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ANNUAL REPORT
NIMBUS SALMON AND STEELHEAD HATCHERY 1982-83

by

Ronald Ducey
Region 2

Anadromous Fisheries Branch
Administrative Report No. 83-12

1983

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ABSTRACT

This report describes the operation of Nimbus Salmon and Steelhead Hatchery from July 1, 1982 through June 30, 1983. Tables present numbers of adult fish trapped, eggs taken, fish reared and released, daily river flow, weather conditions, and water and air temperatures.

There were 10,924 chinook salmon, Oncorhynchus tshawytscha, trapped, which produced 11,752,490 eggs. There were 1,003 winter-run steelhead, Salmo gairdneri, trapped, from which 1,586,324 eggs were taken.

During the year we planted or transferred a total of 7,641,209 small fingerling and 3,432,830 smolt chinook salmon and 315,164 fingerling and 526,730 yearling steelhead.

^{1/} Anadromous Fisheries Branch Administrative Report No. 83-12
Submitted October 1983.

INTRODUCTION

This is the 28th annual report for Nimbus Salmon and Steelhead Hatchery. The hatchery is operated by the California Department of Fish and Game under contract with the United States Bureau of Reclamation. This report summarizes the activities at the hatchery during 1982-83, with particular reference to numbers of fish trapped, spawned, and released, eggs taken and fish produced.

PRODUCTION SUMMARY

During 1982-83 we took an estimated 13,338,814 eggs and planted approximately 11,957,933 salmon and steelhead (Table 1).

TABLE 1. Production Summary, Nimbus Salmon and Steelhead Hatchery, 1982-83

| | Number trapped | Eggs taken or received | Eggs transferred | Fingerlings planted | Smolts planted | Total weight planted (lb) |
|--------------------|-------------------|------------------------------|-----------------------|------------------------|-------------------|---------------------------------|
| Chinook Salmon | | | | | | |
| 1981 BY | | | | | 2,916,530 | 87,750 |
| 1982 BY | 10,925 | 11,752,490 | | 5,058,745 | 516,300 | 25,485 |
| 1982 BY (KS-FR) | | 2,599,108 | | 2,582,464 | | 2,011 |
| Steelhead | | | | | | |
| 1982 BY | | | | 34,224 | 526,730 | 143,275 |
| 1983 BY | 1,003 | 1,586,324 | 101,152 ^{a/} | 280,940 | | 1,001 |

^{a/} Shipped to Mokelumne River Fish Installation.

HATCHERY OPERATION

The Weir

The weir was installed August 28, 1982 by the U.S. Bureau of Reclamation. The pickets were lowered and capped on October 3, 1982.

A visual inspection was made by boat before the rack was installed. The base was in bad condition. The U.S. Bureau of Reclamation placed rock at the rack site as needed. Half of the rack pickets were raised November 7, 1982 because of high flow. November 8, 1982 pickets were lowered again. November 12, 1982 half of the pickets were pulled again. On November 23, 1982, the rack was removed for the season.

Water Temperature Control

Shutters #8 and #9 were raised on September 9, 1982. On October 16, 1982 shutters #1-#7 were raised; the water temperature dropped to 60°F. The temperature gradually dropped to a season low of 44°F in January 1983 (Appendix Table 1).

Disposal of Salmon Carcasses

Edible carcasses were given to State and county institutions, community action groups, and groups or councils representing local Indians. Local zoos received carcasses of questionable quality and all inedible carcasses went to a local rendering plant. The total dispensed was 64,950 lb edible, 800 lb animal food and 39,300 lb inedible.

Public Relations

An estimated 249,952 people visited Nimbus Hatchery this year. This number was arrived at by an employee count of cars, bus passengers, and bicyclists. November was the peak month, with 63,240 visitors.

CHINOOK SALMON MAINTENANCE PROGRAM

Chinook Salmon Counts

The fish ladder was opened October 18, 1982 and the first spawning took place October 25, 1982.

A total of 10,924 salmon entered the holding pond this season including 4,535 males, 3,813 females and 2,576 grilse (Appendix Table 1). Fish 60 cm (23.6 inches) forklength, or less, were considered to be grilse. A total of 778 carcasses was removed from the weir: 398 males, 48 females, and 77 male and 20 female grilse. An additional 235 carcasses were recovered but were too decomposed to sex.

Sorting and Spawning

Of the females counted, 2,282 were spawned, 1,477 died in the pond, and 54 were accidentally killed or immature.

The spawning season, which began October 25, 1982 and ended December 6, 1982, produced a total of 11,752,490 eggs, for an average of 5,150 eggs per female. Fertility, as determined by the difference between green eggs taken and the total eggs eyed, ranged from 59% to 96%, for an average of 80.4% fertility.

Marked Chinook Salmon Recoveries

All fish were examined for marks as they were processed or removed dead from the pond or weir. Fork length and sex of marked fish were recorded (Appendix Table 2) and heads were removed from all adipose fin clipped fish for recovery of coded wire tags.

Chinook Salmon Planting

1981 Brood Year

There were an estimated 1,687,525 chinook salmon on hand July 1, 1982.

1982 Brood Year KS-N

We released 5,575,045 Nimbus strain fingerlings and smolts (Table 2). No fish were marked. On June 3, 1983 there were approximately 2,467,170 chinook salmon on hand to be released in July and August 1983.

1982 Brood Year KS-FR

A total of 2,599,108 eyed Feather River strain chinook salmon eggs was received from Feather River Hatchery. The resulting fry (2,582,464), weighing 2,011 lb, were planted (Table 2).

TABLE 2. Planting Data 1981 and 1982 Brood Year Chinook Salmon

| Month | Release site | Fingerlings | Smolts | Size/lb | Weight (lb) |
|---------------|---------------------|-------------|-----------|---------|-------------|
| 1981 BY KS-N | | | | | |
| July | Maritime Academy | | 1,458,625 | 42 | 34,225 |
| August | Maritime Academy | | 1,457,905 | 28 | 52,525 |
| 1982 BY KS-N | | | | | |
| January | American River | 1,141,693 | | 1,186 | 1,070 |
| February | American River | 475,492 | | 1,067 | 453 |
| March | American River | 364,048 | | 976 | 373 |
| April | American River | 971,612 | | 665 | 1,589 |
| April | Vallejo | 1,012,500 | | 220 | 4,700 |
| April | Maritime Academy | 615,000 | | 246 | 2,500 |
| May | Benicia | 391,400 | | 120 | 3,600 |
| June | Benicia | 87,000 | | 73 | 1,200 |
| June | Benicia | | 516,300 | 52 | 10,000 |
| 1982 BY KS-FR | | | | | |
| December | Auburn Ravine Cr. | 86,432 | | 1,184 | 73 |
| December | Bear River | 331,726 | | 1,270 | 251 |
| December | Cache Creek | 167,020 | | 1,193 | 140 |
| December | Calaveras River | 190,880 | | 1,193 | 160 |
| December | Consumnes River | 599,040 | | 1,483 | 404 |
| December | Coon Creek | 100,640 | | 1,184 | 85 |
| December | Dry Creek | 223,449 | | 1,231 | 183 |
| December | Duty Creek Ravine | 50,912 | | 1,184 | 43 |
| December | Mokelumne River | 548,780 | | 1,193 | 460 |
| December | Putah Creek | 158,788 | | 1,484 | 107 |
| December | Rancheria Creek | 32,211 | | 1,193 | 27 |
| December | Secret Ravine Creek | 61,568 | | 1,184 | 52 |
| December | Sutter Creek | 31,018 | | 1,193 | 26 |
| Totals | | 7,641,209 | 3,432,830 | 20,844 | 114,246 |

Chinook Salmon Disease Information

1982 Brood Year

Infectious Hematopoietic Necrosis (IHN) caused an estimated loss of 15% in all lots of fish ponded. Thinning of fish to reduce stress reduced the losses. Minor outbreaks of Columnaris were controlled using Nyamin drip treatment and by adding Terramycin to the diet.

WINTER-RUN STEELHEAD MAINTENANCE PROGRAM

History of the 1983 Winter-Run

The first steelhead was inventoried from the holding pond on December 13, 1982 and the last one March 17, 1983 (Table 4). All fish were examined for marks as they were handled and the fork length and sex of all marked fish recorded (Appendix Table 3). Spawned out and surplus fish were returned to the river below the weir.

TABLE 4. Counts of Winter-run Steelhead, Nimbus Salmon and Steelhead Hatchery, 1982-83

| Date | Spawned and released | | Died in Pond | | Released unspawned | | Total |
|---------|----------------------|-----|--------------|---|--------------------|-----|---------------------|
| | M | F | M | F | M | F | |
| Dec. 13 | 7 | 13 | 3 | 3 | 104 | 33 | 163 |
| Dec. 20 | 6 | 13 | | | 56 | 32 | 107 |
| Dec. 28 | 23 | 32 | 2 | 1 | | | 58 |
| Jan. 04 | 39 | 44 | | | | | 83 |
| Jan. 12 | 31 | 46 | | | | | 77 |
| Jan. 19 | 21 | 30 | | | | | 51 |
| Feb. 02 | 18 | 17 | 1 | | | | 36 |
| Feb. 09 | 26 | 39 | 4 | 1 | | | 70 |
| Feb. 16 | 12 | 15 | | | 100 | 50 | 177 |
| Mar. 10 | 12 | 10 | 5 | 1 | 56 | 4 | 88 |
| Mar. 17 | 8 | 12 | | | | | 20 |
| Mar. 19 | 36 | 37 | | | | | 73 |
| Totals | 239 | 308 | 15 | 6 | 316 | 119 | 1,003 ^{1/} |

^{1/} Includes males and females with CWT.

Spawning Data 1983 Brood Year

The 308 females spawned produced 1,385,413 eggs, for an average of 4,498 eggs per female. Survival of green to eyed eggs ranged from 68% to 97%, with an average of 85.6%.

An additional 104,500 winter-run steelhead eggs were received from Warm Springs Hatchery.

Winter-Run Steelhead Planted

1982 Brood Year

From July 3, 1982 to March 11, 1983 a total of 34,224 fingerling and 526,730 yearling Nimbus steelhead was planted. Four groups of approximately 50,000 each were marked using an adipose clip and coded wire tag. The first group of 47,690 (Tag #06-54-2) was planted at Rio Vista from January 7 through January 17, 1983. The next group of 50,970 (Tag #06-54-4) was planted at the Maritime Academy February 25 through March 1, 1982. The third group of 49,395 (Tag #06-54-46) was planted at the Maritime Academy March 1 through March 4, 1983. The last group of 48,720 (Tag #06-54-3) was planted at Rio Vista March 4 through March 8, 1983.

TABLE 5. Planting Data, 1982 Brood Year Winter-run Steelhead, Nimbus Salmon and Steelhead Hatchery, 1982-83

| Date | Release site | Fingerlings | Yearlings | Size/lb | Weight (lb) |
|--------|------------------|-------------|-----------------------|---------|-------------|
| 7-82 | American River | 34,224 | | 368 | 93 |
| 1-83 | Rio Vista | | 227,380 ^{1/} | 4.0 | 57,450 |
| 2-83 | Rio Vista | | 72,325 ^{2/} | 3.9 | 15,500 |
| 2-83 | Maritime Academy | | 45,000 ^{2/} | 3.0 | 15,000 |
| 3-83 | Maritime Academy | | 55,365 ^{2/} | 3.0 | 18,425 |
| 3-83 | Rio Vista | | 126,660 ^{3/} | 3.2 | 36,900 |
| Totals | | 34,224 | 526,730 | | 143,275 |

1/ Includes 47,690 CWT #06-54-2

2/ Includes 100,365 CWT #06-54-4 and 06-54-46

3/ Includes 48,720 CWT #06-54-3

1983 Brood Year

Prior to June 3, 1983 there were 280,940 fingerlings released into the American River at the base of the fish ladder. On June 30, 1983 there were approximately 668,690 Nimbus and 91,000 Warm Springs fingerlings on hand; approximately 500,000 will be released as yearlings in January and April 1984.

Steelhead Disease Information

1982 Brood Year

Heavy losses from January through April occurred due to low flow and bacterial gill disease. The addition of Terramycin to the diet, chemical flushes, and constant reduction of the number of fish on hand by planting helped keep losses down.

1983 Brood Year

The 1983 Brood Year steelhead have had no disease problems to date.

APPENDIX TABLE 1. Nimbus Salmon and Steelhead Hatchery Weather, Water and Fish Trapping Data July 1, 1982 through June 30, 1983

| July 1982 | Temperature (C*) | | | | Weather | American River flow at Hatchery (m ³ /sec**) | Salmon | Steelhead |
|--------------|------------------|---------|---------|---------|---------------|---|--------|-----------|
| | Air | | Water | | | | | |
| | Maximum | Minimum | Maximum | Minimum | | | | |
| 1 | 25.6 | 14.4 | 13.9 | 12.8 | Clear | 138.645 | | |
| 2 | 26.1 | 15.0 | 13.9 | 12.8 | Clear | 103.899 | | |
| 3 | 26.7 | 15.0 | 13.9 | 12.8 | Clear | 99.651 | | |
| 4 | 28.9 | 15.6 | 14.4 | 13.3 | Clear | 98.632 | | |
| 5 | 32.2 | 16.7 | 14.4 | 13.3 | Clear | 99.368 | | |
| 6 | 32.2 | 16.7 | 14.4 | 13.3 | Clear | 96.678 | | |
| 7 | 29.4 | 16.7 | 14.4 | 13.3 | Clear | 71.928 | | |
| 8 | 32.8 | 15.6 | 14.4 | 13.9 | Clear | 28.318 | | |
| 9 | 33.3 | 15.6 | 14.4 | 13.3 | Clear | 72.466 | | |
| 10 | 36.1 | 16.7 | 15.0 | 13.9 | Clear | 95.800 | | |
| 11 | 37.2 | 17.2 | 15.0 | 13.9 | Clear | 97.640 | | |
| 12 | 37.2 | 18.9 | 15.6 | 13.3 | Partly Cloudy | 99.963 | | |
| 13 | 37.8 | 19.4 | 16.7 | 15.0 | Clear | 99.113 | | |
| 14 | 38.3 | 20.0 | 16.7 | 15.0 | Clear | 99.028 | | |
| 15 | 36.7 | 13.9 | 14.4 | 13.9 | Clear | 99.651 | | |
| 16 | 30.6 | 16.1 | 13.9 | 13.3 | Clear | 99.396 | | |
| 17 | 31.1 | 13.3 | 13.9 | 13.3 | Clear | 98.009 | | |
| 18 | 32.2 | 17.8 | 14.4 | 13.3 | Clear | 97.301 | | |
| 19 | 35.6 | 15.6 | 15.0 | 14.4 | Clear | 98.320 | | |
| 20 | 35.6 | 15.6 | 14.4 | 13.9 | Clear | 100.925 | | |
| 21 | 36.1 | 17.8 | 15.0 | 13.9 | Clear | 100.925 | | |
| 22 | 36.7 | 17.8 | 15.0 | 14.4 | Clear | 101.067 | | |
| 23 | 36.7 | 17.2 | 15.0 | 13.9 | Clear | 100.699 | | |
| 24 | 35.0 | 15.0 | 15.0 | 13.9 | Clear | 101.095 | | |
| 25 | 32.8 | 16.1 | 15.0 | 14.4 | Clear | 101.124 | | |
| 26 | 35.0 | 15.6 | 15.0 | 14.4 | Clear | 100.840 | | |
| 27 | 36.7 | 16.1 | 15.0 | 14.4 | Clear | 101.180 | | |
| 28 | 38.3 | 17.8 | 15.6 | 14.4 | Clear | 100.982 | | |
| 29 | 39.4 | 18.9 | 15.6 | 14.4 | Clear | 100.840 | | |
| 30 | 38.3 | 17.8 | 15.6 | 14.4 | Clear | 100.416 | | |
| 31 | 38.9 | 18.3 | 15.6 | 14.4 | Clear | 100.076 | | |

*Temperature measured to nearest whole degree F, and later converted to C.

**Flows measured in cfs, and later converted to m³/sec.

Appendix Table 1.

| August 1982 | Temperature (C*) | | | | Weather | American River flow at Hatchery (m ³ /sec**) | Salmon | Steelhead |
|----------------|------------------|---------|---------|---------|---------------|---|--------|-----------|
| | Air | | Water | | | | | |
| | Maximum | Minimum | Maximum | Minimum | | | | |
| 1 | 35.6 | 17.8 | 15.6 | 14.4 | Clear | 100.274 | | |
| 2 | 33.9 | 15.6 | 15.6 | 14.4 | Clear | 92.713 | | |
| 3 | 28.9 | 13.9 | 15.6 | 14.4 | Clear | 12.460 | | |
| 4 | 27.8 | 14.4 | 15.6 | 14.4 | Clear | 7.080 | | |
| 5 | 35.0 | 16.1 | 16.7 | 15.6 | Clear | 11.979 | | |
| 6 | 37.8 | 17.2 | 17.2 | 16.7 | Clear | 111.261 | | |
| 7 | 32.2 | 24.4 | 15.6 | 15.0 | Clear | 114.008 | | |
| 8 | 38.9 | 18.9 | 15.6 | 14.4 | Partly Cloudy | 113.725 | | |
| 9 | 30.6 | 16.7 | 15.6 | 14.4 | Clear | 113.697 | | |
| 10 | 32.2 | 20.0 | 15.6 | 15.0 | Clear | 114.008 | | |
| 11 | 30.0 | 17.2 | 15.6 | 15.0 | Clear | 113.923 | | |
| 12 | 36.1 | 14.4 | 15.6 | 15.0 | Clear | 112.989 | | |
| 13 | 31.1 | 16.7 | 15.6 | 15.0 | Clear | 113.385 | | |
| 14 | 27.2 | 14.4 | 15.6 | 15.0 | Clear | 113.385 | | |
| 15 | 31.1 | 15.0 | 15.6 | 15.0 | Partly Cloudy | 113.612 | | |
| 16 | 34.4 | 16.7 | 15.6 | 15.0 | Partly Cloudy | 113.300 | | |
| 17 | 36.7 | 16.7 | 15.6 | 15.0 | Clear | 112.876 | | |
| 18 | 35.0 | 17.8 | 15.6 | 15.0 | Clear | 112.281 | | |
| 19 | 33.3 | 15.6 | 16.1 | 15.0 | Partly Cloudy | 112.819 | | |
| 20 | 36.7 | 17.8 | 16.1 | 15.0 | Clear | 112.479 | | |
| 21 | 39.4 | 18.9 | 16.1 | 15.6 | Clear | 111.516 | | |
| 22 | 40.0 | 18.9 | 16.1 | 15.6 | Clear | 112.394 | | |
| 23 | 36.7 | 13.3 | 16.1 | 15.6 | Clear | 112.876 | | |
| 24 | 35.6 | 16.7 | 16.1 | 15.0 | Clear | 114.745 | | |
| 25 | 30.6 | 14.4 | 16.1 | 15.6 | Partly Cloudy | 144.960 | | |
| 26 | 30.0 | 14.4 | 16.1 | 15.0 | Partly Cloudy | 144.365 | | |
| 27 | 27.8 | 17.8 | 16.5 | 15.6 | Partly Cloudy | 144.365 | | |
| 28 | 30.0 | 18.3 | 16.1 | 15.6 | Partly Cloudy | 146.857 | | |
| 29 | 30.0 | 15.6 | 16.1 | 15.6 | Partly Cloudy | 145.723 | | |
| 30 | 32.2 | 13.9 | 16.1 | 15.6 | Partly Cloudy | 143.940 | | |
| 31 | 33.9 | 13.9 | 16.1 | 15.6 | Partly Cloudy | 142.581 | | |

*Temperature measured to nearest whole degree F, and later converted to C.

**Flows measured in cfs, and later converted to m³/sec.

Appendix Table 1.

| September 1982 | Temperature (C*) | | | | Weather | American River flow at Hatchery (m ³ /sec**) | Salmon | Steelhead |
|-------------------|------------------|---------|---------|---------|---------------|---|--------|-----------|
| | Air | | Water | | | | | |
| | Maximum | Minimum | Maximum | Minimum | | | | |
| 1 | 35.0 | 14.4 | 16.7 | 15.1 | Partly Cloudy | 141.873 | | |
| 2 | 35.6 | 16.7 | 16.7 | 16.1 | Partly Cloudy | 142.666 | | |
| 3 | 32.8 | 15.0 | 16.7 | 16.1 | Partly Cloudy | 143.374 | | |
| 4 | 33.9 | 14.4 | 16.7 | 16.1 | Clear | 141.930 | | |
| 5 | 35.0 | 15.6 | 16.7 | 16.1 | Clear | 140.854 | | |
| 6 | 37.2 | 18.3 | 16.7 | 16.1 | Clear | 138.730 | | |
| 7 | 38.3 | 16.1 | 16.7 | 16.1 | Clear | 138.079 | | |
| 8 | 37.8 | 17.8 | 16.7 | 16.1 | Clear | 136.719 | | |
| 9 | 34.4 | 16.1 | 16.1 | 15.6 | Clear | 137.229 | | |
| 10 | 29.4 | 16.7 | 16.1 | 15.0 | Clear | 142.213 | | |
| 11 | 31.7 | 15.6 | 16.7 | 15.0 | Clear | 144.252 | | |
| 12 | 32.2 | 13.9 | 16.1 | 15.0 | Clear | 127.516 | | |
| 13 | 30.6 | 15.6 | 16.7 | 15.6 | Clear | 68.331 | | |
| 14 | 29.4 | 15.6 | 16.7 | 15.6 | Clear | 63.687 | | |
| 15 | 21.1 | 15.0 | 16.1 | 15.6 | Rain | 67.482 | | |
| 16 | 23.3 | 13.9 | 17.2 | 16.1 | Partly Cloudy | 67.737 | | |
| 17 | 24.4 | 18.9 | 16.1 | 15.6 | Partly Cloudy | 67.935 | | |
| 18 | 21.1 | 17.2 | 16.1 | 15.6 | Rain | 68.699 | | |
| 19 | 25.0 | 13.3 | 16.1 | 15.6 | Partly Cloudy | 68.246 | | |
| 20 | 27.2 | 13.9 | 16.1 | 15.6 | Clear | 71.475 | | |
| 21 | 30.6 | 12.8 | 16.7 | 15.6 | Clear | 71.899 | | |
| 22 | 33.3 | 12.8 | 16.7 | 16.1 | Clear | 69.096 | | |
| 23 | 29.4 | 10.0 | 16.7 | 16.1 | Rain | 67.340 | | |
| 24 | 27.8 | 9.4 | 16.7 | 16.1 | Cloudy | 66.604 | | |
| 25 | 23.9 | 8.9 | 16.7 | 16.1 | Rain | 67.397 | | |
| 26 | 21.1 | 7.8 | 16.7 | 16.1 | Partly Cloudy | 66.066 | | |
| 27 | 30.6 | 12.8 | 16.7 | 16.1 | Partly Cloudy | 66.802 | | |
| 28 | 25.6 | 11.7 | 16.7 | 16.1 | Partly Cloudy | 67.057 | | |
| 29 | 25.6 | 11.7 | 16.1 | 15.6 | Clear | 66.632 | | |
| 30 | 25.6 | 11.1 | 16.1 | 15.6 | Clear | 65.500 | | |

*Temperature measured to nearest whole degree F, and later converted to C.

**Flows measured in cfs, and later converted to m³/sec.

Appendix Table 1.

| October 1982 | Temperature (C*) | | | | Weather | American River flow at Hatchery (m ³ /sec**) | Salmon | Steelhead |
|-----------------|------------------|---------|---------|---------|---------------|---|--------|-----------|
| | Air | | Water | | | | | |
| | Maximum | Minimum | Maximum | Minimum | | | | |
| 1 | 26.7 | 10.0 | 16.1 | 15.6 | Clear | 67.935 | | |
| 2 | 26.7 | 10.0 | 16.7 | 15.6 | Clear | 66.972 | | |
| 3 | 27.8 | 13.3 | 16.7 | 15.6 | Clear | 65.783 | | |
| 4 | 23.9 | 12.8 | 16.7 | 15.6 | Clear | 67.340 | | |
| 5 | 26.7 | 10.0 | 16.7 | 15.6 | Clear | 67.227 | | |
| 6 | 26.7 | 10.0 | 16.7 | 15.6 | Rain | 67.425 | | |
| 7 | 21.7 | 8.9 | 15.6 | 15.0 | Clear | 55.645 | | |
| 8 | 27.8 | 9.4 | 15.6 | 15.0 | Clear | 70.965 | | |
| 9 | 29.4 | 10.0 | 16.1 | 15.6 | Clear | 70.427 | | |
| 10 | 30.0 | 10.6 | 16.1 | 15.6 | Clear | 70.087 | | |
| 11 | 28.9 | 12.2 | 16.1 | 15.6 | Clear | 68.473 | | |
| 12 | 30.6 | 10.6 | 16.7 | 15.6 | Clear | 68.926 | | |
| 13 | 28.9 | 12.2 | 16.7 | 15.6 | Partly Cloudy | 69.889 | | |
| 14 | 30.0 | 15.0 | 16.7 | 15.6 | Clear | 72.522 | | |
| 15 | 30.6 | 12.8 | 16.7 | 15.6 | Clear | 72.862 | | |
| 16 | 26.7 | 12.2 | 16.1 | 15.6 | Partly Cloudy | 71.078 | | |
| 17 | 24.4 | 7.2 | 15.6 | 15.6 | Clear | 72.324 | | |
| 18 | 25.6 | 9.4 | 15.0 | 14.4 | Partly Cloudy | 72.126 | | |
| 19 | 26.1 | 13.9 | 15.0 | 14.4 | Cloudy | 71.928 | | |
| 20 | 25.6 | 15.0 | 15.0 | 14.4 | Partly Cloudy | 71.956 | | |
| 21 | 23.9 | 15.6 | 15.6 | 15.6 | Partly Cloudy | 71.899 | | |
| 22 | 27.2 | 16.1 | 16.1 | 15.6 | Partly Cloudy | 71.446 | | |
| 23 | 27.2 | 17.2 | 15.6 | 15.6 | Partly Cloudy | 71.418 | | |
| 24 | 23.3 | 15.6 | 15.6 | 15.0 | Rain | 71.305 | | |
| 25 | 20.0 | 17.2 | 15.0 | 14.4 | Rain | 71.022 | 692 | |
| 26 | 19.4 | 11.7 | 15.0 | 14.4 | Partly Cloudy | 74.221 | 261 | |
| 27 | 18.9 | 8.3 | 15.0 | 14.4 | Partly Cloudy | 139.863 | 404 | |
| 28 | 20.0 | 7.2 | 15.0 | 14.4 | Partly Cloudy | 145.130 | | |
| 29 | 18.3 | 12.2 | 15.0 | 14.4 | Cloudy | 142.836 | 909 | |
| 30 | 16.1 | 11.7 | 14.4 | 14.4 | Rain | 141.675 | 564 | |
| 31 | 17.2 | 9.4 | 14.4 | 13.9 | Partly Cloudy | 141.703 | | |

-10-

*Temperature measured to nearest whole degree F, and later converted to C.

**Flows measured in cfs, and later converted to m³/sec.

Appendix Table 1.

| November 1982 | Temperature (C*) | | | | Weather | American River flow at Hatchery (m ³ /sec**) | Salmon | Steelhead |
|------------------|------------------|---------|---------|---------|---------------|---|--------|-----------|
| | Air | | Water | | | | | |
| | Maximum | Minimum | Maximum | Minimum | | | | |
| 1 | 17.8 | 9.4 | 14.4 | 13.9 | Clear | 140.797 | 600 | |
| 2 | 22.2 | 6.7 | 14.4 | 13.9 | Clear | 138.956 | 435 | |
| 3 | 22.2 | 7.2 | 14.4 | 13.9 | Clear | 138.702 | | |
| 4 | 22.2 | 6.7 | 14.4 | 13.9 | Clear | 141.137 | 390 | |
| 5 | 22.2 | 6.1 | 13.9 | 13.3 | Clear | 139.693 | 419 | |
| 6 | 22.2 | 7.8 | 13.9 | 13.3 | Clear | 181.802 | | |
| 7 | 19.4 | 8.9 | 13.9 | 13.3 | Cloudy | 185.653 | | |
| 8 | 14.4 | 4.4 | 13.3 | 12.8 | Rain | 191.996 | 795 | |
| 9 | 15.0 | 5.6 | 13.3 | 12.8 | Rain | 157.080 | 396 | |
| 10 | 8.9 | 3.3 | 12.8 | 12.2 | Rain | 156.882 | | |
| 11 | 20.6 | 1.7 | 12.8 | 12.2 | Fog | 158.383 | 814 | |
| 12 | 14.4 | 3.3 | 13.3 | 12.8 | Fog | 166.255 | 474 | |
| 13 | 13.3 | .6 | 13.3 | 12.8 | Fog | 238.409 | | |
| 14 | 13.9 | 1.1 | 13.3 | 12.8 | Fog | 238.721 | | |
| 15 | 8.9 | 4.4 | 12.8 | 12.2 | Fog | 168.520 | 814 | |
| 16 | 6.1 | 3.3 | 12.2 | 12.2 | Fog | 107.212 | 530 | |
| 17 | 14.4 | 4.4 | 13.3 | 12.2 | Rain | 100.529 | | |
| 18 | 15.0 | 6.1 | 12.2 | 11.7 | Rain | 122.560 | 921 | |
| 19 | 16.1 | 8.3 | 12.2 | 11.7 | Partly Cloudy | 157.845 | | |
| 20 | 15.0 | 6.1 | 12.2 | 11.7 | Clear | 162.970 | | |
| 21 | 14.4 | 3.3 | 11.7 | 11.1 | Cloudy | 160.591 | | |
| 22 | 10.6 | 6.1 | 12.2 | 11.7 | Rain | 160.025 | 746 | |
| 23 | 12.8 | 4.4 | 11.7 | 11.1 | Rain | 101.548 | | |
| 24 | 16.7 | 5.0 | 11.7 | 11.7 | Fog | 237.645 | | |
| 25 | 9.4 | 5.0 | 11.7 | 11.1 | Cloudy - Fog | 242.515 | | |
| 26 | 10.0 | 6.7 | 11.7 | 11.1 | Cloudy | 242.600 | | |
| 27 | 14.4 | 6.1 | 11.7 | 11.1 | Rain | 241.298 | | |
| 28 | 12.2 | 10.0 | 11.1 | 11.1 | Rain | 241.326 | | |
| 29 | 11.7 | 12.2 | 11.1 | 11.1 | Rain | 171.720 | 556 | |
| 30 | 12.8 | 9.4 | 10.6 | 10.6 | Rain | 273.524 | | |

*Temperature measured to nearest whole degree F, and later converted to C.

**Flows measured in cfs, and later converted to m³/sec.

Total

7,990

Cumulative Total

10,820

Appendix Table 1.

| December 1982 | Temperature (C*) | | | | Weather | American River flow at Hatchery (m ³ /sec**) | Salmon | Steelhead |
|------------------|------------------|---------|---------|---------|---------------|---|--------|-----------|
| | Air | | Water | | | | | |
| | Maximum | Minimum | Maximum | Minimum | | | | |
| 1 | 14.4 | 5.0 | 11.7 | 11.1 | Clear | 433.265 | | |
| 2 | 11.7 | 4.4 | 11.1 | 11.1 | Rain | 424.515 | | |
| 3 | 14.4 | 3.9 | 11.7 | 11.7 | Partly Cloudy | 375.921 | | |
| 4 | 15.6 | 4.4 | 11.1 | 10.6 | Partly Cloudy | 240.392 | | |
| 5 | 10.6 | 10.0 | 10.0 | 10.0 | Cloudy - Fog | 237.758 | | |
| 6 | 11.1 | 8.9 | 10.0 | 10.0 | Cloudy | 166.793 | 101 | |
| 7 | 15.6 | 5.0 | 10.0 | 9.4 | Clear | 158.892 | | |
| 8 | 17.8 | 3.9 | 9.4 | 8.9 | Clear | 156.145 | | |
| 9 | 11.1 | 1.7 | 9.4 | 8.9 | Clear | 157.137 | | |
| 10 | 17.8 | 2.8 | 10.0 | 8.9 | Clear | 158.807 | | |
| 11 | 17.2 | 1.1 | 10.0 | 8.9 | Fog | 158.977 | | |
| 12 | 11.1 | 2.2 | 10.0 | 8.9 | Fog - Rain | 156.344 | | |
| 13 | 10.6 | 2.8 | 10.0 | 7.8 | Fog | 155.721 | 2 | |
| 14 | 8.9 | 2.8 | 9.4 | 7.8 | Fog | 154.899 | | 163 |
| 15 | 13.3 | 3.9 | 9.4 | 7.8 | Cloudy - Rain | 141.165 | | |
| 16 | 15.6 | 2.8 | 9.4 | 7.8 | Cloudy | 140.571 | | |
| 17 | 15.6 | 11.1 | 8.9 | 8.9 | Cloudy | 142.978 | | |
| 18 | 16.1 | 2.8 | 9.4 | 8.9 | Clear | 142.071 | | |
| 19 | 6.7 | 1.7 | 8.9 | 8.9 | Cloudy - Fog | 142.694 | | |
| 20 | 13.3 | 6.7 | 8.9 | 8.9 | Rain | 144.006 | | 107 |
| 21 | 12.2 | 7.8 | 8.9 | 8.9 | Rain | 318.039 | | |
| 22 | 14.4 | 7.2 | 9.4 | 9.4 | Rain | 947.152 | | |
| 23 | 12.2 | 5.6 | 10.0 | 9.4 | Cloudy | 987.081 | | |
| 24 | 12.2 | 2.8 | 9.4 | 8.3 | Clear | 754.958 | | |
| 25 | 5.0 | 0.6 | 9.4 | 8.9 | Partly Cloudy | 428.310 | | |
| 26 | 10.6 | 3.9 | 9.4 | 8.9 | Partly Cloudy | 428.819 | | |
| 27 | 11.1 | 6.7 | 9.4 | 8.9 | Partly Cloudy | 426.243 | | |
| 28 | 12.8 | 0.6 | 8.9 | 8.3 | Fog | 261.205 | | 58 |
| 29 | 12.8 | 0.6 | 8.9 | 8.3 | Clear | 173.703 | | |
| 30 | 9.4 | 2.2 | 7.8 | 7.8 | Cloudy | 170.361 | | |
| 31 | 10.6 | 1.7 | 7.8 | 6.7 | Fog | 171.862 | 1 | |

*Temperature measured to nearest whole degree F, and later converted to C.

Total

104

328

**Flows measured in cfs, and later converted to m³/sec.

Cumulative Total

13,679

Appendix Table 1.

| January 1983 | Temperature (C*) | | | | Weather | American River flow at Hatchery (m ³ /sec**) | Salmon | Steelhead |
|-----------------|------------------|---------|---------|---------|---------------|---|--------|-----------|
| | Air | | Water | | | | | |
| | Maximum | Minimum | Maximum | Minimum | | | | |
| 1 | 8.9 | .6 | 7.8 | 7.8 | Cloudy-Fog | 172.202 | | |
| 2 | 3.9 | .6 | 7.8 | 7.2 | Cloudy-Fog | 171.154 | | |
| 3 | 4.4 | .6 | 6.7 | 6.7 | Cloudy-Fog | 170.021 | | |
| 4 | 4.4 | 3.3 | 7.2 | 6.7 | Cloudy-Fog | 168.039 | | 83 |
| 5 | 4.4 | 2.8 | 7.8 | 6.7 | Cloudy-Fog | 156.174 | | |
| 6 | 4.4 | 2.8 | 8.3 | 7.8 | Cloudy-Fog | 154.446 | | |
| 7 | 5.6 | 3.9 | 7.8 | 7.8 | Cloudy-Fog | 140.571 | | |
| 8 | 5.6 | 3.3 | 7.8 | 7.2 | Cloudy-Fog | 139.494 | | |
| 9 | 15.6 | 3.3 | 7.8 | 6.1 | Clear | 139.664 | | |
| 10 | 12.8 | 4.4 | 7.8 | 6.1 | Cloudy-Fog | 137.965 | | |
| 11 | 4.4 | 3.3 | 6.7 | 6.7 | Cloudy-Fog | 115.226 | | |
| 12 | 4.4 | 2.8 | 6.7 | 6.7 | Cloudy-Fog | 113.527 | | 77 |
| 13 | 3.9 | 2.2 | 6.7 | 6.7 | Cloudy-Fog | 99.340 | | |
| 14 | 4.4 | .0 | 6.7 | 6.7 | Cloudy-Fog | 97.754 | | |
| 15 | 8.9 | 2.8 | 6.7 | 6.7 | Cloudy-Fog | 86.058 | | |
| 16 | 10.0 | 3.9 | 6.7 | 6.7 | Fog-Rain | 85.294 | | |
| 17 | 9.4 | 5.6 | 6.7 | 6.7 | Cloudy-Fog | 85.011 | | |
| 18 | 5.6 | 7.8 | 6.7 | 6.7 | Rain | 85.520 | | |
| 19 | 12.8 | 6.7 | 7.2 | 6.1 | Partly Cloudy | 86.427 | | 51 |
| 20 | 11.1 | 2.8 | 7.2 | 6.7 | Clear | 84.926 | | |
| 21 | 11.1 | .6 | 7.2 | 6.7 | Cloudy-Rain | 83.906 | | |
| 22 | 11.7 | 2.2 | 7.2 | 6.7 | Rain | 90.221 | | |
| 23 | 16.7 | 6.7 | 7.2 | 6.7 | Rain | 220.342 | | |
| 24 | 16.1 | 11.7 | 7.8 | 7.2 | Partly Cloudy | 306.118 | | |
| 25 | 14.4 | 8.9 | 7.8 | 7.2 | Partly Cloudy | 422.731 | | |
| 26 | 17.2 | 14.4 | 7.8 | 7.2 | Rain | 422.448 | | |
| 27 | 14.4 | 10.0 | 7.8 | 7.2 | Rain | 589.722 | | |
| 28 | 17.8 | 3.9 | 7.8 | 7.2 | Clear | 727.801 | | |
| 29 | 17.8 | 3.9 | 7.8 | 7.8 | Rain | 679.122 | | |
| 30 | 19.4 | 2.2 | 7.8 | 7.8 | Partly Cloudy | 430.292 | | |
| 31 | 26.7 | 11.1 | 8.3 | 7.8 | Clear | 428.536 | | |

-13-

*Temperature measured to nearest whole degree F, and later converted to C.

Total

211

**Flows measured in cfs, and later converted to m³/sec.

Cumulative Total

539

Appendix Table 1.

| February 1983 | Temperature (C*) | | | | Weather | American River flow at Hatchery (m ³ /sec. **) | Salmon | Steelhead |
|------------------|------------------|---------|---------|---------|---------------|---|--------|-----------|
| | Air | | Water | | | | | |
| | Maximum | Minimum | Maximum | Minimum | | | | |
| 1 | 17.2 | 2.2 | 8.3 | 7.3 | Clear | 369.323 | | |
| 2 | 19.4 | 3.9 | 8.3 | 7.8 | Cloudy | 258.968 | | 36 |
| 3 | 15.6 | 4.4 | 8.3 | 7.8 | Cloudy | 234.331 | | |
| 4 | 15.6 | 3.9 | 8.3 | 7.8 | Cloudy | 225.610 | | |
| 5 | 11.7 | 7.8 | 8.3 | 7.8 | Rain | 153.144 | | |
| 6 | 11.1 | 8.3 | 8.3 | 7.8 | Rain | 142.893 | | |
| 7 | 16.7 | 10.0 | 7.8 | 7.8 | Rain | 229.404 | | |
| 8 | 13.3 | 10.6 | 8.3 | 7.8 | Rain | 586.296 | | |
| 9 | 16.1 | 10.0 | 8.3 | 7.8 | Cloudy | 589.439 | | 70 |
| 10 | 21.7 | 10.0 | 8.9 | 7.2 | Partly Cloudy | 568.342 | | |
| 11 | 20.6 | 8.9 | 8.9 | 7.2 | Partly Cloudy | 480.047 | | |
| 12 | 17.8 | 10.6 | 8.3 | 8.3 | Rain | 423.920 | | |
| 13 | 17.2 | 9.4 | 8.3 | 8.3 | Partly Cloudy | 452.040 | | |
| 14 | 18.3 | 6.1 | 8.9 | 8.3 | Clear | 560.102 | | |
| 15 | 5.6 | 18.3 | 8.9 | 8.3 | Cloudy-Rain | 559.507 | | |
| 16 | 19.4 | 11.1 | 9.4 | 8.3 | Clear | 473.173 | | 177 |
| 17 | 21.1 | 5.6 | 9.4 | 8.3 | Partly Cloudy | 305.749 | | |
| 18 | 20.6 | 10.0 | 8.3 | 8.0 | Partly Cloudy | 280.631 | | |
| 19 | 17.2 | 10.0 | 9.4 | 8.3 | Clear | 273.932 | | |
| 20 | 20.0 | 5.0 | 8.3 | 9.4 | Partly Cloudy | 278.762 | | |
| 21 | 18.3 | 7.2 | 8.9 | 8.9 | Partly Cloudy | 285.955 | | |
| 22 | 18.3 | 9.4 | 8.9 | 8.9 | Clear | 283.293 | | |
| 23 | 20.0 | 8.9 | 9.4 | 8.9 | Cloudy | 284.398 | | |
| 24 | 17.2 | 8.3 | 10.0 | 8.3 | Cloudy | 277.205 | | |
| 25 | 11.7 | 8.3 | 8.9 | 8.3 | Rain | 238.749 | | |
| 26 | 17.2 | 9.4 | 8.9 | 8.3 | Rain | 297.197 | | |
| 27 | 17.2 | 10.0 | 8.9 | 8.3 | Rain | 420.947 | | |
| 28 | 15.6 | 9.4 | 8.9 | 8.3 | Rain | 457.845 | | |

*Temperature measured to nearest whole degree F, and later converted to C.

**Flows measured in cfs, and later converted to m³/sec.

| | |
|------------------|-----|
| Total | 283 |
| Cumulative Total | 822 |

Appendix Table 1.

| March 1983 | Temperature (C*) | | | | Weather | American River flow at Hatchery (m ³ /sec.**) | Salmon | Steelhead |
|---------------|------------------|---------|---------|---------|---------------|--|--------|-----------|
| | Air | | Water | | | | | |
| | Maximum | Minimum | Maximum | Minimum | | | | |
| 1 | 16.7 | 9.4 | 9.4 | 8.9 | Rain | 623.336 | | |
| 2 | 16.7 | 10.6 | 10.0 | 9.4 | Rain | 649.190 | | |
| 3 | 18.9 | 10.0 | 10.0 | 9.4 | Rain | 708.516 | | |
| 4 | 19.4 | 9.4 | 10.0 | 9.4 | Partly Cloudy | 688.609 | | |
| 5 | 14.4 | 9.4 | 8.9 | 8.9 | Rain | 571.259 | | |
| 6 | 17.3 | 8.9 | 8.9 | 8.3 | Partly Cloudy | 574.034 | | |
| 7 | 18.9 | 15.6 | 9.4 | 8.9 | Cloudy | 574.714 | | |
| 8 | 24.4 | 13.9 | 10.0 | 9.4 | Clear | 548.605 | | |
| 9 | 26.7 | 10.6 | 10.0 | 9.4 | Clear | 402.484 | | |
| 10 | 24.4 | 15.6 | 10.0 | 9.4 | Rain | 341.175 | | 88 |
| 11 | 19.4 | 9.4 | 10.0 | 9.4 | Clear | 351.002 | | |
| 12 | 16.7 | 11.1 | 9.4 | 9.4 | Rain | 423.609 | | |
| 13 | 19.4 | 13.3 | 10.0 | 9.4 | Rain | 755.638 | | |
| 14 | 20.0 | 7.8 | 10.6 | 9.4 | Partly Cloudy | 999.625 | | |
| 15 | 22.8 | 15.6 | 11.1 | 9.4 | Partly Cloudy | 999.937 | | |
| 16 | 14.4 | 7.2 | 11.7 | 10.0 | Rain | 998.946 | | |
| 17 | 16.7 | 6.7 | 9.4 | 9.4 | Rain | 908.356 | | 20 |
| 18 | 16.1 | 7.8 | 9.4 | 9.4 | Partly Cloudy | 596.066 | | |
| 19 | 18.9 | 4.4 | 9.4 | 8.9 | Clear | 566.700 | | 73 |
| 20 | 20.0 | 4.4 | 8.9 | 8.9 | Rain | 455.240 | | |
| 21 | 15.6 | 6.7 | 9.4 | 9.4 | Rain | 423.722 | | |
| 22 | 16.7 | 13.3 | 9.4 | 9.4 | Rain | 421.060 | | |
| 23 | 15.0 | 8.3 | 9.4 | 8.9 | Rain | 420.182 | | |
| 24 | 12.8 | 8.3 | 9.4 | 8.9 | Rain | 428.508 | | |
| 25 | 17.2 | 6.1 | 10.0 | 8.9 | Cloudy | 423.864 | | |
| 26 | 15.6 | 6.7 | 10.0 | 9.4 | Rain | 422.788 | | |
| 27 | 16.1 | 7.2 | 9.4 | 8.9 | Rain | 422.731 | | |
| 28 | 17.8 | 6.7 | 9.4 | 7.8 | Cloudy | 421.230 | | |
| 29 | 20.0 | 10.6 | 9.4 | 8.9 | Partly Cloudy | 370.683 | | |
| 30 | 21.7 | 8.3 | 9.4 | 8.9 | Partly Cloudy | 248.774 | | |
| 31 | 26.1 | 10.0 | 10.0 | 8.9 | Clear | 242.572 | | |

*Temperature measured to nearest whole degree F, and later converted to C.

**Flows measure in cfs, and later converted to m³/sec.

Total

Cumulative Total

181
1,003

Appendix Table 1.

| April 1983 | Temperature (C*) | | | | Weather | American River flow at Hatchery (m ³ /sec.**) | Salmon | Steelhead |
|---------------|------------------|---------|---------|---------|---------------|--|--------|-----------|
| | Air | | Water | | | | | |
| | Maximum | Minimum | Maximum | Minimum | | | | |
| 1 | 22.2 | 6.7 | 9.4 | 8.9 | Rain | 242.883 | | |
| 2 | 18.3 | 8.9 | 10.6 | 8.9 | Clear | 244.611 | | |
| 3 | 19.4 | 6.1 | 10.0 | 6.1 | Clear | 244.328 | | |
| 4 | 20.6 | 13.9 | 10.0 | 8.9 | Clear | 245.545 | | |
| 5 | 20.6 | 8.9 | 10.6 | 9.4 | Clear | 339.306 | | |
| 6 | 21.7 | 15.0 | 11.1 | 9.4 | Clear | 339.674 | | |
| 7 | 24.4 | 5.6 | 11.1 | 9.4 | Clear | 337.211 | | |
| 8 | 22.2 | 7.8 | 10.6 | 10.0 | Clear | 331.207 | | |
| 9 | 16.7 | 10.0 | 10.0 | 9.4 | Cloudy | 281.707 | | |
| 10 | 21.1 | 6.7 | 9.4 | 8.9 | Partly Cloudy | 283.605 | | |
| 11 | 15.6 | 6.1 | 9.4 | 9.4 | Partly Cloudy | 254.862 | | |
| 12 | 17.8 | 15.0 | 10.0 | 9.4 | Partly Cloudy | 283.208 | | |
| 13 | 18.9 | 3.9 | 10.6 | 9.4 | Partly Cloudy | 284.454 | | |
| 14 | 26.1 | 5.0 | 10.6 | 9.4 | Partly Cloudy | 283.605 | | |
| 15 | 23.3 | 7.8 | 11.1 | 9.4 | Clear | 281.283 | | |
| 16 | 22.2 | 8.9 | 10.6 | 10.0 | Clear | 233.057 | | |
| 17 | 22.2 | 11.7 | 10.0 | 10.0 | Clear | 241.298 | | |
| 18 | 18.3 | 8.9 | 10.0 | 10.0 | Rain | 241.609 | | |
| 19 | 23.9 | 11.1 | 10.0 | 8.9 | Rain | 240.901 | | |
| 20 | 21.7 | 11.1 | 11.1 | 10.0 | Partly Cloudy | 240.335 | | |
| 21 | 21.1 | 20.0 | 10.0 | 10.0 | Clear | 234.275 | | |
| 22 | 17.8 | 11.1 | 10.0 | 10.0 | Cloudy | 241.099 | | |
| 23 | 15.6 | 12.2 | 10.0 | 9.4 | Rain | 242.459 | | |
| 24 | 16.1 | 7.2 | 9.4 | 9.4 | Rain | 242.883 | | |
| 25 | 13.9 | 9.4 | 10.0 | 6.7 | Partly Cloudy | 243.110 | | |
| 26 | 19.4 | 8.9 | 10.0 | 9.4 | Partly Cloudy | 238.551 | | |
| 27 | 16.1 | 4.4 | 10.0 | 9.4 | Rain | 240.023 | | |
| 28 | 18.3 | 11.1 | 10.0 | 9.4 | Rain | 247.924 | | |
| 29 | 19.4 | 10.0 | 10.0 | 9.4 | Rain | 273.212 | | |
| 30 | 20.6 | 11.1 | 10.0 | 9.4 | Rain | 340.043 | | |

-16-

*Temperature measured to nearest whole degree F,₃ and later converted to C.

**Flows measured in cfs, and later converted to m³/sec.

Appendix Table 1.

| May 1983 | Temperature (C*) | | | | Weather | American River flow at Hatchery (m ³ /sec.**) | Salmon | Steelhead |
|-------------|------------------|---------|---------|---------|---------------|--|--------|-----------|
| | Air | | Water | | | | | |
| | Maximum | Minimum | Maximum | Minimum | | | | |
| 1 | 24.4 | 8.9 | 11.1 | 9.4 | Partly Cloudy | 347.434 | | |
| 2 | 22.8 | 10.0 | 11.1 | 10.0 | Partly Cloudy | 350.775 | | |
| 3 | 25.0 | 10.0 | 11.1 | 10.0 | Partly Cloudy | 349.812 | | |
| 4 | 16.1 | 13.9 | 10.6 | 10.0 | Cloudy | 349.529 | | |
| 5 | 23.3 | 11.1 | 10.6 | 9.4 | Rain | 349.756 | | |
| 6 | 24.4 | 14.4 | 10.0 | 9.4 | Partly Cloudy | 349.104 | | |
| 7 | 25.6 | 11.1 | 11.1 | 10.6 | Clear | 346.980 | | |
| 8 | 25.6 | 8.9 | 11.1 | 10.0 | Clear | 346.527 | | |
| 9 | 18.3 | 6.7 | 11.7 | 10.0 | Clear | 346.131 | | |
| 10 | 20.6 | 10.0 | 11.7 | 10.6 | Clear | 344.743 | | |
| 11 | 21.1 | 9.4 | 11.7 | 11.1 | Clear | 344.857 | | |
| 12 | 22.2 | 10.0 | 11.7 | 10.5 | Partly Cloudy | 343.129 | | |
| 13 | 26.7 | 11.1 | 11.7 | 10.5 | Clear | 341.855 | | |
| 14 | 30.6 | 11.7 | 12.2 | 10.6 | Clear | 341.062 | | |
| 15 | 30.0 | 11.7 | 12.2 | 10.6 | Clear | 339.901 | | |
| 16 | 27.8 | 10.0 | 12.8 | 10.6 | Clear | 338.712 | | |
| 17 | 27.2 | 13.3 | 13.3 | 11.7 | Clear | 343.327 | | |
| 18 | 31.7 | 12.2 | 12.8 | 11.1 | Clear | 344.234 | | |
| 19 | 32.2 | 15.6 | 13.9 | 11.7 | Clear | 343.696 | | |
| 20 | 35.0 | 13.9 | 13.9 | 12.2 | Clear | 342.931 | | |
| 21 | 32.8 | 15.6 | 13.9 | 11.7 | Clear | 341.940 | | |
| 22 | 35.0 | 17.2 | 12.8 | 11.7 | Clear | 340.581 | | |
| 23 | 33.9 | 12.2 | 12.8 | 11.7 | Clear | 339.533 | | |
| 24 | 32.8 | 12.2 | 12.8 | 11.7 | Clear | 340.297 | | |
| 25 | 33.3 | 13.3 | 12.8 | 11.7 | Clear | 342.789 | | |
| 26 | 35.6 | 14.4 | 12.8 | 11.7 | Clear | 345.876 | | |
| 27 | 36.1 | 14.4 | 13.3 | 11.7 | Clear | 344.319 | | |
| 28 | 32.2 | 16.1 | 13.3 | 12.2 | Partly Cloudy | 339.788 | | |
| 29 | 27.2 | 12.2 | 13.3 | 11.1 | Clear | 335.030 | | |
| 30 | 28.9 | 11.7 | 13.3 | 11.7 | Clear | 333.671 | | |
| 31 | 25.6 | 13.3 | 11.7 | 11.1 | Cloudy | 329.083 | | |

-17-

*Temperature measured to nearest whole degree F, and later converted to C.

**Flows measured in cfs, and later converted to m³/sec.

Appendix Table 1.

| June 1983 | Temperature (C*) | | | | Weather | American River flow at Hatchery (m ³ /sec.**) | Salmon | Steelhead |
|--------------|------------------|---------|---------|---------|---------------|--|--------|-----------|
| | Air | | Water | | | | | |
| | Maximum | Minimum | Maximum | Minimum | | | | |
| 1 | 21.7 | 13.9 | 11.7 | 11.7 | Rain | 330.160 | | |
| 2 | 26.7 | 12.2 | 12.2 | 11.1 | Partly Cloudy | 334.804 | | |
| 3 | 29.4 | 16.1 | 12.8 | 11.7 | Partly Cloudy | 311.951 | | |
| 4 | 33.3 | 13.9 | 12.8 | 11.7 | Clear | 285.502 | | |
| 5 | 37.2 | 15.6 | 13.3 | 11.7 | Clear | 286.323 | | |
| 6 | 36.7 | 15.6 | 13.3 | 11.7 | Clear | 284.992 | | |
| 7 | 35.6 | 16.1 | 12.8 | 11.7 | Partly Cloudy | 283.916 | | |
| 8 | 30.6 | 13.9 | 12.2 | 11.7 | Clear | 287.739 | | |
| 9 | 31.7 | 13.3 | 12.2 | 11.7 | Clear | 259.789 | | |
| 10 | 31.7 | 14.4 | 12.8 | 11.1 | Partly Cloudy | 239.570 | | |
| 11 | 27.8 | 12.2 | 12.2 | 11.1 | Partly Cloudy | 206.920 | | |
| 12 | 31.1 | 12.8 | 12.2 | 11.7 | Clear | 204.569 | | |
| 13 | 36.1 | 13.3 | 12.2 | 11.1 | Clear | 234.813 | | |
| 14 | 32.8 | 16.7 | 12.2 | 11.1 | Clear | 240.108 | | |
| 15 | 33.3 | 14.4 | 12.8 | 11.1 | Clear | 237.390 | | |
| 16 | 36.7 | 14.4 | 12.2 | 11.1 | Clear | 234.473 | | |
| 17 | 29.4 | 16.7 | 12.2 | 11.1 | Clear | 239.627 | | |
| 18 | 30.0 | 12.2 | 12.8 | 11.1 | Clear | 238.579 | | |
| 19 | 31.7 | 12.2 | 12.8 | 11.1 | Clear | 231.075 | | |
| 20 | 31.7 | 13.3 | 12.2 | 11.1 | Clear | 275.599 | | |
| 21 | 32.8 | 15.0 | 12.2 | 11.1 | Clear | 233.041 | | |
| 22 | 33.3 | 16.1 | 12.2 | 11.1 | Clear | 238.636 | | |
| 23 | 29.4 | 10.6 | 12.2 | 11.1 | Clear | 239.882 | | |
| 24 | 29.4 | 11.7 | 12.8 | 11.1 | Clear | 264.009 | | |
| 25 | 35.0 | 14.4 | 13.3 | 11.7 | Clear | 285.219 | | |
| 26 | 33.9 | 16.7 | 18.9 | 17.2 | Clear | 344.687 | | |
| 27 | 34.4 | 13.9 | 13.3 | 11.7 | Clear | 351.398 | | |
| 28 | 30.6 | 13.3 | 13.3 | 12.2 | Clear | 349.756 | | |
| 29 | 31.1 | 15.6 | 13.3 | 12.2 | Clear | 350.832 | | |
| 30 | 29.4 | 15.6 | 13.3 | 12.2 | Clear | 353.069 | | |

-18-

*Temperature measured to nearest whole degree F, and later converted to C.

**Flows measured in cfs, and later converted to m³/sec.

APPENDIX TABLE 2. Fork Lengths of Marked Chinook Salmon Received at Nimbus Salmon and Steelhead Hatchery, 1982-83 Season

| FL(cm) | <u>CWT</u> | |
|--------|------------|--------|
| | Male | Female |
| 48 | 1 | |
| 54 | | 1 |
| 57 | 2 | |
| 60 | 3 | |
| 61 | | 1 |
| 63 | 1 | |
| 72 | 1 | |
| 73 | | 1 |
| 74 | 1 | 2 |
| 75 | 1 | |
| 77 | 1 | |
| 78 | 2 | |
| 79 | 2 | |
| 80 | 1 | 3 |
| 81 | 2 | 1 |
| 82 | 1 | |
| 84 | 4 | 2 |
| 86 | 1 | 1 |
| 87 | 1 | |
| 88 | 2 | |
| 89 | 4 | |
| 90 | 1 | |
| 91 | 1 | |
| 92 | 3 | 2 |
| 103 | 1 | |
| 105 | 1 | |
| Total | 38 | 14 |

APPENDIX TABLE 3. Fork Lengths of Marked Steelhead Recovered at Nimbus Salmon and Steelhead Hatchery, 1982-83 Season

| FL(cm) | <u>CWT</u> | |
|--------|------------|--------|
| | Male | Female |
| 40 | 1 | |
| 43 | 5 | |
| 44 | 4 | 1 |
| 45 | 3 | 1 |
| 46 | 8 | 4 |
| 47 | 8 | 1 |
| 48 | 9 | 3 |
| 49 | 7 | 2 |
| 50 | 4 | 3 |
| 51 | 6 | 5 |
| 52 | 2 | 2 |
| 53 | 3 | 7 |
| 54 | 4 | 5 |
| 55 | 5 | 11 |
| 56 | 6 | 9 |
| 57 | 3 | 13 |
| 58 | 2 | 10 |
| 59 | 3 | 10 |
| 60 | 3 | 18 |
| 61 | 5 | 10 |
| 62 | 4 | 13 |
| 63 | 7 | 5 |
| 64 | 10 | 6 |
| 65 | 8 | 5 |
| 66 | 10 | 1 |
| 67 | 4 | |
| 68 | 5 | |
| 69 | 2 | |
| 70 | 1 | 1 |
| 71 | 3 | |
| 72 | 1 | |
| 73 | 3 | 1 |
| 75 | 1 | |
| 76 | 1 | |
| Total | 151 | 147 |