



Annual Report

FISCAL YEAR 1971

Dworshak National Fish Hatchery
(Hatchery)

Submitted

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DIVISION OF FISH HATCHERIES



Annual Report

FISCAL YEAR 1971

Department of the Interior
Bureau of Fish Management

Special Agent

Date 8/13/71

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DIVISION OF FISH MANAGEMENT

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INTRODUCTION

This report for the fiscal year 1971 is the second complete report to be submitted for the Dworshak National Fish Hatchery. During the 1970 fiscal year the first phase of the construction had been substantially completed. During the period covered by this report, design was started for two separate alterations to the facility. Design was completed and contracts let for the correction of deficiencies in the original contract. In addition, design was started and is under way for the conversion of the additional ponds to an environmental control system such as is in operation for 25 ponds at this time.

The Dworshak National Fish Hatchery was designed and built to replace the spawning and nursery areas for the steelhead which will be lost by the construction of the Dworshak Dam. In addition to the rearing of steelhead trout for release into the North Fork of the Clearwater River, this station is also participating in the management of the Dworshak pool. At this time, the hatchery is rearing catchable size rainbow trout for stocking the reservoir. In addition, there are a limited number of cutthroat trout on hand which will be used for brood stock for supplying this species for stocking the reservoir and the peripheral tributaries. In addition to these, it is expected that this hatchery will supply kokanee trout for the reservoir if sufficient eggs can be located to supply the requirements.

The Dworshak National Fish Hatchery is located at the confluence of the North Fork of the Clearwater and the Middle Fork of the Clearwater River near the unincorporated town of Ahsahka, Idaho. The construction site is approximately three miles west of Orofino, Idaho on the north bank of the main stem of the Clearwater River. It is located approximately 8,000 feet downstream from the construction site of the Dworshak Dam.

When completed, the Dworshak Dam will have a height of almost 700 feet. The depth of the pool behind the dam will be in excess of 600 feet.

The Dworshak National Fish Hatchery was engineered and planned to be built in two phases. The first phase was to care for an estimated 6,000 adult steelhead trout. The second phase was to include construction of additional rearing facilities to take care of a total of 12,000 adult steelhead. Construction of the first phase consisted of a total of eighty-four recirculating type ponds, sixty-four feeding

INTRODUCTION

This report for the fiscal year 1971 in the annual progress report to be submitted for the Riverbank National Fish Hatchery. During the 1970 fiscal year the first phase of the construction had been substantially completed. During the period covered by this report design was started for the second phase of construction. The design was completed and contracts let for the construction of buildings in the original contract. In addition, design was started and is under way for the construction of the additional buildings in an expansion program of the system such as in operation at this time.

The Riverbank National Fish Hatchery was designed and built to replace the existing and nursery areas for the steelhead which will be lost by the construction of the Riverbank Dam. In addition to the raising of steelhead trout for release into the upper portion of the Clearwater River, this station is also participating in the management of the Riverbank Dam. At this time, the hatchery is raising steelhead trout for stocking the reservoir. In addition, there are a limited number of different trout on hand which will be used for brood stock for supplying this station for stocking the reservoir and the peripheral tributaries. In addition to these, it is expected that this hatchery will supply kokanee trout for the reservoir if sufficient eggs can be located to supply the requirements.

The Riverbank National Fish Hatchery is located at the confluence of the upper portion of the Clearwater and the middle portion of the Clearwater River near the unincorporated town of Abisko, Idaho. The construction site is approximately three miles west of Orofino, Idaho on the north bank of the main stem of the Clearwater River. It is located approximately 7,000 feet downstream from the construction site of the Riverbank Dam.

When completed, the Riverbank Dam will have a height of about 700 feet. The height of the dam will be in excess of 600 feet.

The Riverbank National Fish Hatchery was originally planned and designed to be built in two phases. The first phase was to care for an estimated 6,000 steelhead trout. The second phase was to provide care for an additional 10,000 steelhead trout. Construction of the first phase consisted of a total of thirty-four buildings and four buildings.

tanks, and one hundred twenty-eight Heath type incubators. The production to be expected from the first phase of construction is to be approximately 3,500,000 steelhead smolts. The second phase of construction was to be deferred until such a time as studies showed that the production envisioned in that construction would be needed for adequately maintaining the runs of steelhead in the North Fork of the Clearwater River. The additional ponds envisioned in the second stage of construction may never be realized due to the fact that plans are under way to convert all of the ponds presently constructed into environmental reuse systems.

The first year's operation started with the collection of eggs from the 1969 brood year steelhead trout which had been transported to the hatchery from the trap at the dam site during the period of October 1968 to May 1969. The steelhead reared in the raw water for two years from the 1969 brood year were released in the spring of 1971. In addition, the 1970 brood year fish reared in the reuse system were released as part of the same downstream migrating group of smolts.

During the summer months of the fiscal year starting with July 1970, considerable difficulty was experienced with the fish being held in the raw water during the hot period of the year. Water temperatures in excess of 76°F. were experienced. This environmental situation contributed to slower growth and distressed condition of the fish during the summer as well as relatively heavy mortalities. During the year a heavy silt load was experienced during freshets and high water. For extended periods in the winter-time a 32° water with its attending ice and snow problems contributed to slow growth and stressing condition of the fish being held over the winter. A cumulative effect of the conditions mentioned was to result in higher conversions, slower growth and more costly rearing for those steelhead which had to be held for the two year period before release. Subsequent to release, large numbers of smolts were checked through the Little Goose facility of the National Marine Fishery Services. There have been reports from the monitoring activities carried on by this Bureau at the estuary of the Columbia River that smolts had been found at that point which indicates that at least a portion of our releases have passed through or around the nitrogen problem on the lower Columbia and Snake Rivers.

Approximately 20% of the smolts released were marked with an adipose fin removal and a freeze brand. All the fish released had

been treated with oxytetracycline for marking purposes. A portion of the steelhead released did not smolt. No accurate percentage of those remaining in the watershed has been calculated. This situation appears to be normal as residual populations have been found at release sites in the Klackamas River watershed, the Sacramento River and other points where artificial propagation is carried on. The main problem involved concerns public relations as it has in every other area.

Due to the publicity which has been given concerning this hatchery as well as the very nature of its installation, public visitation is very heavy. At times the parking lot is overflowing with vehicles. During the year large numbers of groups visited the hatchery. These consisted of schools, lodges, religious organizations and professional organizations. The station has a program for conducted tours for organizations and groups. Because of the lack of staffing for this purpose, it is impossible to carry on conducted tours for the general public. The U. S. Corps of Army Engineers in cooperation with the National Park Service and our Bureau of Sport Fisheries is developing a self-guided tour concept for this station. Programs and talks were given before many groups as high interest has been maintained during the year by people of this area.

The weather during the year could be considered normal for this area. During the winter intermittent snows and thaws occurred. During the summer of 1970, the weather was warmer than it was in the previous fiscal year. Air temperatures as high as 105° were experienced. Water temperatures of the river varied during the year from 32°F. to 76°F.

During the fiscal year, two Division inspections were made by members of the regional office staff. On December 29, 1970 the station was inspected by Mr. John Miller, Assistant Regional Supervisor. On May 28, 1971 this station was again inspected by Mr. Marvin Smith, Regional Supervisor, Division of Fish Hatcheries, Region 1. The Manager of the Dworshak National Fish Hatchery served on an ad hoc committee for developing plans for the Spring Creek station. Many other meetings were held with the personnel of the Corps of Engineers to facilitate the operation of the station. Many visits were made by Corps of Engineer personnel to finalize design criteria for the new contract to place the entire hatchery on environmental control systems. A complete description of the construction and operation of the Dworshak National Fish Hatchery can be found in the annual report for fiscal year 1970.

been treated with oxytetracycline for a certain purpose. A portion of the stock was released in the month of June. The percentage of those remaining in the watershed has been calculated. This station appears to be normal as residual populations have been found in relation to the Chocoma River watershed, the percentage of river and other points where residual populations is carried on. The main problem involved concerns public relations as it has in every other area.

Due to the publicity which has been given concerning this laboratory as well as the very nature of the installation, public visitation is very heavy. At times the parking lot is overflowing with vehicles. During the year large numbers of groups visited the laboratory. These consisted of schools, colleges, religious organizations and professional organizations. The station has a program for contact tours for organizations and groups. Because of the lack of staffing for this purpose, it is impossible to carry on contact tours for the general public. The U. S. Corps of Army Engineers in cooperation with the National Park Service are carrying out a program in developing a half-gated dam control for the station. The program talks have been given before many groups as high interest has been maintained during the year by people of this area.

The weather during the year could be considered normal for this area. During the winter the weather was not too severe. During the summer of 1970, the weather was warm and humid as in the previous fiscal year. Air temperatures as high as 105° were experienced. Water temperatures of the river varied during the year from 38° to 78°.

During the fiscal year, two Division inspections were made by members of the regional office staff. On November 22, 1970 the station was inspected by Mr. John Walker, Assistant Regional Supervisor. On May 26, 1971 this station was again inspected by Mr. Walker, Chief, Regional Supervisor, Division of Fish and Fisheries, Region I. The manager of the Branch National Fish Laboratory served as an ad hoc committee for developing plans for the Spring Creek station. Many other meetings were held with the personnel of the State of Michigan to facilitate the operation of the station. During the year, a visit by the Corps of Army Engineers to the station was made. In addition, the new contract to place the water laboratory on an automatic control system. A complete description of the construction of the Branch National Fish Laboratory can be found in the annual report for fiscal year 1970.

COOPERATION WITH OTHER AGENCIES

The staff of the Dworshak National Fish Hatchery cooperated very closely with the U. S. Corps of Army Engineers in many facets of the operation. During the year close communications were maintained in the planning for the closure of the dam. It is expected that the gates in the diversion tunnel which carries the North Fork of the Clearwater River past the dam site will be dropped on or about October 1, 1971. This will shut the water flow to the very minimum necessary for the operation of this station. The closure of the tunnel was delayed until this time in order to take advantage of the lower water temperatures in the river for the hatchery operation. During the year many deficiencies in the original construction of the Dworshak National Fish Hatchery by the Corps of Engineers were corrected by force account using Corps funds. This situation worked out highly satisfactory for both the Corps of Engineers and the Dworshak Hatchery. The cost of these changes would be prohibitive if put out on contract by the Corps. They were accomplished at a reasonable cost using force account labor and the supervision available by the staff of the Dworshak National Fish Hatchery. To cover labor, the sum of \$2,500.00 was set up under reimbursable account number 3169, station number 0195.

This hatchery cooperated with the Corps of Engineers, the State of Idaho Department of Fish and Game, and the University of Idaho in providing laboratory facilities and expertise in many programs having to do with testing of the water quality of the river, studies on the North Fork of the Clearwater River and laboratory work having to do with the construction of Dworshak Dam. During the year members of the Idaho Fish and Game Department and personnel of this station conferred in setting up management programs for the Dworshak Reservoir to be implemented at the time the reservoir is filled. At the present time this hatchery is rearing rainbow trout for this program. The U. S. Corps of Engineers, the National Park Service and the Bureau of Sport Fisheries and Wildlife are cooperating in a program for establishing self-guided tours at this hatchery. This program should be implemented at the time the visitors' centers are designed and constructed for the Dworshak Dam as well as the Dworshak National Fish Hatchery.

COOPERATION WITH OTHER AGENCIES

The staff of the Bworth National Fish Hatchery cooperated very closely with the U. S. Army Engineers in many phases of the operation. During the year of construction work was maintained in the channel for the channel of the river. It is expected that the water in the river channel which carries the Borth National Fish Hatchery will be stopped on or about October 1, 1951. This will mean the water flow to the hatchery will be necessary for the operation of this station. The closure of the hatchery was delayed until this time in order to take advantage of the lower water for operation in the river for the hatchery. During the year many determinations in the original construction of the Bworth National Fish Hatchery by the Corps of Engineers were corrected by force account being 0.0000. This station worked out highly satisfactory for both the Corps of Engineers and the Bworth Hatchery. The cost of these changes would be prohibitive if not out on contract by the Corps. They were accomplished at a reasonable cost being force account labor and the material for available by the staff of the Bworth National Fish Hatchery. The cost of 25,000.00 was set up under miscellaneous account number 3189, station number 0125.

This hatchery cooperated with the Corps of Engineers, the State of Idaho Department of Fish and Game, and the University of Idaho in providing laboratory facilities and expertise in many programs having to do with testing of the water quality of the river, studies of the fish of the Clearwater River and laboratory work having to do with the construction of Borth National Fish Hatchery. Year members of the Idaho Fish and Game Department and personnel of this station conferred in setting up a survey program for the Bworth Hatchery to be installed at the time the reservoir is filled. At the present time this hatchery is testing rain water for this program. The U. S. Corps of Engineers, the National Park Service and the Bureau of Sport Fisheries and Wildlife are cooperating in a program for establishing self-guided tours at this hatchery. This program should be implemented at the time the visitor centers are designed and constructed for the Bworth Dam as well as the Bworth National Fish Hatchery.

FISH CULTURAL OPERATIONS

In July, the river temperatures were the highest on record, rising to 76°F. There were very high mortalities in the raw water system, due mainly to hemorrhage caused by glochidia, but also due to ichthyophthirius and columnaris, aggravated by the additional stress caused by the high temperature. Sanguinicola, and various lesser external parasites were identified. The mortality rate for July was 15.8%. Abernathy feed with oxytetracycline was fed to combat columnaris and for marking the fish. The high mortality rate continued into August.

Lowering the water level and increasing the flow in the ponds to allow a more rapid water change and flushing action reduced the incidence of disease in the raw water system. The fish in the reuse system, using treated make-up water, had a lower mortality rate, as disease was almost non-existent. An acute case of gill hyperplasia occurred. The computer had been down for a while and several feedings were made without pause. The water became cloudy with small size feed and resulted in the hyperplasia.

The faster growth in the reuse system with controlled temperature produced smolts in one year, whereas fish in the raw water system must be held for two years until smolting.

The fall run of steelhead yielded 385 adults and the spring run 1,906. Spawning began on May 10 and lasted until June 30. 1,203 females were spawned, which yielded 6½ million eggs. This year's steelhead run had a larger amount of smaller fish and fewer eggs per females, in comparison to the previous year.

In order to provide the greatest contribution possible from Dworshak National Fish Hatchery to the steelhead fishery, a study to determine the feasibility of live spawning steelhead was proposed.

During the first two years of operation, the average percent eye of all steelhead eggs incubated at Dworshak National Fish Hatchery has been 75%. This low survival may be attributed to one of several reasons or a combination of several factors. One of the factors may be excessive handling through a series of mechanical sorters during spawning operations.

The study had two purposes, (1) to determine the effect of the mechanical sorting apparatus on the quality of the incubating egg, and (2) to

TEMPERATURE AND SALINITY

In July, the river temperatures were the highest on record, rising to 85°F. There were very high salinities in the raw water system, due mainly to increased evaporation, but also due to the addition of sea water, aggravated by the additional stress caused by the high temperature. Salinities, and various other factors, were not considered. The mortality rate for July was 100%. Mortality had also been reported in other years, but not for months of the year. The high mortality rate continued into August.

During the water level and increasing the flow in the river, a large rapid water change and flushing action reduced the salinity of the raw water system. The fish in the river system, being treated with up-water, had a lower mortality rate, as there was almost no mortality. The water was slightly cloudy, as there were some suspended solids in the water. Several fish were seen without incident. The water became cloudy with small fish and was treated in the system.

The fish grown in the river system, with controlled temperature, produced a surplus in one year, whereas fish in the raw water system would be held for two years and a half.

The fall run of steelhead yields 1000 fish and the spring run 1,000. The fall run began on May 10 and lasted until June 30. The steelhead were grown, which yield 100 million eggs. This year's production was a larger amount of steelhead and fewer eggs per fish, in comparison to the previous year.

In order to provide the greatest contribution possible from the steelhead fishery to the steelhead fishery, a study to determine the feasibility of live spawning steelhead was conducted.

During the first two years of operation, the average percent of steelhead eggs fertilized in the steelhead fish hatchery was 100%. This low fertility may be attributed to one of several reasons or a combination of several factors. One of the factors may be excessive handling, changing water, or mechanical factors during spawning operations.

The study had two purposes: (1) to determine the effect of the mechanical handling operation on the quality of the fertilized egg, and (2) to

determine the feasibility of live spawning steelhead at Dworshak.

271 females were air spawned in the hatchery and were processed through the sorting apparatus.

330 females were air spawned in the pond and therefore not processed through the sorting apparatus.

602 females were processed through the mechanism as it was designed and designated "females killed".

A summary of eggs reaching the eyed stage is:

Air spawned in the hatchery	80.7%
Air spawned in the pond	77.9%
Females killed	74.3%

The adult fish spawned via the air injection method were identified by numbered tags and released into the Clearwater River.

10,000 cutthroat eggs were received from Colville, Washington in July 1970, and approximately 6,000 at 10 per pound were on hand on June 30, 1971. These fish are to be used for brood stock, the progeny of which will be planted in the reservoir above the Dworshak Dam.

294,000 eyed rainbow eggs were received from Ennis, Montana in October and 50,000 in December. 175,000 eyed rainbow eggs were received from the South Tacoma Washington Hatchery in November. These fish are scheduled for release into the reservoir above the dam.

Corps testing of the feed system apparatus has been completed. Preliminary indications are that the blowers should be reduced in speed and the pellets delivered to the pond at a slower rate. The buckets in the feeding system were replaced with a new set, designed to improve the operation.

The fish were sampled either during distribution or on June 30, and actual weights were compared to growth rates calculated by the computer. The computer was sufficiently accurate that adjustments were not necessary. A fish pump, which is a fruit pump modified by the Pacific Pump Company to handle fish, was used during distribution. The fish can be pumped directly out of the pond with undergoing the

stress caused by being weighed in a net. In tests with the pump, the fish show no signs of stress and are eager to feed immediately after being pumped. The result is a fish which is in normal condition being released into the river, with a better chance of survival.

A 20% sampler was devised to allow more rapid sampling of steelhead. It incorporates the use of the fish pump and greatly reduces time and man hours necessary for sampling and fin clipping.

The water inlet system in the tanks was modified to insure a more even flow of water and distribution of feed. A perforated PVC pipe was laid lengthwise in the tanks to impart a continuous action to the water perpendicular to the normal flow direction. Fish food is kept in motion and presents continual feeding "targets" instead of sinking to the bottom and not being available to the fish.

The concept of separate crews is being utilized. There is a crew of experienced fish culturists, and a maintenance crew. They are not separated to the point of being strangers to each other, but they are not generally interchangeable.

There have been a number of seminars by the individual staff members to acquaint all personnel with the various phases of the operation.

One man from the production crew is assigned to assist the hatchery biologist. Each man takes his turn for one month.

HATCHERY BIOLOGIST ACTIVITIES

Diagnostic Services

The hatchery biologist is responsible for disease diagnosis at three federal hatcheries--Dworshak, Kooskia and Hagerman. In addition to the federal hatcheries, assistance is provided to the Idaho Fish & Game Department and commercial hatcheries when requested.

The following list shows disease diagnosis made during the past year.

Dworshak National Fish Hatchery

Reclaimed Water System:

<u>Disease</u>	<u>Species</u>	<u>Treatment</u>	<u>Results</u>
Bact. Gill Disease	Steelhead	Roccal 2 ppm for one hour three times	Good
<u>Costia</u>	Steelhead	None	----
<u>Ichthyophthirius</u>	Rainbow & Cutthroat	Formalin 166 ppm for 1 hour 3 times followed by once weekly	Good
<u>Costia</u>	Rainbow & Cutthroat	Formalin 166 ppm for 1 hour 3 times followed by once weekly	Good
<u>Epistylis</u>	Rainbow & Cutthroat	Formalin 166 ppm for 1 hour 3 times followed by once weekly	Good

Raw Water System:

<u>Disease</u>	<u>Species</u>	<u>Treatment</u>	<u>Results</u>
<u>Costia</u>	Steelhead & Rainbow	None	----
<u>Scyphidia</u>	Steelhead & Rainbow	None	----
<u>Epistylis</u>	Steelhead & Rainbow	None	----
<u>Gyrodactylus</u>	Steelhead & Rainbow	None	----
<u>Ichthyophthirius</u>	Steelhead & Rainbow	None	----
<u>Trichodina</u>	Steelhead & Rainbow	None	----
<u>glochidia</u>	Steelhead & Rainbow	None	----
<u>Ceratomyxa</u>	Steelhead Adults	None	----
<u>Columnaris</u>	Steelhead & Rainbow	TM 50 @ 3 gm level for 14 days followed in 4 days by another 14-day treatment	Good
<u>Sanguinicola</u>	Steelhead	None	----

Kooskia National Fish Hatchery

<u>Disease</u>	<u>Species</u>	<u>Treatment</u>	<u>Results</u>
Coagulated Yolk	Spring Chinook	None	----
<u>Ichthyophthirius</u> D	Spring Chinook	Formalin 166 ppm for 1 hour 2 times per week	Good
Kidney Disease*	Spring Chinook	Sulfamerazine--8 gm level for 14 days fol- lowed by 1 gram level	No decrease in Mortality

* (Kooskia National Fish Hatchery received 1970 brood spring chinook eggs from Idaho's Rapid River Hatchery. Fourteen million eggs were taken at Rapid River and about 10 million were shipped throughout the state of Idaho. During the fall of 1970, adult chinook were checked at Rapid River and many kidney disease infected fish were observed.)

Hagerman National Fish Hatchery

<u>Disease</u>	<u>Species</u>	<u>Treatment</u>	<u>Results</u>
<u>Sanguinicola</u>	Rainbow	None	----

Lahontan National Fish Hatchery

<u>Disease</u>	<u>Species</u>	<u>Treatment</u>	<u>Results</u>
Bact. Gill Disease	Cutthroat	Hyamine 3500-2 ppm for 1 hour, 3 times	Good
Whirling Disease	Rainbow & Cutthroat	None	----

Idaho State Fish & Game Department

<u>Hatchery</u>	<u>Disease</u>	<u>Species</u>
Rapid River	Kidney Disease	Spring Chinook
Winchester Lake	Low Oxygen	Rainbow & Cutthroat
Clark Fork	Disease Certification --Negative	Kamloops

Washington Department of Game

<u>Hatchery</u>	<u>Disease</u>	<u>Species</u>
Kings Lake	Disease Certification --Negative	Cutthroat

Hatchery Classification

The following classifications of the three federal hatcheries are based on disease examinations carried out this past year and past records of disease occurrences.

<u>Hatchery</u>	<u>Classification</u>
Dworshak NFH	A-2 (no disease diagnosis, but hatchery has open water supply).
Kooskia NFH	B-BK (Kidney disease diagnosed this past year).
Hagerman NFH	B-BR-BK

Hatchery Evaluation

Fish Marking:

The 1971 releases of steelhead smolts from Dworshak National Fish Hatchery were divided into two groups with regards to planting dates. The early release started on March 15 and the late release was started on April 19. A total of 3,090,632 fish were released, of which 544,336 fish (17.6 percent) were marked with a common adipose clip and a freeze brand. A square letter U was used along with an adipose clip to identify five groups of fish. The groups are as follows:

- (1) Progeny of 1969 brood spring run adults reared in raw water for two years and released early (March 15, 1971)--the fish were branded □ on the right side forward of dorsal fin.
- (2) Progeny of 1969 brood spring run adults reared in raw water for two years and released late (April 19, 1971)--the fish were branded ◓ on the right side forward of dorsal fin.
- (3) Progeny of 1970 brood spring run adults reared in reclaimed water system for one year and released early (March 15, 1971)--the fish were branded ◑ on the left side forward of dorsal fin.
- (4) Progeny of 1971 brood fall run adults reared in reclaimed water for one year and released late (April 19, 1971)--the fish were branded ◒ on the left side posterior to the dorsal fin.
- (5) Progeny of 1970 brood spring run adults reared in reclaimed water for one year and released late (April 19, 1971)--the fish were branded ◑ on the left side forward of dorsal fin.

In addition to the adipose clip and freeze brand, all of the fish carried tetracycline marks.

Data regarding the fin-clipped and branded fish are listed on Table 1.

An experiment conducted by the National Marine Fisheries Service to determine the feasibility of transporting steelhead smolts from Dworshak National Fish Hatchery to Bonneville Dam was initiated this past spring. The fish used in the trial were in addition to the

normal release. Data regarding the transportation study are listed on Table 2.

TABLE I. Information Pertaining to Numbers of Marked Steelhead Release from Dworshak National Fish Hatchery During the Spring of 1971.

Brood	Run	Fin Mark	Brand	Number of Marked Fish Released	Number of Unmarked Fish Released	% Marked	Fish/Pound	Size in mm	Size in Inches
1969	Spring	Adipose	 on right side forward of dorsal	153,033	637,771	19.35	6.14	199	7.82
1969	Spring	Adipose	 on right side forward of dorsal	104,689	436,267	19.35	4.95	213	8.40
1970	Spring	Adipose	 on left side forward of dorsal	49,911	453,549	9.92	9.08	174	6.86
1970	Fall	Adipose	 on left side behind dorsal	60,175	259,100	18.85	10.49	166	6.54
1970	Spring	Adipose	 on left side forward of dorsal	176,528	759,909	18.85	10.29	167	6.58
Totals				544,336	2,546,296	17.61			
Total Fish Released					3,090,632		7.45	186	7.32

TABLE 2. Information Pertaining to Numbers of Nose Tagged Steelhead Smolts Transported from Dworshak National Fish Hatchery to Bonneville Dam in 1971.

Brood	Date of Hauling	Tag Description	Number of Fish	Fish / Pound	Size in Inches	Size in mm	Method of Handling
1969	4/7/71	white-purple-pink	1,600	7.50	7.31	186	directly Hauled fish/to Bonneville Dam
	4/14/71		2,000				
	4/21/71		1,877				
			5,477				
1969	4/28/71	white-purple-green	1,800	7.50	7.31	186	Hauled directly to Bonneville Dam.
			1,795				
			3,595				
1969	4/7/71	white-purple-orange	2,500	8.30	7.06	179	Hauled to Lewiston, overnight in holding box then transported to Bonneville Dam.
			2,790				
			5,290				
1969	4/28/71	white-purple-oxide yellow	2,500	7.25	7.40	188	Hauled to Lewiston, overnig. in holding box then transported to Bonneville Dam.
			2,552				
			5,052				
1970	4/7/71	white-purple-red oxide	2,400	9.20	6.84	174	Hauled directly to Bonneville Dam.
	4/14/71		2,400				
	4/21/71		4,988				
			9,788				
1970	4/28/71 5/5/71	white-purple-light blue	3,000	9.20	6.84	174	Hauled directly to Bonneville Dam.
			2,943				
			5,943				

Adult Steelhead Evaluation

All adults handled were measured, weighed, and checked for marks and tags. The table below shows average size for 1971 brood males and females.

<u>Sex</u>	<u>Average Fork Length</u>	<u>Average Weight Before Spawning</u>	<u>Average Weight After Spawning</u>
Female	30.65"	* 9.39 lbs.	8.02 lbs.
Male	30.28"	10.39 lbs.	

* All females were weighed after spawning. To determine weight of fish before spawning, a percent of body weight as eggs (17% as determined in 1969) factor was used.

One tagged fish with an Oregon Game Commission tag and three fin clipped (two right ventral and one with both ventrals removed) were recovered.

Fish Cultural Management

Steelhead Live Spawning Study:

A study to determine the feasibility of live spawning steelhead was initiated this fiscal year.

The spring run was handled in three different ways--fish in group one were brought into the hatchery building via the sorting machinery and killed; fish in group two were brought into the hatchery building via the sorting machinery and air spawned; and fish in group three were air spawned in a holding pond.

Of the 800 air spawned fish that were tagged, approximately 250 were released into the Clearwater River. The other 550 fish died in the ponds after spawning. The evaluation of the success of releasing spawned out steelhead will be made as the adults return to the sport fishery and hatchery.

Some of the air spawned fish were killed to determine the amount of eggs left in the body cavity and the fertility of the remaining eggs. The following tables 3 and 4 show the results of the live spawning study.

Table 3. Number and Percent Eye of Steelhead Eggs Obtained Via Air and Incision Spawning.

Group	Number Females	Number Green Eggs	Green Eggs Per Female	Number Eyed Eggs	Eyed Eggs Per Female	Percent Eyed Eggs	Average Length of Females	Method
1	439	2,385,618	5,434	1,912,798	4,357	80.18	30.97"	Kill
2	276	1,390,770	5,039	1,133,941	4,108	81.53	30.48"	Air spawn in blég.
3	346	1,674,606	4,839	1,303,245	3,766	77.82	31.13"	Air spawn in pond

Table 4. Amount and Fertility of Eggs Left in Body Cavity After Air Spawning.

Group	Number Females	Number Green Eggs Air Spawmed	Number Green Eggs Remaining	Percent Eggs Left	Eyed Eggs Spawmed	Percent Eyed	Eyed Eggs Remaining	Percent Eyed	Percent Eye of Group
2	16	85,580	13,060	13.24	76,176	89.0	12,265	93.91	81.53
3	16	82,278	15,967	16.25	70,135	85.2	12,538	78.5	77.82

Table 3. Number and Percent of Fertilized Eggs Obtained Via Air and Intra-Uterine Injections.

Group	Number Females	Number Green Eggs	Number Fertilized Eggs	Percent Fertilized Eggs	Number Eggs Per Female	Average Length of Females	Method
1	439	2,382,618	2,432,432	102.15%	5,540	30.97	IAI
2	378	1,390,770	1,432,041	102.98%	3,789	30.43	Air Injection in Uterus
3	346	1,074,000	1,202,242	112.02%	3,475	31.13	Air Injection in Uterus

Table 4. Amount and Fertility of Eggs Laid in Body Cavity After Air Breathing.

Group	Number Females	Number Green Eggs	Number Fertilized Eggs	Percent Fertilized Eggs	Number Eggs Per Female	Average Length of Females	Method
2	18	22,880	13,264	58.01%	1,314	31.23	Air Breathing
3	18	22,272	12,288	55.18%	1,299	28.82	Air Breathing

Design of Fish Sampler

An incline plane fish sampler was designed by the hatchery biologist and fabricated by hatchery personnel. The sampler is triangular shaped with the narrow entrance of the sampler elevated to allow fish to be poured on to the sampler and flop down the face of the incline plane. An opening allows the sampled fish to fall into a vat where they are then transported via a fish pump. Substantial savings in labor were achieved by the use of this sampler during the past marking season.

Establishment of Cutthroat Broodstock

A second group of Westslope cutthroat eggs was obtained from Colville State Hatchery (Washington Department of Game) to establish a broodstock at Dworshak. A sample of the broodstock was checked at Kings Lake and found to be disease free.

Fish Hatchery Water Treatment

A cooperative study with Kramer, Chin and Mayo, Consulting Engineers, regarding the development of fish hatchery water treatment systems was initiated this fiscal year. Water samples are being analyzed for alkalinity, ammonia, nitrate, nitrite, oxygen, B.O.D., C.O.D., phosphate, pH, suspended solids, and settleable solids.

Biological Training Program

A program was initiated with the start of this fiscal year to provide training in laboratory techniques and to acquaint hatchery personnel with the basic philosophy regarding disease prevention and control. Hatcherymen are detailed for one month to assist the hatchery biologist.

Determination of Food Quality of Degraded Pellets

The feeding system at Dworshak is designed to deliver feed at the ponds via a series of vibrators and pneumatic blowers. Degradation tests have been conducted to determine the amount of pellet breakdown at different points in the feeding system. A feeding trial was set up to determine the food quality of the pellets after degradation.

Degraded Abernathy dry pellets were collected at the ponds and processed through a series of sieves to separate the different sizes

of feed delivered to the pond. The minimum sizes of particles were 0.111", 0.0470", 0.0235", and 0.0117". These four sizes of feed and the degraded pellet as delivered to the pond (0.111 - 44%, 0.0470 - 21%, 0.0235 - 10%, 0.0117 - 25%) were fed to steelhead fingerling for 10 weeks. Fifty fingerlings were maintained in troughs containing six cubic feet of water at 54°F. Six grams of food were fed to each group of fish each day throughout the ten week trial. No mortalities occurred and the fish were in excellent condition at the termination of the test.

The Table No. 5 on the following page shows the data regarding the feed trial.

Table 5. Table Showing Data Regarding the Feed Trial

Group No.	Min. Pellet Size Inch	Ave. Length Start mm	Ave. Length End mm	Increase Length mm	Ave. Weight Start gm	Ave. Weight End gm	Increase Weight gm	Per Cent Gain	Cof. of Cond. Start	Cof. of Cond. End	Ave. Hematocrit End
1	0.110	68.48	79.07	10.59	2.74	4.31	1.57	57.3	.8565	.8742	36.0
2	0.0470	72.26	84.00	11.74	3.32	5.57	2.25	67.8	.8822	.9398	34.6
3	0.0235	74.40	85.62	11.22	3.66	5.55	1.89	51.6	.8887	.8849	38.0
4	0.0177	73.50	80.08	6.58	3.48	4.62	1.14	32.8	.8765	.8996	35.5
5	Combination	70.92	82.17	11.25	3.08	4.94	1.86	60.4	.8644	.8927	37.8

TABLE 1. Average and maximum values of the physical characteristics of the soil

Soil Type	100 cm	10 cm	5 cm	0-5 cm	0-10 cm	0-20 cm	0-30 cm	0-40 cm	0-50 cm	0-60 cm	0-70 cm	0-80 cm	0-90 cm	0-100 cm
1. VA Mollisol	5473.	8228.	5.78	78.1	18.4	47.5	22.01	70.07	84.88	011.0				
2. VA Mollisol	5220.	5523.	4.70	25.5	72.2	22.0	27.11	00.12	23.87	070.0				
3. VA Mollisol	2423.	7100.	2.12	92.1	27.2	21.2	26.11	22.22	01.27	2222.0				
4. VA Mollisol	2023.	2023.	2.52	11.1	22.2	21.2	26.2	20.02	02.27	2770.0				
5. VA Mollisol	2223.	2223.	4.02	22.1	22.2	20.2	22.11	21.22	22.07	2222.0				

Although the percent gain of the fish fed the smallest particles was not as high as the other groups, the coefficient of condition was maintained throughout the test. This indicates that the small food particles were utilized by the fish. However, pellet degradation is a definite environmental problem as large amounts of dust from the feed will cause gill irritation and excessive proliferation of the gill epithelium.

SAFETY

The safety program continued with monthly staff meetings. There were eight Safety Committee meetings.

A circuit guarding device was purchased to minimize injury from electrical shock when employees are required to work near water with electrical equipment. This device senses electrical malfunctions and immediately shuts off current when malfunctions occur.

No lost time accidents occurred during the year.

At the close of the fiscal year there were 385 days since the last lost time accident.

MAINTENANCE AND REPAIR

Preventive maintenance and repair work continued at an accelerated pace with some breakdown repairs necessary. Charges to maintenance cost codes, with a few exceptions, were for personnel costs and for acquisition of materials and equipment necessary in conducting the maintenance program.

Breakdown of equipment during the year presented some potentially disastrous situations. On July 11, 1970, one week after all but 300,000 fry were removed from the incubators, an electrical system fault occurred which shut off water to the incubators and to the reuse system ponds. Electrical power was returned after two hours of frantic repair work. This shutdown resulted in the loss of all fry in the incubators but no loss of fry in the reuse system ponds. Subsequent investigations determined that factory assembly of switch gear components was at fault, and remedies have been instituted.

Other breakdowns included failure of two out of four reuse system pumps, which were repaired without seriously hampering the production program.

Factory repair work on one main supply pump under warranty provisions was completed.

Flow through the reuse system filter beds declined during the year to a low of 12,000 gpm. Corps of Engineer design engineers determined the necessity of installing a backflush pump which could also act as a backup for other pumps in the reuse system. Other work to improve flow characteristics of the filter beds was accomplished by hatchery personnel. Design work for the additional pump was completed by the end of the fiscal year with installation to be completed in the near future.

Industrial Instrument Supply Company of Spokane was the low bidder on the instrumentation service contract. The instrumentation system degraded through the year to a point of very low efficiency. Apparently contractor technicians did not have the knowledge or training that the contract terms specified, however, this was impossible to prove. In the future, service and maintenance of the instrumentation system will be accomplished by hatchery personnel.

MAINTENANCE AND REPAIR

Preventive maintenance and repair work continued at an accelerated pace with some breakdown repairs necessary. Charges for maintenance cost codes, with a few exceptions, were for personal costs and for acquisition of materials and equipment necessary in conducting the maintenance program.

Breakdown of equipment during the year presented some potentially disastrous situations. On July 11, 1976, one week after all the 200,000 fry were removed from the incubators, an electrical system fault occurred which shut off water to the incubators and to the house system ponds. Electrical power was returned after two hours of frantic repair work. This shutdown resulted in the loss of all fry in the incubators and no loss of fry in the house system ponds. Subsequent investigation determined that factory assembly of switch gear components was at fault, and remedies have been initiated.

Other breakdowns included failure of two out of four house system pumps, which were repaired without seriously hampering the production program.

Factory repair work on one main supply pump under warranty provisions was completed.

Even though the house system filter beds declined during the year to a low of 15,000 gpm, a large force of Engineer design engineers determined the necessity of installing a backwash pump which could also act as a backup for other pumps in the house system. Other work to improve the characteristics of the filter beds was recommended by factory personnel. Design work for the additional pump was completed by the end of the fiscal year with installation to be completed in the near future.

Industrial Instrument Supply Company of Spokane was the low bidder on the instrumentation service contract. The instrumentation system ordered through the year is a point of very low efficiency. Apparently connector technicians did not have the level of training that the contract terms specified, however, this was in process to prove. In the future, service and maintenance of the instrumentation system will be accomplished by factory personnel.

Performance of the automatic fish feeding system improved somewhat but still requires a significant amount of service and maintenance time. A new weighing assembly to be installed in the near future should improve operation of the system.

BROODSTOCK AND SPAWNING OPERATIONS

(See Fish Hatchery Manual Section 4438a for Instructions)

ITEM	ANADROMOUS OR WILD TROUT - Indicate Species			DOMESTICATED TROUT - Indicate Species		
	Steelhead					
1. NUMBER OF FEMALES STRIPPED						
2. TOTAL WEIGHT OF FEMALES	120.3					
3. NUMBER OF MALES STRIPPED	46.2					
4. TOTAL WEIGHT OF MALES						
5. NUMBER OF GREEN EGGS TAKEN	6,448,600					
6. EGGS TAKEN PER POUND OF FEMALES						
7. EGGS TAKEN PER FEMALE	5,360					
8. NUMBER OF EYED EGGS PRODUCED	5,016,000					
9. EGG SURVIVAL: PERCENT TO EYED STAGE	77.8	%	%	%	%	%
	76.5	%	%	%	%	%
	76.0	%	%	%	%	%
10. LABOR COST	13,232.33					
11. NON-LABOR COST	239.79					
12. TOTAL COST	13,472.12					
13. CREDIT CURRENT YEAR WEIGHT GAIN OF LOT (lbs. @ \$)						
14. ADJUSTED TOTAL COST (Item 12 minus Item 13)						
15. DEBIT CURRENT YEAR WEIGHT LOSS OF LOT (lbs. @ \$)						
16. ADJUSTED TOTAL COST (Item 12 plus Item 15)						
17. COST PER THOUSAND EYED EGGS	2.69					

BUREAU OF SPORT FISHERIES AND WILDLIFE
BROODSTOCK AND SPAWNING OPERATIONS

(see Fish Harvesting Manual Section 413a for instructions)

ITEM	ANADROMOUS OR WILD TROUT - Indicate Species	DOMESTICATED TROUT - Indicate Species		
17. COST PER THOUSAND EYED EGGS	5.00			
18. ADJUSTED TOTAL COST (Item 15 plus Item 17)				
19. DEBIT CURRENT YEAR WEIGHT LOSS OF LOT (lbs. @ \$)				
20. ADJUSTED TOTAL COST (Item 18 minus Item 19)				
21. CREDIT CURRENT YEAR WEIGHT GAIN OF LOT (lbs. @ \$)				
22. TOTAL COST	13,475.15			
23. NON-LABOR COST	539.50			
24. LABOR COST	13,535.33			
25. PERCENT TO FEEDING	75.0%	%	%	%
26. PERCENT TO HATCHING	75.2%	%	%	%
27. PERCENT TO EYED STAGE	75.8%	%	%	%
28. EGG SURVIVAL	2,016,000			
29. NUMBER OF EYED EGGS PRODUCED	2,360			
30. EGGS TAKEN PER FEMALE				
31. EGGS TAKEN PER POUND OF FEMALES	6,448,400			
32. NUMBER OF GREEN EGGS TAKEN				
33. TOTAL WEIGHT OF MALES	463			
34. NUMBER OF MALES STRIPPED				
35. TOTAL WEIGHT OF FEMALES	1503			
36. NUMBER OF FEMALES STRIPPED				

DISTRIBUTION DATA AND COSTS

(see Fish Hatchery Manual Section 4438b for instructions)

PART 1 - COSTS

SPECIES	DISTRIBUTION COSTS			FISH DISTRIBUTED		AVERAGE COSTS
	Labor	Non-Labor	Total	Pounds	Number	
	(1)	(2)	(3)	(4)	(5)	
PONDFISH	-----	-----	-----	-----	-----	Per M. -----
TROUT	-----	-----	-----	-----	-----	Per lb. -----
ANADROMOUS	93.49	-----	93.49	415,046	3,143,571	Per lb. .00023
TOTALS	93.49	-----	93.49	415,046	3,143,571	

PART 2 - DISTRIBUTIONS

SPECIES	TRANSFERS TO OTHER NFH's		TRANSFERS TO STATES		OTHER DISTRIBUTION	
	Pounds	Number	Pounds	Number	Pounds	Number
	(1)	(2)	(3)	(4)	(5)	(6)
PONDFISH	-----	-----	-----	-----	-----	-----
TROUT	-----	-----	-----	-----	-----	-----
ANADROMOUS	-----	-----	-----	-----	415,046	3,143,571
TOTALS	-----	-----	-----	-----	415,046	3,143,571

PART 3 - TRIP DATA

SPECIES	NUMBER OF TRIPS			POUNDS PER TRIP			NUMBER PER TRIP		
	Transfers	Other	Total	Transfers	Other	Total	Transfers	Other	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
PONDFISH									
TROUT									
ANADROMOUS	Not Applicable: Fish Stocked Directly Into North Fork Of Clearwater River								
TOTALS									
AVERAGE									

PART 4 - MILEAGE AND SPECIES DELIVERIES

ITEM	PONDFISH	TROUT	ANADROMOUS	TOTAL
MILES TRAVELED	Not Applicable			
AVERAGE NUMBER OF MILES PER TRIP				
NUMBER APPLICATIONS (species delivered) THIS YEAR				
NUMBER FARM POND DELIVERIES				
NUMBER INDIVIDUAL FARM PONDS INVOLVED				

PONDFISH DISTRIBUTED, 6" and larger: _____ POUNDS _____ NUMBER

Bureau of Sport Fisheries and Wildlife

SALMONIDAE PRODUCTION

(Fish and Eggs)

(See Fish Hatchery Manual Section 4438c for Instructions)

(1) Species	(2) ON HAND JULY 1		(3) Received During Year		(4) Total Distribution		(5) ON HAND JUNE 30		(6) Total Production in Pounds
	Number	Weight	Number	Weight	Number	Weight	Number	Weight	
Steelhead (9-D)	1,785,875	89,049	-----	---	1,341,366	238209	---	---	149,160
Steelhead (0-D)	4,920,000	1,968	-----	---	1,802,205	1768371	1,149,985	60,742	235,611
Steelhead (1-D)	-----	---	6,448,600	---	-----	---	5,016,000*	2150	2,150
Sub Total	6,705,875	91,017	6,448,600	---	3,417,571 3,143,571	4150466	6,165,985	62,892	386,921
Cutthroat (0-C-6)	10,000	3	-----	---	-----	---	5,277	517	514
Cutthroat	-----	---	12,672	3	-----	---	12,672	3	0
Sub Total	10,000	3	12,672	3	-----	---	17,949	520	514
Rainbow (0-E-7)	-----	---	261,000	90	-----	---	138,983	10,634	10,544
Rainbow (0-U-WN-8)	-----	---	159,400	41	-----	---	121,737	5,850	5,809
Rainbow (0-E-9)	-----	---	50,000	17	-----	---	31,431	1,146	1,129
Sub Total	-----	---	470,400	148	-----	---	292,151	17,630	17,482
* Eyed Eggs									
TOTALS	6,715,875	91,020	6,931,672	151	3,417,571 3,143,571	4150466	6,476,085	81,042	404,917

SALMONIDAE PRODUCTION

(Fish and Eggs)

(See Fish Hatchery Manual Section 4438c for Instructions)

(1) Species	(2) ON HAND JULY 1		(3) Received During Year		(4) Total Distribution		(5) ON HAND JUNE 30	(6) Total Production in Pounds
	Number	Weight	Number	Weight	Number	Weight		
(A-1) Rainbow	---	---	---	---	---	---	---	1,139
(A-2) Rainbow	---	---	---	---	---	---	---	2,809
(A-3) Rainbow	---	---	---	---	---	---	---	10,244
Sub Total	10,000	15,675	3	15,675	---	---	17,949	514
(B-1) Cutthroat	---	---	---	---	---	---	---	0
(B-2) Cutthroat	10,000	3	---	---	---	---	2,527	214
Sub Total	10,000	3	---	---	---	---	---	---
(C-1) Rainbow	---	---	---	---	---	---	---	---
(C-2) Rainbow	---	---	---	---	---	---	---	---
(C-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(D-1) Rainbow	---	---	---	---	---	---	---	---
(D-2) Rainbow	---	---	---	---	---	---	---	---
(D-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(E-1) Rainbow	---	---	---	---	---	---	---	---
(E-2) Rainbow	---	---	---	---	---	---	---	---
(E-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(F-1) Rainbow	---	---	---	---	---	---	---	---
(F-2) Rainbow	---	---	---	---	---	---	---	---
(F-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(G-1) Rainbow	---	---	---	---	---	---	---	---
(G-2) Rainbow	---	---	---	---	---	---	---	---
(G-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(H-1) Rainbow	---	---	---	---	---	---	---	---
(H-2) Rainbow	---	---	---	---	---	---	---	---
(H-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(I-1) Rainbow	---	---	---	---	---	---	---	---
(I-2) Rainbow	---	---	---	---	---	---	---	---
(I-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(J-1) Rainbow	---	---	---	---	---	---	---	---
(J-2) Rainbow	---	---	---	---	---	---	---	---
(J-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(K-1) Rainbow	---	---	---	---	---	---	---	---
(K-2) Rainbow	---	---	---	---	---	---	---	---
(K-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(L-1) Rainbow	---	---	---	---	---	---	---	---
(L-2) Rainbow	---	---	---	---	---	---	---	---
(L-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(M-1) Rainbow	---	---	---	---	---	---	---	---
(M-2) Rainbow	---	---	---	---	---	---	---	---
(M-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(N-1) Rainbow	---	---	---	---	---	---	---	---
(N-2) Rainbow	---	---	---	---	---	---	---	---
(N-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(O-1) Rainbow	---	---	---	---	---	---	---	---
(O-2) Rainbow	---	---	---	---	---	---	---	---
(O-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(P-1) Rainbow	---	---	---	---	---	---	---	---
(P-2) Rainbow	---	---	---	---	---	---	---	---
(P-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(Q-1) Rainbow	---	---	---	---	---	---	---	---
(Q-2) Rainbow	---	---	---	---	---	---	---	---
(Q-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(R-1) Rainbow	---	---	---	---	---	---	---	---
(R-2) Rainbow	---	---	---	---	---	---	---	---
(R-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(S-1) Rainbow	---	---	---	---	---	---	---	---
(S-2) Rainbow	---	---	---	---	---	---	---	---
(S-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(T-1) Rainbow	---	---	---	---	---	---	---	---
(T-2) Rainbow	---	---	---	---	---	---	---	---
(T-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(U-1) Rainbow	---	---	---	---	---	---	---	---
(U-2) Rainbow	---	---	---	---	---	---	---	---
(U-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(V-1) Rainbow	---	---	---	---	---	---	---	---
(V-2) Rainbow	---	---	---	---	---	---	---	---
(V-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(W-1) Rainbow	---	---	---	---	---	---	---	---
(W-2) Rainbow	---	---	---	---	---	---	---	---
(W-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(X-1) Rainbow	---	---	---	---	---	---	---	---
(X-2) Rainbow	---	---	---	---	---	---	---	---
(X-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(Y-1) Rainbow	---	---	---	---	---	---	---	---
(Y-2) Rainbow	---	---	---	---	---	---	---	---
(Y-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---
(Z-1) Rainbow	---	---	---	---	---	---	---	---
(Z-2) Rainbow	---	---	---	---	---	---	---	---
(Z-3) Rainbow	---	---	---	---	---	---	---	---
Sub Total	---	---	---	---	---	---	---	---

* Total Eggs

TOTALS 6,112,874 / 1,021,043 / 151 / 1,021,043 / 151 / 1,021,043 / 151

ANADROMOUS DISTRIBUTION

(See Fish Hatchery Manual Section 4438d for Instructions)

BROOD YEAR	NUMBER OF EGGS		EGGS AND FISH SHIPPED to another Hatchery				FISH PLANTED				Species	Source (parent waters)	Waters
	Collected	Received	Number	Number per pound	Weight	Date Mo./Yr.	Number	Number per pound	Weight				
1969	11,472,500		1,200,000	3000	Eggs	4/70	1,248,227	7.10	175,766			North Fork of Clearwater River	
						5/70	123,316	9.15	13,472				
						7/69	1,583,066	2500	633				
1970	11,627,946		2,795,500		Eggs	4/71	1,341,366	5.63	238,209				
1971	6,448,600					4/71	1,802,205	10.19	176,837				
						---	-----	---	-----				

Bureau of Sport Fisheries and Wildlife

EGG SHIPMENTS - SALMONIDAE

(See Fish Hatchery Manual Section 4438e for Instructions)

SPECIES	NAME AND ADDRESS OF APPLICANT	NUMBER SHIPPED (Also subtotal each species)	DATE SHIPPED
No egg shipments this fiscal year.			
TOTAL NUMBER SHIPPED			

FISH FOOD

SPECIES
 Trout Anadromous
 Salmon
 Other

(See Fish Hatchery Manual Section 4438f for Instructions)

NO	ITEM	POUNDS		TOTAL COST or VALUE
		(a)	(b)	(b)
1.	FISH FOOD ON HAND JULY 1	-----	-----	-----
2.	FISH FOOD RECEIVED BY DONATION	-----	-----	-----
3.	FISH FOOD RECEIVED BY TRANSFER	-----	-----	-----
4.	SUB-TOTAL RECEIVED AND ON HAND		-----	-----
5.	LIST TYPE PURCHASED DURING YEAR	Cost Per Pound		
	Abernathy Medicated 6/64	.1705	6853	1,168.76
	Abernathy 4/64	.13	5277	686.01
	Abernathy 3/64	.13	1747	227.11
	PR-6 6/64	.103	13334	1,373.39
	Clark's Salmon Mash	.1527	471	71.93
	Silver Cup 6/64	.1208	1366	165.06
	Silver Cup #2 Crumbles	.13	1336	173.68
	Silver Cup #4 Crumbles	.124	100	12.40
	Silver Cup #3 Crumbles	.124	100	12.40
	Silver Cup Salmon Fry	.1566	50	7.83
6.	SUB-TOTAL PURCHASED	Average: .1273	30634	3,898.57
7.	TOTAL RECEIVED AND PURCHASED (Item 4 + 6)		30634	3,898.57
8.	LESS FISH FOOD TRANSFERRED TO OTHER HATCHERIES		-----	-----
9.	LESS FISH FOOD ON HAND JUNE 30		5093	3,580.79
10.	TOTAL FISH FOOD EXPENDED		25541	3,317.78
11.	COST PER POUND OF FISH FOOD EXPENDED (Line 10, col.(b) ÷ col.(a))			.1299
12.	GAIN IN WEIGHT OF FEEDING FISH PRODUCED DURING YEAR			17,996
13.	FOOD CONVERSION (Line 10, col.(a) ÷ line 12)			1.42
14.	FOOD COST PER POUND OF FISH PRODUCED (Line 10, col.(b) ÷ line 12)			.18
15.	GIVE DETAILS ON REVERSE SIDE FOR ENTRIES ON LINES 2, 3, and 8			

15. GIVE DETAILS ON REVERSE SIDE FOR ENTRIES ON LINES 2, 3, and 8

18	FOOD COST PER POUND OF FISH PRODUCED (Line 10, col. (b) ÷ line 12)	.18
13	FOOD CONVERSION (line 10, col. (a) ÷ line 12)	1.45
12	GAIN IN WEIGHT OF FEEDING FISH PRODUCED DURING YEAR	17,996
11	COST PER POUND OF FISH FOOD EXPENDED (line 10, col. (b) ÷ col. (a))	.1509

10	TOTAL FISH FOOD EXPENDED	3,317.78
9	LESS FISH FOOD ON HAND LINE 30	2093
8	LESS FISH FOOD TRANSFERRED TO OTHER HATCHERIES	---
7	TOTAL RECEIVED AND PURCHASED (line 4 + 6)	3,098.57
6	SUB-TOTAL PURCHASED	3,098.57
	Average: .1573	

5	LIST TYPE PURCHASED DURING YEAR	Cost Per Pound	
	Silver Cup Salmon Fry	.1509	20
	Silver Cup #3 Crumbles	.124	100
	Silver Cup #4 Crumbles	.124	100
	Silver Cup #2 Crumbles	.13	1336
	River Cup	.1508	1366
	Clark's Salmon Mash	.1527	471
	PS-6	.103	1333
	Aberrantly	.13	1767
	Aberrantly	.13	2777
	Aberrantly indicated 6/64	.1702	6823

4	SUB-TOTAL RECEIVED AND ON HAND	---
3	FISH FOOD RECEIVED BY TRANSFER	---
2	FISH FOOD RECEIVED BY DONATION	---
1	FISH FOOD ON HAND JULY 1	---
	TOTAL COST OF VALUE (b)	---

(See Fish Hatchery Manual Section 44381 for Instructions)

FISH FOOD

Bureau of Sport Fisheries and Wildlife

Trout
 SPECIES

Other
 Salmon
 Hatchery

FISH FOOD

SPECIES
 Trout Anadromous
 Salmon
 Other

(See Fish Hatchery Manual Section 4438f for Instructions)

NO	ITEM	POUNDS		TOTAL COST
		(a)	(b)	or VALUE
1.	FISH FOOD ON HAND JULY 1	112,200		12,366.17
2.	FISH FOOD RECEIVED BY DONATION	-----		-----
3.	FISH FOOD RECEIVED BY TRANSFER	-----		-----
4.	SUB-TOTAL RECEIVED AND ON HAND	112,200		12,366.17
5.	LIST TYPE PURCHASED DURING YEAR	Cost Per Pound		
	Abernathy 6/64	.1178	372,860	43,925.40
	Abernathy Medicated 6/64	.1704	171,547	29,231.62
	Abernathy 4/64	.13	73,723	9,583.99
	Abernathy 3/64	.13	24,403	3,172.39
	Abernathy 2/64	.1483	11,950	1,772.50
	PR-6 6/64	.103	110,666	11,398.61
	Silver Cup Starter Mash	.15	5,000	750.00
	Clark's Salmon Mash	.1521	6,579	1,001.32
	Silver Cup 6/64	.1207	19,084	2,303.44
	Silver Cup #2 Crumbles	.13	18,664	2,426.32
6.	SUB-TOTAL PURCHASED	Average: .1296	814,476	105,565.59
7.	TOTAL RECEIVED AND PURCHASED (Item 4 + 6)		926,676	117,931.76
8.	LESS FISH FOOD TRANSFERRED TO OTHER HATCHERIES		-----	-----
9.	LESS FISH FOOD ON HAND JUNE 30		157,657	18,035.76
10.	TOTAL FISH FOOD EXPENDED		769,019	99,896.00
11.	COST PER POUND OF FISH FOOD EXPENDED (Line 10, col. (b) ÷ col. (a))			.1299
12.	GAIN IN WEIGHT OF FEEDING FISH PRODUCED DURING YEAR			384,711
13.	FOOD CONVERSION (Line 10, col. (a) ÷ line 12)			2.00
14.	FOOD COST PER POUND OF FISH PRODUCED (Line 10, col. (b) ÷ line 12)			.26
15.	GIVE DETAILS ON REVERSE SIDE FOR ENTRIES ON LINES 2, 3, and 8			

15. GIVE DETAILS ON REVERSE SIDE FOR ENTRIES ON LINES 2, 3, and 8

11	FOOD COST PER POUND OF FISH PRODUCED (Line 10, col. (b) ÷ line 13)	1.25
12	FOOD CONVERSION (line 10, col. (a) ÷ line 12)	384.711
13	GAIN IN WEIGHT OF FEEDING FISH PRODUCED DURING YEAR	1520
14	COST PER POUND OF FISH FOOD EXPENDED (line 10, col. (b) ÷ col. (a))	1.250

10	TOTAL FISH FOOD EXPENDED	769.018	22,882.00
9	LESS FISH FOOD ON HAND JUNE 30	127.257	18,032.76
8	LESS FISH FOOD TRANSFERRED TO OTHER HATCHERIES	---	---
7	TOTAL RECEIVED AND PURCHASED (Item 4 + 6)	252.276	117,831.76
6	SUB-TOTAL PURCHASED	814.472	102,222.20
Average: 1.250			

5	LIST TYPE PURCHASED DURING YEAR	Cost Per Pound	
	Silver Cup #2 Crumplee	.13	5,426.32
	Silver Cup	.1507	2,303.44
	Clarke's Salmon Mash	.1521	1,001.32
	Silver Cup Starter Mash	.12	750.00
	PR-6	.103	11,328.61
	Abernathy	.1483	1,772.20
	Abernathy	.13	3,172.30
	Abernathy	.13	2,283.22
	Abernathy Medicated	.1704	22,231.62
	Abernathy	.1178	42,222.40

4	SUB-TOTAL RECEIVED AND ON HAND	112,200	12,396.17
3	FISH FOOD RECEIVED BY TRANSFER	---	---
2	FISH FOOD RECEIVED BY DONATION	---	---
1	FISH FOOD ON HAND JULY 1	142,200	11,222.17
TOTAL COST OF VALUE			

(See Fish Handling Manual Section 4481 for Instructions)

FISH FOOD

Department of Sport Fisheries and Wildlife

SPECIES
 Trout

Salmon
 Other

OPERATION COST SUMMARY

(See Fish Hatchery Manual Section 4438j for instructions.)

ITEM	Cost Code	LABOR EXPENDITURES *				NON-LABOR EXPENDITURES *				Total Expenditures (i)
		Warmwater	Trout	Anadromous	Total	Warmwater	Trout	Anadromous	Total	
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	
1 Broodstock and spawning	01 06		124	13,232	13,356		16	240	256	13,612
2 Rearing	07 12		10,914	99,319	110,233		6,000	229,125	235,125	345,358
3 Distribution	13 18			93	93		6			93
4 PRODUCTION Sub-total			11,038	112,644	123,682		6,016	229,365	235,381	359,063
5 Fish production facilities	21 22				38,739					24,543
6 Buildings	23 24				19,823					12,023
7 Other physical facilities	25 26				31,202					46,002
8 MAINTENANCE Sub-total					89,764				82,568	172,332
9 Public use	27 28				3,693				830	4,523
10 Training	31 32				8,740				1,176	9,916
11 Opr. fish passage facilities	41 42									
12 OPERATIONS & MAINTENANCE TOTAL			11,038	112,644	225,879		6,016	229,365	319,955	545,834
13 Fish production facilities	51 52									
14 Buildings	53 54									
15 Other physical facilities	55 56									
16 Public use facilities	57 58									
17 REHABILITATION TOTAL										
18 GRAND TOTALS			11,038	112,644	225,879		6,016	229,365	319,955	545,834
19 O & M Expenditures - Percent for Fish Production			Column (d): Line 4 ÷ Line 12		57		Column (i): Line 4 ÷ Line 12			66
20 TOTAL EXPENDITURES - Percent for Fish Production			Column (d): Line 4 ÷ Line 18				Column (i): Line 4 ÷ Line 18			

*If any totals include contributed funds, show source and breakdown on reverse! *

PRODUCTION COSTS

(See Fish Hatchery Manual Section 4438k for Instructions)

PART 1 - PRODUCTION and EXPENDITURES

No.	ITEM	PONDFISH	TROUT	ANADROMOUS	TOTAL
1	Number Produced	----			----
2	Pounds Produced	----	17,996	386,921	404,917
3	Labor Expenditures	----	11,038	112,644	123,682
4	Non-Labor Expenditures	----	6,016	229,365	235,381
5	TOTAL EXPENDITURES	----	17,054	342,009	359,063

PART 2 - ANALYSIS OF PRODUCTION COST

ITEM	COST	PERCENTAGE
PONDFISH	----	
PRODUCTION COST PER POUND	----	
LABOR COST PER POUND	----	
LABOR COST PERCENT OF PRODUCTION COST		----
PRODUCTION COST PER THOUSAND FISH	----	
LABOR COST PER THOUSAND FISH	----	
TROUT	----	
PRODUCTION COST PER POUND	1.06	
LABOR COST PER POUND	.61	
LABOR COST PERCENT OF PRODUCTION COST		58
ANADROMOUS	----	
PRODUCTION COST PER POUND	.88	
LABOR COST PER POUND	.29	
LABOR COST PERCENT OF PRODUCTION COST		33
AVERAGE PRODUCTION COST PER POUND OF ALL FISH PRODUCED	.89	

PRODUCTION COSTS

(See Fish History Manual Section 4438k for Instructions)

PART 1 - PRODUCTION and EXPENDITURES

NO.	ITEM	PONDRAISE	TROUT	ANADROMOUS	TOT.
1	Number Produced	---	---	---	---
2	Pounds Produced	---	17,996	386,651	404,647
3	Labor Expenditures	---	11,038	112,644	123,682
4	Non-Labor Expenditures	---	6,016	229,362	235,378
5	TOTAL EXPENDITURES	---	17,054	342,006	359,060

PART 2 - ANALYSIS OF PRODUCTION COST

PERCENT	COST	ITEM
---	---	PONDRAISE
---	---	PRODUCTION COST PER POUND
---	---	LABOR COST PER POUND
---	---	LABOR COST PERCENT OF PRODUCTION COST
---	---	PRODUCTION COST PER THOUSAND FISH
---	---	LABOR COST PER THOUSAND FISH
---	---	TROUT
---	1.06	PRODUCTION COST PER POUND
---	.61	LABOR COST PER POUND
24	---	LABOR COST PERCENT OF PRODUCTION COST
---	---	ANADROMOUS
---	.88	PRODUCTION COST PER POUND
---	.29	LABOR COST PER POUND
3	---	LABOR COST PERCENT OF PRODUCTION COST
---	.89	AVERAGE PRODUCTION COST PER POUND OF ALL FISH PRODUCED

Bureau of Sport Fisheries and Wildlife
REARING FACILITIES AND WATER SUPPLY

Fish Hatchery Manual Section 4438m for Instructions)

PART 1 REARING FACILITIES

1. TYPES OF FACILITIES IN USE	NUMBER IN USE	CAPACITY (Calculate at normal water level)	MONTHS IN USE	TOTAL (Months x Cu.Ft.)
TROUGHS	---	----- Cu.Ft.	---	-----
TANKS	64	5,120 Cu.Ft.	4	20,480
RACEWAYS	*64	195,200 Cu.Ft.	12	2,342,400
OTHER POOLS AND PONDS - Concrete	4	2,840 Cu.Ft.	6	17,040
OTHER POOLS AND PONDS - Earthen	---	----- Cu.Ft.	---	-----
TOTAL				2,379,920
TOTAL CUBIC FEET IN USE ON YEARLY BASIS (Divide Total by 12)				198,327

PART 2 - WATER SUPPLY

2. SOURCE OF SUPPLY	Check appropriate source for each supply				OTHER (Explain on reverse)
	SPRING	WELL	LAKE	STREAM	
Supply No. 1	----	----	----	X	----
Supply No. 2	----	----	----	----	** reuse system
Supply No. 3	----	----	----	----	----
3. AVERAGE VOLUME OF WATER-g.p.m. (Give total flow in parenthesis, if not all used)	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	ANNUAL AVERAGE
Supply No. 1	41,000	26,000	20,000	30,500	29,400
Supply No. 2	10,200	13,000	12,000	5,000	10,000
Supply No. 3	----	----	----	----	----
4. AVERAGE WATER TEMPERATURE-F ^o	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	ANNUAL AVERAGE
Supply No. 1	64.0	39.6	35.3	47.7	46.6
Supply No. 2	56.7	54.4	52.0	50.6	53.4
Supply No. 3	----	----	----	----	----

5. TOTAL POUNDS OF TROUT OR ANADROMOUS SPECIES PRODUCED:	404,917
6. TOTAL POUNDS OF TROUT OR ANADROMOUS SPECIES PRODUCED per g.p.m. AVERAGE FLOW USED:	10.26
7. TOTAL POUNDS OF TROUT OR ANADROMOUS SPECIES PRODUCED per Cu. Ft. (annual) FLOW:	2.0

IS ANY WATER PUMPED FOR FISH PRODUCTION? YES NO HEATED? YES NO
 (If YES in either case, give details as to flow involved, estimated cost, etc., on reverse.)

PART I REARING FACILITIES

1. TYPES OF FACILITIES IN USE	NUMBER IN USE	CAPACITY (Calculated as follows) (gallons per day)	MONTHS IN USE	TOTAL (Gallons x Capacity)
TROUGHS	---	---	---	---
TANKS	---	---	---	---
BACKWAYS	---	---	---	---
OTHER POOLS AND PONDS - COOLERS	---	---	---	---
OTHER POOLS AND PONDS - BATHS	---	---	---	---
TOTAL				5,378,480

TOTAL CUBIC FEET IN USE ON YEARLY BASIS (Divide Total by 12)

WATER SUPPLY
 All water is pumped. Pumping, heating, and cooling costs are as follows:

Check appropriate source for each supply				2. SOURCE OF SUPPLY	
WELL	LAKE	STREAM	OTHER		
				Main supply pumps:	\$14,200.08
				Reuse system pumping costs:	8,857.63
				Cooling of Incubator and reuse system:	5,032.74
				Heating of reuse water system:	46,402.11

AVERAGE WATER TEMPERATURE-F ₀		1st Gr.	2nd Gr.	3rd Gr.	4th Gr.	ANNUAL AVERAGE
Supply No. 1	41.000	42.000	40.000	39.500	39.500	39.400
Supply No. 2	40.200	41.000	39.000	38.000	38.000	38.000
Supply No. 3	---	---	---	---	---	---
Supply No. 1	61.0	59.0	57.3	57.7	57.7	57.8
Supply No. 2	50.7	54.4	55.0	50.6	50.6	53.8
Supply No. 3	---	---	---	---	---	---

3. TOTAL POUNDS OF TROUT OR ANADROMOUS SPECIES PRODUCED: 104,017

4. TOTAL POUNDS OF TROUT OR ANADROMOUS SPECIES PRODUCED per g.p.m. AVERAGE FLOW USED: 10.26

5. TOTAL POUNDS OF TROUT OR ANADROMOUS SPECIES PRODUCED per Cu. Ft. (annual) FLOW: 2.0

IS ANY WATER PUMPED FOR FISH PRODUCTIONS? YES NO
 HEATED? YES NO
 (If YES in either case, give details as to flow involved, estimated cost, etc., on reverse.)

Bureau of Sport Fisheries and Wildlife

SUMMARY OF LABOR EXPENDED AND UTILIZATION

(See Fish Hatchery Manual Section 4438n for Instructions)

PART 1 - STATION LABOR ANALYSIS

No.	ITEM	Man-Years of Labor
1	PERMANENT PERSONNEL	15.17
2	ALL OTHER LABOR	2.44
3	OVERTIME FOR WORK PERFORMED AT STATION BY ABOVE EMPLOYEES	.11
4	DETAIL OF PERSONNEL TO STATION	----
5	OVERTIME OF DETAILED PERSONNEL AT STATION	----
6	TOTAL LABOR - ALL PERSONNEL	17.72

PART 2 - LABOR UTILIZATION

No.	ITEM	Permanent	Other
7	PRODUCTION	8.87	.26
	PONDFISH (Cost Codes 01, 07)	----	----
	TROUT (Cost Codes 03, 09)	.87	----
	SALMON (Cost Codes 05, 11)	8.00	.26
8	DISTRIBUTION (Cost Codes 13, 15, 17)	----	----
9	MAINTENANCE	5.12	2.11
	MAINTENANCE (Cost Codes 21, 23, 25)	5.12	2.11
	REHABILITATION (Cost Codes 51, 53, 55, 57)	----	----
10	PUBLIC USE (Cost Code 27)	.45	.07
11	TRAINING (Cost Code 31)	.84	---
12	SUB TOTAL	15.28	2.44
13	TOTAL PERMANENT AND OTHER (Equals Item 6)	17.72	

Form 3-113

(Revised June 1968)

SUMMARY OF LABOR EXPENDED AND UTILIZATION

(See Fish Hatchery Manual Section 4-38n for Instructions)

PART I - STATION LABOR ANALYSIS

Item	Man-Years of Labor	04
PERMANENT PERSONNEL	12.17	1
ALL OTHER LABOR	5.44	2
OVERTIME FOR WORK PERFORMED AT STATION BY ABOVE EMPLOYEES	.11	3
DETAIL OF PERSONNEL TO STATION	---	4
OVERTIME OF DETAILED PERSONNEL AT STATION	---	5
TOTAL LABOR - ALL PERSONNEL	17.72	6

PART 2 - LABOR UTILIZATION

Item	Permanent	Other	04
PRODUCTION	8.87	.38	7
PONDISH (Cost Codes 01, 07)	---	---	
TROUT (Cost Codes 03, 09)	.87	---	
SALMON (Cost Codes 02, 11)	8.00	.38	
8 DISTRIBUTION (Cost Codes 13, 15, 17)	---	---	
9 MAINTENANCE	2.12	2.11	
MAINTENANCE (Cost Codes 21, 23, 25)	2.12	2.11	
REHABILITATION (Cost Codes 21, 23, 25, 27)	---	---	
10 PUBLIC USE (Cost Code 27)	.42	.07	
11 TRAINING (Cost Code 31)	.84	---	
12 SUB TOTAL	12.28	2.44	
13 TOTAL PERMANENT AND OTHER (Equals Item 6)	17.72		

REPORT OF PERMANENT PERSONNEL

(See Fish Hatchery Manual Section 4438o for Instructions)

PART 1 - STATION PERSONNEL

NAME OF EMPLOYEE	Age	Grade	Marital Status	Children Under 18	Period Worked	COMPENSATION PAID			Total Compensation
						Total Regular Salary	Uniform Allowance	Paid Overtime	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Ankney, William G.	37	6	M	3	7/1/70 - 6/30/71	9,086.32	125.00	71.00	9,282.32
Brainard, Lila N.	53	6	M	1	7/1/70 - 6/30/71	7,849.76	125.00	37.52	8,012.28
Carlson, Dwain A.	36	6	M	5	7/1/70 - 6/30/71	8,843.16	125.00	47.68	9,015.84
Halfmoon, Frank L.	42	5	M	0	9/8/70 - 6/30/71	5,609.88	125.00	-----	5,734.88
Harris, Walter G.	37	9	M	3	7/1/70 - 6/30/71	13,106.72	125.00	231.33	13,463.05
Hosking, Henry F.	34	11	M	4	7/1/70 - 6/26/71*	15,483.84	125.00	124.18	15,733.02
Parvin, John R.	57	13	M	0	7/1/70 - 6/30/71*	21,755.52	125.00	-----	21,880.52
1. TOTAL - STATION PERSONNEL						81,735.20	875.00	511.71	83,121.91

PART 2 - PERSONNEL DETAILED TO STATION

NAME OF EMPLOYEE	From Station	Period of Detail	COMPENSATION PAID			Total Compensation
			Regular Salary Costs	Per Diem and Expenses	Paid Overtime	
(1)	(2)	(3)	(4)	(5)	(6)	
2. TOTAL - DETAILED TO STATION						
3. TOTAL COMPENSATION PAID TO PERMANENT PERSONNEL ON DUTY AT STATION						

REPORT OF PERMANENT PERSONNEL

(See Fish Hatchery Manual Section 4438o for Instructions)

PART 1 - STATION PERSONNEL

NAME OF EMPLOYEE	Age	Grade	Marital Status	Children Under 18	Period Worked	COMPENSATION PAID			Total Compensation
						Total Regular Salary	Uniform Allowance	Paid Overtime	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Pittman, Jack E. W.	63	WG 4	M	0	7/1/70 - 5/1/71	5,677.60	125.00	-----	5,802.60
Sanders, Boyce O.	55	9	M	0	7/1/70 - 6/30/71	*14,680.48	125.00	-----	14,805.48
Simonsen, Rolf W.	49	7	M	1	7/1/70 - 6/30/71	10,066.08	125.00	14.02	10,205.10
Taggart, Thomas M.	38	6	M	2	7/1/70 - 6/30/71	8,308.24	125.00	-----	8,433.24
Thornton, Warren L.	42	WG10	M	1	7/1/70 - 6/30/71	9,359.28	125.00	370.32	9,854.60
Williams, George L.	42	11	M	3	7/1/70 - 6/30/71	*16,008.96	125.00	-----	16,133.96
Wold, Einar	39	12	M	0	7/1/70 - 6/30/71	15,316.32	125.00	-----	15,441.32
1. TOTAL - STATION PERSONNEL						79,416.96	875.00	384.34	80,676.30

PART 2 - PERSONNEL DETAILED TO STATION

NAME OF EMPLOYEE	From Station	Period of Detail	COMPENSATION PAID			Total Compensation
			Regular Salary Costs	Per Diem and Expenses	Paid Overtime	
(1)	(2)	(3)	(4)	(5)	(6)	
2. TOTAL - DETAILED TO STATION						
3. TOTAL COMPENSATION PAID TO PERMANENT PERSONNEL ON DUTY AT STATION						

Bureau of Sport Fisheries and Wildlife
REPORT OF PERMANENT PERSONNEL

(See Fish Hatchery Manual Section 4438o for Instructions)

PART 1 - STATION PERSONNEL

NAME OF EMPLOYEE	Age	Grade	Marital Status	Children Under 18	Period Worked	COMPENSATION PAID			Total Compensation
						Total Regular Salary	Uniform Allowance	Paid Overtime	
						(6)	(7)	(8)	
Wurth, Richard L.	39	WG10	M	2	7/1/70 - 6/30/71	9,391.76	125.00	132.60	9,649.36
1. TOTAL - STATION PERSONNEL						9,391.76	125.00	132.60	9,649.36

PART 2 - PERSONNEL DETAILED TO STATION

NAME OF EMPLOYEE	From Station	Period of Detail	COMPENSATION PAID			Total Compensation			
			Regular Salary Costs	Per Diem and Expenses	Paid Overtime				
			(3)	(4)	(5)				
2. TOTAL - DETAILED TO STATION									
3. TOTAL COMPENSATION PAID TO PERMANENT PERSONNEL ON DUTY AT STATION									\$173,447.57

Bureau of Sport Fisheries and Wildlife

FIVE YEAR PRODUCTION AND DISTRIBUTION SUMMARY

(See Fish Hatchery Manual Section 4438p for Instructions)

PART 1 - PRODUCTION

YEAR	TOTAL POUNDS (All Species)	NUMBER of POND FISH	PER TOTAL MAN YEARS		PER PRODUCTION MAN YEARS	
			Pounds (All Species)	Number (Pondfish)	Pounds (All Species)	Number (Pondfish)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1970	279,291	-	18,290	-	30,031	-
1971	404,917	-	22,850	-	44,350	-

PART 2 - COST ANALYSIS

YEAR	Percent Production Cost of Total	Percent Labor Cost of Total	Production Cost per Pound of Fish	Labor Cost per Pound of Fish	Food Cost per Pound of Fish	Food Conversion
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1970	70	38	1.06	.37	.246	1.94
1971	66	33	.89	.31	.26	2.00

PART 3 - DISTRIBUTION

YEAR	TOTAL DISTRIBUTION		Number of Truck Trips	Miles Traveled in Fish Distribution	Average Miles per Trip	AVERAGE DISTRIBUTION PER TRIP		Average Cost per Trip	Dist. Cost per Pound of Fish
	Pounds	Number				Pounds	Number		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1970	189,871	2,954,609	---	Not Applicable	---				
1971	415,046	3,143,571	---	Not Applicable	---				

ANALYSIS OF PROGRAM

Fish Hatchery Manual 4438r for instructions)

PART 1 - PRODUCTION

Line Number	Species	PROGRAM SCHEDULE		ANNUAL REPORT		DIFFERENCE			
		Pounds	Numbers	Pounds	Numbers	Pounds	%	Numbers	%
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
1	Trout								
2	Warmwater								
3	Anadromous	520,000	3,600,000	415,046	3,143,571	104,954	25	456,429	14.5
4	TOTALS	520,000	3,600,000	415,046	3,143,571	104,954	25	456,429	14.5

PART 2 - COSTS

Category	PROGRAM SCHEDULE		ANNUAL REPORT		DIFFERENCE			
	Dollars	Man Years	Dollars	Man Years	Dollars	%	Man Years	%
5 Production	341,000	10.2	359,063	9.13	18,063	5.3	1.07	10.5
6 Distribution							--	--
7 Maintenance	167,000	6.0	172,332	7.23	5,332	3.2	1.23	20.3
8 Rehabilitation	—	—						
9 Public Use	8,500	.8	4,523	.52	3,977	47	.28	35.0
10 Training	3,500	.5	9,916	.84	6,416	183	.34	68.0
11 TOTALS	520,000	17.5	545,834	17.72	25,834	5.0	.22	1.3

PART 3 - INDEXES

Costs Lb/M	PROGRAM SCHEDULE		ANNUAL REPORT		DIFFERENCE			
	Per. Lb.	Per M	Per. Lb.	Per M	Per. Lb.	%	Per M	%
12 Total Cost	1.00		1.24		.24	24		
13 Production Cost	0.66		0.89		.23	35		
Pounds/Man Years	PROGRAM SCHEDULE		ANNUAL REPORT		DIFFERENCE			
14 Total Man Years		29,714		22,850			6864	23
15 Prod. Man Year.		50,980		44,350			6630	13

PUBLIC RELATIONS

TOTAL PUBLIC VISITORS^{1/}

31,563

See Fish Hatchery Manual section 4438q for instructions)

A - INTERPRETATIVE PRESENTATIONS

TYPE OF GROUPS	ON HATCHERY		OFF HATCHERY	
	Number of Groups	Number in Group	Number of Groups	Number in Group
Sportsman Clubs	1	88	2	32
Schools	27	1,157	--	---
Service Clubs	1	7	4	199
Professional-Scientific	6	26	1	80
Religious Groups	1	27	1	120
Camp Groups	--	-----	--	---
Youth Groups	12	171	1	35
State or Federal Government	18	301	--	---
Other Airport dedication	7	199	1	100
TOTALS	73	1,976	10	566

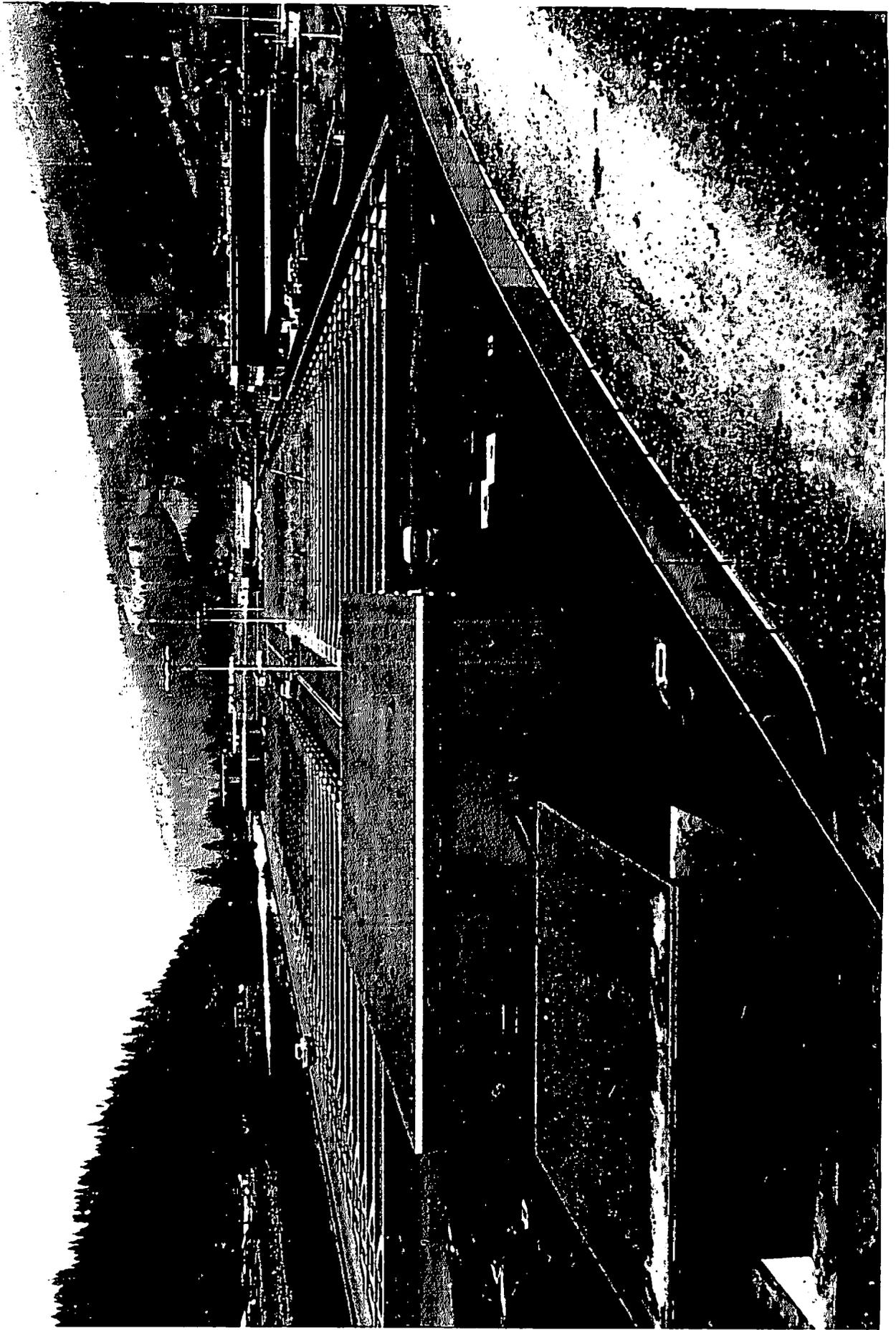
B - OTHER PUBLIC RELATIONS ACTIVITIES

TYPE OF ACTIVITY	NUMBER	TYPE OF ACTIVITY	NUMBER
Press Releases (field level)	2	Hatchery Exhibits	3
Number of newspapers (receiving releases)	2	Off Hatchery Exhibits	1
TV Presentations	4	Estimate number of exhibit viewers	11,000
Radio Presentations	3	Other (Explain in remarks - i. e., open house, participation in local events, etc.)	---

REMARKS

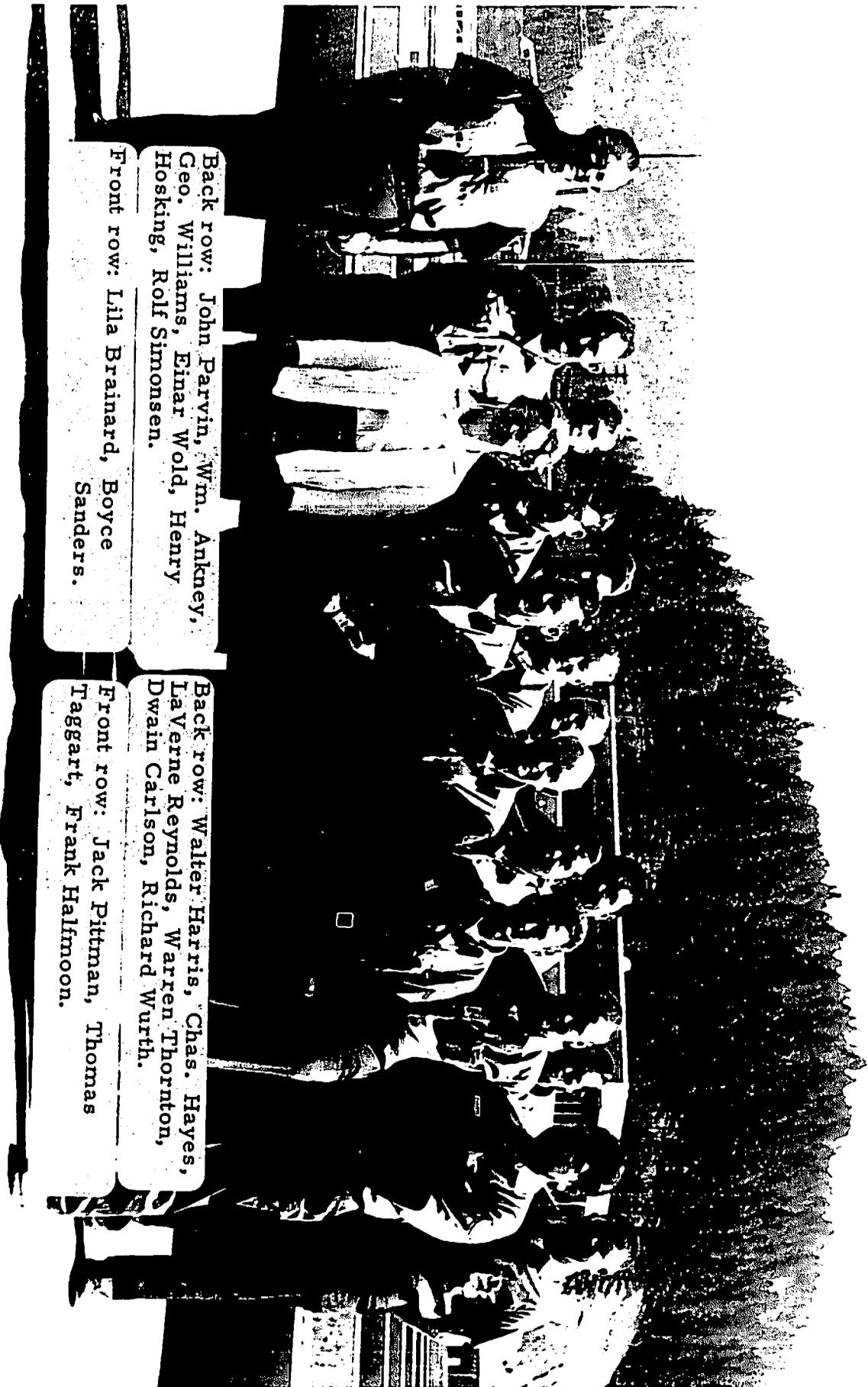
VIEW OF DWORSHAK NATIONAL FISH HATCHERY
TAKEN FROM THE OVERPASS.

FISH SORTING DEVICE AT DWORSHAK
NATIONAL FISH HATCHERY.



DWORSHAK NATIONAL FISH HATCHERY

PERSONNEL TAKEN IN 1971.



Back row: John Parvin, Wm. Ankney,
Geo. Williams, Einar Wold, Henry
Hosking, Rolf Simonsen.

Front row: Lila Brainard, Boyce
Sanders.

Back row: Walter Harris, Chas. Hayes,
LaVerne Reynolds, Warren Thornton,
Dwain Carlson, Richard Wurth.

Front row: Jack Pittman, Thomas
Taggart, Frank Halfmoon.