

The Resources Agency of California  
Department of Fish and Game

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ANNUAL REPORT  
IRON GATE SALMON AND STEELHEAD HATCHERY  
FIRST YEAR OF OPERATION 1965-66<sup>1/</sup>

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SUMMARY

King salmon, Oncorhynchus tshawytscha, started entering the trap on September 24, 1965. The run ended on October 21, 1965. During this period 678 king salmon and 2 male silver salmon, Oncorhynchus kisutch, were trapped. The first steelhead trout, Salmo gairdnerii gairdnerii, entered the trap on September 24. By the time the king salmon run was over 116 steelhead were trapped and released. The ladder was reopened on February 9, 1966, and steelhead trout began entering the trap on February 23.

Production data are as follows:

Species	Number adults	Number females spawned	Number eggs taken	Number fingerlings planted	Number yearlings planted	On hand June 30, 1966
King salmon	365	151	543,600	293,120	--	--
Silver salmon	2	--	--	--	--	83,980
Steelhead trout	259 <sup>2/</sup>	61	122,453	--	--	216,850

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<sup>1/</sup> Submitted June, 1967.  
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<sup>2/</sup> Thirty-two steelhead trout adults from Bogus Creek included.

## INTRODUCTION

This report covers the first year of operation of the Iron Gate Salmon and Steelhead Hatchery. The fish trapping facilities were completed in February, 1962, and operated during the spring and fall of each year by the Department of Fish and Game under agreement with Pacific Power and Light Company.

The hatchery was completed by Pacific Power and Light Company and formally turned over to the Department of Fish and Game on March 22, 1966. The first fish, 293,100 king salmon fingerlings, were placed in the ponds on March 3, 1966.

Water for the trapping facilities and hatchery may be taken from the 16-foot or 74-foot depth from Iron Gate Reservoir or may be blended from these depths. In addition, water can be pumped into the water system from the powerhouse tailrace.

An aerator is located on a rock ledge near the powerhouse. Water enters the aerator through three pipes. Each pipe has three 12-inch jet-type openings which drive the water upward into cone energy dissipaters. After striking these cones, the water splashes down through three sets of baffles and into a sump from which it flows into the supply line or spills through the overflow pipe back to the river. Through a series of valves, water may be passed into the hatchery supply with or without aeration or with partial aeration.

The steel hatchery building is 40 x 120 feet. It is equipped with 136 stacks of Heath incubators (2,176 trays) which may be operated on a closed water system or continuous flow. The electric pump, which circulates water in the closed system, is backed up by a separate pump driven by a 19 HP air-cooled diesel engine. This diesel engine starts automatically when the water flow through the supply line stops. Water temperature in the closed system is controlled by space heaters.

In addition to the incubators, there are 12 fiberglass Heath troughs in the hatchery building. The troughs are not connected to the closed recirculating water system.

A laboratory is located in the hatchery building. It provides room for study of diseased fish, water analysis, and chemical storage.

A shop-office building is located between the hatchery and the residences. This building houses the dry feed storage room, workshop, office, truck storage room, and rest rooms.

There are 32 concrete ponds, 100-feet long, 10-feet wide, and 40-inches deep, arranged in paired raceways of four ponds long. Water is supplied through a 20-inch pipeline to a common head flume where it passes through a sloping screen to each raceway. A common tail flume at the end of the raceways drains them directly into the Klamath River. The crosswalks and screen supports are removable to allow an unobstructed area for seining and grading fish.

Four three-bedroom houses have been provided for permanent employees. Water for domestic use is obtained from a drilled well behind the houses.

The fish ladder consists of 20 ten-foot pools which lead to a trapping pond. After fish enter this pond they are crowded toward the spawning house by a mechanical sweep which is driven by a gasoline engine. The fish are lifted through a hydraulic door sliding across a water-fish separator into a tranquilizing solution inside the spawning house. Here they are sorted and placed in flumes leading to ponds where they are held until ready to spawn. The circular holding ponds are 30-feet in diameter and 5-feet deep.

#### KING SALMON MAINTENANCE PROGRAM

The fish ladder was opened on September 20, 1965. The first king salmon entered the trap on September 24. The ladder was shutdown on October 21, 1965. A total of 141 males, 224 females, and 313 grilse was trapped. The 151 females which were spawned produced 543,600 eggs. Five lots of eggs were taken, the first on October 1 and the last on October 21. Of the females trapped and not spawned, 37 died in the ponds and 36 were released on October 21, 1965. All carcasses were given to State and County institutions.

As soon as the eggs were eyed they were transported to Mt. Chasta Hatchery for hatching and rearing so the water supply line could be opened and the aerator constructed. The resulting fingerlings were returned to Iron Gate on March 3, 1966. These 293,120 king salmon, averaging 40/oz., were released into the Klamath River by the removal of pond screens. The raceway was drained 10 days after the screens were removed. Only about 300 fingerlings had not moved out into the river.

#### SILVER SALMON MAINTENANCE PROGRAM

During the period the king salmon were being trapped only two silver salmon entered the trap. These two males were marked by the removal of the adipose fin and returned to the river.

On April 23, 1966, 85,020 Klaskanine silver salmon fingerlings were received from Trinity River Hatchery.

#### STEELHEAD MAINTENANCE PROGRAM

During the fall of 1965 a total of 116 steelhead trout entered the trap. These fish were marked and returned to the river.

The fish ladder was activated on February 9, 1966. The first steelhead entered the trap on February 23. Through April 26, 54 males and 49 females were trapped. The first fish were spawned March 22 and the last on April 26.

The river temperature during March remained several degrees colder than usual. It seemed the steelhead were looking for warmer water than the 39-41 degrees coming down the ladder. Bogus Creek at this same time was about 50 degrees and several thousand steelhead entered this stream. By late March it was apparent the steelhead were not going to enter the ladder in numbers large enough to produce the desired number of eggs, therefore, a trap was installed at the mouth of Bogus Creek. Even though the steelhead run had nearly ended, 17 males and 15 females were trapped and trucked to the ponds at the spawning house. The 61 females spawned produced 122,453 eggs for an average of 2,007 per female. Average fertility was 93%. Thirty males were spawned and released, 32 died in the ponds, and 2 were released not spawned. No females died in the ponds and 10 were released not spawned.

On April 29, 101,200 eyed eggs were received from Trinity River Hatchery. A total of 101,130 steelhead fingerlings was salvaged from Little Bogus Creek, Brush and Dry creeks. These fingerlings were rescued and delivered to the hatchery by the Yreka Screen Chop crew. All of these steelhead will be released as yearlings.

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APPENDIX

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APPENDIX

TABLE A-1. Yearly Comparison of Fish Trapped - Iron Gate Salmon and Steelhead Hatchery. Compares the number of fish by species trapped at Iron Gate trapping facilities from July 1, 1963 through June 30, 1966.

TABLE A-2. Chart of Operation - Enumerates details of each activity.

TABLES A-3 through A-9. Daily Record of Fish Trapped and Water Temperatures - Summarizes daily water temperatures and number of fish by species trapped at Iron Gate trapping facilities.

FIGURES A-1 through A-3. Show weekly number of king salmon and steelhead trout trapped.

FIGURE A-4. Shows the location of Iron Gate Hatchery.

FIGURE A-5. Illustrates the layout of Iron Gate Salmon and Steelhead Hatchery and trapping facilities.

TABLE A-1

Yearly Comparison of Fish Trapped  
Iron Gate Salmon and Steelhead Hatchery  
July 1, 1963 through June 30, 1966

Species	July 1, 1963 through June 30, 1964	July 1, 1964 through June 30, 1965	July 1, 1965 through June 30, 1966
<b>King salmon</b>			
Male	--	837	141
Female	--	1,651	224
Total adults	1,723	2,488	365
Grilse	448	110	313
Totals	2,171	2,598	678
<b>King salmon</b>			
Bogus Creek females	458	348	32
<b>Silver salmon</b>			
Male	31	--	2
Female	95	--	--
Total adults	176	--	2
Grilse	14	--	--
Totals	190	--	2
<b>Steelhead trout</b>			
Adults	1,542	1,065	227

TABLE A-2

Chart of Operation  
Iron Gate Salmon and Steelhead Hatchery  
1965-66

Species	Females spawned	Eggs taken	Eggs received by transfer	Eggs transferred	Fish received by transfer	Fingerlings planted	Fish on hand June 30, 1966
King salmon	151	543,600	--	384,900 <sup>1/</sup>	297,330 <sup>2/</sup>	293,120	--
Silver salmon	--	--	--	--	85,020 <sup>3/</sup>	--	83,980
Steelhead	61	122,453	101,200 <sup>3/</sup>	--	101,138 <sup>4/</sup>	--	216,850 <sup>4/</sup>

<sup>1/</sup> Eggs transferred to Mt. Shasta Hatchery.

<sup>2/</sup> Fish received from Mt. Shasta Hatchery.

<sup>3/</sup> Fish and eggs received from Trinity River Hatchery.

<sup>4/</sup> Fingerlings salvaged from Bogus Creek, Bush Creek, and Dry Creek.

TABLE A-3

Daily Record of Fish Trapped and Water Temperatures  
Iron Gate Salmon and Steelhead Hatchery  
September, 1965

Date	Fish trapped					Temperature	
	King salmon		Silver salmon		Steelhead trout	Water	
	Adults	Grilse	Adults	Grilse		Maximum	Minimum
20						64	54
21						64	54
22						68	56
23						67	58
24		1			1	68	58
25						68	58
26						66	56
27	2					62	64
28						62	52
29	2				2	62	52
30	3	11			4	62	52
Totals	7	12			7		



TABLE A-4

Daily Record of Fish Trapped and Water Temperatures  
 Iron Gate Salmon and Steelhead Hatchery  
 October, 1965

Date	Fish trapped					Temperature	
	King salmon		Silver salmon		Steelhead trout	Water	
	Adults	Grilse	Adults	Grilse		Maximum	Minimum
1	1	2			1	62	54
2	5	6				62	54
3					3	62	52
4	3	10			2	60	54
5	1	4			2	62	56
6	21	16			1	64	54
7	62	62			11	64	54
8	52	34			5	64	56
9	47	34			7	64	54
10	44	35			19	64	56
11	33	13			8	62	52
12	13	14			7	62	54
13	28	16	1		3	62	54
14	20	15			7	58	54
15	5	3			7	56	50
16	12	10			8	54	48
17	4	12			5	58	50
18	2	4			4	54	50
19					4	56	50
20	3	8			3	56	50
21	2	2	1		2	56	50
Totals	358	301	2		109		

TABLE A-5

Daily Record of Fish Trapped and Water Temperatures  
 Iron Gate Salmon and Steelhead Hatchery  
 February, 1966

Date	Fish trapped					Temperature <sup>1/</sup>	
	King salmon		Silver salmon		Steelhead trout	Water	
	Adults	Grilse	Adults	Grilse		Maximum	Minimum
13						38	38
14						39	38
15						39	39
16						39	39
17						39	39
18						39	39
19						39	39
20						39	39
21						39	39
22						40	39
23					3	40	39
24						40	40
25						40	40
26						40	40
27						40	40
28						40	40
<b>Totals</b>					3		

<sup>1/</sup> Blend of 16' and 74' intakes.

TABLE A-5

Daily Record of Fish Trapped and Water Temperatures  
 Iron Gate Salmon and Steelhead Hatchery  
 March, 1966

Date	Fish trapped					Temperature <sup>1/</sup>	
	King salmon		Silver salmon		Steelhead trout	Water	
	Adults	Grilse	Adults	Grilse		Maximum	Minimum
1						40	40
2						40	40
3						40	40
4						40	40
5					1	40	40
6						40	40
7						41	41
8						41	41
9					1	42	41
10					5	42	41
11					1	41	41
12						41	41
13						41	41
14						41	41
15						42	41
16					14	42	42
17					5	42	42
18					3	43	42
19						43	42
20						43	43
21						43	43
22						43	43
23						43	43
24					7	44	43
25						45	44
26					1	47	45
27					16	48	47
28					8	49	48
29					9	49	48
30					7	50	49
31					1	51	50
<b>Totals</b>					<b>79</b>		

<sup>1/</sup> Blend of 16' and 74' intakes.

TABLE A-7

Daily Record of Fish Trapped and Water Temperatures  
 Iron Gate Salmon and Steelhead Hatchery  
 April, 1966

Date	Fish trapped					Temperature <sup>1/</sup>	
	King salmon		Silver salmon		Steelhead trout	Water	
	Adults	Grilse	Adults	Grilse		Maximum	Minimum
1					4	52	51
2					1	52	51
3					13	52	51
4					1	52	51
5						52	51
6					1	52	51
7						52	51
8						52	51
9						52	51
10						53	52
11					1	53	52
12						54	53
13						55	54
14					1	55	54
15					2	55	54
16						55	54
17					2	55	54
18					3	57	56
19						56	55
20						55	54
21						55	54
22						55	54
23						55	54
24						56	55
25						60	56
26						59	55
27						57	56
28						58	56
29						58	56
30						58	56
<b>Totals</b>					<b>29</b>		

<sup>1/</sup> Blend of 16' and 74' intakes.

TABLE A-8

Daily Record of Fish Trapped and Water Temperatures  
Iron Gate Salmon and Steelhead Hatchery  
May, 1966

Date	Fish trapped					Temperature <sup>1/</sup>	
	King salmon		Silver salmon		Steelhead trout	Water	
	Adults	Grilse	Adults	Grilse		Maximum	Minimum
1						59	58
2						59	57
3						59	57
4						61	60
5						62	56
6						56	56
7						56	56
8						59	58
9						60	59
10						60	59
11						60	58
12						60	58
13						59	59
14						59	59
15						60	58
16						60	58
17						60	58
18						60	58
19						59	58
20						60	59
21						60	59
22						62	60
23						63	59
24						59	58
25						60	58
26						61	58
27						59	59
28						59	59
29						62	59
30						57	57
31						58	57

<sup>1/</sup> Blend of 16' and 74' intakes.

TABLE A-9

Daily Record of Fish Trapped and Water Temperatures  
 Iron Gate Salmon and Steelhead Hatchery  
 June, 1966

Date	Fish trapped					Temperature <sup>1/</sup>	
	King salmon		Silver salmon		Steelhead trout	Water	
	Adults	Grilse	Adults	Grilse		Maximum	Minimum
1						58	57
2						58	57
3						57	52
4						52	52
5						52	52
6						52	48
7						47	47
8						48	47
9						48	48
10						48	48
11						48	48
12						50	50
13						49	49
14						49	48
15						49	48
16						55	48
17						53	52
18						52	52
19						53	53
20						53	53
21						54	53
22						55	54
23						55	54
24						55	54
25						55	54
26						54	53
27						55	53
28						55	54
29						56	55
30						56	55
<b>GRAND TOTALS</b>	<b>365</b>	<b>313</b>	<b>2</b>		<b>227<sup>2/</sup></b>		

<sup>1/</sup> Blend of 16' and 74' intakes.

<sup>2/</sup> Does not include 32 steelhead from Bogus Creek trap.

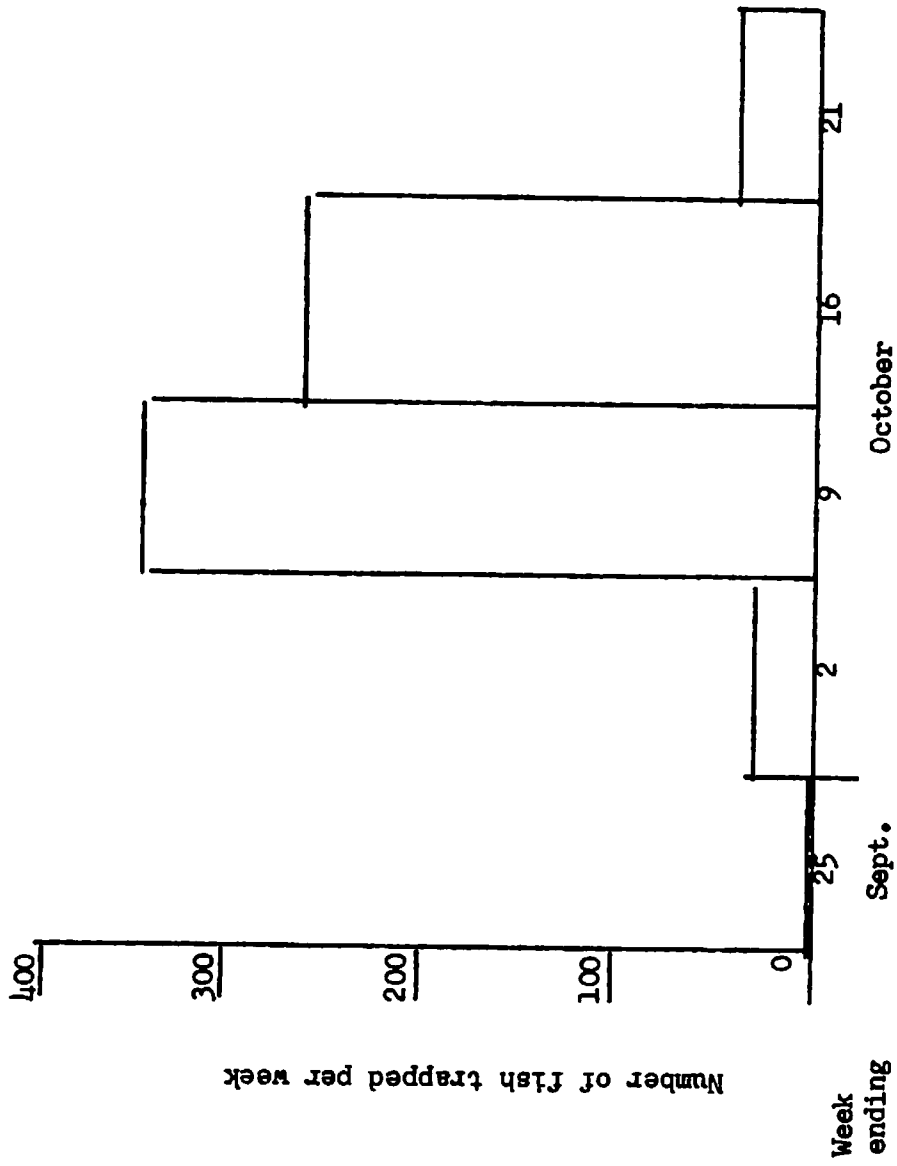


FIGURE A-1. King salmon trapped at Iron Gate Salmon & Steelhead Hatchery. Weekly fish count September 20, 1965 through October 21, 1965.

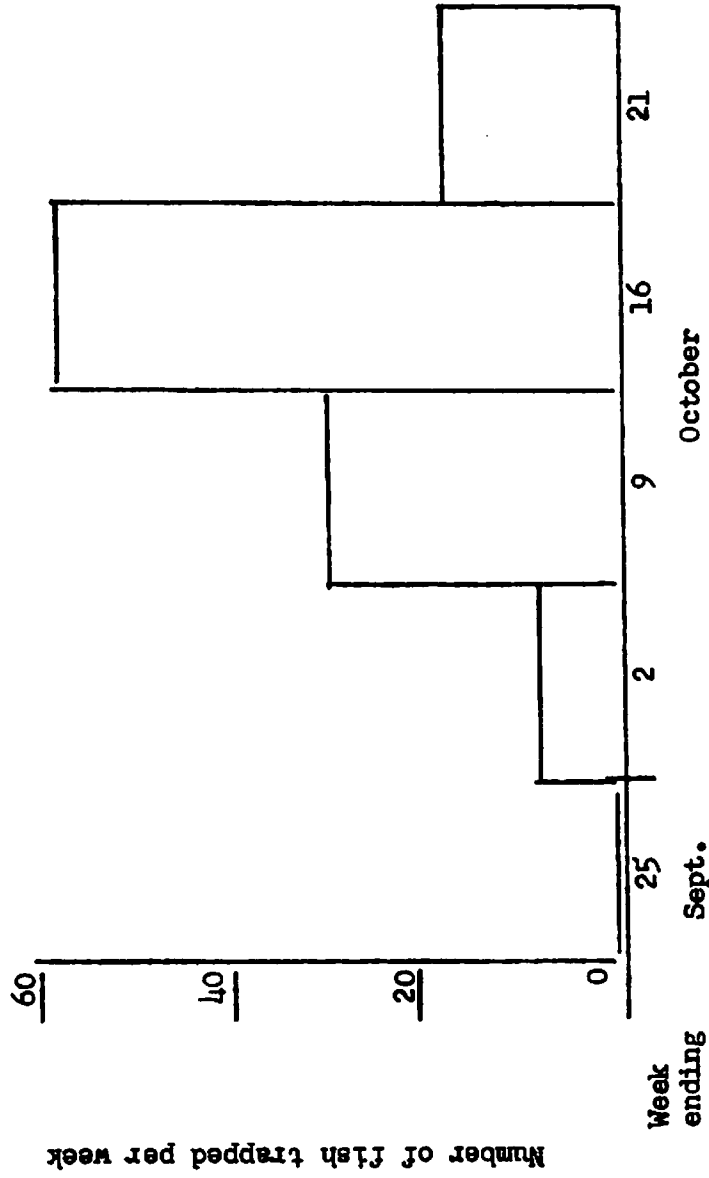


FIGURE A-2. Steelhead trout trapped at Iron Gate Salmon & Steelhead Hatchery. Weekly fish count September 20, 1965 through October 21, 1965



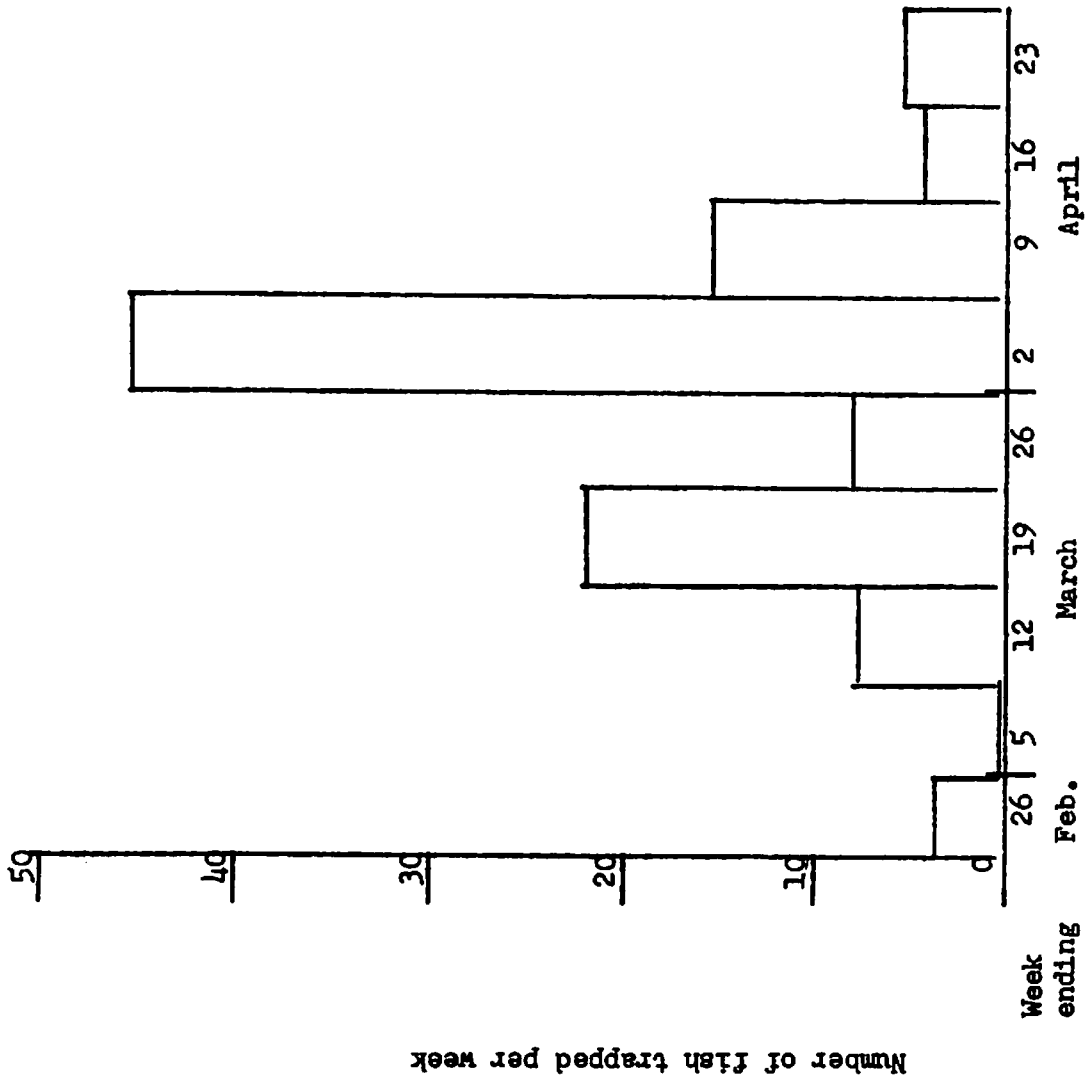


FIGURE A-3. Steelhead trout trapped at Iron Gate Salmon & Steelhead Hatchery. Weekly fish count February 9, 1966 through April 23, 1966.

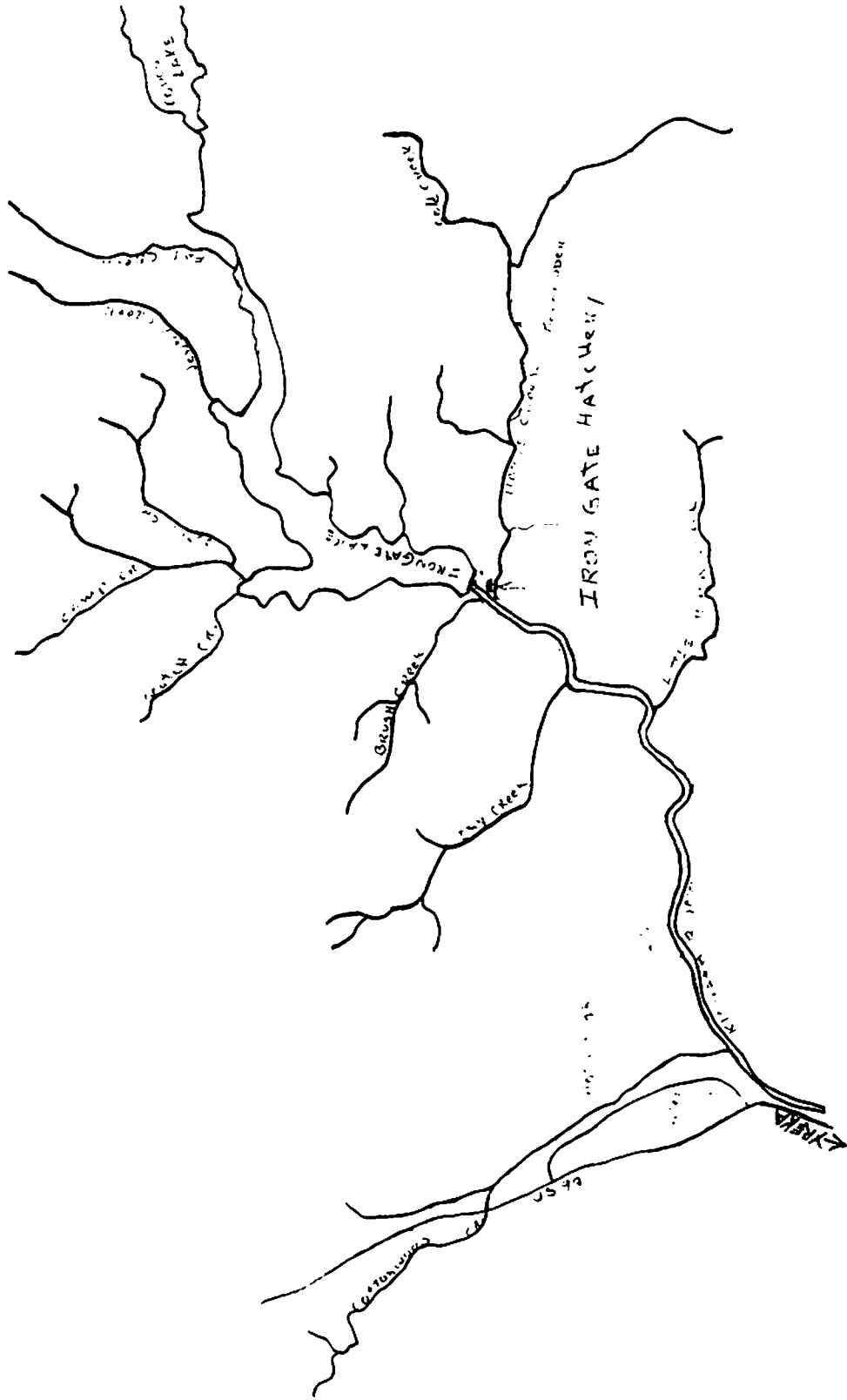


FIGURE A-4. Iron Gate Salmon and Steelhead Hatchery Location map.

FIGURE A-5. IRON GATE SALMON & STEELHEAD HATCHERY.

