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I. INTRODUCTION

A. Description of the Physical Region

1.1 The Platte River Basin spans the three states of Wyoming, Colorado and Nebraska. It has a total catchment area of 64,900 square miles. The river originates in the Rocky Mountains with elevations of about 14,000 feet (Mean sea level), and flows eastward through a broad shallow valley. At the confluence with its tributary the Loup River (about 60 miles downstream from Grand Island, Nebraska), the ground elevation is approximately 1420 feet (mean sea level). As shown in Figure 1, Kingsley Dam is situated at the lower end of the North Platte River and the proposed Narrows Dam site is near the lower end of the South Platte River.

1.2 The natural environment making up the Upper Platte River Basin is also highly diverse. In the higher elevations there are substantial populations of big game animals and high quality cold water fisheries. The downstream land use is dominated by intense agriculatural activity. The topography of the plains is gently to moderately rolling with elevations from about 7000 feet along the foothills in Colorado and Wyoming to about 1870 feet at Grand Island, Nebraska. These lands and surrounding areas provide important habitat for a variety of birds and smaller animals.

1.3 The river basin experiences a wide variety of climatic conditions. The annual precipitation ranges from about 10 inches in the western part to about 24 inches in the eastern part. In the higher mountains, annual snowfall of 40 inches is common. A great deal of interflows (between surface and groundwater) occur within this region, and this causes difficulty in interpreting flow data.

1.4 The water distribution system in the Upper Platte River Basin is very complex. The flows of the North Platte and South Platte Rivers are affected by storage reservoirs, power developments, diversion for irrigation, municipal and industrial use, and groundwater withdrawals. It is estimated that storage reservoirs with individual capacities of 5000 acre feet or more have a total storage capacity of nearly 7 million acre feet. In addition to the above, more than 300,000 acre feet of water is imported into the South Platte River Basin annually from the west side of Colorado through 16 transbasin diversion projects. These transbasin diversions are mainly for irrigation, municipal and industrial uses.

B. Biology - Ecological Environment and Requirements

1.5 The Platte River traditionally provides a favorable environment for many migratory birds, particularly the Whooping Crane, Sandhill Crane, Bald Eagle and Least Tern. The decreased sighting of such migratory birds has resulted in concern by many who believe that this could have been caused by man's interference in the natural environment. The stretch of Platte River between Overton and Grand Island has attracted a lot of attention for the following reasons:

(a) Past sighting of migratory birds is largest in this stretch of the river.

(b) Very noticeable changes of the river conditions in the form of vegetation encroachment and island formation has occurred in the past few decades.

(c) Progressive decline in sighting of such migratory birds has led to widespread public concern.

1.6 The Whooping Crane, Bald Eagle and Least Tern have been classified as endangered and threatened species. The protection of these species would, among other things, entail measures to restore and protect natural habitat which are vital for the continual survival of such birds. Unfortunately, such habitat requirements are not fully understood and there exists some diversity of opinion as to what constitutes a suitable environment for these birds. It is generally said that a wide open water surface is favored by these birds. In addition, the flows in the river must be supportive of fish and other invertebrate growth in order to provide a source of food for the migratory birds.

1.7 The Upper Platte River Study (September 1983) has a component on ecological studies of water use and management. Another report, by the Nebraska Game and Parks Commission (May, 1985), contains an excellent treatment of biological/ecological requirements of the above migratory bird species. Such opinions as those in the above mentioned reports have developed based on extensive study of bird behaviors, correlated with historical changes of river conditions in the Platte River Basin. The requirements for these birds, as found in the second report, are appended below, but the reader is referred to the original report for details.

(a) Whooping Crane

The Platte River (Overton to Grand Island) provides a stopover point for Whooping Crane during the spring and fall migration. In general, Whooping Crane require:

(i) a wide channel, 500 to 1200 feet wide with shallow water (2 to 12 inches) and slow flow (1 to 4 mph);

(ii) sandy river bed;

(iii) unvegetated channel and banks to provide both horizontal and overhead clear visibility; and

(iv) close proximity to a suitable feeding site which is isolated from human activities.

(b) Bald Eagle

The Platte River provides the winter habitat for the Bald Bald Eagle. The wintering habitat consists of:

(i) night roosting trees near to feeding areas; and

(ii) ice-free feeding areas to provide ready accessibility to fish (They can, however, turn to upland areas for alternative food supply during severe cold weather).

(c) Least Tern

The habitat requirements of Least Tern are as follow:

(i) open, unvegetated river channel and sparsley vegetated sandbars for nesting purposes;

(ii) adequate supply of food in the form of small fish; and

(iii) isolation from predators as well as human disturbances.

1.8 In order to satisfy the minimum habitat requirements for the above three migratory bird species, the following Platte River flows (between Overton and Grand Island) are suggested by the Nebraska Game and Park Commission:

(a) Migratory flows of 1700 cfs during the periods, March 25 to May 10 and September 20 to November 10 to provide the required wide channel and flow depth required as a stopover site for Whooping Crane during the spring and fall migration.

(b) A flow of 1100 cfs from March 1 to March 25 to initiate biological response of invertebrates in wet meadows.

(c) A flow of 1100 cfs from December 10 to February 25 to maintain ice free feeding areas for the Bald Eagle.

(d) A minimum year round flow of 400 cfs for continual survival and supply of fish, as the primary source of food for the migratory birds.

The above minimum habitat requirement is shown in the diagram in Figure 3 of this report.

1.9 The above hydrologic requirements are derived based on the best judgement of biologists/ecologists. They are by no means final and these requirements are likely to be refined as more ecological studies are conducted (some are currently in progress).

On the otherhand, there exists a contrastingly different school of thought as to what constitutes the basic hydrologic requirement for these migratory birds. The report by Ecological Analysis, Inc. (1983) prepared for the Central Platte Natural Resources District, typically presents an entirely different ecological opinion. This opinion, from the hydrologic viewpoint, is much less stringent in terms of minimum flow requirements. Interested readers are referred to the original report for details. The recommendations of the Nebraska Game and Park Commission will be followed in the simulation study described in this report.

1.10 The maintenance of a vegetation free channel calls for special measures such as mechanical removal techniques. While these techniques are effective and essential as an intital action, the long term maintenance of a clear channel perhaps requires less expensive means. For this reason, the concept of scouring flows is suggested. It is argued that if a scouring flow of sufficient magnitude is provided, young seedlings and channel deposits can be dislodged and carried away. Although the concept of scouring is fundamentally sound, it is theoretically difficult, if not impossible, to determine the precise hydraulic magnitude of such scouring flows. In addition, there is also the question of whether the existing Platte River System (with its current development and uses) can cope with such an additional water demand. In respect to the first problem, the U.S. Geological Survey and the Fish and Wildlife Service have carried out some studies to come up with a required flow of 3800 cfs for 23 consecutive days. This recommendation is certainly a preliminary one and further studies inclusive of experimental verification can be expected in the future. The second issue, determining the feasibility of the Platte River System meeting additional water demands for biological requirements, is one of the primary objectives of the simulation study discussed in this report.

II. OBJECTIVES

A. Scope

2.1 This report is primarily concerned with a simulation study of the Platte River System (between Lewellen/Julesburg and Overton) with a view to examine the feasibility of revising the present operation policies/strategies of the system to create an improved habitat for the threatened and endangered migratory birds using the stretch of the Platte River between Overton and Grand Island. It is a pre-feasibility level study using readily available data from Government Agencies and previous study reports.

2.2 Given the limited time and budget, this study cannot claim to be comprehensive or exhaustive. Its primary target is to provide a preliminary indication of possible impacts on system performance that would result from imposition of additional demands or constraints on the existing system. In this manner, decision makers can be advised of possible consequences and tradeoffs for intended actions. Since, at this time, exact definition of habitat requirements is neither fixed nor agreed upon, some flexibility is built into the model to allow other alternative scenarios to be examined at a later date.

B. Specific Objectives

2.3 Given the above broad objectives, the detailed objectives of this study are as follow:

(a) To develop a simulation model to examine the future operations of the Platte River System under present operating policy. The performance of future operation is expressed in terms of resulting flow of the Platte River at Overton, and water shortage and hydro-electric power production at Kingsley, North Platte and Tri-county Systems.

(b) To study the impact on the performance/output of the Platte River System if the current Kingsley Dam operating rules are to be modified to meet the stipulated habitat flow requirement with and without consideration of Narrows Project

(c) An extension of (b) to include scouring flows.

(d) To conduct items (b) and (c) for slightly modified stipulated habitat flow requirement and stipulated scouring flow requirement.

III. THE SIMULATION MODEL

A. Purpose

3.1 A simulation model for the Platte River System has been developed by this study for the various studies as outlined in Chapter II. This Simulation model has been chosen because it can account for the complicated relationship and interaction between the various components and uses within the system. In addition, there are some 40 years of past operation results that could be used to check the validity of the model before it is used to carry out studies on future operation under various revised operating rules.

B. Model Descriptions

3.2 Figure 2 shows a schematic representation of the Platte River System. Based on this representation, the simulation model has been formulated. This figure, with its legend, is self explanatory. The figure shows the present facilities. It is relevant to point out that Elwood Reservoir was completed only in 1978, while Kingsley Hydro started operation in late 1984. Except for the above, all the storage, diversion and hydro-generation facilities have been completed and operational since 1941.

3.3 In the schematic representation, the inflows to the system are represented by:

Q_1 = North Platte River flows at Lewellen

Q_2 = South Platte River flows at Julesburg

In addition to natural inflows, there are also other inflows along the various reaches of the river. These inflows termed as gains, are largely derived from tributary flows, irrigation return flows and groundwater outflow. The gains are grouped for specific reaches as follows:

G_1 = North Platte River between Keystone and North Platte

G_2 = South Platte River between Julesburg and North Platte

G_3 = Platte River between North Platte and Brady

G_4 = Platte River between Brady and Overton

G_B = Tributary inflow to North Platte by Birdwood Creek

The estimates of gains, G_1 to G_4 are obtained by mass balance study for each of the designated river reaches using historical flow data. This is possible because there exists complete and comprehensive record on the inflows and outflows of each reach as well as diversion/losses, etc.

3.4 Irrigation diversion is the largest water use, and there are a large number of diversion canals tapping water from the Platte River. Here again, for simplicity, irrigation diversions are grouped as follows:

I_1 = Total irrigation diversion between Keystone and North Platte

I_2 = Irrigation diversion by Western Canal on South Platte River

I_3 = Total irrigation diversion between Brady and Overton (comprising six diversion canals, namely, Gottenburg, Cozad, Dawson, Thirty Mile, Sixth Mile and Orchard)

I_4 = Irrigation diversion by E65 & E67 (tapping upstream of Johnson Hydro)

I_5 = Phelp Canal diversion (after Johnson Hydro)

Historical records of irrigation diversion are available, but some adjustments are necessary in order to account for the development which has taken place over the years (such as expansion/reduction of acreage, change of crops or cropping pattern, switch to groundwater as sole or supplementary supply, etc.). These adjustments will be discussed later.

3.5 The last of the grouped parameters are reservoir system losses. (Note: losses in riverine reaches will be accounted as negative gains) The following are defined:

L_1 = Reservoir loss at Lake McConaughy

L_2 = Reservoir loss at Sutherland storage

L_3 = Tri-county system losses primarily from Jeffrey, Johnson, Elwood and other smaller regulating ponds/storages.

The grouped reservoir/system losses are computed by mass balance studies on each of the reservoirs/systems using historical records of inflows and outflows and change of reservoir storages. These losses are fairly uniform over years, and their monthly variations bear direct relation to the respective evaporation rates. There is some occurrence of negative losses, presumably as a result of large groundwater recharge or bank storage recharge.

3.6 Hydrogeneration discharges are instream, non-consumptive uses. Hence, they are not included in any of the grouped diversion, gain or loss variables. The power generated is a function of head and discharges except in cases where head variation is negligible. The latter is true of Sutherland and the Tri-county System. The following power versus discharge and head relationships have been derived (U.S. Bureau of Reclamation, 1985):

(a) Kingsley Hydro

$$E = \frac{1.025 \times 0.75\ Q}{1000}$$

for H > 58.0' (no generation below H = 58.0')

Q < 352 KAF (maximum capacity of turbine)

(b) Sutherland-North Platte Hydro

$$E = 0.162\ Q - 0.47$$

(c) Jeffrey Hydro

$$E = 0.86\ Q + 0.33$$

(d) Johnson Hydro (total 2 plants)

$$E = 0.218\ Q - 0.88$$

where Q = total volume of flow through the hydropower unit in thousand acre-feet (abreviated as KAF)

E = Energy production in Million Kilowatt-hour (abbreviated as MKWH)

H = Generation Head in feet

3.7 This simulation model is basically a set of algebraic and logical relationships to account for the mass balance of the system at various points of interest. The model takes into account:

(a) inflows, gains, diversion, losses;

(b) system capacity constraints such as maximum and minimum allowable storage in reservoirs, canal capacity, power plant capacity etc; and

(c) operating rules/policies.

The output of the simulation model comprises computed outflows at specified points, end-of-month reservoir storages, energy output of hydropower plants and shortages/deficits (if any). For the present problem, the simulation model gives time series output (monthly) of the following:

(a) simulated Platte River flows at Overton;

(b) simulated end-of-month storage at Lake McConaughy;

(c) irrigation shortage;

(d) Jeffrey hydro-return to Platte River;

(e) Johnson hydro-return to Platte River;

(f) hydro energy production at Johnson Hydro;

(g) hydro energy production at North Platte Hydro; and

(h) hydro energy production at Kingsley.

It is possible to obtain printouts for all other variables of interest (at slight expense of computer time), but the above set of output is sufficient for all the evaluation and studies in connection with objectives of this study listed in Section II.

3.8 A complete listing of the simulation program (in Fortran 77) is given in Appendix VI.

IV. MODEL TESTING, CALIBRATION AND VERIFICATION

4.1 In order to use the simulation model with confidence in predicting future operation, it must be verified against some historical observation and performance of the system. This is, however, difficult because:

(a) dynamic changes occur in system components as more components are added;

(b) changes in operating rules/policies occur with the accumulation of experience; and

(c) changes occur in priorities and commitments

A. Current Reservoir Operation Policy

4.2 Prior to 1972, maximum operating storage in Lake McConaughy was allowed to reach some 1900 KAF, irrespective of time in year. After the experience of a severe storm surge in 1972, the operating authorities adopted more conservative operating levels (maximum levels) as follow:

(a) 1644 KAF or 3260 feet MSL from September 1 to April 30

(b) 1793 KAF or 3265 feet MSL from May 1 to August 30

4.2 The historical operation rule recognizes priority for irrigation. Hence, in time of severe drought and reservoir storage, it is an acceptable practice to curtail hydropower production in the non-irrigation season as a measure for conservation. The need for such a practice was only realized once in the entire 40 years of past operation. This need occurred in September/October 1956, when Lake McConaughy storage fell to about 400 KAF.

4.3 With the exception of severe drought years, the operating strategy of the Platte River System can be described as follows:

(a) In the irrigation months, all irrigation diversion should be met, and wherever possible, irrigation diversion should be routed through hydropower plants to maximize energy production.

(b) In the non-irrigation season, their should be a minimum diversion of about 1000 cfs in the Tri-county Diversion Canal to maintain a minimum, and preferably uniform, energy output in the Tri-county Hydro (Jeffrey and Johnson). The above minimum diversion requirement is related to the need to maintain an annual firm energy output commitment of 157 MKWH for Tri-county Hydro.

B. Data Inputs

4.4 The primary data input for the simulation model are time series information of inflows, gains, irrigation diversion and losses. Although there are historical observations to permit the above grouped variables to be computed directly or indirectly, there are other considerations that limit their direct application (see Section 3.4). Consequently, the historical data are adjusted (by U.S. Bureau of Reclamation, 1985) as follows:

(a) The inflows, Q_1 , and Q_2 are adjusted to account for current level of catchment development. In the case of Q_1, it is based on results of a reservoir operation study on the Upper Platte River (by the U.S.B.R., 1985). The South Platte flows are adjusted to recognize the drying up of Lodgepole Creek.

(b) Irrigation diversions I_3, I_4, and I_5 (definition on page 11) require adjustment, particularly for the 1940 to 1954 1954 period when the areas served by E65, E67 and Phelps Canal had not reached full scale development (compared to 1980). In the case of I_3, some downward adjustments are necessary to account for the switch to groundwater as a source of supply in some of the farmlands.

(c) Resulting from the adjustment in irrigation diversion/demand, river gains also change accordingly. This is true of of G_3 and G_4 (definition on page 10).

(d) Reservoir and system losses are computed indirectly from historical records. In the case of Tri-county System, the addition of Elwood Reservoir resulted in additional losses of about 32.2 KAF/year due to evaporation and seepages. L_3 is therefore adjusted accordingly.

Appendix I gives a complete tabulation of time series data on adjusted inflows, gains, irrigation diversion and losses. The tabulation comprises 39 years of adjusted historical information between 1942 and 1980. Means and standard deviations (month and year) are also computed for easy reference.

4.5 The following table gives the comparison between the historical time series and adjusted time series of inflows, gains, irrigation diversions and losses.

TABLE 1. Comparison Between Historical and Adjusted Data (U.S. Bureau of Reclamation, 1985) on Inflows, Gains, Irrigation Diversions and Losses

Type	Historical Data (1942-1980)	Adjusted Time Series (1942-1980)	Percentage Difference
Total Inflow	1418.9	1376.5	-3%
Total Gains	682.9	696.6	+2%
Total Irrigation	553.5	567.7	+2.6%
Total Losses	479.9	512.1	+6.7%
Balance (or expected outflow at Overton)	1068.4	993.3	-7.0%

Units: Mean annual volumes in thousand acre-feet (KAF for 39 years)

4.6 The above total system mass balance study shows that the expected mean annual flow of the Platte River at Overton will be 1068.4 KAF. The historical observations at Overton give a mean annual flow of 1030.1 KAF. The difference of 38.3 KAF (or 1493.7 KAF for 39 years) can be accounted by the difference in storage since Lake McConaughy started with an inital storage of about 200 KAF (December, 1941) and ended with a storage of 1501.3 KAF in December of 1980. With the adjustments in input data, the mean annual flow at Overton will decrease by about 7 percent to a value of 993.3 KAF. The significance of this reduction on the monthly flow distribution of the Platte River flows at Overton will be discussed later. The above value is an important parameter for calibration and verification of the simulation model.

C. Modification of This Simulation Model and Model Verification

4.7 The present operating policy of the Platte River System is described in Section 4.3. In the simulation model, a slight variation is made with regard to hydro-release for the non-irrigation season. It is felt that a simpler, but practical rule would be to target a certain minimum energy output at Johnson Power Plant. Using a target hydro-power discharge of 45 KAF at Johnson Hydro, the resulting Tri-county diversion will average about 62 KAF which corresponds to an average flow of 1025 cfs. The resulting energy production at Tri-county Hydro will be about 14 MKWH per month which is slightly more than 1/12 of the annual firm energy commitment at Tri-county Hydro. From the mathematical modeling standpoint, the above rule is more convenient and simplier.

4.8 As a first step in model calibration, a preliminary simulation run is carried out using historical input, known initial storage at Lake McConaughy and the operation rule described in 4.3 and 4.7. The simulated flows at Overton compare fairly well with the historical observations, particularly in the mean annual volumes. The table below gives a comparison of mean monthly and annual flows as well as their respective standard deviations.

TABLE 2. Comparison of Historical and Simulated Flows at Overton

Month	Mean Flows (1942-1980)		Standard Deviation (1942-1980)	
	Historical	Simulated	Historical	Simulated
January	89.6	91.6	35.7	40.4
February	96.3	103.8	44.5	45.9
March	119.7	123.5	63.6	50.5
April	105.2	122.0	69.2	69.1
May	128.7	103.5	170.7	141.9
June	122.5	113.7	152.3	150.8
July	47.2	32.7	46.4	63.0
August	26.7	15.0	15.3	17.7
September	49.4	69.2	46.4	87.8
October	76.6	77.5	57.8	48.2
November	79.7	86.3	34.5	42.1
December	88.3	89.6	31.4	35.3
Annual	1030.1	1028.2	544.5	592.3

(Units: Thousand acre-feet)

4.9 The simulation model also predicts a minimum Lake McConaughy storage of 383.0 KAF in September of 1956 as compared to the historical observation of 391.6 KAF in October of 1956. The mean annual energy production of Tri-county Hydro is computed at 254 MKWH. The simulated energy production cannot be verified because of lack of historical data.

4.10 The simulation run as described in 4.8 and 4.9 has little practical future application other than as a means of model calibration and verification. Since the study is concerned with future operation, it is logical to use the adjusted time series data (4.4, 4.5 and Appendix I) and an average storage level as the initial condition at Lake McConaughy (a value of 1400 KAF for December). The results of this second siumlation run are compared with that of a parallel U.S. Bureau of Reclamation study known as the Platte River-Prairie Bend Unit Study (July, 1985). The Bureau of Reclamation model is a larger and more complex model developed to handle a larger scope and objective. The base run of the Bureau of Reclamation model corresponds to future operation of the Platte River System under existing operating rules, and hence, can be used for direct comparison. Table 3 gives a comparison of the results of the two models for the base run corresponding to future operation of the Platte River System under present operation rule.

4.11 An examination of Table 3 shows that the results of the two different models compare very well, particularly in the mean annual values. There are some minor differences in the mean monthly

TABLE 3. Comparison of Simulation Results of CSU Model and USBR Model for Base Condition - Future Operation Under Present Policy

MONTH	FLOWS AT OVERTON		ENERGY PRODUCTION AT TRICOUNTY HYDRO		ENERGY PRODUCTION AT KINGSLEY		ENERGY PRODUCTION AT NORTH PLATTE	
	CSU	USBR	CSU	USBR	CSU	USBR	CSU	USBR
January	91.2	84.7	20.8	19.4	5.0	4.0	9.4	7.3
February	104.0	92.6	22.8	19.4	4.8	3.2	9.6	7.3
March	120.3	111.3	23.8	22.3	5.5	4.0	10.3	8.8
April	111.1	111.6	21.9	21.6	6.7	6.4	10.3	10.0
May	99.4	117.0	18.8	23.5	6.5	8.1	8.6	11.4
June	109.7	119.3	20.9	22.3	9.9	12.2	10.0	9.2
July	32.7	35.7	22.5	23.6	14.5	16.4	10.6	15.7
August	16.0	27.5	20.8	23.4	13.6	13.8	12.9	18.5
September	69.9	60.4	19.2	18.1	10.8	10.7	10.3	10.0
October	73.7	73.5	18.4	19.0	6.6	4.9	9.6	9.0
November	81.6	71.4	18.9	17.2	5.2	4.9	8.3	6.8
December	84.4	79.0	19.2	18.7	4.6	4.8	8.4	6.8
Mean Annual	993.9	983.9	248.0	248.5	93.5	93.3	118.3	120.7

Note: (i) Flows in KAF
(ii) Energy production in MKWH
(iii) CSU results based on simulation over 39 years (1942-1980)
(iv) USBR results based on simulation over 30 years (1951-1980)
(Results are non-final)

values, resulting most likely from the simplification of operating rules introduced in the Colorado State University Model (Section 4.7). The differences are, however, small and hence can be considered acceptable given the fact that this is a study at a pre-feasibility level. At this stage in time, there is still a lack of precise definition on the future operation rule which will optimize the performance of the system. Past experience can be useful for this purpose, but there is no guarantee of global optimum results. In this respect, there is scope for refinement of the past operation rule through some mathematical optimization or simulation technique.

D. Results of This Simulation Study Based on Current Reservoir Operation Policy

4.12 The key findings of the simulation study of future operation of the Platte River System under present operation rules are as follow:

(a) The mean annual outflow is 993.9 KAF which is similar to the value derived by total system mass balance study (Section 4.5).

(b) If an irrigation conservation pool of 500 KAF is defined, there will be no irrigation shortage for the entire period of simulation.

(c) The minimum storage in Lake McConaughy is 190 KAF occurring at September 1956.

(d) The mean annual energy output of Tri-county Hydro will be around 248 MKWH. The minimum firm energy commitment of 175 MKWH for Tri-county Hydro can be met for all the 39 years (in simulation). There is a period of 5 months (between October 1956 to February 1957) when hydro-generation is curtailed due to low storage level in Lake McConaughy (thereby initiating conservation measures).

4.13 The computer model also provides simulated monthly flow at Overton for the entire 39 years of study (see typical printout in Appendix II). It can be seen that the year to year variations of flows for any particular month of interest can be quite considerable. From the environmental viewpoint, one would be interested to know how often the river flows fall below the minimum habitat requirements. This can be evaluated by performing a statistical analysis on the 39 years of simulated monthly (January, February, etc.) flows at Overton. For simplicity, a simple frequency count analysis is used but this can be refined at a later stage with the use of a suitable probability distribution. The results of such a simplified analysis are displayed in Figure 4. The Figure gives the percentage occurrences of flows below habitat requirements based on the 39 years of simulated monthly flows. For example, in the month of October, it is found that the historical flows at Overton are below the habitat requirements for about 80 percent of the time. This implies that in the month of October the habitat flow requirements are not met in 31 out of 39 years. The above analysis has shown that the past historical flows are inadequate to meet habitat requirements for more than 50 percent of the time, in the months of April, September and October. Future operation of the system using the adjusted inflows and present day demand will result in similar pattern, but slightly aggravated deficits. For comparison purposes, the results of simulation with Narrows Project are also plotted in Figure 4. It can be seen that the depletion of the South Platte flows by the Narrows Project can further aggravate the existing habitat flow deficit in the stretch of the Platte River between Overton and Grand Island.

4.14 Between Overton and Grand Island (for a distance of 75 miles), there is an additional small irrigation diversion of about 20 KAF/per annum by the Kearney Canal. Kearney Hydro is a non-consumptive use and hence will not affect the overall balance of water. Analysis of past records give a negative section gain (i.e. a loss) of 20 KAF/year. The combined effect of the above is that the mean annual flow at Grand Island will be about 40 KAF lower which represents a reduction of 4 percent over the mean annual flows at Overton. Hence, for all practical purposes, the conclusions derived for Overton can be applied at Grand Island without any significant loss of accuracy (at least for this stage of the study).

V. SIMULATION OF FUTURE OPERATIONS USING A PROPOSED OPERATION POLICY THAT PROVIDES FOR MEETING HABITAT FLOW REQUIREMENTS

A. Proposed Operation Policy

5.1 If one assumes that the habitat flow requirements are as defined by the Nebraska Game and Parks Commission (Figure 3), it is evident from the analysis described in Section 4.13 that the present operating policy, based on meeting irrigation and energy production objectives, is not able to fulfill habitat flow requirements for a major percentage of time. This leads to the question of what can be done and at what tradeoff to economic efficiency objectives.

5.2 To answer the above question, the simulation model developed in Section IV is used to study the effects of changing the operation rule to achieve environmental objectives. The simulation model cannot prescribe an optimum rule explicitly, and hence, it is necessary to make some initial assumptions or guesses (guided by judicious engineering judgement), and subsequently refine them as the results of the simulation study become available.

5.3 It has been explicitly stated by many sources that irrigation demand should be given the highest priority. This requirement is recognized in the simulation model by assigning a minimum irrigation conservation pool at Lake McConaughy. The base run simulation study uses a minimum irrigation conservation pool level of 500 KAF and confirms that this ensures that all irrigation demand will be met (for the 39 years of the simulation). The above minimum irrigation conservation pool level will be maintained in all of the future simulation study.

5.4 It is generally acceptable to regard habitat flow requirement as 'desirable' rather than a 'necessity.' By this definition, one can expect that some failures, provided not too often, will be tolerable and will not lead to disaster or major economic losses. Given the high level of consumptive use and a large annual and seasonal variability of flows in the Platte River System, it is practically impossible to operate (or construct additional works) that can guarantee meeting all requirements at all times. Hence, in developing a revised operating rule, it has been assumed that some shortage of habitat flow requirements will be tolerable during severe drought when resevoir storage falls to an alarmingly low level. For obvious reasons, the minimum irrigation conservation pool level is chosen as the control level.

5.5 Based on the reasonings presented in 5.4 and 5.5, a sound operating rule that will maintain priority for irrigation is as follows:

(a) Irrigation release will be provided, on demand at all times.

(b) Irrigation release will be routed through hydro-power plants to maximize energy production.

(c) In the non-irrigation season, a minimum hydro-discharge of 45 KAF through Johnson Power Plant will be maintained, except in times when the storage level at Lake McConaughy is is at or below the minimum irrigation conservation pool level (i.e. 500 KAF).

(d) The end of month storage level at Lake McConaughy will be checked against the specified upper limit corresponding to the particular month of operation and water in excess of the imposed limit will be spilled.

(e) If the resulting flow at Overton (after operation steps (a) to (d)) is below the required habitat flow requirements, additional release will be made from storage to meet such such shortfall, provided that the end of month storage at Lake McConaughy is still above the minimum irrigation conservation pool level (i.e. 500 KAF).

B. Results of the Proposed Operation Policy

5.6 Using the above operating rule, the simulation model is run using the adjusted inflows, gains, irrigation diversion, diversion (Section IV) for the period 1942 to 1980. The important results of this simulation run are given in Appendix III. The results show that:

(a) With a minimum irrigation conservation pool of 500 KAF, there is no irrigation shortage for the entire period of simulation.

(b) The mean annual energy output of the North Platte and Tri-county Hydro is not affected by the change in operation rule rule to incorporate habitat considerations. The monthly distribution of energy output is, however, altered slightly with larger quantity of secondary energy produced in those months corresponding with larger habitat flows (See Figures 5 and 6). The above results are largely due to the fact that energy production at North Platte and Tri-county Hydro is not dependent on head. There is one year (1956) in which the annual firm energy commitment (157 MKWH) of Tri-county county Hydro cannot be met with the adoption of the proposed revised operating rule.

(c) Kingsley Hydro will experience a loss of 6 percent (average of 5.61 MKWH/year) in energy production. This is primarily due to the large release in October which is also the month with relatively lower storage level. The habitat releases in October, as a result, generate less energy per unit volume, as compared to release in other months.

(d) The required habitat flows at Overton can be met at all times except for a 22 month period between July 1955 and April 1957. The aggregated deficit in that period is about 1000 KAF. The occurrence of such a deficit period is the direct consequence of a three year extended drought (1954, 1955 and 1956), in which mean annual flow fell below 60 percent of long term mean for three consecutive years. A simplified frequency analysis shows that such an extended drought has a return period of 20 to 25 years.

C. Effects of Changing Biological Requirements

5.7 Sensitivity analysis is carried out for migratory flows since this is the largest habitat flow component and has the largest uncertainties in its definition. A simulation run with migratory flow reduced to 1100 cfs (i.e. by 35 percent) gives practically identical results as that described in 5.6, except that the deficit duration (5.6 (d)) is shortened by six months (January 1956 to April 1957) with a corresponding aggregated shortage of about 650 KAF.

VI. SIMULATION OF FUTURE OPERATION WITH PROVISIONS FOR BOTH HABITAT AND SCOURING FLOW REQUIREMENTS

A. Discussions on Scouring Flow Requirements

6.1 The justification for maintenance of scouring flows is presented in 1.10. There have been many postulations on the quantity and timing requirements for effective channel scouring and a definite recommendation is unlikely to be reached in the near future. From the water conservation and operational flexibility viewpoint, the views of the Fish and Wildlife Service (which is 3800 cfs for any 23 consecutive days) seem to be the best judgement.

6.2 Given the tight situation of water supply/demand balance in the Platte River Basin, extreme care must be exercised in accommodating additional demand on the system. Scouring flow requirements, in this respect should be assigned lower priority, because alternative means, although more expensive, do exist for bringing about the desired channel conditions. In this simulation study, such a consideration is reflected through appropriate timing and control on scouring flow release.

6.3 From the hydraulic viewpoint, the scouring flow as recommended by the Fish and Wildlife Service can take place during any time of the year. Environmental considerations would exclude the mid-May to August period in consideration of the nesting habitat for Least Tern. Furthermore, one would be doubtful about timing such release in any of the winter months. The remaining months that are left are

March, April, September, October and November. From the operation viewpoint, releasing a large quantity of water from storage in the pre-irrigation season is unlikely to be acceptable. With a minimum irrigation conservation pool, the fear of irrigation shortage can be eliminated (if the operating agency can be convinced). But there still remains the problem that the habitat flow requirement (such as fall migratory flows, winter habitat flows) may be totally or partially sacrificed. The latter suspect is subsequently confirmed in the sensitivity analysis. Based on the above arguments, the scouring release should be in the period from September to November. Since the October habitat flow (fall migration) is highest, it was decided to raise the habitat flow to the required magnitude for scouring purposes. Such an arrangement will minimize additional release from storages. The onset of winter following scouring will further help to preserve the desired channel condition (free of vegetation).

B. Results on Meeting Scouring Flow Requirements

6.4 Using a similar operating rule as in 5.5, but with a higher targeted October flow (200 KAF) at Overton to account for meeting both habitat and scouring requirements, the simulation model is re-run and the key findings of simulation are as follows (refer to Appendix IV - Computer Printout for details):

(a) With a minimum irrigation conservation pool of 500 KAF, there is no shortage in irrigation for the entire period of simulation.

(b) The energy production of Kingsley, North Platte and Tri-county Hydro are reduced by 9 percent, 6 percent and 5 percent respectively (See Figures 5 and 6). The energy output reduction at North Platte and Tri-county Hydro is primarily due to the fact that the scouring flow (3800 cfs) is much higher than the diversion and power plant capacities (2000 to 2150 cfs). The loss of output at Kingsley is due to similar reasons as explained in 5.6 (c).

(c) There are two years (1956 and 1957) in which annual firm energy commitment of Tri-county Hydro is not met as a result of this revised operation rule.

(d) The habitat flow requirements are met in all the years except for a 22 month period between July 1955 and April 1957. The finding is identical to the case of future operation with provision for habitat flows only (5.6 (d)).

(e) There are 8 years (1954, 1955, 1956, 1957, 1960, 1961, 1964 and 1968) in which the scouring flows cannot be provided due to low storage in Lake McConaughy. Since the simulation period is 39 years, this represents an approximate failure probability of 20 percent. The consecutive failure of 1954 to 1957 is due to an extended drought of about 20 to 25 year return period.

C. Effects of Changing Scouring Flow Requirements

6.5 Sensitivity analysis for this simulation run is carried out for:

(a) Scouring flow releases in March

(b) A 33 percent reduction in magnitude of scouring flow (i.e. 2500 cfs)

If the timing of scouring flows is advanced to March, the results indicate:

(a) Meeting irrigation demand can be guaranteed in all the 39 years of simulation.

(b) There is no loss of energy output for the Tri-county and North Platte Hydro except for higher variability of the monthly output of energy. The loss of energy output at Kingsley Hydro is about 9 percent (as in 6.4 (b)).

(c) With a cutoff control at 500 KAF of storage at Lake McConaughy, scouring flows will be released in all but three years (1956, 1957, and 1965). However, this will result in five other years in which some shortages will occur in the fall and winter habitat requirements, in addition to the July 1955 to April 1957 period (which is practically a standard outcome for all simulation runs).

(d) Given that habitat flows are assigned higher priority, one possible remedy will be to impose a two-tier control level level policy with the higher of the minimum control levels applicable to release of scouring flows. Due to variability in inflows as well as demand (in the intervening period between Spring and Fall), it would be difficult to establish the higher minimum storage level without the help of some reliable means of river flow and irrigation demand forecasting. If such a forecasting method is available and implemented, the fall and winter habitat flows can be fulfilled if the scouring flows are cut off in eight years out

out of 39 years. This result is similar to the earlier one discussed in 6.4 (e). The return for such a more complicated operation policy would be the higher mean annual energy output as discussed in (b). This alternative is therefore worthy of serious consideration.

6.6 The second sensitivity analysis is carried out on the magnitude of scouring flows. A simulation study using a scouring flow of 2500 cfs (33 percent reduction) is carried out and the results show that:

(a) Irrigation demand can be met in all 39 years
(b) Smaller losses (compared to base run in Section IV) in energy output of Kingsley, North Platte and Tri-county Hydro. The estimated reduction in mean energy output is 7.5 percent, 2.3 percent and 1.4 percent respectively.
(c) A similar habitat shortage for the period of July 1955 to April 1957.
(d) The number of years of no scouring flow release will be reduced to 5.

Hence, it can be seen that accurate determination of magnitude of scouring flow is very critical and deserves special attention. If the scouring flow can be reduced, there is a higher probability of it being complied with and also at a lower sacrifice to the output performance of the original system.

VII. SIMULATION STUDY ON EFFECTS OF NARROWS PROJECT ON FUTURE OPERATION AND PERFORMANCE OF PLATTE RIVER SYSTEM

A. Narrows Project

7.1 The Narrows Dam is a proposed future project on the South Platte River, located about 80 miles upstream from Julesburg. The primary purpose of Narrows Dam, if constructed, is to regulate the flows of the South Platte in order to meet consumptive demand (mainly irrigation) downstream of the Dam. The Bureau of Reclamation has carried out an operation study on the Narrows Dam and the results show that there will be a net reduction of 120 KAF (or 36 percent) in mean annual streamflow of the South Platte at Julesburg.

7.2 For the purpose of this study, a modified South Platte streamflow series (the output of the U.S. Bureau of Reclamation's operation study on Narrows Dam) is used in place of the historical flow series at Julesburg (Q_2). This implies that the Narrows Dam will be operated independently of all other downstream storage systems (a valid assumption, at least at this stage of development) and its impact is therefore reflected in the modification of natural flows in the South Platte River. Therefore, an important question to be answered is the extent of the impact on the Platte River System downstream of Narrows Dam, resulting from the depletion of the natural flows of the South Platte by the Narrows Project. In addition, it is also of interest to find out how the simulation results of Section V and VI (both simulations assumed existing conditions without Narrows Dam) will be changed if Narrows Dam is built and operated independently.

7.3 Three additional simulation runs are made in order to study and evaluate the impacts of Narrows Project. They are as follow:

(a) Future operation of the Platte River System with South Platte flows depleted by Narrows Dam Project (referred to as 'with Narrows')

(b) Future operation 'with Narrows' using revised operation rule that provides for habitat flow requirements.

(c) Future operation 'with Narrows' using revised operation rule that provides for both habitat and scouring flow requirements.

The operation rules for the above three simulation runs are similar to their respective cases in the 'without Narrows' case Sections IV, V and VI). The only change that is made is in the South Platte inflow, Q_2. In the 'with Narrows' case, the original Q_2 is substituted by a modified flow series obtained from the operation study of Narrows Dam (from the U.S. Bureau of Reclamation). The 'with Narrows' simulation studies are based on 36 years of data (1942-1977) because 'Narrows-modified' flows are available for the above period only.

B. Results of Considering Narrows Project on Downstream Habitat Flow Requirements

7.4 The findings of simulation operation of the Platte River System 'with Narrows' are as follow (Refer to Appendix V - Computer Printout for details):

(a) The mean annual flow at Overton will be reduced to 882 KAF

(-11 percent). This is the direct consequence of flow depletion of the South Platte River by the Narrows Project.

(b) There is no irrigation shortage for the entire 36 years of simulation if a minimum irrigation conservation pool of 500 KAF is implemented.

(c) With the reduction of flow in the Platte River, mean annual energy output of the North Platte and Tri-county Hydro will be reduced by about 7 percent (as compared to base run simulation described in Section IV). Also, the firm energy commitment of Tri-county Hydro is not met in 1956. Energy output of Kingsley Hydro is unaffected. These results are shown graphically in Figures 7 and 8.

(d) Analysis of the simulated flow series at Overton shows that there is a marginal increase in incidence of habitat flow deficit as shown in Table 4 below and also graphically in Figure 4.

TABLE 4. Habitat Flow Shortage at Overton - 'With' and 'Without' Narrows Project

Month	Percent of months experiencing habitat flow deficit	
	Without Narrows (base run)	With Narrows
March	15%	25%
April	56%	64%
May	30%	39%
September	59%	69%
October	77%	80%

The simulation findings show that Narrows Dam could lead to some direct losses to the downstream Platte River users. In addition, it would further aggregate the environmental quality of the Platte River at Overton.

7.5 The simulation of future operating of the Platte River 'with Narrows' using a revised operation rule that provides for meeting habitat flow requirements gives the following findings:

(a) There is no irrigation shortage if a minimum irrigation conservation pool level of 500 KAF is specified.

(b) Energy production of North Platte and Tri-county Hydro are unchanged as compared to the earlier simulation run discussed discussed in 7.4. However, at Kingsley Hydro a loss of 8 percent in energy output occurs as a result of providing for for habitat demand.

(c) Although the mean annual energy is unaffected, the monthly variations of energy production are higher. There are two years (1956 and 1957) in which the stipulated minimum firm energy commitment (for Tri-county Hydro) is not met.

(d) The required habitat flows are not met for a 22 month period beginning July 1955, with a total aggregated shortage of about 1000 KAF (similar to earlier findings in 5.6 (d)). In addition, there are another 5 years (1957, 1960, 1961, 1964 and 1969) in which shortages averaging about 200 KAF are experienced in the September to November period.

C. Results of Considering Narrows Project on Downstream Habitat and Scouring Flow Requirements

7.6 The last set of simulation is that of future operation of the Platte River System 'with Narrows' and with an operating policy that provides for both habitat and scouring flows. This is the 'with Narrows' counterpart of simulation study described in Section VI. The findings of this simulation run are as follow:

(a) There is no irrigation shortage for the 36 years of simulation if a minimum irrigation conservation pool level of 500 KAF is implemented.

(b) The mean annual energy output of Kingsley, North Platte and Tri-county Hydro are reduced by 9 percent, 12 percent, and 10 percent respectively when compared to the base run simulation described in Section IV. There are also two years (1956 and 1957) in which firm energy commitment of Tri-county Hydro cannot be met.

(c) Habitat flows deficit is similar to the simulation run described in 7.5 (d).

(d) The required scouring flows (in October) are not met in 12 years (out of 36 years of simulation).

VIII. PRELIMINARY CONCLUSIONS

8.1 With the development that has taken place in the past few decades, mean annual flows of the Platte River have decreased. Irrigation and system losses will result in about 50 percent of the future mean annual flows. Lake McConaughy has a fairly large storage capacity as compared to its mean inflow and will be able to sustain a very high level of utilization of river inflows in the North Platte. The flows of the South Platte are largely unregulated and exhibit very high monthly and yearly variations.

8.2 The South Platte River System between Lewellen/Julesburg and Overton has supported some sizable irrigation and hydropower development since 1941. the present operating policy is based purely on meeting irrigation demand and maximizing hydropower production. The resulting flow regime based on observations of the Platte River flows at Overton has proved to be rather unfavorable to some migratory birds which utilize the stretch of river between Overton and Grand Island. The simulation study shows that if the present operation rule is continued, there will be more than 50 percent probability that the 'required' habitat flows cannot be met for each of the months of April, September and October.

8.3 The requirements of no irrigation shortage at all times can be achieved if a minimum irrigation conservation of 500,000 acre-feet is maintained at Lake McConaughy. This implies that whenever storage at Lake McConaughy falls to the above minimum level, there should be no release for any purpose other than irrigation.

8.4 It is possible to achieve a flow regime at Overton which meets the habitat requirement for most of the times (except for a 22 month deficit duration in a 3 year drought of 20 to 25 years return period) by revising the present operation policy to incorporate habitat flow as an additional demand with priority ranking after irrigation and hydropower. The simulation study shows that the above can be achieved without any loss of mean energy production at North Platte and Tri-county Hydro. There will be a loss of 6 percent in mean annual energy output at Kingsley Hydro.

8.5 The month of October appears to be the most suitable time for release of scouring flows. It is not possible to provide scouring flows for all the years. On the average, there is a one in five year chance that scouring flows will not be met. An operation policy that provides for meeting scouring flow (on a priority ranking after irrigation, power and habitat requirements) will result in about 5 to 6 percent reduction in mean annual energy output at Tri-county and North Platte Hydro, and introduce greater variability in the monthly and yearly energy output. The energy output of Kingsley will be reduced by 9 percent (compared to base run). Providing for scouring release based on the proposed operation rule will not compete with habitat flow requirements, and hence, a similar 22 month deficit duration in habitat requirements will be maintained.

8.6 The proposed Narrows Dam, if constructed, will result in about 9 percent depletion of natural inflows to the Platte River System (at Julesburg and Lewellen). This will have the direct impact of reducing the mean annual flow at Overton by about 11 percent and the mean annual energy output of North Platte and Tri-county Hydro by about 7 percent. The effects on energy output of Kingsley Hydro will be insignificant. With the reduction of flows at Overton, there will be a marginal increase in the probability of not meeting the habitat flow requirement.

8.7 The Narrows Project, with its mean annual consumptive withdrawal of about 120 KAF from the South Platte River will further reduce the ability of the existing system to accommodate additional demands, such as the environmental quality requirements discussed in 8.4 and 8.5. The simulation study shows that the Narrows Project will result in additional shortages or loss of system performance as follows:

(a) Habitat flow shortages of about 200 KAF in the September to November period for 5 out of 36 years.

(b) Failure to provide scouring flows for 8 out of 39 years to 12 out of 36 years.

(c) Loss of energy output at Kingsley, North Platte, and Tri-county Hydro (as compared to the 'without Narrows' base run).

The above assumes that the Narrows Project is operated independently of the Lake McConaughy and Tri-county Diversion facilities. Some improvements in system performance can be expected if the above facilities are operated in an integrated manner.

8.8 The findings described earlier are derived from the simplified simulation model developed at CSU. The model can provide a reasonable forecast of system performance based on the inputs, demand and pre-specified operation rules. However, a record length of about 40 years is generally inadequate for predicting long-term system behavior, because the limited length of hydrological observations may not be representative of the true long-term behavior. Similarly, the irrigation demand represents only the present level of development which does not recognize the potential for future development and changes.

8.9 The present study is a pre-feasibility level investigation of the possibilities and associated impacts of revising existing system operation rules to meet habitat flow requirements. A simplified monthly model is used so that a broad range of alternatives can be examined within the time and budget limitations. On the basis of findings of this report, further studies are recommended in the following order of priority:

(a) Throughout this study, it has been assumed that habitat flow and channel maintenance requirements were defined by the Nebraska Game and Parks Commission. It has been shown that the severity of impact on the Platte River System as a result meeting such habitat requirement is directly related to the magnitude of the scouring flows and to a lesser extent, the migratory flows. These habitat flow requirements (especially for scouring flows) should be investigated much more thoroughly and be better defined. If the 23 days of scouring flow were not required to be consecutive, and could occur at several times during the year, the scouring flow requirement would be much easier to accommodate and the ability to meet all other water demands would improve.

(b) The recommended irrigation conservation pool level of 500,000 acre-feet is based purely on the quantitative requirements of meeting irrigation needs through the most severe drought (within the 39 years considered in the simulation). This above conservation pool level requirement may or may not be adequate or acceptable from the fishery point of view. At this stage, the requirement of fishery has not been clearly defined and further studies are therefore suggested.

(c) The monthly flow model used in this study disregards the daily variation of flows. For more accurate evaluation, a simulation model based on daily flows should be pursued. This would involve considerable increase in data collection and processing effort, as well as, computer execution time.

(d) It has been shown that the 1954-1957 drought is the most critical event when meeting the habitat flow requirement is concerned. In all the options investigated by this study, it is found that the habitat flows would be deficient in a 22 month period as a direct consequence of the above drought. A detailed statistical analysis of the 1954-1957 drought is therefore suggested so that the probability of its recurrence can be better assessed.

(e) In assessment, the impact of the proposed Narrows Project on the Platte River system, it was assumed that the Narrows Reservoir would be operated independently. The advantages of integrated operation of a system of reservoirs have been been demonstrated for many other river systems. It is therefore suggested that further studies be carried out to determine whether the habitat and channel maintenance flows can be more readily achieved through an integrated operation of several existing reservoirs, as well as, the proposed Narrows Dam on the Platte River.

IX. REFERENCES

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Nebraska Game and Parks Commission, May 1985, "Biological, Opinion, Twin Valley Project."

U.S. Bureau of Reclamation, August 1985, Personal communication with Duane Woodward.

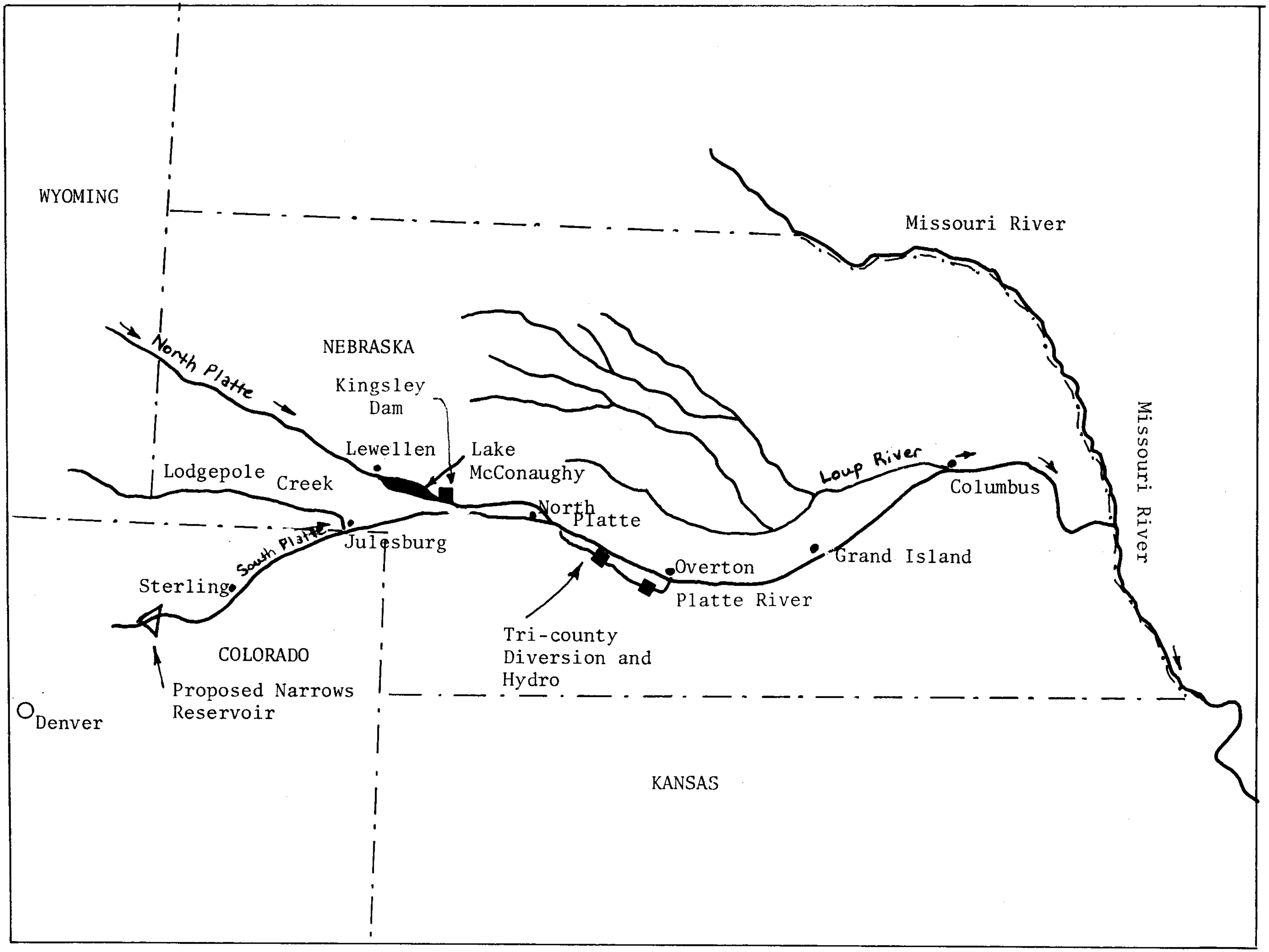


Figure 1. The Platte River System

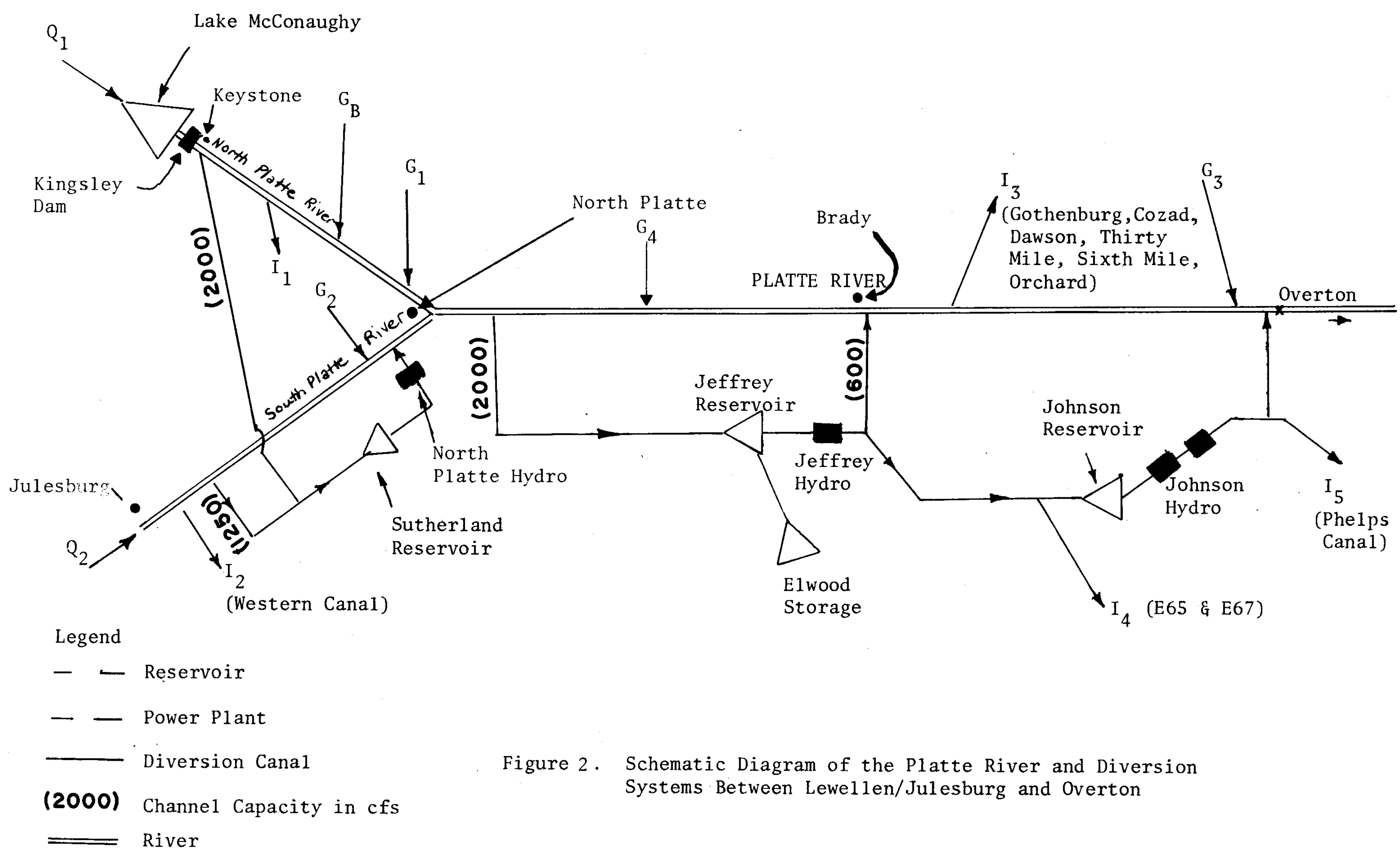


Figure 2. Schematic Diagram of the Platte River and Diversion Systems Between Lewellen/Julesburg and Overton

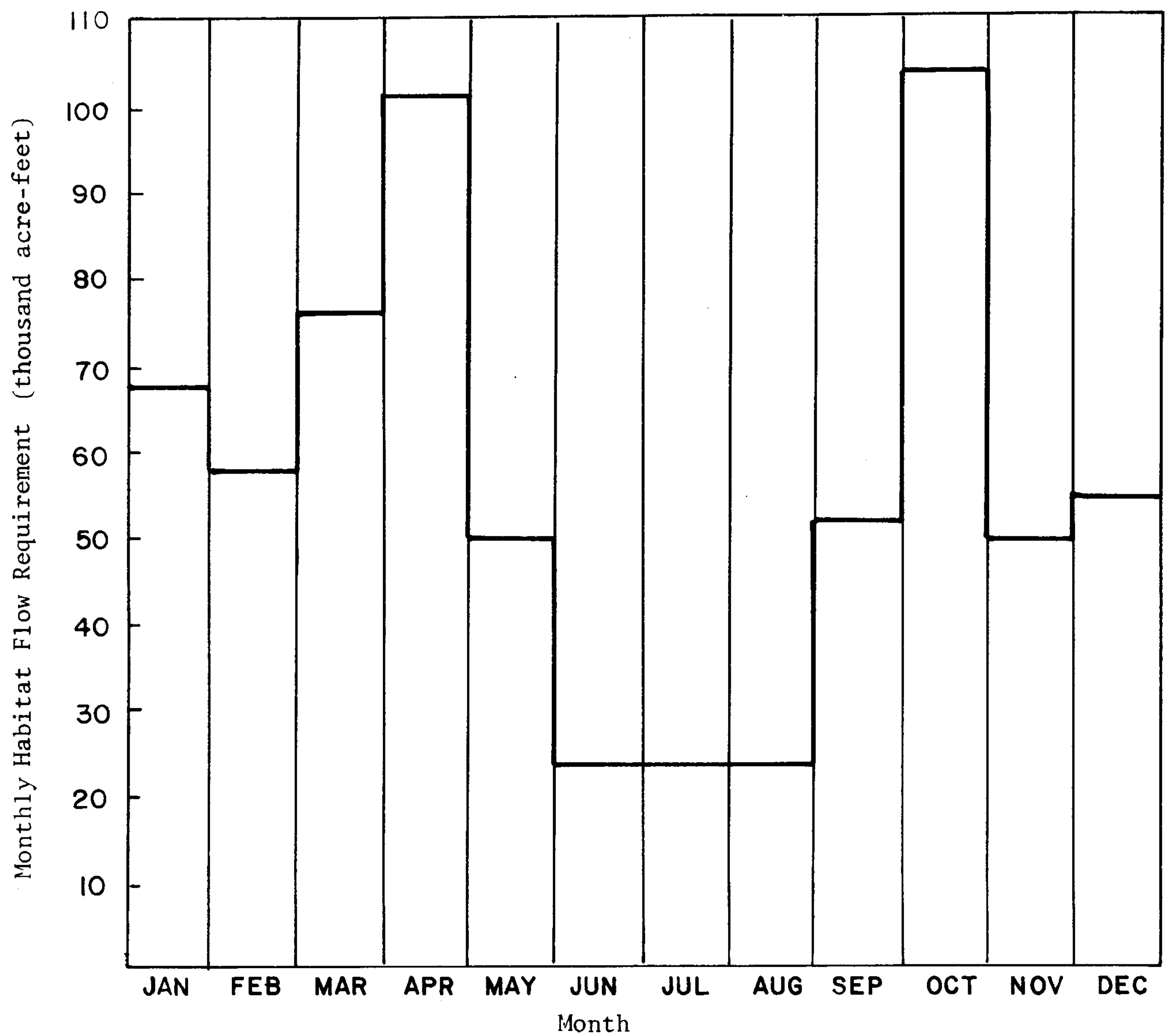
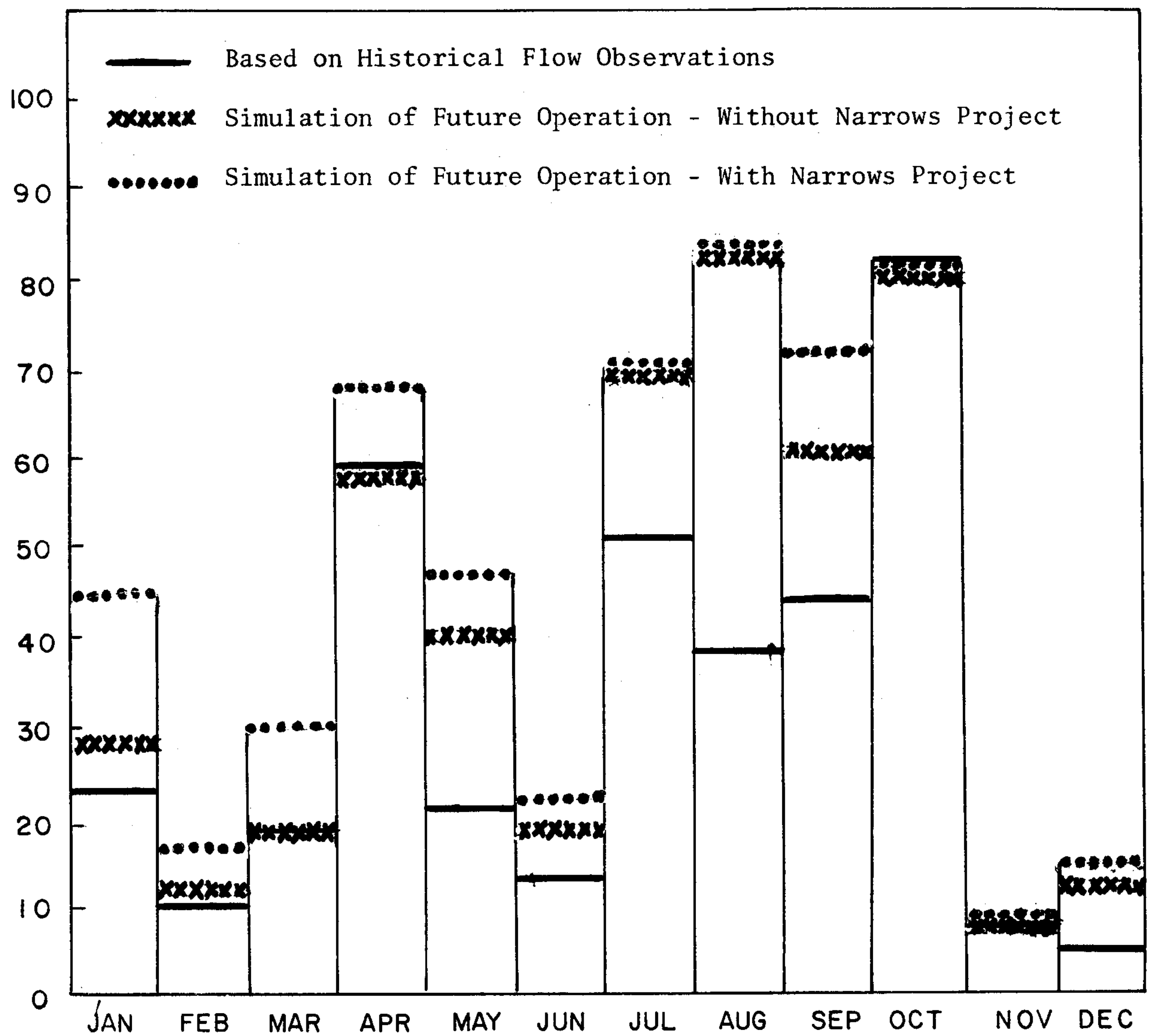


Figure 3. Habitat Flow (in monthly volume) Required Based on Recommendation of Nebraska Game and Parks Commission (1985).



Note: (i) Habitat Flow Requirements as Defined by Figure
(ii) Percentage Based on Arithmetic Count of Shortage Months
(iii) The July and August Shortage is Small in Terms of Volume, Although Percentage-wise, it may be high.
(iv) Simulation of Future Operation Means that Present Operating Policy to be Continued into the Future The River Flows and Irrigation demand are, however, Adjusted to Account for Present-day development (see Section 4.4)

Figure 4. Platte River at Overton - Percentage of Time of Not Meeting Habitat Flow Requirements.

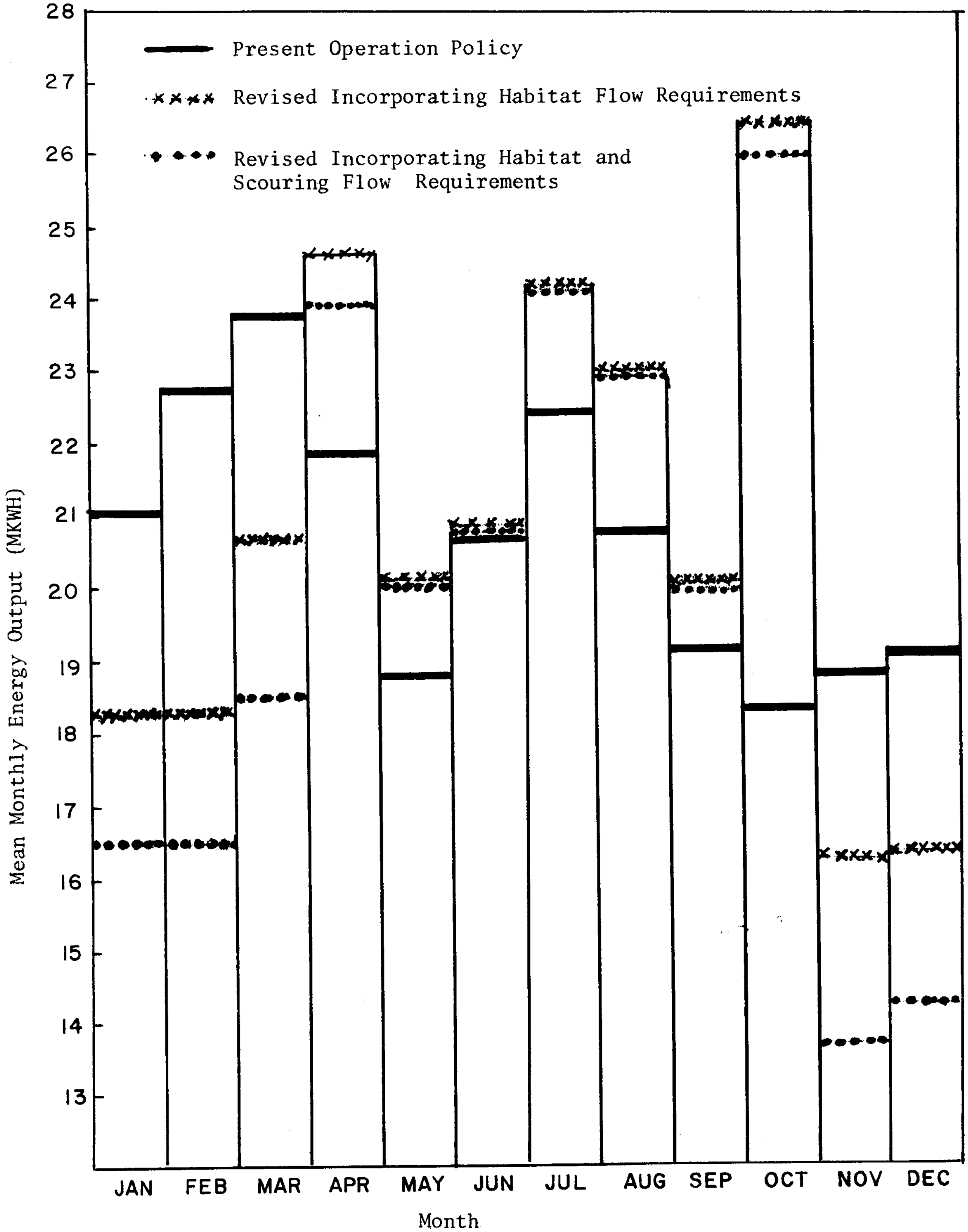


Figure 5. Simulated Mean Monthly Energy Output of Tri-county Hydro (1942 to 1980).

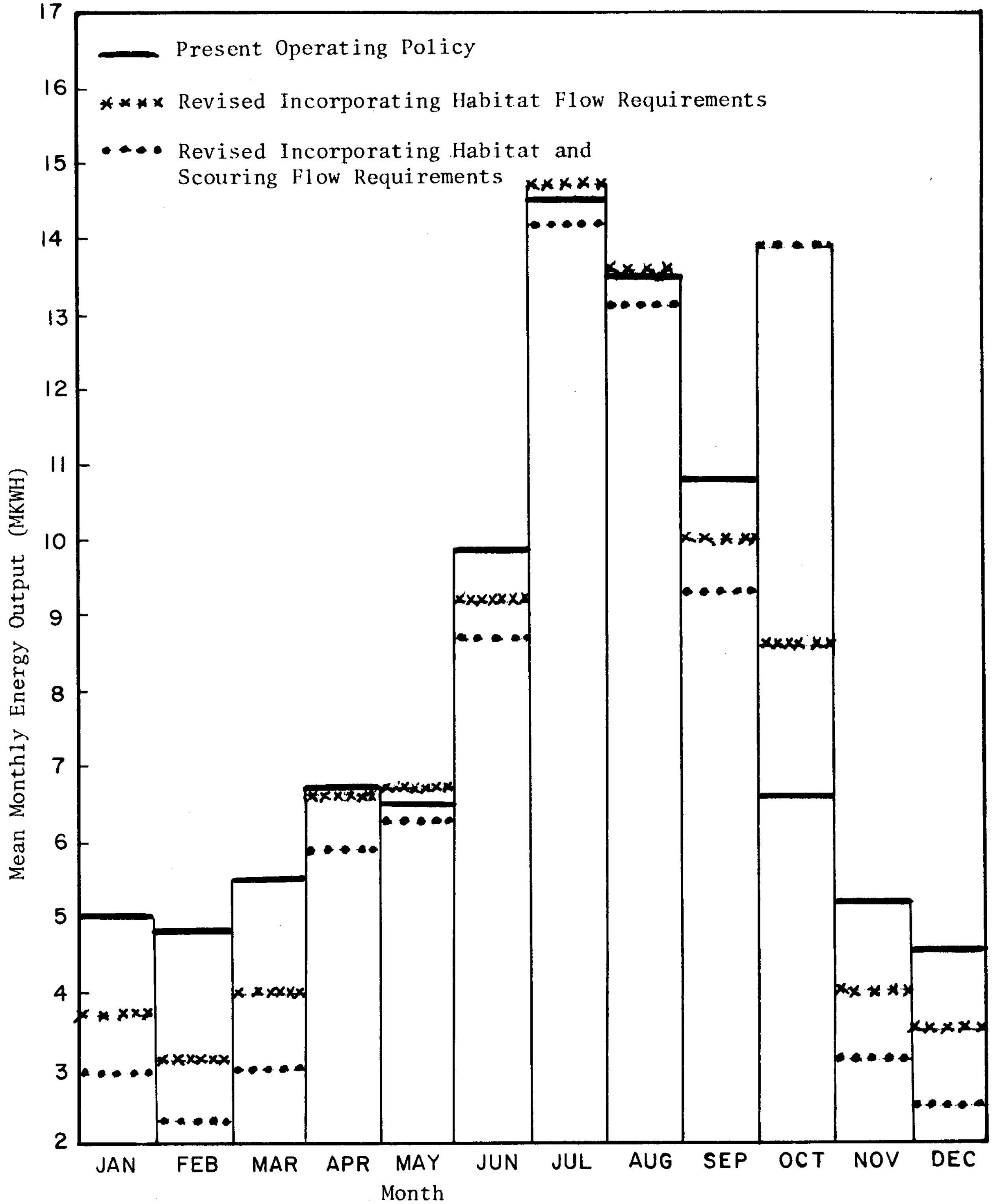


Figure 6. Simulated Mean Monthly Energy Output of Kingsley Hydro (1942 to 1980).

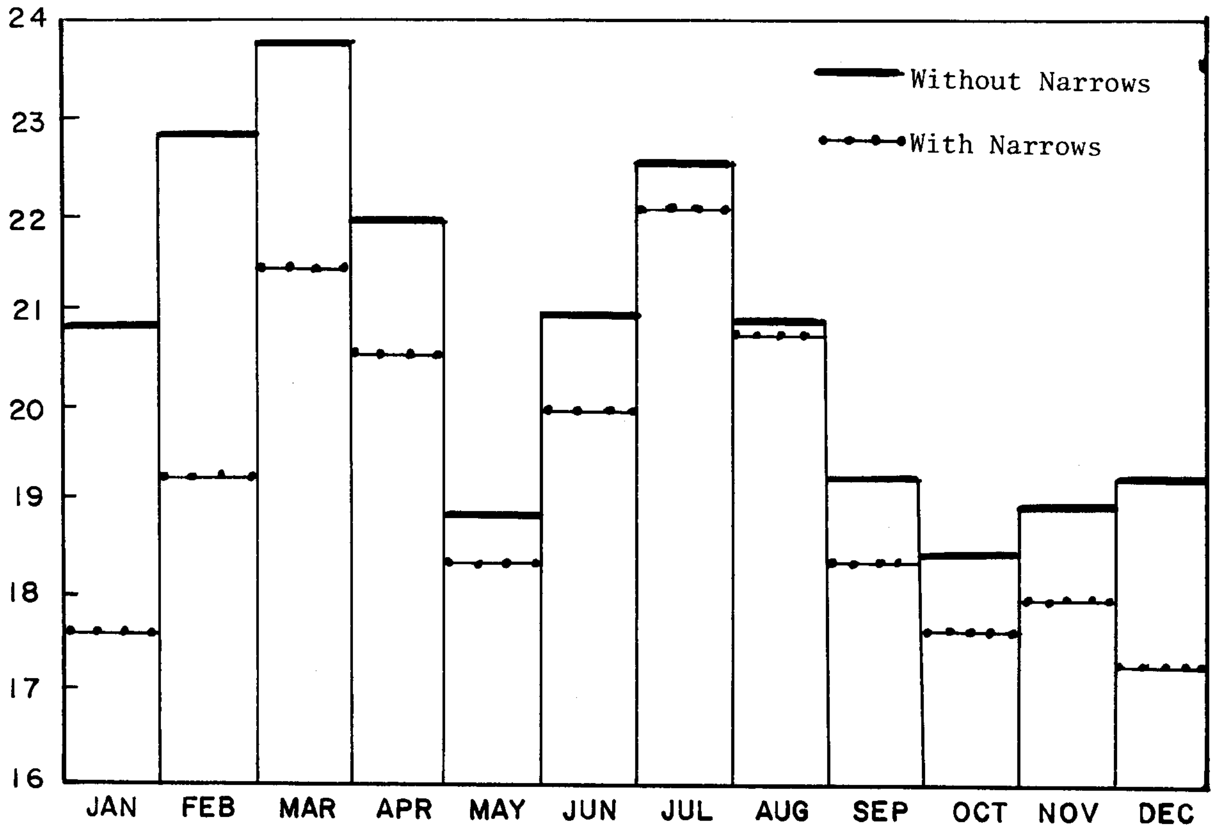


Figure 7. Mean Monthly Energy Output of Tri-county Hydo - Present Operation Rule 'Without' and 'With' Narrows Project.

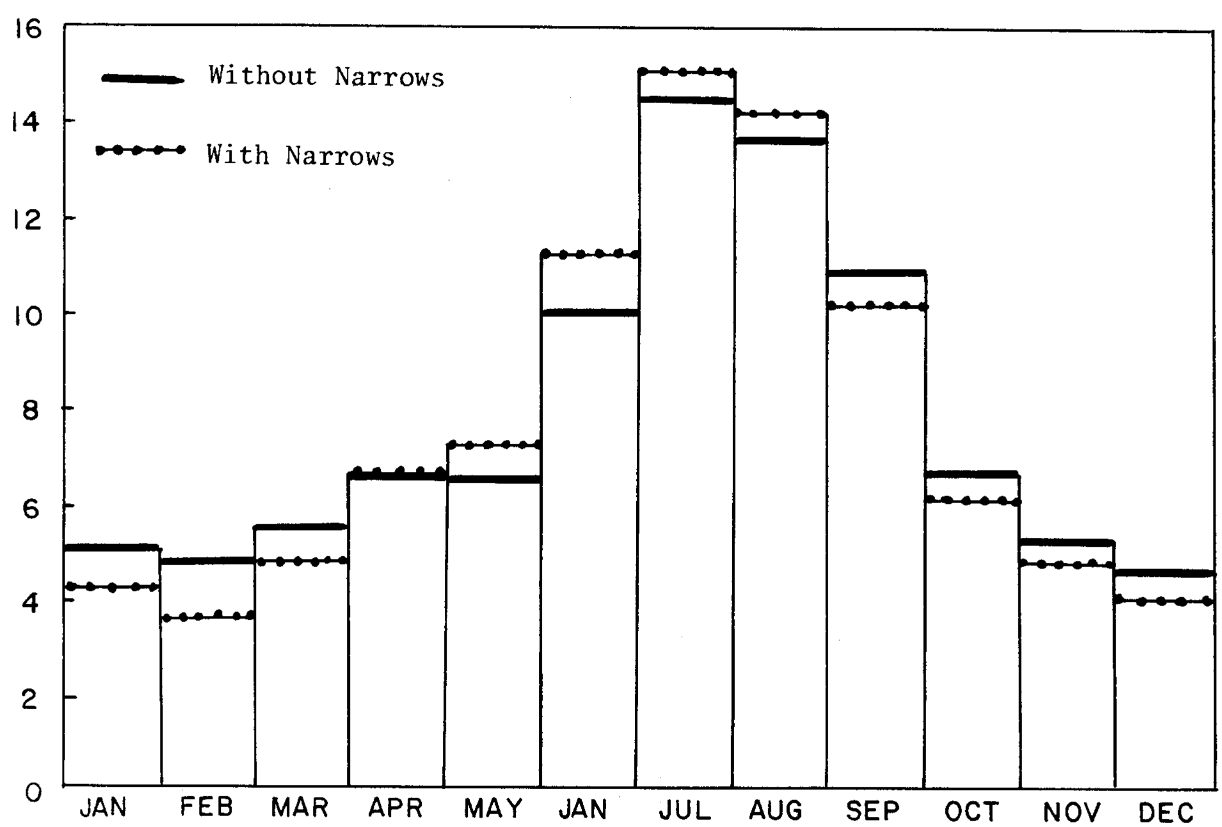


Figure 8. Mean Monthly Energy Output of Kingsley Hydro - Present Operation Rule 'Without' and 'With' Narrows Project.

APPENDIX I

ADJUSTED INFLOWS, GAINS, LOSSES AND IRRIGATION DIVERSIONS 1942-1980

Table 1. NORTH PLATTE FLOWS AT LEWELLEN --KAF

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	65.9	77.3	84.9	59.7	276.3	91.8	24.2	22.0	56.7	116.0	97.2	93.6	1065.6
1943	94.1	86.8	91.8	137.6	72.8	50.9	27.1	25.5	48.2	99.4	94.1	80.5	908.8
1944	80.7	83.3	95.3	83.2	110.4	61.2	61.0	38.9	57.9	106.6	100.5	83.4	962.4
1945	76.7	78.7	80.4	89.0	117.7	139.5	41.5	77.6	76.8	131.6	98.0	74.7	1082.2
1946	83.4	73.0	103.2	73.7	65.2	44.5	21.6	22.0	76.7	119.4	106.8	81.7	871.2
1947	77.2	72.1	85.0	123.4	44.5	128.4	127.1	36.4	72.1	117.2	107.0	103.2	1093.6
1948	75.7	94.0	129.4	115.5	43.6	76.3	67.4	55.7	68.5	118.9	102.7	79.8	1027.5
1949	53.6	93.6	116.5	86.9	104.2	85.2	39.9	43.3	87.5	123.8	102.8	95.3	1032.6
1950	82.6	85.3	93.2	65.7	52.6	62.1	50.1	64.5	108.5	126.1	104.8	100.8	996.3
1951	78.1	77.9	78.7	70.3	57.7	90.3	75.4	51.7	154.2	122.8	111.3	81.8	1050.2
1952	81.6	80.6	103.1	94.3	252.9	291.7	193.9	39.8	71.1	123.7	96.9	106.8	1536.4
1953	91.3	80.7	110.7	81.6	53.1	52.6	33.6	81.4	55.1	94.4	94.4	84.8	913.7
1954	76.2	71.3	76.6	69.3	47.4	23.1	8.9	19.7	21.9	65.7	71.7	70.7	622.5
1955	59.4	58.8	74.5	64.4	43.2	26.6	34.8	16.9	30.0	73.8	70.8	69.7	622.9
1956	67.8	58.6	62.4	46.4	29.3	17.6	50.5	12.9	19.0	59.2	77.0	65.4	566.1
1957	48.4	62.9	62.8	65.2	67.5	78.7	33.3	42.1	63.7	82.8	76.6	75.8	761.8
1958	62.5	61.5	73.9	79.8	57.2	95.4	89.2	29.8	59.0	98.2	87.1	82.7	876.3
1959	72.9	68.8	75.0	70.7	65.4	30.5	19.6	10.9	43.0	106.6	81.0	77.3	721.7
1960	62.6	66.4	85.3	61.4	46.9	18.9	5.0	9.6	24.2	68.8	69.5	61.1	579.7
1961	61.8	60.9	67.7	58.5	65.4	25.1	4.9	19.0	29.0	78.7	73.1	65.9	610.0
1962	54.2	51.7	65.5	54.6	50.4	103.8	92.8	36.2	55.5	99.2	81.3	70.8	816.0
1963	61.7	81.8	87.0	69.8	34.1	69.8	7.8	17.0	66.8	108.2	89.3	73.0	766.3
1964	69.1	68.7	68.9	69.9	33.6	43.4	10.2	12.3	32.7	93.6	78.7	66.5	647.6
1965	74.1	61.7	53.9	56.2	51.0	98.4	98.0	44.8	94.2	124.8	85.7	89.0	931.8
1966	68.6	67.5	81.3	61.6	38.7	57.2	32.0	58.1	99.7	108.9	94.4	72.1	840.1
1967	68.4	60.6	64.7	48.9	49.7	98.8	64.3	29.2	70.2	93.2	85.0	64.3	797.3
1968	65.1	69.0	59.0	71.0	127.9	49.4	29.7	77.5	78.8	99.6	89.6	70.6	887.2
1969	64.6	66.1	69.9	65.4	74.4	56.5	19.4	23.0	56.7	124.9	107.7	83.9	812.5
1970	66.8	71.7	76.9	74.9	185.6	184.0	45.8	34.3	72.0	119.0	104.3	75.7	1111.0
1971	74.0	67.6	96.2	88.1	272.2	416.6	323.2	287.3	245.4	113.7	95.9	80.7	2160.9
1972	67.0	61.2	88.6	125.7	128.3	250.4	57.5	57.2	91.5	99.1	103.1	81.5	1211.1
1973	81.0	68.4	94.8	109.5	379.5	444.7	307.0	296.7	284.5	142.6	110.0	94.2	2412.9
1974	111.6	89.6	82.9	271.0	328.4	293.0	276.1	53.4	94.9	113.8	90.9	91.3	1896.9
1975	86.1	77.2	72.3	76.7	81.2	100.4	27.9	38.0	64.8	101.3	95.0	93.5	914.4
1976	91.6	81.4	81.7	72.1	144.7	140.4	14.5	45.2	70.2	100.9	86.1	83.0	1011.8
1977	65.6	73.4	73.7	91.4	62.9	48.1	18.4	48.8	61.4	88.5	76.5	69.9	778.6
1978	69.4	69.2	88.0	68.2	99.4	84.8	59.6	56.6	73.8	101.9	83.4	93.6	947.9
1979	66.5	100.4	92.0	71.1	63.0	59.1	51.2	67.8	91.2	97.2	80.4	93.0	932.9
1980	74.9	97.4	85.3	129.6	228.1	135.7	40.7	43.8	71.2	97.5	83.4	78.2	1165.8
AVER.	72.6	73.8	82.9	83.9	105.3	108.3	66.3	52.5	76.9	104.1	90.9	81.0	998.6
STD.D	12.3	11.7	16.0	38.0	88.6	101.0	78.3	59.6	51.6	18.8	12.0	11.4	394.9

Appendix I.

Table 2. SOUTH PLATTE FLOWS AT JULESBURG --KAF

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	16.4	16.0	84.2	143.8	502.8	230.5	36.8	2.6	9.1	25.9	23.9	43.6	1135.6
1943	63.7	44.3	56.0	27.6	30.3	50.8	3.5	1.2	1.3	5.1	6.1	12.8	302.7
1944	16.7	20.4	18.6	26.8	107.1	5.0	10.8	1.9	1.8	4.3	11.7	20.6	245.7
1945	21.0	18.9	15.8	11.4	4.8	30.3	5.9	43.3	4.7	27.3	23.3	35.0	241.7
1946	59.0	42.0	33.4	14.7	3.9	1.8	1.1	1.4	5.6	6.8	16.9	19.3	205.9
1947	18.9	19.9	28.4	20.8	10.2	248.0	142.0	6.2	8.3	18.9	31.4	33.6	586.6
1948	33.4	71.6	107.7	50.1	17.6	23.4	11.6	2.5	2.2	7.5	19.2	20.2	367.0
1949	26.0	46.4	27.6	20.7	13.5	388.1	40.2	6.1	15.7	22.3	23.6	20.1	650.3
1950	21.2	25.7	35.3	17.1	3.9	2.3	3.4	7.1	7.1	8.0	17.5	19.5	168.1
1951	18.1	16.9	12.5	8.2	9.0	16.6	8.0	21.8	18.2	19.8	20.9	20.5	190.5
1952	26.9	31.3	45.8	37.4	62.2	50.0	2.5	2.6	3.5	6.7	12.3	18.5	299.7
1953	22.8	17.1	19.3	23.7	10.9	2.7	2.6	2.2	1.6	5.4	11.6	18.0	137.9
1954	16.7	13.5	14.4	6.1	3.4	1.4	.9	.7	1.2	1.9	3.0	5.7	68.9
1955	6.1	11.7	13.3	4.6	4.7	10.7	1.3	1.1	1.0	2.7	5.5	6.3	69.0
1956	7.4	10.6	7.8	2.5	1.8	2.8	1.3	1.8	.9	1.9	10.7	6.4	55.9
1957	5.4	7.2	4.0	11.8	161.7	131.1	20.1	7.0	8.7	15.6	21.7	28.5	422.8
1958	55.9	42.4	47.6	58.1	250.7	93.0	23.9	2.1	3.7	11.3	17.9	19.0	625.6
1959	16.2	16.2	25.4	59.9	52.7	14.4	1.5	1.2	1.2	9.0	11.2	17.0	225.9
1960	16.3	23.0	46.2	36.1	18.3	15.4	2.2	.9	.8	4.1	5.4	12.3	181.0
1961	14.3	12.7	13.3	15.4	42.0	178.4	7.9	4.8	11.5	75.5	83.9	78.3	538.0
1962	76.2	82.9	76.7	34.3	13.5	46.0	15.4	19.1	4.7	20.2	19.8	18.1	426.9
1963	17.1	33.3	44.4	7.3	2.7	2.7	2.0	1.5	7.0	12.1	12.4	13.2	155.7
1964	15.3	14.3	11.7	11.5	3.6	3.0	2.6	.9	.6	1.5	2.9	4.5	72.4
1965	5.4	8.6	7.1	3.5	2.8	257.5	59.4	51.3	22.7	70.0	57.3	56.6	602.2
1966	46.2	56.4	36.7	15.5	3.5	6.4	4.5	2.7	8.9	8.4	10.9	13.8	213.9
1967	14.2	12.3	7.5	2.2	4.7	89.2	84.7	2.4	2.0	6.0	10.0	15.8	251.0
1968	23.3	18.0	20.0	12.8	5.8	5.8	1.8	58.0	10.5	7.8	11.3	14.3	189.4
1969	17.6	14.2	14.4	6.3	126.4	207.2	44.3	2.5	2.2	10.3	46.2	61.0	552.6
1970	95.9	66.4	37.5	121.5	102.8	218.6	35.3	3.2	11.6	26.0	34.3	37.7	790.8
1971	46.6	57.9	54.9	50.8	197.6	53.1	4.1	1.3	18.1	21.2	24.7	25.8	556.1
1972	24.2	36.9	26.9	7.5	5.9	11.4	2.0	2.4	8.4	5.9	9.5	19.8	160.8
1973	40.9	53.1	54.0	94.0	527.4	217.6	20.9	7.3	48.3	86.1	57.5	39.9	1247.0
1974	76.6	60.6	62.4	69.0	9.0	9.7	1.7	1.7	11.9	8.2	7.9	19.3	338.0
1975	28.9	31.3	15.1	31.1	14.5	81.6	4.8	4.8	7.9	8.4	11.8	26.6	266.8
1976	35.5	25.9	30.9	8.8	5.7	3.0	1.4	1.1	2.8	4.6	3.8	7.4	130.9
1977	9.9	12.8	25.0	20.0	10.4	8.0	2.4	3.3	2.8	5.9	5.1	6.4	112.0
1978	7.9	10.1	11.8	4.3	3.6	13.6	1.9	1.0	.8	5.4	5.0	6.3	71.7
1979	9.5	29.5	14.9	17.6	44.2	260.8	19.7	42.6	19.3	16.9	32.1	50.5	557.6
1980	69.5	97.1	89.2	129.6	610.1	254.0	8.4	2.2	10.4	6.8	17.5	29.5	1324.3
AVER.	29.3	31.5	33.3	31.9	77.1	83.2	16.5	8.4	7.9	15.7	19.4	23.6	377.9
STD.D	22.8	22.4	24.9	35.8	149.6	104.8	27.6	14.6	8.9	19.5	17.0	16.5	317.4

Appendix I

Table 3. RIVER GAINS AT NORTH PLATTE --G1(KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	12.2	3.2	14.7	25.2	18.4	13.9	3.5	8.4	37.3	9.7	11.8	17.0	175.3
1943	8.0	11.4	13.8	16.4	15.5	18.1	-4.0	-1.3	14.6	12.9	11.6	8.1	125.1
1944	10.5	11.9	17.8	16.8	14.3	12.3	2.0	13.6	19.1	18.0	15.1	25.3	176.7
1945	15.2	13.0	11.6	14.0	11.6	24.5	11.1	31.7	21.1	20.9	13.0	10.6	198.3
1946	12.5	11.8	17.1	7.4	19.4	10.9	4.1	21.3	24.4	22.5	18.4	15.1	184.9
1947	10.5	13.4	15.4	13.2	10.1	19.5	12.3	2.8	26.3	4.2	15.6	14.1	157.4
1948	10.3	3.5	14.2	5.6	17.2	21.4	9.0	24.6	23.5	17.7	16.6	13.1	176.7
1949	-.8	11.3	26.0	25.1	25.1	19.0	-.2	23.7	15.2	19.7	13.6	12.5	190.2
1950	7.8	12.4	14.8	10.4	20.8	11.5	23.5	25.6	23.2	16.8	11.4	13.6	191.8
1951	10.1	13.4	11.9	13.4	35.5	35.5	21.8	17.6	21.8	18.3	14.8	9.1	223.2
1952	7.2	19.2	21.1	19.8	23.3	2.2	12.9	22.2	17.5	20.6	14.6	13.1	193.7
1953	13.4	12.2	17.3	14.3	15.9	11.2	10.9	23.3	20.1	17.3	16.5	15.7	188.1
1954	10.6	12.7	14.4	10.7	18.9	10.4	6.8	23.0	15.5	20.2	14.2	11.8	169.2
1955	11.5	7.5	16.7	10.0	17.1	17.0	1.4	14.1	12.6	15.5	11.5	11.8	146.7
1956	10.7	11.9	12.7	11.8	12.2	14.0	13.3	23.2	10.7	19.7	15.8	13.4	169.4
1957	9.5	12.3	12.4	17.0	29.6	21.4	5.6	23.6	19.5	19.0	13.6	10.6	194.1
1958	12.4	10.3	17.9	20.5	21.9	15.9	27.9	19.1	19.9	13.5	12.7	9.8	201.8
1959	8.5	11.3	16.0	13.4	16.0	8.1	8.7	21.1	15.6	21.4	18.0	13.0	171.1
1960	10.7	14.1	24.5	18.2	19.2	13.2	-.3	16.7	15.4	13.4	13.1	12.4	170.6
1961	10.9	10.2	16.4	16.0	22.4	11.9	-2.8	18.0	18.7	15.2	12.4	12.2	161.5
1962	10.9	12.8	16.4	13.9	26.3	41.1	26.3	16.3	22.6	16.6	13.6	11.8	228.6
1963	11.4	16.1	14.8	10.0	17.4	6.7	2.8	24.0	21.0	12.9	12.9	12.4	162.4
1964	10.5	8.6	15.5	17.7	11.3	16.9	5.5	16.2	14.5	17.3	14.9	12.5	161.4
1965	12.8	12.7	12.1	12.7	13.8	28.7	18.3	15.2	28.5	16.4	15.2	17.4	203.8
1966	11.5	11.8	21.3	11.0	10.4	36.1	29.9	6.1	31.3	17.6	15.0	17.1	219.1
1967	12.4	10.4	11.9	12.6	20.3	23.2	18.8	14.9	23.5	13.3	19.3	11.9	192.5
1968	11.4	13.6	12.3	16.3	12.2	10.7	9.7	23.1	18.7	18.0	16.6	10.4	173.0
1969	10.9	10.8	17.5	11.5	16.3	19.6	11.4	15.8	20.5	18.4	15.0	12.6	180.3
1970	8.8	12.4	13.8	15.4	13.3	9.5	10.0	21.5	17.7	12.3	14.1	12.8	161.6
1971	9.8	16.6	17.1	8.6	-5.1	16.7	18.3	15.1	19.6	14.3	17.5	18.8	167.3
1972	11.0	12.0	9.7	16.1	20.5	14.9	21.7	14.2	24.7	14.7	15.8	13.1	188.4
1973	13.2	12.5	16.2	6.6	-15.0	24.5	22.9	11.5	28.2	22.0	18.9	14.9	176.4
1974	21.7	13.5	11.2	26.4	25.3	12.3	7.4	23.8	22.8	12.8	11.5	11.5	200.2
1975	11.9	11.3	13.0	13.8	15.8	20.2	-.6	17.1	24.7	12.9	12.0	17.5	169.6
1976	12.8	15.5	13.6	16.8	16.1	3.9	12.7	18.1	31.7	16.1	13.9	13.1	184.3
1977	10.4	12.5	20.6	23.2	17.9	5.7	12.9	27.3	16.0	13.6	13.9	11.4	185.4
1978	10.4	10.3	18.0	11.9	13.2	1.0	12.3	20.3	16.5	7.8	15.6	12.9	150.2
1979	9.2	9.5	21.9	14.5	10.8	16.4	12.4	16.5	16.4	15.0	12.9	15.3	170.8
1980	13.2	14.0	11.6	12.4	21.3	14.0	8.0	24.8	18.6	8.4	13.1	11.3	170.7
AVER.	10.9	11.9	15.8	14.6	16.6	16.3	11.0	18.3	20.8	15.8	14.5	13.4	179.8
STD.D	3.1	2.9	3.7	4.9	8.4	8.8	8.7	6.7	5.6	4.1	2.1	3.1	20.7

Appendix I

Table 4. RIVER GAINS AT SOUTH PLATTE --G2(KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	14.0	8.0	-7.6	-45.4	3.9	-27.6	35.7	13.4	14.7	5.8	9.4	2.1	26.4
1943	-13.6	11.9	-3.5	22.5	3.5	22.3	17.3	10.0	9.3	9.2	12.7	7.4	109.0
1944	8.0	15.5	18.6	12.1	2.5	22.6	14.8	12.2	10.5	13.3	9.4	7.2	146.7
1945	7.2	9.5	11.1	16.6	17.0	18.0	16.3	3.9	17.2	12.5	12.6	-4.0	137.9
1946	1.6	8.2	13.9	17.2	17.2	13.6	6.8	5.8	10.4	13.6	8.0	8.1	124.4
1947	8.1	9.5	7.8	16.2	8.7	-59.5	54.1	17.6	8.4	6.1	9.5	7.7	94.2
1948	5.3	.3	4.0	17.9	11.8	9.9	16.0	9.9	7.3	8.7	8.3	6.2	105.6
1949	1.2	7.9	21.3	21.0	20.8	28.9	47.4	10.5	8.3	10.6	10.0	9.2	197.1
1950	3.8	11.7	10.0	14.6	16.7	11.1	13.9	20.6	14.1	15.0	8.9	10.9	151.3
1951	9.4	11.3	12.8	15.2	35.8	31.6	21.4	16.4	19.9	14.4	12.4	3.2	203.8
1952	9.6	11.3	14.4	15.6	7.4	28.1	11.3	9.3	7.7	13.5	8.3	8.8	145.3
1953	9.7	8.6	14.1	12.8	17.6	11.5	7.5	7.9	7.3	9.7	7.2	10.5	124.4
1954	8.4	12.8	11.5	13.4	16.9	10.8	5.8	7.1	7.2	8.5	8.7	7.1	118.2
1955	8.7	3.6	12.8	12.8	14.4	13.7	9.5	6.4	5.6	8.2	6.8	7.3	109.8
1956	8.1	7.9	12.3	12.2	10.7	12.6	9.9	7.9	6.8	7.1	3.3	9.3	108.1
1957	5.7	8.4	11.0	12.9	-.1	6.3	17.5	11.4	11.2	12.4	9.4	5.4	111.5
1958	-.4	6.2	11.5	11.1	-42.3	61.7	29.2	19.0	13.6	8.9	7.6	8.3	134.4
1959	9.5	9.7	8.6	14.7	16.0	22.4	11.5	7.7	7.5	9.9	7.7	9.0	134.2
1960	5.2	8.8	23.2	18.1	18.7	16.0	10.0	6.4	6.4	6.4	7.0	5.6	131.8
1961	6.3	9.9	12.9	15.0	3.7	11.7	17.0	9.5	2.8	1.1	4.1	-13.5	80.5
1962	-15.4	12.5	6.3	15.8	17.6	25.4	20.3	13.2	10.1	8.7	12.3	8.4	135.2
1963	7.4	15.6	10.9	16.4	15.1	12.7	5.9	7.0	5.0	10.9	9.3	7.1	123.3
1964	9.2	9.3	13.4	14.9	14.8	11.3	9.2	6.5	7.6	8.3	7.8	6.2	118.5
1965	8.3	6.7	9.7	11.5	11.8	-46.2	33.4	21.7	16.0	18.1	11.1	10.0	112.1
1966	6.7	5.7	21.3	16.2	15.6	14.4	12.8	12.8	8.9	10.4	8.4	8.7	141.9
1967	10.7	11.4	12.7	12.3	15.3	-3.8	25.5	14.2	12.0	13.6	11.9	10.0	145.8
1968	8.0	13.9	11.7	16.8	14.9	13.0	8.7	-11.5	19.7	14.3	8.5	7.8	125.8
1969	7.7	12.6	15.8	13.9	-19.3	-32.9	47.6	13.8	12.9	12.7	2.5	.6	87.9
1970	-17.8	13.8	11.1	-21.8	6.7	-18.7	35.3	13.1	7.7	11.1	7.0	2.3	49.8
1971	3.9	11.9	13.0	3.6	1.1	25.1	22.5	12.4	9.0	8.4	11.0	2.3	124.2
1972	8.8	22.6	13.6	11.5	19.6	16.5	14.7	11.2	10.8	12.6	9.3	5.3	156.5
1973	2.7	7.4	10.3	4.6	-44.1	8.1	16.6	16.8	1.8	9.5	10.2	5.8	49.7
1974	-1.2	14.4	13.4	8.8	19.2	16.2	9.7	10.2	6.3	10.8	7.9	3.7	119.4
1975	3.6	7.6	11.0	9.9	17.4	18.5	18.6	12.9	8.9	7.3	3.8	7.8	127.3
1976	3.1	14.5	8.4	15.8	18.0	13.7	9.1	9.8	8.8	7.7	5.2	5.6	119.7
1977	2.1	8.3	11.3	15.7	16.6	26.2	12.6	12.8	10.7	8.7	7.5	7.6	140.1
1978	6.1	7.2	15.0	12.0	14.7	12.9	8.7	8.8	8.7	4.8	3.9	4.8	107.6
1979	.3	-2.6	19.8	11.4	2.4	15.4	35.1	9.2	17.3	8.6	3.2	13.0	133.1
1980	-5.1	2.1	18.6	-2.5	-53.9	10.1	18.6	9.5	3.8	4.8	3.0	3.1	12.1
AVER.	4.2	9.6	12.0	11.1	7.8	10.3	18.9	10.7	9.8	9.9	8.1	6.0	118.6
STD.D	6.9	4.5	5.8	11.8	18.2	21.6	12.2	5.5	4.3	3.4	2.8	4.5	37.7

Table 5. RIVER GAINS ,N.PLATTE TO BRADY --G3(KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	3.9	3.5	28.7	15.6	55.1	6.9	18.9	9.1	25.3	7.7	7.2	-.4	186.5
1943	-2.7	17.5	16.7	7.7	16.8	18.1	10.5	4.6	7.7	6.9	7.5	4.5	115.8
1944	8.5	9.5	15.3	18.4	14.9	10.0	9.0	5.1	7.0	8.6	3.4	1.3	111.0
1945	13.7	12.4	11.3	12.2	12.0	18.3	12.5	7.4	9.4	9.5	10.9	14.4	144.0
1946	7.5	11.9	16.3	10.3	14.7	11.9	1.2	4.3	9.8	21.4	15.9	13.2	138.4
1947	15.0	13.3	13.5	16.4	12.9	.5	24.4	.4	4.1	11.2	12.4	9.0	133.1
1948	10.1	23.0	14.4	7.8	4.9	8.9	.4	14.6	8.0	8.0	5.7	3.2	109.0
1949	13.1	10.9	27.9	23.5	18.3	-32.1	8.9	10.2	12.4	12.1	11.0	9.9	126.1
1950	9.8	12.0	13.9	13.8	15.0	9.1	13.9	14.0	12.3	9.0	10.1	10.7	143.6
1951	4.4	17.8	12.7	13.5	29.4	42.3	18.1	6.8	12.3	9.6	9.6	6.4	182.9
1952	2.8	4.8	16.6	15.5	9.1	1.5	-2.7	2.7	3.0	7.9	6.0	13.3	80.5
1953	19.0	9.1	13.8	10.9	11.3	7.2	-8.3	-2.1	.0	4.8	11.6	9.4	86.7
1954	8.4	15.5	10.9	11.4	12.9	7.6	-1.9	6.4	7.8	7.6	6.7	8.6	101.9
1955	11.5	14.1	14.1	10.2	16.9	12.3	1.7	5.3	9.8	10.2	10.6	11.1	127.8
1956	12.0	10.9	12.5	10.2	11.2	9.4	-10.1	-.2	1.7	6.1	9.6	10.6	83.9
1957	8.1	11.4	13.2	14.7	24.9	18.1	.4	5.1	13.3	11.5	12.2	9.6	142.5
1958	11.4	9.3	23.7	23.7	6.4	10.7	20.8	6.6	11.2	10.8	9.2	14.6	158.4
1959	10.2	8.3	17.4	15.1	15.9	8.7	.3	3.1	7.2	6.5	11.9	14.6	119.2
1960	18.1	20.1	26.2	19.3	17.9	14.5	5.0	1.5	6.3	7.8	9.4	14.0	160.1
1961	15.2	12.4	15.4	14.2	19.6	.3	-1.8	-.5	4.2	3.5	5.6	5.0	93.1
1962	3.5	6.8	7.9	6.1	8.5	20.4	9.2	-1.2	1.9	2.2	4.7	5.4	75.4
1963	11.4	16.0	11.0	7.4	7.8	11.2	-5.8	7.6	11.1	2.8	4.4	6.9	91.8
1964	12.5	11.0	15.6	17.7	12.7	11.4	-.1	7.0	6.3	7.7	5.0	9.1	115.9
1965	9.4	9.5	10.4	10.9	13.4	12.2	22.1	10.7	13.1	13.1	10.0	8.9	143.7
1966	14.2	13.7	30.8	14.2	8.9	10.3	-3.0	7.4	5.7	7.0	3.9	7.7	120.8
1967	8.5	9.3	8.6	7.5	8.7	22.0	12.7	2.0	6.5	7.0	7.6	8.1	108.5
1968	8.8	9.0	9.0	10.2	9.1	10.0	4.2	10.9	11.4	8.0	7.9	7.5	106.0
1969	8.9	8.1	12.4	9.0	14.2	4.5	10.1	3.7	7.3	6.1	9.8	9.2	103.3
1970	14.2	12.6	14.1	15.1	18.1	4.7	17.6	5.8	5.6	5.0	6.9	5.5	125.2
1971	12.0	8.5	17.0	20.3	73.3	93.2	25.1	3.2	8.8	11.3	12.1	14.5	299.3
1972	-2.6	13.4	13.3	17.2	23.3	9.1	5.9	13.8	6.5	6.1	10.5	17.1	133.6
1973	21.5	16.9	18.0	13.0	30.7	55.7	9.1	6.6	10.7	30.6	23.2	7.4	243.4
1974	3.2	16.4	23.5	34.0	20.3	11.4	-1.2	.9	6.2	8.3	8.6	9.4	141.0
1975	8.9	8.1	9.6	10.6	10.0	17.3	1.9	3.1	7.7	6.5	6.8	8.4	98.9
1976	8.8	11.3	10.9	11.1	11.0	10.1	1.6	-2.9	7.8	7.5	7.1	8.1	92.4
1977	6.5	8.5	14.6	21.4	17.1	12.3	12.6	10.8	6.0	6.5	8.3	5.5	130.1
1978	-1.7	3.5	14.1	11.5	11.9	5.9	15.1	7.2	1.0	7.9	7.9	7.3	91.6
1979	6.5	7.7	17.6	12.1	10.3	6.2	20.5	11.0	2.3	7.4	9.5	11.0	122.1
1980	1.1	11.1	15.9	30.4	76.8	42.4	16.5	19.7	3.6	8.7	6.3	6.8	239.3
AVER.	9.1	11.6	15.6	14.5	18.6	14.2	7.6	5.9	7.8	8.7	8.9	8.9	131.5
STD.D	5.6	4.1	5.5	6.1	15.9	18.6	9.4	5.0	4.5	4.8	3.6	3.8	46.5

Appendix I

Table 6. RIVER GAINS, BRADY TO OVERTON --G4(KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	10.1	10.7	6.5	.1	11.6	44.4	21.0	5.6	5.0	6.4	9.6	14.6	145.6
1943	11.0	10.7	17.5	25.9	5.8	22.7	-.8	-1.6	15.6	5.6	1.3	4.0	117.7
1944	9.2	.4	1.5	20.4	21.0	13.3	14.6	.1	5.7	4.8	.3	10.3	101.6
1945	9.5	15.0	17.4	10.9	15.4	57.0	9.9	.4	12.5	7.3	1.5	-2.3	154.5
1946	8.1	8.6	18.6	10.9	20.5	12.2	1.4	3.3	20.7	54.2	19.7	15.3	193.5
1947	12.6	8.9	22.1	22.3	13.7	63.5	51.6	4.0	17.2	22.1	16.6	20.0	274.6
1948	13.0	4.6	21.6	7.0	3.6	29.8	5.0	8.4	.7	4.0	18.0	3.7	119.4
1949	3.7	-7.1	31.9	32.0	29.3	-17.0	41.2	13.5	9.8	-2.2	20.9	20.3	176.3
1950	10.4	25.7	18.1	15.7	20.7	7.1	13.0	9.2	8.1	2.7	10.2	10.7	151.6
1951	7.7	17.7	16.5	9.5	28.5	50.5	24.2	18.1	54.1	3.4	5.9	-.8	235.3
1952	21.1	12.0	16.1	19.8	15.3	-5.5	1.5	3.6	-.9	-1.0	-3.9	-2.3	75.8
1953	13.8	6.3	7.2	8.0	13.6	6.2	-.2	5.4	3.9	6.7	3.8	9.1	83.8
1954	2.4	7.9	2.2	5.9	15.3	3.2	-8.3	10.4	3.7	4.1	5.2	3.5	55.5
1955	-3.7	11.6	16.2	12.0	5.8	10.8	.1	4.5	.5	2.4	4.5	1.2	65.9
1956	3.0	1.2	3.1	12.5	10.3	4.8	.3	2.1	-.1	4.4	4.2	4.1	49.9
1957	.8	10.2	2.0	15.4	7.9	33.2	12.0	7.3	9.0	.9	1.3	2.4	102.4
1958	1.8	-.5	16.9	27.5	-5.0	31.7	25.6	12.1	7.5	4.3	3.4	5.5	130.8
1959	2.3	6.7	23.8	18.1	14.4	9.1	12.7	9.3	2.9	7.1	7.5	7.0	120.9
1960	4.2	9.6	35.8	17.3	22.1	27.3	6.9	10.5	3.7	4.3	3.8	3.9	149.4
1961	6.9	7.7	9.0	14.7	25.9	20.9	7.3	16.9	5.9	-11.7	-5.8	.0	97.7
1962	2.7	15.4	31.3	15.9	17.8	58.7	23.7	16.0	10.6	3.7	4.0	6.9	206.7
1963	2.7	18.6	10.2	3.2	8.9	15.6	-.7	6.4	10.2	4.5	2.6	10.0	92.2
1964	11.2	8.0	12.1	16.8	13.0	11.1	2.7	7.7	4.1	4.4	4.8	5.6	101.5
1965	6.0	14.2	12.2	14.9	24.4	7.2	39.1	13.2	17.2	22.4	7.9	13.0	191.7
1966	7.0	22.3	10.2	20.6	12.8	11.1	5.3	13.9	3.9	-.8	-.4	.7	106.6
1967	4.0	2.7	2.7	9.3	8.8	48.7	37.2	21.7	7.7	6.7	9.7	6.3	165.5
1968	14.9	7.2	11.2	15.0	18.6	2.9	9.2	5.0	5.7	1.6	5.0	14.3	110.6
1969	17.0	15.3	25.2	11.5	12.0	-24.3	41.6	10.2	8.9	6.1	2.4	6.7	132.6
1970	2.7	17.7	20.1	22.6	16.1	-20.6	31.1	10.6	9.8	15.8	13.6	17.6	157.1
1971	26.9	19.6	24.7	5.8	-39.9	81.1	37.7	16.8	2.1	9.8	21.8	26.3	232.7
1972	44.2	26.0	30.0	28.0	16.4	3.2	-3.3	11.3	11.5	18.6	25.0	14.1	225.0
1973	14.0	22.2	15.3	26.5	-40.9	111.0	26.1	-1.8	26.2	50.8	30.9	46.0	326.3
1974	30.1	49.9	26.8	38.6	38.8	20.0	1.8	16.3	9.4	4.7	13.1	12.1	261.6
1975	18.1	17.1	16.9	18.0	11.4	41.8	14.3	14.5	10.4	12.2	23.1	27.5	225.3
1976	30.6	22.5	25.7	31.9	23.2	4.7	3.8	-1.5	5.8	10.8	15.3	22.9	195.7
1977	17.0	19.0	22.5	51.6	55.5	23.4	-5.6	11.7	5.3	13.2	16.5	21.9	252.0
1978	6.1	5.7	28.2	34.8	25.1	15.6	-7.9	20.3	11.7	12.6	17.5	12.4	182.1
1979	6.1	10.7	33.5	17.1	23.5	6.3	48.0	25.2	16.9	7.8	9.6	26.0	230.7
1980	33.6	23.5	40.8	19.1	-51.2	43.3	-10.7	-3.3	11.0	11.6	12.1	10.2	140.0
AVER.	11.4	13.0	18.0	18.1	12.6	22.7	13.7	9.2	9.6	8.9	9.3	11.0	157.4
STD.D	10.2	9.8	10.0	10.3	19.5	27.4	16.9	6.9	9.4	12.1	8.5	10.0	66.1

Appendix I

Table 7. RIVER GAINS , BIRDWOOD CREEK----GB(KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	10.0	10.4	10.3	11.5	11.7	9.5	8.4	8.1	9.3	9.0	8.7	9.4	116.3
1943	9.0	9.3	9.0	9.6	9.5	8.0	7.7	6.8	7.0	8.7	8.4	9.5	102.5
1944	9.1	9.6	10.4	10.1	9.4	8.8	8.5	6.5	6.7	7.7	9.1	9.1	105.0
1945	10.7	8.1	9.5	8.9	9.3	9.3	8.6	8.9	8.3	9.2	9.0	10.0	109.8
1946	9.2	8.6	10.2	9.8	10.0	8.2	7.7	7.0	8.7	10.4	10.0	9.4	109.2
1947	9.7	8.6	9.4	9.6	9.8	9.9	8.0	6.6	8.4	8.7	9.2	10.3	108.2
1948	9.4	9.2	10.8	9.2	8.0	9.1	7.6	8.5	7.8	8.6	9.2	10.0	107.4
1949	9.3	9.7	12.2	11.5	10.9	9.6	8.6	7.3	8.1	9.2	9.5	10.4	116.3
1950	9.8	9.9	10.0	10.1	10.3	7.2	7.2	8.8	8.5	9.1	9.7	10.4	111.0
1951	9.8	9.4	10.4	10.0	11.4	10.7	10.1	8.7	9.0	9.3	9.8	9.6	118.2
1952	10.4	10.2	10.8	10.1	10.0	7.0	6.2	8.1	7.1	8.6	8.1	10.0	106.6
1953	10.4	9.8	10.5	9.5	9.2	7.2	6.6	6.9	6.5	8.9	10.2	10.1	105.8
1954	9.7	9.1	10.3	9.3	8.5	7.0	6.4	7.7	7.7	9.0	8.8	10.2	103.7
1955	9.5	9.9	11.2	9.5	9.4	8.0	6.9	6.4	6.8	9.2	9.6	10.2	106.6
1956	10.3	10.0	10.6	10.0	9.0	8.5	8.0	8.3	7.1	9.0	10.1	10.3	111.2
1957	8.9	9.9	11.0	10.9	11.4	9.1	7.6	8.1	8.6	9.9	9.5	10.4	115.3
1958	10.7	9.3	11.0	10.2	11.3	9.6	9.6	8.6	8.7	9.2	9.4	9.8	117.4
1959	10.1	9.7	10.5	9.6	10.3	7.9	7.4	7.3	7.6	9.1	9.8	9.9	109.2
1960	10.6	9.8	11.8	9.3	10.3	8.0	7.7	6.4	7.3	8.5	8.8	10.4	108.9
1961	10.2	9.3	11.2	10.5	10.7	8.2	6.6	7.0	7.9	9.1	9.3	9.5	109.5
1962	9.9	8.9	11.2	9.6	10.2	9.8	10.3	7.7	8.9	9.5	9.2	9.8	115.0
1963	9.4	10.4	10.8	10.1	9.4	8.0	7.0	7.3	9.2	8.8	8.9	9.6	108.9
1964	10.5	10.1	11.0	10.2	9.4	8.3	7.2	7.3	7.6	8.5	9.2	10.1	109.4
1965	10.4	9.6	11.0	10.2	9.5	9.0	8.6	7.8	8.6	9.9	9.5	10.0	114.1
1966	10.3	9.6	10.9	9.9	9.4	7.9	8.2	8.9	8.7	9.0	9.4	10.3	112.5
1967	10.1	9.5	11.0	9.9	10.0	10.1	9.5	7.5	7.8	9.0	9.4	10.2	114.0
1968	10.4	10.2	10.8	10.4	10.1	7.5	6.7	7.0	7.1	8.6	9.1	9.4	107.3
1969	10.1	9.5	10.4	9.7	8.8	7.9	7.7	6.9	7.4	9.9	9.5	9.9	107.7
1970	9.9	9.2	10.6	9.9	9.7	8.1	6.6	6.6	7.8	8.8	9.5	9.8	106.5
1971	9.2	8.6	10.5	10.5	10.5	9.5	8.5	7.5	8.5	9.6	9.5	9.8	112.2
1972	9.6	9.4	10.1	10.0	9.2	7.9	8.2	7.4	7.7	9.6	10.5	9.7	109.3
1973	10.1	9.4	10.3	9.9	10.0	8.2	7.8	7.1	8.6	10.3	9.7	10.0	111.4
1974	9.3	9.2	10.0	9.7	10.0	9.1	6.8	7.3	7.9	9.2	9.7	10.1	108.3
1975	9.7	9.0	9.9	9.6	9.0	8.4	8.1	7.4	6.9	9.0	8.6	10.2	105.8
1976	9.9	9.5	10.0	9.9	10.3	7.1	7.3	8.1	7.8	8.6	9.5	9.8	107.8
1977	9.8	9.2	10.6	10.7	10.2	8.8	8.3	8.2	8.4	9.3	8.9	9.9	112.3
1978	9.7	9.3	10.6	10.0	9.7	7.8	7.2	7.4	7.1	8.3	9.6	9.4	106.1
1979	10.3	8.6	10.7	9.8	10.6	8.0	8.3	7.1	7.8	8.2	9.0	8.6	107.0
1980	8.9	8.4	9.8	9.8	9.2	6.9	6.0	6.7	7.3	8.3	8.6	9.0	98.9
AVER.	9.9	9.4	10.5	10.0	9.9	8.4	7.8	7.5	7.9	9.0	9.3	9.9	109.6
STD.D	.5	.5	.6	.5	.8	1.0	1.0	.7	.7	.6	.5	.4	4.2

Appendix I

Table 8. LOSS AT LAKE MCCONAUGHY---L1(KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	1.6	-6.9	-3.7	-4.7	-38.1	-11.1	-20.9	1.8	-16.0	-8.4	-19.2	-10.1	-135.7
1943	-19.2	-8.6	-16.5	-12.9	-3.2	-.3	1.9	9.0	-12.9	-7.0	-4.4	2.3	-71.8
1944	-9.7	3.0	2.9	-4.3	-1.0	-4.5	-.9	-2.7	-8.9	-8.5	-13.4	-10.1	-58.1
1945	10.5	-5.3	-9.8	2.1	-7.4	-14.2	-1.0	-3.9	-14.4	-17.3	-9.4	-11.5	-81.6
1946	3.6	5.4	5.5	-6.6	1.7	-4.3	-.9	-3.8	-1.2	-8.5	-8.6	-3.6	-21.3
1947	.1	-6.9	-2.2	.5	1.9	-22.3	-8.1	-12.1	-11.9	-17.1	-11.3	-12.5	-101.9
1948	-5.7	-4.5	-7.1	-14.6	-3.4	-10.7	-12.9	-3.5	-19.5	-13.8	-10.5	-6.4	-112.6
1949	.5	6.6	.9	-6.4	14.6	-12.9	-8.0	-12.6	-13.8	-13.7	-12.1	-19.7	-76.6
1950	-14.2	.2	-8.4	-2.0	2.0	-4.9	5.4	7.8	-13.3	-16.9	-13.3	-17.1	-74.7
1951	-5.6	3.1	-1.5	-1.8	4.9	.8	2.9	-.4	-15.4	-13.8	-15.3	-2.5	-44.6
1952	2.8	13.6	6.4	-3.7	-2.4	-7.5	-7.3	-7.9	-9.1	-7.9	-3.4	-7.1	-33.5
1953	13.9	-6.3	2.6	.2	.7	4.9	-1.5	-1.1	-8.6	-6.7	1.3	-1.5	-2.1
1954	-3.9	3.8	1.0	1.5	10.8	3.1	-1.3	8.6	-1.6	-7.8	1.9	2.5	18.6
1955	7.3	2.0	8.3	1.4	10.0	9.9	63.9	-53.2	-1.2	3.3	2.0	5.4	59.1
1956	3.5	8.7	.0	7.6	12.5	3.8	17.9	10.1	1.8	4.5	12.4	12.6	95.4
1957	3.9	9.6	7.5	12.3	13.7	2.6	-1.4	2.9	-3.2	4.4	5.0	3.0	60.3
1958	10.1	3.8	3.3	-3.1	4.2	-7.8	4.3	4.9	-11.3	-8.6	-8.1	1.3	-7.0
1959	-8.7	1.9	11.6	-5.0	5.6	2.0	-3.5	-3.5	-16.0	-4.4	1.2	.1	-18.7
1960	7.0	8.0	5.6	-3.1	5.1	-.3	.2	-10.2	-3.3	-.5	-1.8	7.2	13.9
1961	3.5	9.4	6.0	1.6	9.7	2.6	9.8	1.2	-6.6	-1.5	-3.7	-10.4	21.6
1962	-3.4	2.3	-2.6	-6.3	4.1	-2.8	-6.7	-6.7	-12.0	-11.3	-6.8	-8.7	-60.9
1963	5.3	-2.7	-12.2	-13.5	4.0	-4.5	3.7	-7.4	-1.8	-17.0	-14.1	-14.1	-74.3
1964	2.8	-4.3	.2	8.1	-2.2	8.4	4.1	-11.5	-11.0	-17.2	-3.3	1.8	-24.1
1965	3.1	3.0	10.2	4.3	2.2	-15.2	4.6	-5.3	-12.1	-10.7	-8.0	-19.9	-43.8
1966	-5.8	-3.9	-1.1	-5.3	-5.1	9.6	9.8	-6.6	-12.1	-20.1	-15.2	-5.0	-60.8
1967	7.5	2.1	-3.3	-.8	6.2	8.6	6.2	-11.9	-7.9	-8.0	-9.6	3.6	-7.3
1968	13.3	8.8	.5	-4.0	-2.2	.2	-5.2	-1.5	-17.9	-19.8	-8.5	-19.6	-55.9
1969	13.8	11.5	-5.5	2.3	6.6	1.7	6.1	-8.8	-12.5	-23.4	-14.4	-2.6	-25.2
1970	.2	6.6	-5.6	-3.4	.1	-18.9	-4.4	-19.1	-18.9	-25.9	-15.9	-6.5	-111.7
1971	5.3	8.3	-2.1	-1.5	-22.9	-12.6	-2.8	-.4	-11.5	-9.7	-9.0	-6.1	-65.0
1972	3.6	1.6	-6.2	-1.1	4.7	12.1	-5.1	-8.0	-12.3	-3.0	2.6	-.8	-11.9
1973	-.5	15.2	3.9	-5.1	-34.5	-20.1	-18.8	-10.9	-7.8	-5.7	-2.3	1.5	-85.1
1974	-.2	6.5	-8.7	-11.6	-6.2	-.8	-12.8	-7.7	-11.0	-12.4	-2.4	-9.2	-76.5
1975	-13.1	-28.0	24.8	4.9	13.8	9.9	5.2	-5.4	-15.7	-9.2	-9.8	-10.3	-32.9
1976	-6.6	-2.8	.1	4.7	8.2	3.3	-1.4	-10.7	-11.3	-3.3	-3.9	-5.0	-28.7
1977	-4.6	4.0	14.3	14.1	8.9	3.7	3.4	-2.7	-12.6	-1.2	-.7	-.9	25.7
1978	-9.6	10.1	6.5	-2.8	1.7	9.9	.0	-6.5	-6.5	-8.2	.9	-14.2	-18.7
1979	1.8	-23.8	11.2	5.4	2.3	4.3	-5.6	-6.6	-13.8	-11.9	-2.8	-10.6	-50.1
1980	-5.7	-5.3	4.1	-.2	-14.4	-5.0	-16.9	-15.5	-12.5	-15.4	-8.9	-8.9	-104.6
AVER.	.2	1.3	1.0	-1.4	.4	-2.0	.1	-5.7	-10.5	-9.8	-6.2	-5.5	-38.0
STD.D	7.8	8.9	7.9	6.4	11.5	9.1	13.2	10.3	5.2	7.2	6.8	7.7	50.9

Appendix I

Table 9. LOSS AT SUTHERLAND STORAGE--L2(KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	-11.5	-7.2	-6.9	-6.9	-5.8	-13.6	-27.7	-23.4	-16.4	-15.2	-17.2	-16.3	-168.1
1943	-36.6	-11.3	-12.1	-19.1	-20.2	-21.3	-26.3	-18.3	-17.6	-17.5	-17.9	-16.0	-234.2
1944	-14.0	-12.1	-10.4	-9.4	-17.5	-23.3	-27.4	-24.6	-23.2	-12.7	-7.2	-14.7	-196.5
1945	-18.2	-16.6	-12.0	-12.3	-16.5	-17.5	-24.5	-24.4	-24.8	-15.5	-13.8	-17.6	-213.7
1946	-16.6	-15.5	-15.4	-20.0	-18.1	-23.6	-29.4	-27.9	-21.7	-10.7	-14.6	-21.9	-235.4
1947	-15.8	-15.9	-14.9	-11.1	-17.0	-16.1	-29.1	-21.1	-19.8	-23.3	-15.6	-13.1	-212.8
1948	-13.0	-13.9	-11.2	-10.2	-16.1	-16.4	-26.1	-26.5	-21.3	-22.6	-12.4	-15.8	-205.5
1949	-14.8	-9.5	-11.9	-16.8	-19.9	-18.5	-19.2	-19.2	-16.5	-14.9	-19.4	-15.3	-195.9
1950	-11.0	-8.2	-10.5	-6.2	-14.2	-27.7	-23.6	-26.0	-22.7	-21.1	-15.9	-14.5	-201.6
1951	-16.2	-11.3	-17.5	-16.1	-9.9	-11.5	-22.4	-22.9	-25.5	-22.2	-16.4	-13.2	-205.1
1952	-17.8	-12.9	-10.7	-13.1	-15.9	-14.7	-23.6	-22.8	-17.2	-26.8	-19.2	-14.9	-209.6
1953	-14.0	-13.0	-11.4	-14.8	-14.7	-26.2	-26.7	-21.6	-22.7	-16.3	-15.7	-11.6	-208.7
1954	-11.4	-8.6	-9.8	-13.5	-15.9	-23.5	-28.6	-27.5	-26.5	-10.4	-16.9	-18.1	-210.7
1955	-15.4	-13.2	-15.6	-14.8	-23.7	-25.3	-42.0	-34.8	-27.1	-25.6	-20.8	-20.1	-278.4
1956	-17.3	-13.4	-15.9	-19.3	-19.1	-24.4	-36.1	-19.8	-14.6	-12.6	-15.4	-14.8	-222.7
1957	-14.4	-12.1	-21.9	-14.8	-13.8	-21.3	-21.6	-20.0	-21.5	-14.8	-14.5	-17.0	-207.7
1958	-14.7	-5.1	-7.8	-5.9	-12.1	-19.0	-17.3	-23.1	-21.9	-18.8	-16.6	-11.0	-173.3
1959	-14.5	-8.6	-11.9	-17.8	-13.1	-21.9	-31.7	-22.6	-8.4	-13.3	-22.7	-18.6	-205.1
1960	-17.6	-15.1	-16.9	-13.5	-15.7	-20.5	-35.3	-25.6	-23.4	-9.3	-16.2	-17.1	-226.2
1961	-16.4	-10.4	-13.3	-10.9	-13.9	-22.4	-25.2	-24.0	-15.7	-15.6	-8.6	-7.1	-183.5
1962	-7.3	-3.9	-3.8	-7.2	-4.0	-15.5	-20.5	-25.5	-16.0	-21.4	-14.4	-10.4	-149.9
1963	-12.8	-7.3	-16.5	-2.8	-16.8	-20.4	-21.5	-15.2	-6.3	-18.0	-16.3	-12.9	-166.8
1964	-11.2	-11.7	-12.5	-16.5	-19.5	-25.0	-27.9	-15.7	-12.2	-18.0	-15.9	-12.3	-198.4
1965	-12.1	-11.0	-9.0	-18.6	-6.7	-11.3	-27.3	-18.5	-14.4	-20.4	-11.2	-9.6	-170.1
1966	-7.5	-9.5	-9.6	-14.2	-5.1	-15.0	-24.9	-18.7	-9.4	-9.6	-18.2	-14.7	-156.4
1967	-11.3	-12.8	-13.7	-15.3	-12.5	-22.7	-25.4	-26.6	-19.9	-19.3	-19.8	-13.4	-212.7
1968	-12.7	-15.4	-19.8	-13.3	-10.2	-26.9	-26.4	-14.3	-6.3	-4.0	-20.1	-17.8	-187.2
1969	-13.4	-7.8	-11.2	-13.2	-12.4	-15.3	-20.4	-18.4	-16.0	-9.5	-17.8	-12.4	-167.8
1970	-14.7	-10.8	-7.1	-14.6	-15.1	-16.9	-27.5	-19.3	-15.8	-7.9	-14.5	-19.2	-183.4
1971	-9.1	-11.9	-11.2	-12.8	-21.5	-18.7	-24.1	-24.9	-21.1	-10.4	-15.8	-20.3	-201.8
1972	-17.7	-13.9	-12.3	-3.7	-16.4	-24.7	-23.7	-15.2	-25.4	-21.8	-12.2	-14.5	-201.5
1973	-14.2	-13.8	-13.5	-11.6	-14.0	-19.7	-24.8	-24.0	-13.5	15.4	-37.7	-9.2	-180.6
1974	-12.2	-10.3	-13.2	-13.6	-16.6	-25.2	-26.2	-18.2	-21.0	-14.1	-9.9	-14.2	-194.7
1975	-15.6	-12.2	-11.6	-13.6	-13.0	-18.8	-26.8	-17.6	-14.4	-14.6	-12.0	-12.6	-182.8
1976	-17.2	-11.6	-12.0	-13.2	-13.9	-26.3	-23.0	-2.2	-2.8	-2.2	-9.0	-12.4	-145.8
1977	-10.5	-8.4	-12.4	-11.5	-17.6	-27.8	-22.7	-11.5	-9.0	-13.1	-13.9	-10.4	-168.8
1978	-12.6	-10.8	-11.4	-11.0	-17.2	-29.1	-21.3	-14.7	-10.8	-10.1	-14.2	-13.9	-177.1
1979	-11.5	-16.1	-16.8	-15.6	-15.8	-19.7	-19.0	-18.8	-13.5	-13.1	-17.0	-13.3	-190.2
1980	-13.5	-10.6	-13.4	-13.2	-11.4	-16.6	-20.7	-11.8	-7.1	-11.0	-13.0	-11.5	-153.8
AVER.	-14.3	-11.4	-12.5	-12.9	-14.7	-20.6	-25.6	-20.7	-17.0	-14.4	-15.9	-14.5	-194.5
STD.D	4.6	3.0	3.5	4.1	4.3	4.7	4.8	5.7	6.3	7.4	4.9	3.3	26.6

Appendix I

Table 10. LOSS AT JEFFREY,JOHNSON STORAGES--L3(KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	1.4	-24.0	-36.5	-25.5	-23.1	-15.2	-30.6	-32.2	-23.2	-25.8	-23.5	-23.7	-285.9
1943	-20.8	-19.7	-24.6	-27.2	-22.4	-25.9	-30.1	-33.9	-26.5	-24.8	-22.4	-16.7	-295.0
1944	-17.2	-18.5	-20.5	-18.1	-27.5	-26.0	-32.5	-32.5	-4.2	-20.6	-15.9	-14.4	-247.9
1945	-14.9	-9.9	-17.9	-13.8	-15.1	-17.7	-24.7	-35.0	-23.3	-23.3	-19.9	-26.9	-242.4
1946	-19.1	-16.0	-18.6	-20.3	-19.8	-22.2	-33.0	-33.8	-22.0	-15.5	-18.2	-20.2	-258.7
1947	-22.6	-19.5	-15.9	-15.6	-17.9	-18.9	-24.2	-33.0	-28.4	-25.7	-19.8	-20.3	-261.8
1948	-23.2	-21.3	-17.5	-27.8	-23.8	-16.2	-25.1	-31.8	-26.7	-20.1	-17.6	-14.6	-265.7
1949	-18.1	-16.5	-18.2	-20.2	-24.4	-24.5	-32.1	-30.0	-28.1	-22.2	-26.5	-22.9	-283.7
1950	-25.5	-11.9	-17.0	-18.6	-13.3	-26.7	-28.8	-21.9	-23.1	-25.5	-22.9	-17.8	-253.0
1951	-19.1	-15.2	-20.1	-20.2	-20.1	-19.0	-28.1	-29.9	-57.8	-11.6	-10.8	-11.5	-263.4
1952	-12.8	-10.9	-10.3	-13.2	-15.2	-20.7	-28.4	-24.7	-24.7	-21.2	-16.9	-21.2	-220.2
1953	-20.8	-15.8	-9.4	-12.8	-13.5	-24.1	-29.9	-30.7	-27.1	-22.7	-18.6	-20.5	-245.9
1954	-20.7	-15.5	-15.8	-17.1	-15.6	-21.8	-32.5	-22.7	-26.0	-18.4	-14.1	-16.0	-236.2
1955	-16.4	-11.4	-11.3	-18.9	-20.7	-17.5	-32.4	-30.7	-23.1	-13.9	-15.2	-15.5	-227.0
1956	-12.4	-7.7	-8.7	-15.9	-19.9	-21.3	-31.4	-27.4	-26.6	-21.5	-12.3	-14.2	-219.3
1957	-11.2	-9.5	-10.2	-12.4	-20.2	-17.3	-26.3	-27.7	-18.5	-15.1	14.8	-42.7	-196.3
1958	-14.3	-8.3	-13.7	-13.4	-13.0	-17.0	-21.2	-24.9	-22.6	-17.4	-13.3	-12.9	-192.0
1959	-10.2	-8.4	-9.2	-11.1	-12.9	-19.5	-25.2	-25.3	-19.9	-14.2	-12.0	-10.7	-178.6
1960	-14.9	-7.8	-11.8	-15.7	-19.0	-13.5	-17.9	-26.2	-16.6	-15.2	-18.4	-15.9	-192.9
1961	-18.0	-14.4	-13.9	-13.2	-13.0	-20.0	-29.5	-24.8	-18.7	5.3	6.3	5.8	-148.1
1962	-13.1	-14.3	-15.2	-13.7	-13.4	-7.7	-11.8	-22.4	-9.1	-9.6	-12.2	-9.6	-152.1
1963	-18.5	-11.3	-9.5	-11.4	-14.8	-12.7	-26.2	-25.1	-13.9	-9.8	-5.7	-10.9	-169.8
1964	-12.7	-12.6	-12.5	-10.9	-16.7	-16.0	-29.1	-30.2	-18.6	-21.5	-13.1	-14.3	-208.2
1965	-13.5	-14.2	-11.4	-13.1	-12.2	-16.2	-22.7	-25.2	-18.5	-19.1	-17.2	-15.6	-198.9
1966	-14.8	-12.5	-17.8	-14.1	-14.6	-17.1	-31.0	-29.3	-20.7	-15.6	-9.3	-14.3	-211.1
1967	-10.9	-9.5	-14.3	-18.1	-19.0	-15.3	-23.0	-34.1	-21.8	-21.2	-19.4	-18.4	-225.0
1968	-18.1	-16.0	-18.5	-17.3	-20.2	-18.8	-30.1	-30.3	-25.8	-21.6	-21.9	-23.6	-262.2
1969	-16.4	-15.7	-18.2	-20.6	-22.2	-21.2	-28.6	-35.8	-22.8	-14.0	-19.1	-19.5	-254.1
1970	-24.5	-19.9	-24.1	-23.1	-24.3	-24.0	-29.7	-29.0	-22.0	-18.8	-13.4	-15.8	-268.6
1971	-16.7	-12.2	-14.9	-14.1	-16.7	-23.7	-31.9	-38.0	-18.0	-22.4	-18.6	-21.7	-248.9
1972	-17.3	-14.2	-21.8	-18.1	-24.6	-23.2	-60.4	-45.7	-24.6	-20.7	-16.1	-23.9	-310.6
1973	-22.8	-19.9	-17.8	-24.1	-18.8	-21.7	-29.8	-38.5	-27.8	-27.5	-23.3	-21.6	-293.6
1974	-13.6	-24.0	-18.4	-21.4	-23.1	-23.9	-38.4	-35.5	-19.2	-20.8	-16.8	-18.3	-273.4
1975	-17.9	-20.8	-20.2	-22.1	-21.6	-21.3	-33.5	-35.7	-19.2	-26.0	-24.9	-20.4	-283.6
1976	-19.9	-18.3	-23.0	-25.1	-21.7	-23.7	-27.9	-38.9	-22.7	-26.8	-23.2	-24.2	-295.4
1977	-25.1	-22.0	-30.7	-23.8	-22.7	-26.2	-33.5	-29.5	-16.8	-22.0	-17.3	-12.4	-282.0
1978	-5.4	-5.0	-19.2	-22.7	-27.3	-30.6	-42.8	-35.4	-29.4	-28.7	-25.1	-26.5	-298.1
1979	-20.9	-22.3	-20.2	-29.4	-33.2	-31.0	-37.1	-44.3	-23.9	-27.0	-27.0	-31.2	-347.5
1980	-28.5	-25.0	-24.1	-24.7	-29.6	-33.2	-49.3	-38.7	-28.5	-25.1	-20.9	-23.0	-350.6
AVER.	-17.0	-15.2	-17.3	-18.5	-19.7	-20.8	-30.3	-31.3	-22.8	-19.7	-16.5	-18.4	-247.4
STD.D	5.7	5.2	5.9	5.3	5.1	5.2	8.0	5.7	7.8	6.4	8.1	7.5	48.1

Appendix I

Table 11. IRRIGATION DIVERSION ,NORTH PLATTE --I1(KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.0	.0	.0	3.7	11.0	15.0	35.6	34.2	11.7	2.0	.0	.0	113.2
1943	.0	.0	.0	2.9	18.3	20.2	31.0	28.9	20.6	7.6	.0	.0	129.5
1944	.0	.0	.0	2.9	6.7	18.0	34.3	32.4	26.3	10.0	.0	.0	130.6
1945	.0	.0	.0	3.3	14.3	14.5	25.7	26.9	21.1	.4	.0	.0	106.2
1946	.0	.0	.0	3.7	18.1	27.1	39.2	32.6	14.0	.0	.0	.0	134.7
1947	.0	.0	.0	2.9	12.2	18.4	28.2	37.5	19.7	.0	.0	.0	118.9
1948	.0	.0	.0	3.3	28.4	21.7	36.1	28.8	23.0	5.8	.0	.0	147.1
1949	.0	.0	.0	4.2	10.8	16.2	34.5	31.5	13.9	2.9	.0	.0	114.0
1950	.0	.0	.0	4.1	10.7	29.0	34.7	24.5	10.4	5.3	.0	.0	118.7
1951	.0	.0	.0	5.1	11.2	8.6	18.2	28.0	14.1	2.3	.0	.0	87.5
1952	.0	.0	.0	.0	5.3	29.5	33.4	29.3	23.0	10.2	.0	.0	130.7
1953	.0	.0	.0	2.2	19.7	24.8	32.9	33.0	25.2	10.9	.0	.0	148.7
1954	.0	.0	.0	5.0	21.1	27.9	34.2	30.4	23.0	4.9	.2	.0	146.7
1955	.0	.0	.0	1.5	17.4	16.7	31.8	28.0	20.7	7.1	.3	.0	123.5
1956	.0	.0	.0	2.9	20.6	16.6	30.5	29.6	27.4	15.0	.0	.0	142.6
1957	.0	.0	.0	.7	6.8	15.2	25.5	33.2	18.4	4.7	.0	.0	104.5
1958	.0	.0	.0	.0	2.8	13.7	21.3	30.5	16.7	4.6	.9	.0	90.5
1959	.0	.0	.0	.0	10.6	22.8	31.4	28.0	23.9	4.6	.2	.0	121.5
1960	.0	.0	.0	.0	6.5	18.7	26.9	29.6	24.4	10.3	.0	.0	116.4
1961	.0	.0	.0	.0	4.9	15.4	28.5	30.0	21.4	4.6	.0	.0	104.8
1962	.0	.0	.0	.5	16.6	13.3	12.8	32.7	19.8	4.2	1.0	.0	100.9
1963	.0	.0	.0	3.0	17.9	20.6	32.8	22.3	11.1	2.7	.1	.0	110.5
1964	.0	.0	.0	.6	13.7	18.4	29.5	22.9	23.3	10.2	2.6	.0	121.2
1965	.0	.0	.0	2.9	19.6	9.6	16.5	29.8	12.0	2.8	.3	.0	93.5
1966	.0	.0	.0	.9	16.1	15.9	27.7	21.8	14.9	3.1	.0	.0	100.4
1967	.0	.0	.5	10.2	17.2	10.6	21.4	35.0	22.2	10.3	1.3	.0	128.7
1968	.0	.0	.6	4.5	15.8	26.8	34.2	30.0	18.9	9.5	.5	.0	140.8
1969	.0	.0	.0	3.4	17.8	20.3	29.1	33.4	17.3	2.8	.0	.0	124.1
1970	.0	.0	.0	1.9	15.0	19.1	35.5	32.0	19.3	2.9	.0	.0	125.7
1971	.0	.0	.0	3.2	9.2	15.2	34.0	35.1	16.1	3.3	.2	.0	116.3
1972	.0	.0	1.1	5.9	16.8	22.9	30.1	28.9	18.0	.4	.0	.0	124.1
1973	.0	.0	.0	3.1	11.9	22.9	32.2	32.9	18.1	.4	.0	.0	121.5
1974	.0	.0	.0	1.9	17.8	20.2	36.9	29.5	16.6	1.0	.0	.0	123.9
1975	.0	.0	.0	1.5	17.0	18.5	35.8	33.3	19.0	5.9	.0	.0	131.0
1976	.0	.0	.2	5.8	13.8	22.7	36.4	31.3	19.6	3.5	.1	.0	133.4
1977	.0	.0	.0	.1	7.3	16.9	32.6	26.4	16.8	.5	.0	.0	100.6
1978	.0	.0	.0	.6	11.7	23.1	35.7	31.0	21.2	1.5	.0	.0	124.8
1979	.0	.0	.0	.0	8.3	15.9	27.1	29.2	19.6	2.1	.0	.0	102.2
1980	.0	.0	.0	.3	12.6	17.7	41.5	28.8	14.4	.0	.0	.0	115.3
AVER.	.0	.0	.1	2.5	13.7	19.0	30.7	30.1	18.9	4.6	.2	.0	119.7
STD.D	.0	.0	.2	2.2	5.4	5.1	6.2	3.5	4.3	3.8	.5	.0	15.6

Appendix I

Table 12. IRRIGATION DIVERSION ,SOUTH PLATTE --I2(KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.0	.0	.0	1.9	.0	.0	3.0	3.1	4.7	1.0	.0	.0	13.7
1943	.0	.0	.0	4.4	5.3	6.3	3.9	1.6	1.6	4.4	4.4	.9	32.8
1944	.0	.0	.0	.0	1.6	5.0	1.9	2.8	2.2	5.6	3.8	.0	22.9
1945	.0	.0	.0	3.6	3.3	4.0	5.4	8.0	4.6	2.8	2.2	.0	33.9
1946	.0	.0	.0	.8	5.5	3.6	1.9	1.8	3.4	2.9	.5	.0	20.4
1947	.0	.0	.0	2.7	4.8	.0	5.2	5.6	5.2	3.9	2.0	.0	29.4
1948	.0	.0	.0	4.1	7.1	7.5	4.9	2.9	2.7	4.6	1.1	.0	34.9
1949	.0	.0	.0	.0	3.2	2.9	8.7	6.6	4.1	3.4	.0	.0	28.9
1950	.0	.0	.0	4.6	3.9	3.1	2.7	3.2	2.8	4.6	.0	.0	24.9
1951	.0	.0	.0	7.5	3.8	3.2	1.6	8.8	6.5	1.6	.1	.0	33.1
1952	.0	.0	.0	2.3	9.8	12.8	3.7	3.3	4.1	6.9	2.8	.0	45.7
1953	.0	.0	.0	2.4	4.0	3.2	2.5	4.0	2.5	5.8	1.0	.0	25.4
1954	.0	.0	.0	2.4	4.5	2.0	1.2	1.2	1.5	2.3	3.9	.0	19.0
1955	.0	.0	.0	1.7	5.2	5.5	2.1	1.6	1.4	3.4	2.9	.0	23.8
1956	.0	.0	1.8	3.2	2.2	3.2	1.8	2.0	1.2	1.4	.0	.0	16.8
1957	.0	.0	1.4	1.8	2.1	1.2	8.3	5.9	6.6	6.2	1.5	.0	35.0
1958	.0	.0	.0	.0	.0	6.7	5.0	4.0	4.9	.0	.0	.0	20.6
1959	.0	.0	.0	1.7	6.6	4.0	2.2	1.4	1.4	3.8	.0	.0	21.1
1960	.0	.0	.0	2.8	5.3	6.1	2.7	1.3	1.2	3.2	1.6	.0	24.2
1961	.0	.0	.7	4.2	6.4	11.5	8.0	5.2	5.2	6.0	3.9	.0	51.1
1962	.0	.0	.0	2.5	4.5	5.2	6.4	7.2	4.9	2.8	2.9	.6	37.0
1963	.0	.0	.0	2.4	3.8	3.2	2.3	1.6	2.7	3.5	1.8	.1	21.4
1964	.0	.0	.0	.0	2.6	2.7	2.0	1.1	.7	1.5	2.5	.0	13.1
1965	.0	.0	.0	2.2	2.8	4.4	9.8	10.9	4.2	.0	.0	.0	34.3
1966	.0	.0	.0	.6	3.6	4.2	3.6	3.1	4.0	1.4	.0	.0	20.5
1967	.0	.0	.0	1.5	3.8	.0	8.9	3.9	3.2	5.5	3.1	.0	29.9
1968	.0	.0	.0	1.4	3.9	3.6	1.4	5.2	7.0	4.5	.0	.0	27.0
1969	.0	.0	.0	.0	.6	4.0	8.9	3.0	2.2	2.9	.0	.0	21.6
1970	.0	.0	.0	2.0	6.2	13.7	9.6	3.2	6.2	3.6	.0	.0	44.5
1971	.0	.0	.0	.0	.0	.4	4.2	2.1	4.3	1.9	.0	.0	12.9
1972	.0	.0	.0	.0	2.6	2.8	1.4	1.9	2.8	5.1	.0	.0	16.6
1973	.0	.0	.0	.0	.0	.2	5.9	5.3	5.0	1.9	.0	.0	18.3
1974	.0	.0	.0	.0	1.6	2.5	2.0	2.1	5.1	4.0	2.8	.0	20.1
1975	.0	.0	.0	.2	7.7	5.8	2.8	4.5	4.3	.1	.0	.0	25.4
1976	.0	.0	.0	1.0	4.1	3.4	1.5	.8	2.0	2.3	.0	.0	15.1
1977	.0	.0	.0	.0	.9	1.0	2.5	4.8	2.9	2.1	.0	.0	14.2
1978	.0	.0	.0	.0	3.5	6.8	2.0	1.0	.6	2.5	.0	.0	16.4
1979	.0	.0	.0	.0	1.3	10.3	5.8	11.1	8.1	2.7	.0	.0	39.3
1980	.0	.0	.0	.0	.0	.6	4.4	2.3	4.2	.0	.0	.0	11.5
AVER.	.0	.0	.1	1.7	3.5	4.3	4.2	3.8	3.6	3.1	1.1	.0	25.6
STD.D	.0	.0	.4	1.7	2.3	3.4	2.6	2.6	1.9	1.8	1.5	.2	9.8

Appendix I

Table 13. IRRIGATION DIVERSION ,BRADY TO OVERTON --I3(KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.0	.0	.0	.0	1.5	7.6	22.8	45.0	6.6	5.2	.2	.0	88.9
1943	.0	.0	.0	4.7	19.9	20.8	43.7	63.1	17.2	17.0	2.1	.0	188.5
1944	.0	.0	.0	.9	4.5	18.1	27.3	60.7	23.6	8.2	.0	.0	143.3
1945	.0	.0	.0	.0	6.9	10.0	27.9	58.6	29.4	10.7	.0	.0	143.5
1946	.0	.0	.0	3.3	27.5	29.2	51.9	53.7	19.3	1.9	.0	.0	186.8
1947	.0	.0	.0	.0	4.0	14.3	5.1	49.9	31.3	11.8	1.6	.0	118.0
1948	.0	.0	.0	.0	24.4	20.6	35.7	38.1	26.5	8.4	.0	.0	153.7
1949	.0	.0	.0	.0	3.5	18.1	45.3	56.4	15.0	1.7	.0	.0	140.0
1950	.0	.0	.0	.0	6.8	18.8	34.0	54.1	21.0	1.8	.0	.0	136.5
1951	.0	.0	.0	.4	6.3	13.0	19.0	54.7	6.4	.0	.0	.0	99.8
1952	.0	.0	.0	.0	5.0	39.0	72.5	44.2	20.1	6.1	.0	.0	186.9
1953	.0	.0	.0	.0	2.9	26.0	83.5	59.3	34.3	13.8	.8	.0	220.6
1954	.0	.0	.0	1.5	11.7	22.1	69.3	35.2	18.1	5.2	.0	.0	163.1
1955	.0	.0	.0	.5	21.9	20.6	59.6	53.2	14.1	19.0	3.4	.0	192.3
1956	.0	.0	.0	1.7	21.4	21.5	65.6	48.0	18.4	14.5	.0	.0	191.1
1957	.0	.0	.0	.0	4.9	16.8	45.1	64.2	14.9	.9	.0	.0	146.8
1958	.0	.0	.0	.0	3.3	15.3	13.9	53.6	24.6	5.6	.6	.0	116.9
1959	.0	.0	.0	.0	7.6	22.7	48.6	54.4	15.3	1.7	.0	.0	150.3
1960	.0	.0	.0	.0	4.0	14.1	39.8	53.8	15.9	.7	.0	.0	128.3
1961	.0	.0	.0	.6	7.0	16.6	58.8	41.3	15.1	.2	.0	.0	139.6
1962	.0	.0	.0	.6	14.4	4.2	8.7	35.7	13.2	.0	.0	.0	76.8
1963	.0	.0	.0	.9	14.2	17.1	70.7	43.2	3.0	.0	.0	.0	149.1
1964	.0	.0	.0	.0	10.6	20.7	56.4	43.4	12.5	2.2	.0	.0	145.8
1965	.0	.0	.0	1.3	17.4	11.9	25.0	48.7	4.3	.0	.0	.0	108.6
1966	.0	.0	.0	.1	10.5	19.1	64.6	38.7	13.1	.5	.0	.0	146.6
1967	.0	.0	.0	12.6	12.7	7.4	24.3	60.1	17.9	.6	.0	.0	135.6
1968	.0	.0	.0	1.4	11.2	22.1	59.8	57.2	13.6	1.2	.0	.0	166.5
1969	.0	.0	.0	.0	10.7	18.4	53.3	62.0	14.8	.3	.0	.0	159.5
1970	.0	.0	.0	.0	11.6	22.2	69.2	48.9	13.4	.4	.0	.0	165.7
1971	.0	.0	.0	.2	7.6	23.1	63.6	68.0	22.7	.4	.0	.0	185.6
1972	.0	.0	.0	2.5	9.3	27.6	76.0	57.8	20.8	2.4	.0	.0	196.4
1973	.0	.0	.0	.1	5.4	15.4	71.6	74.2	22.0	1.3	.0	.0	190.0
1974	.0	.0	.0	.1	10.6	23.7	84.5	59.0	16.0	.8	.0	.0	194.7
1975	.0	.0	.0	.0	13.1	25.9	74.7	72.9	21.8	.0	.0	.0	208.4
1976	.0	.0	.0	.6	14.6	32.5	82.8	68.6	20.8	.7	.0	.0	220.6
1977	.0	.0	.0	.0	9.0	20.7	87.8	60.1	8.7	.0	.0	.0	186.3
1978	.0	.0	.0	.0	9.8	28.3	85.5	58.3	19.3	.0	.0	.0	201.2
1979	.0	.0	.0	.3	11.8	28.4	59.4	70.3	21.9	.0	.0	.0	192.1
1980	.0	.0	.0	.5	14.1	27.3	94.8	74.8	13.6	.0	.0	.0	225.1
AVER.	.0	.0	.0	.9	10.6	20.0	53.4	55.0	17.4	3.7	.2	.0	161.3
STD.D	.0	.0	.0	2.2	6.2	7.1	23.9	10.5	6.8	5.3	.7	.0	37.0

Appendix I

Table 14. IRRIGATION DIVERSION ,E65 &E57 --I4(KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.0	.0	2.9	8.7	10.1	10.9	24.0	21.0	.0	4.6	.0	.0	82.2
1943	.0	.0	.0	.0	9.5	15.3	26.3	22.5	6.2	3.0	.0	.0	82.8
1944	.0	.0	.0	.0	7.2	17.1	28.6	21.7	11.1	.0	.0	.0	85.7
1945	.0	.0	.0	.0	8.5	13.5	25.7	21.1	6.8	.0	.0	.0	75.6
1946	.0	.0	.0	5.3	10.4	17.2	29.1	21.4	2.8	.0	.0	.0	86.2
1947	.0	.0	.0	.0	11.1	16.9	25.7	21.7	7.7	.3	.0	.0	83.4
1948	.0	.0	.0	4.0	10.9	15.6	26.3	19.0	3.5	2.6	.0	.0	81.9
1949	.0	.0	.0	.0	6.1	12.4	25.5	20.9	6.5	.0	.0	.0	71.4
1950	.0	.0	.0	2.7	8.5	13.2	24.9	19.7	6.0	.0	.0	.0	75.0
1951	.0	.0	.0	2.6	10.4	13.7	20.4	20.0	2.2	.0	.0	.0	69.3
1952	.0	.0	.0	.0	9.2	17.3	29.0	23.0	10.2	3.2	.0	.0	91.9
1953	.0	.0	.0	6.3	11.0	14.0	19.8	19.8	18.9	15.6	.6	.0	106.0
1954	.0	.0	.1	9.6	7.7	16.2	22.2	21.1	20.0	10.8	.0	.0	107.7
1955	.0	.0	.0	7.4	16.2	10.9	22.3	23.4	20.5	6.5	.0	.0	107.2
1956	.0	.0	.0	9.0	16.9	16.9	23.4	22.9	20.8	8.5	.0	.0	118.4
1957	.0	.0	1.2	5.6	11.1	13.7	22.0	23.8	17.5	5.8	.0	.0	100.7
1958	.0	.0	.0	1.5	10.9	18.3	21.5	22.8	20.1	3.8	.0	.0	98.9
1959	.0	.0	.2	5.2	15.5	19.0	23.5	23.3	15.9	1.3	.0	.0	103.9
1960	.0	.0	.0	1.5	10.2	13.5	18.1	23.8	20.1	3.0	.0	.0	90.2
1961	.0	.0	.0	5.2	13.8	14.7	23.5	21.3	17.0	1.2	.0	.0	96.7
1962	.0	.0	.0	3.4	16.3	12.2	20.6	21.8	15.2	.5	.0	.0	90.0
1963	.0	.0	.0	4.6	17.7	16.9	23.7	22.0	9.5	.2	.0	.0	94.6
1964	.0	.0	.1	6.2	17.7	18.6	23.2	22.8	17.8	.6	.0	.0	107.0
1965	.0	.0	.8	8.2	16.3	11.9	18.9	21.1	9.9	.1	.0	.0	87.2
1966	.0	.0	.0	3.2	18.4	17.9	23.4	22.2	16.3	2.0	.0	.0	103.4
1967	.0	.0	1.4	10.5	14.5	7.4	11.1	21.4	16.0	1.9	.0	.0	84.2
1968	.0	.0	2.5	9.6	13.7	16.2	21.8	19.9	16.3	1.8	.0	.0	101.8
1969	.0	.0	.0	3.0	15.2	14.9	20.9	21.5	7.9	.2	.0	.0	83.6
1970	.0	.0	.0	1.4	17.2	19.9	24.0	22.6	11.9	.0	.0	.0	97.0
1971	.0	.0	.0	2.0	12.6	19.5	23.6	23.0	13.1	.0	.0	.0	93.8
1972	.0	.0	.0	3.4	17.4	20.4	23.5	23.0	13.0	.0	.0	.0	100.7
1973	.0	.0	.0	.6	13.4	20.0	23.3	23.1	10.7	.0	.0	.0	91.1
1974	.0	.0	.0	.9	15.5	17.9	23.4	22.8	12.0	.0	.0	.0	92.5
1975	.0	.0	.0	2.6	12.2	15.5	23.3	22.7	10.6	.0	.0	.0	86.9
1976	.0	.0	.0	.3	13.0	19.8	23.4	22.8	10.8	.0	.0	.0	90.1
1977	.0	.0	.0	.0	5.7	20.3	23.1	22.4	5.9	11.5	11.9	1.9	102.7
1978	.0	.0	.0	2.0	12.5	16.6	23.9	23.0	8.3	.0	.0	.0	86.3
1979	.0	.0	.0	.9	8.3	13.8	21.0	21.9	9.7	.0	.0	.0	75.6
1980	.0	.0	.0	.8	7.8	17.6	24.0	23.8	6.9	.0	.0	.0	80.9
AVER.	.0	.0	.2	3.5	12.3	15.8	23.1	22.0	11.7	2.3	.3	.0	91.4
STD.D	.0	.0	.7	3.2	3.6	3.0	3.1	1.2	5.7	3.7	1.9	.3	11.3

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Table 15. IRRIGATION DIVERSION ,PHELPS --I5(KAF)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.0	.0	1.8	15.9	19.4	21.6	54.1	46.6	.0	6.0	.0	.0	165.4
1943	.0	.0	.0	.0	18.2	32.4	59.7	50.2	9.7	1.8	.0	.0	172.0
1944	.0	.0	.0	.0	12.3	37.0	65.6	48.3	22.0	.0	.0	.0	185.2
1945	.0	.0	.0	.0	15.4	27.9	58.2	46.8	11.3	.0	.0	.0	159.6
1946	.0	.0	.0	7.6	20.3	37.0	66.8	47.7	1.3	.0	.0	.0	180.7
1947	.0	.0	.0	.0	21.9	36.3	58.1	48.5	13.6	.0	.0	.0	178.4
1948	.0	.0	.0	4.3	21.6	33.2	59.7	41.6	3.0	1.0	.0	.0	164.4
1949	.0	.0	.0	.0	9.5	25.3	57.9	46.3	10.5	.0	.0	.0	149.5
1950	.0	.0	.0	1.0	15.5	27.1	56.3	43.4	9.2	.0	.0	.0	152.5
1951	.0	.0	.0	.8	20.4	28.3	45.0	44.1	.0	.0	.0	.0	138.6
1952	.0	.0	.0	.0	17.3	37.5	60.4	51.6	19.6	2.3	.0	.0	188.7
1953	.0	.0	.0	5.3	16.2	23.9	48.0	44.1	36.0	10.7	.0	.0	184.2
1954	.0	.0	.0	8.3	13.2	26.9	51.7	31.0	29.3	6.1	.0	.0	166.5
1955	.0	.0	.0	8.3	30.7	15.1	46.0	58.4	35.5	5.6	.0	.0	199.6
1956	.0	.0	.0	10.4	30.8	37.2	48.2	54.2	35.7	14.6	.0	.0	231.1
1957	.0	.0	4.6	7.0	19.5	18.6	38.3	51.4	11.7	2.5	.0	.0	153.6
1958	.0	.0	.0	5.5	18.7	27.6	40.4	45.8	18.1	3.2	.0	.0	159.3
1959	.0	.0	1.0	5.8	20.0	37.7	49.7	53.5	17.4	.8	.0	.0	185.9
1960	.0	.0	.0	2.8	14.9	19.4	37.0	64.1	30.0	1.0	.0	.0	169.2
1961	.0	.0	.0	6.1	20.5	28.1	66.1	45.0	20.3	1.6	.0	.0	187.7
1962	.0	.0	.0	4.9	23.3	20.0	29.2	36.1	12.1	2.3	.0	.0	127.9
1963	.0	.0	.6	11.4	27.6	33.4	68.2	55.8	6.3	.8	.0	.0	204.1
1964	.0	.0	1.8	10.5	30.2	23.3	55.3	44.8	14.7	1.8	.0	.0	182.4
1965	.0	.0	1.8	8.4	19.8	14.8	35.8	52.0	8.2	.0	.0	.0	140.8
1966	.0	.0	.0	3.9	29.8	27.6	58.6	43.6	18.6	.0	.0	.0	182.1
1967	.0	.0	2.3	18.0	16.2	9.0	29.2	59.0	21.7	2.9	.0	.0	158.3
1968	.0	.0	2.0	7.6	19.7	26.5	66.0	45.2	16.9	2.4	.0	.0	186.3
1969	.0	.0	.0	3.8	15.2	21.7	45.6	58.3	5.1	.2	.0	.0	149.9
1970	.0	.0	.0	2.8	17.4	36.7	76.8	38.6	7.0	.0	.0	.0	179.3
1971	.0	.0	.0	.8	11.6	37.1	72.5	52.9	10.0	.0	.0	.0	184.9
1972	.0	.0	.0	2.6	4.1	20.6	43.7	30.3	5.5	.0	.0	.0	106.[illegible]
1973	.0	.0	.0	.0	11.2	30.1	65.1	55.7	4.5	.0	.0	.0	166.6
1974	.0	.0	.0	1.3	19.9	29.2	71.8	44.2	6.0	.0	.0	.0	172.4
1975	.0	.0	.0	.3	15.7	22.3	66.0	49.8	8.0	.0	.0	.0	162.1
1976	.0	.0	.0	.9	14.6	30.9	73.6	64.0	10.7	.0	.0	.0	194.7
1977	.0	.0	.0	.6	16.4	34.6	72.0	37.0	.9	.0	.0	.0	161.5
1978	.0	.0	.0	1.3	16.7	32.0	68.6	51.6	11.2	.0	.0	.0	181.4
1979	.0	.0	.0	1.0	13.3	19.2	30.4	48.5	8.6	.0	.0	.0	121.0
1980	.0	.0	.0	2.3	18.2	30.7	76.3	52.2	3.3	.0	.0	.0	183.0
AVER.	.0	.0	.4	4.4	18.4	27.6	55.7	48.3	13.2	1.7	.0	.0	169.7
STD.D	.0	.0	1.0	4.5	5.8	7.3	13.6	7.7	9.9	3.1	.0	.0	23.5

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Appendix I

APPENDIX II

SIMULATION OF FUTURE OPERATIONS OF PLATTE RIVER SYSTEM UNDER PRESENT OPERATION POLICY

Table 1. SIMULATED MONTHLY FLOWS AT OVERTON --KAF

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	59.0	64.2	78.4	73.8	538.4	272.5	21.0	5.6	128.3	99.5	102.0	129.8	1572.5
1943	92.9	151.4	145.3	166.3	32.6	35.3	.0	.0	50.9	48.8	51.7	53.5	828.7
1944	62.7	54.9	61.8	82.9	64.1	21.3	14.6	.1	28.7	50.2	48.7	56.6	546.6
1945	68.2	104.9	113.7	122.3	50.1	82.4	9.9	.4	46.2	99.8	117.3	82.4	897.6
1946	147.6	139.6	180.5	66.6	45.2	20.2	1.4	3.3	64.4	118.7	80.6	73.5	941.6
1947	72.6	67.2	80.6	83.7	45.7	72.2	136.3	21.0	91.5	93.5	145.7	152.0	1062.0
1948	115.3	162.1	203.3	155.2	27.0	41.6	5.0	11.8	42.7	48.0	68.7	51.9	932.6
1949	61.8	55.9	214.4	171.6	79.6	170.7	41.2	13.5	100.0	123.9	127.7	119.8	1280.1
1950	94.7	162.8	155.7	98.4	58.4	25.0	13.0	10.8	43.9	54.9	65.3	66.4	849.3
1951	92.8	141.0	112.7	75.8	76.2	96.5	24.2	19.0	216.1	133.3	136.4	102.6	1226.6
1952	131.8	156.0	187.2	170.9	145.6	215.1	1.5	3.6	25.4	44.9	94.3	125.0	1301.3
1953	159.5	108.7	171.0	107.4	50.8	27.3	.0	6.3	12.9	41.0	59.6	63.5	808.0
1954	55.8	68.4	58.1	52.5	48.3	21.3	.0	24.4	19.4	45.4	56.9	57.1	507.6
1955	56.5	70.7	75.3	58.4	20.1	40.7	.1	4.5	10.0	41.8	56.7	57.3	492.1
1956	60.0	57.1	60.6	55.6	24.5	12.6	.3	2.1	.0	4.4	13.8	14.7	305.7
1957	8.9	21.6	55.6	68.1	53.4	104.5	18.7	7.3	42.3	54.0	58.5	57.0	549.9
1958	58.2	54.3	85.6	90.7	108.8	114.6	37.1	12.1	34.4	51.3	57.0	65.1	769.2
1959	57.5	60.0	85.2	72.4	47.7	16.4	12.7	9.3	30.5	56.1	64.4	66.6	578.8
1960	67.3	74.7	107.0	78.8	66.1	53.3	14.9	10.5	18.7	55.4	58.2	62.9	667.8
1961	67.1	65.1	69.4	67.2	63.0	37.8	7.3	16.9	30.6	46.7	50.6	50.0	571.7
1962	51.2	116.3	127.1	61.5	39.5	99.9	54.3	24.9	143.0	95.2	101.9	101.9	1016.8
1963	95.1	158.7	140.4	82.4	26.3	27.2	.0	6.4	57.0	51.5	52.0	61.9	758.9
1964	68.7	64.0	70.9	69.0	29.9	32.8	2.7	7.9	34.4	53.1	54.8	59.7	547.9
1965	60.4	68.7	65.8	61.1	49.6	73.9	49.5	13.2	62.8	80.5	62.9	125.4	773.8
1966	129.0	144.6	168.0	132.1	28.0	28.5	5.3	15.3	30.3	51.5	48.9	53.4	834.9
1967	104.4	96.0	79.9	36.3	37.6	99.3	53.0	21.7	31.0	55.2	62.3	77.5	754.2
1968	124.4	118.3	87.4	83.6	43.9	21.4	9.2	5.0	33.8	51.0	57.9	66.8	702.7
1969	70.9	68.4	82.6	63.0	45.3	23.3	41.6	10.2	48.8	56.7	135.9	142.2	788.9
1970	128.9	153.6	150.5	151.4	74.1	171.4	52.0	17.0	50.2	125.7	140.2	119.9	1335.0
1971	161.9	149.0	180.8	155.9	187.5	550.1	281.4	108.1	336.8	127.4	143.2	130.1	2512.2
1972	130.8	147.2	154.9	168.9	71.3	88.2	1.3	26.0	51.0	67.3	80.5	96.5	1083.9
1973	145.9	167.7	177.0	188.0	496.0	717.8	269.0	87.7	441.0	262.0	206.8	194.1	3353.0
1974	189.7	207.4	169.5	382.7	231.3	296.2	16.7	17.1	80.6	101.9	112.0	115.7	1920.8
1975	120.6	100.6	137.1	124.5	40.7	64.5	14.3	14.5	47.4	63.7	74.9	80.9	883.7
1976	84.4	91.2	142.4	114.4	53.6	18.8	3.8	.0	40.1	62.6	67.4	76.0	754.7
1977	68.5	72.5	82.1	134.9	92.2	33.8	.0	19.7	49.4	64.7	69.8	72.4	760.0
1978	51.1	54.2	87.3	90.0	55.5	28.6	.0	20.3	45.5	65.5	70.4	64.7	633.1
1979	57.6	63.4	96.1	72.9	55.2	67.0	62.6	25.2	53.3	60.2	64.1	82.0	759.6
1980	121.9	171.7	191.1	240.6	573.7	355.8	.0	.0	52.7	65.3	63.4	62.0	1898.2
AVER.	91.2	104.0	120.3	111.1	99.4	109.7	32.7	16.0	69.9	73.7	81.6	84.4	993.9
STD.D	39.5	46.0	47.7	64.4	134.8	149.3	63.0	21.0	85.6	42.4	38.1	35.7	585.5

Appendix II

Table 2. SIMULATED END OF MONTH STORAGE AT LAKE MAC.--KAF

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	1467.5	1537.9	1619.1	1644.0	1793.0	1793.0	1762.6	1700.4	1644.0	1644.0	1644.0	1644.0	19893.5
1943	1644.0	1644.0	1644.0	1644.0	1639.0	1650.2	1502.9	1347.1	1281.0	1284.1	1317.2	1359.2	17956.7
1944	1398.3	1466.4	1550.4	1609.9	1714.8	1698.5	1596.2	1457.7	1409.7	1445.7	1500.5	1561.9	18410.0
1945	1625.1	1644.0	1644.0	1644.0	1684.7	1778.0	1690.9	1647.1	1608.3	1644.0	1644.0	1644.0	19898.1
1946	1644.0	1644.0	1644.0	1644.0	1623.7	1542.3	1343.5	1191.1	1190.4	1267.7	1335.2	1378.1	17448.0
1947	1419.2	1455.4	1519.7	1616.3	1583.9	1673.9	1766.5	1735.2	1644.0	1644.0	1644.0	1644.0	19346.1
1948	1644.0	1644.0	1644.0	1644.0	1621.9	1615.3	1510.6	1439.3	1382.0	1415.7	1479.4	1526.9	18567.0
1949	1538.8	1636.2	1644.0	1644.0	1714.1	1772.4	1771.6	1702.3	1644.0	1644.0	1644.0	1644.0	19999.4
1950	1644.0	1644.0	1644.0	1644.0	1645.1	1578.9	1501.4	1463.5	1486.0	1529.8	1579.3	1640.1	19000.1
1951	1644.0	1644.0	1644.0	1644.0	1688.3	1770.9	1784.0	1705.4	1644.0	1644.0	1644.0	1644.0	20100.6
1952	1644.0	1644.0	1644.0	1644.0	1793.0	1793.0	1770.1	1656.8	1606.1	1644.0	1644.0	1644.0	20127.0
1953	1644.0	1644.0	1644.0	1644.0	1633.9	1566.5	1384.5	1299.5	1199.8	1191.1	1245.7	1306.2	17403.2
1954	1346.8	1400.9	1454.7	1462.6	1450.2	1353.8	1141.8	1040.5	933.5	926.8	950.2	979.1	14440.9
1955	1001.1	1025.0	1086.2	1089.8	1046.3	1001.1	895.3	670.8	577.0	567.3	583.6	613.7	10157.2
1956	646.8	688.4	719.1	705.2	637.6	555.9	420.3	288.7	185.3	191.9	276.6	354.6	5670.4
1957	406.9	479.4	546.4	586.4	663.4	731.6	739.8	646.4	632.2	671.9	755.5	786.8	7646.8
1958	859.4	924.7	1001.9	1078.6	1139.8	1215.9	1290.3	1294.2	1237.5	1267.6	1312.7	1374.7	13997.7
1959	1413.5	1469.1	1546.2	1611.9	1671.6	1608.8	1452.8	1300.4	1230.0	1286.6	1329.9	1381.9	17303.1
1960	1416.8	1479.0	1569.9	1628.2	1657.1	1609.1	1463.8	1279.2	1183.2	1185.1	1200.2	1231.2	16903.2
1961	1258.8	1301.4	1352.3	1381.0	1428.3	1442.5	1331.2	1235.3	1185.9	1260.6	1330.0	1385.5	15892.8
1962	1436.3	1490.3	1553.2	1601.5	1641.7	1731.7	1793.0	1781.7	1644.0	1644.0	1644.0	1644.0	19605.2
1963	1644.0	1644.0	1644.0	1644.0	1595.8	1565.1	1352.8	1232.8	1244.6	1288.5	1332.6	1364.9	17553.1
1964	1413.4	1450.8	1497.7	1541.0	1486.7	1441.1	1266.5	1132.4	1053.8	1056.2	1081.6	1111.6	15532.8
1965	1155.1	1187.2	1221.3	1219.9	1194.8	1270.5	1358.5	1370.0	1442.1	1555.7	1633.4	1644.0	16252.6
1966	1644.0	1644.0	1644.0	1644.0	1663.7	1693.2	1563.7	1482.8	1503.6	1547.5	1591.8	1634.8	19257.1
1967	1644.0	1644.0	1644.0	1613.6	1594.2	1693.3	1744.6	1617.9	1580.3	1591.4	1623.1	1644.0	19634.4
1968	1644.0	1644.0	1644.0	1644.0	1692.2	1627.5	1453.5	1423.0	1411.5	1440.8	1474.2	1480.7	18579.4
1969	1530.6	1586.8	1631.2	1644.0	1709.2	1748.9	1747.1	1616.6	1578.2	1643.8	1644.0	1644.0	19724.5
1970	1644.0	1644.0	1644.0	1644.0	1793.0	1793.0	1793.0	1666.5	1644.0	1644.0	1644.0	1644.0	20197.5
1971	1644.0	1644.0	1644.0	1644.0	1793.0	1793.0	1793.0	1793.0	1644.0	1644.0	1644.0	1644.0	20324.0
1972	1644.0	1644.0	1644.0	1644.0	1699.8	1793.0	1644.6	1533.4	1514.2	1547.3	1619.1	1644.0	19571.4
1973	1644.0	1644.0	1644.0	1644.0	1793.0	1793.0	1793.0	1793.0	1644.0	1644.0	1644.0	1644.0	20324.0
1974	1644.0	1644.0	1644.0	1644.0	1793.0	1793.0	1793.0	1679.0	1644.0	1644.0	1644.0	1644.0	20210.0
1975	1644.0	1644.0	1644.0	1644.0	1666.5	1760.2	1583.2	1432.7	1396.7	1422.0	1455.8	1523.1	18816.2
1976	1587.3	1644.0	1644.0	1644.0	1722.3	1728.9	1515.7	1362.4	1349.6	1391.6	1423.2	1455.5	18468.5
1977	1468.1	1512.9	1576.6	1644.0	1662.1	1615.1	1416.1	1334.5	1315.3	1333.1	1350.5	1385.1	17613.4
1978	1414.3	1469.7	1540.3	1552.8	1568.3	1522.8	1350.1	1238.0	1197.9	1217.3	1245.7	1273.1	16590.3
1979	1293.3	1331.5	1416.3	1445.4	1455.7	1505.0	1525.4	1473.9	1465.8	1497.1	1537.2	1617.5	17564.4
1980	1644.0	1644.0	1644.0	1644.0	1793.0	1793.0	1682.7	1546.4	1522.2	1538.7	1570.8	1613.5	19636.3
AVER.	1453.6	1481.4	1510.9	1527.1	1567.9	1574.7	1494.6	1400.3	1351.3	1375.6	1406.7	1435.9	17579.9
STD.D	289.9	274.8	258.0	253.4	276.6	284.4	303.8	324.0	326.3	328.1	315.3	304.4	3328.9

Appendix II

Table 3. SIMULATED JEFFREY HYDRO RETURN TO PLATTE --KAF

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.0	.0	.0	.0	.0	.0	22.8	38.3	.0	.0	.2	.0	61.3
1943	.0	.0	.0	.0	19.9	20.8	24.0	31.5	17.2	17.0	2.1	.0	132.5
1944	.0	.0	.0	.9	4.5	18.1	13.4	35.6	23.6	8.2	.0	.0	104.3
1945	.0	.0	.0	.0	6.9	10.0	27.9	35.2	29.4	1.4	.0	.0	110.8
1946	.0	.0	.0	3.3	27.5	29.2	11.2	35.2	19.3	1.9	.0	.0	127.6
1947	.0	.0	.0	.0	4.0	14.3	.0	17.9	.0	11.8	.0	.0	48.0
1948	.0	.0	.0	.0	24.4	20.6	29.0	38.1	26.5	8.4	.0	.0	147.0
1949	.0	.0	.0	.0	3.5	.0	24.6	40.9	.0	.0	.0	.0	69.0
1950	.0	.0	.0	.0	6.8	18.8	30.1	51.5	21.0	1.8	.0	.0	130.0
1951	.0	.0	.0	.4	6.3	13.0	19.0	43.2	.0	.0	.0	.0	81.9
1952	.0	.0	.0	.0	.0	.0	22.3	38.8	20.1	6.1	.0	.0	87.3
1953	.0	.0	.0	.0	2.9	26.0	42.4	42.6	32.1	13.8	.8	.0	160.6
1954	.0	.0	.0	1.5	11.7	22.1	33.7	35.2	18.1	5.2	.0	.0	127.5
1955	.0	.0	.0	.5	21.9	20.6	39.4	25.6	14.1	19.0	3.4	.0	144.5
1956	.0	.0	.0	1.7	21.4	21.5	37.1	33.6	18.4	14.5	.0	.0	148.2
1957	.0	.0	.0	.0	4.9	8.5	45.1	35.2	14.9	.9	.0	.0	109.5
1958	.0	.0	.0	.0	.0	.0	13.9	44.6	24.6	5.6	.6	.0	89.3
1959	.0	.0	.0	.0	7.6	22.7	41.7	36.0	15.3	1.7	.0	.0	125.0
1960	.0	.0	.0	.0	4.0	14.1	39.8	24.0	15.9	.7	.0	.0	98.5
1961	.0	.0	.0	.6	7.0	16.6	21.0	41.3	15.1	.2	.0	.0	101.8
1962	.0	.0	.0	.6	14.4	4.2	8.7	35.7	.0	.0	.0	.0	63.6
1963	.0	.0	.0	.9	14.2	17.1	22.0	35.2	3.0	.0	.0	.0	92.4
1964	.0	.0	.0	.0	10.6	20.7	32.5	40.1	12.5	2.2	.0	.0	118.6
1965	.0	.0	.0	1.3	17.4	11.9	25.0	39.8	4.3	.0	.0	.0	99.7
1966	.0	.0	.0	.1	10.5	19.1	27.1	38.7	13.1	.5	.0	.0	109.1
1967	.0	.0	.0	12.6	12.7	7.4	24.3	23.6	17.9	.6	.0	.0	99.1
1968	.0	.0	.0	1.4	11.2	22.1	22.2	42.7	13.6	1.2	.0	.0	114.4
1969	.0	.0	.0	.0	10.7	18.4	45.0	22.5	14.8	.3	.0	.0	111.7
1970	.0	.0	.0	.0	10.0	.0	.0	41.5	13.4	.0	.0	.0	64.9
1971	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1972	.0	.0	.0	.0	9.3	.0	11.2	24.4	20.8	2.4	.0	.0	68.1
1973	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1974	.0	.0	.0	.0	.0	.0	.0	34.8	14.7	.8	.0	.0	50.3
1975	.0	.0	.0	.0	13.1	25.9	17.3	29.9	21.8	.0	.0	.0	108.0
1976	.0	.0	.0	.6	14.6	32.5	15.2	12.4	20.8	.7	.0	.0	96.8
1977	.0	.0	.0	.0	9.0	20.7	11.5	41.2	8.7	.0	.0	.0	91.1
1978	.0	.0	.0	.0	9.8	28.3	4.8	28.1	19.3	.0	.0	.0	90.3
1979	.0	.0	.0	.3	11.8	3.4	37.0	23.4	21.9	.0	.0	.0	97.8
1980	.0	.0	.0	.0	.0	.0	.0	23.4	13.6	.0	.0	.0	37.0
AVER.	.0	.0	.0	.7	9.3	13.6	21.6	32.4	14.4	3.3	.2	.0	95.3
STD.D	.0	.0	.0	2.1	7.2	10.1	13.9	11.2	8.8	5.2	.6	.0	36.5

Appendix II

Table 4. SIMULATED JOHNSON HYDRO RETURN TO PLATTE --KAF

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	45.0	45.0	43.2	58.1	67.8	80.4	.0	.0	99.9	80.8	85.4	106.3	711.9
1943	81.9	110.3	101.7	93.0	26.8	12.6	.0	.0	35.3	43.2	45.0	45.0	594.8
1944	45.0	45.0	45.0	45.0	32.7	8.0	.0	.0	23.0	45.0	45.0	45.0	378.7
1945	45.0	77.5	85.0	99.2	29.6	17.1	.0	.0	33.7	92.5	104.4	68.0	652.0
1946	110.9	114.0	107.7	48.7	24.7	8.0	.0	.0	43.7	45.0	45.0	45.0	592.7
1947	45.0	45.0	45.0	45.0	23.1	8.7	32.1	17.0	73.4	71.4	104.5	109.7	619.9
1948	92.2	108.7	108.8	84.1	23.4	11.8	.0	3.4	42.0	44.0	45.0	45.0	608.4
1949	45.0	45.0	108.1	100.0	35.5	65.9	.0	.0	78.0	95.0	95.8	89.6	757.9
1950	74.5	118.1	109.3	68.9	29.5	17.9	.0	1.6	35.8	45.0	45.0	45.0	590.6
1951	80.7	105.5	83.5	53.2	24.6	16.7	.0	.9	63.1	105.6	113.5	96.2	743.5
1952	107.9	119.1	116.0	107.0	78.7	52.6	.0	.0	25.4	43.1	88.3	108.8	846.9
1953	109.2	93.3	116.9	88.5	28.8	21.1	.0	.9	9.0	34.3	45.0	45.0	592.0
1954	45.0	45.0	45.0	36.7	31.8	18.1	.0	14.0	15.7	38.9	45.0	45.0	380.2
1955	45.0	45.0	45.0	36.7	14.3	29.9	.0	.0	9.5	39.4	45.0	45.0	354.8
1956	45.0	45.0	45.0	34.6	14.2	7.8	.0	.0	.0	.0	.0	.0	191.6
1957	.0	.0	40.4	38.0	25.5	70.0	6.7	.0	33.3	42.5	45.0	45.0	346.4
1958	45.0	45.0	45.0	39.5	77.8	65.2	4.6	.0	26.9	41.8	45.0	45.0	480.8
1959	45.0	45.0	44.0	39.2	25.0	7.3	.0	.0	27.6	44.2	45.0	45.0	367.3
1960	45.0	45.0	45.0	42.2	30.1	25.6	8.0	.0	15.0	44.0	45.0	45.0	389.9
1961	45.0	45.0	45.0	38.9	24.5	16.9	.0	.0	24.7	43.4	45.0	45.0	373.4
1962	45.0	94.1	87.9	40.1	21.7	25.0	30.1	8.9	86.7	89.3	93.2	89.6	711.6
1963	81.0	118.7	116.2	72.7	17.4	11.6	.0	.0	38.7	44.2	45.0	45.0	590.5
1964	45.0	45.0	43.2	34.5	14.8	21.7	.0	.2	30.3	43.2	45.0	45.0	367.9
1965	45.0	45.0	43.2	36.6	25.2	66.4	10.4	.0	36.8	45.0	45.0	103.5	502.1
1966	107.8	108.6	108.5	97.4	15.2	17.4	.0	1.4	26.4	45.0	45.0	45.0	617.7
1967	91.9	84.0	68.6	27.0	28.8	36.0	15.8	.0	23.3	42.1	45.0	63.1	525.6
1968	100.7	102.1	67.2	59.8	25.3	18.5	.0	.0	28.1	42.6	45.0	45.0	534.3
1969	45.0	45.0	45.0	42.5	29.8	23.3	.0	.0	39.9	44.8	105.2	110.5	531.0
1970	105.5	110.1	102.2	92.9	51.5	47.5	16.9	6.4	40.4	98.4	110.9	96.8	879.6
1971	113.3	117.8	111.4	103.3	79.5	47.8	12.1	24.2	82.0	94.8	105.7	89.3	981.2
1972	86.6	107.8	104.5	96.1	40.9	63.9	1.3	14.7	39.5	45.0	45.0	65.3	710.6
1973	107.2	110.1	108.5	95.5	77.0	56.3	21.9	20.8	80.1	89.7	101.0	108.4	976.5
1974	116.4	106.0	107.9	96.6	61.9	57.1	6.5	.8	71.2	89.7	90.3	94.2	898.6
1975	93.6	75.4	106.1	95.2	29.3	22.7	.0	.0	37.0	45.0	45.0	45.0	594.3
1976	45.0	57.4	103.3	72.0	30.4	14.1	.0	.0	34.3	45.0	45.0	45.0	491.5
1977	45.0	45.0	45.0	61.9	28.6	10.4	.0	8.0	44.1	45.0	45.0	45.0	423.0
1978	45.0	45.0	45.0	43.7	28.3	13.0	.0	.0	33.8	45.0	45.0	45.0	388.8
1979	45.0	45.0	45.0	44.0	31.7	60.7	14.6	.0	36.4	45.0	45.0	45.0	457.4
1980	87.2	105.0	102.2	92.4	64.8	46.6	.0	.0	41.7	45.0	45.0	45.0	674.9
AVER.	67.9	74.6	76.6	64.1	35.1	31.3	4.6	3.2	40.1	54.4	60.7	62.4	575.2
STD.D	29.7	33.1	30.5	26.2	19.2	22.1	8.5	6.3	22.9	23.2	27.8	27.6	186.5

Appendix II

Table 5. POWER PRODUCTION AT KINGSLEY HYDRO --MKWH

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.0	.0	.0	3.1	9.3	8.6	3.6	9.0	10.0	11.1	8.0	8.6	71.3
1943	7.7	8.0	7.7	12.8	7.7	4.0	17.8	18.4	9.5	8.3	5.3	3.8	111.0
1944	3.0	1.8	1.4	2.0	.5	7.6	16.7	17.4	9.4	6.0	3.2	1.2	70.1
1945	2.4	5.6	7.3	9.4	7.2	3.4	13.4	12.1	10.4	8.0	9.1	6.5	94.7
1946	8.9	8.1	11.2	6.9	8.9	12.3	21.3	15.7	6.8	3.1	2.9	3.3	109.4
1947	3.5	2.8	1.8	2.7	8.0	1.6	2.8	5.9	15.7	10.3	9.8	9.3	74.3
1948	7.2	9.2	12.6	10.4	6.4	7.4	16.0	12.1	10.2	6.9	2.8	2.6	103.6
1949	4.2	.3	11.2	8.3	5.0	1.5	3.5	10.5	13.7	11.3	9.3	7.8	86.5
1950	7.0	8.8	8.7	6.5	5.5	12.6	13.3	10.8	7.1	6.5	4.2	2.3	93.4
1951	7.0	8.3	7.9	7.0	1.9	.9	6.9	13.7	20.7	11.2	9.9	8.1	103.6
1952	8.7	9.7	11.2	9.3	10.6	30.3	22.3	15.2	11.5	8.0	9.6	10.2	156.6
1953	10.8	7.6	11.6	8.4	6.6	12.7	21.0	15.6	13.4	8.7	3.7	2.1	122.2
1954	3.0	2.0	2.3	6.1	6.9	11.8	20.1	11.2	10.5	5.2	4.1	3.6	86.8
1955	3.7	3.1	1.8	5.4	8.3	6.9	16.7	14.1	8.4	5.7	3.7	3.0	80.8
1956	2.6	1.8	2.3	4.9	7.7	6.9	12.6	8.3	5.6	.0	.2	.0	52.9
1957	.0	.0	.2	2.5	.3	.9	1.7	9.9	5.2	3.3	.0	3.5	27.5
1958	.0	.0	.0	.0	.0	1.0	1.7	2.9	9.6	5.4	3.1	2.1	25.9
1959	2.4	1.5	.9	.0	1.2	9.8	17.2	15.2	9.0	4.2	3.6	2.4	67.3
1960	3.3	1.2	.0	.0	2.4	6.8	15.0	17.5	10.6	5.9	4.7	3.4	70.9
1961	3.4	2.6	2.1	3.0	2.7	1.3	12.0	10.7	6.5	.2	.0	.0	44.6
1962	.0	.0	.0	.0	1.5	1.1	2.6	4.3	18.9	9.0	7.7	6.4	51.6
1963	6.9	8.1	7.7	5.8	8.8	9.7	21.9	12.0	4.8	4.4	2.9	2.5	95.5
1964	2.2	2.6	2.2	3.4	8.5	9.5	17.9	12.1	8.7	6.3	4.3	3.3	81.1
1965	3.0	2.9	2.7	5.6	7.1	.7	1.4	2.7	1.0	.1	.0	6.0	32.9
1966	6.5	6.5	8.2	5.8	1.4	3.9	17.5	13.2	6.6	4.5	3.5	2.5	80.0
1967	6.8	6.4	6.3	8.0	7.7	.9	2.0	14.9	10.1	7.5	4.4	4.8	80.0
1968	8.1	8.0	6.1	6.9	8.0	11.8	19.8	10.3	7.0	4.9	4.7	4.4	99.9
1969	2.8	2.1	2.0	5.6	1.6	1.9	2.9	15.0	8.4	3.7	9.6	8.4	64.0
1970	6.9	8.0	7.3	7.3	3.8	17.6	4.4	14.9	7.8	9.6	9.1	7.1	103.8
1971	8.1	7.8	9.7	8.9	10.5	37.3	34.1	30.6	36.6	10.7	8.9	7.7	210.9
1972	7.3	6.5	8.5	12.8	8.0	17.8	21.0	16.2	9.8	6.3	3.4	5.7	123.2
1973	8.3	8.6	10.1	10.7	20.5	37.3	30.7	30.4	36.6	14.1	11.1	9.8	228.2
1974	11.4	9.9	7.6	26.6	18.1	31.1	28.1	16.8	12.3	10.4	9.1	8.4	189.9
1975	7.5	5.1	10.0	8.4	7.5	1.7	21.7	18.1	8.2	6.4	5.0	1.6	101.2
1976	2.1	2.2	8.4	7.9	7.7	14.4	23.1	18.2	6.8	5.3	4.9	4.4	105.5
1977	4.7	3.2	2.4	3.9	5.5	10.1	21.9	12.2	6.4	6.5	5.5	3.3	85.7
1978	2.9	2.3	2.4	5.3	8.6	14.0	22.5	15.1	9.7	6.7	5.1	4.8	99.4
1979	4.5	3.6	1.8	4.6	5.4	1.4	2.5	11.1	8.4	5.3	3.7	.2	52.4
1980	4.4	9.5	9.2	13.3	6.8	13.9	14.1	16.8	8.3	6.5	4.3	2.7	109.6
AVER.	5.0	4.8	5.5	6.7	6.5	9.9	14.5	13.6	10.8	6.6	5.2	4.6	93.5
STD.D	3.0	3.3	4.1	4.8	4.3	9.8	9.0	5.7	7.1	3.1	3.1	2.8	43.7

Appendix II

Table 6. POWER PRODUCTION AT N.PLATTE HYDRO --MKWH

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.3	1.0	10.6	15.3	18.2	16.9	.5	4.4	11.8	16.7	13.3	16.5	125.5
1943	13.2	17.3	17.2	16.0	9.8	6.7	14.9	16.2	10.0	10.4	6.1	5.5	143.2
1944	5.1	3.8	3.2	5.4	8.9	5.0	14.7	15.1	7.5	6.2	4.9	2.4	82.2
1945	3.9	8.7	11.6	13.4	6.4	4.1	12.5	15.2	8.8	13.7	15.1	12.6	125.9
1946	16.4	16.5	16.6	9.2	8.2	11.3	14.4	14.6	6.8	3.9	4.8	4.8	127.5
1947	5.9	4.9	4.7	5.0	8.8	9.2	7.0	.0	15.9	14.4	16.6	17.0	109.4
1948	14.2	16.9	17.3	17.5	4.4	8.0	14.9	10.9	9.9	7.3	5.1	4.4	130.7
1949	8.1	6.0	17.2	13.0	4.5	8.8	1.5	7.8	16.5	16.7	14.9	12.6	127.4
1950	12.3	16.2	17.3	10.6	4.5	10.6	12.0	10.2	7.0	6.7	6.6	4.0	118.0
1951	11.0	13.6	11.2	7.7	.3	.2	4.9	14.8	15.0	15.5	15.8	13.6	123.6
1952	14.7	17.0	17.4	17.0	16.6	16.8	15.3	14.9	11.5	6.5	13.1	16.3	177.0
1953	16.9	12.2	17.3	13.8	5.8	11.8	14.8	15.6	15.5	11.1	5.4	4.3	144.4
1954	5.5	3.7	4.1	7.7	5.3	11.3	14.5	11.4	12.4	7.9	4.9	4.7	93.5
1955	5.3	5.3	2.7	7.7	8.9	7.1	12.3	13.5	11.9	8.6	5.7	4.6	93.5
1956	4.1	3.2	3.1	7.3	11.2	9.9	13.3	15.9	13.1	4.7	.0	.0	85.8
1957	.0	.0	.0	4.8	9.5	8.3	.0	13.8	5.8	6.0	.5	9.1	57.8
1958	6.2	5.6	6.0	8.0	9.8	8.7	.0	.0	10.5	7.6	5.2	4.4	71.9
1959	3.9	3.2	3.3	6.1	5.4	9.7	14.0	15.5	10.4	5.2	4.0	3.4	83.9
1960	4.9	2.8	4.3	2.7	2.2	5.8	13.4	15.0	11.0	7.6	6.0	4.8	80.5
1961	5.3	4.4	3.1	4.7	7.2	8.1	11.0	9.9	6.5	8.3	10.4	10.6	89.4
1962	10.6	11.1	11.1	3.5	.3	3.6	.0	.0	16.5	12.8	12.0	10.7	92.4
1963	11.1	16.6	16.2	8.9	8.2	8.7	15.6	14.7	6.4	5.6	3.6	3.9	119.5
1964	4.0	4.3	3.0	4.3	8.5	8.6	14.6	15.4	10.3	7.3	5.0	4.5	89.9
1965	3.9	4.4	4.1	6.7	8.3	9.9	3.1	3.1	.2	7.6	7.0	16.6	74.9
1966	16.0	17.4	16.9	8.8	.0	1.2	15.1	14.7	7.5	6.2	4.0	3.3	111.2
1967	10.8	9.6	8.5	8.6	7.4	8.1	7.6	13.2	9.2	7.2	4.5	7.5	102.2
1968	13.9	12.6	9.2	9.7	8.6	10.0	14.9	16.8	8.0	6.4	5.8	6.2	122.0
1969	4.8	4.0	3.3	7.1	9.8	9.3	2.0	14.8	7.8	4.9	16.2	17.1	101.2
1970	16.8	17.4	16.0	16.8	13.2	16.4	.4	14.4	7.3	16.8	16.8	13.7	165.9
1971	17.7	17.2	17.3	17.1	15.6	16.1	15.2	15.1	15.7	17.4	15.0	12.5	192.0
1972	12.0	13.4	15.2	18.5	7.5	15.1	15.3	16.7	9.6	6.3	4.6	9.4	143.8
1973	16.8	16.9	16.9	17.3	16.9	15.9	15.1	15.2	16.9	21.6	13.0	17.6	200.3
1974	17.2	17.5	17.0	16.9	16.4	15.0	14.9	16.2	14.1	14.4	13.1	13.7	186.3
1975	13.5	10.6	15.8	15.6	7.9	8.7	14.8	16.3	8.7	8.7	7.8	4.4	132.8
1976	5.9	5.4	15.8	10.5	7.8	14.1	15.4	18.8	7.9	8.3	6.9	6.1	122.9
1977	7.3	5.5	5.5	7.1	6.1	9.8	15.5	14.4	6.7	9.3	7.6	4.5	99.1
1978	3.7	3.3	3.5	7.0	9.1	14.4	15.7	16.8	12.0	10.4	7.1	6.7	109.7
1979	7.0	7.9	2.2	7.5	11.9	8.6	.0	15.4	10.1	8.4	8.1	5.9	93.0
1980	15.5	17.4	17.0	17.0	17.3	16.4	12.0	17.2	10.8	9.5	7.1	6.8	164.0
AVER.	9.4	9.6	10.3	10.3	8.6	10.0	10.6	12.9	10.3	9.6	8.3	8.4	118.3
STD.D	5.3	5.9	6.3	4.8	4.6	4.2	5.9	5.0	3.6	4.3	4.7	5.0	34.5

Appendix II

Table 7. POWER PRODUCTION AT TRICOUNTY HYDRO---MKWH

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	13.1	14.2	15.1	24.4	28.2	32.1	20.8	19.8	31.1	27.9	26.7	32.8	286.1
1943	25.2	33.8	31.6	29.3	17.0	17.4	22.8	20.5	16.6	16.5	14.5	13.8	259.1
1944	13.9	13.9	14.2	14.4	15.7	17.4	24.0	20.1	16.6	15.3	14.1	13.7	193.2
1945	13.8	23.4	26.2	30.6	15.5	16.0	22.4	19.7	17.5	29.2	32.3	21.3	268.0
1946	34.0	34.8	33.1	18.6	17.7	18.2	24.2	19.9	16.3	14.5	14.2	14.0	259.4
1947	14.1	14.0	14.0	14.2	15.6	16.7	29.7	23.8	28.1	23.9	32.3	33.7	260.0
1948	28.5	33.4	33.4	28.3	17.6	17.0	23.0	19.1	17.2	15.5	14.1	13.8	260.8
1949	13.9	13.8	33.3	31.1	15.4	29.4	22.3	19.8	28.4	29.8	30.0	27.7	294.9
1950	23.2	35.9	33.6	22.2	15.4	17.1	22.1	19.8	16.7	14.9	14.4	13.9	249.2
1951	24.8	32.2	25.9	17.4	15.8	16.3	17.3	19.5	21.6	32.6	34.7	29.2	287.3
1952	32.8	36.1	35.3	33.0	30.5	29.3	23.0	21.2	17.1	15.5	27.3	33.4	334.5
1953	33.5	28.5	35.6	29.5	15.3	17.7	20.2	19.5	19.0	17.2	14.3	14.0	264.3
1954	14.0	13.8	14.0	15.2	15.9	17.4	20.9	18.6	17.8	15.8	14.0	13.8	191.4
1955	13.8	13.6	13.8	15.0	17.7	16.7	19.7	22.4	17.4	16.5	14.3	13.8	194.7
1956	13.7	13.5	13.7	15.2	17.7	17.4	20.2	21.6	15.1	7.3	1.1	.9	157.4
1957	.8	.7	13.8	14.6	15.8	29.1	19.6	21.0	17.0	14.9	12.7	15.0	175.1
1958	13.7	13.5	13.9	14.3	30.7	30.0	16.7	19.9	18.2	15.2	14.0	13.7	213.8
1959	13.6	13.5	13.7	14.5	16.1	17.6	20.8	21.6	17.0	14.5	13.9	13.6	190.3
1960	13.8	13.5	13.8	14.4	15.6	16.2	18.4	23.8	17.2	14.7	14.2	13.8	189.3
1961	13.9	13.7	13.9	14.6	15.9	16.8	24.2	19.2	17.0	13.6	13.1	12.9	188.8
1962	13.7	28.7	27.0	14.5	16.8	15.0	20.1	18.7	31.5	28.3	28.6	27.1	269.8
1963	24.9	36.0	35.5	26.4	16.9	16.7	24.8	22.1	15.1	14.1	13.6	13.6	259.7
1964	13.7	13.7	13.8	14.6	16.7	17.3	21.9	19.5	16.8	14.8	13.9	13.7	190.4
1965	13.7	13.7	13.8	14.9	17.0	27.0	17.8	21.2	15.4	14.5	14.1	31.6	214.9
1966	32.9	33.0	33.4	31.6	16.7	17.1	22.5	19.3	16.8	14.6	13.8	13.7	265.3
1967	27.9	25.4	21.9	16.3	16.7	15.1	16.7	22.4	17.3	14.8	14.2	19.4	228.1
1968	30.8	31.2	21.7	22.1	16.6	17.3	24.2	19.5	17.1	14.9	14.3	14.1	243.7
1969	13.8	13.8	14.1	15.1	16.7	17.0	19.8	22.1	16.4	14.3	32.5	33.9	229.5
1970	32.6	33.8	31.7	30.1	24.2	27.9	30.9	19.5	17.3	30.7	34.0	29.6	342.2
1971	34.6	35.8	34.1	32.3	29.4	28.0	28.1	26.2	29.6	29.8	32.6	27.5	368.0
1972	26.5	32.8	32.3	30.9	16.9	28.0	18.3	18.8	17.4	14.8	14.1	20.3	271.1
1973	33.0	33.8	33.4	30.0	28.6	28.5	28.7	26.0	27.6	28.5	31.4	33.3	362.7
1974	35.4	32.7	33.2	30.6	27.1	28.3	26.5	19.3	26.3	28.2	27.9	28.9	344.4
1975	28.7	23.3	32.7	30.1	16.6	17.7	24.0	20.3	17.0	14.8	14.4	14.0	253.7
1976	14.0	17.7	32.0	23.2	16.8	18.7	25.9	23.3	17.1	14.9	14.4	14.2	232.2
1977	14.2	14.1	14.6	19.9	15.8	17.9	25.3	19.5	15.4	15.6	15.1	13.8	201.3
1978	13.4	13.3	14.1	14.7	16.6	18.4	24.2	20.7	17.1	14.9	14.5	14.3	196.1
1979	14.0	14.1	14.2	14.9	16.7	26.6	19.3	19.6	17.2	14.8	14.5	14.5	200.5
1980	27.2	32.4	31.7	29.8	27.0	26.0	26.4	20.7	16.4	14.8	14.3	14.1	280.8
AVER.	20.8	22.8	23.8	21.9	18.8	20.9	22.5	20.8	19.2	18.4	18.9	19.2	248.0
STD.D	9.0	10.1	9.2	7.2	4.9	5.6	3.5	1.9	4.8	6.5	8.4	8.4	53.5

Appendix II

APPENDIX III

SIMULATION OF FUTURE OPERATION OF PLATTE RIVER SYSTEM USING OPERATION POLICY THAT PROVIDES FOR MEETING HABITAT FLOW REQUIREMENTS

Table 1. SIMULATED MONTHLY FLOWS AT OVERTON --KAF

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	68.0	64.2	78.4	101.0	502.2	272.5	24.0	24.0	106.9	104.0	97.5	129.8	1572.5
1943	92.9	151.4	145.3	166.3	50.0	35.3	24.0	24.0	52.0	104.0	51.7	55.0	951.9
1944	68.0	58.0	76.0	101.0	64.1	24.0	24.0	24.0	52.0	104.0	50.0	56.6	701.7
1945	68.2	72.4	76.0	101.0	50.1	82.4	24.0	24.0	52.0	104.0	57.4	59.4	770.9
1946	68.0	67.6	180.5	101.0	50.0	24.0	24.0	24.0	64.4	118.7	80.6	73.5	876.3
1947	72.6	67.2	80.6	101.0	50.0	72.2	136.3	24.0	52.0	104.0	72.4	143.4	975.7
1948	115.3	162.1	203.3	198.7	50.0	41.6	24.0	24.0	52.0	104.0	68.7	55.0	1098.7
1949	68.0	58.0	104.8	106.8	79.6	170.7	41.2	24.0	89.5	123.9	127.7	119.8	1114.0
1950	94.7	162.8	155.7	101.0	58.4	25.0	24.0	24.0	52.0	104.0	65.3	66.4	933.3
1951	68.0	81.8	112.7	101.0	76.2	96.5	24.2	24.0	185.9	133.3	136.4	102.6	1142.6
1952	131.8	156.0	187.2	191.6	145.9	194.1	24.0	24.0	52.0	104.0	51.0	58.3	1319.9
1953	140.9	108.7	171.0	107.4	50.8	27.3	24.0	24.0	52.0	104.0	59.6	63.5	933.2
1954	68.0	68.4	76.0	101.0	50.0	24.0	24.0	24.4	52.0	104.0	56.9	57.1	705.8
1955	68.0	70.7	76.0	101.0	50.0	40.7	.1	4.5	.5	2.4	11.7	12.3	437.9
1956	15.0	12.1	60.6	55.6	10.3	4.8	.3	2.1	.0	4.4	13.8	14.7	193.7
1957	8.9	21.6	15.2	30.1	69.2	126.3	18.7	7.3	42.3	54.0	58.5	57.0	509.1
1958	68.0	58.0	85.6	101.0	94.8	114.6	37.1	24.0	52.0	104.0	57.0	65.1	861.2
1959	68.0	60.0	85.2	101.0	50.0	24.0	24.0	24.0	52.0	104.0	64.4	66.6	723.2
1960	68.0	74.7	107.0	101.0	66.1	53.3	24.0	24.0	52.0	104.0	58.2	62.9	795.2
1961	68.0	65.1	76.0	101.0	63.0	37.8	24.0	24.0	52.0	104.0	50.6	55.0	720.5
1962	68.0	94.5	127.1	101.0	50.0	99.9	40.0	24.9	52.0	104.0	53.7	57.3	872.4
1963	68.0	79.6	76.0	101.0	50.0	27.2	24.0	24.0	57.0	104.0	52.0	61.9	724.7
1964	68.7	64.0	76.0	101.0	50.0	32.8	24.0	24.0	4.1	53.1	54.8	59.7	612.2
1965	68.0	68.7	76.0	101.0	50.0	73.9	49.5	24.0	62.8	104.0	62.9	66.9	807.8
1966	68.0	81.0	86.0	101.0	50.0	28.5	24.0	24.0	52.0	104.0	50.0	55.0	723.5
1967	68.0	58.0	76.0	101.0	50.0	99.3	53.0	24.0	52.0	104.0	62.3	59.4	807.0
1968	68.7	61.2	76.0	101.0	50.0	24.0	24.0	24.0	52.0	104.0	57.9	66.8	709.6
1969	70.9	68.4	82.6	101.0	50.0	24.0	41.6	24.0	52.0	104.0	57.2	60.9	736.6
1970	68.0	75.3	79.2	101.0	50.2	24.0	31.1	24.0	52.0	104.0	116.4	119.9	845.1
1971	161.9	149.0	180.8	186.8	187.5	550.1	250.5	108.1	336.8	127.4	143.2	130.1	2512.2
1972	130.8	147.2	154.9	168.9	71.3	88.2	24.0	26.0	52.0	104.0	80.5	76.2	1124.0
1973	105.8	167.7	177.0	202.5	481.5	717.8	269.0	87.7	441.0	262.0	206.8	194.1	3312.9
1974	189.7	207.4	169.5	382.7	231.3	296.2	24.0	24.0	66.4	104.0	109.9	115.7	1920.8
1975	120.6	100.6	137.1	124.5	50.0	64.5	24.0	24.0	52.0	104.0	74.9	80.9	957.1
1976	84.4	78.8	81.6	114.2	53.6	24.0	24.0	24.0	52.0	104.0	67.4	76.0	784.0
1977	68.5	72.5	82.1	117.4	92.2	33.8	24.0	24.0	52.0	104.0	69.8	72.4	812.7
1978	68.0	58.0	87.3	101.0	55.5	28.6	24.0	24.0	52.0	104.0	70.4	64.7	737.5
1979	68.0	63.4	96.1	101.0	55.2	67.0	62.6	25.2	53.3	104.0	64.1	82.0	841.9
1980	79.7	79.6	101.7	122.2	573.7	355.8	24.0	24.0	52.7	104.0	63.4	62.0	1642.8
AVER.	81.6	87.6	107.1	120.5	102.1	106.4	41.8	26.4	72.1	102.5	72.0	75.3	995.4
STD.D	34.1	42.9	43.9	55.6	128.6	149.0	55.4	17.8	80.7	37.1	35.2	34.1	557.5

Appendix III

Table 2. SIMULATED END OF MONTH STORAGE AT LAKE MAC.--KAF

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	1467.5	1537.9	1619.0	1623.3	1793.0	1793.0	1762.6	1679.0	1644.0	1639.5	1644.0	1644.0	19846.8
1943	1644.0	1644.0	1644.0	1644.0	1621.6	1632.8	1461.5	1281.7	1214.5	1162.4	1195.5	1236.0	17382.0
1944	1269.8	1334.8	1404.6	1446.0	1550.9	1531.9	1420.2	1257.8	1186.5	1168.7	1222.2	1283.6	16077.0
1945	1346.8	1399.2	1435.9	1457.2	1497.9	1591.2	1490.0	1422.6	1378.0	1409.5	1469.4	1492.4	17389.1
1946	1572.0	1644.0	1644.0	1609.5	1584.5	1499.3	1277.9	1104.8	1104.1	1181.4	1248.9	1291.8	16762.3
1947	1332.9	1369.1	1433.4	1512.7	1476.0	1566.0	1658.6	1624.3	1572.6	1562.1	1635.4	1644.0	18387.1
1948	1644.0	1644.0	1644.0	1644.0	1555.4	1548.8	1425.1	1341.6	1275.0	1252.7	1316.4	1360.8	17651.8
1949	1366.5	1461.8	1579.2	1644.0	1714.1	1772.4	1771.6	1691.8	1644.0	1644.0	1644.0	1644.0	19577.4
1950	1644.0	1644.0	1644.0	1641.4	1642.5	1576.3	1487.8	1436.7	1451.1	1445.8	1495.3	1556.1	18665.0
1951	1584.8	1644.0	1644.0	1618.8	1663.1	1745.7	1758.8	1675.2	1644.0	1644.0	1644.0	1644.0	19910.4
1952	1644.0	1644.0	1644.0	1644.0	1793.0	1793.0	1747.6	1613.9	1536.6	1515.4	1558.7	1625.4	19759.6
1953	1644.0	1644.0	1644.0	1644.0	1633.9	1566.5	1360.5	1257.8	1119.0	1047.3	1101.9	1162.4	16825.3
1954	1190.8	1244.9	1280.8	1240.2	1226.1	1127.0	891.0	789.7	650.1	584.8	608.2	637.1	11470.7
1955	647.6	671.5	732.0	693.0	619.6	574.4	468.6	244.1	159.8	189.5	244.1	312.1	5556.3
1956	383.4	450.7	513.1	507.4	454.0	380.1	244.5	112.9	9.5	16.1	100.8	178.8	3351.3
1957	231.1	303.6	373.9	451.4	529.4	596.6	604.8	498.1	470.6	510.3	593.9	625.2	5788.0
1958	688.0	753.3	830.5	907.2	968.4	1044.5	1118.9	1110.9	1036.6	1014.0	1059.1	1121.1	11652.7
1959	1149.4	1205.0	1282.1	1319.2	1376.6	1306.2	1138.9	971.8	879.9	888.6	931.9	983.9	13433.8
1960	1018.1	1080.3	1171.2	1229.0	1236.2	1188.2	1033.8	835.7	706.4	659.7	674.8	705.8	11539.5
1961	732.5	775.1	819.4	814.3	861.6	875.8	747.8	644.7	574.0	591.3	660.7	716.2	8813.7
1962	767.0	821.0	883.9	932.2	972.5	1062.4	1138.1	1076.8	1030.1	1021.3	1069.5	1114.1	11889.3
1963	1141.2	1220.3	1295.1	1266.1	1194.2	1163.5	927.2	789.6	801.4	792.8	836.9	869.2	12298.0
1964	917.7	955.1	996.9	1008.2	933.8	888.2	692.3	542.1	493.8	496.2	521.6	551.6	8998.0
1965	587.5	619.6	643.5	602.2	576.7	652.4	740.5	752.0	824.1	934.9	1012.6	1081.7	9027.8
1966	1144.5	1208.1	1288.3	1344.6	1309.2	1315.0	1166.8	1077.2	1076.3	1067.7	1110.9	1152.3	14260.7
1967	1197.9	1235.9	1239.8	1144.7	1112.9	1212.0	1263.3	1134.3	1075.7	1038.0	1069.7	1108.7	13832.8
1968	1164.4	1221.5	1232.9	1215.5	1257.6	1190.3	1001.5	952.0	922.3	898.6	932.0	938.5	12927.0
1969	988.4	1044.6	1089.0	1063.8	1124.3	1164.0	1162.2	1017.2	975.6	993.9	1072.8	1154.1	12849.9
1970	1221.1	1299.4	1370.7	1442.2	1615.1	1763.0	1739.3	1622.7	1598.5	1620.2	1644.0	1644.0	18580.1
1971	1644.0	1644.0	1644.0	1644.0	1793.0	1793.0	1793.0	1793.0	1644.0	1644.0	1644.0	1644.0	20324.0
1972	1644.0	1644.0	1644.0	1644.0	1699.8	1793.0	1621.9	1510.7	1490.5	1486.9	1558.7	1603.9	19341.4
1973	1644.0	1644.0	1644.0	1644.0	1793.0	1793.0	1793.0	1793.0	1644.0	1644.0	1644.0	1644.0	20324.0
1974	1644.0	1644.0	1644.0	1644.0	1793.0	1793.0	1785.7	1664.8	1644.0	1641.9	1644.0	1644.0	20186.4
1975	1644.0	1644.0	1644.0	1644.0	1657.2	1750.9	1564.2	1404.2	1363.6	1348.6	1382.4	1449.7	18496.8
1976	1513.9	1583.0	1643.8	1644.0	1722.3	1723.7	1490.3	1313.0	1288.3	1288.9	1320.5	1352.8	17884.5
1977	1365.4	1410.2	1473.9	1558.8	1576.9	1529.9	1306.9	1221.0	1199.2	1177.7	1195.1	1229.7	16244.7
1978	1242.0	1293.6	1364.2	1365.7	1381.2	1335.7	1139.0	1023.2	976.6	957.5	985.9	1013.3	14077.9
1979	1023.1	1061.3	1146.1	1147.1	1157.4	1206.7	1227.1	1175.6	1167.5	1155.0	1195.1	1275.4	13937.7
1980	1344.1	1436.2	1525.6	1644.0	1793.0	1793.0	1658.7	1498.4	1474.2	1452.0	1484.1	1526.8	18630.2
AVER.	1231.8	1275.0	1317.9	1330.5	1365.6	1375.2	1284.1	1178.4	1126.8	1122.8	1163.4	1201.6	14973.1
STD.D	386.1	373.7	358.5	359.9	391.0	397.0	405.5	421.1	424.0	420.9	410.1	399.1	4531.2

Appendix III

Table 3. POWER PRODUCTION AT KINGSLEY HYDRO --MKWH

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.0	.0	.0	5.2	7.2	8.5	3.5	11.2	7.8	11.5	7.5	8.6	71.2
1943	7.7	8.0	7.7	12.8	9.4	4.0	20.1	20.4	9.4	12.9	5.1	3.8	121.4
1944	3.4	2.0	2.7	3.6	.4	7.6	16.9	18.7	10.9	10.3	3.0	1.1	80.6
1945	2.2	2.1	3.2	6.3	6.8	3.2	14.2	13.8	10.3	7.9	2.8	4.0	77.2
1946	.7	.7	11.2	10.4	9.3	12.5	23.2	17.2	6.6	3.0	2.8	3.2	100.7
1947	3.4	2.7	1.8	4.4	8.2	1.6	2.7	6.0	11.4	11.1	2.3	8.4	64.0
1948	7.2	9.2	12.6	10.4	13.1	7.2	17.5	13.0	10.8	11.7	2.6	2.7	118.0
1949	4.6	.5	.0	1.6	5.0	1.5	3.5	11.6	12.6	11.3	9.3	7.8	69.2
1950	7.0	8.8	8.7	6.8	5.5	12.6	14.4	12.1	7.9	11.1	4.1	2.3	101.2
1951	4.4	2.2	7.9	9.6	1.9	.9	6.9	14.1	17.5	11.2	9.9	8.1	94.6
1952	8.7	9.7	11.2	9.3	10.6	30.3	24.6	17.2	14.1	13.6	5.0	3.3	157.6
1953	8.9	7.6	11.6	8.4	6.6	12.7	23.3	17.1	16.6	13.7	3.5	2.0	132.0
1954	3.9	1.9	3.8	10.2	6.6	11.2	20.4	10.0	11.6	8.4	3.4	3.0	94.4
1955	3.9	2.6	1.6	7.6	8.8	5.5	12.9	10.1	.0	.0	.0	.3	53.4
1956	.0	.0	.0	3.7	5.8	5.5	10.4	.0	.0	.0	.0	.0	25.5
1957	.0	.0	.0	.0	.3	.9	1.6	9.8	5.4	2.9	.0	3.2	24.1
1958	.7	.0	.0	.0	.0	1.0	1.6	3.7	10.5	5.4	2.9	1.9	31.7
1959	3.2	1.3	.9	2.7	1.3	9.7	16.6	14.9	9.6	7.4	3.1	2.1	72.7
1960	2.9	1.0	.0	.0	4.1	6.0	13.9	16.0	11.2	8.2	3.7	2.7	69.7
1961	2.8	2.0	2.2	5.0	2.1	1.1	10.9	8.8	6.3	4.0	.0	.0	45.2
1962	.0	.0	.0	.0	1.2	.9	.9	7.9	7.7	8.1	2.2	1.5	30.4
1963	3.5	.0	.0	7.9	10.0	8.6	21.0	11.5	4.0	7.6	2.4	2.1	78.5
1964	1.9	2.2	2.3	5.6	8.7	7.8	15.9	10.3	4.4	4.6	3.1	2.5	69.1
1965	2.7	2.2	2.8	6.9	5.2	.5	1.0	2.1	.8	.3	.0	.0	24.5
1966	.0	.0	.0	.0	6.5	5.7	17.3	12.3	7.6	8.4	3.1	2.3	63.2
1967	2.7	2.2	5.2	12.8	7.7	.7	1.8	13.2	10.5	10.5	3.7	2.5	73.5
1968	2.0	1.9	4.4	7.7	7.6	10.6	18.5	10.3	7.3	8.3	3.8	3.6	86.0
1969	2.3	1.8	1.7	8.0	1.8	1.6	2.4	13.7	7.1	6.9	1.2	.0	48.6
1970	.0	.0	.0	.0	1.3	1.8	6.9	13.7	7.9	7.3	6.6	7.1	52.5
1971	8.1	7.8	9.7	8.9	10.5	37.3	34.1	30.6	36.6	10.7	8.9	7.7	210.9
1972	7.3	6.5	8.5	12.8	8.0	17.8	23.3	16.1	9.8	9.8	3.4	3.6	126.9
1973	4.1	8.6	10.1	10.7	20.5	37.3	30.7	30.4	36.6	14.1	11.1	9.8	224.1
1974	11.4	9.9	7.6	26.6	18.1	31.1	28.8	17.5	10.8	10.6	8.9	8.4	189.8
1975	7.5	5.1	10.0	8.4	8.4	1.7	22.7	18.9	8.6	10.1	4.9	1.5	107.8
1976	2.0	1.0	2.1	7.9	7.7	14.9	25.1	20.3	7.8	9.0	4.7	4.3	106.8
1977	4.6	3.1	2.4	2.0	5.4	9.9	23.6	12.1	6.4	9.7	5.2	3.1	87.6
1978	4.3	2.5	2.2	6.1	8.1	13.3	23.4	14.3	9.5	9.3	4.6	4.3	101.9
1979	4.9	3.3	1.6	6.7	4.9	1.3	2.3	10.1	7.6	8.7	3.3	.2	54.8
1980	.0	.0	.0	1.1	6.8	13.9	16.6	19.0	8.2	10.2	4.2	2.6	82.6
AVER.	3.7	3.1	4.0	6.6	6.7	9.2	14.7	13.6	10.0	8.6	4.0	3.5	87.8
STD.D	3.0	3.2	4.1	5.1	4.4	9.8	9.4	6.1	7.3	3.6	2.8	2.7	47.1

Appendix III

Table 4. POWER PRODUCTION AT N.PLATTE HYDRO --MKWH

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.3	1.0	10.6	18.0	18.2	16.9	.5	7.9	8.3	16.7	12.5	16.5	127.5
1943	13.2	17.3	17.2	16.0	12.6	6.7	14.9	16.2	10.2	16.3	6.1	5.7	152.3
1944	6.0	4.3	5.5	8.3	8.9	5.4	14.7	15.1	11.2	14.9	5.1	2.4	102.0
1945	3.9	3.5	5.5	9.9	6.4	4.1	14.8	15.2	9.8	14.4	5.4	8.9	101.6
1946	7.6	4.9	16.6	14.8	8.8	11.9	14.4	14.6	6.8	3.9	4.8	4.8	114.0
1947	5.9	4.9	4.7	7.8	9.5	9.2	7.0	.0	12.1	15.4	5.4	16.2	97.9
1948	14.2	16.9	17.3	17.5	15.2	8.0	14.9	12.9	11.4	15.5	5.1	4.9	153.6
1949	9.1	6.3	2.1	2.5	4.5	8.8	1.5	9.5	16.5	16.7	14.9	12.6	104.8
1950	12.3	16.2	17.3	11.0	4.5	10.6	13.8	12.3	8.3	14.7	6.6	4.0	131.6
1951	6.9	4.0	11.2	11.8	.3	.2	4.9	15.4	15.0	15.5	15.8	13.6	114.7
1952	14.7	17.0	17.4	17.0	16.6	16.8	15.3	15.4	15.8	14.8	6.1	5.5	172.4
1953	15.0	12.2	17.3	13.8	5.8	11.8	14.8	15.6	15.5	16.5	5.4	4.3	147.9
1954	7.5	3.7	7.0	15.5	5.5	11.8	14.5	11.4	14.8	17.3	4.9	4.7	118.8
1955	7.1	5.3	2.8	14.6	13.7	7.1	12.3	13.5	10.4	2.3	.0	.0	89.0
1956	.0	.0	.0	6.0	8.9	8.6	13.3	15.9	13.1	4.7	.0	.0	70.5
1957	.0	.0	.0	.0	9.5	8.3	.0	15.9	8.0	6.0	.5	9.1	57.2
1958	7.8	5.5	6.0	8.0	9.8	8.7	.0	.0	13.4	16.1	5.2	4.4	84.9
1959	5.6	3.2	3.3	10.7	5.7	10.9	14.0	15.5	13.8	13.0	4.0	3.4	103.1
1960	5.1	2.8	4.3	2.8	5.7	5.8	13.4	15.0	15.3	15.4	6.0	4.8	96.4
1961	5.4	4.4	4.2	10.1	7.2	8.1	13.7	11.0	9.9	16.6	10.4	10.6	111.7
1962	10.6	11.1	11.1	3.5	.3	3.6	.0	7.0	8.7	14.2	4.2	3.5	78.0
1963	6.7	3.7	4.0	13.6	12.1	8.7	15.6	16.7	6.4	14.1	3.6	3.9	109.1
1964	4.0	4.3	3.8	9.5	11.8	8.6	14.6	16.6	5.4	7.3	5.0	4.5	95.5
1965	5.1	4.4	5.7	13.1	8.4	9.9	3.1	3.1	.2	8.0	7.0	7.1	75.3
1966	5.8	7.1	3.9	.0	7.6	5.1	15.1	16.1	11.0	14.7	4.2	3.5	94.2
1967	4.9	3.5	7.8	16.7	9.4	8.1	7.6	13.5	12.6	15.1	4.5	4.6	108.3
1968	4.9	3.3	7.4	12.6	9.5	10.4	14.9	16.8	11.0	15.0	5.8	6.2	117.7
1969	4.8	4.0	3.3	13.3	10.5	9.3	2.0	16.2	8.3	12.6	6.5	7.4	98.1
1970	9.4	8.5	4.5	9.4	9.3	9.0	4.3	12.8	7.5	13.3	13.2	13.7	115.0
1971	17.7	17.2	17.3	17.1	15.6	16.1	15.2	15.1	15.7	17.4	15.0	12.5	192.0
1972	12.0	13.4	15.2	18.5	7.5	15.1	15.3	16.7	9.8	12.3	4.6	6.1	146.7
1973	10.4	16.9	16.9	17.3	16.9	15.9	15.1	15.2	16.9	21.6	13.0	17.6	193.9
1974	17.2	17.5	17.0	16.9	16.4	15.0	14.9	16.2	11.8	14.7	12.7	13.7	184.0
1975	13.5	10.6	15.8	15.6	9.4	8.7	14.8	16.3	9.5	15.2	7.8	4.4	141.6
1976	5.9	3.4	6.0	10.5	7.8	14.9	15.4	18.8	9.9	15.0	6.9	6.1	120.4
1977	7.3	5.5	5.5	4.2	6.1	9.8	15.5	15.1	7.1	15.6	7.6	4.5	103.7
1978	6.5	3.9	3.5	8.8	9.1	14.4	15.7	16.8	13.1	16.6	7.1	6.7	122.1
1979	8.7	7.9	2.2	12.1	11.9	8.6	.0	15.4	10.1	15.5	8.1	5.9	106.3
1980	8.7	10.0	9.6	11.4	17.3	16.4	15.8	17.2	10.8	15.7	7.1	6.8	146.8
AVER.	8.0	7.4	8.5	11.3	9.6	9.9	11.0	13.6	10.9	13.9	6.9	7.1	118.0
STD.D	4.4	5.4	5.9	5.1	4.3	4.0	5.9	4.4	3.5	4.1	3.9	4.4	32.3

Appendix III

Table 5. POWER PRODUCTION AT TRICOUNTY HYDRO---MKWH

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	15.8	14.2	15.1	26.8	28.2	32.1	21.7	23.8	25.6	27.9	25.3	32.9	290.3
1943	25.2	33.8	31.6	29.3	22.3	17.4	28.0	25.7	16.9	28.5	14.5	14.3	287.7
1944	15.5	14.9	18.5	19.9	15.7	18.2	26.0	25.3	23.7	30.3	14.5	13.7	236.1
1945	13.8	13.6	14.8	24.1	15.5	16.0	25.8	24.8	19.3	29.5	14.2	14.3	225.7
1946	16.2	14.5	33.1	29.1	19.1	19.3	26.6	24.4	16.3	14.5	14.2	14.0	241.3
1947	14.1	14.0	14.0	19.5	16.9	16.7	29.7	24.5	19.0	26.8	14.4	33.7	243.2
1948	28.5	33.4	33.4	28.3	24.0	17.0	27.1	22.1	20.0	29.8	14.1	14.7	292.5
1949	15.8	14.5	14.1	16.3	15.4	29.4	22.3	22.1	28.4	29.8	30.0	27.7	265.7
1950	23.2	35.9	33.6	22.9	15.4	17.1	24.5	22.7	19.2	29.0	14.4	13.9	271.8
1951	17.3	14.2	25.9	25.1	15.8	16.3	17.3	20.6	21.6	32.6	34.7	29.2	270.5
1952	32.8	36.1	35.3	33.0	30.5	29.3	27.9	25.6	24.9	29.4	14.1	14.0	332.9
1953	33.2	28.5	35.6	29.5	15.3	17.7	25.5	23.3	26.0	26.3	14.3	14.0	289.1
1954	17.7	13.8	19.4	29.9	16.4	18.3	26.2	18.6	26.0	28.5	14.0	13.8	242.5
1955	17.3	13.6	14.0	28.0	25.7	16.7	19.7	22.4	14.5	4.5	1.5	1.0	178.9
1956	.9	.7	13.7	15.2	13.4	15.1	20.2	21.6	15.1	7.3	1.1	.9	125.1
1957	.8	.7	1.5	3.0	20.6	31.0	19.6	21.0	17.0	14.9	12.7	15.0	157.9
1958	16.7	14.6	13.9	17.4	30.7	30.0	16.7	22.5	23.0	30.3	14.0	13.7	243.4
1959	16.8	13.5	13.7	23.2	16.8	19.9	23.3	24.8	23.5	29.1	13.9	13.6	232.0
1960	14.0	13.5	13.9	21.1	15.6	16.2	21.2	26.8	26.7	29.4	14.2	13.8	226.2
1961	14.2	13.7	15.9	24.9	15.9	16.8	27.8	21.3	23.5	31.0	13.1	14.4	232.5
1962	18.8	22.0	27.0	26.5	20.0	15.0	15.7	18.7	18.8	31.0	13.9	13.5	240.9
1963	16.6	13.6	16.9	32.1	24.1	16.7	29.6	25.9	15.1	30.1	13.6	13.6	247.9
1964	13.7	13.7	15.4	24.3	22.8	17.3	26.5	23.0	7.6	14.8	13.9	13.7	206.8
1965	16.0	13.7	16.9	27.1	17.1	27.0	17.8	23.6	15.4	21.7	14.1	13.8	224.2
1966	14.3	13.7	14.1	22.1	23.3	17.1	26.6	21.4	23.4	30.5	14.1	14.2	234.9
1967	16.8	13.8	20.7	29.4	20.5	15.1	16.7	22.9	23.7	29.6	14.2	13.9	237.4
1968	13.9	13.8	18.2	27.3	18.4	18.1	27.4	23.7	22.6	29.6	14.3	14.1	241.5
1969	13.8	13.9	14.1	26.6	18.2	17.2	19.8	25.2	17.3	28.7	14.2	14.0	222.8
1970	16.0	14.0	14.3	21.1	17.1	22.6	26.5	21.1	17.8	26.3	29.4	29.6	255.8
1971	34.6	35.8	34.1	32.3	29.4	28.0	28.1	26.2	29.6	29.8	32.6	27.5	368.0
1972	26.5	32.8	32.3	30.9	16.9	28.0	20.7	18.8	17.7	25.9	14.1	14.2	278.9
1973	21.8	33.8	33.4	30.0	28.6	28.5	28.7	26.0	27.6	28.5	31.4	33.3	351.5
1974	35.4	32.7	33.2	30.6	27.1	28.3	26.5	20.8	22.1	28.9	27.2	28.9	341.7
1975	28.7	23.3	32.7	30.1	19.5	17.7	26.1	22.4	18.4	27.0	14.4	14.0	274.3
1976	14.0	13.9	14.3	23.1	16.8	20.3	29.2	26.0	20.7	27.5	14.4	14.2	234.4
1977	14.2	14.1	14.6	14.6	15.8	17.9	27.8	20.5	16.2	27.4	15.1	13.8	211.9
1978	18.5	14.5	14.1	18.0	16.6	18.4	25.2	21.5	19.0	26.6	14.5	14.3	221.3
1979	17.2	14.1	14.2	23.5	16.7	26.6	19.3	19.6	17.2	28.2	14.5	14.5	225.5
1980	14.4	14.2	14.3	24.0	27.0	26.0	26.4	25.8	16.4	26.5	14.3	14.1	243.4
AVER.	18.3	18.3	20.7	24.6	20.1	20.9	24.2	23.0	20.5	26.4	16.3	16.7	250.0
STD.D	7.6	9.3	9.0	6.1	5.0	5.5	4.1	2.3	4.7	6.4	7.2	7.7	47.8

Appendix III

Table 6. DEFICIT IN HABITAT FLOWS AT OVERTON --KAF

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1943	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1944	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1945	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1946	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1947	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1948	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1949	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1950	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1951	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1952	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1953	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1954	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1955	.0	.0	.0	.0	.0	.0	23.9	19.5	51.5	101.6	38.3	42.7	277.5
1956	53.0	45.9	15.4	45.4	39.7	19.2	23.7	21.9	52.0	99.6	36.2	40.3	492.3
1957	59.1	36.4	60.8	70.9	.0	.0	5.3	16.7	9.7	50.0	.0	.0	308.9
1958	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1959	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1960	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1961	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1962	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1963	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1964	.0	.0	.0	.0	.0	.0	.0	.0	47.9	50.9	.0	.0	98.8
1965	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1966	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1967	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1968	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1969	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1970	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1971	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1972	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1973	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1974	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1975	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1976	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1977	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1978	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1979	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1980	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
AVER.	2.9	2.1	2.0	3.0	1.0	.5	1.4	1.5	4.1	7.7	1.9	2.1	30.2
STD.D	12.5	9.3	10.0	13.3	6.4	3.1	5.4	5.3	13.6	24.6	8.3	9.3	101.2

Appendix III

APPENDIX IV

SIMULATION OF FUTURE OPERATIONS OF PLATTE RIVER SYSTEM USING OPERATION POLICY THAT PROVIDES FOR MEETING BOTH HABITAT AND SCOURING FLOW REQUIREMENTS

Table 1. SIMULATED MONTHLY FLOWS AT OVERTON --KAF

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	68.0	64.2	78.4	101.0	502.2	272.5	24.0	24.0	106.9	200.0	61.6	69.7	1572.5
1943	92.9	151.4	145.3	166.3	50.0	35.3	24.0	24.0	52.0	200.0	51.7	55.0	1047.9
1944	68.0	58.0	76.0	101.0	64.1	24.0	24.0	24.0	52.0	200.0	50.0	56.6	797.7
1945	68.2	72.4	76.0	101.0	50.1	82.4	24.0	24.0	52.0	200.0	57.4	59.4	866.9
1946	68.0	65.5	79.9	101.0	50.0	24.0	24.0	24.0	64.4	200.0	80.6	73.5	854.9
1947	72.6	67.2	80.6	101.0	50.0	72.2	136.3	24.0	52.0	200.0	72.4	74.0	1002.3
1948	68.1	72.6	81.0	164.5	50.0	41.6	24.0	24.0	52.0	200.0	68.7	55.0	901.5
1949	68.0	58.0	104.8	101.0	79.6	170.7	41.2	24.0	52.0	200.0	76.9	75.2	1051.4
1950	68.0	156.1	155.7	101.0	58.4	25.0	24.0	24.0	52.0	200.0	65.3	66.4	995.9
1951	68.0	80.5	76.0	101.0	76.2	96.5	24.2	24.0	127.9	200.0	69.7	102.6	1046.6
1952	131.8	156.0	187.2	191.6	145.9	194.1	24.0	24.0	52.0	200.0	51.0	58.3	1415.9
1953	77.8	75.8	171.0	107.4	50.8	27.3	24.0	24.0	52.0	200.0	59.6	63.5	933.2
1954	68.0	68.4	76.0	101.0	50.0	24.0	24.0	24.4	52.0	45.4	56.9	57.1	647.2
1955	68.0	70.7	76.0	101.0	50.0	40.7	.1	4.5	.5	2.4	11.7	12.3	437.9
1956	15.0	12.1	15.6	21.0	10.3	4.8	.3	2.1	.0	4.4	13.8	14.7	114.1
1957	8.9	21.6	15.2	30.1	69.2	126.3	24.0	24.0	42.3	54.0	58.5	57.0	531.1
1958	68.0	58.0	85.6	101.0	94.8	114.6	37.1	24.0	52.0	200.0	57.0	65.1	957.2
1959	68.0	60.0	85.2	101.0	50.0	24.0	24.0	24.0	52.0	200.0	64.4	66.6	819.2
1960	68.0	74.7	107.0	101.0	66.1	53.3	24.0	24.0	52.0	55.4	58.2	62.9	746.6
1961	68.0	65.1	76.0	101.0	63.0	37.8	24.0	16.9	5.9	46.7	50.6	55.0	610.0
1962	68.0	94.5	127.1	101.0	50.0	99.9	40.0	24.9	52.0	200.0	53.7	57.3	968.4
1963	68.0	79.6	76.0	101.0	50.0	27.2	24.0	24.0	57.0	200.0	52.0	61.9	820.7
1964	68.7	64.0	76.0	101.0	50.0	32.8	2.7	7.7	4.1	9.9	9.8	14.7	441.4
1965	68.0	68.7	76.0	101.0	50.0	73.9	49.5	24.0	62.8	200.0	62.9	66.9	903.8
1966	68.0	81.0	86.0	101.0	50.0	28.5	24.0	24.0	52.0	200.0	50.0	55.0	819.5
1967	68.0	58.0	76.0	101.0	50.0	99.3	53.0	24.0	52.0	200.0	62.3	59.4	903.0
1968	68.7	61.2	76.0	101.0	50.0	24.0	24.0	24.0	52.0	51.0	57.9	66.8	656.6
1969	70.9	68.4	82.6	101.0	50.0	24.0	41.6	24.0	52.0	200.0	57.2	60.9	832.6
1970	68.0	75.3	79.2	101.0	50.2	24.0	31.1	24.0	52.0	200.0	65.5	68.1	838.4
1971	83.9	73.1	86.7	101.0	163.1	550.1	250.5	108.1	336.8	200.0	78.9	121.8	2154.0
1972	130.8	147.2	154.9	168.9	71.3	88.2	24.0	26.0	52.0	200.0	80.5	76.2	1220.0
1973	80.5	97.0	177.0	202.5	481.5	717.8	269.0	87.7	441.0	262.0	206.8	194.1	3216.9
1974	189.7	207.4	169.5	382.7	231.3	296.2	24.0	24.0	66.4	200.0	66.7	66.5	1924.4
1975	117.0	100.6	137.1	124.5	50.0	64.5	24.0	24.0	52.0	200.0	74.9	80.9	1049.5
1976	84.4	78.8	81.6	101.0	53.6	24.0	24.0	24.0	52.0	200.0	67.4	76.0	866.8
1977	68.5	72.5	82.1	117.4	92.2	33.8	24.0	24.0	52.0	200.0	69.8	72.4	908.7
1978	68.0	58.0	87.3	101.0	55.5	28.6	24.0	24.0	52.0	200.0	70.4	64.7	833.5
1979	68.0	63.4	96.1	101.0	55.2	67.0	62.6	25.2	53.3	200.0	64.1	82.0	937.9
1980	79.7	79.6	101.7	111.2	519.5	241.2	24.0	24.0	52.7	200.0	63.4	62.0	1559.0
AVER.	75.3	80.4	96.9	115.8	100.1	103.5	41.4	26.2	68.5	167.5	62.8	66.9	1005.3
STD.D	28.6	36.9	39.1	54.9	123.2	145.0	55.7	17.9	79.6	70.3	28.7	28.5	522.8

Appendix IV.

Table 2. SIMULATED END OF MONTH STORAGE AT LAKE MAC.--KAF

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	1467.5	1537.8	1619.0	1623.3	1793.0	1793.0	1762.6	1679.0	1644.0	1543.5	1583.9	1644.0	19690.7
1943	1644.0	1644.0	1644.0	1644.0	1621.6	1632.8	1461.5	1281.7	1214.5	1066.4	1099.5	1140.0	17094.0
1944	1173.8	1238.8	1308.6	1350.0	1454.9	1435.9	1324.2	1161.8	1090.5	976.7	1030.2	1091.6	14637.0
1945	1154.8	1206.2	1243.9	1265.2	1305.9	1399.2	1298.0	1230.6	1186.0	1121.5	1181.4	1204.4	14797.1
1946	1284.0	1358.1	1458.7	1424.3	1399.2	1314.0	1092.6	919.5	918.8	914.8	982.3	1025.2	14091.5
1947	1066.3	1102.5	1166.8	1246.1	1209.4	1299.4	1392.0	1357.7	1306.0	1199.5	1272.8	1350.8	14969.3
1948	1398.0	1487.5	1609.8	1644.0	1555.4	1548.8	1425.1	1341.6	1275.0	1156.7	1220.4	1264.8	16927.1
1949	1270.5	1365.8	1483.2	1553.8	1623.9	1682.2	1681.4	1601.6	1591.3	1515.2	1566.0	1610.6	18545.5
1950	1637.3	1644.0	1644.0	1641.4	1642.5	1576.3	1487.8	1436.7	1451.1	1349.8	1399.3	1460.1	18370.3
1951	1488.8	1549.3	1586.0	1560.8	1605.1	1687.7	1700.8	1617.2	1644.0	1577.3	1644.0	1644.0	19305.0
1952	1644.0	1644.0	1644.0	1644.0	1793.0	1793.0	1747.6	1613.9	1536.6	1419.4	1462.7	1529.4	19471.6
1953	1611.1	1644.0	1644.0	1644.0	1633.9	1566.5	1360.5	1257.8	1119.0	951.3	1005.9	1066.4	16504.4
1954	1094.8	1148.9	1184.8	1144.2	1130.1	1031.0	795.0	693.7	554.1	547.4	570.8	599.7	10494.5
1955	610.2	634.1	694.6	655.6	582.2	537.0	431.2	206.7	122.4	152.1	206.7	274.7	5107.5
1956	346.0	413.3	475.7	529.1	496.2	422.3	286.7	155.1	51.7	58.3	143.0	221.0	3598.4
1957	273.3	345.8	416.1	493.6	570.6	638.8	647.0	518.3	490.8	530.5	614.1	645.4	6184.4
1958	708.2	773.5	850.7	927.4	988.6	1064.7	1139.1	1131.1	1056.8	938.2	983.3	1045.3	11607.1
1959	1073.6	1129.2	1206.3	1243.4	1300.8	1230.4	1063.1	896.0	804.1	716.8	760.1	812.1	12236.2
1960	846.3	908.5	999.4	1057.2	1064.4	1016.4	862.0	663.9	534.6	536.5	551.6	582.6	9623.7
1961	609.3	651.9	696.2	691.1	738.4	752.6	624.6	528.6	503.9	578.6	648.0	703.5	7727.1
1962	754.3	808.3	871.2	919.5	959.8	1049.7	1125.4	1064.1	1017.4	912.6	960.8	1005.4	11448.9
1963	1032.5	1111.6	1186.4	1157.4	1085.5	1054.8	818.5	680.9	692.7	588.1	632.2	664.5	10705.6
1964	713.0	750.4	792.2	803.5	729.1	683.5	508.9	375.0	326.7	372.3	431.8	500.1	6986.8
1965	553.6	585.7	609.6	568.3	542.8	618.5	706.6	718.1	790.2	805.0	882.7	951.8	8333.0
1966	1014.6	1078.2	1158.4	1214.7	1179.3	1185.1	1036.9	947.3	946.4	841.8	885.0	926.4	12413.9
1967	972.0	1010.0	1013.9	918.8	887.0	986.1	1037.4	908.4	849.8	716.1	747.8	786.8	10834.0
1968	842.5	899.6	911.0	893.6	935.7	868.4	679.6	630.1	600.4	629.7	663.1	669.6	9223.2
1969	719.5	775.7	820.1	794.9	855.4	895.1	893.3	748.3	706.7	629.0	707.9	789.2	9335.1
1970	856.2	934.5	1005.8	1077.3	1250.2	1398.1	1374.4	1257.8	1233.6	1159.3	1234.0	1285.8	14066.9
1971	1363.8	1439.7	1533.8	1619.6	1793.0	1793.0	1793.0	1793.0	1644.0	1571.4	1635.7	1644.0	19623.9
1972	1644.0	1644.0	1644.0	1644.0	1699.8	1793.0	1621.9	1510.7	1490.5	1390.9	1462.7	1507.9	19053.4
1973	1573.3	1644.0	1644.0	1644.0	1793.0	1793.0	1793.0	1793.0	1644.0	1644.0	1644.0	1644.0	20253.3
1974	1644.0	1644.0	1644.0	1644.0	1793.0	1793.0	1785.7	1664.8	1644.0	1545.9	1591.2	1640.4	20034.0
1975	1644.0	1644.0	1644.0	1644.0	1657.2	1750.9	1564.2	1404.2	1363.6	1252.6	1286.4	1353.7	18208.8
1976	1417.9	1487.0	1547.8	1561.2	1639.5	1640.9	1407.5	1230.2	1205.5	1110.1	1141.7	1174.0	16563.3
1977	1186.6	1231.4	1295.1	1380.0	1398.1	1351.1	1128.1	1042.2	1020.4	902.9	920.3	954.9	13811.1
1978	967.2	1018.8	1089.4	1090.9	1106.4	1060.9	864.2	748.4	701.8	586.7	615.1	642.5	10492.3
1979	652.3	690.5	775.3	776.3	786.6	835.9	856.3	804.8	796.7	688.2	728.3	808.6	9200.1
1980	877.3	969.4	1058.8	1188.2	1391.5	1506.0	1371.7	1211.4	1187.2	1069.0	1101.1	1143.8	14075.8
AVER.	1098.2	1148.6	1200.5	1218.5	1256.2	1268.7	1178.2	1072.4	1024.5	955.5	1005.1	1051.5	13478.1
STD.D	396.2	387.9	377.7	376.8	406.2	411.8	420.8	436.9	438.3	406.6	404.7	399.6	4651.3

Appendix IV

Table 3. POWER PRODUCTION AT KINGSLEY HYDRO --MKWH

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.0	.0	.0	5.2	7.2	8.6	3.6	11.2	7.8	21.1	3.8	2.4	70.8
1943	7.7	8.0	7.7	12.8	9.4	4.0	20.1	20.4	9.4	21.2	4.9	3.7	129.3
1944	3.3	1.9	2.6	3.5	.4	7.4	16.4	18.1	10.5	17.9	2.8	1.0	85.9
1945	2.1	2.0	3.0	6.4	6.4	3.0	13.4	13.0	9.7	15.8	2.5	3.6	80.9
1946	.7	.4	.8	9.9	8.9	11.9	21.8	16.0	6.1	9.2	2.5	2.9	91.0
1947	3.1	2.5	1.6	4.0	7.5	1.5	2.5	5.6	10.5	18.9	2.0	1.2	61.0
1948	2.2	.0	.0	6.8	13.1	7.2	17.5	13.0	10.8	20.2	2.6	2.6	96.0
1949	4.5	.5	.0	1.0	4.9	1.4	3.4	11.3	8.5	18.7	4.0	3.1	61.3
1950	4.3	8.1	8.7	6.8	5.5	12.6	14.4	12.1	7.9	20.2	4.0	2.2	106.6
1951	4.3	2.0	4.1	9.4	1.8	.9	6.8	13.9	11.5	17.9	3.0	8.1	83.8
1952	8.7	9.7	11.2	9.3	10.6	30.3	24.6	17.2	14.1	22.9	4.9	3.3	166.6
1953	2.4	4.2	11.6	8.4	6.6	12.7	23.3	17.1	16.6	21.6	3.4	1.9	129.7
1954	3.8	1.8	3.7	9.9	6.4	10.8	19.5	9.5	10.9	4.2	3.3	2.9	86.7
1955	3.8	2.5	1.6	7.4	8.6	5.3	12.5	9.7	.0	.0	.0	.3	51.7
1956	.0	.0	.0	.0	4.7	5.7	11.0	.0	.0	.0	.0	.0	21.4
1957	.0	.0	.0	.0	.3	.9	1.6	11.5	5.5	3.0	.0	3.3	26.0
1958	.7	.0	.0	.0	.0	1.0	1.7	3.8	10.6	17.3	2.8	1.8	39.6
1959	3.1	1.3	.8	2.6	1.3	9.5	16.2	14.4	9.2	14.1	2.9	1.9	77.2
1960	2.7	1.0	.0	.0	3.8	5.6	12.9	14.7	10.1	4.2	3.4	2.4	61.0
1961	2.6	1.9	2.1	4.7	2.0	1.0	10.2	7.7	3.0	.2	.0	.0	35.2
1962	.0	.0	.0	.0	1.2	.9	.9	7.9	7.6	15.8	2.1	1.4	37.9
1963	3.3	.0	.0	7.6	9.6	8.2	20.1	10.9	3.8	13.5	2.1	1.8	81.0
1964	1.7	2.0	2.0	5.1	7.9	7.0	12.7	8.0	3.7	1.6	.9	.0	52.5
1965	1.5	2.1	2.7	6.8	5.1	.5	1.0	2.0	.7	7.5	.0	.0	30.0
1966	.0	.0	.0	.0	6.2	5.5	16.5	11.7	7.2	15.4	2.8	2.1	67.3
1967	2.5	2.0	4.8	11.8	7.0	.7	1.6	12.0	9.5	16.4	3.2	2.2	73.7
1968	1.7	1.6	3.8	6.7	6.7	9.3	15.9	8.7	6.1	3.4	3.3	3.1	70.7
1969	2.0	1.6	1.5	7.1	1.6	1.5	2.2	12.2	6.2	12.6	1.0	.0	49.4
1970	.0	.0	.0	.0	1.1	1.6	6.2	12.3	7.1	15.0	1.2	1.6	46.2
1971	.1	.0	.0	.1	7.9	37.3	34.1	30.6	36.6	18.0	2.3	6.8	173.8
1972	7.3	6.5	8.5	12.8	8.0	17.8	23.3	16.1	9.8	19.0	3.3	3.5	135.9
1973	1.5	1.3	10.1	10.7	20.5	37.3	30.7	30.4	36.6	14.1	11.1	9.8	214.2
1974	11.4	9.9	7.6	26.6	18.1	31.1	28.8	17.5	10.8	20.2	4.3	3.4	189.8
1975	7.1	5.1	10.0	8.4	8.4	1.7	22.7	18.9	8.6	18.9	4.7	1.5	116.0
1976	2.0	.9	2.1	6.4	7.6	14.6	24.5	19.8	7.6	17.1	4.4	4.0	111.0
1977	4.3	2.9	2.2	1.9	5.1	9.4	22.3	11.4	6.0	16.8	4.7	2.8	89.9
1978	3.9	2.3	2.0	5.5	7.4	12.1	21.0	12.6	8.3	14.4	3.8	3.6	96.9
1979	4.1	2.7	1.3	5.6	4.1	1.1	2.0	8.7	6.5	14.2	2.7	.2	53.2
1980	.0	.0	.0	.0	1.0	1.6	15.4	17.5	7.5	17.6	3.7	2.3	66.4
AVER.	2.9	2.3	3.0	5.9	6.3	8.7	14.2	13.1	9.3	13.9	2.9	2.5	85.1
STD.D	2.6	2.7	3.6	5.2	4.5	9.8	9.3	6.2	7.3	6.8	2.0	2.1	45.1

Appendix IV

Table 4. POWER PRODUCTION AT N.PLATTE HYDRO --MKWH

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.3	1.0	10.6	18.0	18.2	16.9	.5	7.9	8.3	16.7	6.7	7.7	112.9
1943	13.2	17.3	17.2	16.0	12.6	6.7	14.9	16.2	10.2	16.3	6.1	5.7	152.3
1944	6.0	4.3	5.5	8.3	8.9	5.4	14.7	15.1	11.2	17.1	5.1	2.4	104.1
1945	3.9	3.5	5.5	9.9	6.4	4.1	14.8	15.2	9.8	16.6	5.4	8.9	103.8
1946	7.6	4.5	3.8	14.8	8.9	11.9	14.4	14.6	6.8	17.0	4.8	4.8	113.9
1947	5.9	4.9	4.7	7.8	9.5	9.2	7.0	.0	12.1	15.4	5.4	4.9	86.7
1948	6.5	8.9	9.9	15.9	15.2	8.0	14.9	12.9	11.4	15.5	5.1	4.9	129.1
1949	9.1	6.3	2.1	1.5	4.5	8.8	1.5	9.5	10.4	15.7	6.7	5.3	82.4
1950	7.9	15.1	17.3	11.0	4.5	10.6	13.8	12.3	8.3	15.7	6.6	4.0	127.2
1951	6.9	3.8	5.3	11.8	.3	.2	4.9	15.4	13.5	15.5	5.0	13.6	96.2
1952	14.7	17.0	17.4	17.0	16.6	16.8	15.3	15.4	15.8	14.8	6.1	5.5	172.4
1953	4.8	6.9	17.3	13.8	5.8	11.8	14.8	15.6	15.5	16.5	5.4	4.3	132.3
1954	7.5	3.7	7.0	15.5	5.6	11.8	14.5	11.4	14.8	7.9	4.9	4.7	109.4
1955	7.1	5.3	2.8	14.6	13.7	7.1	12.3	13.5	10.4	2.3	.0	.0	89.0
1956	.0	.0	.0	.0	5.5	8.6	13.3	15.9	13.1	4.7	.0	.0	61.2
1957	.0	.0	.0	.0	9.5	8.3	.0	15.9	8.0	6.0	.5	9.1	57.2
1958	7.8	5.6	6.0	8.0	9.8	8.7	.0	.0	13.4	16.1	5.2	4.4	84.9
1959	5.6	3.2	3.3	10.7	5.7	10.9	14.0	15.5	13.8	17.0	4.0	3.4	107.1
1960	5.1	2.8	4.3	2.8	5.7	5.8	13.4	15.0	15.3	7.6	6.0	4.8	88.5
1961	5.4	4.4	4.2	10.1	7.2	8.1	13.7	9.9	2.5	8.3	10.4	10.6	94.7
1962	10.6	11.1	11.1	3.5	.3	3.6	.0	7.0	8.7	15.7	4.2	3.5	79.4
1963	6.7	3.7	4.0	13.6	12.1	8.7	15.6	16.7	6.4	16.2	3.6	3.9	111.3
1964	4.0	4.3	3.8	9.5	11.8	8.6	14.6	15.4	5.4	.3	.0	.0	77.8
1965	2.3	4.4	5.7	13.1	8.4	9.9	3.1	3.1	.2	15.8	7.0	7.1	80.2
1966	5.8	7.1	3.9	.0	7.6	5.1	15.1	16.1	11.0	17.6	4.2	3.5	97.1
1967	4.9	3.5	7.8	16.7	9.4	8.1	7.6	13.5	12.6	16.0	4.5	4.6	109.3
1968	4.9	3.3	7.4	12.6	9.5	10.4	14.9	16.8	11.0	6.4	5.8	6.2	109.1
1969	4.8	4.0	3.3	13.3	10.5	9.3	2.0	16.2	8.3	17.6	6.5	7.4	103.1
1970	9.4	8.5	4.5	9.4	9.3	9.0	4.3	12.8	7.5	17.9	5.0	5.3	102.9
1971	5.8	7.0	6.6	5.7	15.6	16.1	15.2	15.1	15.7	17.4	4.6	11.2	136.1
1972	12.0	13.4	15.2	18.5	7.5	15.1	15.3	16.7	9.8	15.6	4.6	6.1	150.0
1973	6.3	8.0	16.9	17.3	16.9	15.9	15.1	15.2	16.9	21.6	13.0	17.6	180.9
1974	17.2	17.5	17.0	16.9	16.4	15.0	14.9	16.2	11.8	16.8	5.8	5.7	171.2
1975	12.9	10.6	15.8	15.6	9.4	8.7	14.8	16.3	9.5	16.8	7.8	4.4	142.5
1976	5.9	3.4	6.0	8.4	7.8	14.9	15.4	18.8	9.9	18.8	6.9	6.1	122.1
1977	7.3	5.5	5.5	4.2	6.1	9.8	15.5	15.1	7.1	17.0	7.6	4.5	105.1
1978	6.5	3.9	3.5	8.8	9.1	14.4	15.7	16.8	13.1	17.5	7.1	6.7	123.0
1979	8.7	7.9	2.2	12.1	11.9	8.6	.0	15.4	10.1	17.0	8.1	5.9	107.8
1980	8.7	10.0	9.6	9.6	9.9	9.1	15.8	17.2	10.8	17.4	7.1	6.8	131.9
AVER.	6.9	6.6	7.5	10.7	9.3	9.7	11.0	13.5	10.5	14.4	5.4	5.8	111.4
STD.D	3.7	4.5	5.3	5.3	4.2	3.8	5.9	4.5	3.6	4.9	2.5	3.4	28.7

Appendix IV

Table 5. POWER PRODUCTION AT TRICOUNTY HYDRO---MKWH

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	15.8	14.2	15.1	26.8	28.2	32.1	21.7	23.8	26.6	27.9	14.4	17.2	263.9
1943	25.2	33.8	31.6	29.3	22.3	17.4	28.0	25.7	16.9	28.5	14.5	14.3	287.7
1944	15.5	14.9	18.5	19.9	15.7	18.2	26.0	25.3	23.7	30.3	14.5	13.7	236.1
1945	13.8	13.6	14.8	24.1	15.5	16.0	25.8	24.8	19.3	29.5	14.2	14.3	225.7
1946	16.2	13.8	14.1	29.1	19.1	19.3	26.6	24.4	16.3	31.6	14.2	14.0	238.7
1947	14.1	14.0	14.0	19.5	16.9	16.7	29.7	24.5	19.0	28.9	14.4	14.0	225.6
1948	14.1	14.0	14.0	28.3	24.0	17.0	27.1	22.1	20.0	29.8	14.1	14.7	239.4
1949	15.8	14.5	14.1	14.6	15.4	29.4	22.3	22.1	18.8	29.8	14.5	14.1	225.4
1950	15.1	35.9	33.6	22.9	15.4	17.1	24.5	22.7	19.2	29.0	14.4	13.9	263.6
1951	17.3	13.8	14.7	25.1	15.8	16.3	17.3	20.6	21.6	32.6	16.6	29.2	240.9
1952	32.8	36.1	35.3	33.0	30.5	29.3	27.9	25.6	24.9	29.4	14.1	14.0	332.9
1953	14.0	18.5	35.6	29.5	15.3	17.7	25.5	23.3	26.0	26.3	14.3	14.0	259.9
1954	17.7	13.8	19.4	29.9	16.4	18.3	26.2	18.6	26.0	15.8	14.0	13.8	229.9
1955	17.3	13.6	14.0	28.0	25.7	16.7	19.7	22.4	14.5	4.5	1.5	1.0	178.9
1956	.9	.7	.9	4.6	13.4	15.1	20.2	21.6	15.1	7.3	1.1	.9	101.8
1957	.8	.7	1.5	3.0	20.6	31.0	20.9	24.6	17.0	14.9	12.7	15.0	162.8
1958	16.7	14.6	13.9	17.4	30.7	30.0	16.7	22.5	23.0	30.3	14.0	13.7	243.4
1959	16.8	13.5	13.7	23.2	16.8	19.9	23.3	24.8	23.5	31.6	13.9	13.6	234.5
1960	14.0	13.5	13.8	21.1	15.6	16.2	21.2	26.8	26.7	14.7	14.2	13.8	211.4
1961	14.2	13.7	15.9	24.9	15.9	16.8	27.8	19.2	9.5	13.6	13.1	14.4	199.0
1962	18.8	22.0	27.0	26.5	20.0	15.0	15.7	18.7	18.8	33.0	13.9	13.5	242.9
1963	16.6	13.6	16.9	32.1	24.1	16.7	29.6	25.9	15.1	33.0	13.6	13.6	250.8
1964	13.7	13.7	15.4	24.3	22.8	17.3	21.9	19.4	7.6	2.2	1.1	.9	160.3
1965	16.0	13.7	16.9	27.1	17.1	27.0	17.8	23.6	15.4	30.6	14.1	13.8	233.2
1966	14.3	13.7	14.1	22.1	23.3	17.1	26.6	21.4	23.4	31.1	14.1	14.2	235.5
1967	16.8	13.8	20.7	29.4	20.5	15.1	16.7	22.9	23.7	29.7	14.2	13.9	237.4
1968	13.9	13.8	18.2	27.3	18.4	18.1	27.4	23.7	22.6	14.9	14.3	14.1	226.8
1969	13.8	13.8	14.1	26.6	18.2	17.2	19.8	25.2	17.3	31.9	14.2	14.0	226.1
1970	16.0	14.0	14.3	21.1	17.1	22.6	26.5	21.1	17.8	30.7	14.0	13.8	229.0
1971	13.8	13.7	13.9	23.7	29.4	28.0	28.1	26.2	29.6	29.8	14.2	25.0	275.4
1972	26.5	32.8	32.3	30.9	16.9	28.0	20.7	18.8	17.7	30.2	14.1	14.2	283.2
1973	14.1	17.9	33.4	30.0	28.6	28.5	28.7	26.0	27.6	28.5	31.4	33.3	328.0
1974	35.4	32.7	33.2	30.6	27.1	28.3	26.5	20.8	22.1	30.2	14.1	13.9	314.9
1975	27.6	23.3	32.7	30.1	19.5	17.7	26.1	22.4	18.4	28.8	14.4	14.0	275.0
1976	14.0	13.9	14.3	19.1	16.8	20.3	29.2	26.0	20.7	28.6	14.4	14.2	231.6
1977	14.2	14.1	14.6	14.6	15.8	17.9	27.8	20.5	16.2	27.4	15.1	13.8	211.9
1978	18.5	14.5	14.1	18.0	16.6	18.4	25.2	21.5	19.0	28.1	14.5	14.3	222.8
1979	17.2	14.1	14.2	23.5	16.7	26.6	19.3	19.6	17.2	28.6	14.5	14.5	225.9
1980	14.4	14.2	14.3	20.7	27.0	26.0	26.4	25.8	16.4	29.1	14.3	14.1	242.6
AVER.	16.5	16.5	18.5	23.9	20.1	20.9	24.1	22.9	19.9	26.0	13.7	14.3	237.3
STD.D	6.3	7.9	8.7	6.7	5.0	5.5	4.1	2.4	4.8	8.2	4.6	5.7	43.0

Appendix IV

Table 6. DEFICIT IN HABITAT FLOWS AT OVERTON --KAF

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1943	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1944	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1945	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1946	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1947	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1948	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1949	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1950	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1951	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1952	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1953	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1954	.0	.0	.0	.0	.0	.0	.0	.0	.0	154.6	.0	.0	154.6
1955	.0	.0	.0	.0	.0	.0	23.9	19.5	51.5	197.6	38.3	42.7	373.5
1956	53.0	45.9	60.4	80.0	39.7	19.2	23.7	21.9	52.0	195.6	36.2	40.3	667.9
1957	59.1	36.4	60.8	70.9	.0	.0	.0	.0	9.7	146.0	.0	.0	382.9
1958	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1959	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1960	.0	.0	.0	.0	.0	.0	.0	.0	.0	144.6	.0	.0	144.6
1961	.0	.0	.0	.0	.0	.0	.0	7.1	46.1	153.3	.0	.0	206.5
1962	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1963	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1964	.0	.0	.0	.0	.0	.0	21.3	16.3	47.9	190.1	40.2	40.3	356.1
1965	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1966	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1967	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1968	.0	.0	.0	.0	.0	.0	.0	.0	.0	149.0	.0	.0	149.0
1969	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1970	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1971	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1972	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1973	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1974	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1975	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1976	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1977	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1978	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1979	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1980	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
AVER.	2.9	2.1	3.1	3.9	1.0	.5	1.8	1.7	5.3	34.1	2.9	3.2	62.4
STD.D	12.5	9.3	13.5	16.9	6.4	3.1	6.2	5.3	15.2	68.8	10.3	11.1	146.6

Appendix IV

APPENDIX V

SIMULATION OF EFFECTS OF NARROWS RESERVOIR ON FUTURE OPERATION AND PERFORMANCE OF PLATTE RIVER SYSTEM

A. Using Present Operation Policy - Run # Narrow 1

Table 1 - Modified (with Narrows) Flows of South Platte at Julesburg

Table 2 - Simulated Monthly Flows at Overton

Table 3 - Simulated End-of-Month Storage at Lake McConaughy

Table 4 - Energy Output of Kingsley Hydro

Table 5 - Energy Output of North Platte Hydro

Table 6 - Energy Output of Tri-county Hydro

Table 7 - Deficit in Habitat Flow Requirements at Overton

B. Using Revised Operation Policy That Provides for Meeting Habitat Flow Requirements - Run # Narrow 2

Table 8 - Simulated Flows at Overton

Table 9 - Simulated End-of-Month Storage at Lake McConaughy

Table 10- Energy Output of Kingsley Hydro

Table 11- Energy Output of North Platte Hydro

Table 12- Energy Output of Tri-county Hydro

Table 13- Deficit in Habitat Flow Requirements

C. Using Revised Operation Policy That Provides for Meeting Both Habitat and Scouring Flow Requirements - Run # Narrow 3

Table 14- Simulated Flows at Overton

Table 15- Simulated End-of-Month Storage at Lake McConaughy

Table 16- Energy Output of Kingsley Hydro

Table 17- Energy Output of North Platte Hydro

Table 18- Energy Output of Tri-county Hydro

Table 19- Deficit in Habitat Flow Requirements

Table 1. SOUTH PLATTE FLOWS AT JULESBURG -WITH NARROW

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	14.9	14.6	15.9	.0	391.6	233.3	27.1	5.5	8.3	23.8	25.7	20.6	781.3
1943	29.0	40.5	54.4	18.5	10.2	16.5	9.2	7.6	7.3	11.2	11.0	16.8	232.2
1944	19.0	18.9	19.6	12.7	13.6	8.6	16.0	7.6	7.1	9.8	14.6	23.1	170.6
1945	22.9	21.1	17.6	13.4	5.7	20.1	12.1	16.1	11.0	29.4	26.4	11.3	207.1
1946	31.4	30.7	21.5	10.3	5.7	4.3	4.4	5.0	9.0	10.2	18.3	20.9	171.7
1947	15.0	16.9	1.9	12.1	1.3	.2	69.6	9.1	12.5	14.4	29.6	28.3	210.9
1948	21.1	45.4	109.5	34.9	3.6	15.4	13.3	5.7	5.4	11.1	22.0	21.7	309.1
1949	9.7	34.5	27.2	22.0	9.6	273.4	21.4	9.7	16.0	23.9	26.4	22.4	496.2
1950	22.6	22.8	25.3	12.0	4.8	5.1	7.7	12.1	11.7	12.8	21.5	22.8	181.2
1951	20.5	18.8	14.1	9.6	10.0	17.5	10.5	3.8	12.7	21.5	22.3	21.7	183.0
1952	25.3	15.2	30.7	20.6	5.5	15.1	7.1	6.8	7.3	11.4	16.0	20.6	181.6
1953	23.8	17.1	20.8	15.2	10.6	5.9	6.8	6.1	6.0	7.6	14.6	20.5	155.0
1954	18.8	15.2	15.4	6.3	4.1	1.8	1.1	.8	1.2	1.8	2.0	5.7	74.2
1955	5.9	11.1	13.2	4.6	3.9	5.6	1.3	1.1	1.0	1.0	4.3	6.3	59.3
1956	7.2	10.3	7.7	2.5	1.8	2.8	1.3	.6	.9	1.9	4.5	4.1	45.6
1957	1.1	6.4	3.4	11.2	13.0	19.2	3.0	3.5	2.9	15.5	21.7	19.1	120.0
1958	22.9	20.9	29.1	57.5	215.4	85.7	15.4	4.0	3.2	14.0	20.7	21.0	509.8
1959	17.7	17.2	12.3	10.0	25.6	13.6	7.0	7.2	6.0	11.6	14.5	19.8	162.5
1960	14.9	17.3	15.0	10.3	6.9	14.8	7.2	7.3	6.9	9.4	9.7	15.9	135.6
1961	17.2	14.9	13.9	13.4	.8	8.5	11.1	8.5	3.5	8.8	34.6	84.0	219.2
1962	81.4	88.3	80.8	26.4	8.6	25.4	11.4	14.7	8.4	22.7	23.4	19.7	411.2
1963	15.3	18.6	27.4	9.0	4.2	5.4	6.4	6.4	6.4	14.5	16.0	15.8	145.4
1964	17.7	16.2	13.1	10.3	5.9	7.1	9.0	6.5	5.0	5.1	5.9	6.8	108.6
1965	7.4	9.9	7.9	4.1	3.6	62.8	4.1	5.3	6.9	17.4	22.1	65.7	217.2
1966	51.4	60.2	40.0	14.4	4.8	8.9	8.5	7.1	8.3	10.4	14.1	16.4	244.5
1967	16.4	14.0	6.9	4.1	4.1	35.8	24.3	9.3	8.4	12.6	15.3	18.4	169.6
1968	21.3	20.9	9.7	10.6	7.9	8.9	6.1	55.1	12.6	11.4	14.9	17.0	196.4
1969	19.6	16.2	15.2	6.4	5.8	16.9	29.8	5.5	4.9	11.2	6.6	30.2	168.3
1970	98.9	70.2	39.6	120.1	90.1	218.1	17.1	6.3	5.7	20.8	12.3	12.9	712.1
1971	33.6	59.7	54.4	42.9	187.0	46.0	6.4	4.1	3.4	9.1	20.8	13.6	481.0
1972	3.5	43.9	26.9	6.5	7.8	9.3	7.9	9.1	14.0	11.6	13.5	9.2	163.2
1973	7.8	17.1	14.8	24.4	515.7	220.4	10.3	10.6	6.5	38.8	59.7	45.3	971.4
1974	82.6	65.1	64.3	59.5	7.8	8.1	5.5	5.8	6.3	9.9	8.6	12.6	336.1
1975	12.3	14.8	9.5	17.8	7.1	12.4	9.0	9.5	10.1	11.4	13.5	15.6	143.0
1976	16.4	19.4	11.0	9.4	7.8	7.1	7.6	8.1	8.9	11.4	9.3	8.5	124.9
1977	7.7	14.1	14.7	17.7	11.4	11.5	7.2	6.9	5.5	7.0	6.7	7.7	118.1
AVER.	23.7	26.6	25.1	18.9	45.1	40.9	11.8	8.3	7.3	13.2	17.3	20.6	258.8
STD.D	21.8	19.7	22.7	22.0	111.8	72.5	12.0	8.7	3.6	7.7	10.6	15.6	208.3

Table 2. SIMULATED MONTHLY FLOWS AT OVERTON --KAF

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	59.0	64.2	78.4	44.8	300.1	218.3	21.0	5.6	120.2	97.4	103.8	106.8	1219.6
1943	58.2	148.5	142.8	157.2	32.6	35.3	.0	.0	50.9	48.8	51.7	53.5	779.5
1944	62.7	54.9	61.8	82.9	64.1	21.3	14.6	.1	28.7	50.2	48.7	56.6	546.6
1945	68.2	72.4	73.7	102.6	50.1	82.4	9.9	.4	46.2	77.9	120.4	59.4	763.6
1946	120.9	126.7	168.6	62.2	45.2	20.2	1.4	3.3	64.4	118.7	80.6	73.5	885.7
1947	72.6	67.2	80.6	83.7	45.7	72.2	70.9	4.0	48.6	67.1	72.4	74.0	759.0
1948	68.1	105.4	203.3	155.2	27.0	41.6	5.0	11.8	42.7	48.0	68.7	51.9	828.7
1949	61.8	55.9	165.0	172.5	79.6	56.0	41.2	13.5	80.7	125.5	130.5	122.1	1104.3
1950	96.1	159.9	145.7	93.3	58.4	25.0	13.0	10.8	43.9	54.9	65.3	91.4	857.7
1951	99.1	142.9	114.3	77.2	76.2	96.5	24.2	19.0	202.0	135.0	137.8	103.8	1228.0
1952	130.2	143.1	187.2	160.9	89.1	159.2	1.5	3.6	25.4	59.5	98.0	127.1	1184.8
1953	160.5	108.7	172.5	98.9	50.8	27.3	.0	6.3	12.9	41.0	59.6	63.5	802.0
1954	55.8	68.4	58.1	52.5	48.3	21.3	.0	24.4	19.4	45.4	56.9	57.1	507.6
1955	56.5	70.7	75.3	58.4	20.1	40.7	.1	4.5	10.0	41.8	56.7	57.3	492.1
1956	60.0	57.1	60.6	55.6	24.5	12.6	.3	2.1	.0	4.4	13.8	14.7	305.7
1957	8.9	21.6	55.6	68.1	53.4	60.9	18.7	7.3	9.0	11.5	58.5	57.0	430.5
1958	58.2	54.3	85.6	90.7	41.2	107.3	37.1	12.1	34.4	51.3	57.0	65.1	694.3
1959	57.5	60.0	85.2	72.4	47.7	16.4	12.7	9.3	30.5	56.1	64.4	66.6	578.8
1960	67.3	74.7	107.0	78.8	66.1	53.3	14.9	10.5	18.7	55.4	58.2	62.9	667.8
1961	67.1	65.1	69.4	67.2	63.0	37.8	7.3	16.9	30.6	46.7	50.6	50.0	571.7
1962	51.2	73.8	131.2	61.5	39.5	99.9	40.0	24.9	43.5	48.6	53.7	57.3	725.1
1963	59.1	79.6	65.6	43.3	26.3	27.2	.0	6.4	57.0	51.5	52.0	61.9	529.9
1964	68.7	64.0	70.9	69.0	29.9	32.8	2.7	7.9	34.4	53.1	54.8	59.7	547.9
1965	60.4	68.7	65.8	61.1	49.6	37.7	48.3	13.2	62.8	80.5	62.9	66.9	677.9
1966	66.2	81.0	86.0	75.8	28.0	28.5	5.3	15.3	30.3	51.5	48.9	53.4	570.2
1967	57.5	57.0	54.0	36.3	37.6	99.3	53.0	21.7	31.0	55.2	62.3	59.4	624.3
1968	68.7	61.2	72.8	81.4	43.9	21.4	9.2	5.0	33.8	51.0	57.9	66.8	573.1
1969	70.9	68.4	93.2	75.9	45.3	23.3	41.6	10.2	48.8	56.7	57.2	60.9	652.4
1970	61.9	75.3	79.2	145.5	74.1	158.5	47.5	17.0	47.8	105.9	118.2	95.1	1026.1
1971	148.9	149.0	180.8	155.9	187.5	550.1	259.3	110.1	323.0	115.3	139.3	117.9	2437.1
1972	110.1	147.2	161.9	167.9	71.3	88.0	1.3	26.0	51.0	67.3	83.5	110.8	1086.3
1973	112.8	135.4	148.6	140.1	448.1	720.6	258.4	91.0	399.2	262.0	202.0	194.1	3112.3
1974	189.7	207.4	169.5	375.6	231.3	268.5	20.2	17.1	78.7	103.6	112.7	109.0	1883.3
1975	104.0	84.1	131.5	111.2	40.7	64.5	14.3	14.5	47.4	63.7	74.9	80.9	831.7
1976	84.4	78.8	81.6	86.5	53.6	18.8	3.8	.0	40.1	62.6	67.4	76.0	653.6
1977	68.5	72.5	82.1	144.8	92.2	33.8	.0	19.7	49.4	64.7	69.8	72.4	769.9
AVER.	79.8	89.6	107.4	101.9	77.3	96.6	30.5	15.7	63.8	70.3	77.0	76.6	886.4
STD.D	35.3	40.2	45.3	61.5	85.7	146.0	59.1	22.2	81.5	43.8	35.7	31.6	554.8

Table 3. SIMULATED END OF MONTH STORAGE AT LAKE MAC.--KAF

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	1467.5	1537.9	1563.4	1506.1	1736.0	1793.0	1762.6	1693.1	1644.0	1644.0	1644.0	1644.0	19635.6
1943	1644.0	1644.0	1644.0	1644.0	1618.9	1595.8	1453.8	1304.0	1243.6	1252.8	1290.8	1336.8	17672.5
1944	1378.2	1444.8	1529.8	1575.2	1609.3	1573.9	1476.8	1343.1	1300.0	1340.2	1397.9	1461.8	17431.0
1945	1526.9	1580.5	1622.3	1644.0	1685.6	1768.7	1687.8	1616.8	1584.3	1644.0	1644.0	1643.3	19648.2
1946	1644.0	1644.0	1644.0	1644.0	1623.9	1543.2	1346.9	1197.7	1200.4	1281.1	1350.0	1394.5	17513.7
1947	1431.7	1464.9	1502.7	1590.6	1552.8	1498.0	1590.6	1452.2	1408.1	1430.0	1501.5	1574.2	17997.3
1948	1609.1	1644.0	1644.0	1644.0	1593.6	1579.0	1476.0	1407.5	1352.9	1390.2	1456.7	1505.7	18302.6
1949	1501.3	1586.8	1644.0	1644.0	1710.2	1768.5	1767.7	1682.7	1644.0	1644.0	1644.0	1644.0	19881.2
1950	1644.0	1644.0	1644.0	1644.0	1646.0	1581.8	1508.6	1475.7	1502.8	1551.4	1604.9	1644.0	19091.2
1951	1644.0	1644.0	1644.0	1644.0	1689.3	1772.8	1788.4	1696.8	1644.0	1644.0	1644.0	1644.0	20099.3
1952	1644.0	1644.0	1644.0	1644.0	1793.0	1793.0	1773.5	1663.7	1616.2	1644.0	1644.0	1644.0	20147.4
1953	1644.0	1644.0	1644.0	1644.0	1633.6	1568.9	1391.1	1308.2	1212.0	1205.1	1262.7	1325.7	17483.3
1954	1368.4	1424.2	1479.0	1487.1	1474.7	1378.3	1166.3	1065.0	958.0	951.3	974.7	1003.6	14730.6
1955	1025.4	1048.7	1109.8	1113.4	1069.9	1019.6	913.8	689.3	595.5	585.8	600.9	631.0	10403.1
1956	663.9	705.2	735.8	721.9	654.3	572.6	437.0	305.4	202.0	208.6	287.1	365.1	5858.9
1957	417.4	489.9	548.9	588.3	614.8	636.5	524.1	405.1	408.8	488.1	571.7	596.4	6290.0
1958	640.6	693.7	770.2	846.9	908.1	984.2	1058.6	1054.0	997.3	1030.1	1078.0	1142.0	11203.8
1959	1182.3	1238.9	1302.9	1325.7	1351.3	1287.7	1136.5	989.9	924.1	983.3	1029.9	1084.7	13837.3
1960	1118.2	1174.7	1262.7	1288.6	1284.4	1235.8	1095.0	916.4	826.1	833.3	852.7	887.3	12775.3
1961	917.8	962.6	1014.1	1040.8	1052.5	976.3	791.6	670.8	587.0	606.8	673.9	729.4	10023.7
1962	780.2	834.2	897.1	945.4	985.7	1075.6	1151.3	1098.2	1063.5	1112.6	1164.4	1210.6	12318.8
1963	1244.8	1321.0	1385.0	1407.8	1360.0	1331.5	1123.3	1008.1	1019.3	1065.6	1113.3	1148.2	14528.0
1964	1199.1	1238.4	1286.7	1328.8	1276.8	1235.3	1067.1	938.4	864.1	870.1	898.5	930.8	13134.2
1965	976.3	1009.7	1044.6	1043.8	1019.5	1056.7	1096.4	1004.1	1035.3	1111.0	1167.2	1236.3	12801.0
1966	1299.1	1362.7	1442.9	1499.2	1505.9	1514.2	1388.7	1311.8	1332.0	1377.9	1425.4	1471.0	16930.9
1967	1529.3	1570.0	1595.3	1566.8	1546.8	1616.6	1628.9	1462.1	1429.7	1447.4	1484.4	1526.0	18403.4
1968	1579.7	1639.7	1644.0	1644.0	1694.3	1632.7	1463.0	1429.6	1420.2	1453.1	1490.1	1499.3	18589.7
1969	1551.2	1609.4	1644.0	1644.0	1613.8	1522.7	1458.1	1293.7	1258.0	1324.5	1363.8	1421.5	17704.7
1970	1488.5	1566.8	1638.1	1644.0	1793.0	1793.0	1778.8	1655.4	1629.4	1644.0	1644.0	1644.0	19919.0
1971	1644.0	1644.0	1644.0	1644.0	1793.0	1793.0	1793.0	1793.0	1644.0	1644.0	1644.0	1644.0	20324.0
1972	1644.0	1644.0	1644.0	1644.0	1701.7	1793.0	1650.5	1546.0	1532.4	1571.2	1644.0	1644.0	19658.8
1973	1644.0	1644.0	1644.0	1644.0	1793.0	1793.0	1793.0	1793.0	1644.0	1644.0	1644.0	1644.0	20324.0
1974	1644.0	1644.0	1644.0	1644.0	1793.0	1793.0	1793.0	1682.7	1644.0	1644.0	1644.0	1644.0	20213.7
1975	1644.0	1644.0	1644.0	1644.0	1659.7	1694.1	1511.4	1365.6	1331.8	1360.1	1395.6	1451.9	18346.2
1976	1497.0	1559.6	1600.5	1629.0	1709.4	1719.7	1512.6	1366.3	1359.6	1408.4	1445.5	1478.9	18286.5
1977	1489.3	1535.4	1588.8	1644.0	1663.1	1619.6	1425.3	1345.8	1329.2	1348.1	1367.1	1403.0	17758.7
AVER.	1360.2	1398.0	1432.8	1447.2	1478.1	1469.8	1382.8	1278.6	1233.0	1260.7	1296.9	1330.5	16368.5
STD.D	337.8	325.9	309.5	300.5	326.6	335.3	355.6	373.7	377.3	374.8	361.6	349.1	3967.3

Appendix V

Table 4. POWER PRODUCTION AT KINGSLEY HYDRO --MKWH

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.0	.0	5.6	11.2	.8	2.5	3.6	9.8	9.3	11.1	8.0	8.6	70.4
1943	7.7	8.0	7.7	12.8	9.7	7.5	17.0	17.6	8.8	7.6	4.8	3.4	112.7
1944	2.8	1.9	1.3	3.4	7.6	9.3	15.6	16.4	8.6	5.4	2.8	.9	76.1
1945	2.2	2.0	2.9	7.1	7.1	4.4	12.7	14.9	9.6	5.6	9.1	6.6	84.2
1946	8.9	8.1	11.2	6.9	8.9	12.2	21.1	15.4	6.5	2.8	2.7	3.2	107.9
1947	3.9	3.1	4.4	3.6	8.5	16.0	2.6	16.2	10.1	7.5	2.4	1.8	80.1
1948	3.6	5.6	12.6	10.4	9.2	8.1	15.7	11.7	9.9	6.5	2.5	2.4	98.1
1949	5.8	1.5	6.1	8.3	5.4	1.5	3.5	12.1	11.6	11.3	9.3	7.8	84.2
1950	7.0	8.8	8.7	6.5	5.4	12.4	12.9	10.4	6.7	6.0	3.8	4.6	93.2
1951	7.4	8.3	7.9	7.0	1.8	.8	6.7	15.0	19.8	11.2	9.9	8.1	104.0
1952	8.7	9.7	11.2	9.3	10.6	30.3	21.9	14.8	11.2	9.0	9.6	10.2	156.6
1953	10.8	7.6	11.6	8.4	6.6	12.4	20.6	15.4	13.1	8.5	3.5	1.9	120.5
1954	2.8	1.9	2.2	6.2	6.9	11.9	20.2	11.3	10.7	5.3	4.1	3.7	87.1
1955	3.8	3.2	1.9	5.4	8.4	7.4	16.8	14.3	8.5	5.8	3.9	3.1	82.2
1956	2.7	1.8	2.3	4.9	7.8	7.0	12.7	8.5	5.8	.0	.5	.0	54.1
1957	.0	.0	.7	2.5	3.7	4.1	9.6	9.9	3.2	.5	.0	3.6	37.7
1958	1.9	.9	.1	.0	.0	.9	1.6	3.4	8.8	4.8	2.6	1.7	26.7
1959	2.1	1.3	2.1	4.0	4.3	9.0	15.1	13.2	7.6	3.5	3.0	1.9	67.0
1960	3.1	1.6	.3	3.0	5.2	6.2	13.0	14.9	8.7	4.7	3.7	2.6	67.0
1961	2.8	2.1	1.6	2.8	5.4	8.7	15.8	10.3	7.3	3.8	.2	.0	60.9
1962	.0	.0	.0	.0	1.2	.9	.9	7.2	6.7	3.3	2.0	1.4	23.7
1963	3.0	.3	1.0	3.2	8.2	8.9	19.9	10.7	4.5	3.8	2.4	2.1	68.0
1964	1.9	2.3	1.9	3.3	7.8	8.6	16.1	10.8	7.7	5.5	3.7	2.9	72.4
1965	2.6	2.6	2.5	5.2	6.5	3.9	5.4	11.2	4.3	3.3	1.9	.0	49.3
1966	.0	.0	.0	.0	2.7	5.8	16.3	12.1	6.3	4.1	3.0	2.1	52.4
1967	1.7	2.2	3.6	7.7	7.6	3.8	5.9	18.4	9.2	6.6	3.8	2.6	73.2
1968	2.5	1.8	5.7	6.9	7.8	11.5	19.4	10.6	6.8	4.6	4.3	4.1	86.0
1969	2.6	2.0	3.0	7.0	11.4	15.0	8.9	17.0	7.4	3.2	5.1	2.3	84.9
1970	.0	.0	.0	6.7	3.8	17.6	5.9	14.5	8.1	8.1	9.1	7.1	80.9
1971	8.1	7.8	9.7	8.9	10.5	37.3	34.1	30.6	36.6	10.7	8.9	7.7	210.9
1972	7.3	6.5	8.5	12.8	7.8	18.0	20.4	15.6	9.3	5.7	3.3	8.3	123.5
1973	8.3	8.6	10.1	10.7	20.5	37.3	30.7	30.4	36.6	14.1	11.1	9.8	228.2
1974	11.4	9.9	7.6	26.6	18.1	31.1	28.1	16.4	12.7	10.4	9.1	8.4	189.9
1975	7.5	5.1	10.0	8.4	8.2	7.9	21.9	17.3	7.8	6.0	4.7	2.6	107.4
1976	3.9	1.6	4.1	4.9	7.5	13.9	22.5	17.6	6.2	4.7	4.4	4.4	95.6
1977	5.0	3.1	3.5	5.1	5.4	9.8	21.5	12.0	6.2	6.4	5.4	3.2	86.5
AVER.	4.3	3.6	4.8	6.7	7.2	11.2	14.9	14.1	10.1	6.1	4.7	4.0	91.8
STD.D	3.2	3.2	3.9	4.7	4.1	9.4	8.2	5.2	7.2	3.1	3.0	2.9	45.0

Appendix V

Table 5. POWER PRODUCTION AT N.PLATTE HYDRO --MKWH

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.1	.7	10.0	16.4	10.8	11.3	.0	6.0	10.5	16.7	13.5	13.8	109.8
1943	10.4	16.9	17.2	16.0	9.8	6.7	14.9	16.2	10.0	10.4	6.1	5.5	140.0
1944	5.1	3.8	3.2	5.4	10.1	8.7	14.7	15.1	7.5	6.2	4.9	2.4	87.1
1945	3.9	3.5	5.1	10.2	6.4	4.1	12.5	15.2	8.8	10.2	15.6	8.9	104.2
1946	15.9	14.7	16.6	8.5	8.2	11.3	14.4	14.6	6.8	3.9	4.8	4.8	124.4
1947	5.9	4.9	4.7	5.0	8.8	16.5	5.2	15.7	11.5	10.1	5.4	4.9	98.7
1948	6.5	13.5	17.3	17.5	7.3	8.0	14.9	10.9	9.9	7.3	5.1	4.4	122.5
1949	8.1	6.0	11.8	13.2	4.5	8.8	.0	10.8	15.0	16.7	15.4	12.9	123.1
1950	12.5	15.7	15.7	9.8	4.5	10.6	12.0	10.2	7.0	6.7	6.6	8.1	119.4
1951	12.0	13.9	11.5	7.9	.3	.2	4.9	14.8	15.0	15.5	16.0	13.8	125.8
1952	14.4	15.2	17.4	15.0	12.9	16.8	15.3	14.9	11.5	8.8	13.7	16.6	172.6
1953	16.9	12.2	17.3	12.5	5.8	11.8	14.8	15.6	15.5	11.1	5.4	4.3	143.0
1954	5.5	3.7	4.1	7.7	5.3	11.3	14.5	11.4	12.4	7.9	4.9	4.7	93.5
1955	5.3	5.3	2.7	7.7	8.9	7.1	12.3	13.5	11.9	8.6	5.7	4.6	93.5
1956	4.1	3.2	3.1	7.3	11.2	9.9	13.3	15.9	13.1	4.7	.0	.0	85.8
1957	.0	.0	.0	4.8	7.2	6.5	15.6	15.9	2.6	.0	.5	8.6	61.7
1958	5.5	4.1	3.1	7.9	9.8	8.7	.0	.0	10.5	7.6	5.2	4.4	66.7
1959	3.9	3.2	3.3	4.9	6.5	9.7	14.0	15.5	10.4	5.2	4.0	3.4	83.9
1960	4.9	2.8	.0	3.8	5.7	5.8	13.4	15.0	11.0	7.6	6.0	4.8	80.8
1961	5.3	4.4	3.1	4.7	7.2	10.5	15.0	14.4	11.0	6.3	3.5	10.6	96.1
1962	10.6	11.1	11.1	2.2	.0	.3	.0	5.0	7.3	5.2	4.2	3.5	60.6
1963	5.2	1.8	3.0	5.5	8.2	8.7	15.6	14.7	6.4	5.6	3.6	3.9	82.4
1964	4.0	4.3	3.0	4.3	8.5	8.6	14.6	15.4	10.3	7.3	5.0	4.5	89.9
1965	3.9	4.4	4.1	6.7	8.3	13.4	2.9	13.3	4.3	5.2	4.8	8.6	79.9
1966	6.6	7.7	4.5	.0	1.0	5.1	15.1	14.7	7.5	6.2	4.0	3.3	75.8
1967	3.2	3.3	4.3	8.6	7.4	6.4	4.2	14.8	9.2	7.2	4.5	4.6	77.7
1968	4.9	3.3	6.8	9.4	8.6	10.0	14.9	16.8	8.0	6.4	5.8	6.2	101.0
1969	4.8	4.0	5.0	9.2	13.8	16.7	9.8	16.2	7.8	4.9	6.5	6.2	104.9
1970	9.4	9.2	4.8	16.8	13.2	16.4	.0	14.4	6.9	13.6	13.5	9.7	127.9
1971	16.3	17.2	17.3	17.1	15.6	16.1	15.2	15.1	15.7	15.7	14.4	10.5	186.3
1972	8.7	14.6	15.2	18.5	7.5	15.1	15.3	16.7	9.6	6.3	5.1	11.7	144.4
1973	11.5	13.6	15.7	17.3	16.9	15.9	15.1	15.2	16.9	21.6	13.0	17.6	190.5
1974	17.2	17.5	17.0	16.9	16.4	15.0	14.9	16.2	13.8	14.6	13.2	12.6	185.3
1975	10.8	7.9	14.9	13.4	7.9	7.2	14.8	16.3	8.7	8.7	7.8	4.4	122.8
1976	5.9	3.4	6.0	6.0	7.8	14.1	15.4	18.8	7.9	8.3	6.9	6.1	106.5
1977	7.3	5.5	5.5	8.7	6.1	9.8	15.5	14.4	6.7	9.3	7.6	4.5	100.7
AVER.	7.7	7.7	8.5	9.6	8.3	10.1	11.3	13.9	10.0	8.8	7.3	7.2	110.3
STD.D	4.5	5.4	6.0	5.0	3.9	4.4	5.7	3.7	3.3	4.4	4.4	4.2	34.3

Appendix ✓

Table 6. POWER PRODUCTION AT TRICOUNTY HYDRO---MKWH

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	13.1	14.2	15.1	15.6	28.2	32.1	20.8	19.8	30.4	27.9	27.2	28.5	272.8
1943	14.7	33.8	31.6	29.3	17.0	17.4	22.8	20.5	16.6	16.5	14.5	13.8	248.5
1944	13.9	13.9	14.2	14.4	15.7	17.4	24.0	20.1	16.6	15.3	14.1	13.7	193.2
1945	13.8	13.6	14.1	24.6	15.5	16.0	22.4	19.7	17.5	23.4	32.3	14.3	227.1
1946	32.3	32.4	33.1	17.3	17.7	18.2	24.2	19.9	16.3	14.5	14.2	14.0	254.0
1947	14.1	14.0	14.0	14.2	15.6	16.7	20.4	20.1	18.0	15.8	14.4	14.0	191.3
1948	14.1	24.0	33.4	28.3	17.6	17.0	23.0	19.1	17.2	15.5	14.1	13.8	237.1
1949	13.9	13.8	32.4	31.1	15.4	27.2	22.3	19.8	26.9	29.8	30.6	28.4	291.6
1950	23.6	35.9	33.6	20.6	15.4	17.1	22.1	19.8	16.7	14.9	14.4	21.5	255.7
1951	26.7	32.8	26.3	17.8	15.8	16.3	17.3	19.5	21.6	32.6	34.7	29.6	291.0
1952	32.3	36.1	35.3	33.0	28.2	29.3	23.0	21.2	17.1	20.0	28.4	33.4	337.3
1953	33.5	28.5	35.6	26.9	15.3	17.7	20.2	19.5	19.0	17.2	14.3	14.0	261.7
1954	14.0	13.8	14.0	15.2	15.9	17.4	20.9	18.6	17.8	15.8	14.0	13.8	191.4
1955	13.8	13.6	13.8	15.0	17.7	16.7	19.7	22.4	17.4	16.5	14.3	13.8	194.7
1956	13.7	13.5	13.7	15.2	17.7	17.4	20.2	21.6	15.1	7.3	1.1	.9	157.4
1957	.8	.7	13.8	14.6	15.8	16.6	19.6	21.0	6.9	2.3	12.7	15.0	139.8
1958	13.7	13.5	13.9	14.3	18.9	30.0	16.7	19.9	18.2	15.2	14.0	13.7	202.0
1959	13.6	13.5	13.7	14.5	16.1	17.6	20.8	21.6	17.0	14.5	13.9	13.6	190.3
1960	13.8	13.5	13.8	14.4	15.6	16.2	18.4	23.8	17.2	14.7	14.2	13.8	189.3
1961	13.9	13.7	13.9	14.6	15.9	16.8	24.2	19.2	17.0	13.6	13.1	12.9	188.8
1962	13.7	15.8	28.2	14.5	16.8	15.0	15.7	18.7	16.3	14.1	13.9	13.5	196.1
1963	13.9	13.6	13.7	14.5	16.9	16.7	24.8	22.1	15.1	14.1	13.6	13.6	192.7
1964	13.7	13.7	13.8	14.6	16.7	17.3	21.9	19.5	16.8	14.8	13.9	13.7	190.4
1965	13.7	13.7	13.8	14.9	17.0	16.0	17.4	21.2	15.4	14.5	14.1	13.8	185.7
1966	13.8	13.7	14.1	14.4	16.7	17.1	22.5	19.3	16.8	14.6	13.8	13.7	190.4
1967	13.6	13.5	14.0	16.3	16.7	15.1	16.7	22.4	17.3	14.8	14.2	13.9	188.6
1968	13.9	13.8	17.2	21.4	16.6	17.3	24.2	19.5	17.1	14.9	14.3	14.1	204.3
1969	13.8	13.8	17.3	19.0	16.7	17.0	19.8	22.1	16.4	14.3	14.2	14.0	198.4
1970	14.2	14.0	14.3	30.1	24.2	27.9	30.7	19.5	16.5	26.8	30.0	22.0	270.3
1971	33.6	35.8	34.1	32.3	29.4	28.0	28.1	26.2	29.6	29.7	32.5	23.8	363.2
1972	20.2	32.8	32.3	30.9	16.9	28.0	18.3	18.8	17.4	14.8	15.0	24.7	270.1
1973	23.9	29.6	33.4	30.0	28.6	28.5	28.7	26.0	27.6	28.5	31.4	33.3	349.5
1974	35.4	32.7	33.2	30.6	27.1	28.3	26.5	19.3	25.9	28.7	28.1	26.8	342.6
1975	23.6	18.2	32.4	26.2	16.6	17.7	24.0	20.3	17.0	14.8	14.4	14.0	239.5
1976	14.0	13.9	14.3	14.7	16.8	18.7	25.9	23.3	17.1	14.9	14.4	14.2	202.2
1977	14.2	14.1	14.6	22.9	15.8	17.9	25.3	19.5	15.4	15.6	15.1	13.8	204.3
AVER.	17.6	19.2	21.4	20.5	18.3	19.9	22.0	20.7	18.3	17.6	17.9	17.2	230.6
STD.D	7.7	9.3	9.1	6.9	4.3	5.3	3.5	1.9	4.5	6.6	7.8	7.0	55.7

Appendix V

Table 7. DEFICIT IN HABITAT FLOWS AT OVERTON --KAF

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1943	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1944	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1945	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1946	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1947	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1948	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1949	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1950	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1951	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1952	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1953	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1954	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1955	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1956	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1957	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1958	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1959	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1960	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1961	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1962	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1963	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1964	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1965	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1966	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1967	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1968	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1969	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1970	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1971	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1972	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1973	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1974	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1975	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1976	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1977	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
AVER.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
STD.D	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

Appendix √

Table 8. SIMULATED MONTHLY FLOWS AT OVERTON --KAF

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	68.0	64.2	78.4	101.0	300.1	207.4	24.0	24.0	68.7	104.0	73.0	106.8	1219.6
1943	68.0	138.7	142.8	157.2	50.0	35.3	24.0	24.0	52.0	104.0	51.7	55.0	902.7
1944	68.0	58.0	76.0	101.0	64.1	24.0	24.0	24.0	52.0	104.0	50.0	56.6	701.7
1945	68.2	72.4	76.0	101.0	50.1	82.4	24.0	24.0	52.0	104.0	57.4	59.4	770.9
1946	68.0	65.5	79.9	101.0	50.0	24.0	24.0	24.0	64.4	118.7	80.6	73.5	773.6
1947	72.6	67.2	80.6	101.0	50.0	72.2	70.9	24.0	52.0	104.0	72.4	74.0	840.9
1948	68.1	72.6	81.0	101.0	50.0	41.6	24.0	24.0	52.0	104.0	68.7	55.0	742.0
1949	68.0	58.0	104.8	101.0	79.6	56.0	41.2	24.0	52.0	104.0	124.9	122.1	935.6
1950	96.1	159.9	145.7	101.0	58.4	25.0	24.0	24.0	52.0	104.0	65.3	66.4	921.8
1951	68.0	109.9	114.3	101.0	76.2	96.5	24.2	24.0	173.2	135.0	137.8	103.8	1163.9
1952	130.2	143.1	187.2	160.9	89.1	159.2	24.0	24.0	52.0	104.0	51.0	60.1	1184.8
1953	160.5	108.7	172.5	101.0	50.8	27.3	24.0	24.0	52.0	104.0	59.6	63.5	947.9
1954	68.0	68.4	76.0	101.0	50.0	24.0	24.0	24.4	52.0	104.0	56.9	57.1	705.8
1955	68.0	70.7	76.0	101.0	50.0	40.7	.1	4.5	.5	2.4	11.7	12.3	437.9
1956	15.0	12.1	60.6	55.6	10.3	4.8	.3	2.1	.0	4.4	13.8	14.7	193.7
1957	8.9	21.6	15.2	30.1	53.4	60.9	12.0	7.3	9.0	11.5	13.5	57.0	300.4
1958	68.0	58.0	85.6	101.0	50.0	98.5	37.1	24.0	52.0	104.0	57.0	65.1	800.3
1959	68.0	60.0	85.2	101.0	50.0	24.0	24.0	24.0	52.0	104.0	64.4	66.6	723.2
1960	68.0	74.7	107.0	101.0	66.1	53.3	24.0	24.0	3.7	55.4	58.2	62.9	698.3
1961	68.0	65.1	76.0	101.0	63.0	37.8	7.3	16.9	5.9	3.3	5.6	19.9	469.8
1962	72.6	126.5	131.2	101.0	50.0	99.9	40.0	24.9	52.0	104.0	53.7	57.3	913.1
1963	68.0	79.6	76.0	101.0	50.0	27.2	24.0	6.4	57.0	51.5	52.0	61.9	654.6
1964	68.7	64.0	76.0	101.0	50.0	32.8	2.7	7.7	4.1	9.9	9.8	14.7	441.4
1965	68.0	68.7	76.0	101.0	50.0	37.7	48.3	24.0	62.8	104.0	62.9	66.9	770.3
1966	68.0	81.0	86.0	101.0	50.0	28.5	24.0	24.0	52.0	104.0	50.0	55.0	723.5
1967	68.0	58.0	76.0	101.0	50.0	99.3	53.0	24.0	52.0	104.0	62.3	59.4	807.0
1968	68.7	61.2	76.0	101.0	50.0	24.0	24.0	24.0	33.8	51.0	57.9	66.8	638.4
1969	70.9	68.4	82.6	101.0	50.0	24.0	41.6	10.2	8.9	11.9	57.2	60.9	587.6
1970	68.0	75.3	79.2	101.0	50.2	24.0	31.1	24.0	52.0	104.0	65.5	68.1	742.4
1971	83.9	73.1	86.7	101.0	99.1	377.6	231.9	110.1	323.0	115.3	139.3	117.9	1858.9
1972	110.1	147.2	161.9	167.9	71.3	88.0	24.0	26.0	52.0	104.0	80.5	76.2	1109.1
1973	90.0	135.4	148.6	140.1	448.1	720.6	258.4	91.0	399.2	262.0	202.0	194.1	3089.5
1974	189.7	207.4	169.5	375.6	231.3	268.5	24.0	24.0	68.0	104.0	112.3	109.0	1883.3
1975	104.0	84.1	131.5	111.2	50.0	64.5	24.0	24.0	52.0	104.0	74.9	80.9	905.1
1976	84.4	78.8	81.6	101.0	53.6	24.0	24.0	24.0	52.0	104.0	67.4	76.0	770.8
1977	68.5	72.5	82.1	117.4	92.2	33.8	24.0	24.0	52.0	104.0	69.8	72.4	812.7
AVER.	77.4	84.2	98.4	112.3	79.4	88.0	38.3	25.2	64.5	89.6	66.4	69.1	892.8
STD.D	31.7	39.1	37.1	51.0	81.6	132.3	52.8	19.9	79.3	48.7	38.6	33.2	507.1

Appendix V

Table 9. SIMULATED END OF MONTH STORAGE AT LAKE MAC.--KAF

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	1467.5	1534.9	1554.4	1440.9	1670.8	1738.7	1708.3	1617.4	1619.8	1613.2	1644.0	1644.0	19253.8
1943	1634.2	1644.0	1644.0	1644.0	1601.5	1578.4	1412.4	1238.6	1177.1	1131.1	1169.1	1213.6	17088.0
1944	1249.7	1313.2	1384.0	1411.3	1445.4	1407.3	1300.8	1143.2	1076.8	1063.2	1119.6	1183.5	15098.0
1945	1248.6	1302.2	1341.7	1365.0	1406.6	1489.7	1394.7	1300.1	1261.8	1295.4	1358.4	1357.7	16121.9
1946	1411.3	1472.5	1561.2	1522.4	1497.5	1413.0	1194.1	1024.2	1026.9	1107.6	1176.5	1221.0	15628.2
1947	1258.2	1291.4	1329.2	1399.8	1357.7	1302.9	1395.5	1237.1	1189.6	1174.6	1246.1	1318.8	15500.9
1948	1353.7	1421.4	1543.7	1623.6	1524.5	1509.9	1387.9	1307.2	1243.3	1224.6	1291.1	1337.0	16767.9
1949	1326.4	1409.8	1527.2	1598.7	1664.9	1723.2	1722.4	1626.9	1616.9	1638.4	1644.0	1644.0	19142.8
1950	1644.0	1644.0	1644.0	1636.3	1638.3	1574.1	1489.9	1443.8	1462.8	1462.3	1515.8	1579.9	18735.2
1951	1611.0	1644.0	1644.0	1620.2	1665.5	1749.0	1764.6	1668.0	1644.0	1644.0	1644.0	1644.0	19942.3
1952	1644.0	1644.0	1644.0	1644.0	1793.0	1793.0	1751.0	1620.8	1546.7	1530.0	1577.0	1644.0	19831.5
1953	1644.0	1644.0	1644.0	1641.9	1631.5	1566.8	1365.0	1264.4	1129.1	1059.2	1116.8	1179.8	16886.5
1954	1210.3	1266.1	1303.0	1262.6	1248.5	1149.4	913.4	812.1	672.5	607.2	630.6	659.5	11735.2
1955	669.8	693.1	753.5	714.5	641.1	590.8	485.0	260.5	176.2	205.9	259.3	327.3	5777.0
1956	398.6	465.9	528.3	522.0	468.6	394.7	259.1	127.5	24.1	30.7	109.2	187.2	3515.9
1957	239.5	312.0	382.3	459.8	515.3	537.0	431.3	312.3	316.0	395.3	478.9	548.6	4928.3
1958	583.0	632.4	708.9	775.3	836.5	912.6	987.0	970.5	896.2	876.3	924.2	988.2	10091.2
1959	1018.0	1074.6	1138.6	1132.8	1156.1	1084.9	922.4	761.1	673.8	685.1	731.7	786.5	11165.7
1960	819.3	875.8	963.8	967.5	963.3	914.7	764.8	572.7	497.4	504.6	524.0	558.6	8926.6
1961	588.2	633.0	677.9	670.8	682.5	606.3	421.6	300.8	241.7	303.6	373.0	428.5	5928.0
1962	479.3	533.3	596.2	644.5	684.7	774.7	849.3	747.3	704.1	697.8	749.6	795.8	8256.6
1963	821.1	897.3	950.9	916.0	844.5	816.0	583.8	468.6	479.8	526.1	573.8	608.7	8486.6
1964	659.6	698.9	742.1	752.2	680.1	638.6	470.4	341.9	297.9	347.1	409.5	477.8	6516.1
1965	535.7	569.1	593.8	553.1	528.4	565.6	605.3	502.2	533.4	585.6	641.8	710.9	6924.9
1966	773.7	837.3	917.5	973.8	931.5	939.8	795.6	710.0	708.5	701.9	748.3	792.3	9830.2
1967	840.1	879.8	883.1	789.9	757.5	827.3	839.6	670.5	617.1	586.0	623.0	664.6	8978.5
1968	718.3	778.3	779.4	759.8	804.0	739.8	555.3	502.9	493.5	526.4	563.4	572.6	7793.7
1969	624.5	682.7	727.9	702.8	667.9	576.1	511.5	347.1	351.3	451.1	501.9	559.6	6704.4
1970	620.5	698.8	770.1	841.6	1014.5	1162.4	1113.7	999.7	969.6	986.1	1038.8	1065.8	11281.6
1971	1130.8	1206.7	1300.8	1383.1	1620.5	1793.0	1793.0	1793.0	1644.0	1644.0	1644.0	1644.0	18596.8
1972	1644.0	1644.0	1644.0	1644.0	1701.7	1793.0	1627.8	1523.3	1508.7	1510.8	1586.6	1621.2	19449.1
1973	1644.0	1644.0	1644.0	1644.0	1793.0	1793.0	1793.0	1793.0	1644.0	1644.0	1644.0	1644.0	20324.0
1974	1644.0	1644.0	1644.0	1644.0	1793.0	1793.0	1789.2	1672.0	1644.0	1643.6	1644.0	1644.0	20198.8
1975	1644.0	1644.0	1644.0	1644.0	1650.4	1684.8	1492.4	1337.1	1298.7	1286.7	1322.2	1378.5	18026.8
1976	1423.6	1486.2	1527.1	1541.1	1621.5	1626.6	1399.3	1229.0	1210.4	1217.8	1254.9	1288.3	16825.8
1977	1298.7	1344.8	1398.2	1480.8	1499.9	1456.4	1238.1	1154.3	1135.1	1114.7	1133.7	1169.6	15424.3
AVER.	1097.8	1141.9	1185.6	1193.6	1222.3	1222.7	1125.8	1011.1	964.8	972.8	1017.0	1058.0	13213.4
STD.D	446.4	432.1	419.1	419.1	449.9	466.9	482.9	501.4	497.2	482.6	471.6	458.3	5359.9

Appendix V

Table 10. POWER PRODUCTION AT KINGSLEY HYDRO --MKWH

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.0	.3	6.2	16.6	.8	1.3	3.5	11.8	3.9	11.6	4.8	8.6	69.6
1943	8.7	7.0	7.7	12.8	11.5	7.5	19.2	19.5	8.7	12.2	4.6	3.4	122.9
1944	3.2	2.1	2.6	4.9	7.3	9.2	15.8	17.6	10.0	9.6	2.7	.8	85.7
1945	2.0	1.8	2.9	6.4	6.6	4.1	13.2	15.9	9.3	7.5	2.4	6.1	78.1
1946	3.2	1.7	2.0	10.6	9.1	12.2	22.3	16.4	6.1	2.6	2.6	3.0	91.7
1947	3.7	3.0	4.2	5.1	8.4	15.1	2.5	17.1	9.7	10.3	2.2	1.7	82.9
1948	3.3	2.1	.0	2.1	14.0	8.0	17.2	12.6	10.4	11.3	2.4	2.6	85.9
1949	6.1	1.6	.0	.9	5.4	1.5	3.4	13.1	8.5	9.1	8.7	7.8	66.0
1950	7.0	8.8	8.7	7.3	5.4	12.3	13.9	11.6	7.4	10.7	3.7	2.0	99.0
1951	4.2	4.9	7.9	9.5	1.8	.8	6.6	15.5	16.8	11.2	9.9	8.1	97.1
1952	8.7	9.7	11.2	9.3	10.6	30.3	24.2	16.8	13.8	13.2	4.7	3.3	155.8
1953	10.8	7.6	11.6	8.6	6.6	12.4	22.9	16.9	16.3	13.6	3.3	1.8	132.5
1954	3.8	1.8	3.8	10.3	6.6	11.3	20.6	10.1	11.7	8.5	3.4	3.1	94.9
1955	4.0	2.7	1.6	7.7	8.9	5.9	13.1	10.3	.0	.0	.9	.4	55.4
1956	.0	.0	.0	3.8	5.9	5.6	10.6	.0	.0	.0	.0	.0	25.9
1957	.0	.0	.0	.0	1.6	3.8	8.4	9.0	2.9	.4	.0	.6	26.7
1958	2.5	1.1	.0	.8	.0	.9	1.6	4.2	9.9	8.7	2.5	1.6	33.7
1959	2.9	1.2	2.0	6.3	4.2	9.1	14.9	13.1	8.3	6.4	2.6	1.7	72.5
1960	2.8	1.4	.2	4.5	4.6	5.5	12.0	13.5	6.2	3.8	3.0	2.2	59.6
1961	2.4	1.7	2.0	4.7	4.5	7.2	12.5	7.6	3.9	.7	.0	.0	47.3
1962	.0	.0	.0	.0	1.0	.8	.9	10.0	6.3	6.8	1.6	1.2	28.5
1963	3.2	.2	1.7	7.4	8.6	7.2	17.5	7.9	3.3	2.8	1.8	1.6	63.2
1964	1.4	1.8	1.9	5.0	7.5	6.5	11.9	7.4	3.4	1.4	.7	.0	48.8
1965	1.2	2.0	2.6	6.7	5.0	3.0	4.2	9.3	3.2	4.0	1.5	.0	42.6
1966	.0	.0	.0	.0	6.2	4.7	14.6	10.1	6.4	6.9	2.4	1.7	53.0
1967	2.1	1.8	4.6	10.9	6.6	2.8	4.5	13.8	8.0	7.8	2.6	1.8	67.4
1968	1.8	1.3	4.4	6.5	6.1	8.5	14.5	8.2	4.4	2.9	2.8	2.7	64.1
1969	1.8	1.4	1.4	6.7	8.2	10.2	5.8	10.4	2.1	.1	2.6	1.5	52.2
1970	.4	.0	.0	.0	1.0	1.5	7.9	11.0	6.9	6.3	3.0	3.6	41.6
1971	1.2	.0	.0	.4	1.2	24.2	34.1	30.6	36.6	10.7	8.9	7.7	155.6
1972	7.3	6.5	8.5	12.8	7.8	18.0	22.7	15.5	9.3	9.3	3.0	4.7	125.3
1973	5.9	8.6	10.1	10.7	20.5	37.3	30.7	30.4	36.6	14.1	11.1	9.8	225.9
1974	11.4	9.9	7.6	26.6	18.1	31.1	28.4	17.1	11.5	10.5	9.0	8.4	189.8
1975	7.5	5.1	10.0	8.4	9.1	7.8	22.8	18.1	8.2	9.7	4.6	2.5	113.8
1976	3.8	1.6	4.0	6.3	7.3	14.2	23.8	19.1	7.0	8.2	4.1	4.1	103.6
1977	4.7	2.9	3.3	2.2	5.2	9.4	22.7	11.7	6.0	9.4	5.0	2.9	85.4
AVER.	3.7	2.9	3.7	6.7	6.8	9.7	14.6	13.4	9.0	7.3	3.6	3.1	84.6
STD.D	3.0	3.0	3.7	5.4	4.4	8.8	8.7	6.0	7.8	4.3	2.8	2.8	45.5

Appendix V

Table 11, POWER PRODUCTION AT N.PLATTE HYDRO --MKWH

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.1	1.2	11.0	18.0	10.8	9.6	.0	9.5	2.1	16.7	8.5	13.8	101.2
1943	12.0	15.3	17.2	16.0	12.6	6.7	14.9	16.2	10.2	16.3	6.1	5.7	149.2
1944	6.0	4.3	5.5	8.3	10.1	9.1	14.7	15.1	11.2	14.9	5.1	2.4	106.8
1945	3.9	3.5	5.5	9.9	6.4	4.1	14.8	15.2	9.8	14.4	5.4	8.9	101.6
1946	7.3	4.8	3.8	14.8	8.9	11.9	14.4	14.6	6.8	3.9	4.8	4.8	100.7
1947	5.9	4.9	4.7	7.8	9.5	16.5	5.2	15.7	12.1	15.4	5.4	4.9	108.0
1948	6.5	8.2	9.9	6.1	15.2	8.0	14.9	12.9	11.4	15.5	5.1	4.9	118.5
1949	9.1	6.3	2.0	1.6	4.5	8.8	.0	12.5	10.4	14.7	14.5	12.9	97.2
1950	12.5	15.7	15.7	11.0	4.5	10.6	13.8	12.3	8.3	14.7	6.6	4.0	129.8
1951	6.9	8.5	11.5	11.8	.3	.2	4.9	15.4	15.0	15.5	16.0	13.8	119.9
1952	14.4	15.2	17.4	15.0	12.9	16.8	15.3	15.4	15.8	14.8	6.1	5.8	164.9
1953	16.9	12.2	17.3	12.8	5.8	11.8	14.8	15.6	15.5	16.5	5.4	4.3	148.7
1954	7.5	3.7	7.0	15.5	5.6	11.8	14.5	11.4	14.8	17.3	4.9	4.7	118.8
1955	7.1	5.3	2.8	14.6	13.7	7.1	12.3	13.5	10.4	2.3	.0	.0	89.0
1956	.0	.0	.0	6.1	8.9	8.6	13.3	15.9	13.1	4.7	.0	.0	70.6
1957	.0	.0	.0	.0	2.5	6.5	14.5	15.9	2.6	.0	.5	1.3	43.8
1958	7.0	4.7	3.1	9.6	9.8	8.7	.0	.0	13.4	16.1	5.2	4.4	81.9
1959	5.6	3.2	3.3	9.6	6.9	10.9	14.0	15.5	13.8	13.0	4.0	3.4	103.1
1960	5.1	2.8	.0	7.4	5.7	5.8	13.4	15.0	8.6	7.6	6.0	4.8	82.1
1961	5.4	4.4	4.2	10.1	7.2	10.5	15.0	14.4	7.0	.0	3.1	10.6	92.1
1962	10.6	11.1	11.1	2.2	.0	.3	.0	12.9	8.7	14.2	4.2	3.5	78.9
1963	6.7	1.8	4.7	14.8	12.1	8.7	15.6	14.7	6.4	5.6	3.6	3.9	98.7
1964	4.0	4.3	3.8	9.5	11.8	8.6	14.6	15.4	5.4	.3	.0	.0	77.8
1965	1.9	4.4	5.7	13.1	8.4	13.4	2.9	15.1	4.3	9.0	4.8	8.6	91.6
1966	6.6	7.7	4.5	.0	8.9	5.1	15.1	16.1	11.0	14.7	4.2	3.5	97.5
1967	4.9	3.5	7.8	16.7	9.4	6.4	4.2	14.8	12.6	15.1	4.5	4.6	104.5
1968	4.9	3.3	7.4	12.6	9.5	10.4	14.9	16.8	8.0	6.4	5.8	6.2	106.1
1969	4.8	4.0	3.3	13.3	14.6	16.7	9.8	16.2	1.3	.0	4.6	6.2	94.8
1970	10.4	9.2	4.8	9.4	9.3	9.0	5.4	12.9	7.6	13.3	5.0	5.3	101.6
1971	5.8	7.3	6.5	5.0	8.3	16.1	15.2	15.1	15.7	15.7	14.4	10.5	135.6
1972	8.7	14.6	15.2	18.5	7.5	15.1	15.3	16.7	9.8	12.3	4.6	6.1	144.4
1973	7.8	13.6	15.7	17.3	16.9	15.9	15.1	15.2	16.9	21.6	13.0	17.6	186.8
1974	17.2	17.5	17.0	16.9	16.4	15.0	14.9	16.2	12.1	14.7	13.1	12.6	183.6
1975	10.8	7.9	14.9	13.4	9.4	7.2	14.8	16.3	9.5	15.2	7.8	4.4	131.6
1976.	5.9	3.4	6.0	8.4	7.8	14.9	15.4	18.8	9.9	15.0	6.9	6.1	118.3
1977	7.3	5.5	5.5	4.2	6.1	9.8	15.5	15.1	7.1	15.6	7.6	4.5	103.7
AVER.	7.2	6.8	7.7	10.6	8.8	9.9	11.5	14.5	10.0	11.7	6.0	6.1	110.7
STD.D	4.1	4.7	5.4	5.1	4.0	4.3	5.5	3.0	4.0	5.9	3.9	4.1	30.3

Appendix V

Table 12. POWER PRODUCTION AT TRICOUNTY HYDRO---MKWH

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	15.8	14.2	15.1	26.8	28.2	32.1	21.7	23.8	15.0	27.9	17.9	28.5	267.0
1943	17.7	33.8	31.6	29.3	22.3	17.4	28.0	25.7	16.9	28.5	14.5	14.3	280.1
1944	15.5	14.9	18.5	19.9	15.7	18.2	26.0	25.3	23.7	30.3	14.5	13.7	236.1
1945	13.8	13.6	14.8	24.1	15.5	16.0	25.8	24.8	19.3	29.5	14.2	14.3	225.7
1946	16.2	13.8	14.1	29.1	19.1	19.3	26.6	24.4	16.3	14.5	14.2	14.0	221.6
1947	14.1	14.0	14.0	19.5	16.9	16.7	20.4	24.5	19.0	26.8	14.4	14.0	214.2
1948	14.1	14.0	14.0	28.3	24.0	17.0	27.1	22.1	20.0	29.8	14.1	14.7	239.4
1949	15.8	14.5	14.1	14.6	15.4	27.2	22.3	22.1	18.8	29.5	29.1	28.4	251.8
1950	23.6	35.9	33.6	22.9	15.4	17.1	24.5	22.7	19.2	29.0	14.4	13.9	272.2
1951	17.3	22.7	26.3	25.1	15.8	16.3	17.3	20.6	21.6	32.6	34.7	29.6	279.9
1952	32.3	36.1	35.3	33.0	28.2	29.3	27.9	25.6	24.9	29.4	14.1	14.6	330.7
1953	33.5	28.5	35.6	27.5	15.3	17.7	25.5	23.3	26.0	26.3	14.3	14.0	287.5
1954	17.7	13.8	19.4	29.9	16.4	18.3	26.2	18.6	26.0	28.5	14.0	13.8	242.5
1955	17.3	13.6	14.0	28.0	25.7	16.7	19.7	22.4	14.5	4.5	1.5	1.0	178.9
1956	.9	.7	13.7	15.2	13.4	15.1	20.2	21.6	15.1	7.3	1.1	.9	125.1
1957	.8	.7	1.5	3.0	15.8	16.6	17.6	21.0	6.9	2.3	-.1	15.0	101.1
1958	16.7	14.6	13.9	17.4	21.6	30.0	16.7	22.5	23.0	30.3	14.0	13.7	234.3
1959	16.8	13.5	13.7	23.2	16.8	19.9	23.3	24.8	23.5	29.1	13.9	13.6	232.0
1960	14.0	13.5	13.8	21.1	15.6	16.2	21.2	26.8	12.7	14.7	14.2	13.8	197.4
1961	14.2	13.7	15.9	24.9	15.9	16.8	24.2	19.2	9.5	.9	.3	3.7	159.2
1962	20.2	31.8	28.2	26.5	20.0	15.0	15.7	18.7	18.8	31.0	13.9	13.5	253.3
1963	16.6	13.6	16.9	32.1	24.1	16.7	29.6	22.1	15.1	14.1	13.6	13.6	228.1
1964	13.7	13.7	15.4	24.3	22.8	17.3	21.9	19.4	7.6	2.2	1.1	.9	160.3
1965	16.0	13.7	16.9	27.1	17.1	16.0	17.4	23.6	15.4	21.7	14.1	13.8	212.9
1966	14.3	13.7	14.1	22.1	23.3	17.1	26.6	21.4	23.4	30.5	14.1	14.2	234.9
1967	16.8	13.8	20.7	29.4	20.5	15.1	16.7	22.9	23.7	29.6	14.2	13.9	237.4
1968	13.9	13.8	18.2	27.3	18.4	18.1	27.4	23.7	17.1	14.9	14.3	14.1	221.3
1969	13.8	13.8	14.1	26.6	18.2	17.2	19.8	22.1	4.2	1.5	14.2	14.0	179.6
1970	16.0	14.0	14.3	21.1	17.1	22.6	26.5	21.1	17.8	26.3	14.0	13.8	224.6
1971	13.8	13.7	13.9	23.7	16.0	28.0	28.1	26.2	29.6	29.7	32.5	23.8	279.2
1972	20.2	32.8	32.3	30.9	16.9	28.0	20.7	18.8	17.7	25.9	14.1	14.2	272.6
1973	17.0	29.6	33.4	30.0	28.6	28.5	28.7	26.0	27.6	28.5	31.4	33.3	342.5
1974	35.4	32.7	33.2	30.6	27.1	28.3	26.5	20.8	22.6	28.9	28.0	26.8	340.9
1975	23.6	18.2	32.4	26.2	19.5	17.7	26.1	22.4	18.4	27.0	14.4	14.0	260.1
1976	14.0	13.9	14.3	19.1	16.8	20.3	29.2	26.0	20.7	27.5	14.4	14.2	230.4
1977	14.2	14.1	14.6	14.6	15.8	17.9	27.8	20.5	16.2	27.4	15.1	13.8	211.9
AVER.	16.9	17.7	19.6	24.3	19.3	19.9	23.6	22.7	18.6	22.7	14.8	15.0	235.2
STD.D	6.8	8.9	8.5	6.1	4.3	5.1	4.2	2.3	5.8	10.1	8.2	7.3	52.6

Appendix V

Table 13. DEFICIT IN HABITAT FLOWS AT OVERTON --KAF

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1943	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1944	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1945	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1946	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1947	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1948	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1949	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1950	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1951	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1952	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1953	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1954	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1955	.0	.0	.0	.0	.0	.0	23.9	19.5	51.5	101.6	38.3	42.7	277.5
1956	53.0	45.9	15.4	45.4	39.7	19.2	23.7	21.9	52.0	99.6	36.2	40.3	492.3
1957	59.1	36.4	60.8	70.9	.0	.0	12.0	16.7	43.0	92.5	36.5	.0	427.9
1958	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1959	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1960	.0	.0	.0	.0	.0	.0	.0	.0	48.3	48.6	.0	.0	96.9
1961	.0	.0	.0	.0	.0	.0	16.7	7.1	46.1	100.7	44.4	35.1	250.1
1962	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1963	.0	.0	.0	.0	.0	.0	.0	17.6	.0	52.5	.0	.0	70.1
1964	.0	.0	.0	.0	.0	.0	21.3	16.3	47.9	94.1	40.2	40.3	260.1
1965	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1966	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1967	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1968	.0	.0	.0	.0	.0	.0	.0	.0	18.2	53.0	.0	.0	71.2
1969	.0	.0	.0	.0	.0	.0	.0	13.8	43.1	92.1	.0	.0	149.0
1970	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1971	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1972	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1973	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1974	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1975	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1976	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1977	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
AVER.	3.1	2.3	2.1	3.2	1.1	.5	2.7	3.1	9.7	20.4	5.4	4.4	58.2
STD.D	13.0	9.6	10.4	13.8	6.6	3.2	7.1	6.8	19.1	37.5	13.8	12.7	125.6

Appendix V

Table 14. SIMULATED MONTHLY FLOWS AT OVERTON --KAF

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	68.0	64.2	78.4	101.0	300.1	207.4	24.0	24.0	68.7	197.0	61.6	59.6	1254.0
1943	68.0	104.3	142.8	157.2	50.0	35.3	24.0	24.0	52.0	197.0	51.7	55.0	961.3
1944	68.0	58.0	76.0	101.0	64.1	24.0	24.0	24.0	52.0	197.0	50.0	56.6	794.7
1945	68.2	72.4	76.0	101.0	50.1	82.4	24.0	24.0	52.0	197.0	57.4	59.4	863.9
1946	68.0	65.5	79.9	101.0	50.0	24.0	24.0	24.0	64.4	197.0	80.6	73.5	851.9
1947	72.6	67.2	80.6	101.0	50.0	72.2	70.9	24.0	52.0	197.0	72.4	74.0	933.9
1948	68.1	72.6	81.0	101.0	50.0	41.6	24.0	24.0	52.0	197.0	68.7	55.0	835.0
1949	68.0	58.0	104.8	101.0	79.6	56.0	41.2	24.0	52.0	197.0	76.9	75.2	933.7
1950	68.0	82.7	77.0	101.0	58.4	25.0	24.0	24.0	52.0	197.0	65.3	66.4	840.8
1951	68.0	80.5	76.0	101.0	76.2	96.5	24.2	24.0	105.0	197.0	60.5	55.0	963.9
1952	68.9	61.8	77.7	152.6	89.1	159.2	24.0	24.0	52.0	197.0	51.0	58.3	1015.6
1953	77.8	100.2	172.5	101.0	50.8	27.3	24.0	24.0	52.0	197.0	59.6	63.5	949.7
1954	68.0	68.4	76.0	101.0	50.0	24.0	24.0	24.4	52.0	45.4	56.9	57.1	647.2
1955	68.0	70.7	76.0	101.0	50.0	40.7	.1	4.5	.5	2.4	11.7	12.3	437.9
1956	15.0	12.1	15.6	55.6	10.3	4.8	.3	2.1	.0	4.4	13.8	14.7	148.7
1957	8.9	21.6	15.2	30.1	53.4	60.9	12.0	7.3	9.0	11.5	13.5	57.0	300.4
1958	68.0	58.0	85.6	101.0	50.0	98.5	37.1	24.0	52.0	197.0	57.0	65.1	893.3
1959	68.0	60.0	85.2	101.0	50.0	24.0	24.0	24.0	52.0	197.0	64.4	66.6	816.2
1960	68.0	74.7	107.0	101.0	66.1	53.3	24.0	10.5	3.7	11.4	13.2	62.9	595.8
1961	68.0	65.1	76.0	101.0	63.0	37.8	7.3	16.9	5.9	3.3	5.6	19.9	469.8
1962	72.6	126.5	131.2	101.0	50.0	99.9	40.0	24.9	52.0	197.0	53.7	57.3	1006.1
1963	68.0	79.6	76.0	101.0	50.0	27.2	.0	6.4	18.3	7.3	52.0	61.9	547.7
1964	68.7	64.0	76.0	101.0	50.0	32.8	2.7	7.7	4.1	9.9	9.8	14.7	441.4
1965	15.4	68.7	76.0	101.0	50.0	37.7	48.3	13.2	62.8	80.5	62.9	66.9	683.4
1966	68.0	81.0	86.0	101.0	50.0	28.5	24.0	24.0	52.0	197.0	50.0	55.0	816.5
1967	68.0	58.0	76.0	101.0	50.0	99.3	53.0	24.0	52.0	55.2	62.3	59.4	758.2
1968	68.7	61.2	76.0	101.0	50.0	24.0	24.0	5.0	33.8	51.0	57.9	66.8	619.4
1969	70.9	68.4	82.6	101.0	50.0	24.0	41.6	10.2	8.9	11.9	57.2	60.9	587.6
1970	68.0	75.3	79.2	101.0	50.2	24.0	31.1	24.0	52.0	197.0	65.5	68.1	835.4
1971	83.9	73.1	86.7	101.0	99.1	287.3	231.9	110.1	323.0	197.0	78.9	96.6	1768.6
1972	110.1	147.2	161.9	167.9	71.3	88.0	24.0	26.0	52.0	197.0	80.5	76.2	1202.1
1973	80.5	84.1	116.4	140.1	448.1	720.6	258.4	91.0	399.2	262.0	202.0	194.1	2996.5
1974	189.7	207.4	169.5	375.6	231.3	268.5	24.0	24.0	68.0	197.0	66.7	66.5	1888.2
1975	99.1	84.1	131.5	111.2	50.0	64.5	24.0	24.0	52.0	197.0	74.9	80.9	993.2
1976	84.4	78.8	81.6	101.0	53.6	24.0	24.0	24.0	52.0	197.0	67.4	76.0	863.8
1977	68.5	72.5	82.1	117.4	92.2	33.8	24.0	24.0	52.0	197.0	69.8	72.4	905.7
AVER.	70.8	76.3	90.2	112.1	79.4	85.5	37.7	24.0	61.5	141.3	58.4	63.4	900.6
STD.D	27.9	32.2	33.8	50.8	81.6	127.5	53.1	20.4	77.8	85.7	32.6	28.8	492.4

Appendix V

Table 15. SIMULATED END OF MONTH STORAGE AT LAKE MAC.--KAF

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	1457.5	1534.9	1554.4	1440.9	1670.8	1738.7	1708.3	1617.4	1619.8	1520.2	1562.4	1609.6	19044.8
1943	1599.8	1644.0	1644.0	1644.0	1601.5	1578.4	1412.4	1238.6	1177.1	1038.1	1076.1	1120.6	16774.6
1944	1156.7	1220.2	1291.0	1318.3	1352.4	1314.3	1207.8	1050.2	933.3	877.2	933.6	997.5	13703.0
1945	1062.6	1116.2	1155.7	1179.0	1220.6	1303.7	1208.7	1114.1	1075.8	1016.4	1079.4	1078.7	13610.9
1946	1132.3	1193.5	1282.2	1243.4	1218.5	1134.0	915.1	745.2	747.9	750.3	819.2	863.7	12045.3
1947	900.9	934.1	971.9	1042.5	1000.4	945.6	1039.2	879.8	832.3	724.3	795.8	868.5	10934.3
1948	903.4	971.1	1093.4	1173.3	1074.2	1059.6	937.6	856.9	793.0	681.3	747.8	793.7	11085.3
1949	783.1	866.5	983.9	1055.4	1121.6	1179.9	1179.1	1033.6	1073.6	1002.1	1055.7	1102.6	12487.1
1950	1130.7	1207.9	1276.6	1268.9	1270.9	1206.7	1122.5	1076.4	1095.4	1001.9	1055.4	1119.5	13832.5
1951	1150.6	1213.0	1251.3	1227.5	1272.8	1356.3	1371.9	1275.3	1319.5	1257.5	1334.8	1383.6	15414.2
1952	1444.9	1526.2	1635.7	1644.0	1793.0	1793.0	1751.0	1620.9	1546.7	1437.0	1484.0	1552.8	19229.1
1953	1635.5	1644.0	1644.0	1641.9	1631.5	1566.8	1365.0	1254.4	1129.1	956.2	1023.8	1086.8	16599.0
1954	1117.3	1173.1	1210.0	1169.6	1155.5	1056.4	820.4	719.1	579.5	572.8	596.2	625.1	10795.0
1955	635.4	658.7	719.1	680.1	606.7	556.4	450.6	226.1	141.8	171.5	224.9	292.9	5364.2
1956	354.2	431.5	493.9	532.6	479.2	405.3	269.7	138.1	34.7	41.3	119.8	197.8	3508.1
1957	250.1	322.6	392.9	470.4	525.9	547.6	441.9	322.9	326.6	405.9	489.5	559.2	5055.5
1958	593.6	643.0	719.5	785.9	847.1	923.2	997.6	981.1	906.8	793.9	841.8	905.8	9939.4
1959	935.6	992.2	1056.2	1050.4	1073.7	1002.5	840.0	678.7	591.4	509.7	556.3	611.1	9897.9
1960	643.9	700.4	788.4	792.1	787.9	739.3	589.4	410.8	335.5	385.7	446.3	485.7	7106.5
1961	515.3	560.1	605.0	597.9	609.6	533.4	348.7	227.9	168.8	230.7	300.1	355.6	5053.2
1962	406.4	460.4	523.3	571.6	611.8	701.8	776.4	674.4	631.2	531.9	583.7	629.9	7102.8
1963	655.2	731.4	785.0	750.1	678.6	650.1	441.9	326.7	376.6	460.1	514.8	549.7	6920.2
1964	600.6	639.9	683.1	693.2	621.1	579.6	411.4	282.9	238.9	288.1	350.5	418.8	5808.1
1965	496.0	560.7	587.4	546.7	522.0	559.2	598.9	506.6	537.8	613.5	669.7	738.8	6937.3
1966	801.6	865.2	945.4	1001.7	959.4	967.7	823.5	737.9	736.4	636.8	683.2	727.2	9886.0
1967	775.0	814.7	818.0	724.8	692.4	762.2	774.5	605.4	552.0	569.7	606.7	648.3	8343.7
1968	702.0	762.0	763.1	743.5	787.7	723.5	539.0	505.6	496.2	529.1	566.1	575.3	7693.1
1969	627.2	685.4	730.6	705.5	670.6	578.8	514.2	349.8	354.0	453.8	504.6	562.3	6736.8
1970	623.2	701.5	772.8	844.3	1017.2	1165.1	1116.4	1002.4	972.3	895.8	948.5	975.5	11035.0
1971	1040.5	1116.4	1210.5	1292.8	1530.2	1793.0	1793.0	1793.0	1644.0	1562.3	1622.7	1644.0	18042.3
1972	1644.0	1644.0	1644.0	1644.0	1701.7	1793.0	1627.8	1523.3	1508.7	1417.8	1493.6	1529.2	19170.1
1973	1560.5	1611.8	1644.0	1644.0	1793.0	1793.0	1793.0	1793.0	1644.0	1644.0	1644.0	1644.0	20208.3
1974	1644.0	1644.0	1644.0	1644.0	1793.0	1793.0	1789.2	1672.0	1644.0	1550.6	1596.6	1639.1	20053.5
1975	1644.0	1644.0	1644.0	1644.0	1650.4	1684.8	1492.4	1337.1	1298.7	1193.7	1229.2	1285.5	17747.8
1976	1330.6	1393.2	1434.1	1448.1	1528.5	1533.6	1306.3	1136.0	1117.4	1031.8	1068.9	1102.3	15430.8
1977	1112.7	1158.8	1212.2	1294.8	1313.9	1270.4	1052.1	968.3	949.1	835.7	854.7	890.6	12913.3
AVER.	974.6	1027.4	1078.1	1087.5	1116.3	1119.2	1022.9	909.5	866.1	822.2	874.5	921.4	11819.7
STD.D	413.3	403.9	392.3	386.4	426.0	448.8	461.6	479.7	472.6	425.2	420.4	413.7	4953.1

Appendix V

Table 16. POWER PRODUCTION AT KINGSLEY HYDRO --MKWH

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.0	.3	6.2	16.6	.8	1.3	3.5	11.8	3.9	20.9	3.6	3.7	72.7
1943	8.6	3.5	7.7	12.8	11.5	7.5	19.2	19.5	8.7	20.1	4.4	3.3	126.9
1944	3.1	2.0	2.5	4.8	7.1	8.9	15.3	17.0	9.7	16.5	2.5	.8	90.2
1945	1.9	1.7	2.7	6.0	6.2	3.9	12.4	14.9	8.7	14.7	2.2	5.5	80.9
1946	2.9	1.5	1.8	9.7	8.3	11.1	20.2	14.5	5.4	8.0	2.2	2.6	88.3
1947	3.2	2.6	3.7	4.5	7.4	13.2	2.2	15.0	8.4	15.6	1.8	1.4	78.9
1948	2.8	1.8	.0	1.8	12.2	6.9	14.7	10.6	8.7	15.9	1.9	2.1	79.2
1949	4.9	1.3	.0	.8	4.5	1.2	2.9	11.1	7.2	15.4	3.1	2.5	54.8
1950	3.5	.7	1.5	6.6	4.8	11.1	12.4	10.3	6.6	17.2	3.2	1.7	79.6
1951	3.6	1.7	3.5	8.4	1.6	.7	6.0	13.9	8.8	15.8	1.7	2.9	68.6
1952	2.2	1.3	.0	8.4	10.6	30.3	24.2	16.8	13.8	22.2	4.5	3.1	137.5
1953	2.3	6.8	11.6	8.6	6.6	12.4	22.9	16.9	16.3	21.3	3.2	1.7	130.6
1954	3.6	1.7	3.6	10.0	6.4	10.9	19.8	9.7	11.1	4.3	3.3	3.0	87.4
1955	3.9	2.6	1.6	7.5	8.8	5.8	12.8	9.9	.0	.0	.0	.3	53.1
1956	.0	.0	.0	1.0	5.9	5.6	10.7	.0	.0	.0	.0	.0	23.3
1957	.0	.0	.0	.0	1.6	3.8	9.5	9.1	2.9	.4	.0	.6	27.0
1958	2.5	1.1	.0	.8	.0	.9	1.6	4.2	9.9	15.8	2.4	1.6	40.8
1959	2.8	1.2	1.9	6.1	4.1	8.8	14.4	12.5	7.9	11.9	2.3	1.5	75.2
1960	2.5	1.3	.2	4.1	4.2	5.0	10.9	11.1	5.3	.9	.5	1.7	47.7
1961	2.2	1.6	1.9	4.5	4.3	6.8	11.8	7.0	.0	.0	.0	.0	40.1
1962	.0	.0	.0	.0	1.0	.8	.9	9.6	6.0	12.4	1.5	1.1	33.1
1963	2.9	.2	1.6	6.8	7.9	6.6	14.2	6.9	.8	.4	1.3	1.5	51.1
1964	1.4	1.7	1.8	4.8	7.2	6.3	11.3	6.9	3.1	1.3	.7	.0	46.5
1965	.0	.0	2.5	6.6	5.0	3.0	4.2	8.5	3.2	2.5	1.5	.0	37.0
1966	.0	.0	.0	.0	6.3	4.8	14.8	10.3	6.5	13.4	2.3	1.7	60.0
1967	2.1	1.7	4.4	10.5	6.4	2.7	4.3	13.3	7.7	4.4	2.6	1.8	61.9
1968	1.7	1.3	4.3	6.4	6.1	8.4	14.3	6.9	4.4	2.9	2.8	2.7	62.5
1969	1.8	1.4	1.4	6.7	8.2	10.2	5.8	10.4	2.1	.1	2.6	1.5	52.3
1970	.4	.0	.0	.0	1.0	1.5	7.9	11.0	6.9	13.7	2.9	3.5	48.8
1971	1.2	.0	.0	.4	1.1	14.6	34.1	30.6	36.6	18.9	2.7	5.5	145.6
1972	7.3	6.5	8.5	12.8	7.8	18.0	22.7	15.5	9.3	18.3	2.9	4.6	134.1
1973	4.8	3.3	6.8	10.7	20.5	37.3	30.7	30.4	36.6	14.1	11.1	9.8	216.1
1974	11.4	9.9	7.6	26.6	18.1	31.1	28.4	17.1	11.5	19.8	4.3	4.0	190.0
1975	7.0	5.1	10.0	8.4	9.1	7.8	22.8	18.1	8.2	18.0	4.5	2.5	121.4
1976	3.7	1.5	3.9	6.1	7.1	13.8	23.2	18.6	6.8	15.7	3.8	3.8	108.2
1977	4.4	2.8	3.1	2.1	4.9	8.8	21.3	10.9	5.6	15.9	4.4	2.6	86.8
AVER.	3.0	1.9	3.0	6.4	6.5	9.2	14.1	12.8	8.3	11.4	2.6	2.4	81.6
STD.D	2.5	2.1	3.1	5.4	4.4	8.5	8.6	6.1	7.9	7.7	2.0	1.9	44.5

ONME 34 PAGES PRINTED.
?>#JOB.SEPARATOR#<?

Appendix V

Table 17. POWER PRODUCTION AT N.PLATTE HYDRO --MKWH

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.1	1.2	11.0	18.0	10.8	9.6	.0	9.5	2.1	16.7	6.7	6.1	91.7
1943	12.0	9.8	17.2	16.0	12.6	6.7	14.9	16.2	10.2	16.3	6.1	5.7	143.6
1944	6.0	4.3	5.5	8.3	10.1	9.1	14.7	15.1	11.2	17.1	5.1	2.4	109.0
1945	3.9	3.5	5.5	9.9	6.4	4.1	14.8	15.2	9.8	16.6	5.4	8.9	103.8
1946	7.3	4.8	3.8	14.8	8.9	11.9	14.4	14.6	6.8	16.6	4.8	4.8	113.4
1947	5.9	4.9	4.7	7.8	9.5	16.5	5.2	15.7	12.1	15.4	5.4	4.9	108.0
1948	6.5	8.2	9.9	6.1	15.2	8.0	14.9	12.9	11.4	15.5	5.1	4.9	118.5
1949	9.1	6.3	2.0	1.6	4.5	8.8	.0	12.5	10.4	16.7	6.7	5.3	83.9
1950	7.9	3.2	4.5	11.0	4.5	10.6	13.8	12.3	8.3	15.7	6.6	4.0	102.6
1951	6.9	3.8	5.3	11.8	.3	.2	4.9	15.4	9.8	15.5	3.5	5.8	83.3
1952	4.5	2.0	2.8	13.7	12.9	16.8	15.3	15.4	15.8	14.8	6.1	5.5	125.6
1953	4.8	10.9	17.3	12.8	5.8	11.8	14.8	15.6	15.5	16.5	5.4	4.3	135.3
1954	7.5	3.7	7.0	15.5	5.6	11.8	14.5	11.4	14.8	7.9	4.9	4.7	109.4
1955	7.1	5.3	2.8	14.6	13.7	7.1	12.3	13.5	10.4	2.3	.0	.0	89.0
1956	.0	.0	.0	.0	8.9	8.6	13.3	15.9	13.1	4.7	.0	.0	64.5
1957	.0	.0	.0	.0	2.5	6.5	14.5	15.9	2.6	.0	.5	1.3	43.8
1958	7.0	4.7	3.1	9.6	9.8	8.7	.0	.0	13.4	16.1	5.2	4.4	81.9
1959	5.6	3.2	3.3	9.6	6.9	10.9	14.0	15.5	13.8	17.0	4.0	3.4	107.1
1960	5.1	2.8	.0	7.4	5.7	5.8	13.4	15.0	8.6	.4	.0	4.0	68.1
1961	5.4	4.4	4.2	10.1	7.2	10.5	15.0	14.4	7.0	.0	3.1	10.6	92.1
1962	10.6	11.1	11.1	2.2	.0	.3	.0	12.9	8.7	15.7	4.2	3.5	80.3
1963	6.7	1.8	4.7	14.8	12.1	8.7	15.6	14.7	.1	.0	2.5	3.9	85.7
1964	4.0	4.3	3.8	9.5	11.8	8.6	14.6	15.4	5.4	.3	.0	.0	77.8
1965	.0	.0	5.4	13.1	8.4	13.4	2.9	13.3	4.3	5.2	4.8	8.6	79.4
1966	6.6	7.7	4.5	.0	8.9	5.1	15.1	16.1	11.0	17.6	4.2	3.5	100.4
1967	4.9	3.5	7.8	16.7	9.4	6.4	4.2	14.8	12.6	7.2	4.5	4.6	96.6
1968	4.9	3.3	7.4	12.6	9.5	10.4	14.9	16.8	8.0	6.4	5.8	6.2	106.1
1969	4.8	4.0	3.3	13.3	14.6	16.7	9.8	16.2	1.3	.0	4.6	6.2	94.8
1970	10.4	9.2	4.8	9.4	9.3	9.0	5.4	12.9	7.6	17.9	5.0	5.3	106.1
1971	5.8	7.3	6.5	5.0	8.3	16.1	15.2	15.1	15.7	17.4	4.6	7.1	124.2
1972	8.7	14.6	15.2	18.5	7.5	15.1	15.3	16.7	9.8	15.6	4.6	6.1	147.8
1973	6.3	5.3	10.5	17.3	16.9	15.9	15.1	15.2	16.9	21.6	13.0	17.6	171.8
1974	17.2	17.5	17.0	16.9	16.4	15.0	14.9	16.2	12.1	16.8	5.8	5.7	171.4
1975	10.0	7.9	14.9	13.4	9.4	7.2	14.8	16.3	9.5	16.8	7.8	4.4	132.3
1976	5.9	3.4	6.0	8.4	7.8	14.9	15.4	18.8	9.9	18.8	6.9	6.1	122.1
1977	7.3	5.5	5.5	4.2	6.1	9.8	15.5	15.1	7.1	17.0	7.6	4.5	105.1
AVER.	6.3	5.4	6.6	10.4	8.8	9.9	11.5	14.4	9.6	12.1	4.7	5.1	104.9
STD.D	3.4	3.9	4.8	5.3	4.0	4.3	5.5	3.0	4.2	7.0	2.6	3.1	27.6

Appendix V

Table 18. POWER PRODUCTION AT TRICOUNTY HYDRO---MKWH

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	15.8	14.2	15.1	26.8	28.2	32.1	21.7	23.8	15.0	27.9	14.4	14.1	249.2
1943	17.7	23.4	31.6	29.3	22.3	17.4	28.0	25.7	16.9	28.5	14.5	14.3	269.7
1944	15.5	14.9	18.5	19.9	15.7	18.2	26.0	25.3	23.7	30.3	14.5	13.7	236.1
1945	13.8	13.6	14.8	24.1	15.5	16.0	25.8	24.8	19.3	29.5	14.2	14.3	225.7
1946	16.2	13.8	14.1	29.1	19.1	19.3	26.6	24.4	16.3	31.6	14.2	14.0	238.7
1947	14.1	14.0	14.0	19.5	16.9	16.7	20.4	24.5	19.0	28.9	14.4	14.0	216.3
1948	14.1	14.0	14.0	28.3	24.0	17.0	27.1	22.1	20.0	29.8	14.1	14.7	239.4
1949	15.8	14.5	14.1	14.6	15.4	27.2	22.3	22.1	18.8	29.8	14.5	14.1	223.2
1950	15.1	13.6	14.0	22.9	15.4	17.1	24.5	22.7	19.2	29.0	14.4	13.9	221.9
1951	17.3	13.8	14.7	25.1	15.8	16.3	17.3	20.6	16.7	32.6	13.8	14.7	218.7
1952	13.7	13.6	13.7	33.0	28.2	29.3	27.9	25.6	24.9	29.4	14.1	14.0	267.4
1953	14.0	25.9	35.6	27.5	15.3	17.7	25.5	23.3	26.0	26.3	14.3	14.0	265.4
1954	17.7	13.8	19.4	29.9	16.4	18.3	26.2	18.6	26.0	15.8	14.0	13.8	229.9
1955	17.3	13.6	14.0	28.0	25.7	16.7	19.7	22.4	14.5	4.5	1.5	1.0	178.9
1956	.9	.7	.9	15.2	13.4	15.1	20.2	21.6	15.1	7.3	1.1	.9	112.3
1957	.8	.7	1.5	3.0	15.8	16.6	17.6	21.0	6.9	2.3	-.1	15.0	101.1
1958	16.7	14.6	13.9	17.4	21.6	30.0	16.7	22.5	23.0	30.3	14.0	13.7	234.3
1959	16.8	13.5	13.7	23.2	16.8	19.9	23.3	24.8	23.5	31.6	13.9	13.6	234.5
1960	14.0	13.5	13.8	21.1	15.6	16.2	21.2	23.8	12.7	1.9	1.4	13.8	168.9
1961	14.2	13.7	15.9	24.9	15.9	16.8	24.2	19.2	9.5	.9	.3	3.7	159.2
1962	20.2	31.8	28.2	26.5	20.0	15.0	15.7	18.7	18.8	33.0	13.9	13.5	255.3
1963	16.6	13.6	16.9	32.1	24.1	16.7	24.8	22.1	3.3	1.4	13.6	13.6	198.8
1964	13.7	13.7	15.4	24.3	22.8	17.3	21.9	19.4	7.6	2.2	1.1	.9	160.3
1965	.9	13.7	16.9	27.1	17.1	16.0	17.4	21.2	15.4	14.5	14.1	13.8	188.3
1966	14.3	13.7	14.1	22.1	23.3	17.1	26.6	21.4	23.4	31.1	14.1	14.2	235.5
1967	16.8	13.8	20.7	29.4	20.5	15.1	16.7	22.9	23.7	14.8	14.2	13.9	222.6
1968	13.9	13.8	18.2	27.3	18.4	18.1	27.4	19.5	17.1	14.9	14.3	14.1	217.1
1969	13.8	13.8	14.1	26.6	18.2	17.2	19.8	22.1	4.2	1.5	14.2	14.0	179.6
1970	16.0	14.0	14.3	21.1	17.1	22.6	26.5	21.1	17.8	30.7	14.0	13.8	229.0
1971	13.8	13.7	13.9	23.7	16.0	28.0	28.1	26.2	29.6	29.8	14.2	17.3	254.4
1972	20.2	32.8	32.3	30.9	16.9	28.0	20.7	18.8	17.7	30.2	14.1	14.2	276.9
1973	14.1	14.0	25.6	30.0	28.6	28.5	28.7	26.0	27.6	28.5	31.4	33.3	316.3
1974	35.4	32.7	33.2	30.6	27.1	28.3	26.5	20.8	22.6	30.2	14.1	13.9	315.4
1975	22.1	18.2	32.4	26.2	19.5	17.7	26.1	22.4	18.4	28.8	14.4	14.0	260.4
1976	14.0	13.9	14.3	19.1	16.8	20.3	29.2	26.0	20.7	28.6	14.4	14.2	231.6
1977	14.2	14.1	14.6	14.6	15.8	17.9	27.8	20.5	16.2	27.4	15.1	13.8	211.9
AVER.	15.0	15.4	17.6	24.3	19.3	19.9	23.5	22.4	18.1	22.1	12.5	13.3	223.5
STD.D	5.8	6.7	7.9	6.1	4.3	5.1	4.0	2.3	6.3	11.6	6.0	5.3	46.4

Appendix V

Table 19. DEFICIT IN HABITAT FLOWS AT OVERTON --KAF

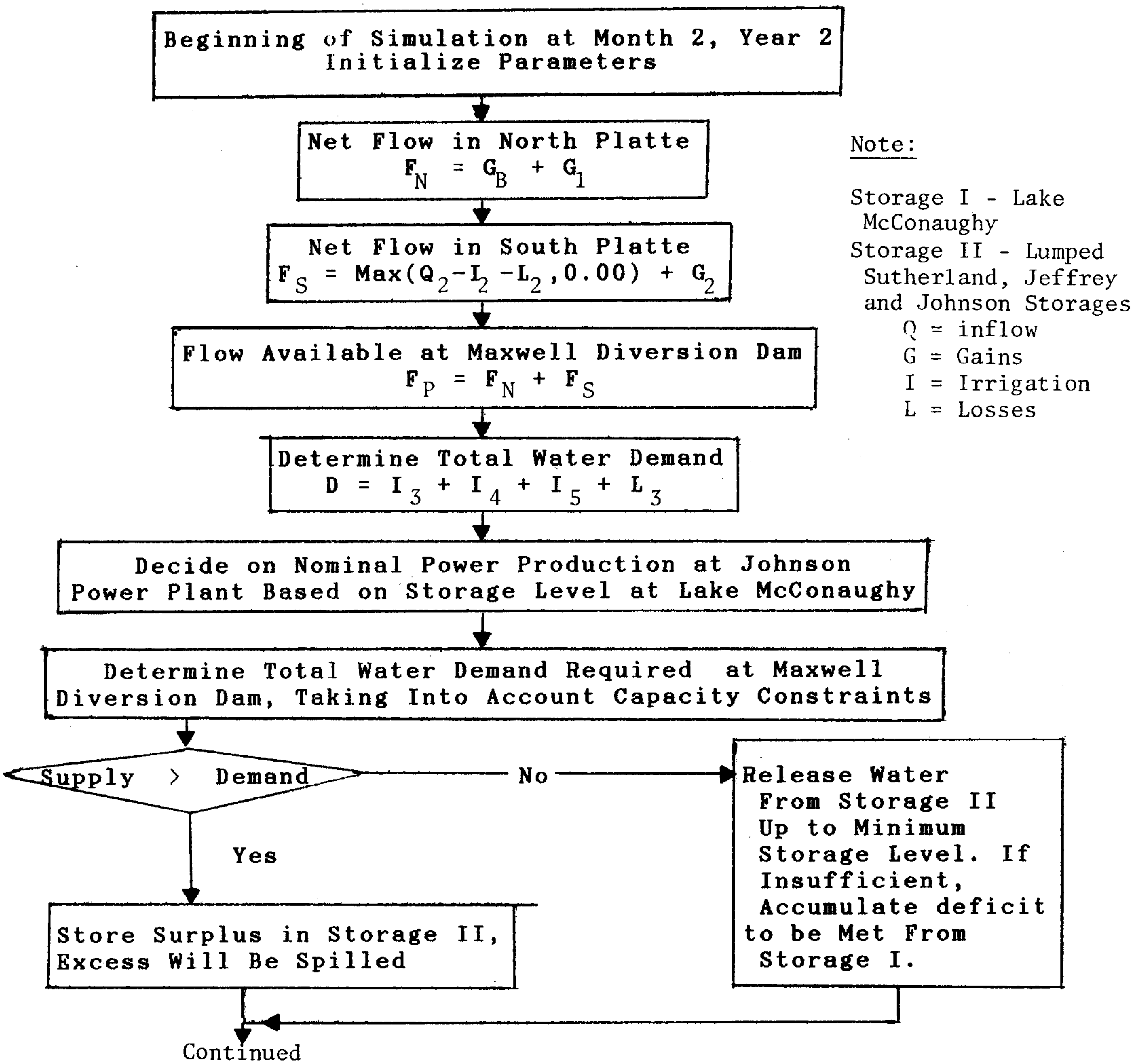
YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1942	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1943	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1944	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1945	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1946	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1947	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1948	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1949	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1950	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1951	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1952	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1953	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1954	.0	.0	.0	.0	.0	.0	.0	.0	.0	151.6	.0	.0	151.6
1955	.0	.0	.0	.0	.0	.0	23.9	19.5	51.5	194.6	38.3	42.7	370.5
1956	53.0	45.9	60.4	45.4	39.7	19.2	23.7	21.9	52.0	192.6	36.2	40.3	630.3
1957	59.1	36.4	60.8	70.9	.0	.0	12.0	16.7	43.0	185.5	36.5	.0	520.[illegible]
1958	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1959	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1960	.0	.0	.0	.0	.0	.0	.0	13.5	48.3	185.6	36.8	.0	284.2
1961	.0	.0	.0	.0	.0	.0	16.7	7.1	46.1	193.7	44.4	35.1	343.1
1962	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1963	.0	.0	.0	.0	.0	.0	24.0	17.6	33.7	189.7	.0	.0	265.0
1964	.0	.0	.0	.0	.0	.0	21.3	16.3	47.9	187.1	40.2	40.3	353.1
1965	52.6	.0	.0	.0	.0	.0	.0	10.8	.0	116.5	.0	.0	179.9
1966	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1967	.0	.0	.0	.0	.0	.0	.0	.0	.0	141.8	.0	.0	141.8
1968	.0	.0	.0	.0	.0	.0	.0	19.0	18.2	146.0	.0	.0	183.2
1969	.0	.0	.0	.0	.0	.0	.0	13.8	43.1	185.1	.0	.0	242.0
1970	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1971	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1972	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1973	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1974	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1975	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1976	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
1977	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
AVER.	4.6	2.3	3.4	3.2	1.1	.5	3.4	4.3	10.7	57.5	6.5	4.4	101.8
STD.D	15.4	9.6	14.1	13.8	6.6	3.2	7.9	7.4	19.4	83.8	14.7	12.7	168.5

Appendix V

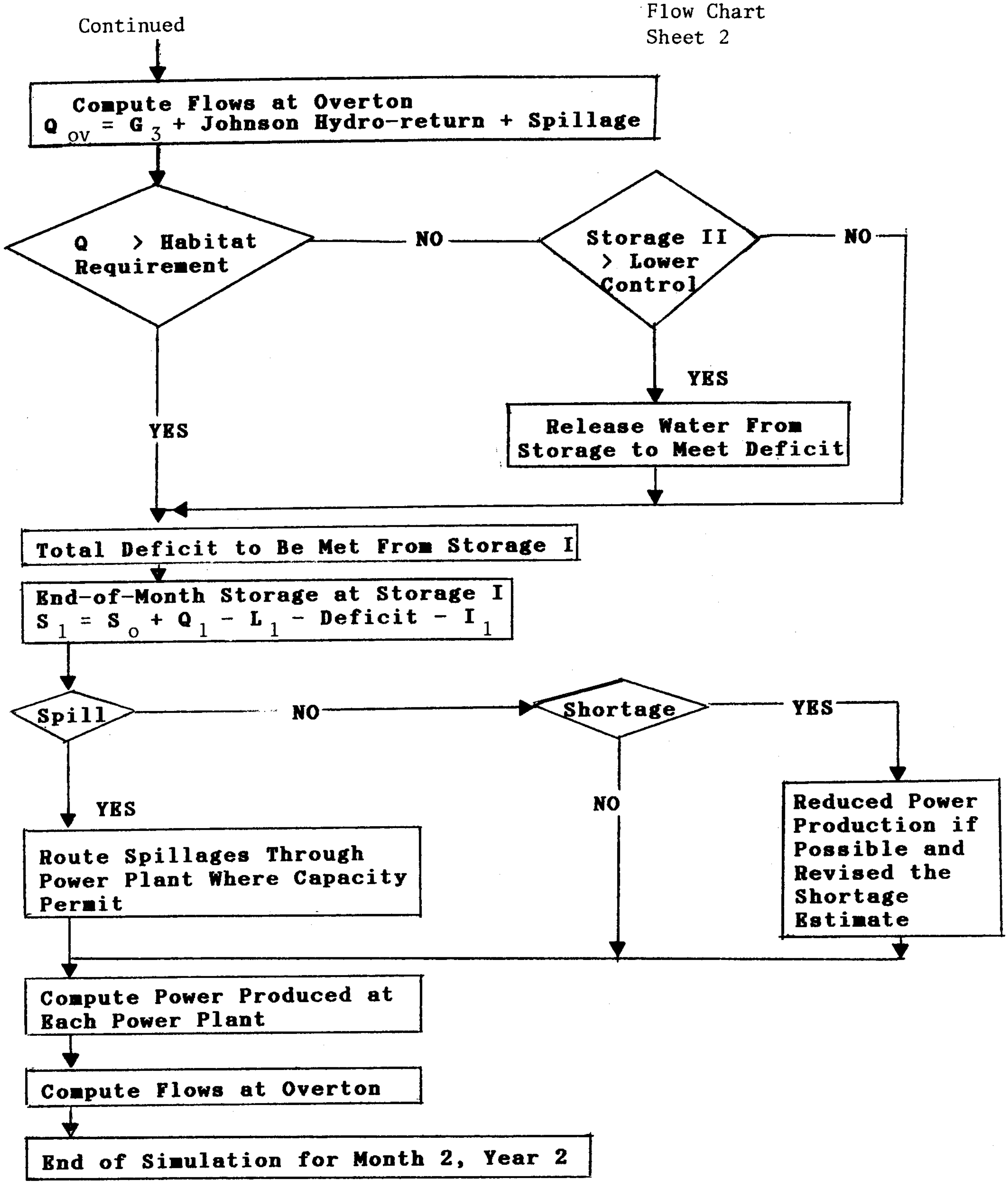
APPENDIX VI

FLOW CHART AND COMPUTER PROGRAM LISTING

Flow Chart
Sheet 1



Flow Chart
Sheet 2



```
    PROGRAM CRANE       74/810   OPT=0,ROUND= A/ S/ M/-D,-DS      FTN 5.1+617        85/09/02. 13.25.16
DO=-LONG/-OT,ARG=-COMMON/-FIXED,CS= USER/-FIXED,DB= TB/ SB/ SL/ ER/-ID/ PMD/-ST,PL=5000
FTN5,I=CRANE2,L=LST,B=BCR2,LO,DB=PMD.

              PROGRAM CRANE(INPUT,OUTPUT,RECD,TAPE5=INPUT,TAPE6=OUTPUT,
             +             TAPE8=RECD)
              COMMON/RES/ XS(10,480)
              DIMENSION Q(2,480),G(5,480),ST(2,480),XIR(5,480),XLS(3,480)
             +     ,RLEVEL(12),TREL(12),QH(12),YEAR(40),ELWLOS(12),ELWSTC(12)
               CHARACTER*55 TITLE(10)
              DATA ELWLOS/2.1,1.6,1.8,3.5,5.0,3.9,2.0,0.2,3.1,3.6,3.2,2.2/
              DATA ELWSTC/-2.1,-1.6,1.9,6.3,4.6,-2.0,-12.1,-8.3,3.8,9.2,2.5,
             +          -2.2/


              READ(5,10) NY,NYS
        10    FORMAT(2I10)
              READ(5,11) (RLEVEL(I),I=1,12)
              READ(5,11) (TREL(I),I=1,12)
              READ(5,11) (QH(I),I=1,12)
              READ(5,11) S1BEGN,S1MIN,S1MAX,VCONT
              READ(5,11) S2BEGN,S2MIN,S2MAX
        11    FORMAT( 12F6.0)


       C      READ IN INFLOWS,GAINS,LOSSES AND IRRIGATION DEMAND
              CALL READIN(8,Q,YEAR,2,NY)
              CALL READIN(8,G,YEAR,5,NY)
              CALL READIN(8,XLS,YEAR,3,NY)
              CALL READIN(8,XIR,YEAR,5,NY)

              DO 21 I = 1,3
                 DO 22 J = 1,480
                    XLS(I,J) = -XLS(I,J)
        22       CONTINUE
        21    CONTINUE
        999   WRITE(6,12)
        12    FORMAT('1',///,5X,'PLATTE RIVER CRANE HABITAT STUDY',//,
             +          5X,'INPUT PARAMETERS ARE AS FOLLOWS')
              WRITE(6,32)
        32    FORMAT( //,2X,'PARAMETER  ',4X,'JAN',4X,'FEB',4X,'MAR',4X,'APR',
             +         4X,'MAY',4X,'JUN',4X,'JUL',4X,'AUG',4X,'SEP',4X,'OCT'
             +        ,4X,'NOV',4X,'DEC')
              WRITE(6,33) (RLEVEL(I),I=1,12)
        33    FORMAT( /,2X,'M.RES.LEVEL',12F7.1)
              WRITE(6,34) (TREL(I),I=1,12)
        34    FORMAT(   2X,'T.POW.PROD ',12F7.1)
              WRITE(6,35) (QH(I),I=1,12)
        35    FORMAT(   2X,'HAB.REQMTS ',12F7.1)
              WRITE(6,36) S1BEGN,S1MIN,S1MAX,VCONT
        36    FORMAT( ///,10X,'LAKE MCCONAUGHY STORAGE LEVELS:-',/,
             +             15X,'STARTING    = ',F8.1,/,
             +             15X,'MINIMUM     = ',F8.1,/,
             +             15X,'MAXIMUM     = ',F8.1,/,
             +             15X,'CONTROL     = ',F8.1)
              WRITE( 6,37) S2BEGN,S2MIN,S2MAX
        37    FORMAT( //,10X,'LUMPED SUTHERLAND,JEFREY &JOHNSON STORAGE :-',/,
             +          15X, 'STARTING    = ',F8.1,/,
             +          15X, 'MINIMUM     = ',F8.1,/,
```

```
     +               15X, 'MAXIMUM      = ',F8.1)
C     START SIMULATIONS OVER NY YEARS AT MONTHLY TIME STEP

      DO 1 I = 1,NYS
        DO 2 J = 1,12
          DEFC = 0.00
          K = (I-1)*12 +J
           XIR45=XIR(4,K) +XIR(5,K)
           TCAP=130.0
           XLS3K=XLS(3,K)+ELWLOS(J)+ELWSTC(J)
           IF( K .EQ. 1) THEN
              STB1=S1BEGN
              STB2=S2BEGN
           ELSE
              STB1=ST(1,K-1)
              STB2=ST(2,K-1)
           ENDIF
           S1MAX=RLEVEL(J)

C          COMPUTE NET FLOW AT N. PLATTE NEGLECTING INFLOW
          DEM1=AMAX1(XIR(1,K) -0.23*G(5,K),0.00)
          IF ( G(1,K) .LT. 0.00) THEN
             RS1 = DEM1 - G(1,K)
             FN= 0.77*G(5,K) + AMAX1( 0.23*G(5,K)-XIR(1,K),0.00)
          ELSE
             RS1 = DEM1
             FN=G(1,K)+0.77*G(5,K)+AMAX1(0.23*G(5,K)-XIR(1,K),0.00)
          ENDIF

C          COMPUTE NET FLOW AT S.PLATTE
          FS= Q(2,K) -XIR(2,K)
          IF( FS .LT. 0.00) THEN
             FS = 0.00
          ENDIF
          IF (FS .LT. XLS(2,K)) THEN
             DEFC=DEFC +XLS(2,K) -FS
             FS =0.00
          ELSE
             FS=FS- XLS(2,K)
          ENDIF
          FS= FS+G(2,K)
C
C          COMBINE FLOWS OF N.&S.PLATTE
          FC=FN+FS

C          CONSIDER WATER NEEDS OF G3-I3 SYSTEM
          FXIR3=AMAX1(G(4,K),0.00)+AMAX1(G(3,K)-XIR(3,K),0.00)
          D3 =AMAX1(XIR(3,K)-G(3,K),0.00) -AMIN1(G(4,K),0.00)
          FS3=FC-D3

          IF(FS3 .LT. 0.00) THEN
             DEFC=DEFC-FS3
             FS3=0.00
          ELSEIF(FS3 .GT.TCAP ) THEN
             STOR = S2MAX -STB2
             S2P =AMIN1(STOR,FS3-TCAP)
             FXIR3 =FXIR3 +FS3 -TCAP -S2P
```

```
            FS3=TCAP
         ELSE
            S2P = 0.00
         ENDIF

C        CONSIDER THE TRICOUNTY DIVERSION SYSTEM

         FR2= FS3 -XIR45 -XLS3K
         IF(FR2 .LT. 0.00) THEN
            DEFC=DEFC -FR2
            FR2 = 0.00
         ENDIF
C        DETERMINE POWER GENERATION TARGET
         STAPR=STB1+Q(1,K) -XLS(1,K) -RS1-DEFC
         IF (STAPR .LT. VCONT) THEN
            RTJOHN=0.00
            GOTO 16
         ENDIF

         RTJOHN=AMIN1(TREL(J)-XIR(5,K),TCAP-XIR45-XLS3K)
         RTJOHN= AMAX1( RTJOHN,0.00)
 16      FJOHN=FR2 -RTJOHN
         IF( FJOHN .LT.0.00) THEN
            DEFC=DEFC -FJOHN
            FJOHN=0.00
            S2PP=0.00
         ELSE
            STOR=S2MAX -STB2 -S2P
            S2PP=AMIN1(STOR,FJOHN)
            FJOHN=FJOHN-S2PP
         ENDIF
         RTJOHN=RTJOHN+FJOHN

C        COMPUTE TOTAL DEFICIT ,OVERTON FLOWS +JOHNSON HYDRO RETURN
         XS(1,K) =FXIR3 +RTJOHN
         R3 = RTJOHN

C        CHECK HABITAT REQUIREMENT
         STAPR= STB1+Q(1,K) -XLS(1,K)-RS1-DEFC
         IF( XS(1,K) .LT. QH(J) .AND.STAPR .GT.VCONT) THEN
            DEFC=DEFC + QH(J) -XS(1,K)
            BC=AMAX1(TCAP-RTJOHN-XIR45-XLS3K,0.00)
            R3 =R3 +AMIN1(BC,QH(J)-XS(1,K))
            XS(1,K) = QH(J)
         ENDIF

C        TOTAL DEFICIT TO BE MET FROM SUTHERLAND STORAGE FIRSE
         IF(DEFC .GT.0.00 ) THEN
            S2A=STB2 -S2MIN
            S2M=AMIN1(DEFC,S2A)
            DEFC=DEFC-S2M
         ELSE
            S2M=0.00
         ENDIF
```

```
1     C       NET DEFICIT TO BE MET FROM LAKE MCCONAUGHY
              SHORT=0.00
              SPILL=0.00

              ST(1,K) =STB1+Q(1,K)-XLS(1,K)-RS1-DEFC
              IF( ST(1,K) .GT.S1MAX) THEN
1                SPILL =ST(1,K) -S1MAX
1                ST(1,K) =S1MAX
1             ELSEIF(ST(1,K) .LT. S1MIN) THEN
1                SHORT=S1MIN-ST(1,K)
1                 ST(1.K)=S1MIN
1             ENDIF
1     C
1     C
1
1     C       COMPUTE POWER GENERATED AT R1-SUTHERLAND
               FSP1=AMIN1(Q(2,K) -XIR(2,K),75.50)
               FSP=AMAX1(FSP1,0.00)
               POWER=AMIN1(FSP+DEFC+SPILL,121.0)
               R1 =AMAX1(POWER-XLS(2,K),0.00)

      C       COMPUTE ADDITIONAL POWER AT R3 DUE TO SPILL
              BC=AMAX1(TCAP-R3-XIR45-XLS3K,0.00)
              ADDPOW=AMIN1(BC,SPILL)
              R3 =R3 +ADDPOW
              XS(1,K) =XS(1,K) +SPILL


      C       IF THERE IS SHORTAGE,CHECK WHETHER SHORTAGE CAN BE REDUCED

              IF(SHORT .GT.0.00 ) THEN
1                DRED=RTJOHN
1                IF (SHORT .LT.DRED) THEN
2                   R3 =R3 -SHORT
2                   XS(1,K) =XS(1,K) -SHORT
2                    R1 =R1 -SHORT
2                    SHORT=0.00
2                ELSE
2                   SHORT =SHORT -DRED
2                   R3 =R3 -DRED
2                   R1 = R1 -DRED
2                   XS(1,K) =XS(1,K) -DRED
2                ENDIF
1              ENDIF
1
               ST(2,K)=STB2 +S2P+S2PP -S2M
               XS(2,K)=ST(1,K)
               XS(3,K) = SHORT
               XS(4,K) = SPILL
               XS(5,K)=AMAX1(QH(J)-XS(1,K),0.00)
               BALC=AMAX1(TCAP-R3-XIR45-XLS3K,0.00)
               R2 = AMIN1(BALC,XIR(3,K))
               XS(6,K) = R2
               XS(7,K) = R3
               XS(8,K) = AMAX1(0.162*R1 -0.47,0.00)
               XS(9,K) = 0.086*(R3 +XIR45 +R2 +0.5*XLS3K)+0.33
             +         +AMAX1(0.218*(R3+XIR(5,K))-0.88,0.00)
```

```
C
C      COMPUTE POWER GENERATED AT KINGSLEY HYDRO
          HYDIS=AMIN1(RS1 +DEFC+SPILL-SHORT,350.0)
         AVEC=0.5*(STR1 +ST(1,K))
         HEAD=5.88486*AVEC**0.42168
         IF ( HEAD .LT. 58.00) THEN
            HYDIS=0.00
         ENDIF
         XS(10,K) = HYDIS*HEAD*1.025*0.75/1000.
C
  2        CONTINUE
  1     CONTINUE

C       ANALYSE AND PRINT RESULTS OF SIMULATION STUDY
         TITLE(1) ='SIMULATED MONTHLY FLOWS AT OVERTON --KAF'
         TITLE(2) ='SIMULATED END OF MONTH STORAGE AT LAKE MAC.--KAF'
         TITLE(3) ='SIMULATED RESER.SHORTAGES AT LAKE MCCONAUGHY --KAF'
         TITLE(4) ='SIMULATED RESER. SPILLAGE AT LAKE MCCONAUGHY --KAF'
         TITLE(5) ='DEFICIT IN HABITAT FLOWS AT OVERTON --KAF'
         TITLE(6) ='SIMULATED JEFFREY HYDRO RETURN TO PLATTE --KAF'
         TITLE(7) ='SIMULATED JOHNSON HYDRO RETURN TO PLATTE --KAF'
         TITLE(8) ='POWER PRODUCTION AT  N.PLATTE HYDRO --MKWH'
         TITLE(9) ='POWER PRODUCTION AT TRICOUNTY HYDRO---MKWH'
         TITLE(10)='POWER PRODUCTION AT KINGSLEY HYDRO --MKWH'

          CALL RESULT(10,NYS,YEAR,TITLE)
        READ(5,10) IC
        GO TO ( 24,25,26,1000),IC
  24    READ(5,11) (RLEVEL(J),J=1,12)
        GOTO 999
  25    READ(5,11) (TREL(J),J=1,12)
        GOTO 999
  26    READ(5,11) (QH(J),J=1,12)
        GOTO 999
1000    STOP

        END
```

```
--VARIABLE MAP--(LO=A/R)                                                               A=ARGLIST, C=CTRL OF
 -NAME---ADDRESS --BLOCK-----PROPERTIES-------TYPE---------SIZE---REFERENCES-          R=READ, S=STORE, U=I

  ADDPOW    23013B                             REAL                193/S  194
  AVEC      23020B                             REAL                230/S  231
  BALC      23015B                             REAL                220/S  221/A
  BC        23002B                             REAL                156/S  157/A   192/S   193/A
  DEFC      22753B                             REAL                 61/S   91      91/S   107     107/S   123
                                                                   138/S  153     155     155/S   162     164/A
                                                                   188/A  229/A
  DEM1      22762B                             REAL                 76/S   78      81
  DRED      23014B                             REAL                201/S  202     208     209     210     211
  D3        22770B                             REAL                103/S  104
  ELWLOS    22607B                             REAL         12       4      7/I    65
  ELWSTC    22623B                             REAL         12       4      8/I    65
  FC        22766B                             REAL                 99/S  104
  FJOHN     22777B                             REAL                136/S  137     138     139/S   143/A   144
```

```
SUBROUTINE READIN       74/810  OPT=0,ROUND= A/ S/ M/-D,-DS      FTN 5.1+617          85,.9/02. 13.25.16
DO=-LONG/-OT,ARG=-COMMON/-FIXED,CS= USER/-FIXED,DB= TB/ SB/ SL/ ER/-ID/ PMD/-ST,PL=5000
FTN5,I=CRANE2,L=LST,B=BCR2,LO,DB=PMD.

     1                    SUBROUTINE READIN(IIN,X,YEAR,NL,NY)
     2                    DIMENSION X(NL,480),YEAR(40)
     3
     4                    DO 2 L = 1,NL
     5                      DO 1 I = 1,NY
     6                        K=(I-1)*12
     7                        READ(IIN,10) YEAR(I),(X(L,K+J),J=1,12)
     8               10       FORMAT(F3.0,12F6.1)
     9                1     CONTINUE
    10                2   CONTINUE
    11                    RETURN
    12                    END

--VARIABLE MAP--(LO=A/R)                                                           A=ARGLIST, C=CTRL OF
 -NAME---ADDRESS --BLOCK-----PROPERTIES-------TYPE---------SIZE---REFERENCES-      R=READ, S=STORE, U=1

  I          142B                             INTEGER                  5/C    6      7
  IIN          1   DUMMY-ARG                  INTEGER                  1      7/U
  J          145B                             INTEGER                  7/C    7
  K          144B                             INTEGER                  6/S    7
  L          140B                             INTEGER                  4/C    7
  NL           4   DUMMY-ARG                  INTEGER                  1      2      4/C
  NY           5   DUMMY-ARG                  INTEGER                  1      5/C
  X            2   DUMMY-ARG                  REAL        ADJ-ARY      1      2      7/R
  YEAR         3   DUMMY-ARG                  REAL             40      1      2      7/R

--STATEMENT LABELS--(LO=A/R)                                                       A=ASSIGN STMT, D=DO
 -LABEL--ADDRESS---PROPERTIES-----DEF--REFERENCES-                                 R=READ, W=WRITE, L=L

     1   INACTIVE DO-TERM        9       5/D    9/L
     2   INACTIVE DO-TERM       10       4/D   10/L
    10     102B   FORMAT         8       7/R    8/L

--ENTRY POINTS--(LO=A/R)                                                           D=DEFINITION, R=RETU
 -NAME---ADDRESS--ARGS------REFERENCES-

  READIN       6B      5          1/D   11/R

--STATISTICS--

  PROGRAM-UNIT LENGTH             151B =   105
  CM STORAGE USED               63400B =  26368
  COMPILE TIME                  0.132 SECONDS
```

```
SUBROUTINE RESULT      74/810   OPT=0,ROUND= A/ S/ M/-D,-DS      FTN 5.1+617         85. 9/02. 13.25.16
DO=-LONG/-OT,ARG=-COMMON/-FIXED,CS= USER/-FIXED,DB= TB/ SB/ SL/ ER/-ID/ PMD/-ST,PL=5000
FTN5,I=CRANE2,L=LST,B=BCR2,LO,DR=PMD.

                  SUBROUTINE RESULT(NS,NY,YEAR,TITLE)
                  COMMON/RES/ X(10,480)
                  DIMENSION SUMM(12),SUMMS(12),XY(40),STDM(12),YEAR(40)
                  CHARACTER*55 TITLE(10)

                  DO 1 II = 1,NS
                     WRITE(6,33) TITLE(II)
   33                FORMAT('1',///,30X,A)
                     WRITE(6,12)
   12                FORMAT(//,2X,'YEAR',4X,'JAN',4X,'FEB',4X,'MAR',4X,'APR',4X,
     +                         'MAY',4X,'JUN',4X,'JUL',4X,'AUG',4X,'SEP',4X,'OCT',
     +                          4X,'NOV',4X,'DEC',2X,'TOTAL')
                     DO 2 I = 1,NY
                     XY(I) = 0.00
                     KK= (I-1)*12
                     DO 3 K = 1,12
                        XY(I) = XY(I) + X(II,KK+K)
    3                CONTINUE
                     IYEAR= YEAR(I) + 1900
                     WRITE(6,15) IYEAR,(X(II,KK+J),J=1,12),XY(I)
   15                FORMAT(I6,13F7.1)
    2                CONTINUE

                    DO 100 IK=1,12
                        SUMM(IK)=0.00
                        SUMMS(IK)=0.00
  100               CONTINUE
                  SUMY=0.00
                  SUMYS=0.00
                  DO 21 I = 1,NY
                     DO 22 J = 1,12
                        KK=(I-1)*12 + J
                       SUMM(J) =SUMM(J) +X(II,KK)
                       SUMMS(J) = SUMMS(J) +X(II,KK)*X(II,KK)
   22                CONTINUE
                     SUMY=SUMY + XY(I)
                     SUMYS = SUMYS + XY(I)*XY(I)
   21             CONTINUE

                  YMEAN = SUMY/FLOAT(NY)
                  YSTD = SQRT((SUMYS -FLOAT(NY)*YMEAN**2)/FLOAT(NY-1))
                  WRITE(6,18) (SUMM(J)/FLOAT(NY),J=1,12),YMEAN
   18             FORMAT( /,' AVER.',13F7.1)
                  DO 23 K = 1,12
                     STDM(K) =SUMMS(K) -SUMM(K)*SUMM(K)/FLOAT(NY)
                     STDM(K) =SQRT( STDM(K)/FLOAT(NY-1))
   23             CONTINUE
                  WRITE(6,19) (STDM(J),J=1,12),YSTD
   19             FORMAT( 1X,'STD.D',13F7.1)
    1             CONTINUE

                  RETURN
                  END
```