0	28.	1.7	1.16	1.0	11.	.7	0.0	0.0	1451.3	191.5	0.0
TOTAL	56.5	0.0		56.5	50.10	46.7		20.8	0.0	0.0			-11.0
					MOST PROBABLE INFLOW CONDITIONS								
JAN	5.3	0.0	86.	5.3	.53	.5	78.	4.8	0.0	0.0	1452.3	202.5	0.0
FEB	6.5	0.0	117.	6.5	.63	.6	106.	5.9	0.0	0.0	1452.3	202.5	0.0
MAR	14.4	0.0	234.	14.4	.84	.8	11.	.7	0.0	0.0	1453.4	215.4	12.9
APR	10.3	0.0	173.	10.3	2.90	2.9	2.	.1	0.0	0.0	1454.1	222.7	7.3
MAY	17.7	0.0	288.	17.7	2.96	3.0	2.	.1	0.0	0.0	1455.3	237.3	14.6
JUN	26.0	0.0	437.	26.0	3.32	3.5	301.	17.9	.4	0.0	1455.6	241.5	4.2
JUL	13.9	0.0	226.	13.9	6.05	6.3	299.	18.4	0.0	0.0	1454.7	230.7	-10.8
AUG	8.3	0.0	135.	8.3	4.46	4.4	299.	18.4	0.0	0.0	1453.5	216.2	-14.5
SEP	12.3	0.0	207.	12.3	3.96	3.8	301.	17.9	0.0	0.0	1452.7	206.8	-9.4
OCT	7.6	0.0	124.	7.6	3.24	3.1	78.	4.8	0.0	0.0	1452.7	206.5	-.3
NOV	4.7	0.0	79.	4.7	1.85	1.7	54.	3.2	0.0	0.0	1452.7	206.3	-.2
DEC	3.9	0.0	63.	3.9	.76	.7	52.	3.2	0.0	0.0	1452.7	206.3	0.0
TOTAL	130.9	0.0		130.9	31.50	31.3		95.4	.4	0.0			3.8
					REASONABLE MAXIMUM INFLOW CONDITIONS								
JAN	14.3	0.0	233.	14.3	.36	.3	228.	14.0	0.0	0.0	1452.3	202.5	0.0
FEB	17.6	0.0	317.	17.6	.21	.2	313.	17.4	0.0	0.0	1452.3	202.5	0.0
MAR	39.0	0.0	634.	39.0	.34	.3	299.	18.4	0.0	0.0	1454.1	222.8	20.3
APR	28.1	0.0	472.	28.1	1.39	1.4	301.	17.9	0.0	0.0	1454.8	231.6	8.8
MAY	48.1	0.0	782.	48.1	.87	.9	2.	.1	37.2	0.0	1455.6	241.5	9.9
JUN	70.7	0.0	1188.	70.7	-.20	-.2	2.	.1	70.8	0.0	1455.6	241.5	0.0
JUL	37.6	0.0	612.	37.6	4.46	4.7	2.	.1	32.8	0.0	1455.6	241.5	0.0
AUG	22.5	0.0	366.	22.5	3.27	3.4	2.	.1	19.0	0.0	1455.6	241.5	0.0
SEP	33.3	0.0	560.	33.3	2.29	2.4	2.	.1	30.8	0.0	1455.6	241.5	0.0
OCT	20.8	0.0	338.	20.8	2.41	2.5	298.	18.3	0.0	0.0	1455.6	241.5	0.0
NOV	12.7	0.0	213.	12.7	.92	1.0	301.	17.9	0.0	0.0	1455.1	235.3	-6.2
DEC	10.5	0.0	171.	10.5	.38	.4	164.	10.1	0.0	0.0	1455.1	235.3	0.0
TOTAL	355.2	0.0		355.2	16.70	17.3		114.5	190.6	0.0			32.8

CEDAR BLUFF RESERVOIR OPERATION ESTIMATES - 1984

MONTH	INFLOW MEAN CFS	INFLOW 1000 AF	NET EVAPORATION INCHES	NET EVAPORATION 1000 AF	RELEASE REQUIREMENT MEAN CFS	RELEASE REQUIREMENT 1000 AF	RESERVOIR SPILL 1000 AF	REQUIREMENT SHORTAGE 1000 AF	END OF MONTH ELEV FT	END OF MONTH CONT 1000 AF	RESERVOIR CHANGE 1000 AF
REASONABLE MINIMUM INFLOW CONDITIONS											
JAN	2.	.1	1.23	.2	3.	.2	0.0	0.0	2100.8	22.3	-.3
FEB	5.	.3	1.39	.2	4.	.2	0.0	0.0	2100.8	22.2	-.1
MAR	13.	.8	2.48	.3	3.	.2	0.0	0.0	2101.0	22.5	.3
APR	12.	.7	5.30	.7	3.	.2	0.0	0.0	2100.8	22.3	-.2
MAY	28.	1.7	5.10	.7	37.	2.3	0.0	2.1	2101.3	23.1	.8
JUN	45.	2.7	7.76	1.1	39.	2.3	0.0	2.1	2102.1	24.5	1.4
JUL	36.	2.2	9.16	1.3	106.	6.5	0.0	6.3	2102.5	25.2	.7
AUG	23.	1.4	8.88	1.3	111.	6.8	0.0	6.3	2102.3	24.8	-.4
SEP	13.	.8	6.41	.9	69.	4.1	0.0	3.2	2101.7	23.8	-1.0
OCT	8.	.5	4.93	.7	24.	1.5	0.0	1.1	2101.4	23.2	-.6
NOV	3.	.2	2.90	.4	3.	.2	0.0	0.0	2101.1	22.8	-.4
DEC	2.	.1	1.46	.2	3.	.2	0.0	0.0	2101.0	22.5	-.3
TOTAL		11.5	57.00	8.0		24.7	0.0	21.1			-.1
MOST PROBABLE INFLOW CONDITIONS											
JAN	5.	.3	1.08	.2	3.	.2	0.0	0.0	2101.0	22.5	-.1
FEB	14.	.8	1.13	.2	4.	.2	0.0	0.0	2101.2	22.9	.4
MAR	36.	2.2	1.72	.2	3.	.2	0.0	0.0	2102.2	24.7	1.8
APR	35.	2.1	3.77	.6	3.	.2	0.0	0.0	2103.0	26.0	1.3
MAY	78.	4.8	3.22	.5	15.	.9	0.0	0.0	2104.8	29.4	3.4
JUN	131.	7.8	4.29	.7	17.	1.0	0.0	0.0	2107.9	35.5	6.1
JUL	101.	6.2	7.39	1.3	88.	5.4	0.0	.3	2107.8	35.3	-.2
AUG	65.	4.0	6.04	1.1	102.	6.3	0.0	3.4	2107.8	35.3	0.0
SEP	37.	2.2	4.48	.8	30.	1.8	0.0	.4	2107.8	35.3	0.0
OCT	23.	1.4	3.73	.7	16.	1.0	0.0	.2	2107.7	35.2	-.1
NOV	7.	.4	2.46	.4	3.	.2	0.0	0.0	2107.6	35.0	-.2
DEC	7.	.4	1.20	.2	3.	.2	0.0	0.0	2107.6	35.0	0.0
TOTAL		32.6	40.51	6.9		17.6	0.0	4.3			12.4
REASONABLE MAXIMUM INFLOW CONDITIONS											
JAN	16.	1.0	.92	.1	3.	.2	0.0	0.0	2101.4	23.3	.7
FEB	43.	2.4	.87	.1	4.	.2	0.0	0.0	2102.6	25.4	2.1
MAR	111.	6.8	1.20	.2	3.	.2	0.0	0.0	2106.1	31.8	6.4
APR	111.	6.6	2.32	.4	3.	.2	0.0	0.0	2109.0	37.8	6.0
MAY	244.	15.0	2.02	.4	11.	.7	0.0	0.0	2114.7	51.7	13.9
JUN	408.	24.3	1.25	.3	12.	.7	0.0	0.0	2122.4	75.0	23.3
JUL	316.	19.4	5.22	1.6	57.	3.5	0.0	0.0	2126.2	89.3	14.3
AUG	203.	12.5	4.25	1.5	65.	4.0	0.0	0.0	2127.9	96.3	7.0
SEP	118.	7.0	3.86	1.4	18.	1.1	0.0	0.0	2129.0	100.8	4.5
OCT	73.	4.5	2.56	.9	11.	.7	0.0	0.0	2129.6	103.7	2.9
NOV	24.	1.4	1.62	.6	3.	.2	0.0	0.0	2129.7	104.3	.6
DEC	20.	1.2	.92	.3	3.	.2	0.0	0.0	2129.9	105.0	.7
TOTAL		102.1	27.01	7.8		11.9	0.0	0.0			82.4

TABLE 5
FLOOD DAMAGES PREVENTED BY NEBRASKA-KANSAS PROJECTS RESERVOIRS

BONNY

Year	Damages Prevented	Cumulative Total
1951	$ 293,000	$ 293,000
1953	135,000	428,000
1957	1,050,000	1,478,000
1960	169,000	1,647,000
1965	273,000	1,920,000
1967	42,000	1,962,000
1969	200,000	2,162,000

SWANSON

Year	Damages Prevented	Cumulative Total
1957	$ 233,000	$ 233,000
1960	900,000	1,133,000
1962	126,000	1,259,000
1964	50,000	1,309,000
1965	477,000	1,786,000
1967	182,000	1,968,000
1969	1,000	1,969,000

ENDERS

Year	Damages Prevented	Cumulative Total
1951	$ 220,000	$ 220,000
1956	104,000	324,000
1960	412,000	736,000
1962	37,000	773,000
1965	137,000	910,000
1967	42,000	952,000
1969	1,000	953,000

HUGH BUTLER

Year	Damages Prevented	Cumulative Total
1962	$ 2,000	$ 2,000
1965	137,000	139,000
1967	42,000	181,000

HARRY STRUNK

Year	Damages Prevented	Cumulative Total
1951	$ 14,000	$ 14,000
1957	5,000	19,000
1960	198,000	217,000
1962	29,000	246,000
1967	129,000	375,000
1969	6,000	381,000

KEITH SEBELIUS

Year	Damages Prevented	Cumulative Total
1966	$ 132,000	$ 132,000
1967	885,000	1,017,000
1972	498,000	1,515,000

HARLAN COUNTY

Year	Damages Prevented	Cumulative Total
1957	$1,045,000	$ 1,045,000
1960	4,853,000	5,898,000
1961	255,000	6,153,000
1962	45,000	6,198,000
1964	182,000	6,380,000
1965	60,000	6,440,000
1966	1,658,000	8,098,000
1967	3,539,000	11,637,000
1969	14,000	11,651,000
1971	64,000	11,715,000
1973	1,310,000	13,025,000
1974	1,000	13,026,000
1975	200,000	13,226,000
1976	1,000	13,227,000
1978	100,000	13,327,000
1979	21,000	13,348,000
1981	21,000	13,369,000
1982	465,000	13,834,000
1983	1,874,000	15,708,000

LOVEWELL

Year	Damages Prevented	Cumulative Total
1957	$ 349,000	$ 349,000
1960	178,000	527,000
1961	165,000	692,000
1962	5,000	697,000
1971	9,000	706,000
1973	1,728,000	2,434,000
1975	98,000	2,532,000
1978	25,000	2,557,000
1979	13,000	2,570,000
1981	8,000	2,578,000
1982	18,000	2,596,000
1983	511,000	3,107,000

KIRWIN

Year	Damages Prevented	Cumulative Total
1957	$ 522,000	$ 522,000
1958	10,000	532,000
1960	499,000	1,031,000
1961	1,000	1,032,000
1962	1,000	1,033,000
1964	34,000	1,067,000
1965	325,000	1,392,000
1967	191,000	1,583,000
1968	44,000	1,627,000
1969	2,000	1,629,000
1971	3,000	1,632,000
1973	40,000	1,672,000
1975	618,000	2,290,000
1978	4,000	2,294,000
1979	35,000	2,329,000
1982	25,000	2,354,000
1983	1,000	2,355,000

WEBSTER

Year	Damages Prevented	Cumulative Total
1957	$ 326,000	$ 326,000
1958	114,000	440,000
1960	1,018,000	1,458,000
1961	1,000	1,459,000
1962	1,000	1,460,000
1964	17,000	1,477,000
1965	325,000	1,802,000
1967	85,000	1,887,000
1968	2,000	1,889,000
1969	1,000	1,890,000
1971	3,000	1,893,000
1973	54,000	1,947,000
1975	885,000	2,832,000
1978	2,000	2,834,000
1979	16,000	2,850,000
1982	36,000	2,886,000

WACONDA

Year	Damages Prevented	Cumulative Total
1968	$ 280,000	$ 280,000
1969	606,000	886,000
1971	9,000	895,000
1973	3,797,000	4,692,000
1974	1,000	4,693,000
1975	967,000	5,660,000
1978	11,000	5,671,000
1979	959,000	6,630,000
1981	24,000	6,654,000
1982	1,398,000	8,052,000
1983	360,000	8,412,000

CEDAR BLUFF

Year	Damages Prevented	Cumulative Total
1951	$ 597,000	$ 597,000
1955	357,000	954,000
1956	19,000	973,000
1957	4,812,000	5,785,000
1958	829,000	6,614,000
1960	1,573,000	8,187,000
1961	101,000	8,288,000
1962	1,000	8,289,000
1964	17,000	8,306,000
1965	38,000	8,344,000
1967	42,000	8,386,000
1969	1,000	8,387,000
1971	8,000	8,395,000
1973	536,000	8,931,000
1975	11,000	8,942,000
1979	2,000	8,944,000
1981	1,000	8,945,000
1982	48,000	8,993,000
1983	1,000	8,994,000

PROJECT TOTALS

Year	Damages Prevented	Cumulative Total
1951	$1,124,000	$ 1,124,000
1953	135,000	1,259,000
1955	357,000	1,616,000
1956	123,000	1,739,000
1957	8,342,000	10,081,000
1958	953,000	11,034,000
1960	9,800,000	20,834,000
1961	523,000	21,357,000
1962	247,000	21,604,000
1964	300,000	21,904,000
1965	1,772,000	23,676,000
1966	1,790,000	25,466,000
1967	5,179,000	30,645,000
1968	326,000	30,971,000
1969	832,000	31,803,000
1971	96,000	31,899,000
1972	498,000	32,397,000
1973	7,465,000	39,862,000
1974	2,000	39,864,000
1975	2,779,000	42,643,000
1976	1,000	42,644,000
1978	142,000	42,786,000
1979	1,046,000	43,832,000
1981	54,000	43,886,000
1982	1,990,000	45,876,000
1983	2,747,000	48,623,000

NOTE.--Construction cost of storage dams -- $208,954,130.

TABLE 6
WATER DIVERTED IN 1983 AND THE
ESTIMATED DIVERSION FOR 1984
(Units - Acre-feet)

Irrigation District and Canal	1983 Irrigation Operations From	To	10-Year Average Diversion (1973-82)	1983 Diversion	Estimated Diversion in 1984
Mirage Flats Irrigation District					
Mirage Flats Canal	7/10	9/10	15,758	16,126	14,000
Ainsworth Irrigation District					
Ainsworth Canal	5/25	9/28	70,862	48,459	70,000
Sargent Irrigation District					
Sargent Canal	6/6	11/4	25,811	24,793	25,000
Farwell Irrigation District					
Farwell Canal	6/10	9/15	89,881	77,431	90,000
Frenchman Valley Irrigation District					
Culbertson Canal	5/16	9/15	15,768	11,142	12,000
H & RW Irrigation District					
Culbertson Extension Canal	5/30	9/18	21,990	20,009	17,000
Frenchman-Cambridge Irrigation District					
Meeker-Driftwood Canal	6/6	9/21	33,663	30,304	31,000
Red Willow Canal	6/20	9/19	8,679	7,832	9,000
Bartley Canal	6/10	9/19	11,106	9,796	11,000
Cambridge Canal	6/23	9/21	31,930	27,530	31,000
Total Frenchman-Cambridge Irrigation District			85,378	75,462	82,000
Almena Irrigation District					
Almena Canal	No irrigation in 1983		2,981	0	0
Bostwick Irrigation District in Nebraska					
Franklin Canal	6/30	9/10	26,102	27,890	24,000
Naponee Canal	6/28	9/6	3,140	3,272	3,300
Franklin Pump Canal	7/7	9/5	2,988	3,362	3,700
Superior Canal	6/28	9/7	13,606	15,578	13,000
Courtland Canal (Nebraska)	4/19	10/4	1,816	2,136	2,300
Total Bostwick Irrigation District in Nebraska			47,652	52,238	46,300
Kansas-Bostwick Irrigation District					
Courtland Canal above Lovewell	4/21	10/8	25,521	25,274	25,000
Courtland Canal below Lovewell	6/2	9/12	45,541	58,690	50,000
Total Kansas-Bostwick Irrigation District			71,062	83,964	75,000
Kirwin Irrigation District					
Kirwin Canal	7/18	8/17	15,109	8,392	0
Webster Irrigation District					
Osborne Canal	7/6	8/19	9,777	9,350	0
Cedar Bluff Irrigation District					
Cedar Bluff Canal	No irrigation in 1983		9,547	0	0
TOTAL			481,576	427,366	431,300

EXHIBIT 1A

BOX BUTTE RESERVOIR OPERATION

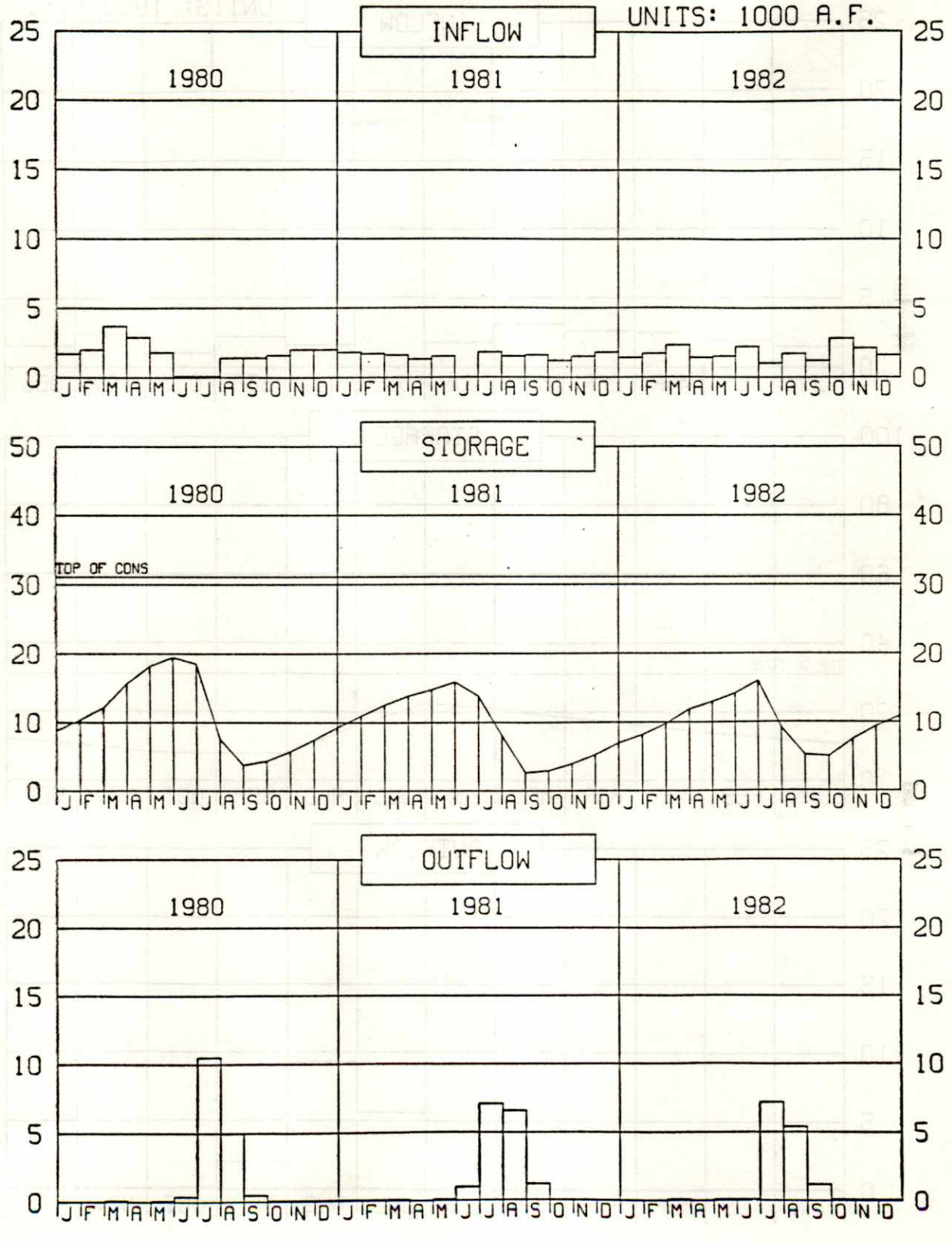


EXHIBIT 1B

BOX BUTTE RESERVOIR 1983 OPERATION

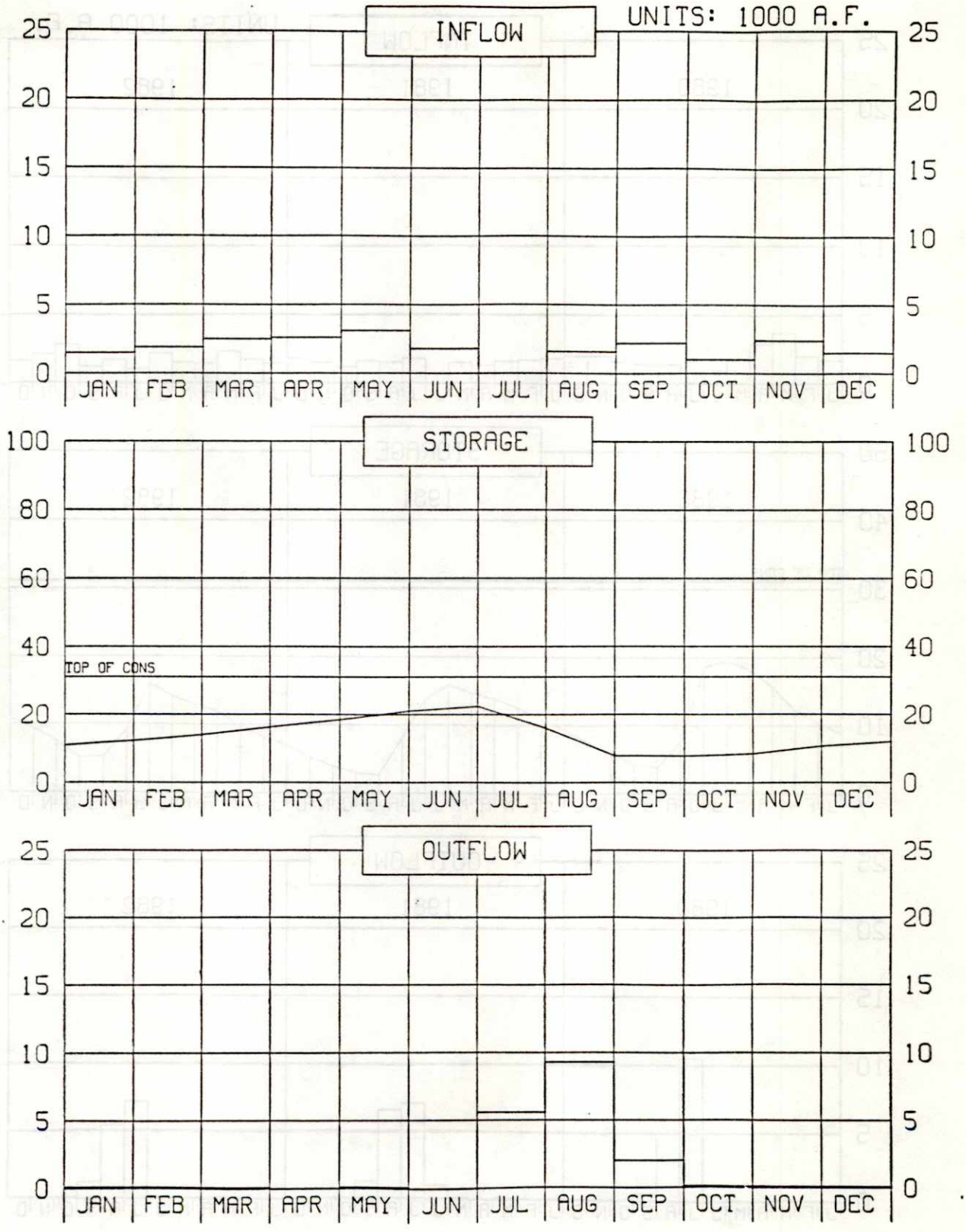


EXHIBIT 1C

BOX BUTTE RESERVOIR

CAL YEAR 1984 OPERATION PLAN

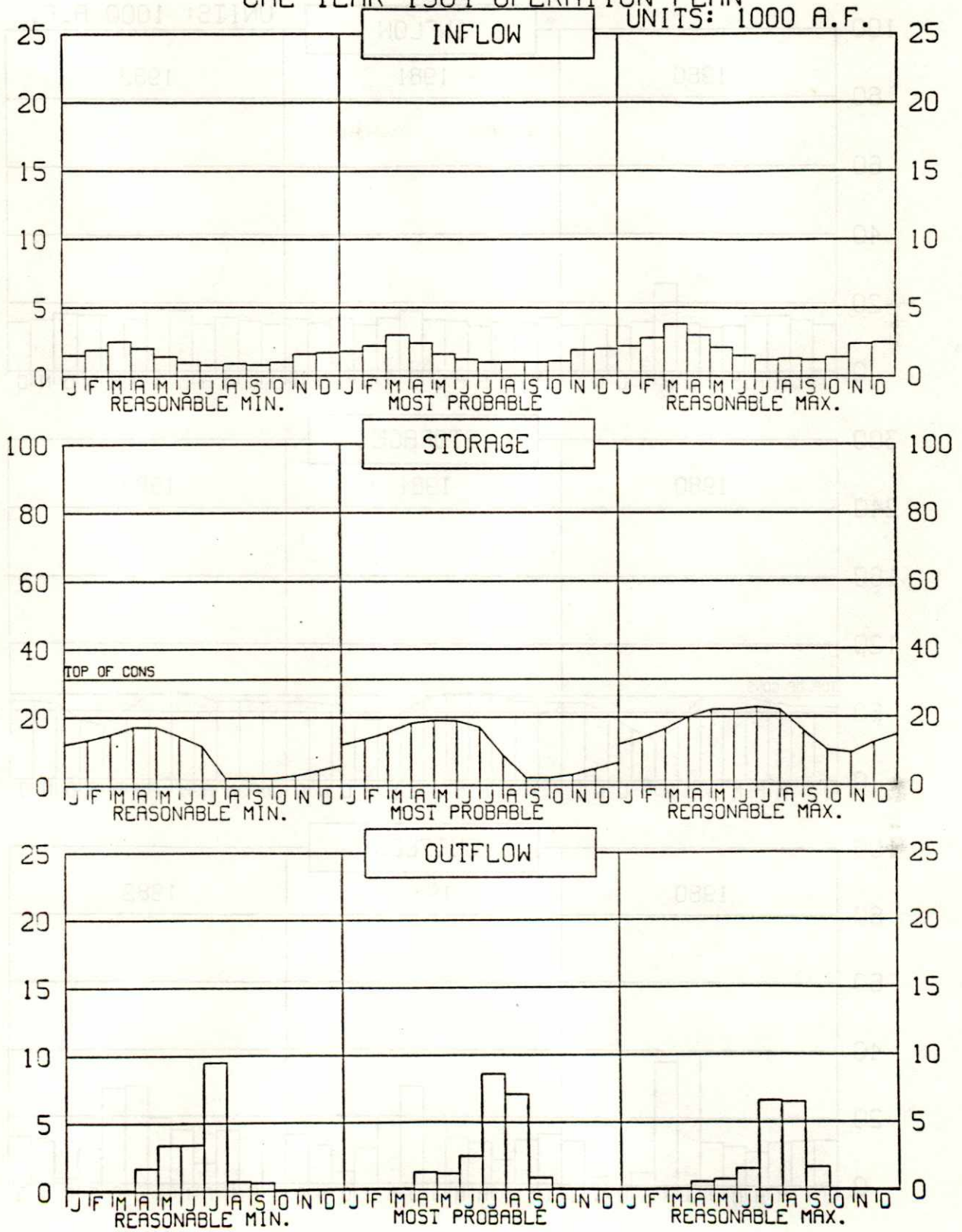


EXHIBIT 2A

MERRITT RESERVOIR OPERATION

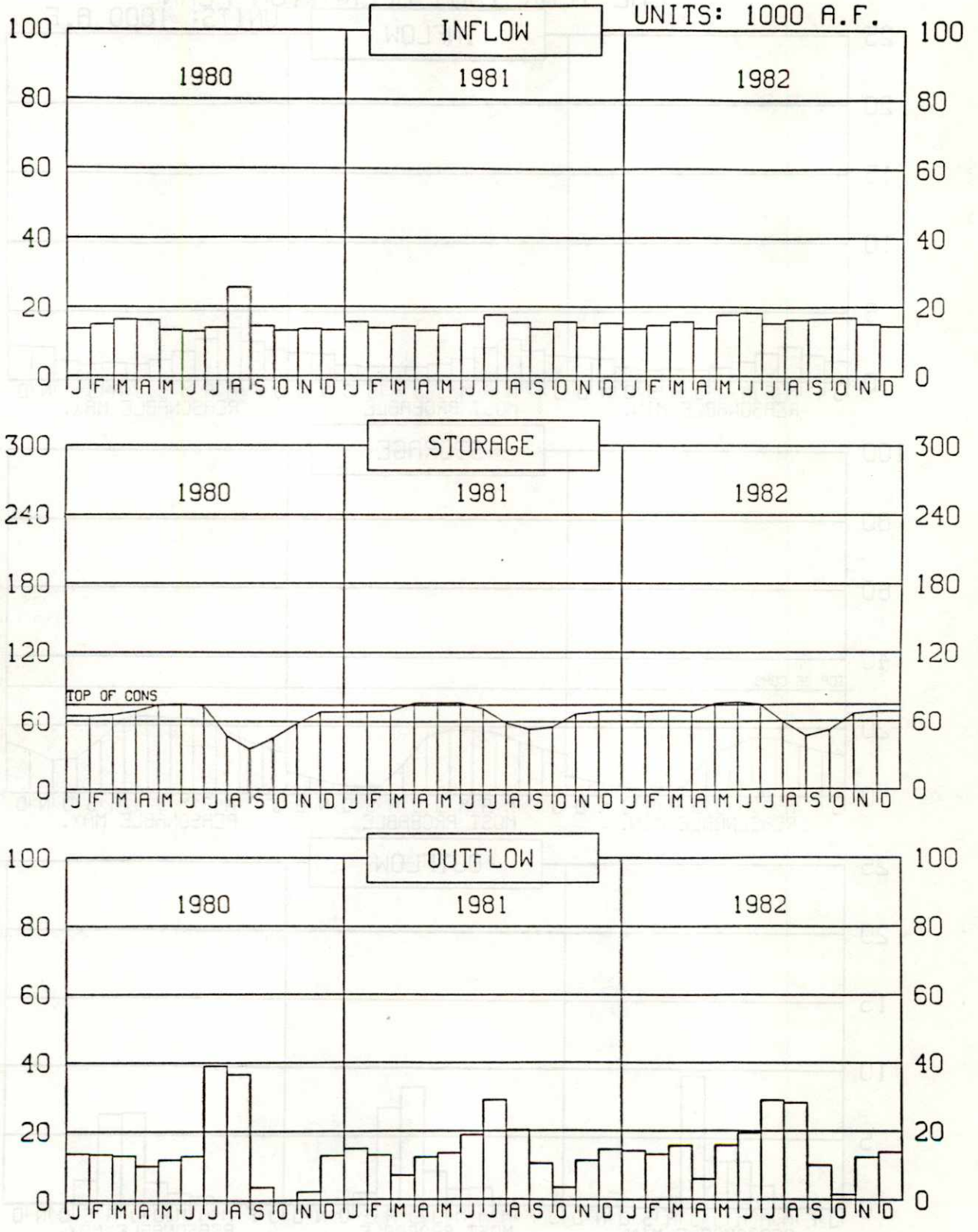
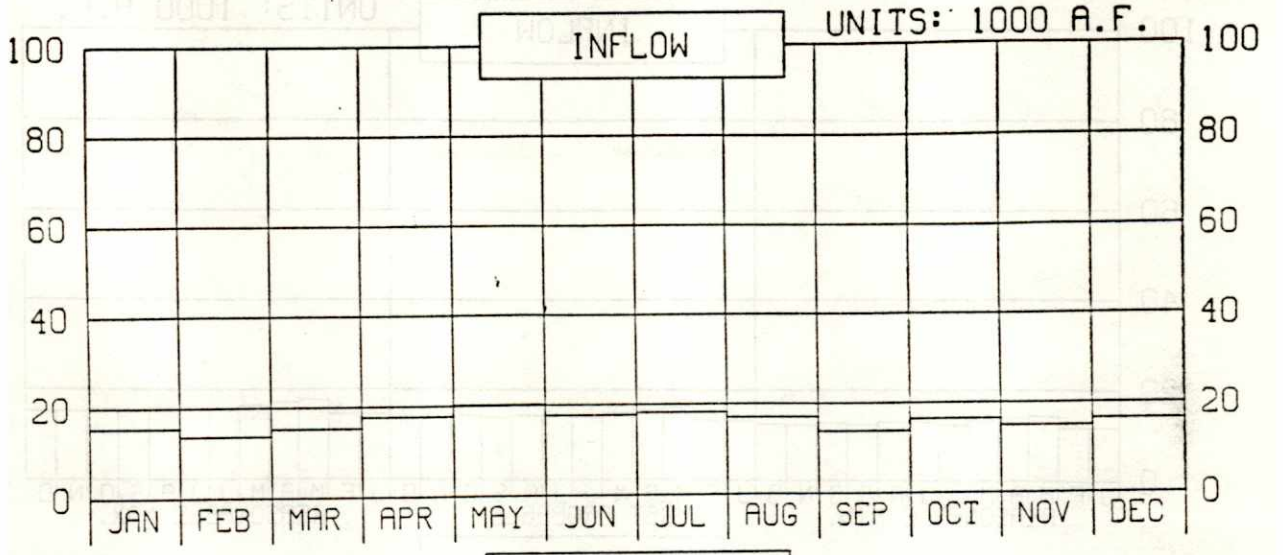
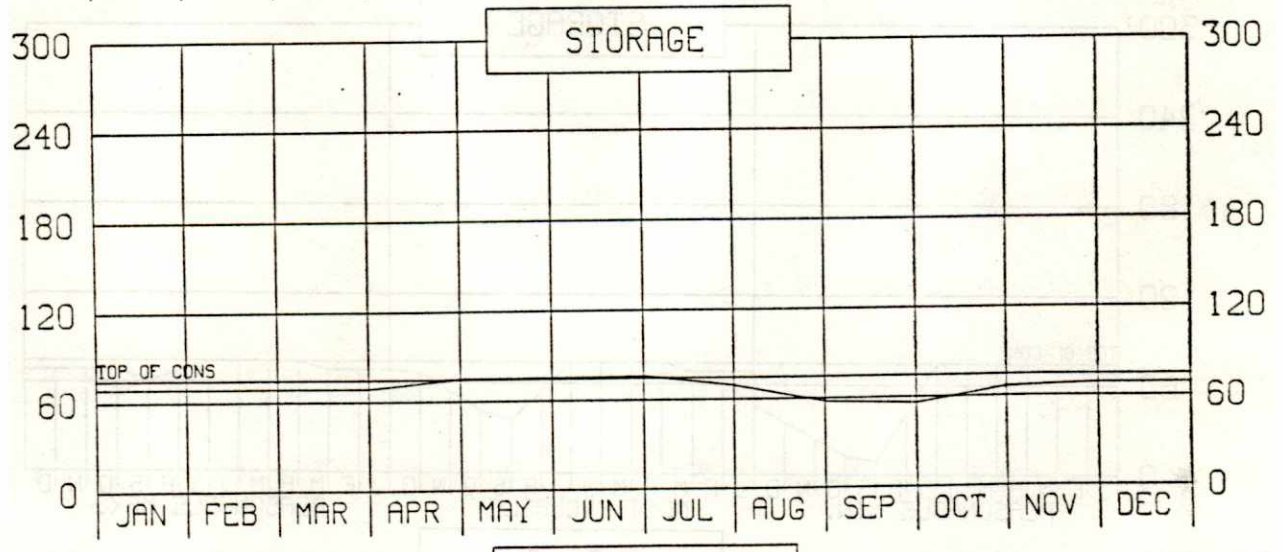


EXHIBIT 2B

MERRITT RESERVOIR 1983 OPERATION





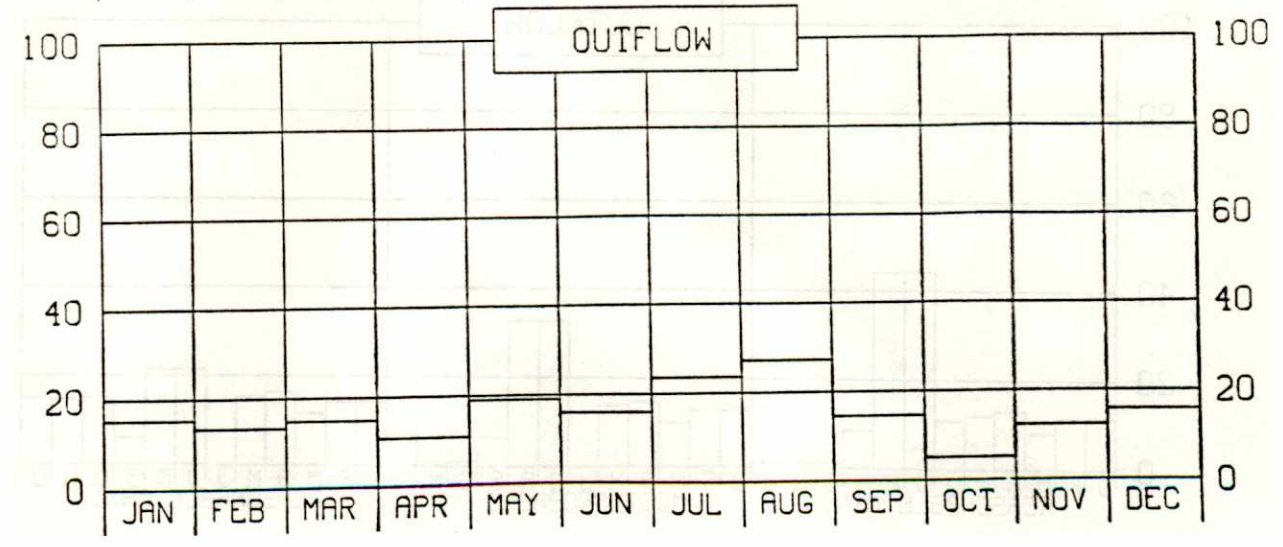


EXHIBIT 2C

MERRITT RESERVOIR

CAL YEAR 1984 OPERATION PLAN

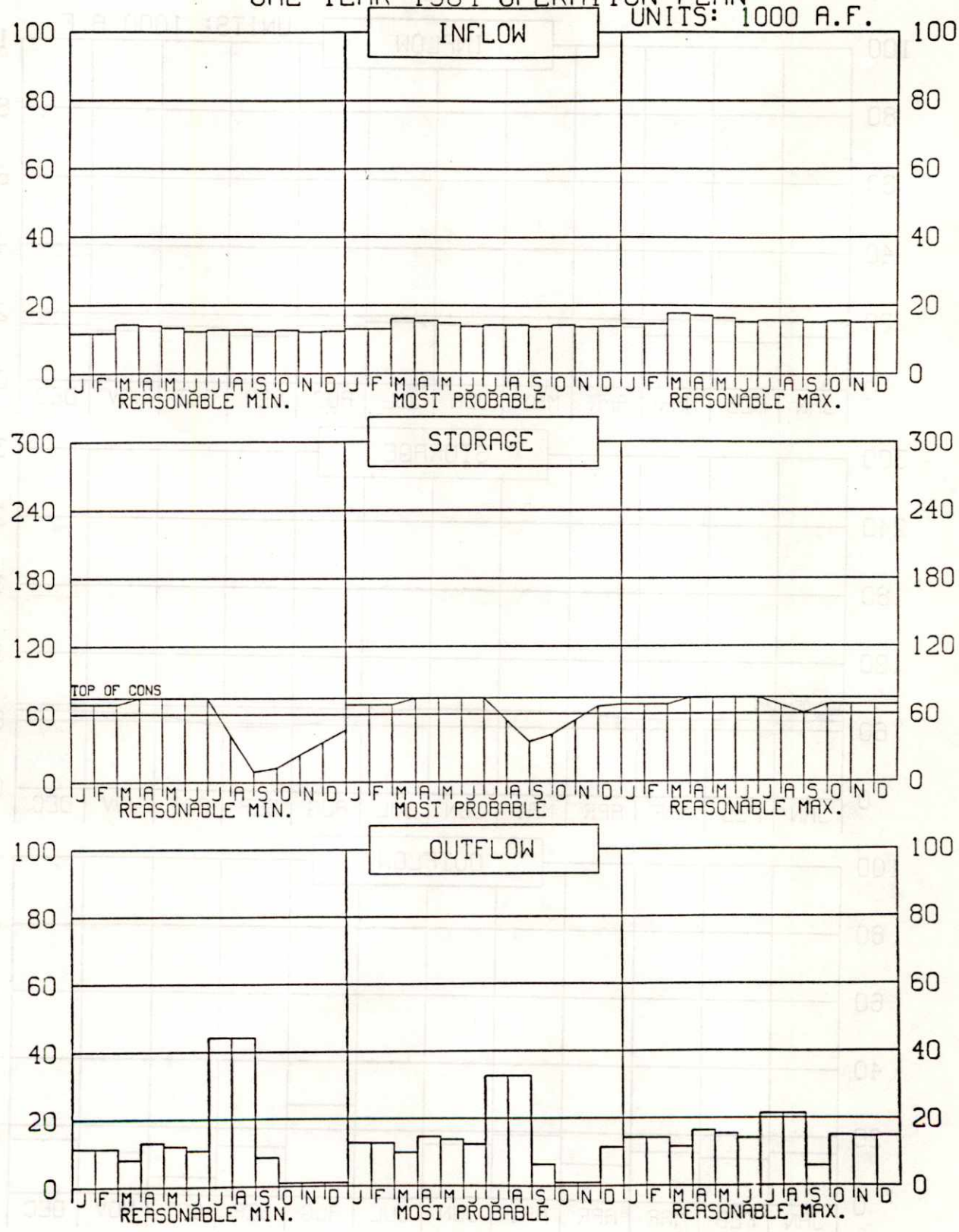
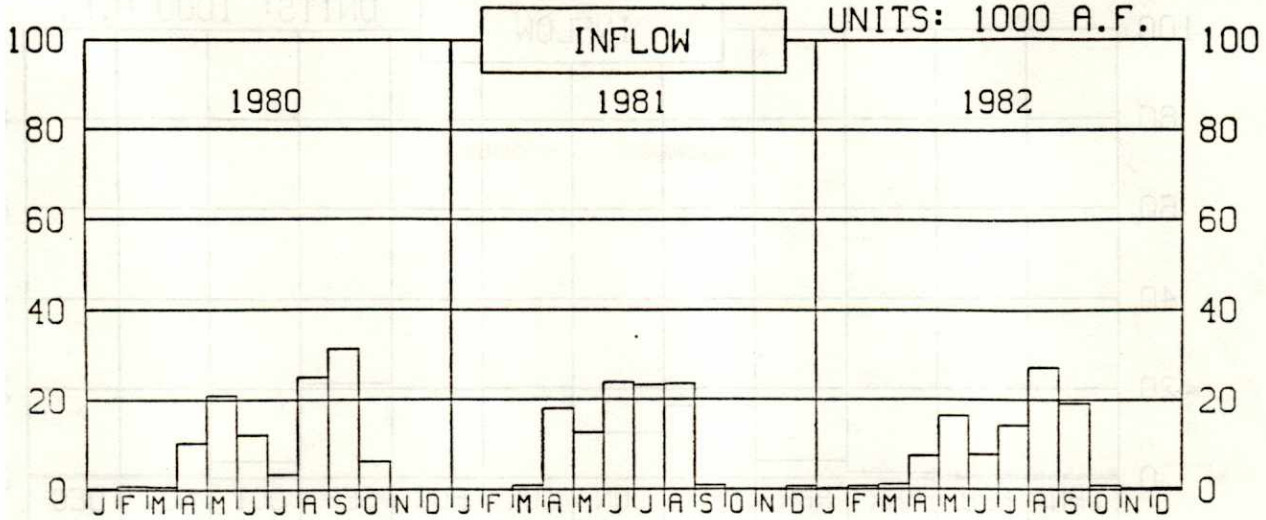
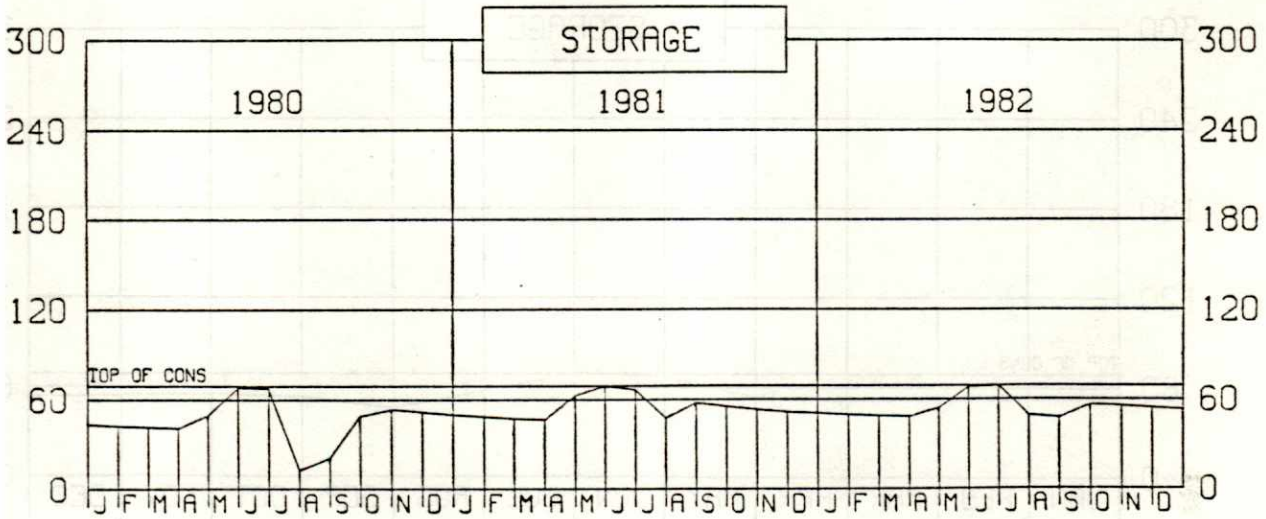


EXHIBIT 3A

SHERMAN RESERVOIR OPERATION





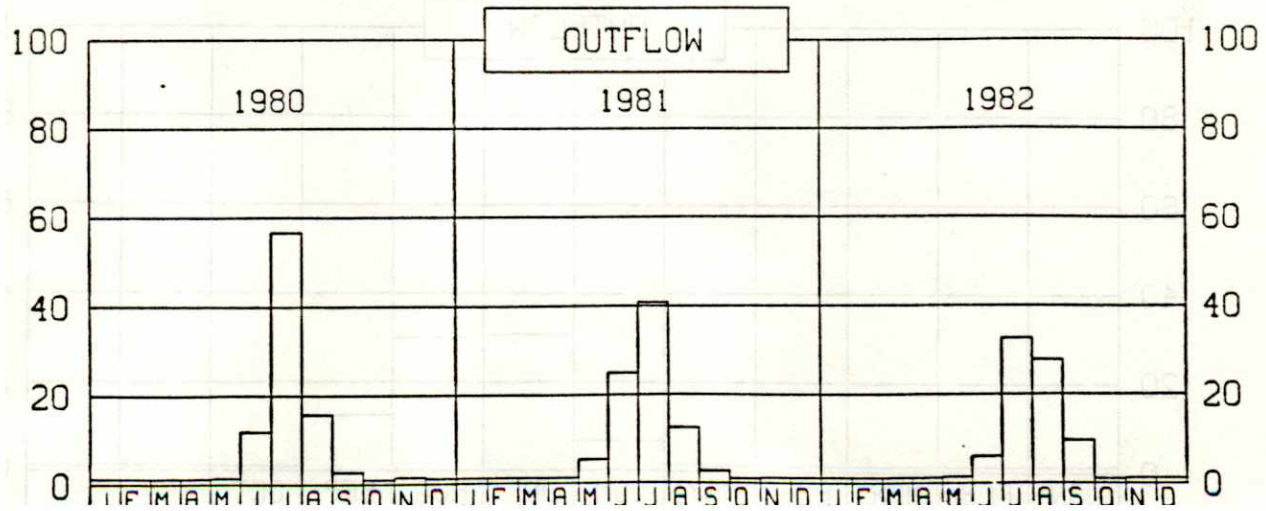


EXHIBIT 3B

SHERMAN RESERVOIR 1983 OPERATION

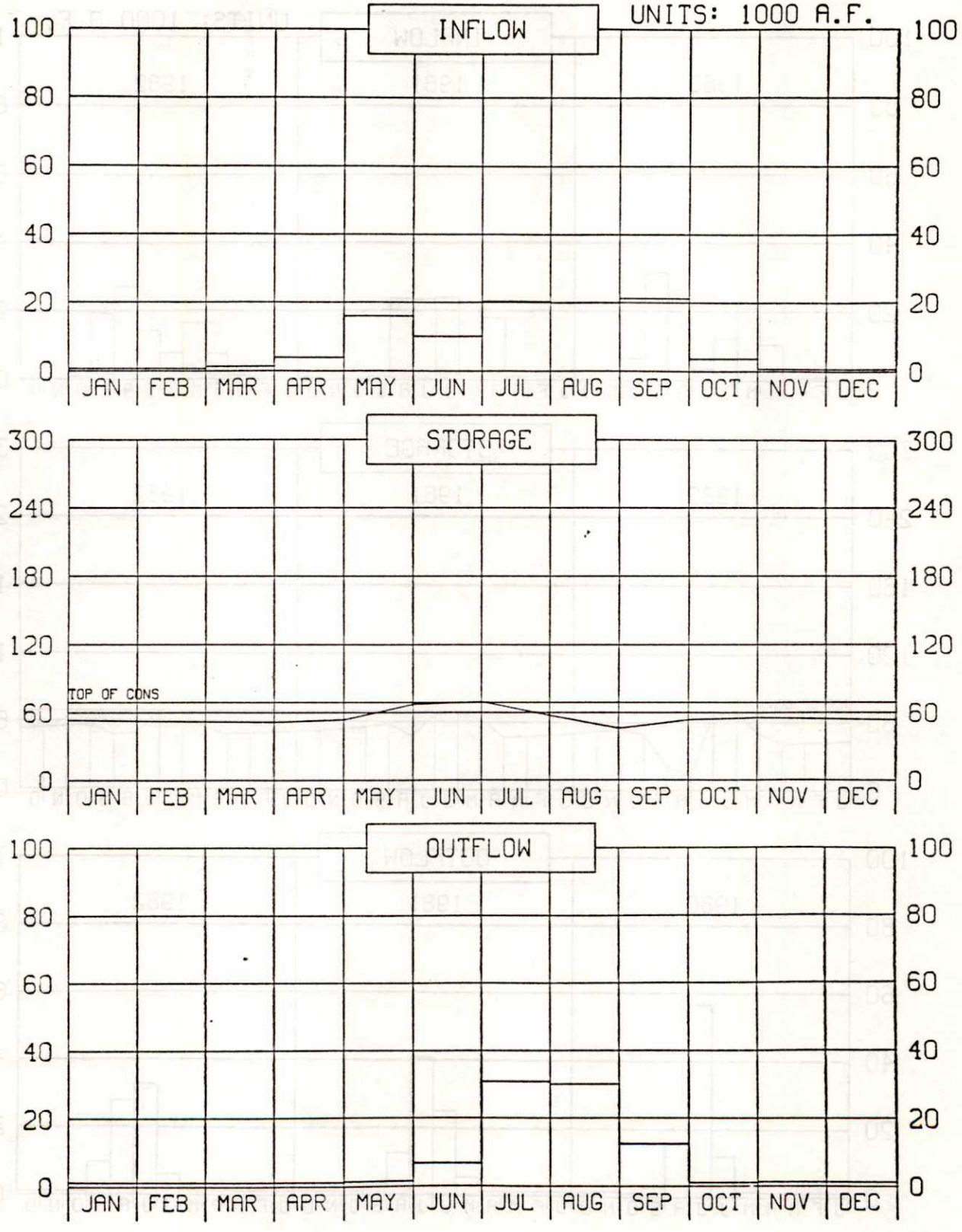


EXHIBIT 3C

SHERMAN RESERVOIR
CAL YEAR 1984 OPERATION PLAN

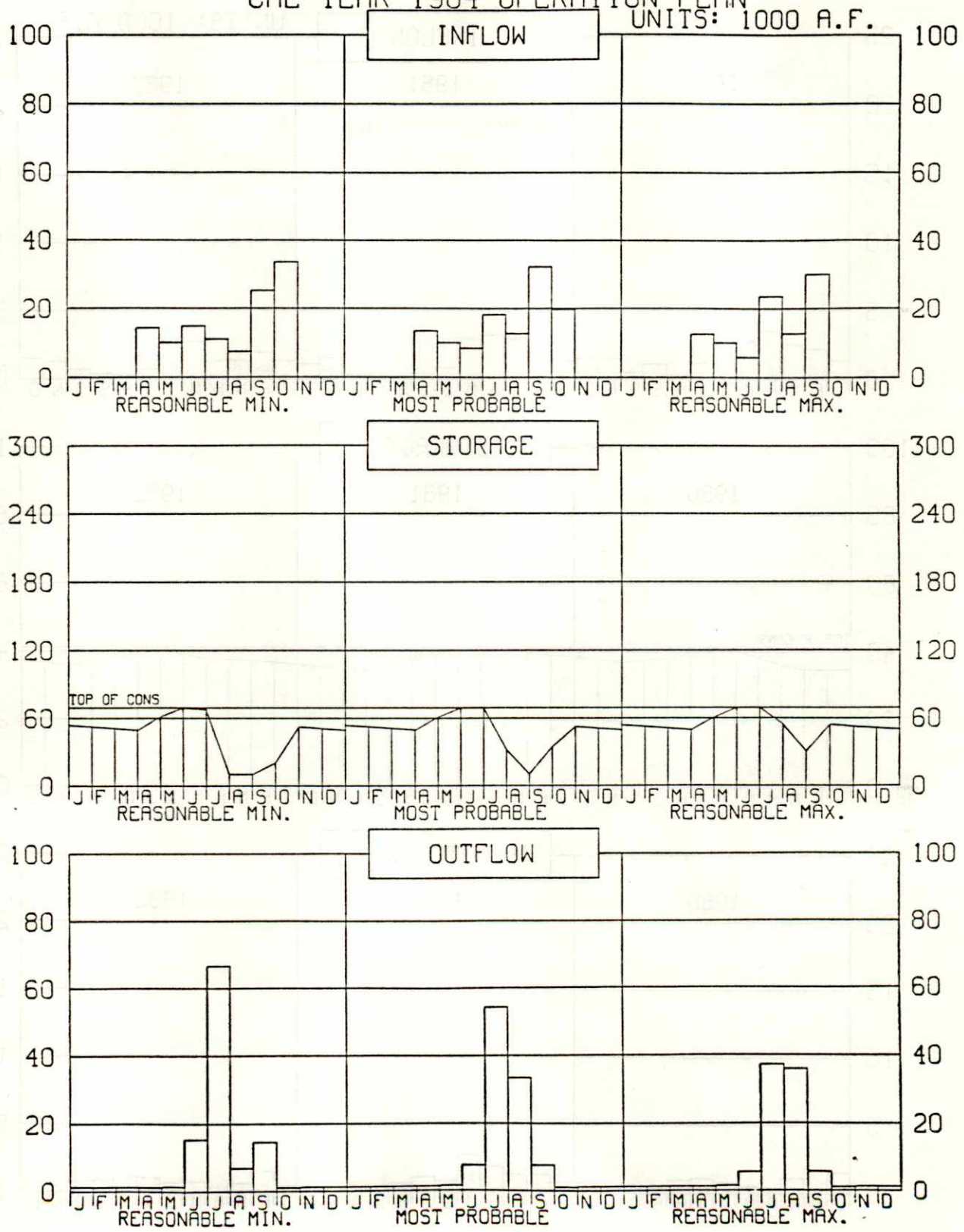


EXHIBIT 4A

BONNY RESERVOIR OPERATION

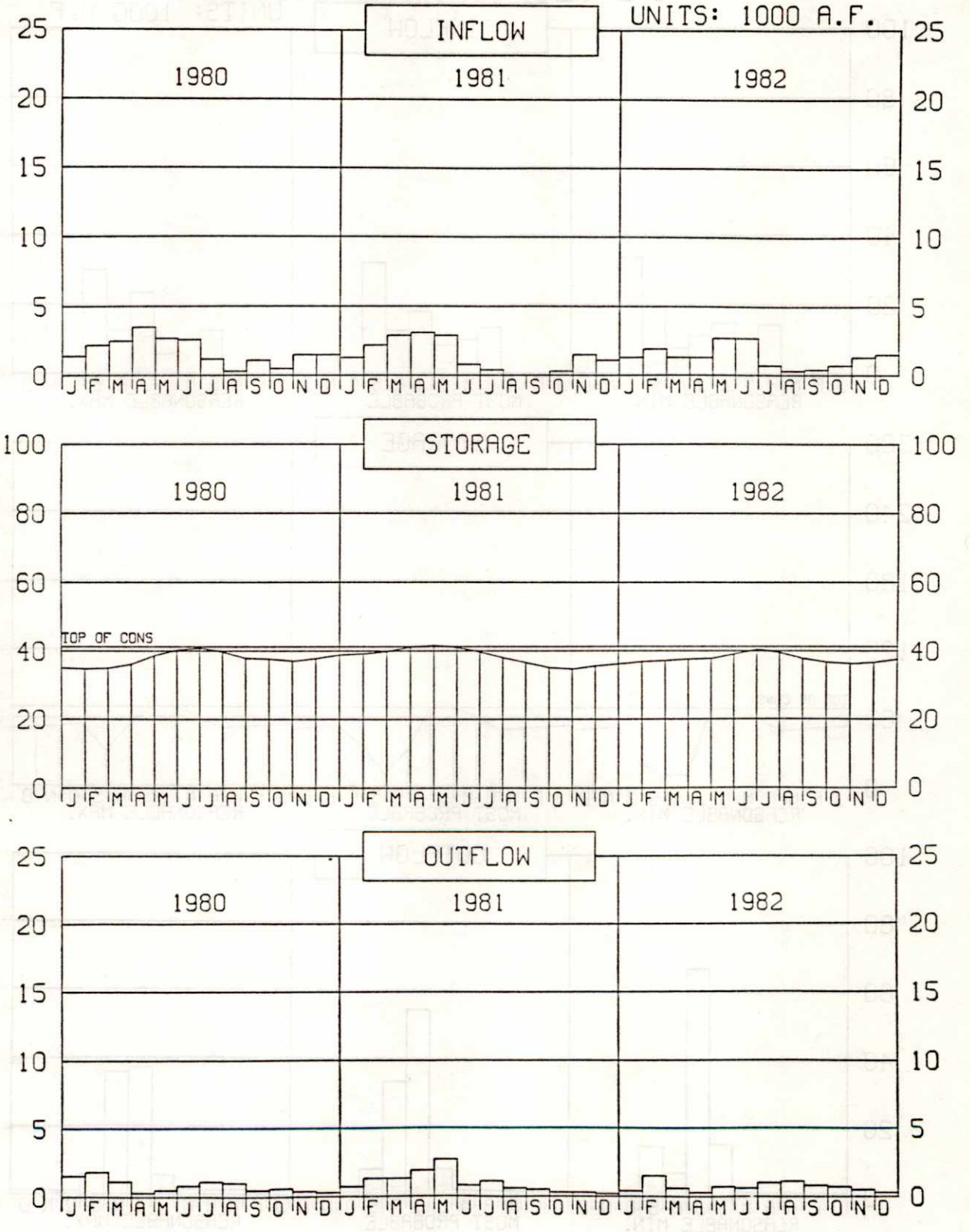


EXHIBIT 4B

BONNY RESERVOIR 1983 OPERATION

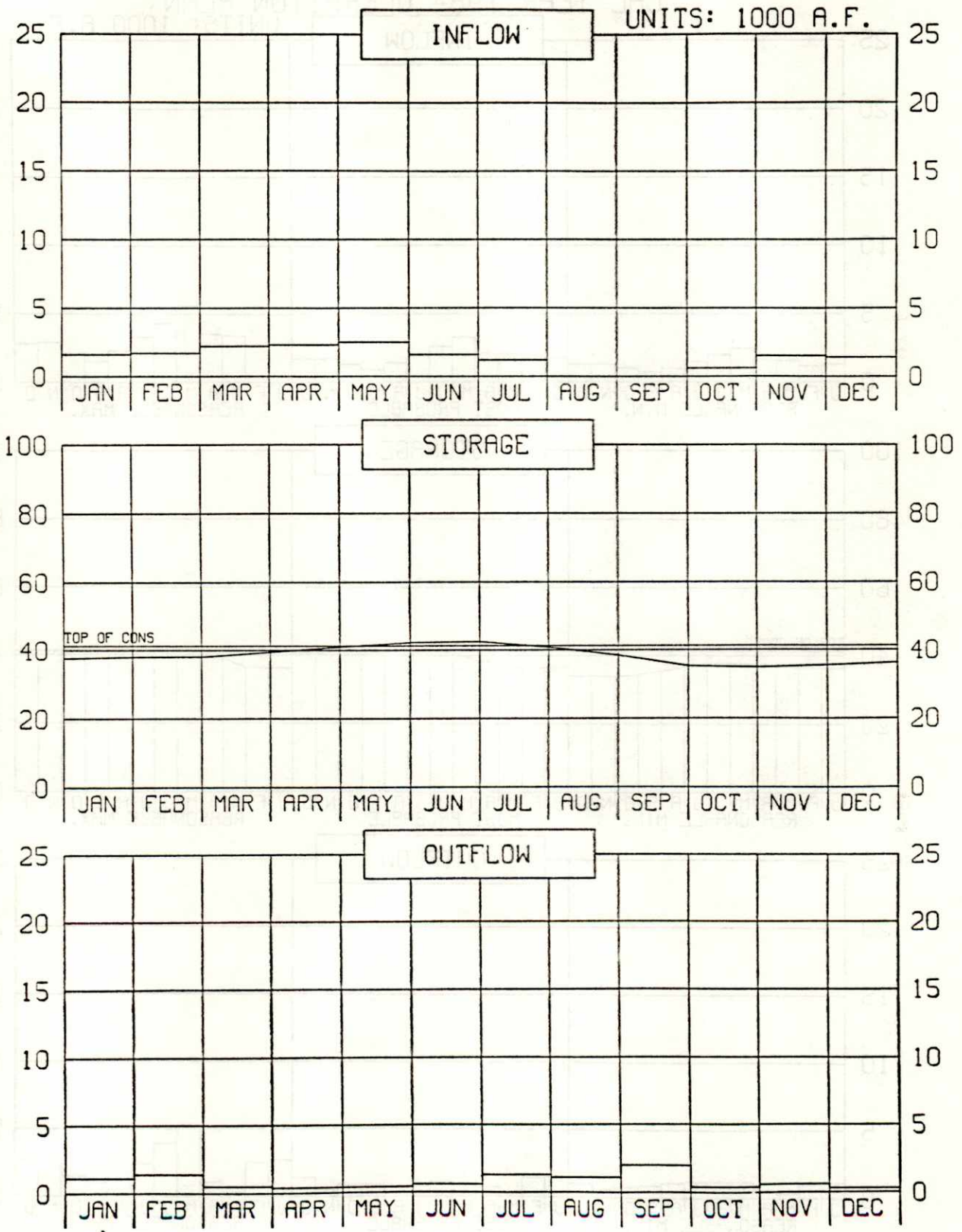


EXHIBIT 4C

BONNY RESERVOIR

CAL YEAR 1984 OPERATION PLAN

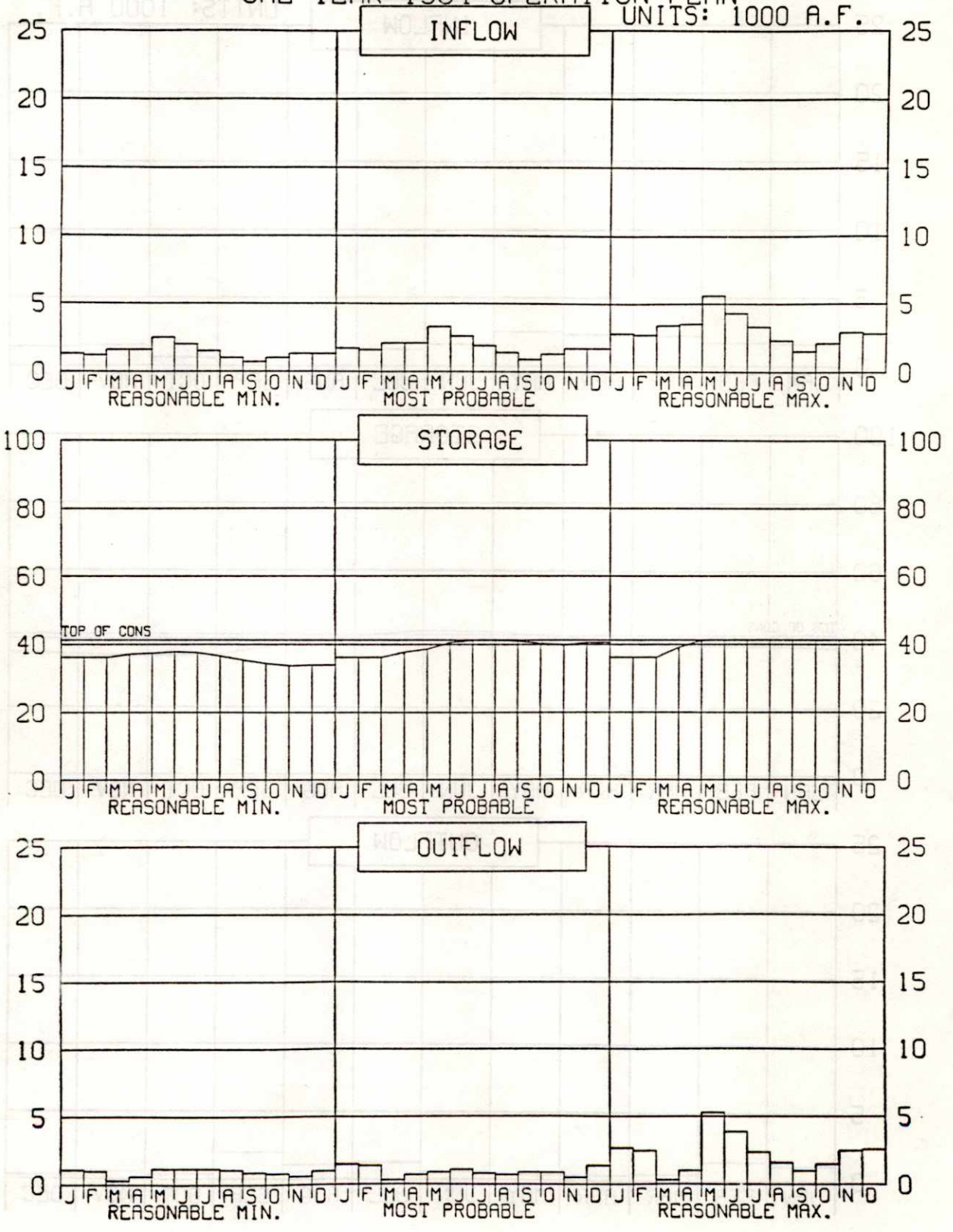


EXHIBIT 5A

SWANSON LAKE OPERATION

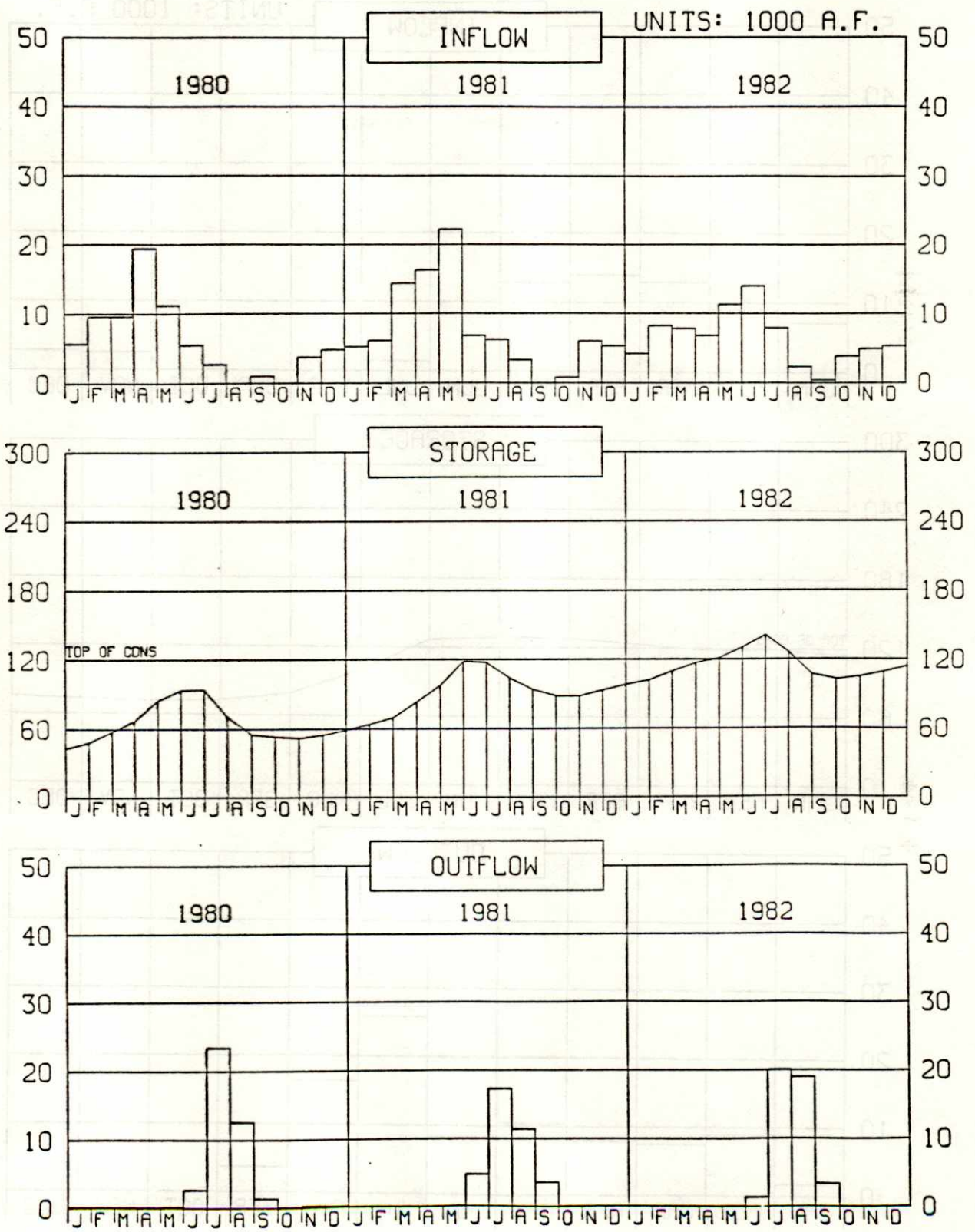


EXHIBIT 5B

SWANSON LAKE 1983 OPERATION

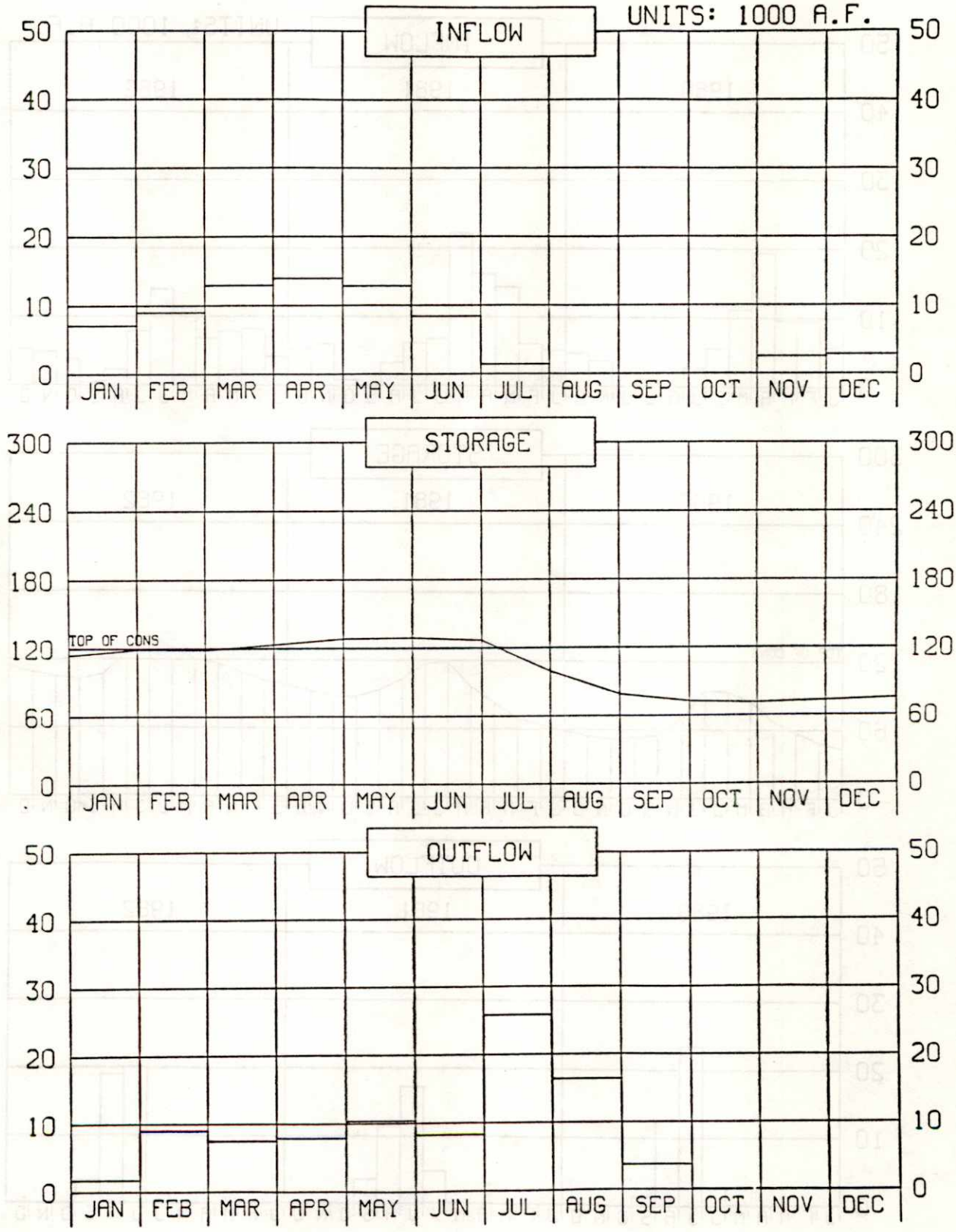


EXHIBIT 5C

SWANSON LAKE

CAL YEAR 1984 OPERATION PLAN

UNITS: 1000 A.F.

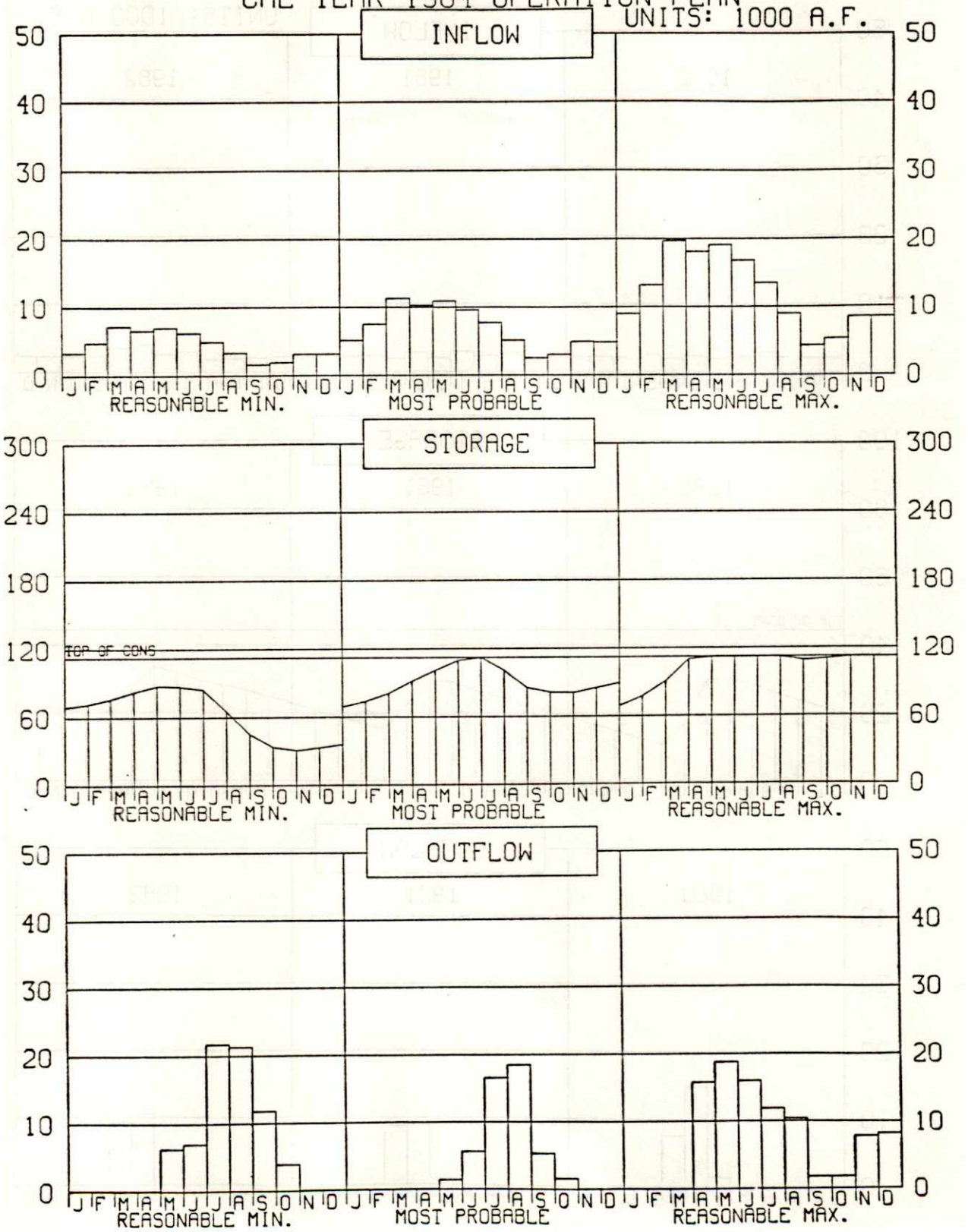


EXHIBIT 6A

ENDERS RESERVOIR OPERATION

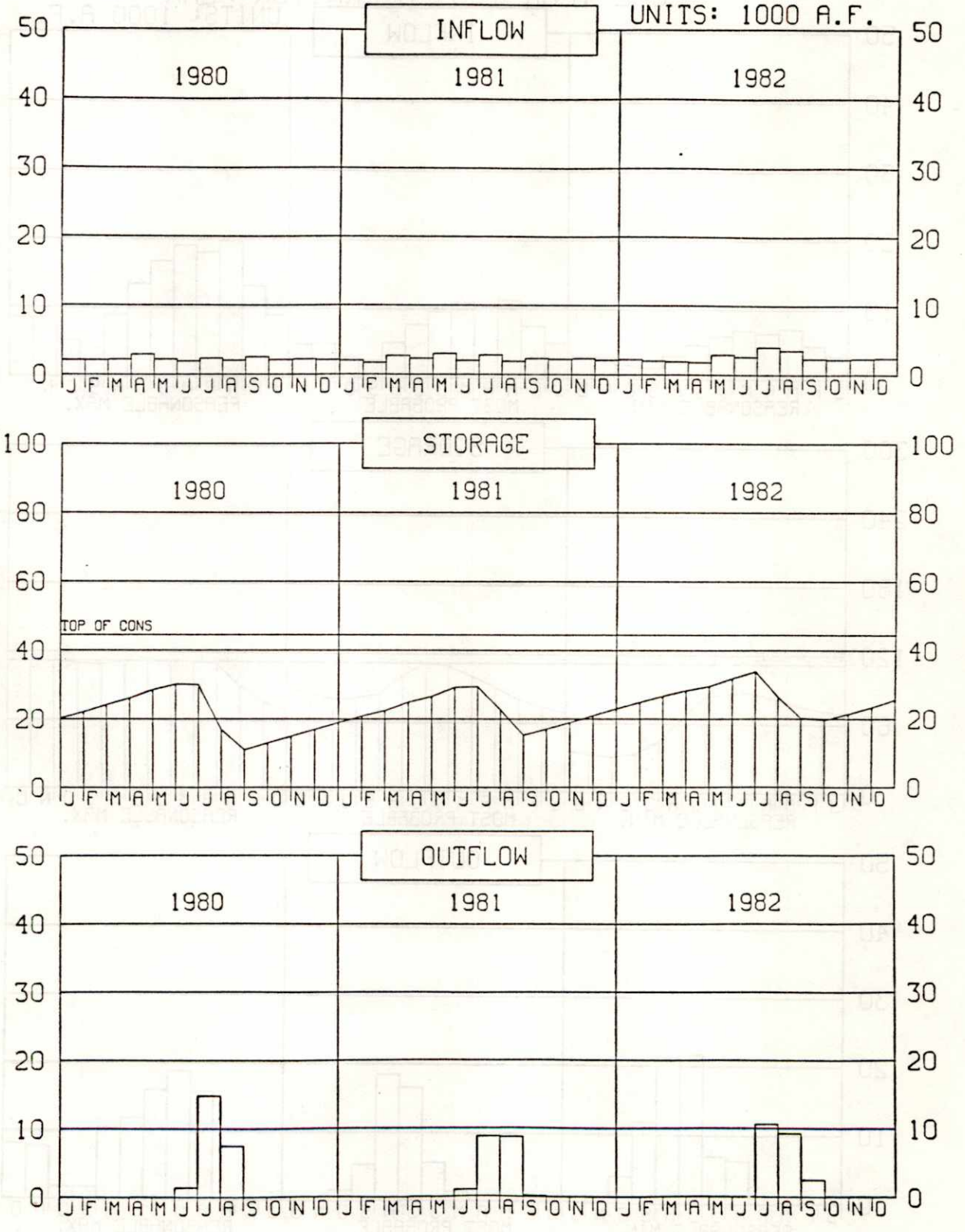


EXHIBIT 6B

ENDERS RESERVOIR 1983 OPERATION

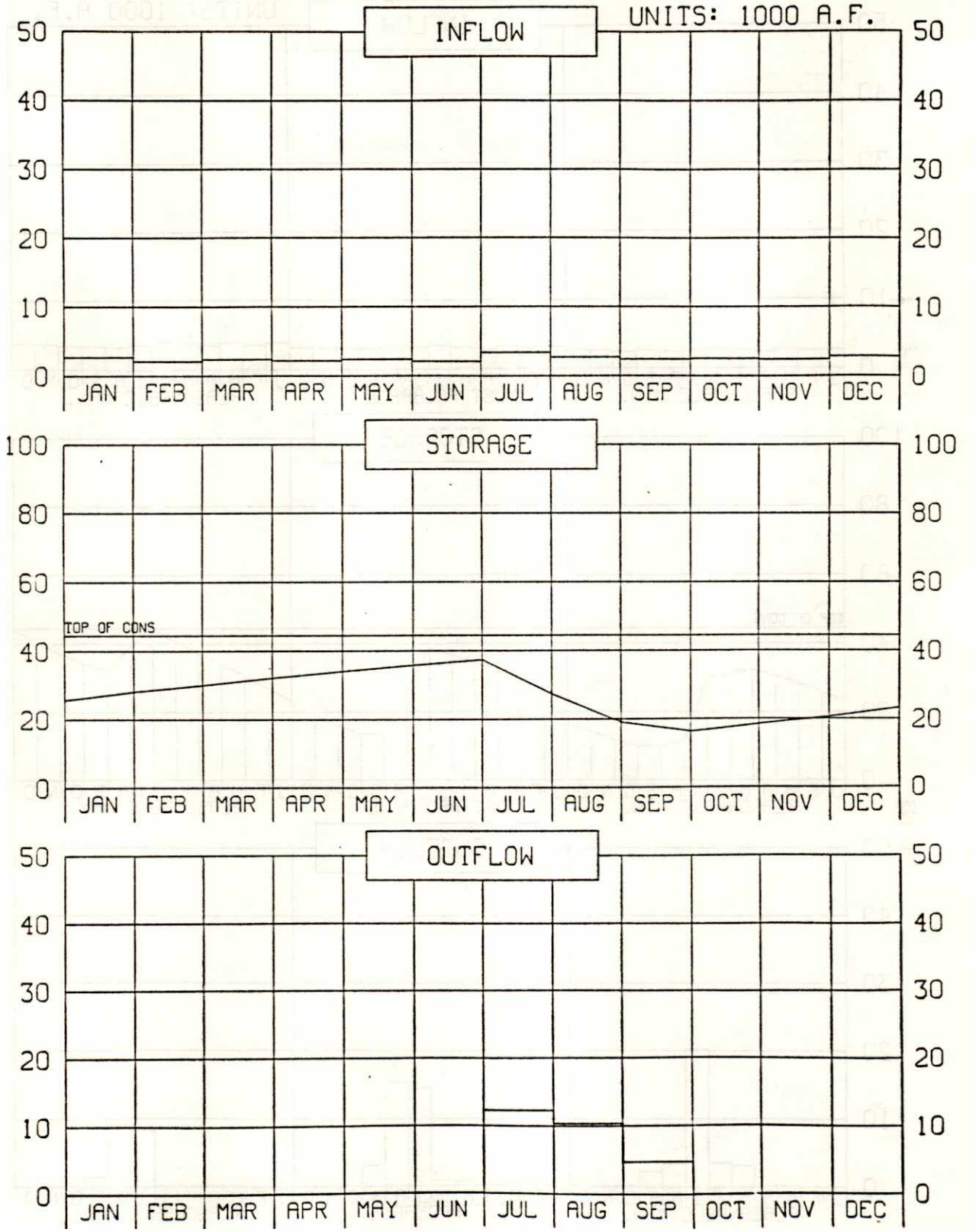


EXHIBIT 6C

ENDERS RESERVOIR
CAL YEAR 1984 OPERATION PLAN

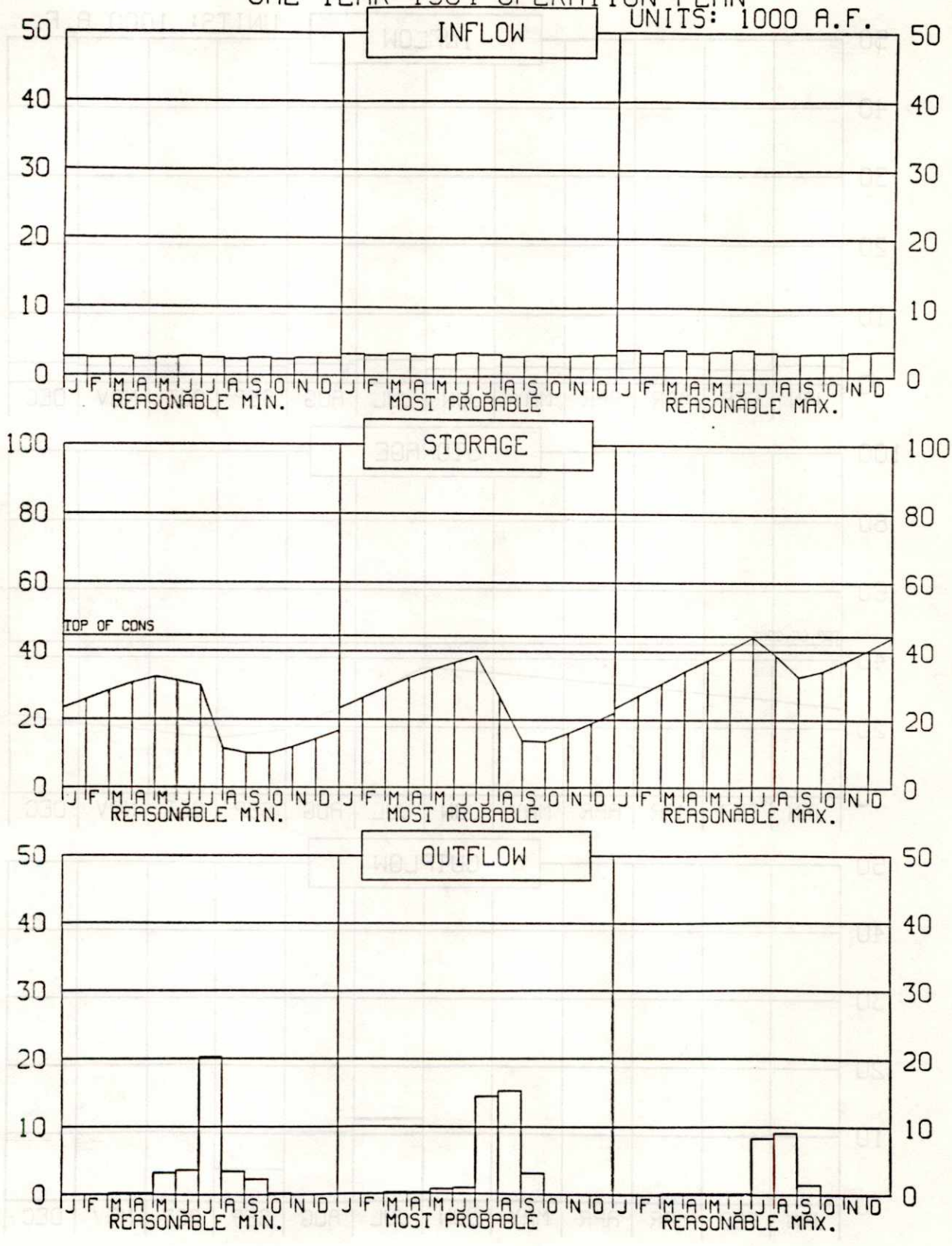


EXHIBIT 7A

HUGH BUTLER LAKE OPERATION

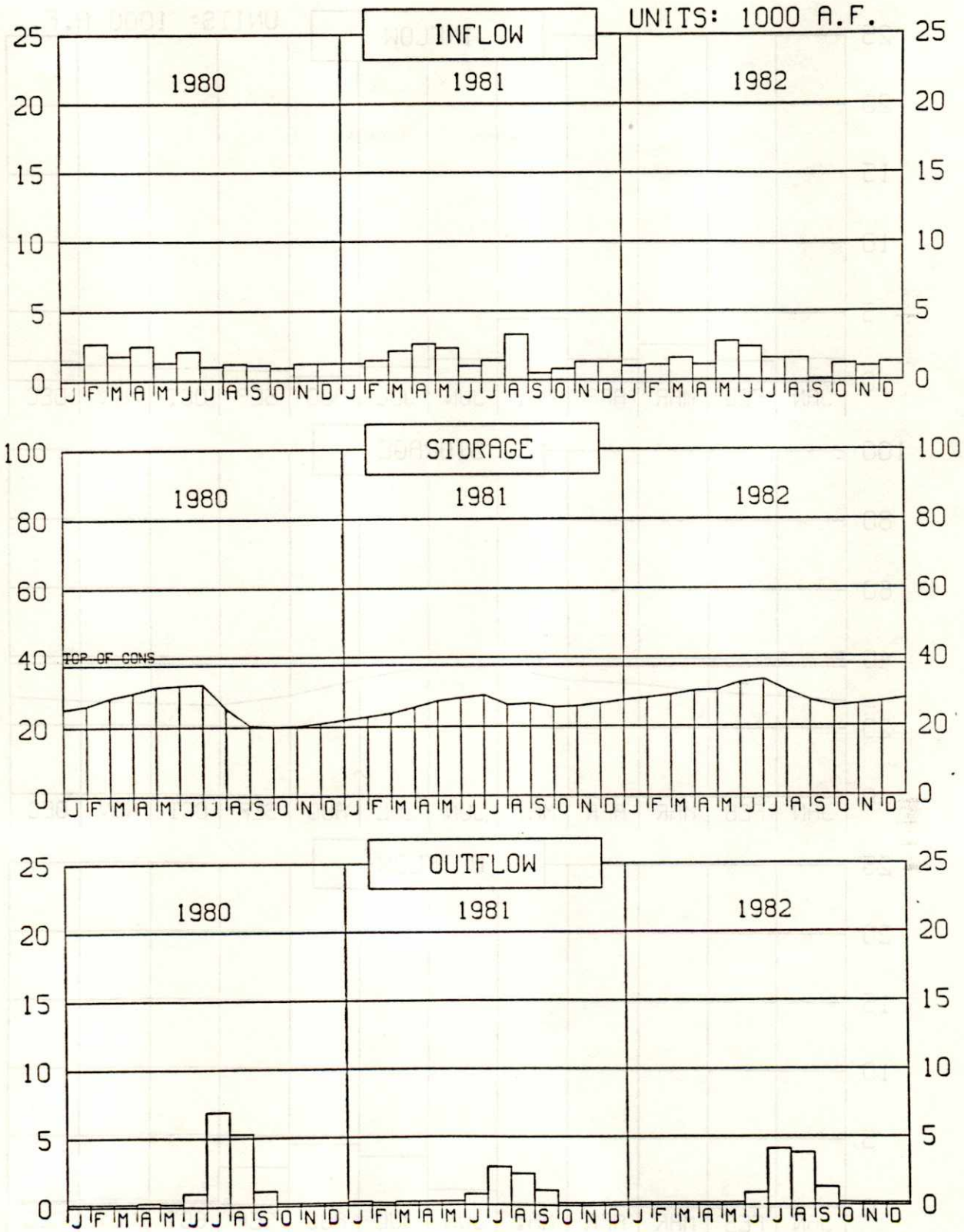
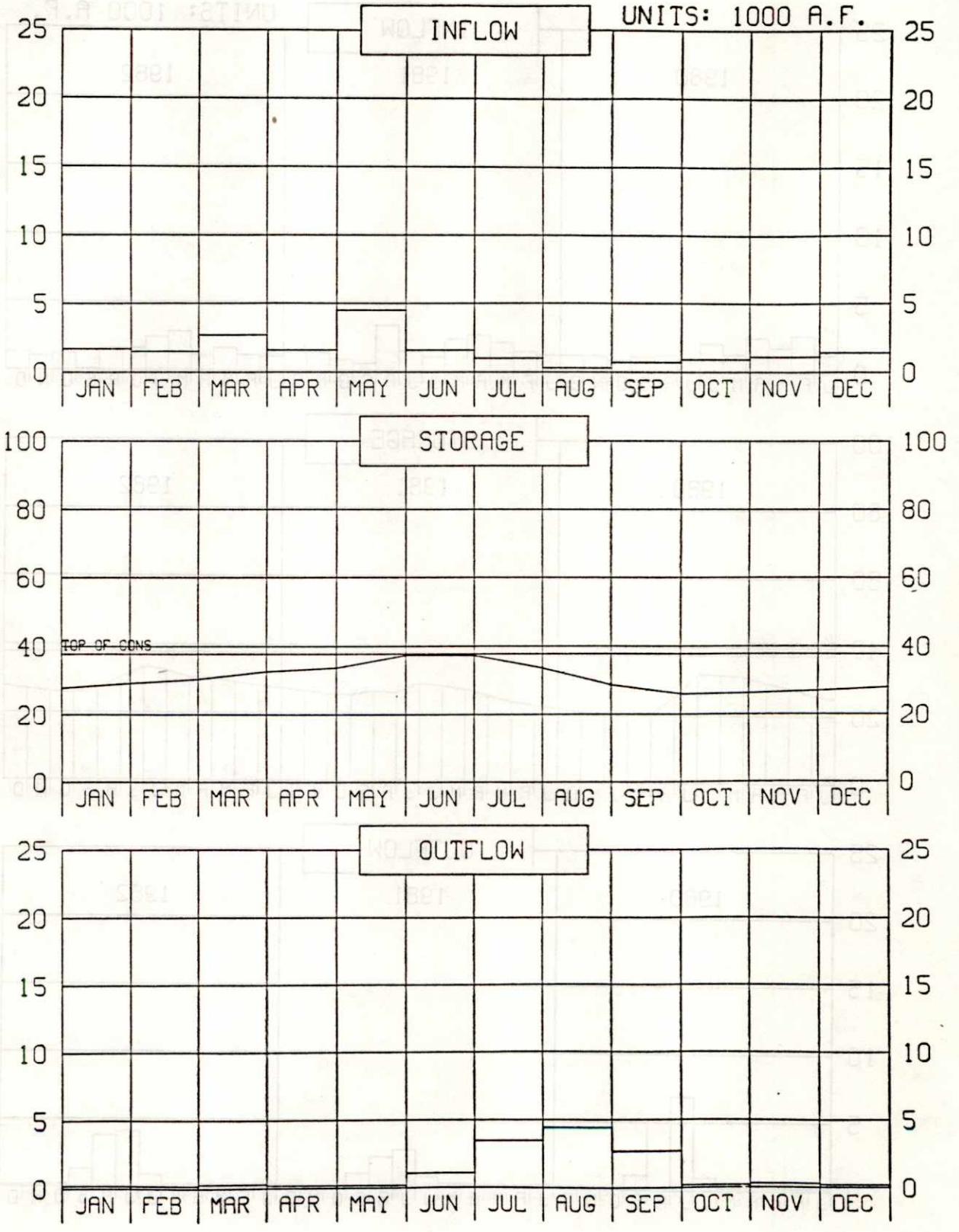


EXHIBIT 7B

HUGH BUTLER LAKE 1983 OPERATION



HUGH BUTLER LAKE

CAL YEAR 1984 OPERATION PLAN

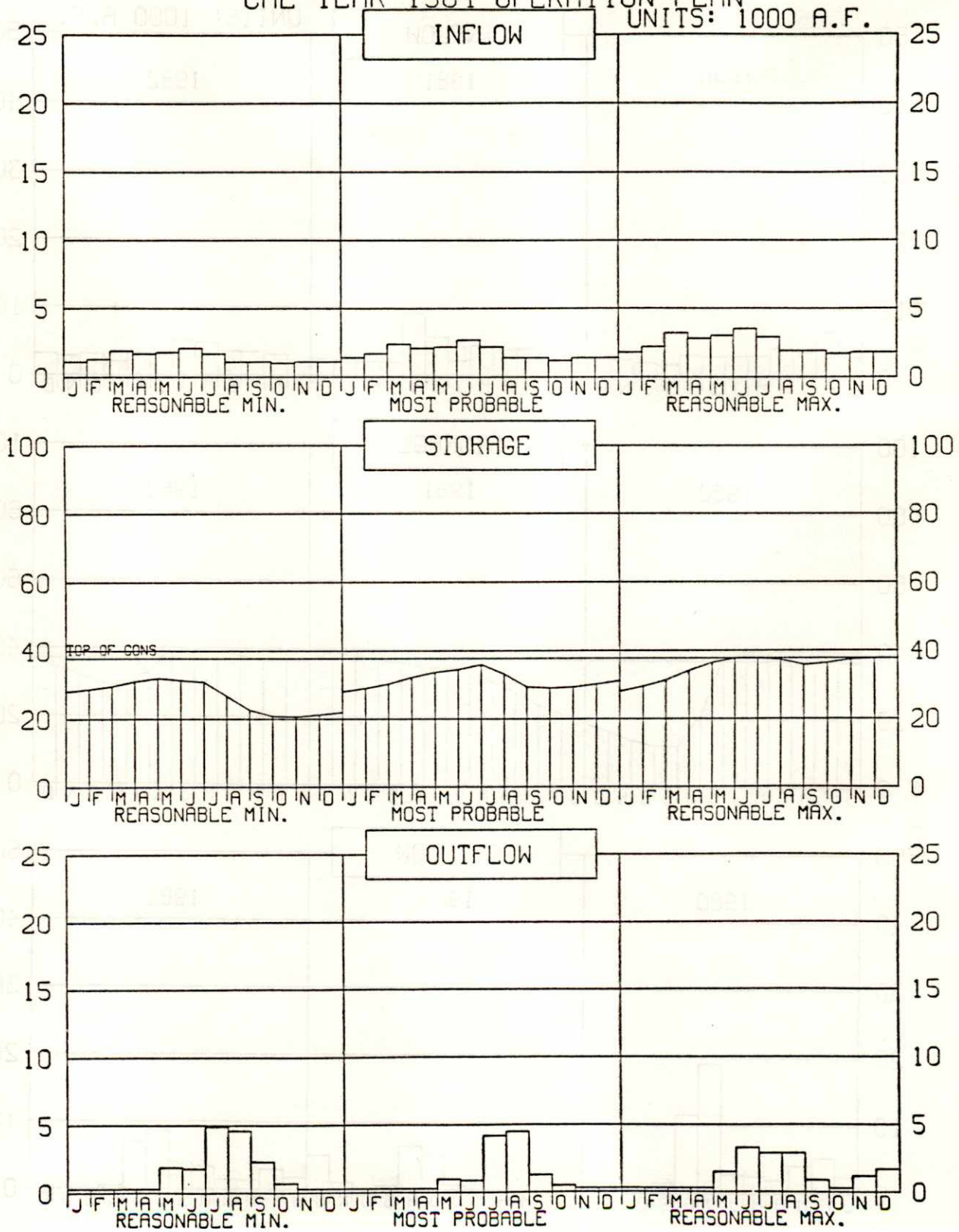


EXHIBIT 8A

HARRY STRUNK LAKE OPERATION

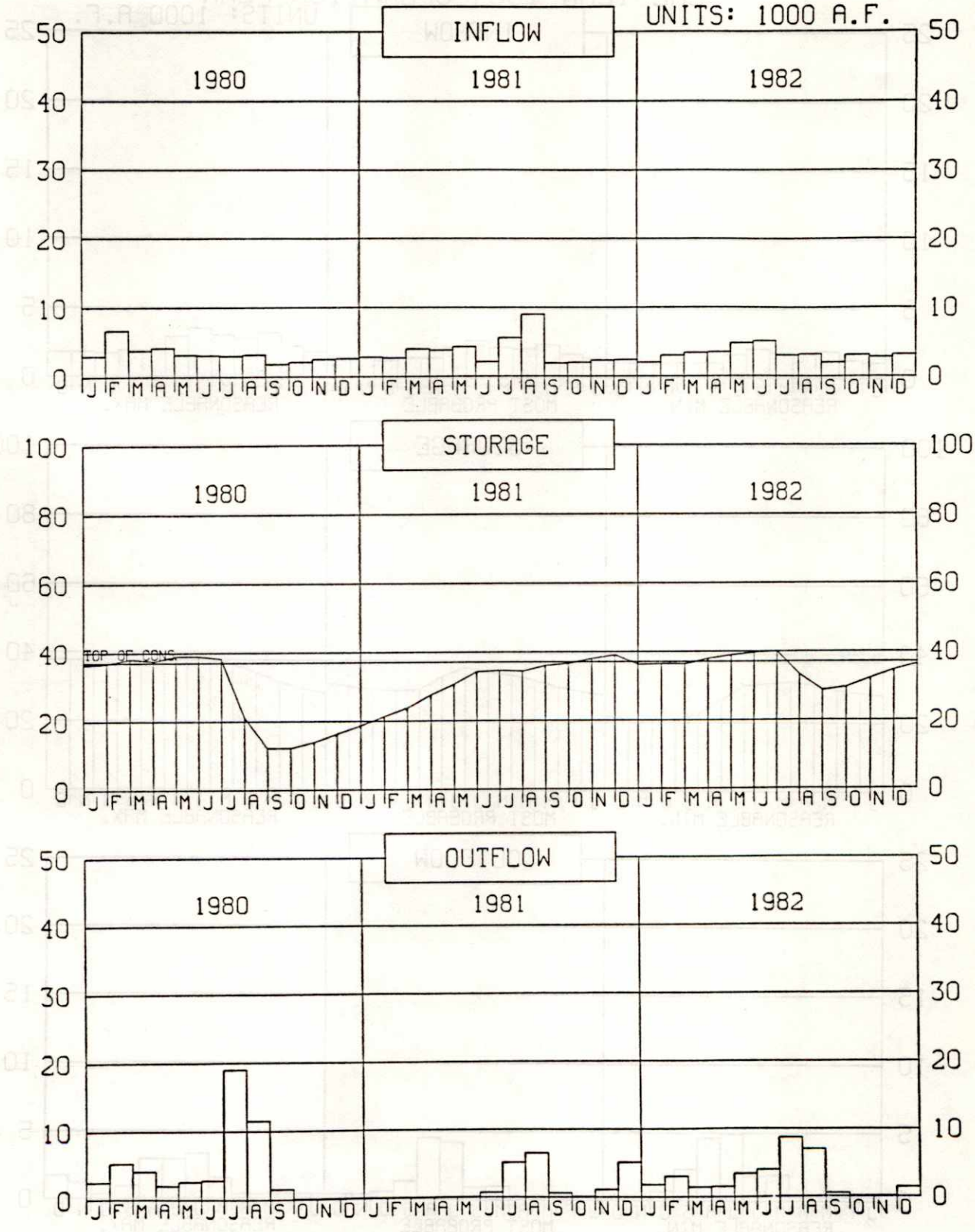


EXHIBIT 8B

HARRY STRUNK LAKE 1983 OPERATION

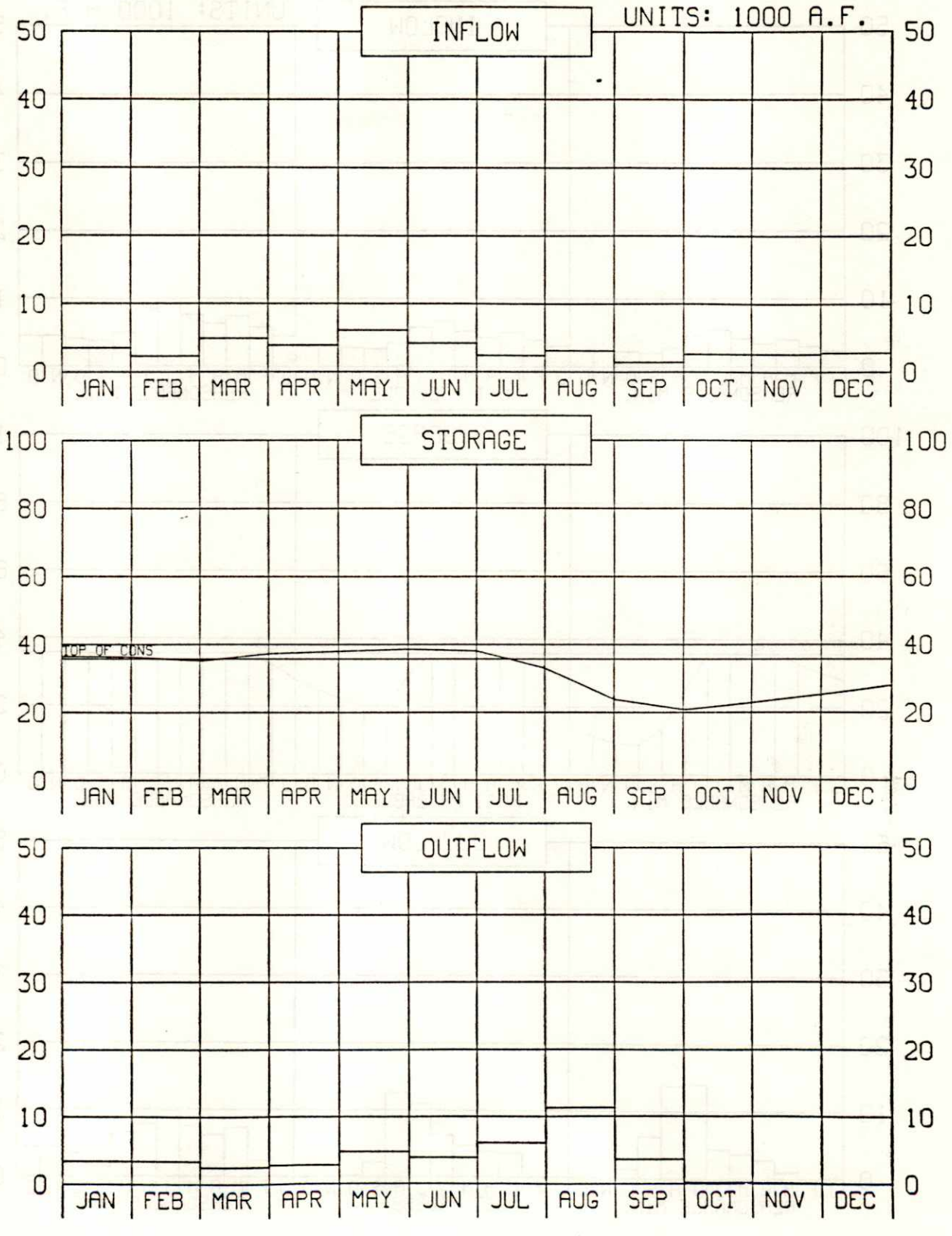


EXHIBIT 8C

HARRY STRUNK LAKE

CAL YEAR 1984 OPERATION PLAN

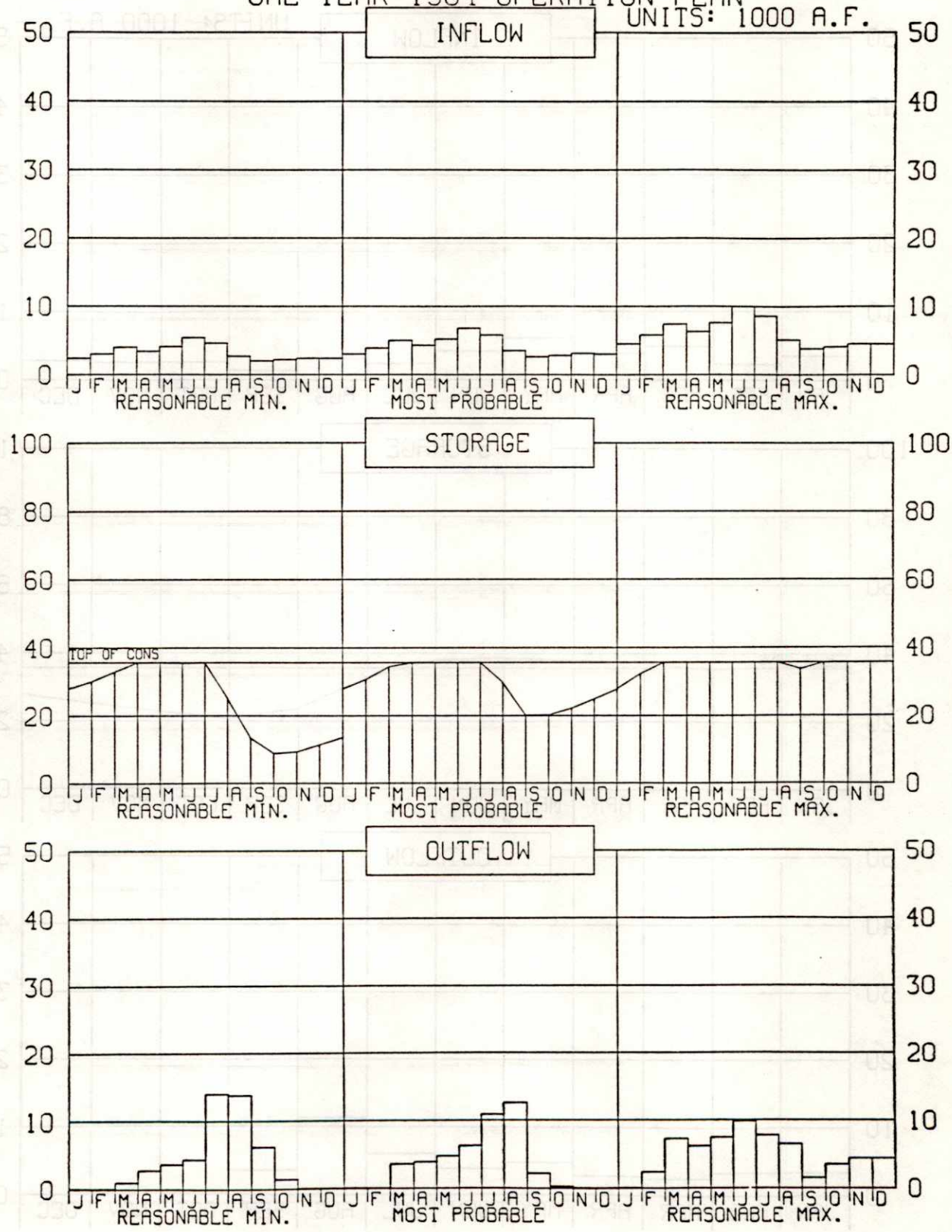


EXHIBIT 9A

KEITH SEBELIUS LAKE OPERATION

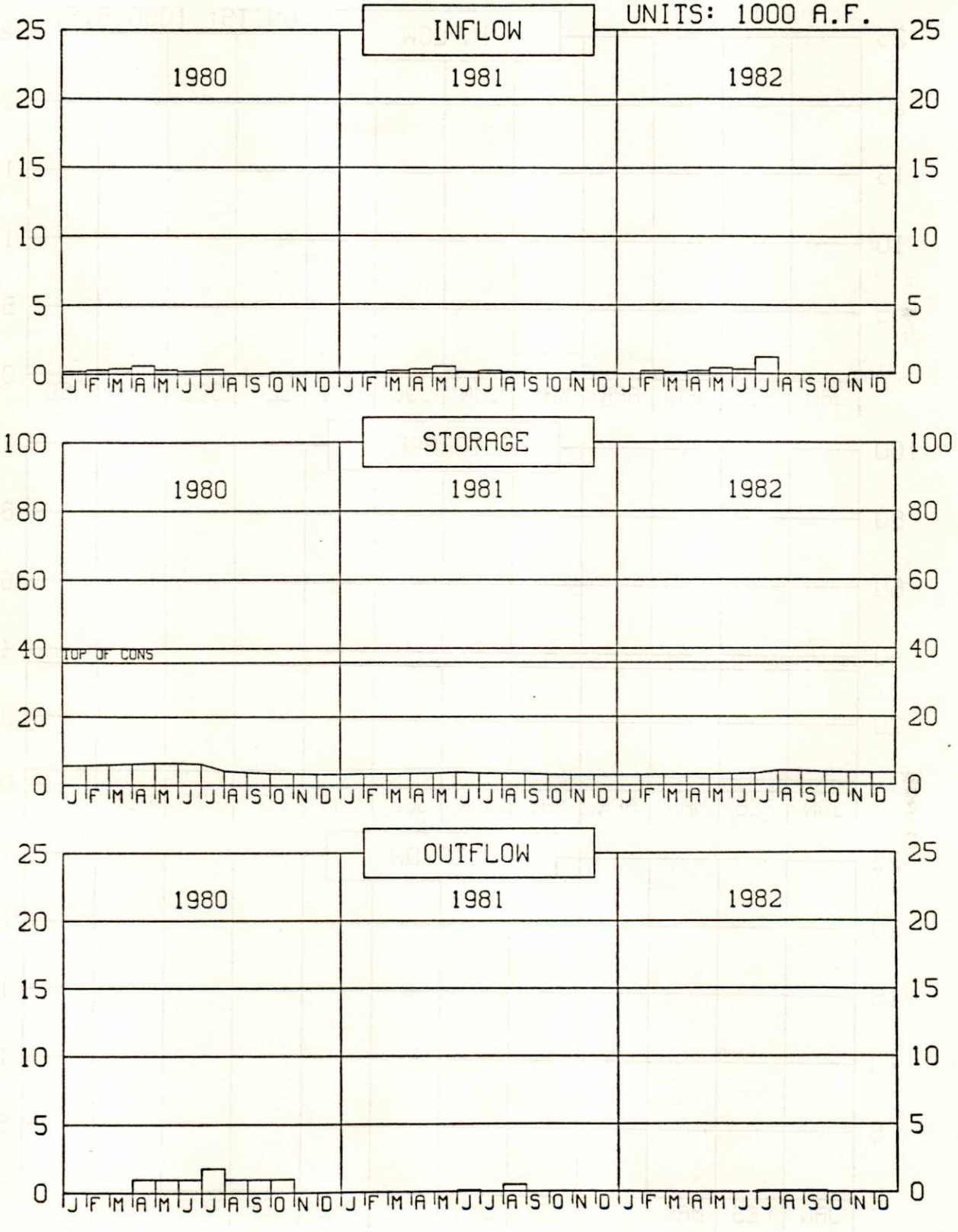
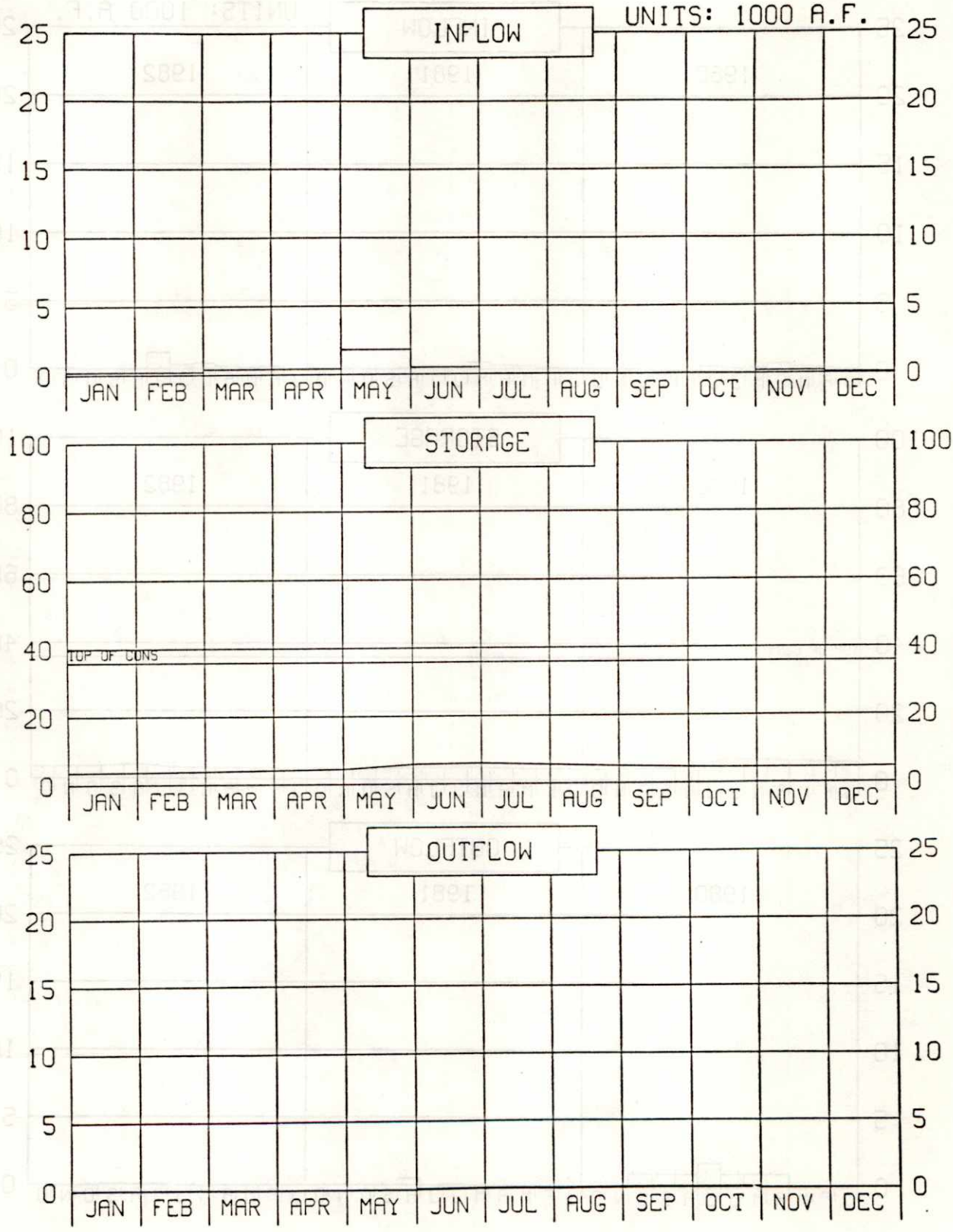


EXHIBIT 9B

KEITH SEBELIUS LAKE 1983 OPERATION



KEITH SEBELIUS LAKE

CAL YEAR 1984 OPERATION PLAN

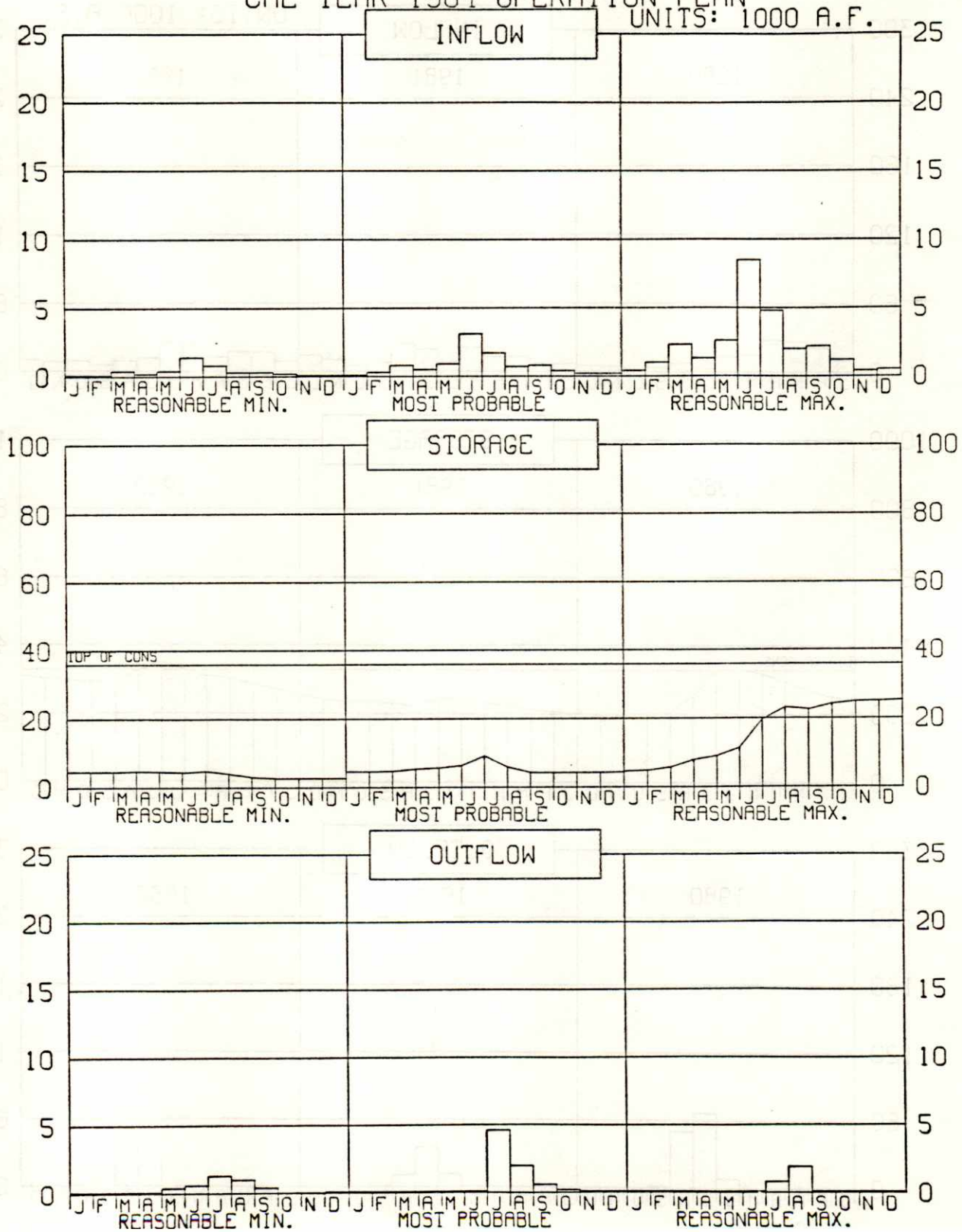


EXHIBIT 10A

HARLAN COUNTY LAKE OPERATION

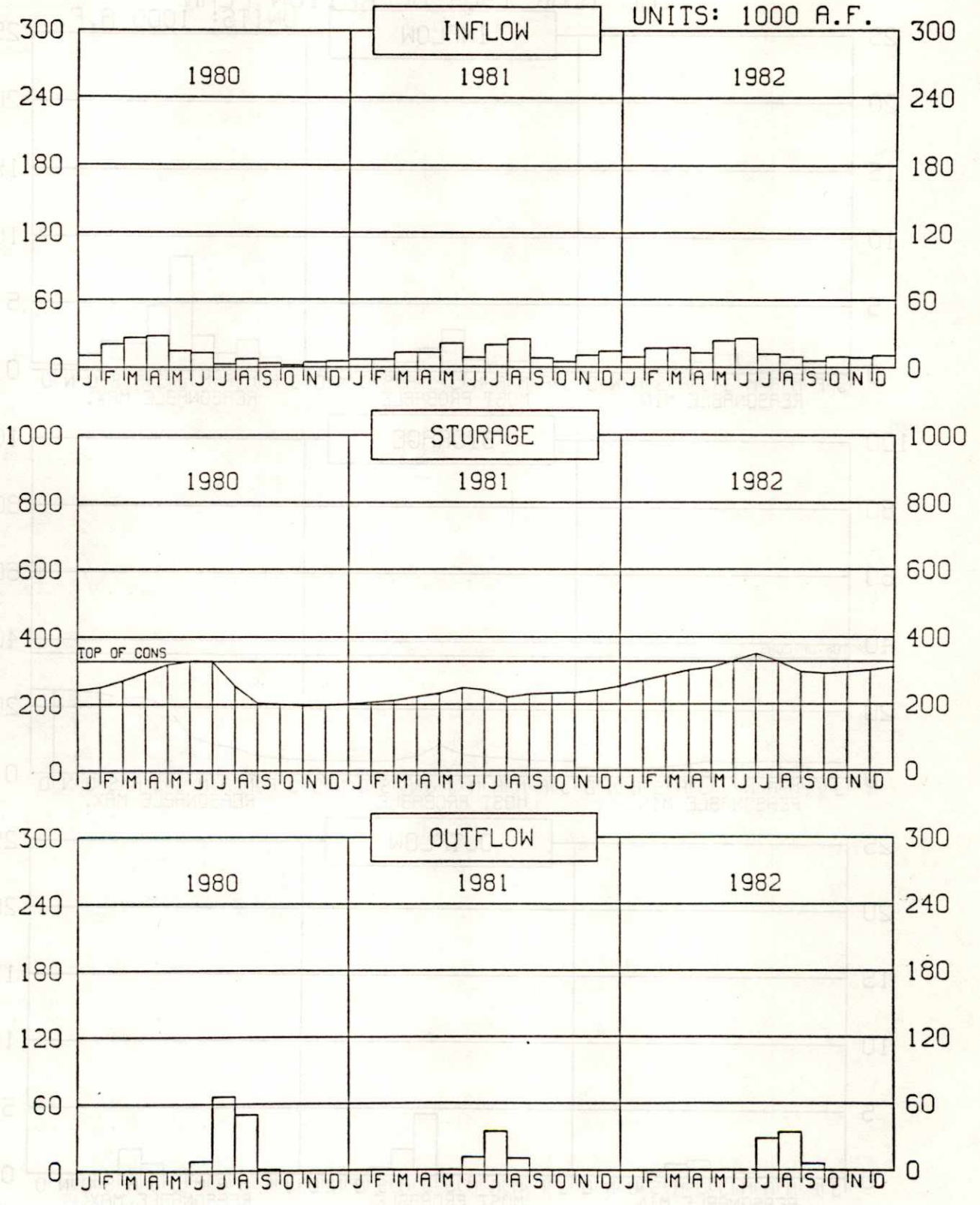
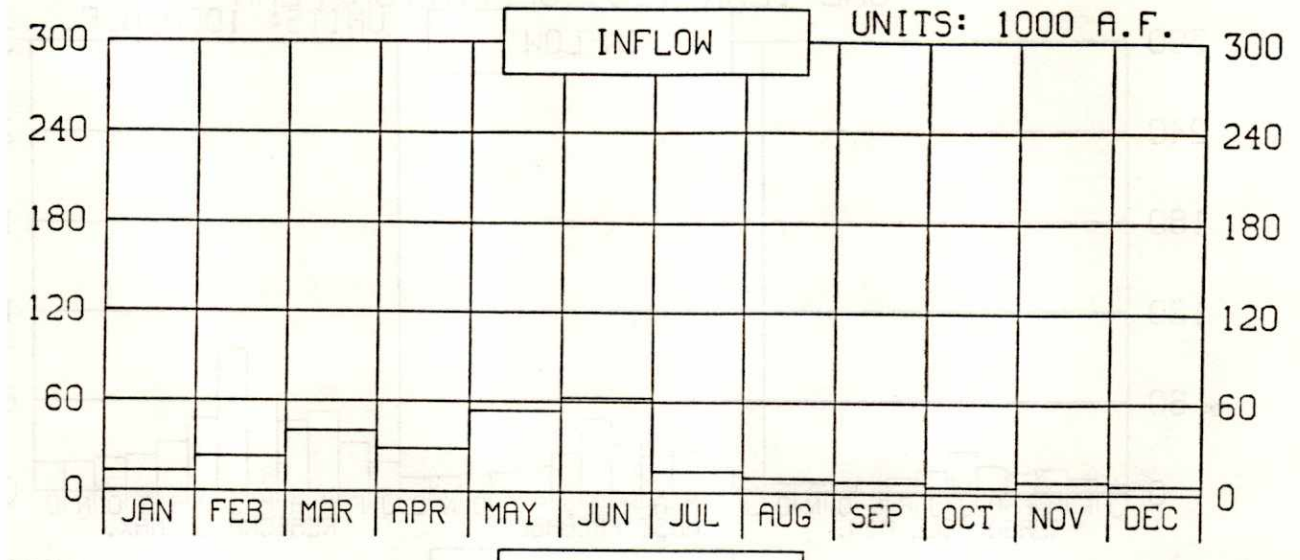
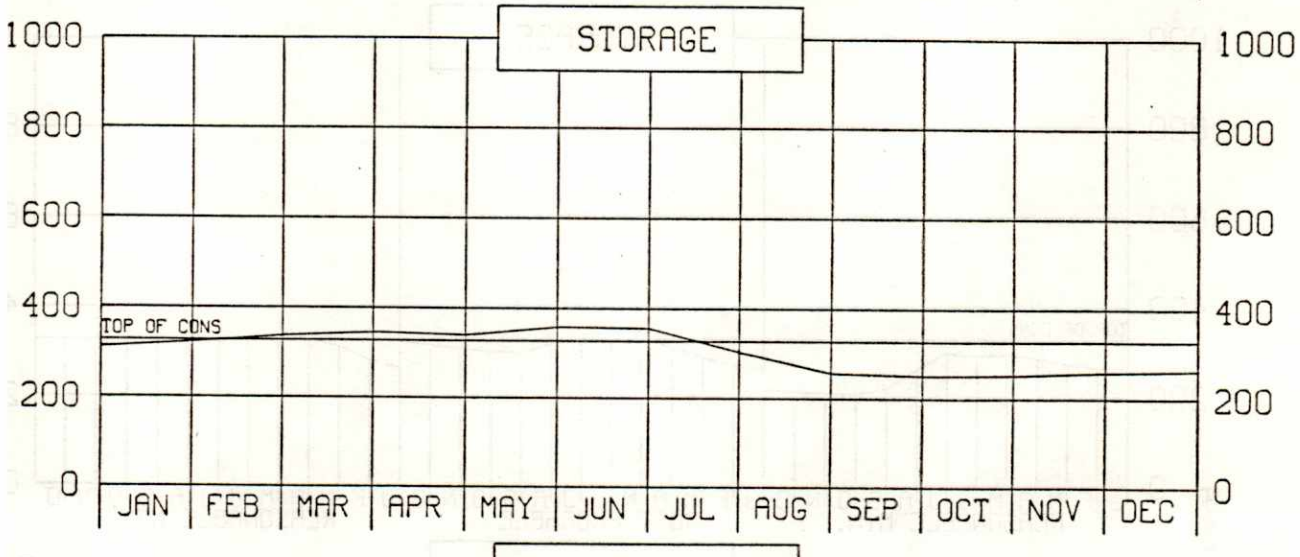


EXHIBIT 10B

HARLAN COUNTY LAKE 1983 OPERATION





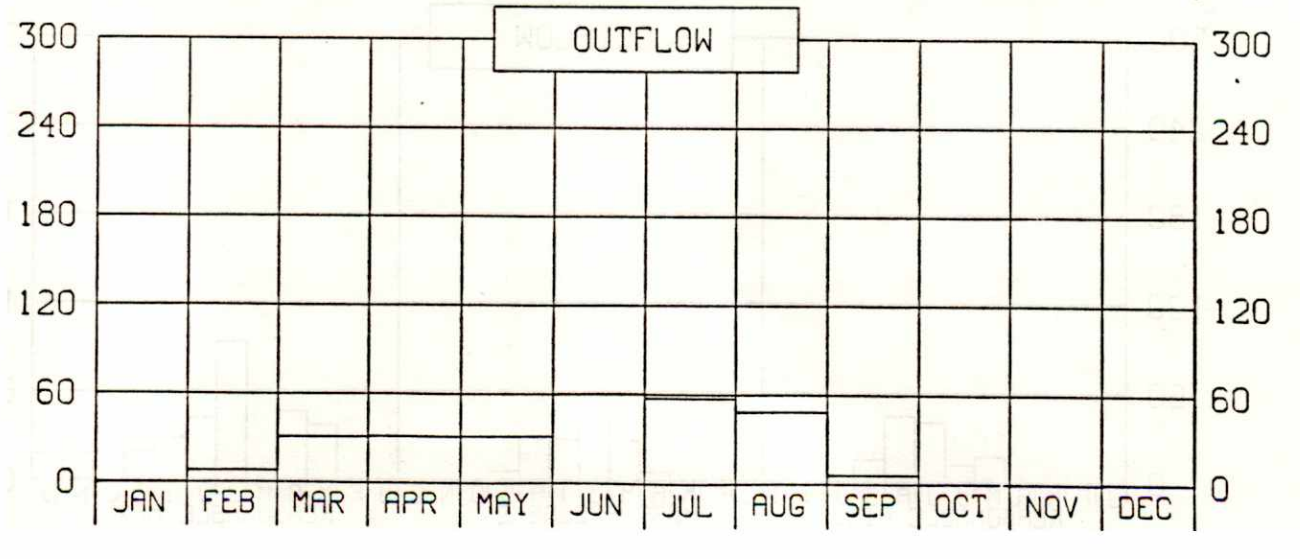


EXHIBIT 10C

HARLAN COUNTY LAKE

CAL YEAR 1984 OPERATION PLAN

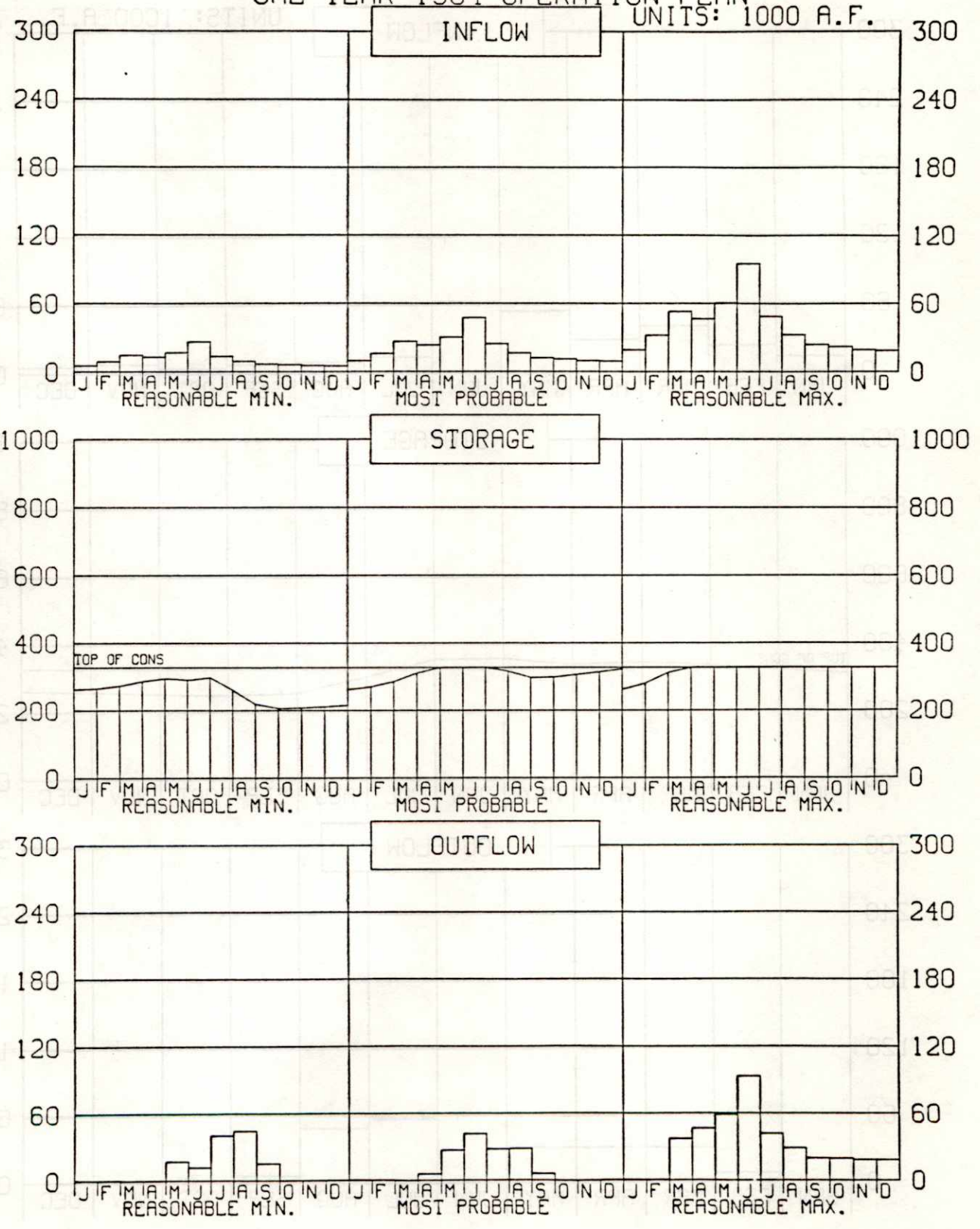


EXHIBIT 11A

LOVEWELL RESERVOIR OPERATION

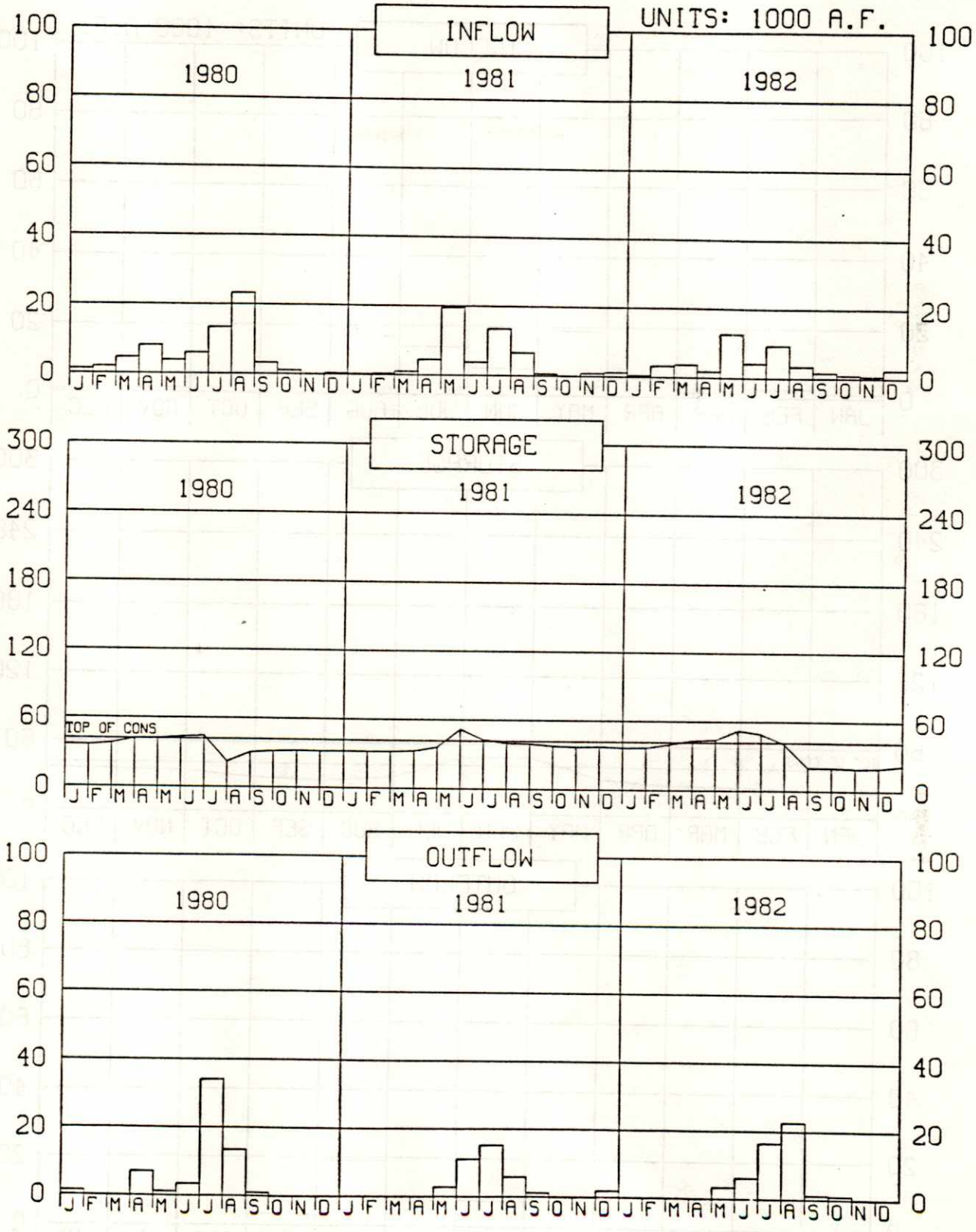


EXHIBIT 11B

LOVEWELL RESERVOIR 1983 OPERATION

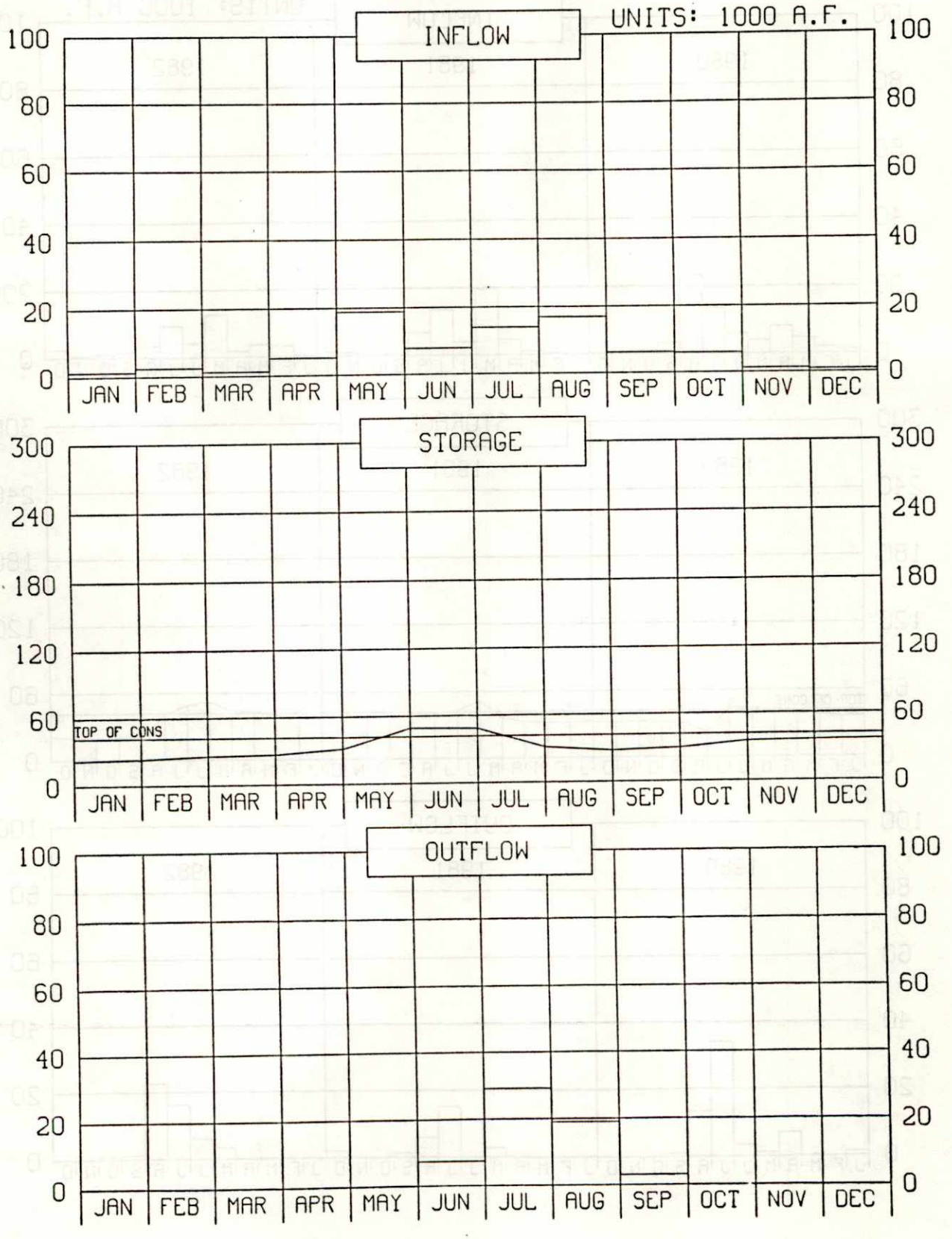


EXHIBIT 11C

LOVEWELL RESERVOIR

CAL YEAR 1984 OPERATION PLAN

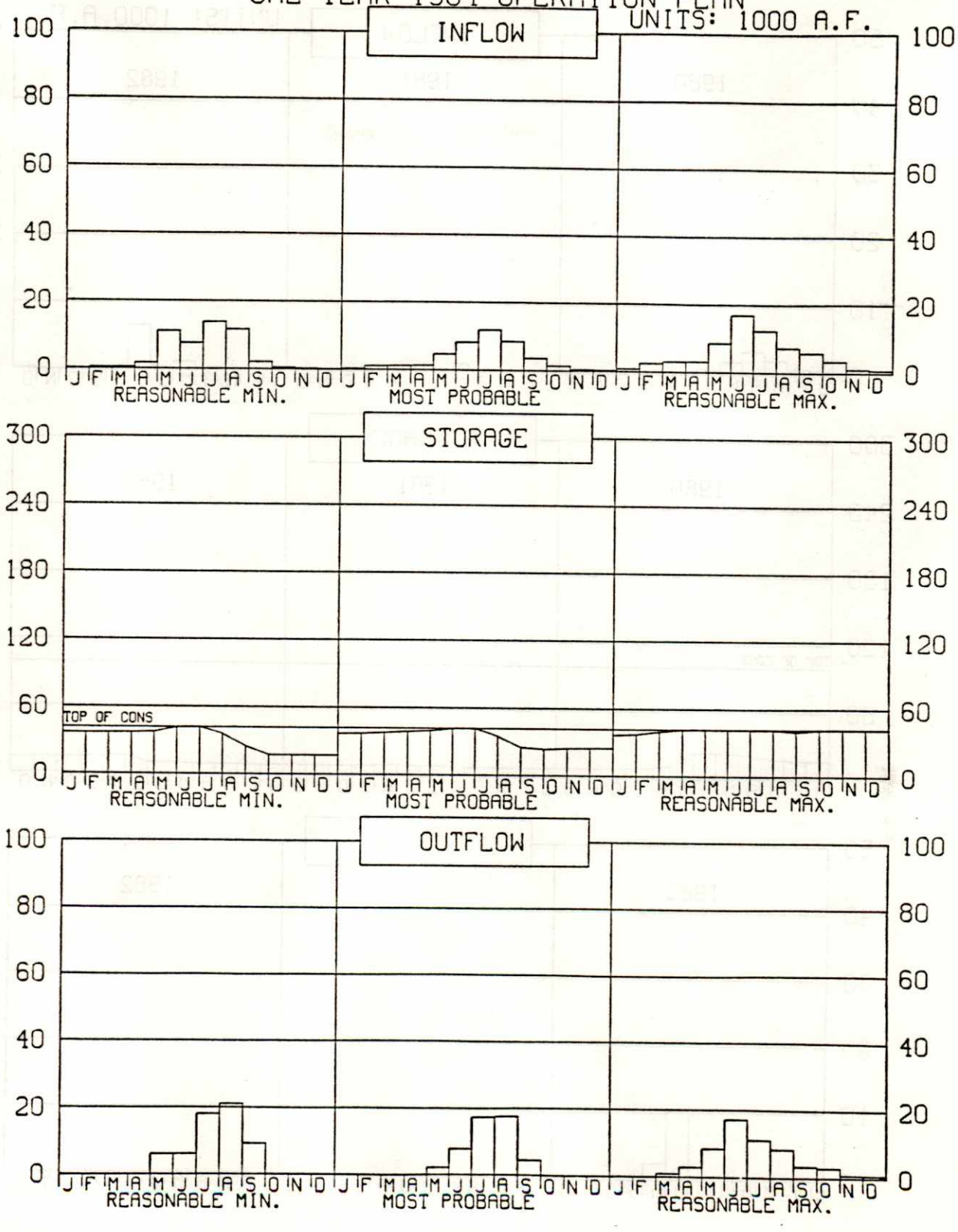


EXHIBIT 12A

KIRWIN RESERVOIR OPERATION

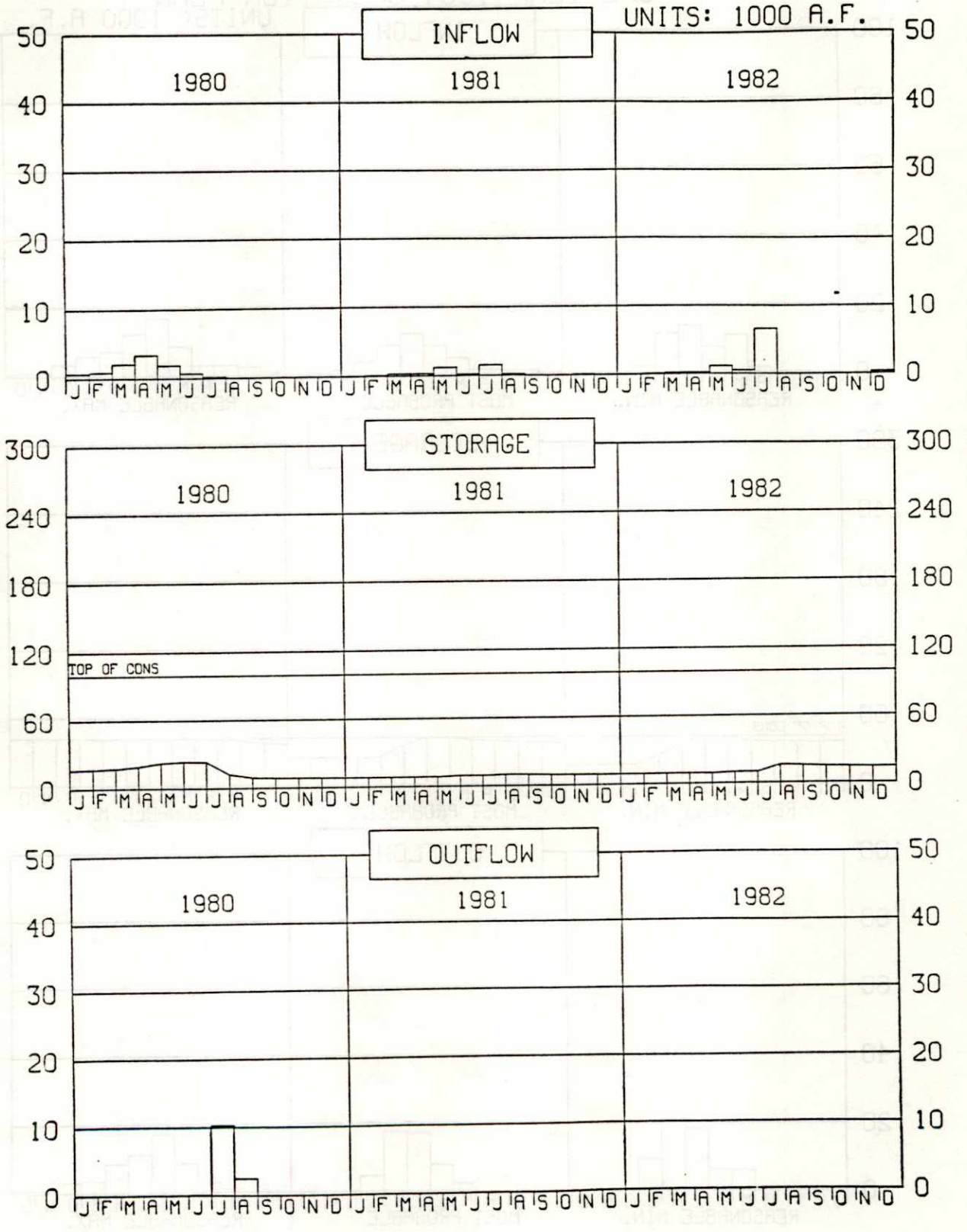


EXHIBIT 12B

KIRWIN RESERVOIR 1983 OPERATION

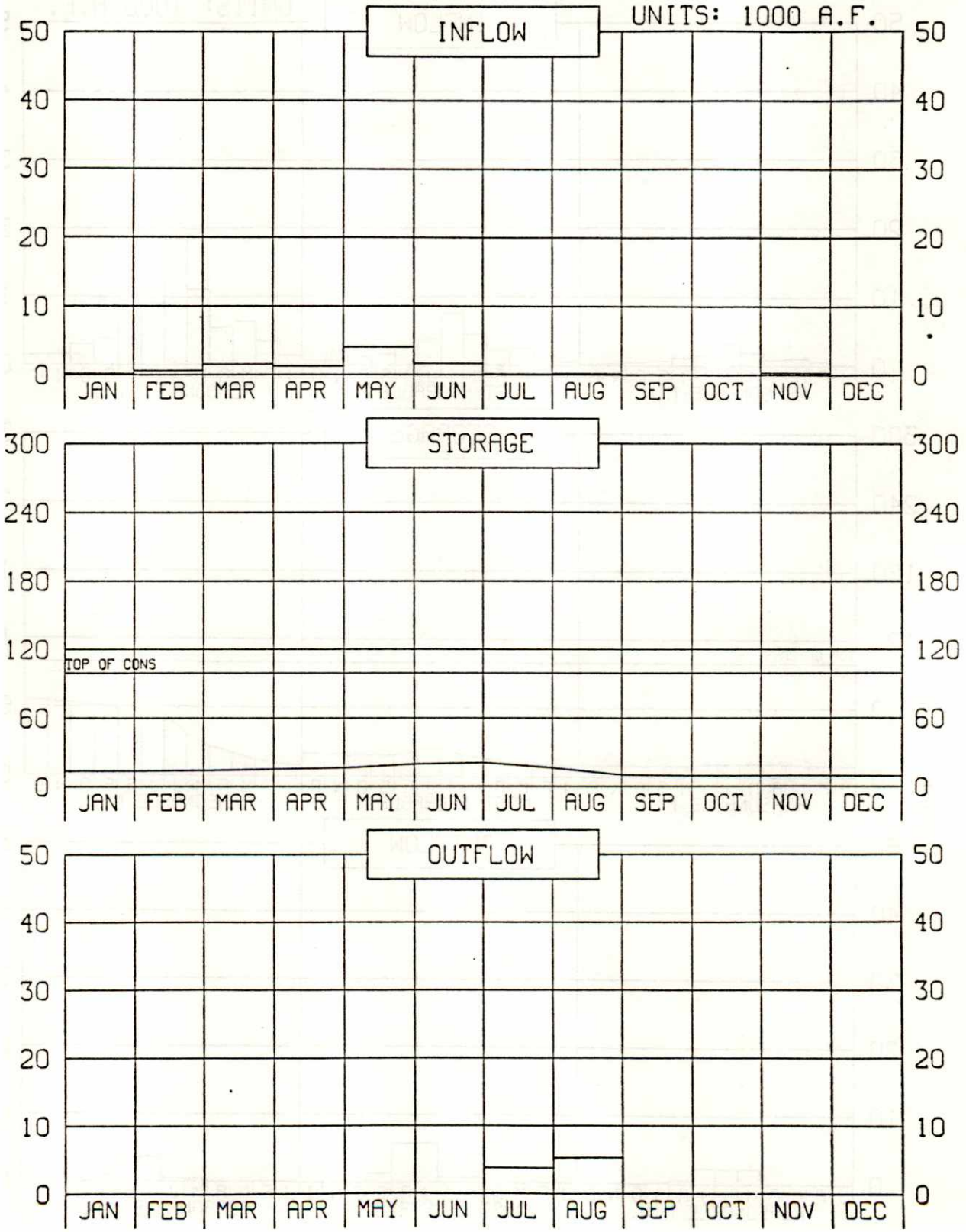


EXHIBIT 12C

KIRWIN RESERVOIR

CAL YEAR 1984 OPERATION PLAN

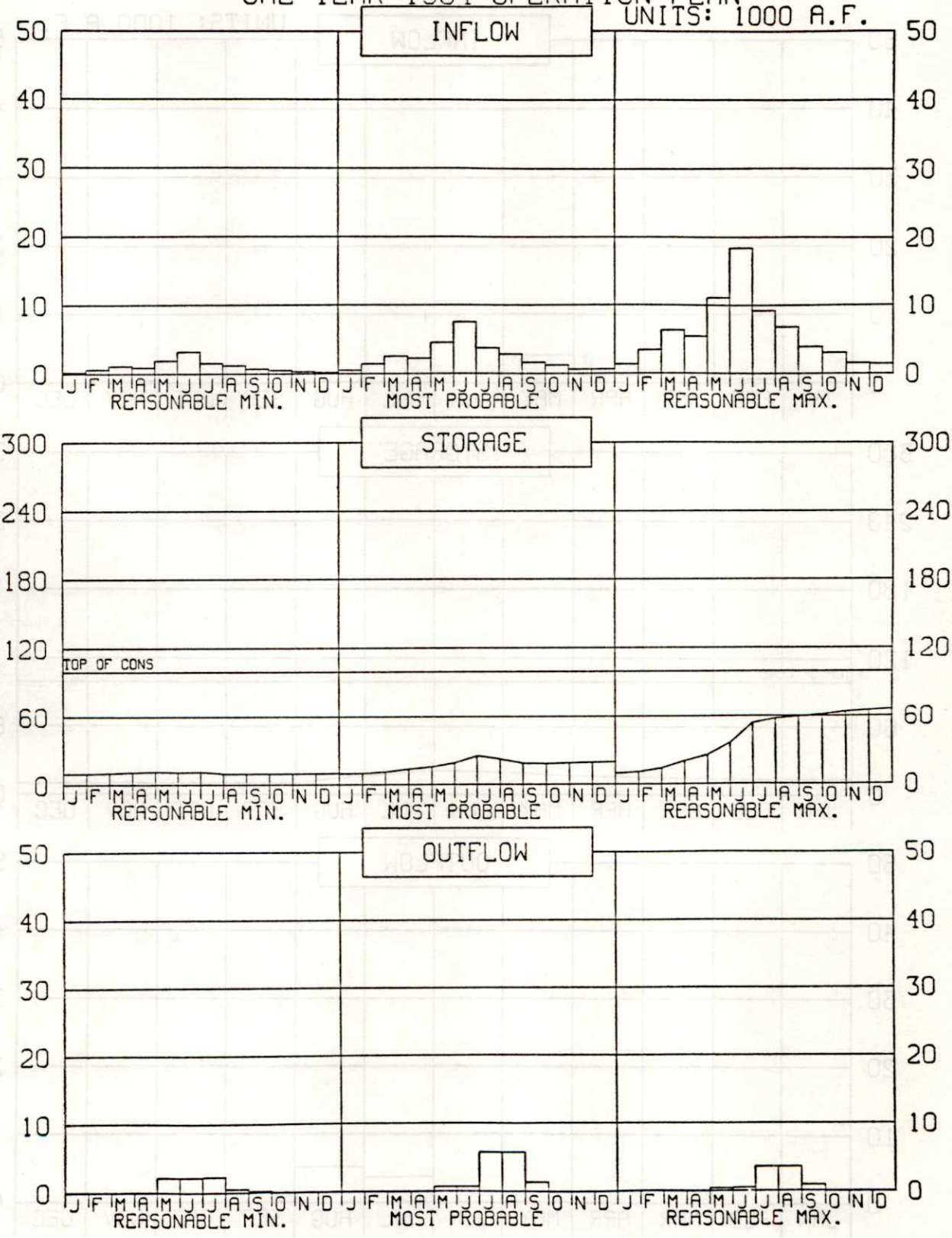


EXHIBIT 13A

WEBSTER RESERVOIR OPERATION

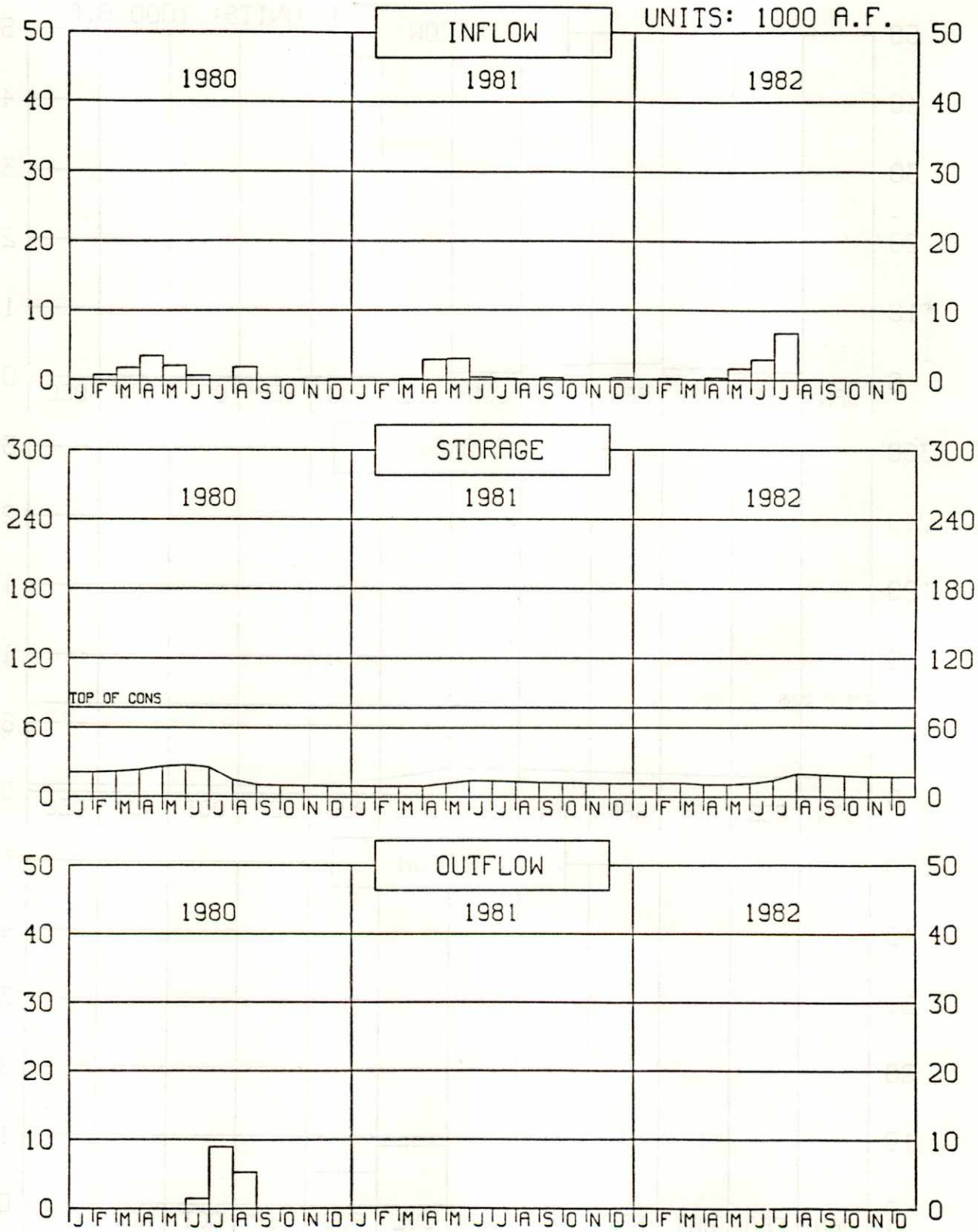


EXHIBIT 13B

WEBSTER RESERVOIR 1983 OPERATION

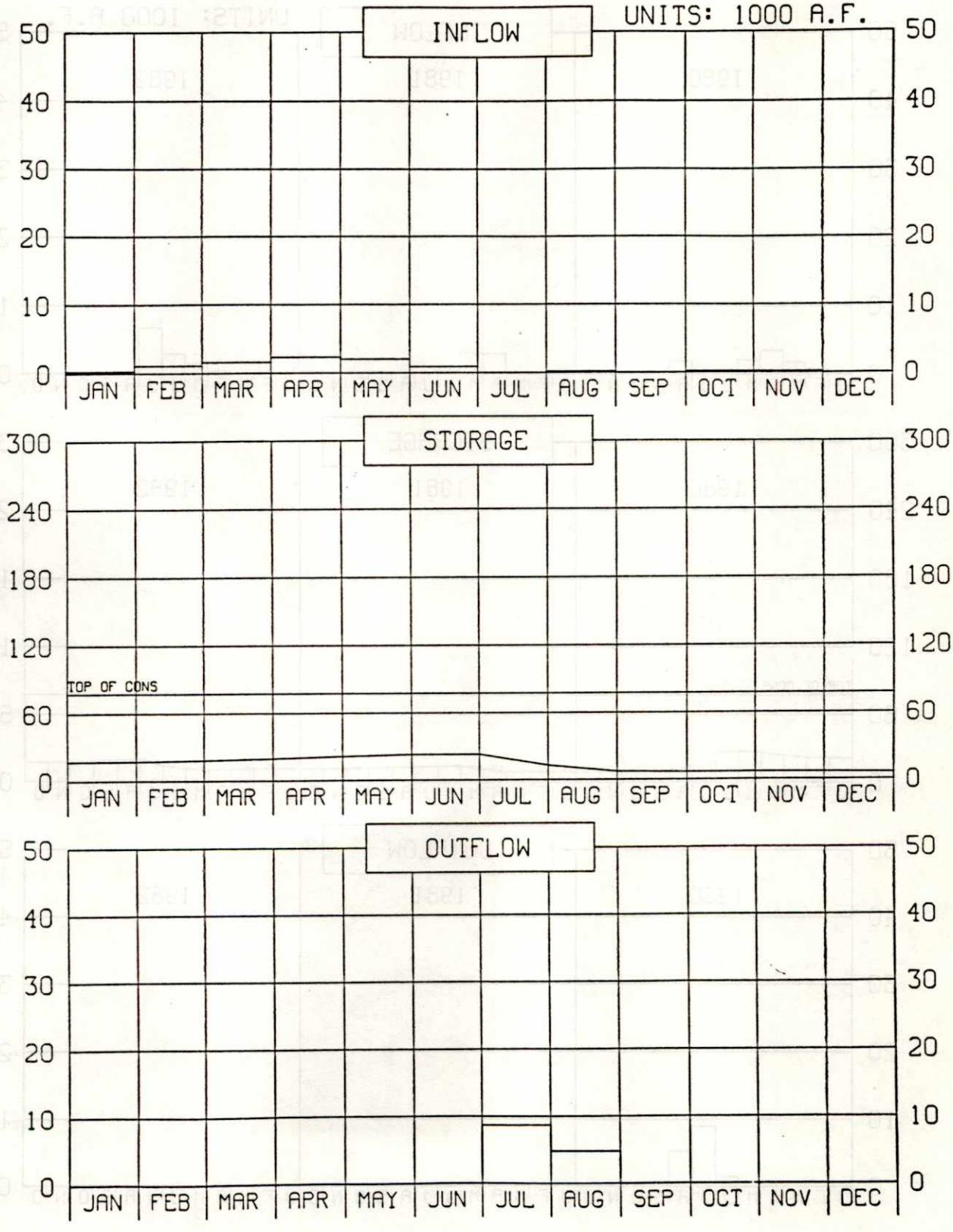


EXHIBIT 13C

WEBSTER RESERVOIR

CAL YEAR 1984 OPERATION PLAN

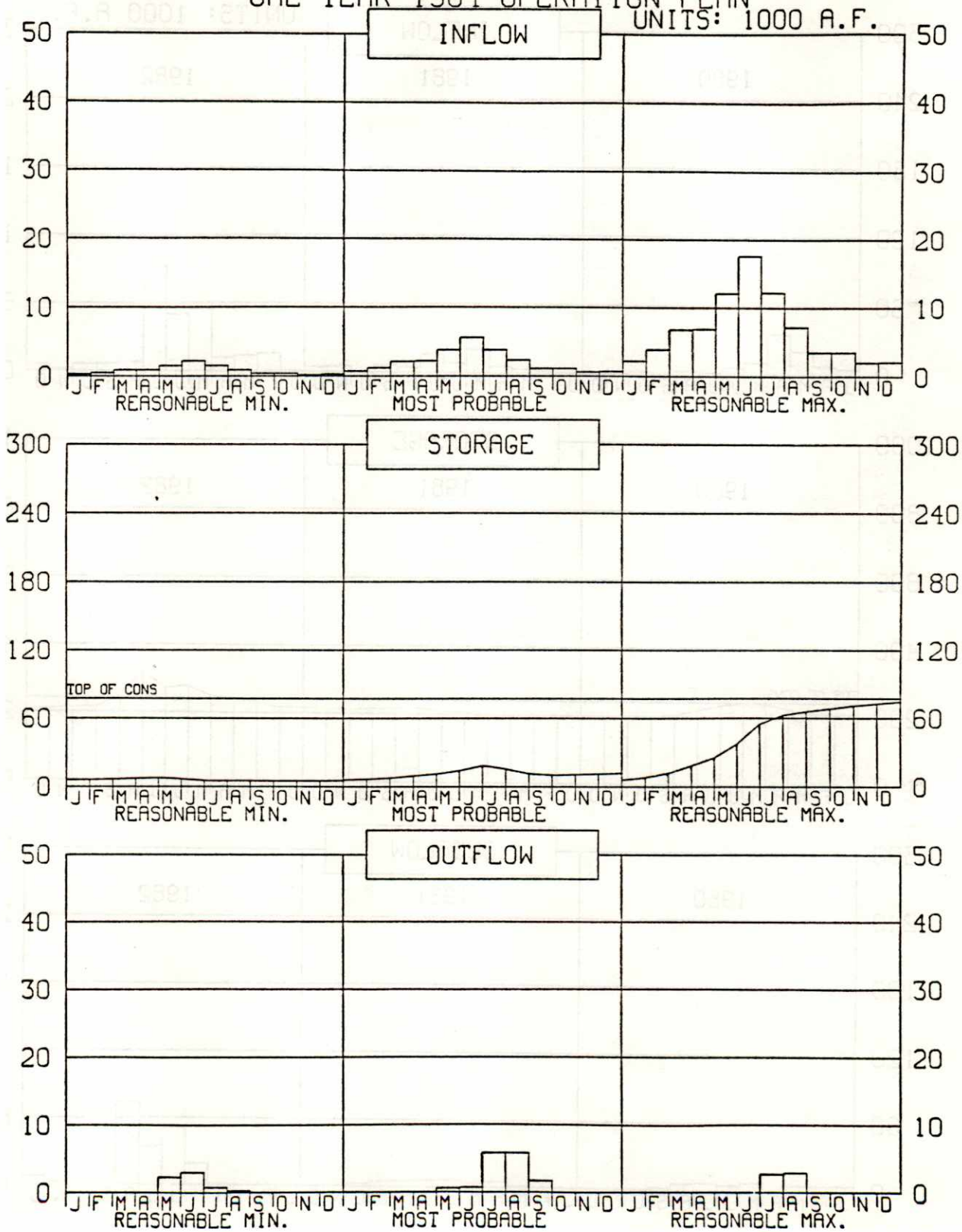
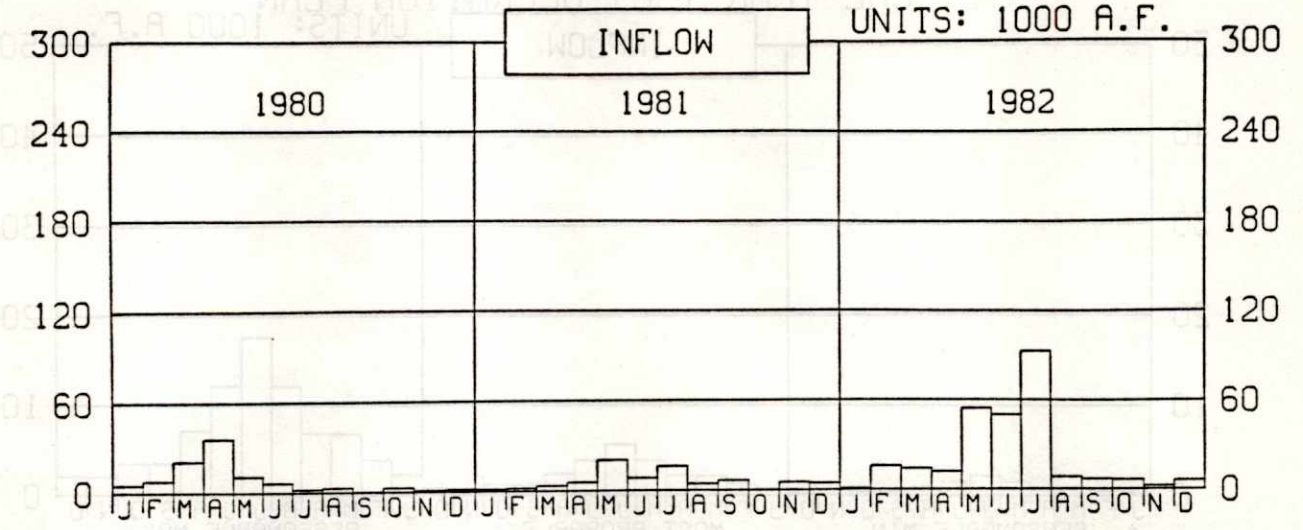
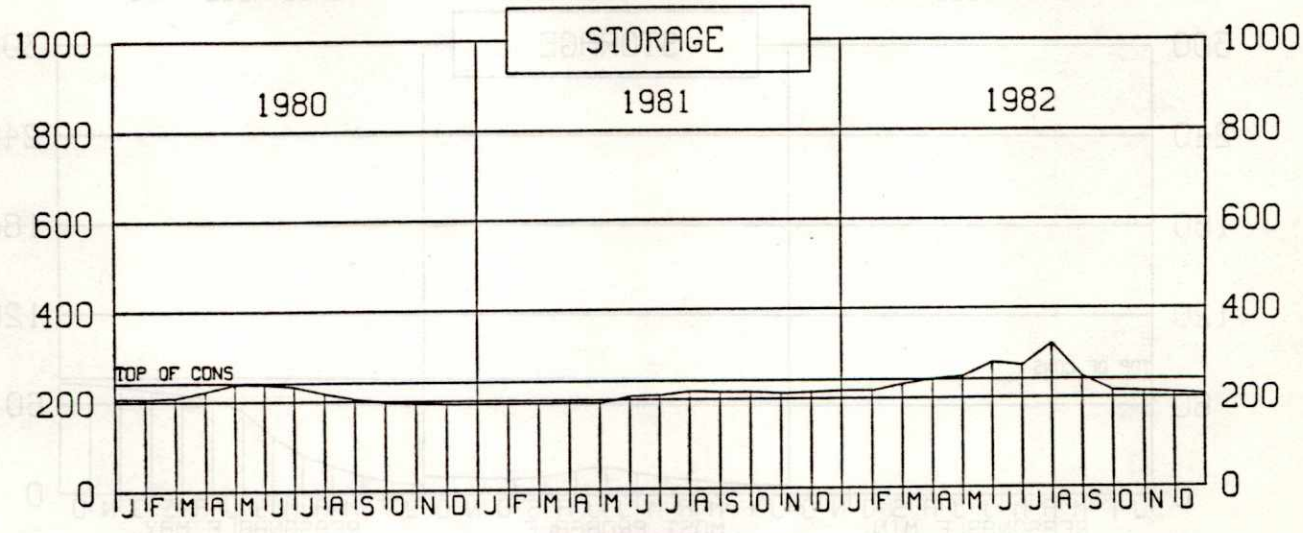


EXHIBIT 14A

WACONDA LAKE OPERATION





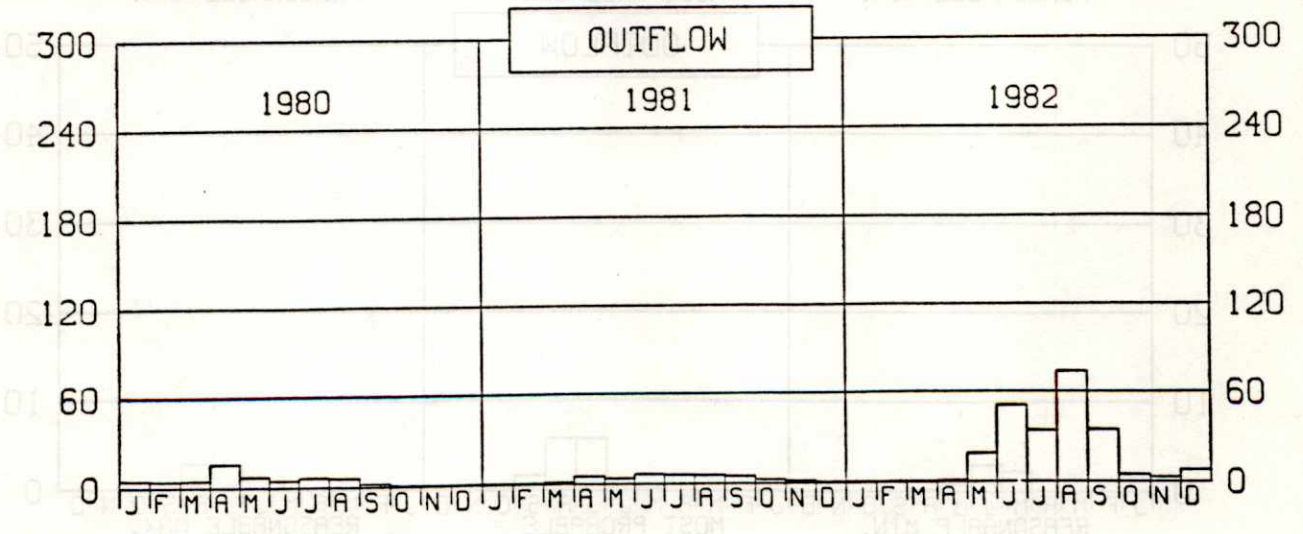


EXHIBIT 14B

WACONDA LAKE 1983 OPERATION

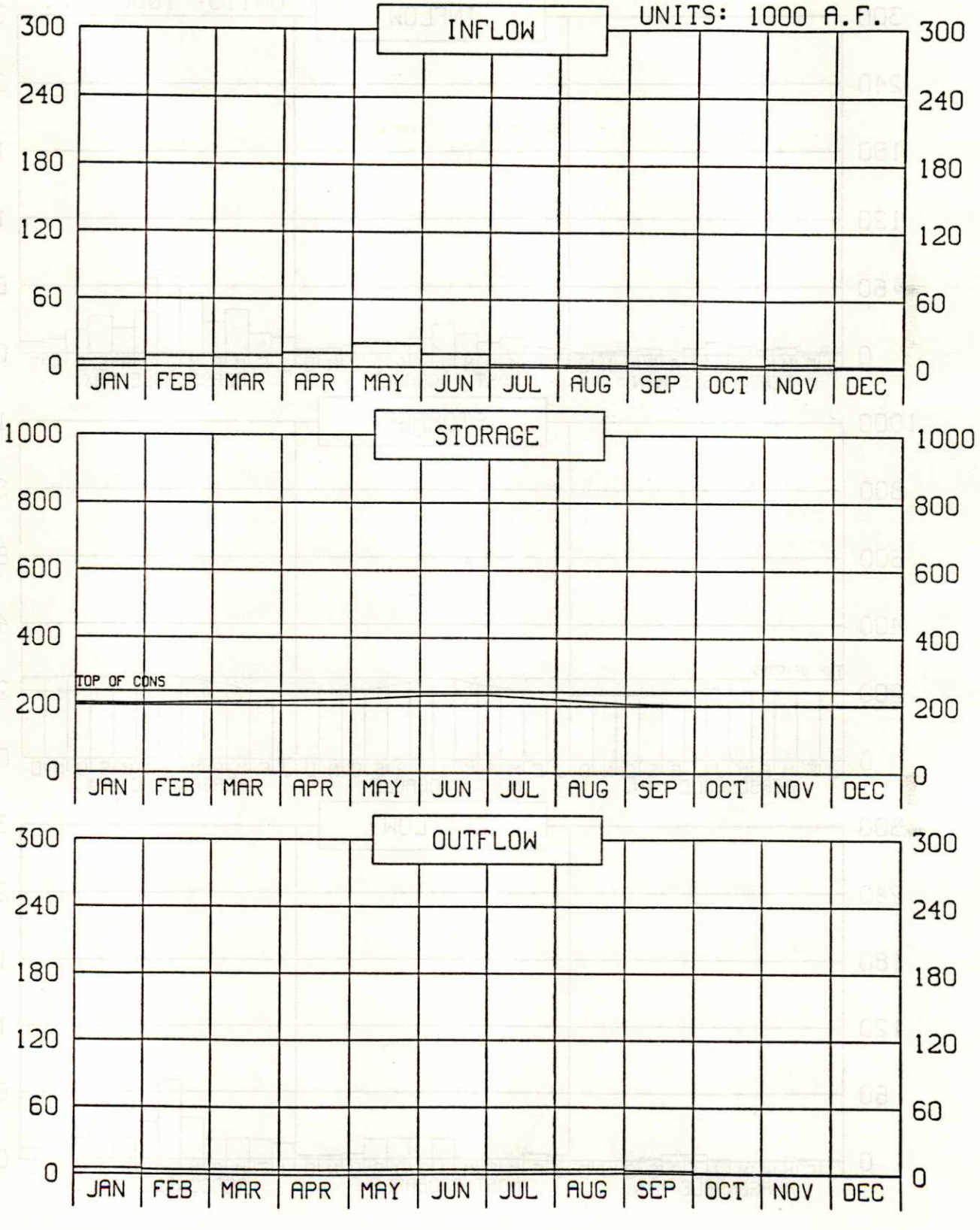


EXHIBIT 14C

WACONDA LAKE

CAL YEAR 1984 OPERATION PLAN

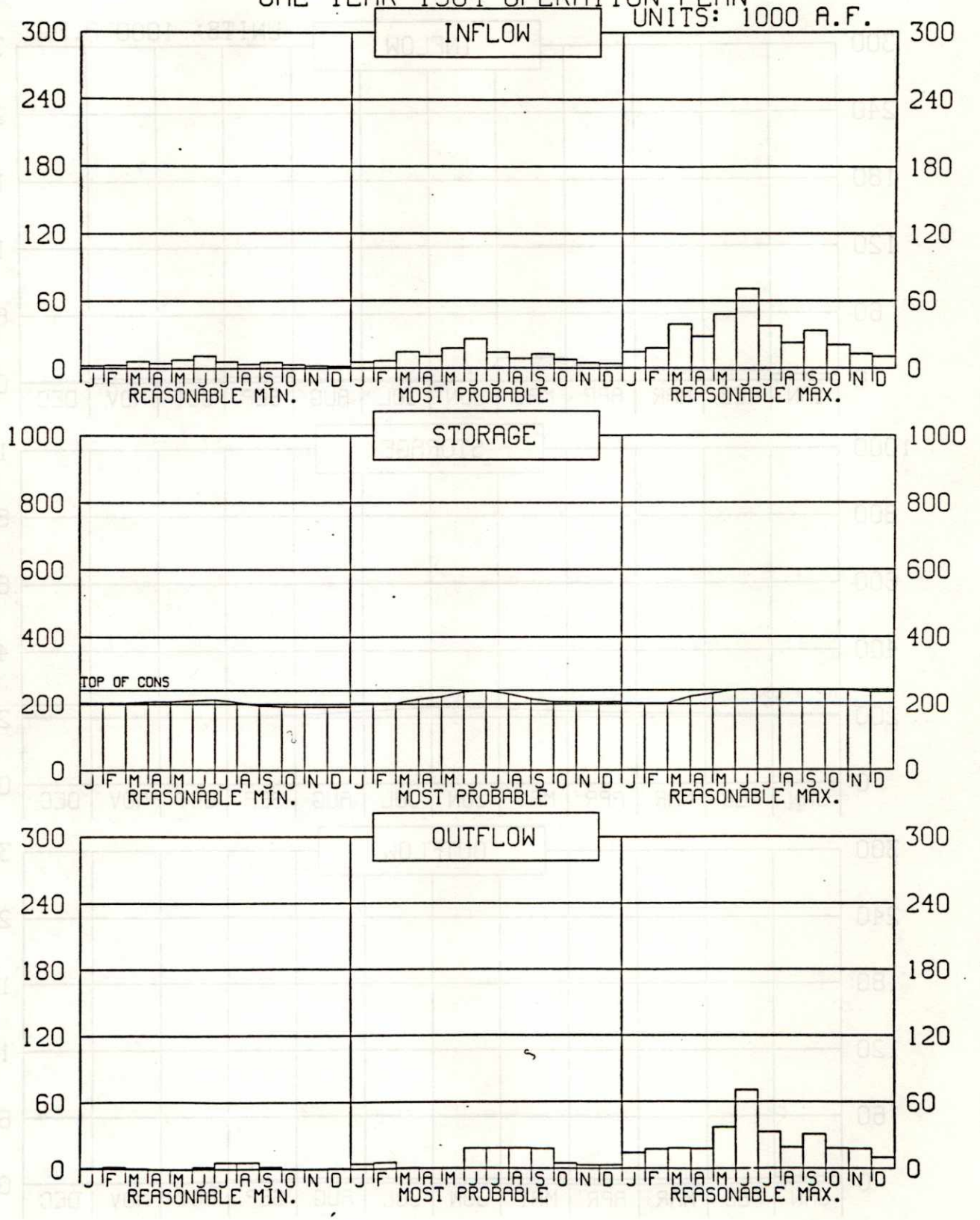


EXHIBIT 15A

CEDAR BLUFF RESERVOIR OPERATION

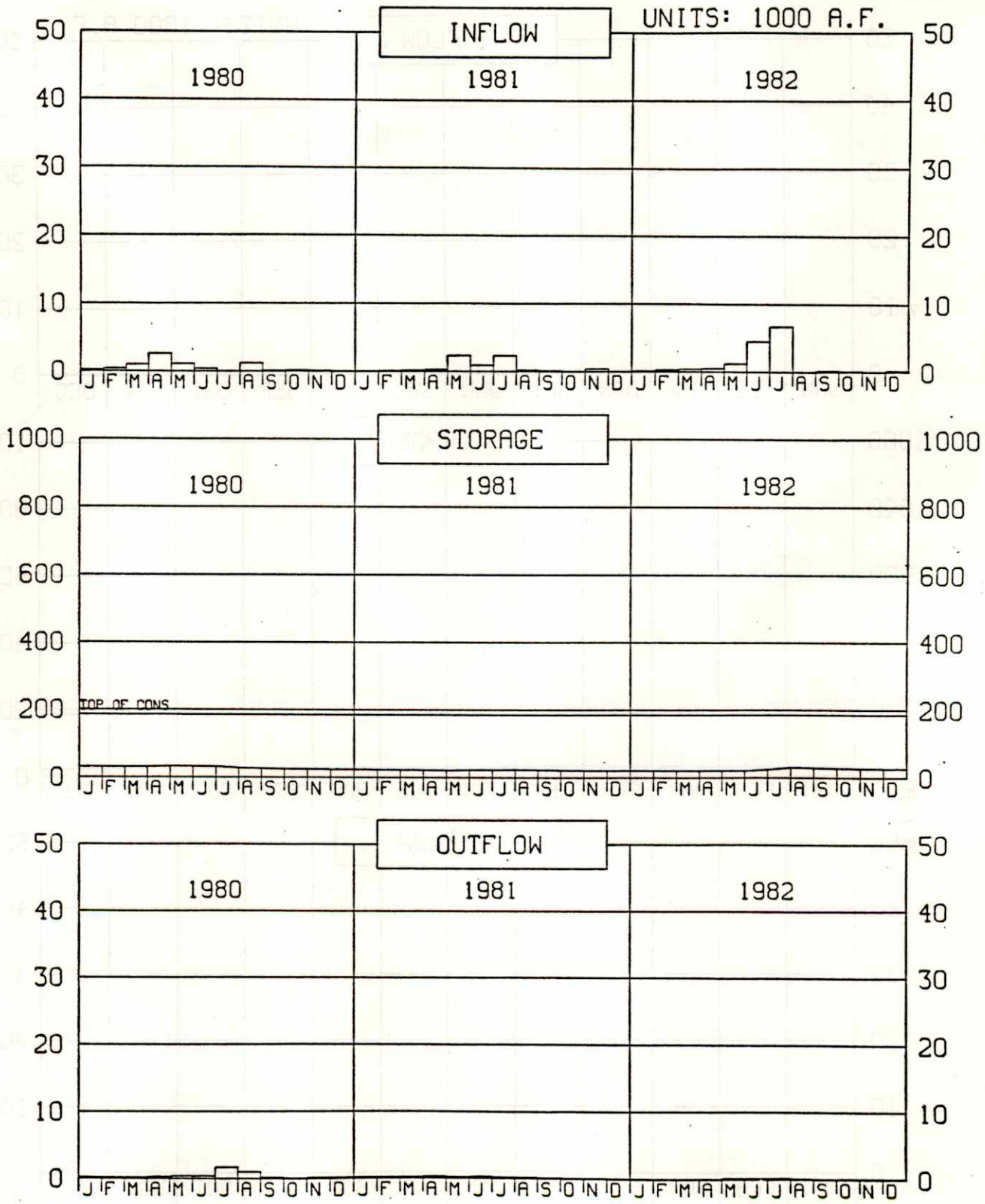


EXHIBIT 15B

CEDAR BLUFF RESERVOIR 1983 OPERATION

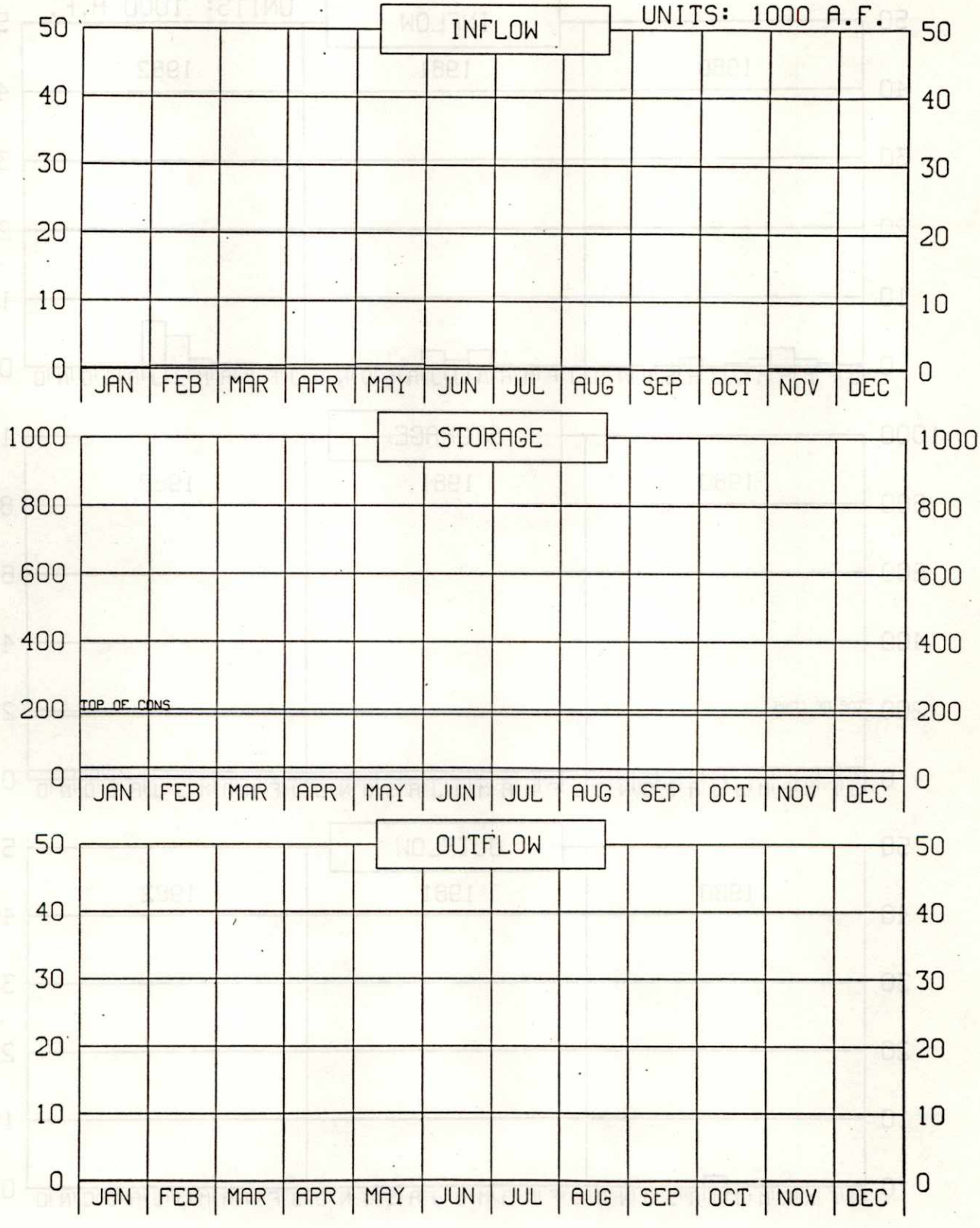


EXHIBIT 15C

CEDAR BLUFF RESERVOIR

CAL YEAR 1984 OPERATION PLAN

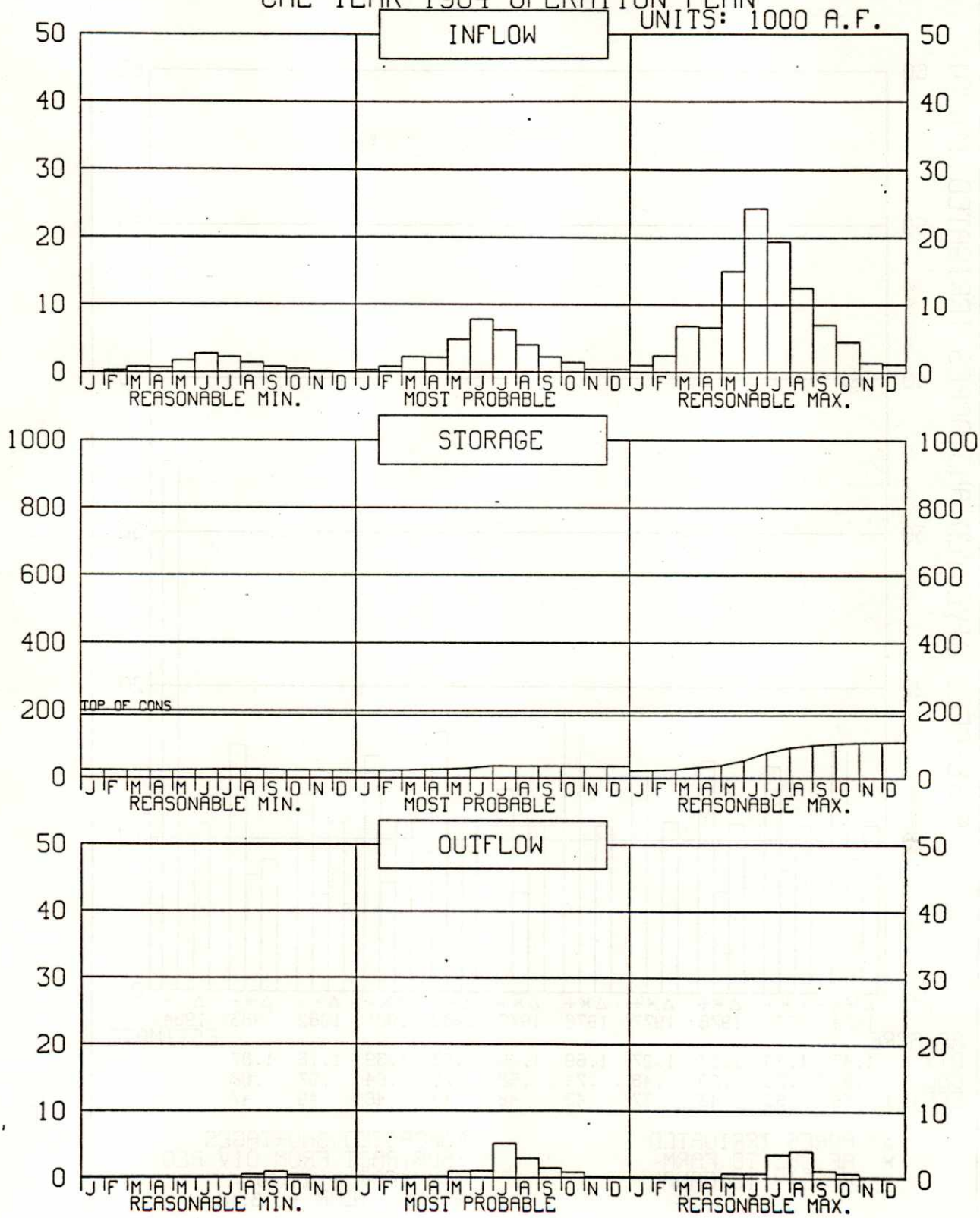


EXHIBIT 16

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED MIRAGE FLATS IRRIGATION DISTRICT

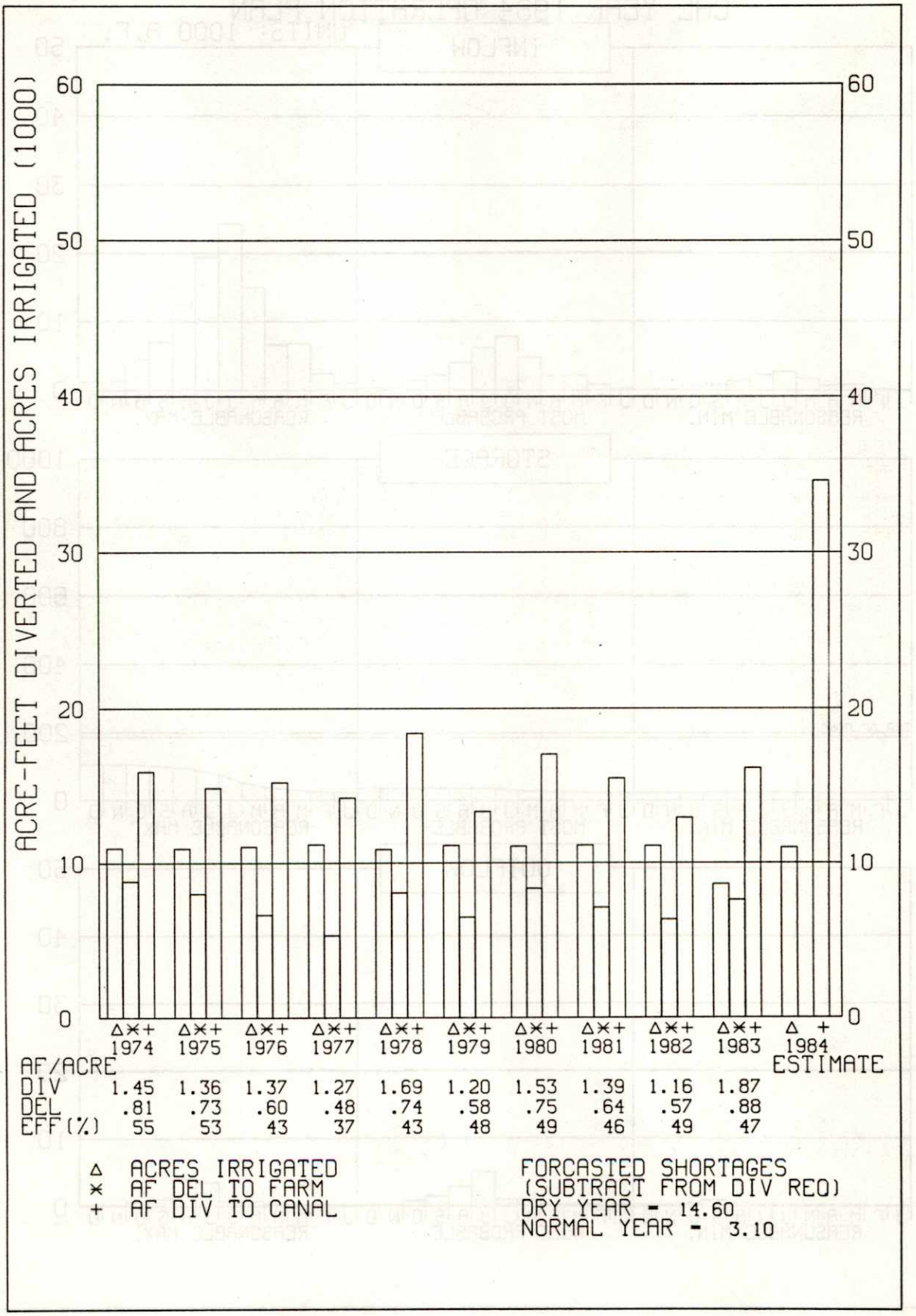


EXHIBIT 17

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
AINSWORTH IRRIGATION DISTRICT

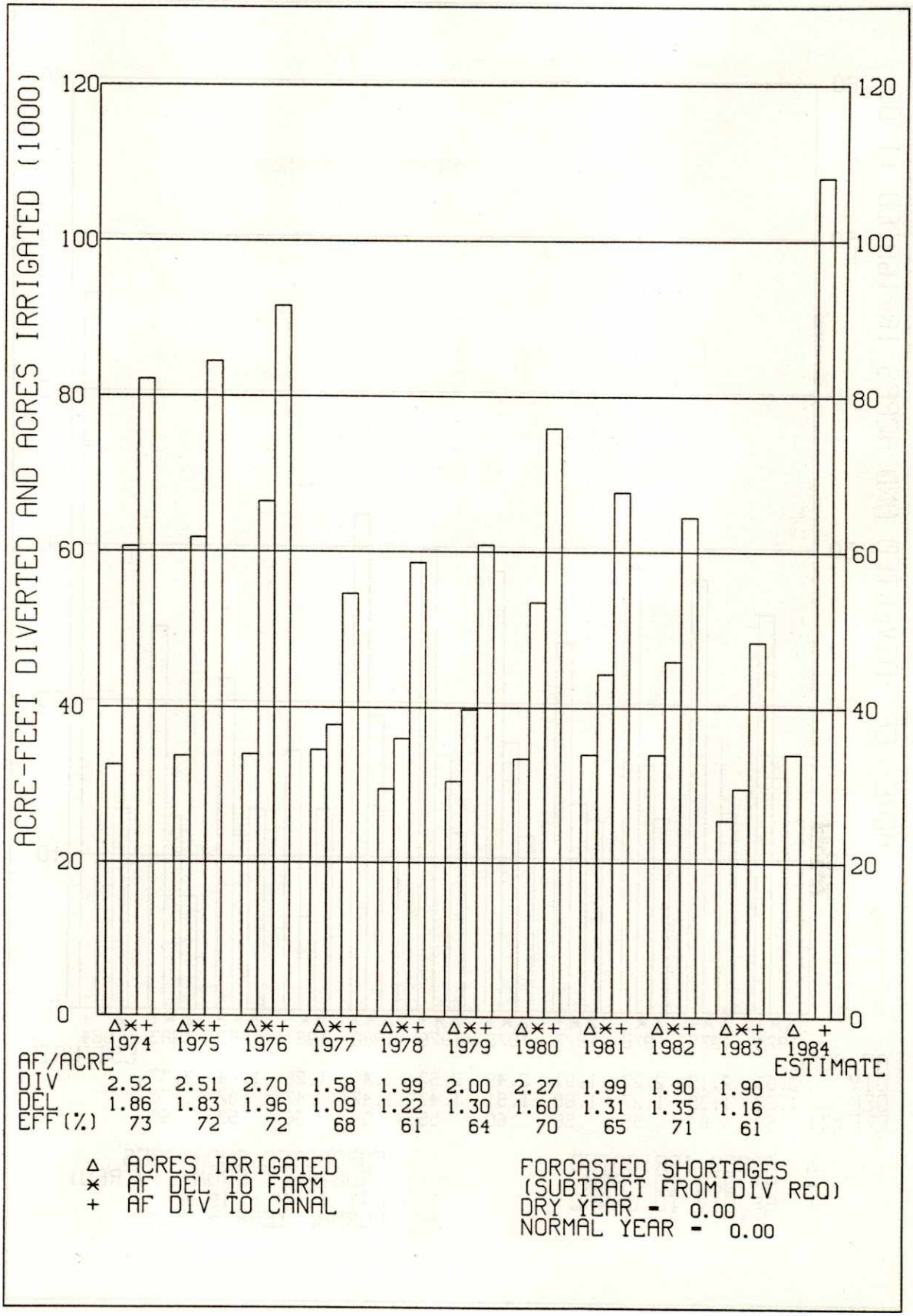


EXHIBIT 18

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
SARGENT IRRIGATION DISTRICT

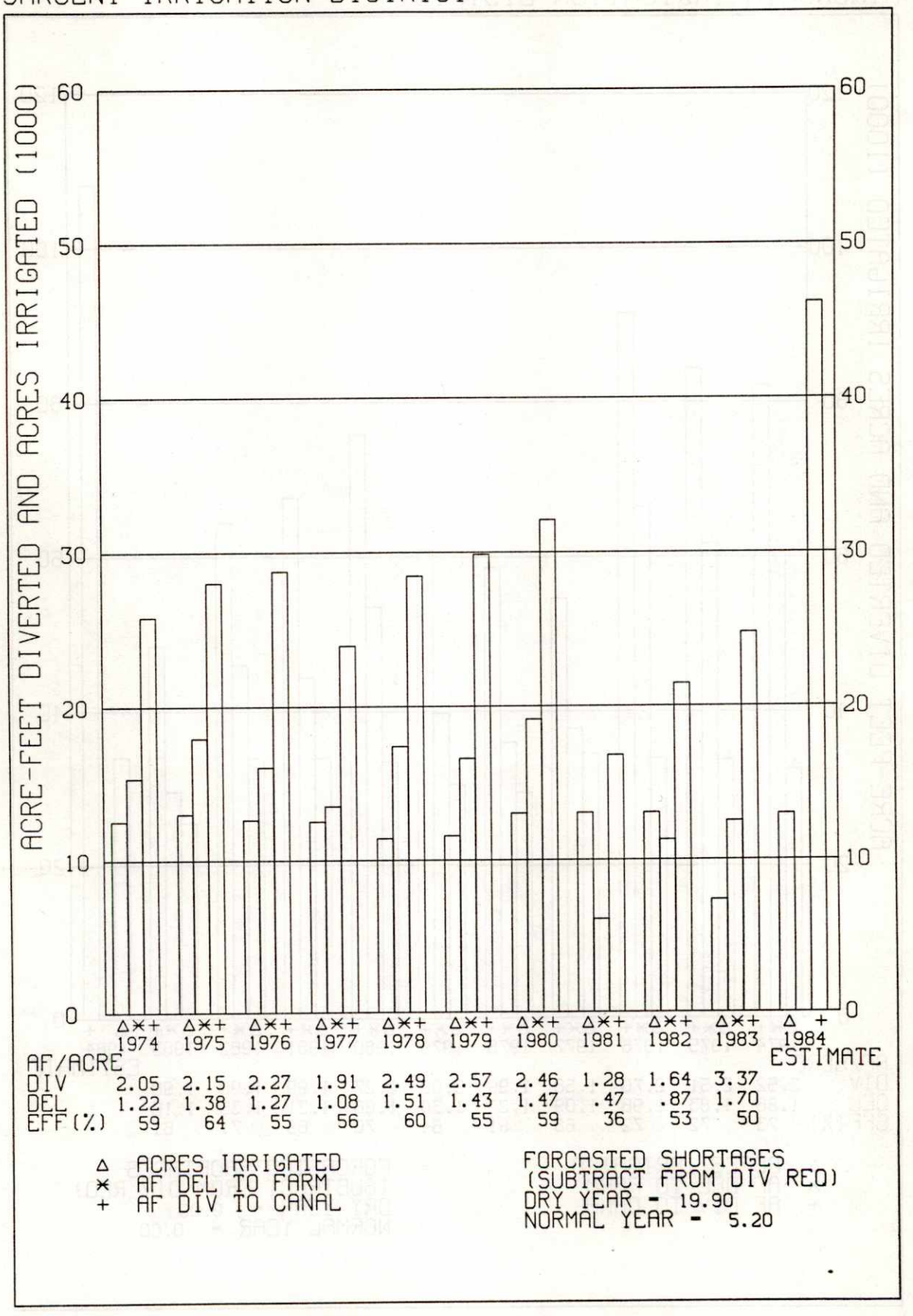
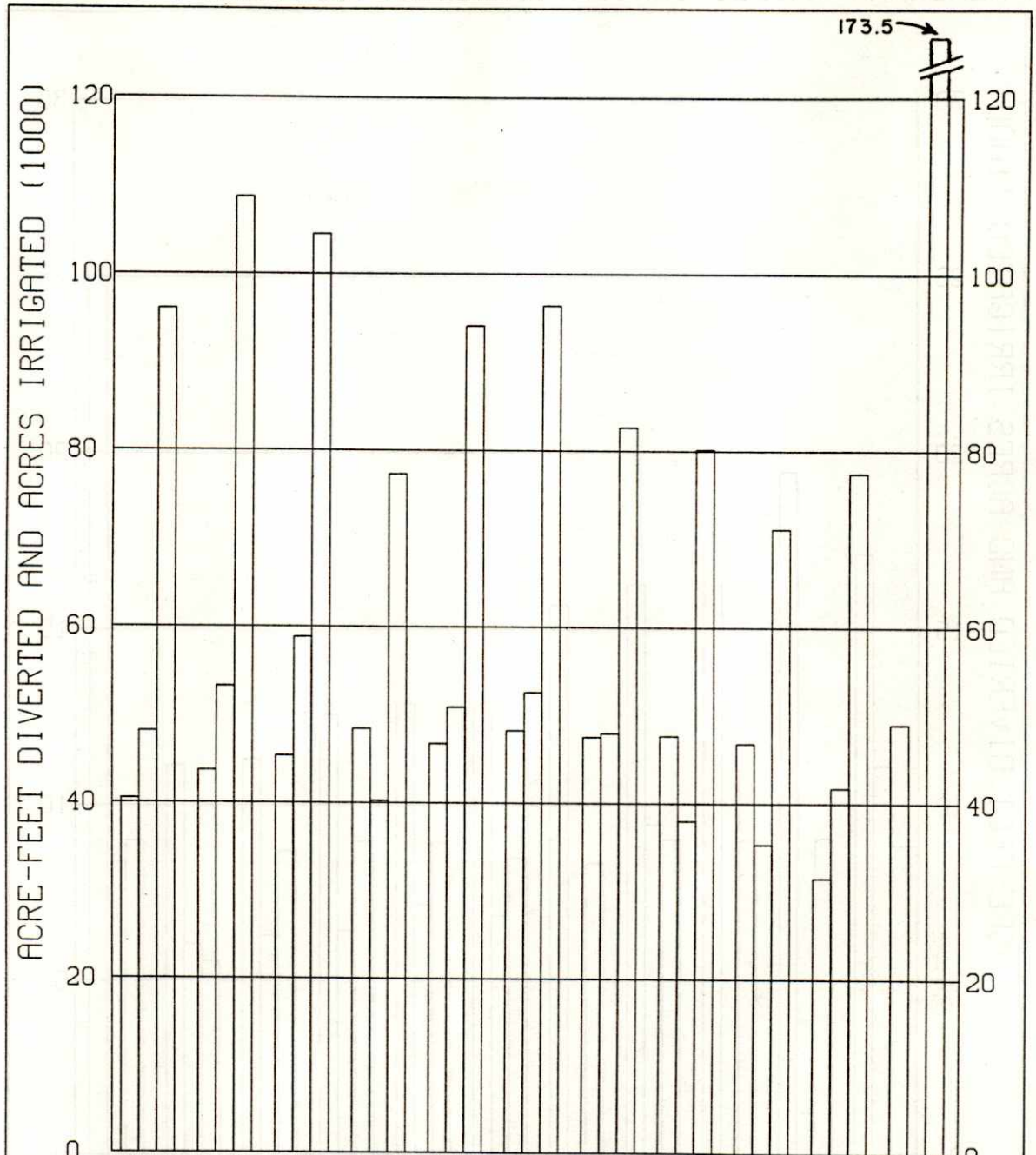


EXHIBIT 19

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
FARWELL IRRIGATION DISTRICT



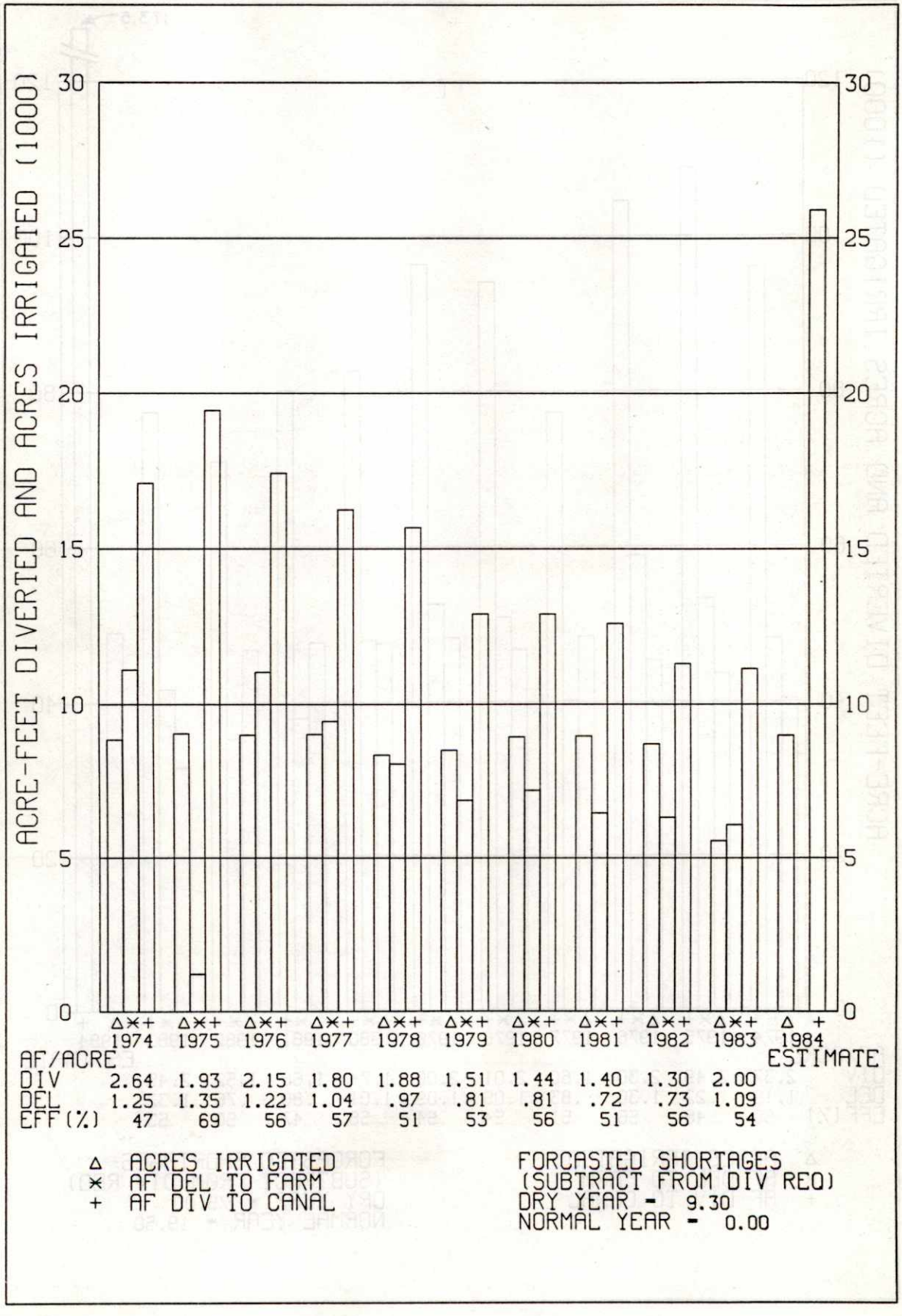
AF/ACRE	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
DIV	2.37	2.49	2.30	1.60	2.01	2.00	1.74	1.68	1.52	2.45
DEL	1.19	1.22	1.30	.83	1.09	1.09	1.01	.80	.76	1.32
EFF (%)	50	48	56	51	54	54	58	47	50	53

Δ ACRES IRRIGATED
✳ AF DEL TO FARM
\+ AF DIV TO CANAL

FORCASTED SHORTAGES
(SUBTRACT FROM DIV REQ)
DRY YEAR - 75.00
NORMAL YEAR - 19.50

EXHIBIT 20

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
FRENCHMAN VALLEY IRRIGATION DISTRICT



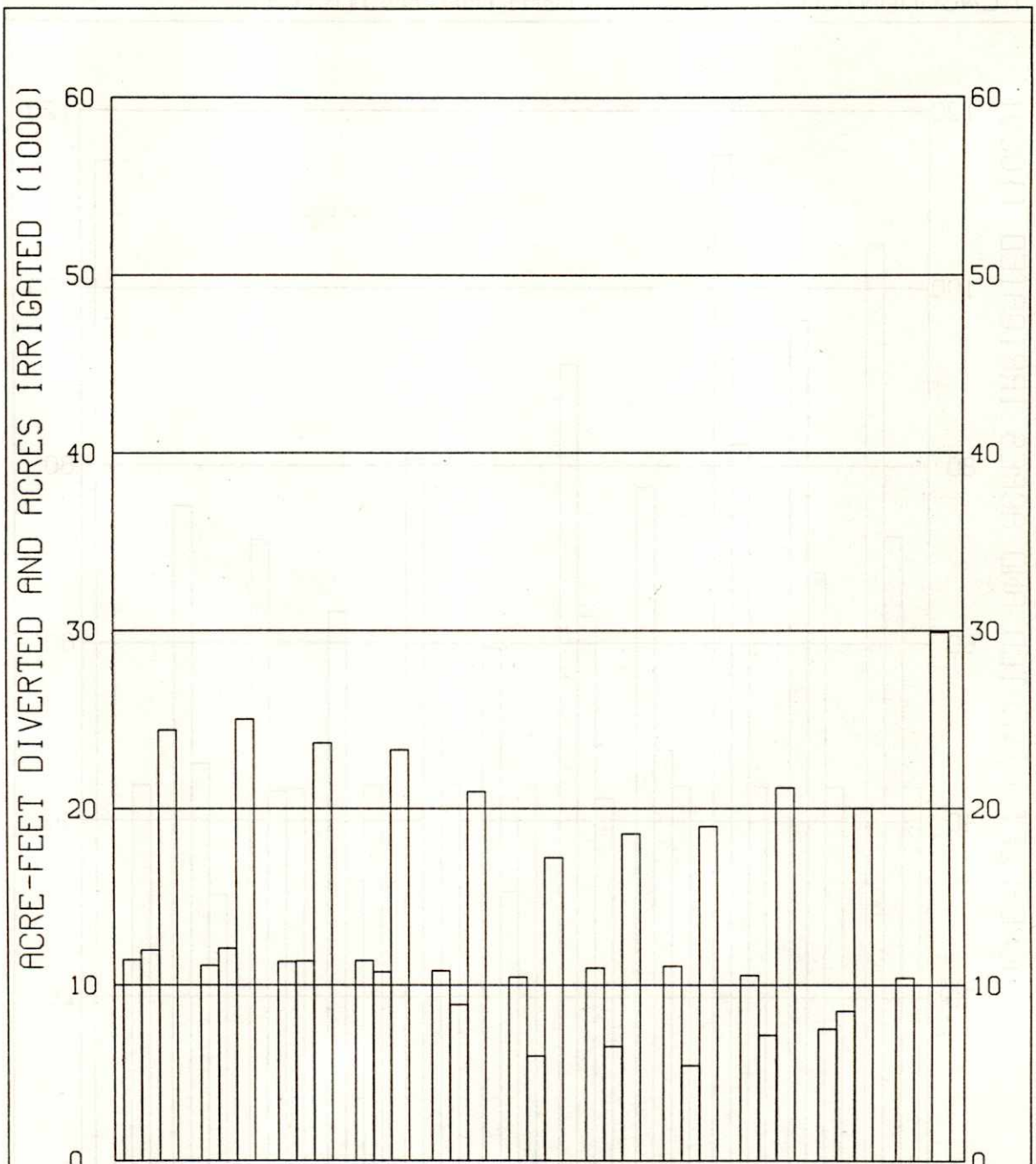
AF/ACRE	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
DIV	2.64	1.93	2.15	1.80	1.88	1.51	1.44	1.40	1.30	2.00
DEL	1.25	1.35	1.22	1.04	.97	.81	.81	.72	.73	1.09
EFF (%)	47	69	56	57	51	53	56	51	56	54

Δ ACRES IRRIGATED
✳ AF DEL TO FARM
\+ AF DIV TO CANAL

FORCASTED SHORTAGES
(SUBTRACT FROM DIV REQ)
DRY YEAR - 9.30
NORMAL YEAR - 0.00

EXHIBIT 21

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
H AND RW IRRIGATION DISTRICT



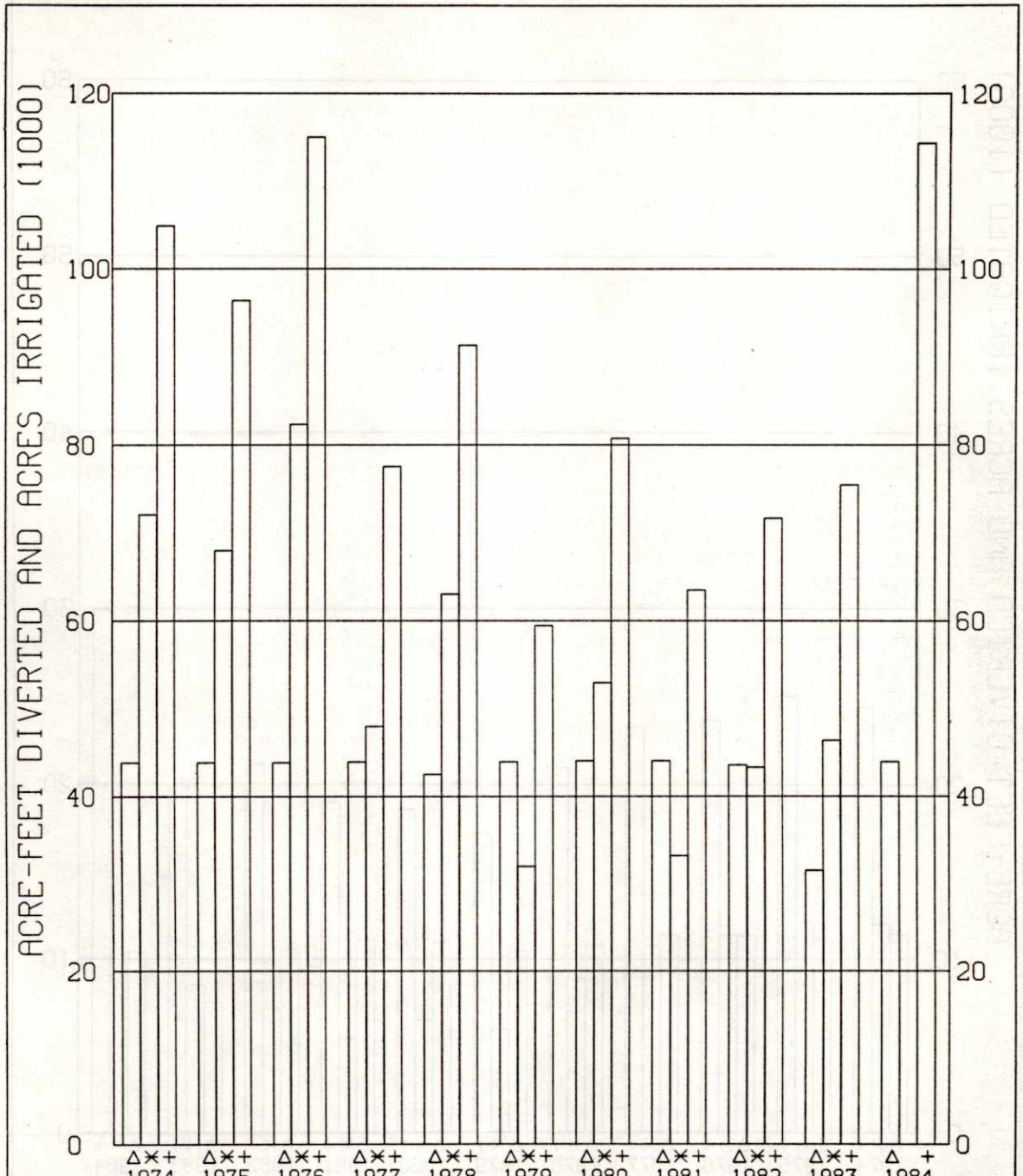
AF/ACRE	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
DIV	2.13	2.25	2.08	2.04	1.94	1.65	1.69	1.71	2.00	2.66
DEL	1.05	1.09	1.00	.94	.82	.57	.59	.49	.68	1.14
EFF(%)	49	48	48	46	42	34	34	28	33	42

Δ ACRES IRRIGATED
* AF DEL TO FARM
\+ AF DIV TO CANAL

FORCASTED SHORTAGES
(SUBTRACT FROM DIV REQ)
DRY YEAR - 20.40
NORMAL YEAR - 0.00

EXHIBIT 22

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
FRENCHMAN CAMBRIDGE IRRIGATION DISTRICT



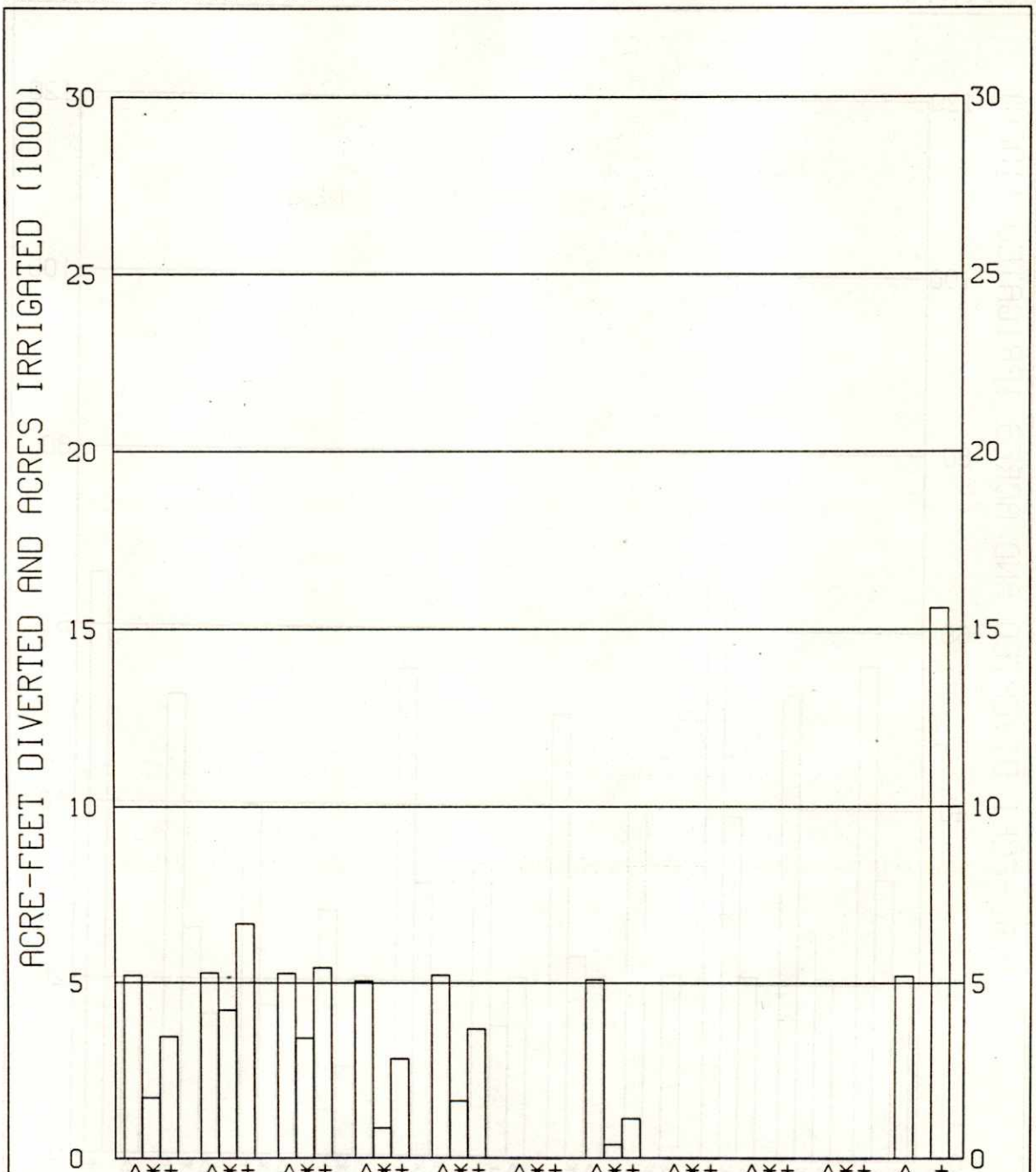
AF/ACRE	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
DIV	2.39	2.20	2.62	1.76	2.15	1.35	1.83	1.44	1.64	2.39
DEL	1.64	1.55	1.88	1.09	1.48	.73	1.20	.75	.99	1.47
EFF(%)	68	70	71	61	68	54	65	52	60	61

Δ ACRES IRRIGATED
✱ AF DEL TO FARM
\+ AF DIV TO CANAL

FORCASTED SHORTAGES
(SUBTRACT FROM DIV REQ)
DRY YEAR - 0.00
NORMAL YEAR - 0.00

EXHIBIT 23

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
ALMENA IRRIGATION DISTRICT



AF/ACRE	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
DIV	.67	1.27	1.03	.56	.71	0.00	.22	0.00	0.00	0.00
DEL	.33	.80	.65	.17	.31	0.00	.08	0.00	0.00	0.00
EFF(%)	49	62	63	30	43	0	36	0	0	0

Δ ACRES IRRIGATED
* AF DEL TO FARM
\+ AF DIV TO CANAL

FORCASTED SHORTAGES
(SUBTRACT FROM DIV REQ)
DRY YEAR - 16.10
NORMAL YEAR - 3.80

EXHIBIT 24

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED BOSTWICK IRRIGATION DISTRICT IN NEBRASKA

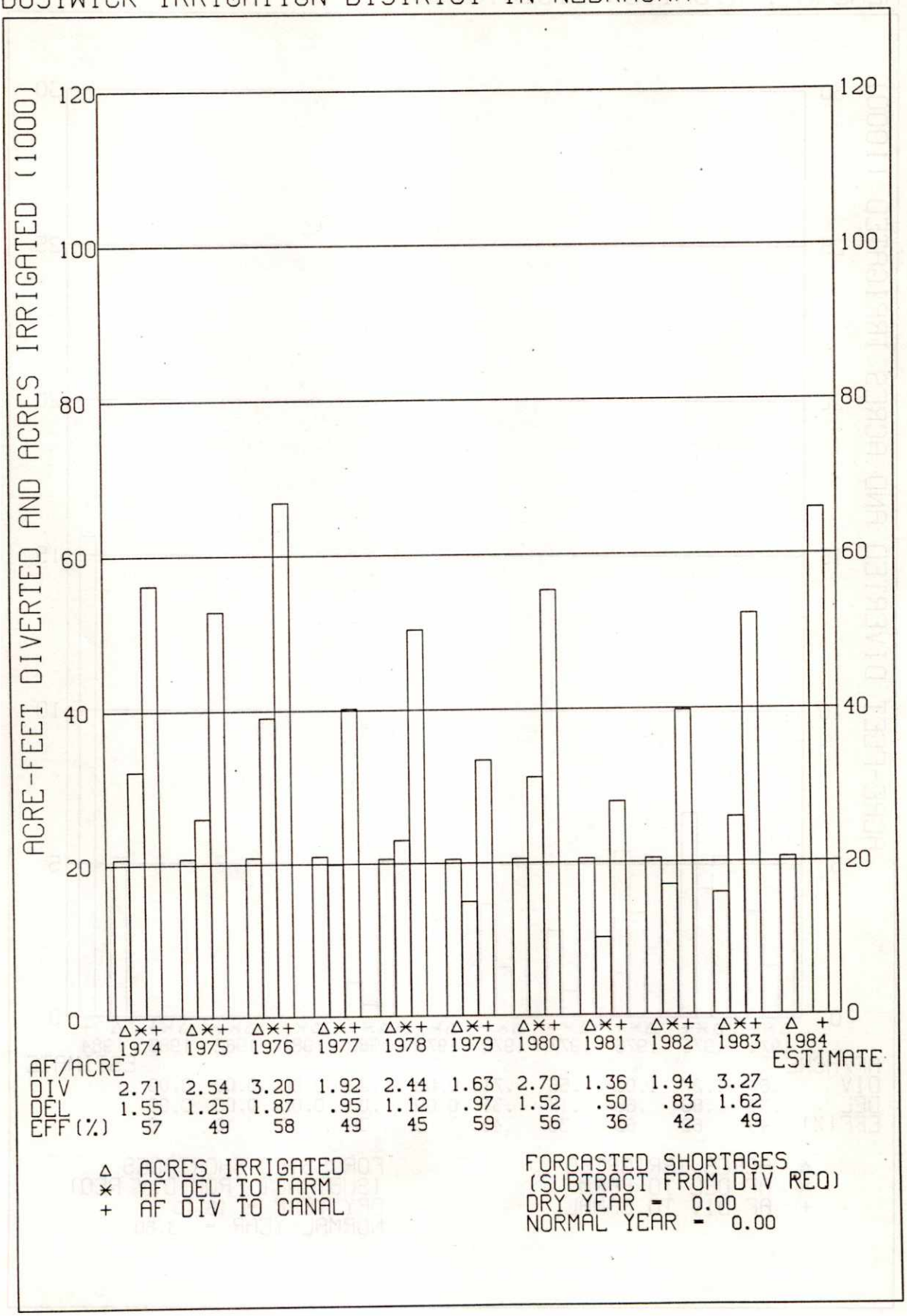
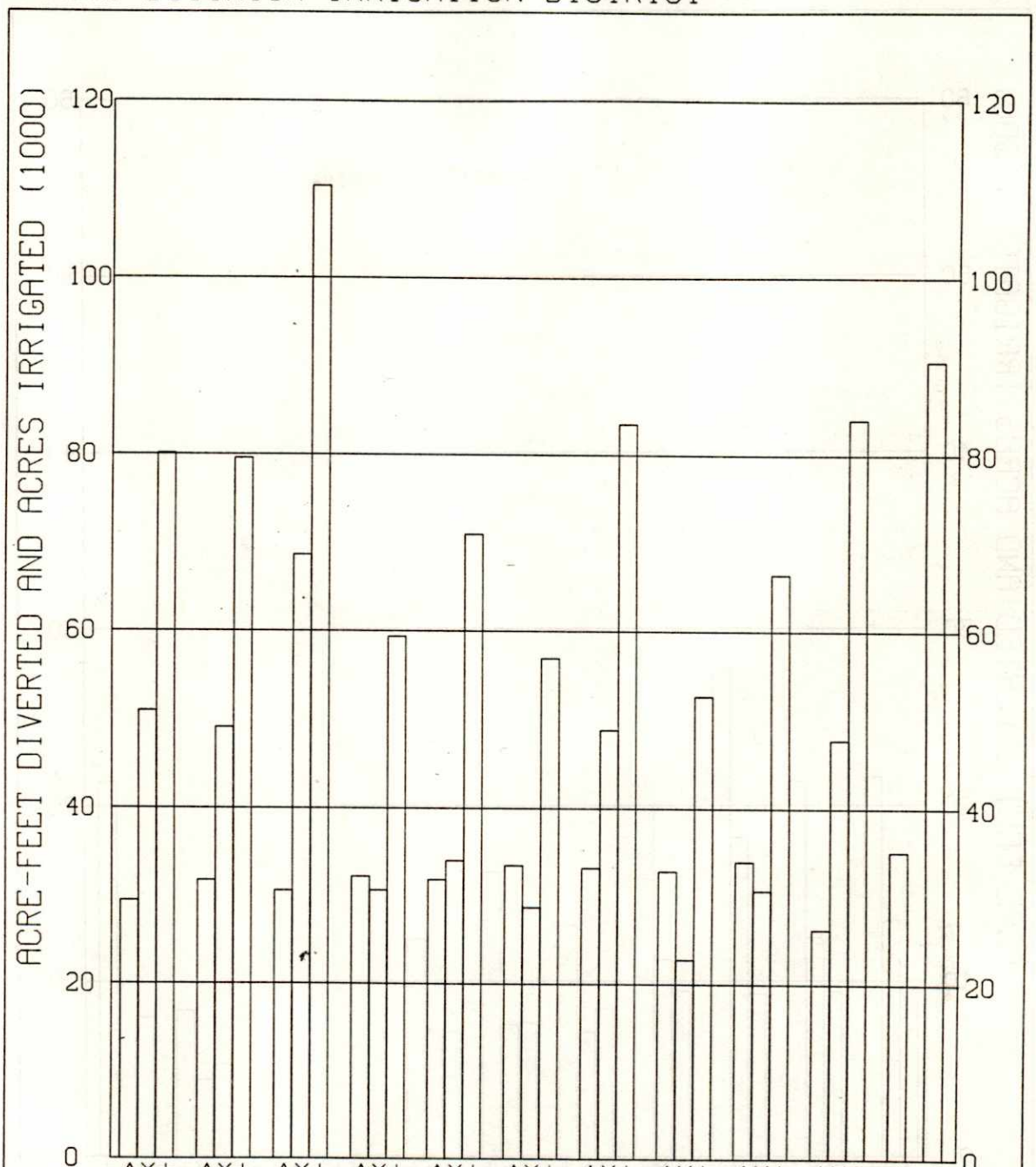


EXHIBIT 25

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
KANSAS-BOSTWICK IRRIGATION DISTRICT



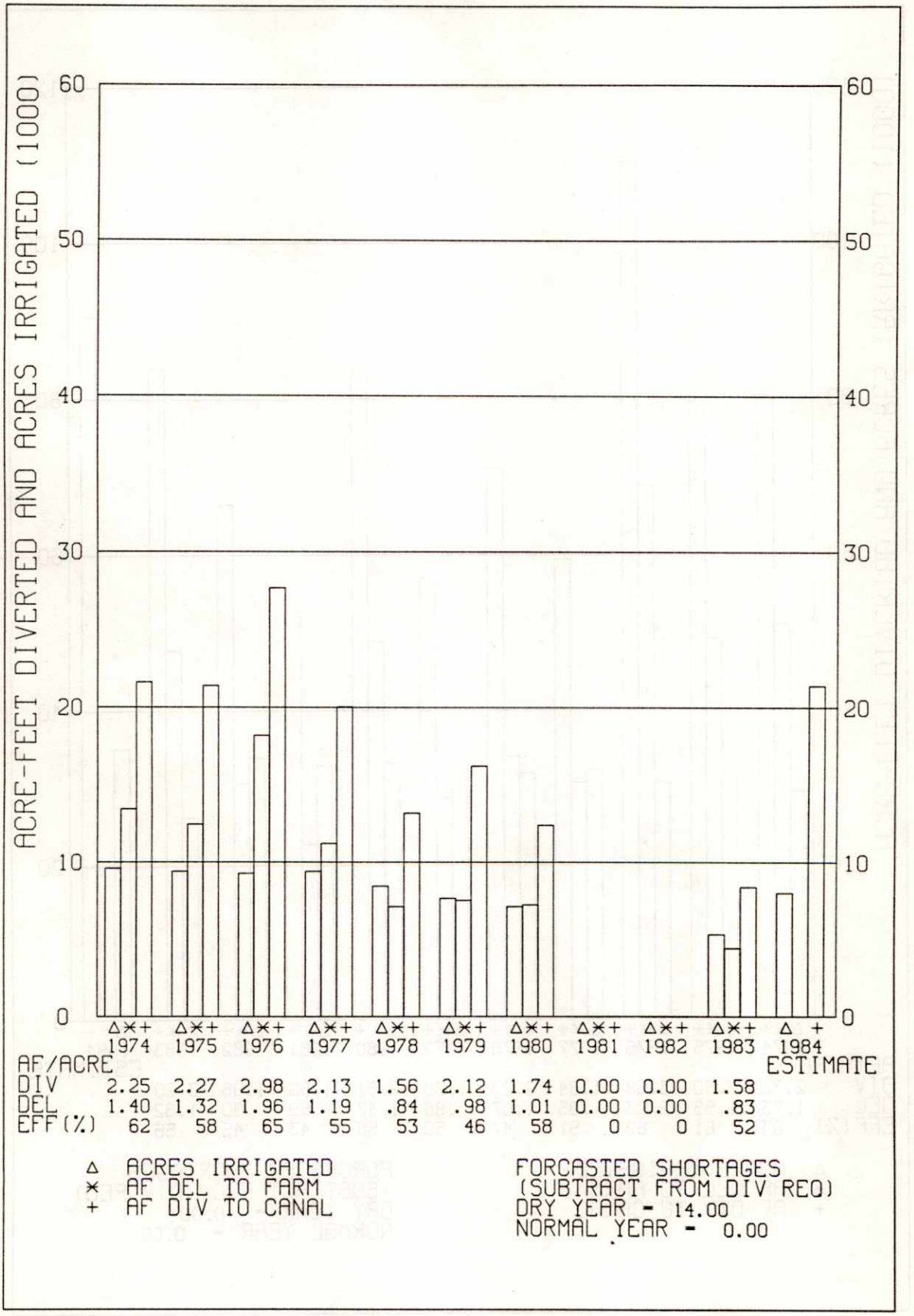
AF/ACRE	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
DIV	2.72	2.50	3.58	1.84	2.23	1.70	2.51	1.60	1.96	3.20
DEL	1.73	1.55	2.23	.95	1.07	.86	1.47	.69	.90	1.82
EFF (%)	63	61	62	51	47	50	58	43	45	56

Δ ACRES IRRIGATED
✳ AF DEL TO FARM
\+ AF DIV TO CANAL

FORCASTED SHORTAGES
(SUBTRACT FROM DIV REQ)
DRY YEAR - 0.00
NORMAL YEAR - 0.00

EXHIBIT 26

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
KIRWIN IRRIGATION DISTRICT



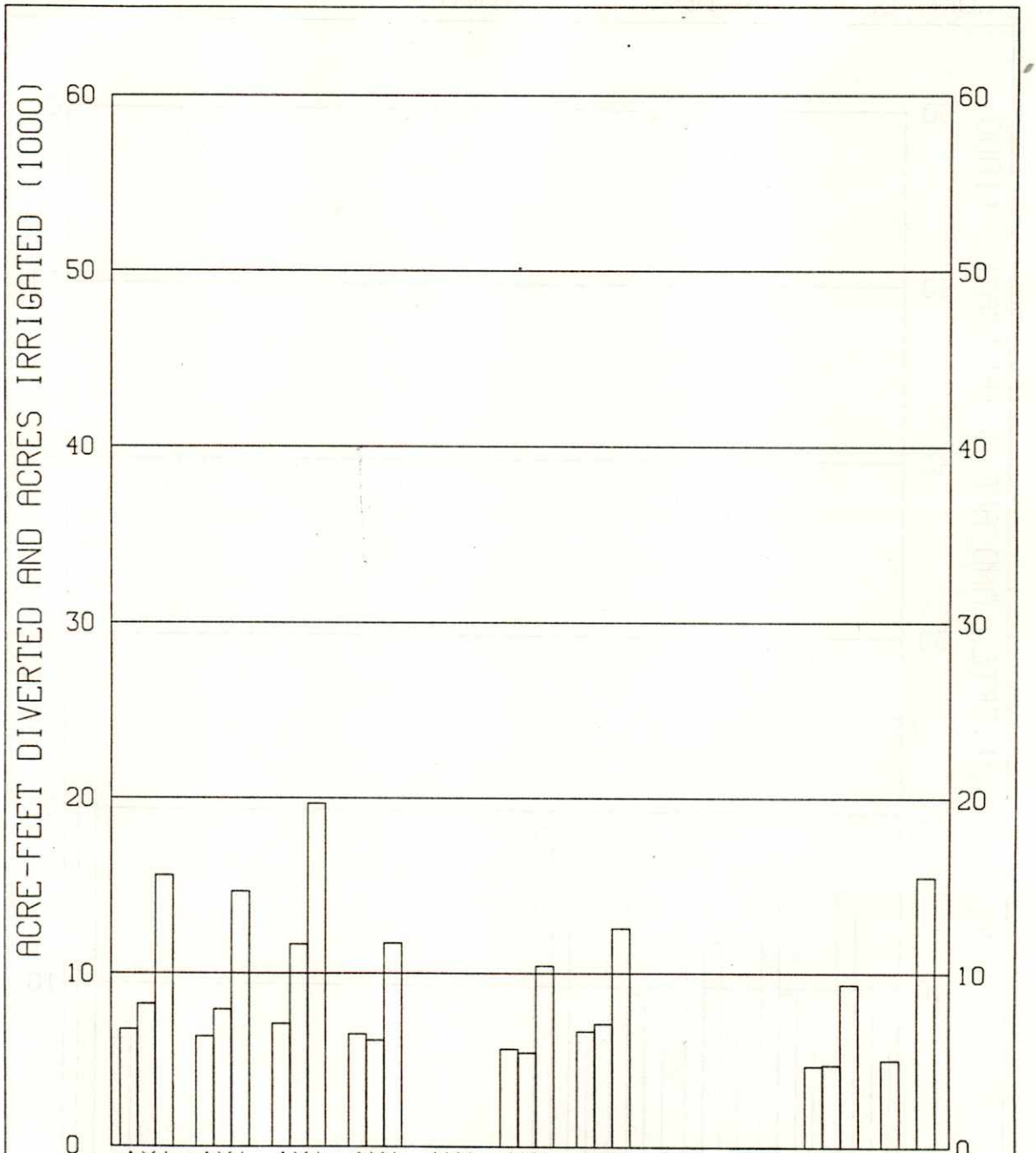
AF/ACRE	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
DIV	2.25	2.27	2.98	2.13	1.56	2.12	1.74	0.00	0.00	1.58
DEL	1.40	1.32	1.96	1.19	.84	.98	1.01	0.00	0.00	.83
EFF(%)	62	58	65	55	53	46	58	0	0	52

Δ ACRES IRRIGATED
* AF DEL TO FARM
+ AF DIV TO CANAL

FORCASTED SHORTAGES
(SUBTRACT FROM DIV REQ)
DRY YEAR - 14.00
NORMAL YEAR - 0.00

EXHIBIT 27

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
WEBSTER IRRIGATION DISTRICT



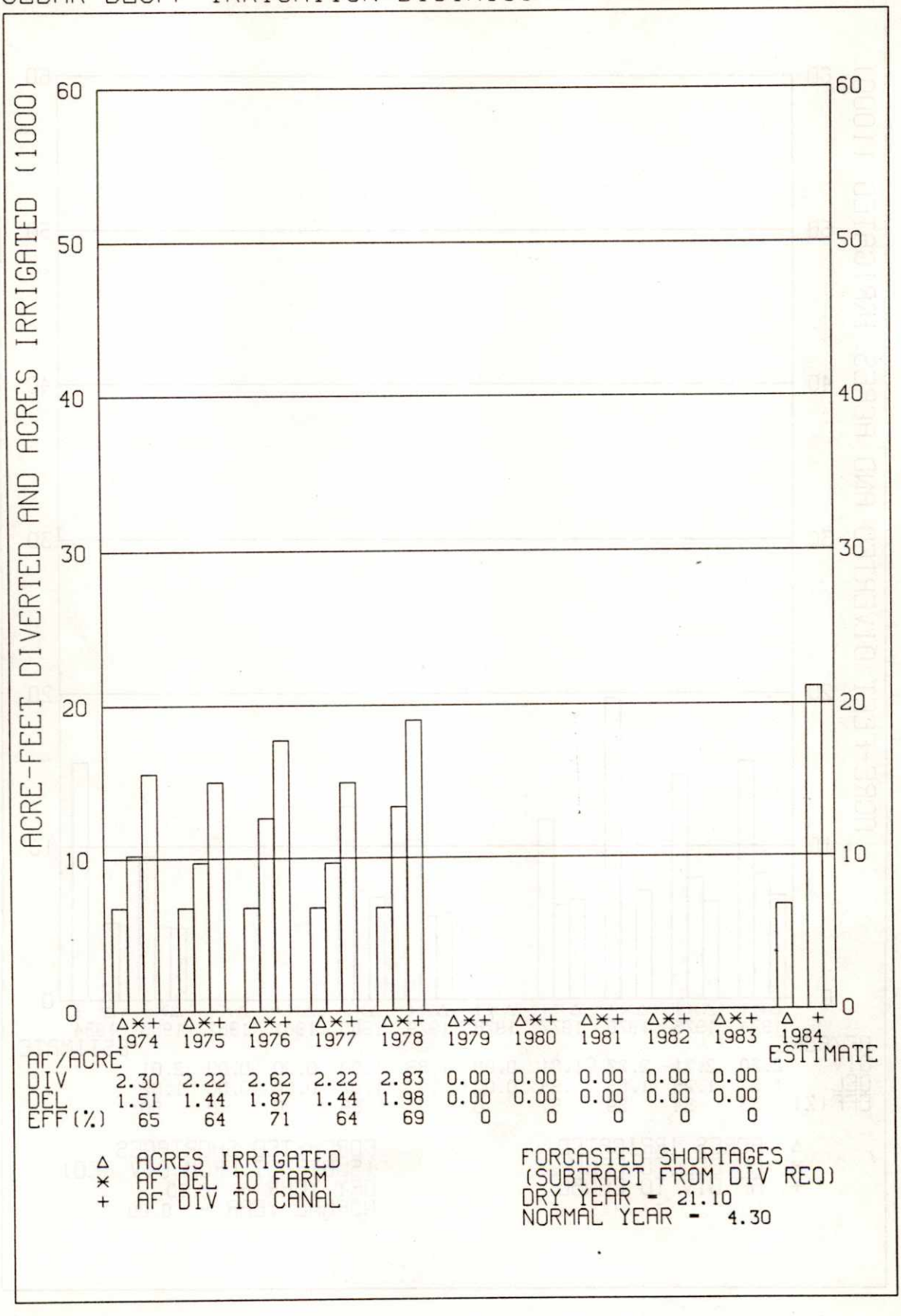
AF/ACRE	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984 ESTIMATE
DIV	2.30	2.31	2.77	1.81	0.00	1.85	1.90	0.00	0.00	2.01	
DEL	1.22	1.25	1.65	.94	0.00	.97	1.07	0.00	0.00	1.02	
EFF (%)	53	54	59	51	0	52	56	0	0	50	

Δ ACRES IRRIGATED
* AF DEL TO FARM
+ AF DIV TO CANAL

FORCASTED SHORTAGES
(SUBTRACT FROM DIV REQ)
DRY YEAR - 16.90
NORMAL YEAR - 0.00

EXHIBIT 28

CANAL DIVERSIONS, FARM DELIVERIES AND ACRES IRRIGATED
CEDAR BLUFF IRRIGATION DISTRICT



	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
AF/ACRE										
DIV	2.30	2.22	2.62	2.22	2.83	0.00	0.00	0.00	0.00	0.00
DEL	1.51	1.44	1.87	1.44	1.98	0.00	0.00	0.00	0.00	0.00
EFF(%)	65	64	71	64	69	0	0	0	0	0

Δ ACRES IRRIGATED
✳ AF DEL TO FARM
\+ AF DIV TO CANAL

FORCASTED SHORTAGES
(SUBTRACT FROM DIV REQ)
DRY YEAR - 21.10
NORMAL YEAR - 4.30

MIRAGE FLATS AND MISSOURI RIVER BASIN PROJECTS
NIOBRARA, LOWER PLATTE AND KANSAS RIVER BASINS
IRRIGATION AND FLOOD CONTROL FACILITIES

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

GRAND ISLAND, NEBRASKA — JANUARY 20, 1984

DWG. NO. 60-705-1
SUPERCEDES 60-701-250

MIRAGE FLATS PROJECT

BOX BUTTE DAM
Mirage Flats Canal
Dunlap Diversion Dam
BOX BUTTE RESERVOIR
Capacity Allocation
Conser. 30,420 a.f.
Dead 640 a.f.
Total 31,060 a.f.

SANDHILLS DIVISION

AINSWORTH UNIT

MERRITT DAM
Ainsworth Canal
MERRITT RESERVOIR
Capacity Allocation
Conser. 72,872 a.f.
Dead 1,614 a.f.
Total 74,486 a.f.
Moon Lake

MIDDLE LOUP DIVISION

SARGENT UNIT

Milburn Diversion Dam
Sargent Canal
Woods Park Pumping Plant
Arcadia Diversion Dam
Sherman Feeder Canal

FARWELL UNIT

SHERMAN DAM
SHERMAN RESERVOIR
Capacity Allocation
Conser. 65,237 a.f.
Dead 3,839 a.f.
Total 69,076 a.f.
Turkey Creek
Deer Station Lateral and Pumping Plant
Farwell Main Canal
Farwell Lower Main Canal
Farwell Central Canal
Farwell Upper South Canal
Farwell South Canal

CALAMUS DAM
CALAMUS RESERVOIR
Capacity Allocation
Flood 50,232 a.f.
Conser. 125,699 a.f.
Dead 1,626 a.f.
Total 177,557 a.f.

FRENCHMAN-CAMBRIDGE DIVISION

RED WILLOW UNIT

ENDERS DAM
ENDERS RESERVOIR
Capacity Allocation
Flood 30,040 a.f.
Conser. 36,013 a.f.
Dead 8,467 a.f.
Total 74,520 a.f.
Stinking Water Creek
HUGH BUTLER LAKE
Capacity Allocation
Flood 48,854 a.f.
Conser. 31,463 a.f.
Dead 6,313 a.f.
Total 86,630 a.f.
RED WILLOW DAM
Red Willow Creek
Medicine Creek

FRENCHMAN UNIT

SWANSON LAKE
Capacity Allocation
Flood 134,077 a.f.
Conser. 110,096 a.f.
Dead 2,118 a.f.
Total 246,291 a.f.
Culbertson Diversion Dam
Culbertson Canal
Culbertson Extension Canal
TRENTON DAM
Upper Meeker Sub Canal
McCook
Trenton
Driftwood Canal
Upper Meeker Canal
Meeker Extension Canal
Driftwood West Canal
Driftwood Sub Canal
Red Willow Diversion Dam
Red Willow Canal

CAMBRIDGE UNIT

HARRY STRUNK LAKE
Capacity Allocation
Flood 52,715 a.f.
Conser. 31,545 a.f.
Dead 4,160 a.f.
Total 88,420 a.f.
MEDICINE CREEK DAM
Cambridge Diversion Dam
Cambridge Canal
Cambridge
Bartley Canal
Bartley Diversion Dam

MEEKER-DRIFTWOOD UNIT

HARLAN COUNTY DAM (U.S.C.E.)
HARLAN COUNTY LAKE
Capacity Allocation
Flood 498,143 a.f.
Conser. & Sed. 327,639 a.f.
Total 825,782 a.f.

KANASKA DIVISION

FRANKLIN UNIT

Franklin Canal
Franklin
Franklin Pump Canal
Naponee Canal

ALMENA UNIT

Almena Main Canal
Almena South Canal
Almena Diversion Dam
KEITH SEBELIUS LAKE
Capacity Allocation
Flood 98,805 a.f.
Conser. 33,917 a.f.
Dead 2,718 a.f.
Total 134,740 a.f.
NORTON DAM

KIRWIN UNIT

KIRWIN RESERVOIR
Capacity Allocation
Flood 215,115 a.f.
Conser. 93,050 a.f.
Dead 6,385 a.f.
Total 314,550 a.f.
Kirwin Main Canal
Kirwin North Canal
Kirwin South Canal
KIRWIN DAM
WEBSTER RESERVOIR
Capacity Allocation
Flood 183,369 a.f.
Conser. 75,187 a.f.
Dead 2,184 a.f.
Total 260,740 a.f.
WEBSTER DAM

BOSTWICK - SUPERIOR-COURTLAND UNIT

Superior-Courtland Diversion Dam
Superior Canal
Red Cloud
Superior
Courtland Canal
Pump No. 1 Canal
North Canal
Ridge Canal
White Rock Canal & Extension
Miller Canal
Pumps No. 3A & 3B Canals
Courtland West Canal
Pump No. 4 Canal
LOVEWELL DAM
LOVEWELL RESERVOIR
Capacity Allocation
Flood 50,460 a.f.
Conser. 36,636 a.f.
Dead 5,054 a.f.
Total 92,150 a.f.

COURTLAND UNIT

GLEN ELDER UNIT

GLEN ELDER DAM
Osborne Canal
Woodston Diversion Dam
WACONDA LAKE
Capacity Allocation
Flood 722,315 a.f.
Conser. 240,224 a.f.
Dead 1,236 a.f.
Total 963,775 a.f.

SOLOMON DIVISION

SMOKY HILL DIVISION

CEDAR BLUFF RESERVOIR
Capacity Allocation
Flood 191,860 a.f.
Conser. 176,829 a.f.
Dead 8,261 a.f.
Total 376,950 a.f.
CEDAR BLUFF DAM
Cedar Bluff Canal
CEDAR BLUFF UNIT

WILSON DAM (U.S.C.E.)
KANOPOLIS DAM (U.S.C.E.)
MILFORD DAM (U.S.C.E.)
TUTTLE CREEK DAM (U.S.C.E.)

UPPER REPUBLICAN DIVISION

ARMEL UNIT

BONNY RESERVOIR
Capacity Allocation
Flood 128,820 a.f.
Conser. 39,922 a.f.
Dead 1,418 a.f.
Total 170,160 a.f.
BONNY DAM

NEBRASKA
COLORADO

COLORADO
KANSAS

NEBRASKA
KANSAS

Chadron
Gordon
Valentine
Niobrara
Hay Springs
Alliance
Scottsbluff
Oshkosh
Sidney
Ogallala
North Platte
Thedford
Burwell
O'Neill
Norfolk
Broken Bow
Columbus
Omaha
Grand Island
Lexington
Kearney
Lincoln
Holyoke
Imperial
Wray
Atwood
Oberlin
Norton
Phillipsburg
St. Francis
Hale
Burlington
Stockton
Glen Elder
Beloit
Osborne
Wakeeney
Hays
Russell
Salina
Lindsborg
Abilene
Junction City
Manhattan
Topeka
Kansas City
Beatrice
Ness City

Lake McConaughy

Niobrara River
Snake River
Calamus River
North Loup River
Middle Loup River
South Loup River
Loup River
Platte River
North Platte River
South Platte River
Frenchman River
Republican River
Missouri River
Big Blue River
Little Blue River
Arikaree River
North Fork Beaver Creek
South Fork Beaver Creek
North Fork Prairie Dog Creek
South Fork Prairie Dog Creek
Sappa Creek
White Rock Creek
Solomon River
North Fork Solomon River
South Fork Solomon River
Saline River
Big Creek
Hill Creek
Smoky Hill River
Kanopolis Lake
Kansas River

N.

EXPLANATION
RESERVOIR
DIVERSION DAM
PUMPING PLANT
CANAL
IRRIGATED LAND

SCALE OF MILES
10 0 10 20 30