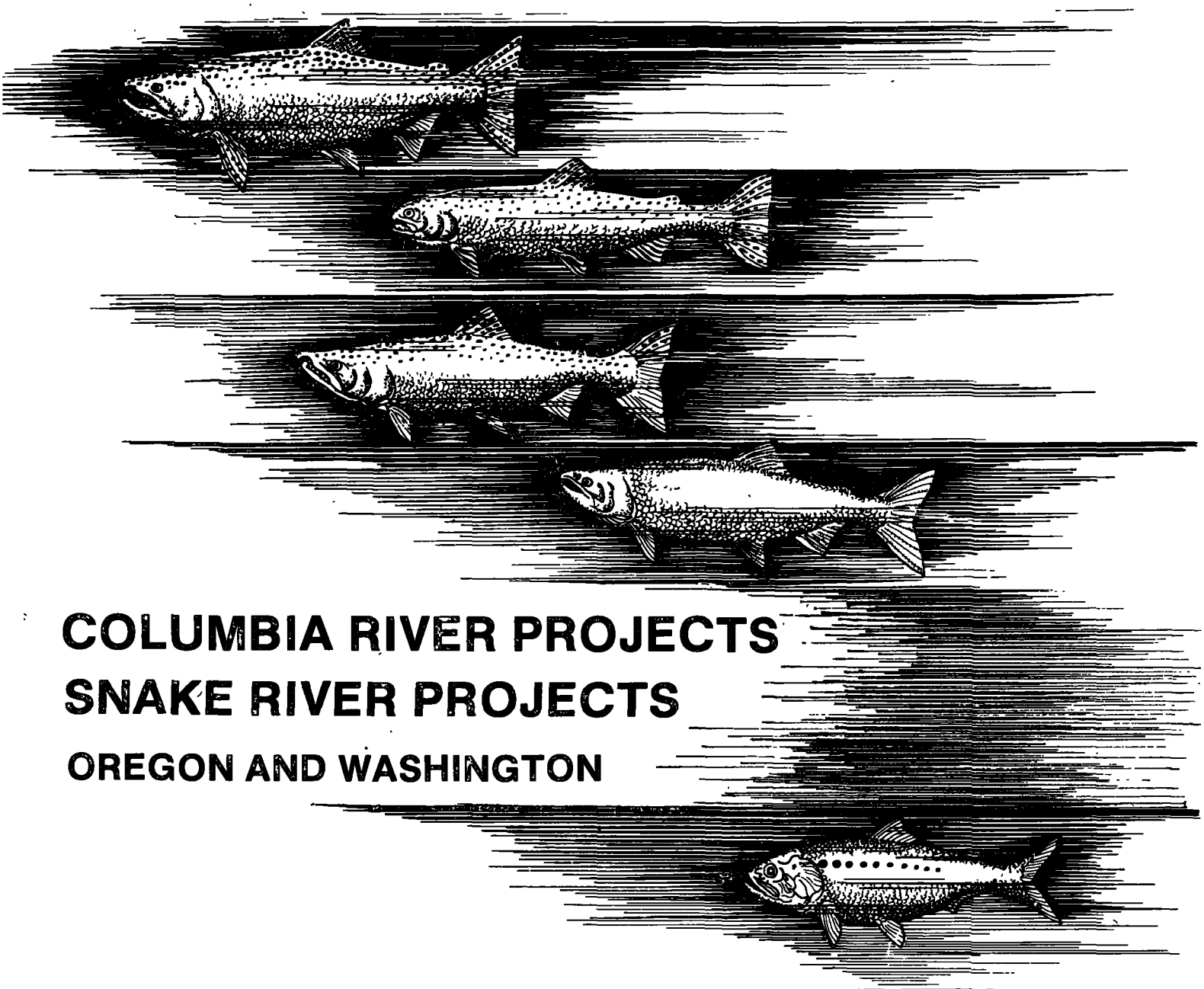
US Army Corps
of Engineers
Portland & Walla Walla Districts

ANNUAL FISH PASSAGE REPORT—1987



COLUMBIA RIVER PROJECTS
SNAKE RIVER PROJECTS
OREGON AND WASHINGTON

1987

ANNUAL FISH PASSAGE REPORT

COLUMBIA AND SNAKE RIVERS

FOR

SALMON, STEELHEAD AND SHAD

Bonneville
The Dalles
John Day
McNary
Ice Harbor
Lower Monumental
Lower Granite

NORTH PACIFIC DIVISION
Corps of Engineers
Prepared By:

U.S. Army Districts
Portland and Walla Walla

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ANNUAL FISH PASSAGE REPORT
COLUMBIA AND SNAKE RIVER PROJECTS
CALENDAR YEAR 1987

BONNEVILLE DAM - 1987

1987 Fish Counting Schedule

1 Jan - 28 Feb	No counting.
1 Mar - 31 Mar	Fish were counted at the Washington Shore ladder for one 8-hour shift each day, 0800-1600 hours Pacific Standard Time.
5 Mar - 31 Mar*	Fish were counted at the Bradford Island ladder for one 8-hour shift each day, 0800-1600 hours Pacific Standard Time.
1 Apr - 31 Oct	Fish were counted in both ladders for two 8-hour shifts each day, 0400-2000 hours Pacific Standard Time.
1 Nov - 30 Nov	Fish were counted in both ladders for one 8-hour shift each day, 0800-1600 hours Pacific Standard Time.
1 Dec - 31 Dec	No counting.

*Fish counting was delayed because the ladder exit was closed during blasting for navigation lock construction.

1987 Adult Fish Facilities Operating Schedule

Bradford Island Fish Ladder:

1 Jan - 14 Jan	A-branch in-service.
1 Jan - 10 Jan	B-branch in-service.
11 Jan - 4 Mar	B-branch out of service for annual maintenance.
15 Jan - 4 Mar	A-branch and powerhouse collection channel out of service for annual maintenance.
5 Mar - 29 Nov	B-branch in-service.
5 Mar - 30 Dec	Powerhouse collection channel in-service.
5 Mar - 31 Dec	A-branch in-service.

30 Nov - 8 Dec	B-branch out of service for annual maintenance.
31 Dec	Powerhouse collection channel out of service for annual maintenance.

Second Powerhouse Fish Ladder:

1 Jan - 13 Jan	Powerhouse collection channel out of service for annual maintenance.
1 Jan - 30 Nov	Washington shore fish ladder in-service.
1 Jan - 23 Dec	Cascades Island fish ladder and upstream migrant transportation channel in-service.
14 Jan - 30 Nov	Powerhouse collection channel in-service.
1 Dec - 24 Dec	Washington shore fish ladder and powerhouse collection channel out of service for annual maintenance.
24 Dec	Cascades Island fish ladder out of service to inspect old ladder exit leads.
25 Dec - 31 Dec 11 Mar	Washington shore fish ladder and powerhouse collection channel in-service.
25 Dec - 31 Dec	Cascades Island fish ladder and upstream migrant transportation channel in-service.

<u>1987 Juvenile Fish Facilities Operating Schedule</u>

First Powerhouse

1 Jan - 4 Mar	Juvenile bypass out of service for annual maintenance.
5 Mar - 23 Nov*	Juvenile bypass in-service.
24 Nov - 31 Dec	Juvenile bypass out of service for annual maintenance.

*The first powerhouse juvenile bypass frequently alternated between two modes of operation. It operated so that flow passed either toward the south or north ends of the powerhouse. Frequent problems with the inclined screen did not allow continuous operation with flow to the north. This was the fourth year of operation.

Second Powerhouse:

1 Jan - 11 Feb	Juvenile bypass out of service for annual maintenance.
12 Feb - 24 Nov	Juvenile bypass in-service.
25 Nov - 31 Dec	Juvenile bypass out of service for annual maintenance.

1987 Fishway Activities

The Washington Department of Wildlife conducted the 1987 fish counting program under contract with the Army Corps of Engineers. Fish were counted for 50 minutes of each hour. Counts were multiplied by a factor of 1.2 to estimate passage for the full hour. Fish counting was extended to 1 March through 30 November to develop a baseline for fish passage. This was done to prepare for the construction of the new navigation lock.

The National Marine Fisheries Service used the Adult Fish Collection and Monitoring Facility at the second powerhouse to continue their capture of marked fish as part of an evaluation of the juvenile salmonid transportation program. All fish were returned to the ladder after examination and were counted at the counting station as usual.

The Oregon Department of Fish and Wildlife and U.S. Fish and Wildlife Service used the Adult Fish Collection and Monitoring Facility to collect early spawning tule and late spawning bright fall chinook as part of a continuing program to develop an egg bank and to supplement this year's low return of tules to Spring Creek hatchery. The number of fish and the dates they were captured are as follows: between 25 August and 22 September, 1,511 tules; and between 17 September and 22 September, 771 brights. These fish were transported to Bonneville and Spring Creek Fish Hatcheries and were not counted at the counting station. The dam counts were not adjusted for these fish because they were not released to continue upstream.

Between 25 August and 22 September, the Washington Department of Fisheries conducted special fish counting, two hours a day at both facilities, for upriver bright fall chinook.

The National Marine Fisheries Service continued to evaluate the first and second powerhouse juvenile bypass sampling facilities.

Work continued this year to improve the effectiveness of the second powerhouse juvenile bypass facility. The National Marine Fisheries Service and the Corps continued research in efforts to determine problem areas, potential remedies, and distribution of fish as they approached the powerhouse. Turbine intake extensions, internal and external deflectors, extended submersible traveling screens, lighting, and the ice and trash sluiceway were all used in trying to improve fish guidance.

THE DALLES DAM - 1987

1987 Fish Counting Schedule

1 Jan - 31 Mar	No counting.
1 Apr - 31 Oct	Fish were counted in both ladders for two 8-hour shifts each day, 0400-2000 hours Pacific Standard Time.
1 Nov - 30 Dec	No counting.

1987 Adult Fish Facilities Operating Schedule

East Fish Ladder:

1 Jan - 7 Jan	In-service.
8 Jan - 12 Feb	Out of service for annual maintenance.
13 Feb - 16 Dec	In-service.
17 Dec - 31 Dec	Out of service for annual maintenance.

North Fish Ladder:

1 Jan - 7 Jan	Out of service for annual maintenance.
8 Jan - 30 Nov	In-service.
1 Dec - 14 Dec	Out of service for annual maintenance.
15 Dec - 31 Dec	In-service.

1987 Ice and Trash Sluiceway Operating Schedule

1 Jan - 31 Mar	Operated with gatewell orifice flow.
1 Apr - 31 Aug	Operated with gatewell orifice flow. Chain gates 1-1, 1-2, 1-3 open daily sunrise to sunset.
1 Sep - 31 Oct	Operated with gatewell orifice flow. Chain gates 1-1, 1-2, 1-3 open two hours after sunrise and closed two hours before sunset.
1 Nov - 31 Dec	Operated with gatewell orifice flow.

Fishway Activities

The Washington Department of Wildlife conducted the 1987 fish counting program under contract with the Corps of Engineers. Fish were counted for 50 minutes of each hour. Counts were multiplied by a factor of 1.2 to estimate passage for the full hour.

JOHN DAY DAM - 1987

1987 Fish Counting Schedule

1 Jan - 31 Mar	No counting.
1 Apr - 31 Oct	Fish were counted in both ladders for two 8-hour shifts each day, 0400-2000 hours Pacific Standard Time.
1 Nov - 31 Dec	No counting.

1987 Adult Fish Facilities Operating Schedule

South Fish Ladder:

1 Jan - 4 Jan	In-service.
5 Jan - 18 Feb	Out of service for annual maintenance.
19 Feb - 31 Dec	In-service.

North Fish Turbine 1:

1 Jan - 7 Feb	In-service.
8 Dec - 15 Dec	Out of service for annual maintenance.
16 Dec - 31 Dec	In-service.

1987 Juvenile Bypass System Operating Schedule

1 Jan - 30 Mar	Out of service for epoxy painting.
31 Mar - 15 Nov	In-service. First year of operation using all gatewell orifices in all powerhouse units.
16 Nov - 18 Nov	Out of service to inspect epoxy and joints.

Fishway Activities

The Washington Department of Wildlife conducted the 1987 fish counting program under contract with the Corps of Engineers. Fish were counted for 90 minutes of each hour. Counts were multiplied by a factor 1.2 to estimate passage for the full hour.

In May, the steelhead count was negative with more fish passing downstream than upstream. There is no evidence that the fish ladders were malfunctioning. Steelhead have always overwintered in the John Day fish ladders. Such fish move up the ladder at night and drift back down during the day. The increase in the negative count at John Day may be because of a possible increase in overwintering steelhead. Biologists will be observing to see if this negative count of steelhead in the spring is a continuing trend.

The Corps contracted with Associated Fisheries Biologists to provide hydroacoustic monitoring information from which the Corps biologist could regulate spill for juvenile salmonid passage.

The National Marine Fisheries Service continued to operate the airlift sampling device at turbine unit 3 for indexing of juvenile fish.

MCNARY DAM - 1987

1987 Fish Counting Schedule

1 Jan - 31 Mar	No counting.
1 Apr - 31 Oct	Counting daily 0400-2000 hours Pacific Standard Time.
1 Nov - 31 Dec	No counting.

1987 Fish Ladder Operating Schedule

North Ladder:

1 Jan - 25 Jan	In-service.
26 Jan - 5 Feb	Out of service for annual inspection and maintenance.
6 Feb - 31 Dec	In-service.

South Ladder:

1 Jan - 5 Jan	In-service.
6 Jan - 13 Jan	Out of service for annual inspection and maintenance.
14 Jan - 31 Dec	In-service.

South Shore Fish Pumps:

5 Jan - 13 Mar	Out of service for replacement of transformers.

1987 Fishway Activities

The Washington Department of Wildlife conducted the 1987 fish counting under a contract with the Corps of Engineers. Fish were counted for two 8-hour shifts from 0400-2000 hours Pacific Standard Time from 1 April through 31 October. Both fish ladders were counted by direct observation.

The National Marine Fisheries Service evaluated the fish guiding efficiency of submersible traveling screens as part of the Corps' Fish Passage Development and Evaluation Program.

The juvenile collection system was in operation from 27 March to 20 October.

ICE HARBOR DAM - 1987

1987 Fish Counting Schedule

1 Jan - 31 Mar	No counting.
1 Apr - 31 Oct	Counting daily 0400-2000 hours Pacific Standard Time.
1 Nov - 31 Dec	No counting.

1987 Fish Ladder Operating Schedule

North Ladder:

1 Jan - 1 Feb	In-service.
2 Feb - 4 Feb	Out of service for annual inspection and maintenance.
5 Feb - 31 Dec	In-service.

South Ladder:

1 Jan - 9 Feb	In-service.
9 Feb - 11 Feb	Out of service for annual inspection and maintenance.
12 Feb - 31 Dec	In-service.

1987 Fishway Activities

The Washington Department of Wildlife conducted the 1987 fish counting under contract with the Corps of Engineers. Fish were counted for two 8-hour shifts from 0400-2000 hours Pacific Standard Time from 1 April through 31 October. One counter counted the south ladder by direct observation and the north ladder by closed circuit television.

The ice and trash sluiceway was operated as a juvenile bypass from 31 March to 1 September.

A hydroacoustic evaluation of juvenile salmonid passage was conducted as part of the Corps Fish Passage Development and Evaluation Program.

As part of the Corps' Fish Passage Development and Evaluation Program, the National Marine Fisheries Service evaluated the fish guiding efficiency of prototype submersible traveling screens in one of the turbine units.

The University of Idaho trapped and collected adult fall chinook in the south ladder during September and October for brood stock for Lyons Ferry Salmon Hatchery.

LOWER MONUMENTAL DAM - 1987

1987 Fish Counting Schedule

1 Jan - 31 Mar	No counting.
1 Apr - 31 Oct	Counting daily 0400-2000 hours Pacific Standard Time.
1 Nov - 31 Dec	No counting.

1987 Fish Ladder Operating Schedule

North Ladder:

1 Jan - 3 Feb	In-service.
4 Feb - 19 Feb	Out of service for annual inspection and maintenance.
20 Feb - 31 Dec	In-service.

South Ladder:

1 Jan - 1 Feb	In-service.
2 Feb - 3 Feb	Out of service for annual inspection and maintenance.
4 Feb - 31 Dec	In-service.

1987 Fishway Activities

The Washington Department of Wildlife conducted the 1987 fish counting under contract with the Corps of Engineers. Fish were counted for two 8-hour shifts from 0400-2000 hours Pacific Standard Time from 1 April through 31 October. One counter counted the north ladder by direct observation and the south ladder by closed circuit television.

A hydroacoustic evaluation of juvenile salmonid passage was conducted as part of the Corps' spill monitoring program.

Washington Department of Wildlife dipped the gatewells of one of the turbine units as part of the smolt monitoring program for the Fish Passage Center.

The juvenile bypass system operated from 31 March to 2 September.

LITTLE GOOSE DAM - 1987

1987 Fish Counting Schedule

1 Jan - 31 Mar	No counting.
1 Apr - 31 Oct	Counting daily 0400-2000 hours Pacific Standard Time with video motion detector system to monitor total fish passage past the project.
1 Nov - 31 Dec	No counting.

1987 Fish Ladder Operating Schedule

Project Ladder:

1 Jan - 5 Jan	In-service.
6 Jan - 29 Jan	Out of service for annual inspection and maintenance.
30 Jan - 31 Dec	In-service.

1987 Fishway Activities

The juvenile collection system was in operation from 1 April to 8 July.

The National Marine Fisheries Service conducted guiding efficiency tests on the submersible traveling screens as part of the Corps' Juvenile Fish Passage Development and Evaluation Program.

LOWER GRANITE - 1987

1987 Fish Counting Schedule

1 Jan - 28 Feb	No counting.
1 Mar - 31 Mar	Counting daily 0800-1600 hours Pacific Standard Time.
1 Apr - 31 Oct	Counting daily 0400-2000 hours Pacific Standard Time.
1 Nov - 15 Dec	Counting daily 0800-1600 hours Pacific Standard Time.

1987 Fish Ladder Operating Schedule

Project Ladder:

1 Jan - 4 Jan	In-service.
5 Jan - 29 Jan	Out of service for annual inspection and maintenance.
30 Jan - 31 Dec	In-service.

1986 Fishway Activities

The Washington Department of Wildlife conducted the 1987 fish counting under contract with the Corps of Engineers. Fish were counted for one 8-hour shift from 0800-1600 hours Pacific Standard Time from 1 March through 31 March and from 1 November through 15 December. Two 8-hour counting shifts were conducted from 0400-2000 hours Pacific Standard Time from 1 April through 31 October.

The National Marine Fisheries Service operated the adult trap as part of the evaluation of the transportation program.

The National Marine Fisheries Service conducted guiding efficiency tests on the submersible traveling screens as part of the Corps' Juvenile Fish Passage Development and Evaluation Program.

The juvenile bypass system operated from 26 March to 24 July.

TABLE 1
FISH ESCAPEMENT AT MAIN STEM DAMS
COLUMBIA AND SNAKE RIVERS 1987

SPECIES	BONNEVILLE	THE DALLES	JOHN DAY	MCNARY	ICE HARBOR	LOWER MONUMENTAL	LOWER GRANITE	PRIEST RAPIDS	ROCKY REACH
1983									
CHINOOK*	244,346	156,190	139,866	121,636	20,259	19,082	16,200	31,021	9,019
Spring*	56,721	36,856	33,480	31,636	12,602	12,731	10,026	10,780	3,512
Summer*	23,458	17,051	14,834	16,199	4,922	3,917	4,662	9,573	3,112
Fall*	164,167	102,283	91,552	73,081	2,735	802	1,512	10,668	1,795
Jacks	58,236	41,335	43,440	29,902	1,978	1,632	2,253	3,787	1,744
STEELHEAD	218,439	171,055	154,425	125,254	88,475	80,562	86,234	31,114	19,698
SOCKEYE	100,545	84,204	91,917	40,903	216	118	122	90,008	26,079
COHO*	15,173	3,459	1,640	2,470	465	110	51	502	237
Adults	8,400	1,203	933	819	221	66	25	317	
Jacks	6,773	2,256	707	1,651	244	44	26	185	
SHAD	1,422,674	1,931,912	1,165,547	417,131	13,942	12,584	552	90,008	
1984									
CHINOOK*	324,425	203,920	188,373	159,071	17,757	17,866	16,517	42,729	14,604
Spring*	51,045	33,848	32,035	27,476	9,183	9,641	7,921	12,662	4,171
Summer*	28,507	22,472	22,795	21,196	6,307	7,016	7,219	17,372	6,999
Fall*	244,873	147,600	133,543	110,401	2,267	1,209	1,377	12,695	3,434
Jacks	107,998	70,798	69,874	56,390	2,596	3,006	3,961	6,576	3,147
STEELHEAD	315,560	219,123	201,154	135,515	94,030	88,655	98,923	26,017	17,228
SOCKEYE	152,541	101,171	107,951	56,906	105	63	49	114,761	73,290
COHO*	29,487	3,142	2,080	2,841	22	26	0	172	923
Adults	16,759	1,860	1,297	897	17	23	0	125	
Jacks	12,728	1,282	783	1,944	5	3	0	47	
SHAD	1,275,791	1,190,118	576,516	280,754	8,475	8,144	388	25,172	
1985									
CHINOOK*	463,873	370,982	337,624	288,483	47,981	42,437	36,567	62,161	20,815
Spring*	90,961	76,514	72,389	63,265	33,527	31,765	27,737	24,706	8,910
Summer*	29,870	25,385	23,489	22,029	5,290	4,845	6,639	17,324	6,781
Fall*	343,042	269,083	241,746	203,189	9,164	5,827	2,191	20,131	5,124
Jacks	167,444	145,007	149,281	120,963	10,574	8,642	5,605	11,065	3,986
STEELHEAD	343,987	276,025	247,093	188,204	128,481	109,718	118,463	34,502	22,718
SOCKEYE	166,340	117,254	124,941	98,457	24	68	35	118,542	54,077
COHO*	56,857	4,625	1,652	6,917	10	24	2	219	613
Adults	38,550	3,070	791	2,784	8	21	2	151	
Jacks	18,307	1,555	861	4,133	2	3	0	68	
SHAD	974,951	1,389,547	682,344	438,329	8,120	5,375	692	44,078	
1986									
CHINOOK*	570,881	443,013	346,700	342,417	52,615	50,584	43,023	68,703	15,340
Spring*	123,043	87,004	77,884	76,077	39,087	39,676	33,074	22,133	4,300
Summer*	31,041	24,826	22,051	25,798	7,745	6,007	7,364	17,074	6,326
Fall*	416,797	331,183	246,765	240,542	5,783	4,901	2,585	29,496	4,714
Jacks	200,152	176,461	133,827	132,936	4,455	5,118	4,363	11,738	2,444
STEELHEAD	379,891	281,953	238,010	193,481	144,292	120,479	134,519	22,401	15,157
SOCKEYE	58,123	48,477	46,327	46,443	20	26	15	43,084	32,912
COHO*	130,853	4,842	1,933	1,374	0	9	1	83	448
Adults	108,649	3,384	1,029	803	0	2	1	72	
Jacks	22,204	1,458	904	571	0	7	0	11	
SHAD	858,170	1,361,854	609,363	307,361	5,403	2,781	156	33,969	
1987									
CHINOOK*	547,494	421,190	327,752	286,638	47,477	42,434	37,677	73,214	19,230
Spring*	101,807	77,453	62,313	60,396	32,083	31,945	29,781	18,775	3,586
Summer*	37,707	30,804	22,244	25,353	6,982	5,941	6,551	14,573	8,238
Fall*	407,980	312,933	243,195	200,889	8,412	4,548	1,345	39,866	7,406
Jacks	78,884	65,115	53,794	50,722	2,807	2,393	2,000	5,540	1,804
STEELHEAD	303,081	217,768	170,554	148,811	74,491	62,586	70,151	14,011	7,178
SOCKEYE	116,993	87,599	75,529	72,190	13	16	29	76,578	41,115
COHO*	27,635	3,310	3,355	615	0	6	0	108	932
Adults	17,922	1,357	2,110	335	0	0	0	56	
Jacks	9,713	1,953	1,245	280	0	6	0	52	
SHAD	943,835	1,289,699	739,690	610,042	8,209	6,563	1,037	40,041	
ASSUMED DATES FOR CHINOOK RUNS (MAY VARY FOR PREVIOUS YEARS)									
SPRING	1 Mar - 31 May	1 Apr - 3 Jun	1 Apr - 5 Jun	1 Apr - 8 Jun	1 Apr - 11 Jun	1 Apr - 13 Jun	1 Mar - 17 Jun	16 Apr - 13 Jun	16 Apr - 23 Jun
SUMMER	1 Jun - 31 Jul	4 Jun - 3 Aug	6 Jun - 5 Aug	9 Jun - 8 Aug	12 Jun - 11 Aug	14 Jun - 13 Aug	18 Jun - 17 Aug	14 Jun - 13 Aug	24 Jun - 1 Sep
FALL	1 Aug - 30 Nov	4 Aug - 31 Oct	6 Aug - 31 Oct	9 Aug - 31 Oct	12 Aug - 31 Oct	14 Aug - 31 Oct	18 Aug - 15 Dec	14 Aug - 30 Nov	2 Sep - 15 Nov

* Includes jack counts. Fish classified as jacks are under 22 inches in length.

TABLE 2
STEELHEAD OVER COLUMBIA AND SNAKE DAMS - 1953-1987
BY RUN-YEAR (JUNE 1 - MAY 31)

Workers using this document to estimate the size of the upriver steelhead run have been hampered because of the calender year approach used in summary tables. A problem in accountability arises due to overwintering behavior of summer steelhead trout, especially Snake River stocks which often have sizable proportions of their runs remaining below mainstream projects during the winter months. Movement of these steelhead trout commences again in the following spring when warming reservoir temperatures trigger upstream movement. For this reason, an additional table has been prepared which summarizes steelhead trout counts at each project on a "fish-year" basis (June 1 to May 31). Because all stocks of summer steelhead cross Bonneville during the calender year, its summary counts for steelhead have not been modified.

RUN-YEAR	THE DALLES	JOHN DAY	MCNARY	ICE HARBOR	LOWER MONUMENTAL	LOWER GRANITE
1953 - 54			8,252*			
1954 - 55			72,913			
1955 - 56			84,434			
1956 - 57	3,531*		40,660			
1957 - 58	128,124		105,136			
1958 - 59	120,170		87,413			
1959 - 60	155,892		111,288			
1960 - 61	110,955		95,556			
1961 - 62	134,740		104,679	9,474*		
1962 - 63	163,125		163,333	108,186		
1963 - 64	118,899		113,676	76,788		
1964 - 65	110,509		99,872	58,025		
1965 - 66	142,376		120,469	62,566		
1966 - 67	144,267		144,461	64,987		
1967 - 68	122,231	6,598*	83,948	47,536		
1968 - 69	147,844	122,649	107,806	85,273	16,240*	
1969 - 70	111,617	81,623	74,933	58,172	63,269	
1970 - 71	99,319	81,238	68,598	54,445	58,430	
1971 - 72	151,329	117,402	110,450	66,196	68,704	
1972 - 73	135,730	149,704	95,837	63,584	66,650	
1973 - 74	100,924	93,951	62,158	37,245	38,288	
1974 - 75	71,336	40,868	26,191	12,170	14,851	2,789*
1975 - 76	57,695	33,640	25,150	15,895	17,236	16,592
1976 - 77	83,194	59,368	54,409	24,140	21,801	22,562
1977 - 78	133,096	102,193	86,962	54,911	48,160	57,029
1978 - 79	58,995	43,554	34,580	27,252	19,849	26,473
1979 - 80	86,317	59,825	54,213	26,790	20,073	28,758
1980 - 81	93,309	77,113	63,957	47,778	32,599	37,996
1981 - 82	112,265	96,663	62,955	43,274	37,755	42,420
1982 - 83	116,178	105,438	72,246	70,236	60,775	72,384
1983 - 84	172,033	157,602	126,706	90,030	82,555	88,760
1984 - 85	221,299	204,595	142,246	101,008	92,947	104,417
1985 - 86	274,826	245,087	181,635	123,187	104,400	116,147
1986 - 87	280,671	234,651	193,096	142,273	121,107	129,983
Totals	3,962,796	2,113,762	3,080,218	1,571,421	985,689	746,310
10-Year Average	154,899	132,672	101,860	72,674	62,022	70,437

* Because counting started at each dam early in the year after construction was completed, these figures are for the latter part of the run-year only. That part of the run-year starting after June 1 of the previous year passed the dam without being counted.

TABLE 3
YEARLY TOTALS OF SALMONID FISH COUNTED OVER BONNEVILLE DAM
1938-1987

YEAR	CHINOOK	STEELHEAD	SOCKEYE	COHO	CHUM	PINK	TOTAL SALMONID
1938	271,799	107,003	75,040	15,185	2,117		471,144
1939	286,189	122,032	73,382	14,383	1,168		497,154
1940	391,587	185,174	148,807	11,917	1,729		739,214
1941	461,443	118,089	65,741	17,911	5,269	4	668,457
1942	401,942	151,800	55,464	12,402	1,865	11	623,484
1943	313,123	92,133	39,845	2,547	788		448,436
1944	240,764	100,518	15,072	4,207	954	1	361,516
1945	297,478	120,133	9,501	790	728	1	428,631
1946	446,052	142,807	74,376	3,898	1,178	2	668,313
1947	480,377	135,444	171,139	11,174	199	3	798,336
1948	419,555	139,062	131,541	4,081	3,636	2	697,877
1949	277,697	119,285	51,444	1,004	2,028	6	451,464
1950	357,375	114,087	77,993	10,151	1,069	8	560,683
1951	331,788	140,689	169,428	5,201	1,044	7	648,157
1952	420,879	260,990	184,645	7,768	1,505	9	875,796
1953	332,479	223,914	235,215	13,018	1,728	10	806,364
1954	320,947	176,260	130,107	4,062	1,569	4	632,949
1955	359,853	198,411	237,748	3,725	318	9	800,064
1956	300,917	131,116	156,418	6,127	693	4	595,275
1957	403,286	139,183	82,915	4,675	569	12	630,640
1958	426,419	131,437	122,389	3,673	455	6	684,379
1959	345,028	129,026	86,560	2,695	906	22	564,237
1960	256,049	113,676	59,713	3,268	1,026		433,732
1961	281,980	139,719	17,111	3,456	896	12	443,174
1962	286,625	164,025	28,179	14,788	1,013	27	494,657
1963	278,560	129,418	60,319	12,658	739	34	481,728
1964	344,422	117,252	99,856	53,602	632	45	615,809
1965	317,957	166,453	55,125	76,032	496	64	616,127
1966	340,111	143,661	156,661	71,891	872	58	713,254
1967	366,237	121,872	144,158	96,488	352	50	729,157
1968	341,154	106,974	108,207	63,488	79	21	619,923
1969	507,543	140,782	59,636	49,378	143	86	757,568
1970	384,780	113,510	70,762	80,116	209	150	649,527
1971	405,702	193,966	87,447	75,989	29	176	763,309
1972	394,456	185,886	56,323	65,932	1	51	702,649
1973	398,635	157,823	58,979	54,609	43	12	670,101
1974	366,759	137,054	43,837	60,955	23	2	608,630
1975	425,566	85,540	58,212	58,307	11	309	627,945
1976	507,773	124,177	43,611	53,150	11	2	728,724
1977	366,657	193,437	99,829	19,408	17		679,348
1978	394,600	104,431	18,436	52,590	28		570,085
1979	276,306	113,979	52,628	45,328	1	23	488,265
1980	245,518	129,254	58,882	22,052	44		455,750
1981	285,650	159,270	56,037	30,510	4	20	531,491
1982	322,809	157,640	50,219	73,832	12		604,512
1983	244,346	218,439	100,545	15,173	50	52	578,605
1984	324.425	315,560	152,541	29,487	64	8	822,085
1985	463,873	343,987	166,340	56,857	97	147	1,031,301
1986	570,881	379,891	58,123	130,853	77	23	1,139,848
1987	547,494	303,081	116,993	27,635	147	20	995,370
TOTAL	18,133,845	7,939,350	4,533,479	1,558,426	38,631	1,513	32,205,244
10-Year Average	367,590	222,553	83,074	48,432	52	29	721,731

TABLE 4

MONTHLY TOTALS OF SALMONID AND SHAD COUNTED OVER BONNEVILLE DAM
1987

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
CHINOOK*	-	-	2,727	68,866	30,214	22,728	14,979	82,500	298,865	25,614	1,001	-	547,494
STEELHEAD	-	-	1,189	2,112	3,233	12,443	104,615	115,481	58,815	4,331	862	-	303,081
SOCKEYE	-	-	-	-	1	75,674	40,930	383	5	-	-	-	116,993
COHO*	-	-	-	-	-	-	464	2,364	21,002	3,556	249	-	27,635
CHUM	-	-	-	-	-	-	-	-	3	6	138	-	147
PINK	-	-	-	-	-	-	-	-	15	5	-	-	20
TOTAL SALMONID	-	-	3,916	70,978	33,448	110,845	160,988	200,728	378,705	33,512	2,250	-	995,370
SHAD	-	-	-	28	254,326	678,850	10,254	379	32	5	1	-	943,875

* Totals include Jacks

TABLE 5

DISCHARGE AND WATER QUALITY DATA
BONNEVILLE DAM - 1987

DATE	JANUARY			FEBRUARY		
	DISCHARGE	TURBIDITY	WATER TEMP.	DISCHARGE	TURBIDITY	WATER TEMP.
1	162.3	4.7	43.0	166.3	1.8	38.0
2	142.6	4.7	44.0	180.4	2.0	38.0
3	123.6	4.0	43.0	166.1	1.5	38.0
4	130.1	4.0	43.0	140.7	1.8	38.0
5	150.7	3.2	43.0	135.2	1.8	38.0
6	162.5	3.8	43.0	148.0	2.4	38.0
7	191.3	3.8	43.0	141.6	2.2	39.0
8	203.4	4.8	43.0	130.0	2.2	39.0
9	193.1	3.5	42.0	140.0	2.0	40.0
10	170.9	4.0	42.0	149.7	2.5	39.0
11	176.9	5.0	42.0	148.1	2.7	40.0
12	179.7	5.0	42.0	149.7	3.2	40.0
13	179.2	3.5	42.0	160.7	2.7	41.0
14	179.7	3.0	42.0	158.0	2.6	40.0
15	201.8	3.5	42.0	151.3	4.0	41.0
16	188.3	3.5	42.0	141.1	3.8	41.0
17	182.5	5.1	41.0	156.3	3.2	41.0
18	181.0	4.8	40.0	146.9	2.5	41.0
19	196.6	4.8	40.0	170.7	3.5	42.0
20	189.3	4.5	40.0	157.2	2.3	42.0
21	184.0	4.5	40.0	156.3	2.3	42.0
22	179.7	5.4	39.0	136.3	2.8	42.0
23	180.4	5.4	39.0	156.1	2.9	42.0
24	166.8	5.0	38.0	147.7	3.3	42.0
25	147.3	5.5	39.0	161.7	3.0	42.0
26	173.9	4.0	38.0	166.1	2.7	42.0
27	161.2	4.0	38.0	145.8	1.9	42.0
28	141.0	4.5	38.0	140.6	2.5	42.0
29	158.8	4.5	38.0			
30	149.4	4.8	38.0			
31	135.7	3.0	38.0			

TABLE 6

MONTHLY FISH PASSAGE SUMMARY REPORT
U.S. ARMY ENGINEER DISTRICT, PORTLAND

BONNEVILLE PROJECT
MAR 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SEECHI)	(DEG F)
*1	6							20		139.8	.0	2.5	42.0
*2								17		143.1	.0	3.0	42.0
*3	1							38		149.1	.0	2.8	42.0
*4	5							17		150.4	.0	2.8	42.0
5	13							43		150.1	.0	2.8	42.0
6	29							57		140.0	.0	3.8	43.0
7	13							53		128.3	.0	3.8	43.0
8	6							31		136.7	.0	4.2	42.0
9	33							40		153.8	.0	4.2	42.0
10	13							6		154.7	.0	4.2	42.0
11	21							40		161.0	.0	4.2	42.0
12	28							54		144.3	.0	4.0	42.0
13	16			1				47		149.1	.0	4.2	42.0
14	20							51		151.1	.0	3.8	43.0
15	40							40		179.8	.0	3.0	43.0
16	14							36		172.6	.0	2.4	44.0
17	34							62		164.6	.0	2.8	44.0
18	73							54		168.6	.0	3.0	44.0
19	45							46		209.4	.0	1.5	45.0
20	32							22		136.0	.0	1.5	45.0
21	120							14		131.5	.0	1.7	45.0
22	84							25		129.8	.0	2.0	45.0
23	150							13		128.9	.0	2.2	46.0
24	194							50		129.0	.0	2.5	46.0
25	208							48		127.3	.0	2.0	47.0
26	101							21		127.6	.0	2.7	46.0
27	144							73		166.4	.0	3.0	47.0
28	113							55		149.4	.0	3.0	46.0
29	330							39		146.4	.0	2.8	47.0
30	423			2				49		143.4	.0	2.8	47.0
31	411			4				28		135.7	.0	2.8	47.0
TOTAL	2,720			7				1,189					

*No fish passage at the Bradford Island ladder because the ladder exit was closed during blasting for the navigation lock construction.

TABLE 6

TABLE 7

MONTHLY FISH PASSAGE SUMMARY REPORT
U.S. ARMY ENGINEER DISTRICT, PORTLAND

BONNEVILLE PROJECT
APR 1987

FISH COUNTS

RIVER CONDITIONS

DATE	CHINOOK ADULTS SPRING	CHINOOK ADULTS SUMMER	CHINOOK ADULTS FALL	CHINOOK JACKS	COHO ADULTS	COHO JACKS	SOCKEYE	STEELHEAD	SHAD	DISCHARGE (KCFS)	SPILL (KCFS)	TURBIDITY (SEECHI)	WATER TEMP (DEG F)
1	1128			11				67		135.1	.0	2.0	55.0
2	1030			2				54		129.9	.0	2.8	48.0
3	842							79		130.0	.0	2.8	48.0
4	1094			4				72		125.1	.0	2.8	48.0
5	1198			2				73		140.6	.0	3.9	48.0
6	2008			9				66		142.8	.0	3.9	49.0
7	1387			12				76		141.4	.0	3.5	49.0
8	1158			25				61		155.0	.0	2.3	49.0
9	860			13				90		171.8	.0	2.3	49.0
10	1199			14				67		162.4	.0	2.3	50.0
11	2129			8				57		138.4	.0	3.4	50.0
12	2321			33				79		146.3	.0	3.5	50.0
13	2190			18				56		173.4	.0	3.8	49.0
14	2315			31				75		176.3	.0	3.2	50.0
15	3214			39				65		156.5	.0	3.4	50.0
16	4013			33				75		147.5	.0	3.2	51.0
17	3079			28				59		150.6	.0	3.0	52.0
18	3310			46				52		150.8	.0	2.8	51.0
19	2688			37				55		149.6	.0	3.0	51.0
20	2648			44				53		150.7	.0	3.2	51.0
21	1961			31				63		150.8	.0	2.8	51.0
22	2802			51				62		148.0	.0	3.0	52.0
23	3035			66				67		148.2	.0	3.0	53.0
24	2637			62				93		154.5	.0	2.8	53.0
25	2091			63				77		148.9	.0	3.0	53.0
26	2984			63				76		144.6	.0	2.5	53.0
27	3562			80				74	2	131.6	.0	3.2	53.0
28	3529			152				110	11	141.0	.4	2.8	53.0
29	2612			165				92	4	173.7	30.2	2.0	54.0
30	2572			128				67	11	236.9	72.3	2.0	55.0
TOTALS	67,596			1,270				2,112	28				

TABLE 8

MONTHLY FISH PASSAGE SUMMARY REPORT
U.S. ARMY ENGINEER DISTRICT, PORTLAND

BONNEVILLE PROJECT
MAY 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SEECHI)	(DEG F)
1	1797			93				75	2	261.1	86.8	2.0	55.0
2	1641			90				50	4	241.6	79.1	2.0	56.0
3	1828			109				54	5	246.6	80.6	2.8	54.0
4	2107			106				68	5	255.2	83.9	2.6	55.0
5	1922			101				77	21	224.9	71.5	2.7	56.0
6	1798			139				76	80	260.1	89.8	2.7	56.0
7	1387			105				88	97	266.6	88.3	2.7	57.0
8	1376			116				91	146	266.6	88.0	2.7	58.0
9	1372			138				139	403	259.8	91.6	2.7	58.0
10	1315			112				130	491	277.5	89.9	2.5	59.0
11	1142			100				101	260	263.2	80.7	2.8	59.0
12	821			68				138	279	251.9	84.2	2.8	59.0
13	592			75				93	507	272.6	89.4	2.8	59.0
14	602			53				72	965	275.6	93.8	2.8	59.0
15	608			40				113	1097	266.4	90.1	2.8	59.0
16	493			34				111	1724	266.1	83.5	2.9	59.0
17	518			58				108	2461	267.1	86.6	2.8	59.0
18	428			41				96	1357	270.5	90.3	2.6	59.0
19	465			48				122	2468	244.0	81.9	2.5	58.0
20	578			44				124	639	232.2	78.6	2.6	58.0
21	626			43				120	2993	203.6	56.2	2.8	58.0
22	482			33				140	10882	186.4	41.0	3.1	59.0
23	580			26				116	31678	179.4	25.2	3.1	59.0
24	549			43				129	36556	172.7	24.7	3.2	59.0
25	528			22				117	21822	200.4	50.6	2.8	59.0
26	476			17				109	10334	195.8	45.8	2.7	59.0
27	352			13				86	9840	190.1	37.5	3.0	58.0
28	363			7				90	7174	204.5	47.3	2.8	58.0
29	502			24				116	21683	213.1	48.8	2.5	58.0
30	364			31			1	126	28206	218.3	53.2	2.0	60.0
31	645			28				158	60147	175.7	18.3	2.8	59.0
TOTALS	28,257			1,957			1	3,233	254,326				

TABLE 9

MONTHLY FISH PASSAGE SUMMARY REPORT
U.S. ARMY ENGINEER DISTRICT, PORTLAND

BONNEVILLE PROJECT
JUN 1987

FISH COUNTS

RIVER CONDITIONS

DATE	CHINOOK ADULTS SPRING	CHINOOK ADULTS SUMMER	CHINOOK ADULTS FALL	CHINOOK JACKS	COHO ADULTS	COHO JACKS	SOCKEYE	STEELHEAD	SHAD	DISCHARGE (KCFS)	SPILL (KCFS)	TURBIDITY (SEECHI)	WATER TEMP (DEG F)
1		706		27			2	134	30129	193.7	35.3	3.0	59.0
2		399		16			6	167	14732	184.7	28.7	3.2	58.0
3		333		20			8	121	11809	209.4	56.3	3.0	59.0
4		436		37			9	151	23088	175.7	38.7	3.2	59.0
5		583		24			23	144	39127	183.5	47.1	2.5	60.0
6		774		40			62	170	30221	205.8	67.5	2.4	60.0
7		810		34			103	215	58513	197.7	58.6	2.6	61.0
8		855		40			139	221	42626	201.4	61.8	2.5	61.0
9		894		37			222	266	18905	181.1	44.1	2.7	61.0
10		769		59			345	220	30823	200.4	56.6	2.8	61.0
11		709		47			674	264	75220	189.7	37.9	3.0	61.0
12		809		42			922	364	77594	138.7	4.1	3.5	62.0
13		676		54			1607	338	37854	121.4	.0	3.5	62.0
14		823		72			2098	462	50659	122.9	.0	3.8	62.0
15		890		59			2128	506	26470	121.7	.0	3.0	64.0
16		854		61			2036	433	12453	120.3	.0	3.0	64.0
17		785		49			2772	432	13001	131.1	.0	4.0	62.0
18		696		44			2662	345	13244	141.2	.0	4.0	63.0
19		697		64			3774	349	12756	142.7	.0	4.0	63.0
20		697		87			4981	489	15581	145.1	.0	4.0	64.0
21		906		132			7136	627	10928	135.7	.0	3.5	64.0
22		829		114			6343	694	9164	123.5	.0	4.4	64.0
23		576		103			4608	566	5687	118.7	.0	4.8	64.0
24		436		60			2263	498	3490	121.5	.0	5.0	64.0
25		419		53			1294	270	2699	131.3	.0	5.0	65.0
26		634		80			1926	571	3007	120.7	.0	5.5	65.0
27		637		76			3558	503	2520	117.0	.0	5.5	66.0
28		756		230			8661	908	2243	105.1	.0	5.5	66.0
29		675		191			9665	1029	2489	114.9	.0	5.8	67.0
30		573		140			5647	986	1818	128.1	.0	5.5	68.0
TOTALS		20,636		2,092			75,674	12,443	678,850				

TABLE 10

TABLE 10

MONTHLY FISH PASSAGE SUMMARY REPORT — BONNEVILLE PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — JUL 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1		496		110			4738	770	1426	131.6	.0	5.3	69.0
2		512		64			2513	868	1335	130.8	.0	4.8	69.0
3		410		123			3139	1003	1173	112.1	.0	4.0	68.0
4		474		69			3837	1415	931	99.6	.0	4.5	68.0
5		428		71			4780	1328	437	97.6	.0	4.0	67.0
6		378		68			2880	1222	296	98.1	.0	5.0	66.0
7		459		84			2741	1623	396	98.9	.0	5.0	66.0
8		420		128			1956	2002	469	106.8	.0	5.0	66.0
9		632		146			2391	2241	335	130.8	.0	4.2	66.0
10		351		85			1576	2170	361	132.7	.0	5.4	66.0
11		314		69		1	1403	2588	586	124.1	.0	5.3	67.0
12		323		108	1	1	1390	2094	370	107.4	.0	5.0	68.0
13		423		100	10		1479	2676	299	119.2	.0	4.8	69.0
14		476		65	132	96	847	3217	227	126.7	.0	4.8	69.0
15		384		85	5		759	3406	146	121.1	.0	4.8	69.0
16		449		96	9	17	754	4415	121	121.2	.0	4.8	69.0
17		292		86	6	4	561	2980	167	110.6	.0	3.8	69.0
18		324		89	10	5	492	3777	363	98.6	.0	3.8	69.0
19		221		66	18	7	263	2522	91	95.8	.0	4.0	69.0
20		250		67	9	3	401	2624	83	106.5	.0	4.0	69.0
21		394		98	4	1	617	4262	92	128.0	.0	5.0	68.0
22		499		83	4	3	441	5760	87	115.9	.0	5.0	69.0
23		430		99	4	5	292	6109	76	113.0	.0	4.5	69.0
24		331		68	1		149	5865	60	116.4	.0	4.5	69.0
25		237		51	4		118	6687	90	105.7	.0	4.8	69.0
26		249		35	2	2	101	4849	46	93.3	.0	4.8	69.0
27		345		50	7	7	97	4434	47	101.3	.0	4.7	69.0
28		291		52	3	5	53	5139	36	115.3	.0	4.7	69.0
29		348		47	10	16	53	4444	32	122.6	.0	4.4	69.0
30		556		84	2	11	50	4752	46	108.5	.0	4.5	69.0
31		702		116	24	15	59	7373	30	119.7	.0	5.0	69.0
TOTALS		12397		2582	265	199	40930	104615	10254				

TABLE 11

MONTHLY FISH PASSAGE SUMMARY REPORT — BONNEVILLE PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — AUG 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1			467	105	7	10	54	7065	57	112.0	.0	5.2	69.0
2			473	96	6	11	55	6031	27	104.5	.0	5.2	69.0
3			612	116	3	7	32	6779	16	105.4	.0	5.5	69.0
4			634	91	5	9	30	5465	22	106.1	.0	5.5	69.0
5			559	78		5	17	6920	22	100.6	.0	5.2	70.0
6			767	101	1	6	25	6029	19	120.6	.0	4.7	70.0
7			282	69	2	2	8	3079	19	131.2	.0	4.7	69.0
8			474	84	2	3	17	3511	24	116.4	.0	5.5	70.0
9			835	80	12	9	23	3954	14	100.7	.0	4.5	70.0
10			923	92	8	7	10	3339	11	95.4	.0	4.5	70.0
11			936	127	9	12	16	3233	16	122.4	.0	5.0	70.0
12			993	112	11	8	10	3692	11	125.5	.0	5.0	70.0
13			1109	111	14	5	15	3853	9	105.3	.0	5.0	70.0
14			1238	191	2	4	3	2946	7	97.6	.0	5.0	69.0
15			699	111	2	7	8	2396	12	101.5	.0	5.2	68.0
16			817	125	1	5	3	2156	9	94.7	.0	5.5	68.0
17			1619	189	15	8	2	2394	7	91.4	.0	6.0	68.0
18			1944	222	32	19	7	2852	3	107.2	.0	6.0	68.0
19			2518	272	48	45	2	3476	10	103.3	.0	5.0	69.0
20			2656	323	31	30	3	3501	6	100.8	.0	5.0	69.0
21			2575	313	57	42	4	3756	8	113.1	.0	4.5	69.0
22			2765	344	81	54	4	3939	11	117.0	.0	4.5	69.0
23			2342	394	65	52	1	3412	8	99.7	.0	5.0	68.0
24			3160	489	94	50	5	3826	1	100.3	.0	5.0	69.0
25			2533	491	63	33	1	2745	9	98.6	.0	5.8	69.0
26			5142	716	63	31	14	3052	8	105.1	.0	6.0	69.0
27			6833	1045	147	93	8	3132	2	112.4	.0	6.3	70.0
28			6416	970	162	64	3	2934	2	121.1	.0	6.0	70.0
29			5870	902	146	63	2	2165	5	108.5	.0	6.0	71.0
30			6644	849	158	69	1	1909	4	105.2	9.2	6.3	71.0
31			7339	1118	243	111		1920		111.3	.0	6.1	71.0
TOTALS			72174	10326	1490	874	383	115481	379				

TABLE 12

MONTHLY FISH PASSAGE SUMMARY REPORT — BONNEVILLE PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — SEP 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SEECHI)	(DEG F)
1			5274	1226	205	130	1	1820	3	111.3	.0	6.2	71.0
2			5157	1237	214	106	2	2140	-1	95.7	.0	6.2	72.0
3			3721	1093	170	95		1515	2	94.8	.0	6.2	72.0
4			1270	720	57	77	-1	913	-1	116.7	.0	6.0	72.0
5			1195	422	72	66		587	2	84.9	.0	6.2	72.0
6			4105	622	89	65	2	997	2	83.6	.0	6.8	72.0
7			8454	1419	219	123	1	1893	8	85.3	.0	7.1	72.0
8			7761	1633	342	257		2484	5	101.9	.0	7.0	71.0
9			6001	1665	367	291		2658	-1	114.4	.0	6.7	71.0
10			6426	1457	353	218		2574		115.2	.0	6.8	71.0
11			15728	1528	379	174		3010	2	113.0	.0	6.8	72.0
12			39376	2536	874	199		4363		120.4	.0	6.0	71.0
13			31383	3466	1576	403		4644		122.7	.0	5.0	70.0
14			22169	2959	1405	343		4066	-1	128.5	.0	6.0	70.0
15			20496	2234	941	320		3164	1	117.6	.0	6.0	70.0
16			16125	2188	909	309		2671	1	127.5	.0	5.5	70.0
17			16176	3031	1314	373		4200	1	121.7	.0	6.2	69.0
18			9530	3552	1424	436		4098	4	106.1	.0	6.2	68.0
19			5519	2842	1366	395		2961	1	100.3	.0	6.4	68.0
20			3502	1998	656	251		1839		96.0	.0	6.5	68.0
21			2477	1470	343	218		995		95.5	.0	6.5	69.0
22			3040	1989	326	234		1127	1	103.5	.0	6.9	69.0
23			3144	2015	244	265		1016	1	122.7	.0	5.2	69.0
24			2564	1595	227	237		772	1	125.6	.0	5.2	69.0
25			1609	1184	156	201		559		107.5	.0	5.0	69.0
26			985	880	134	139		424		101.0	.0	5.7	68.0
27			803	898	79	117		344		97.3	.0	5.5	68.0
28			1254	853	64	110		302		107.9	.0	5.5	67.0
29			1591	1033	82	79		342		120.6	.0	5.2	67.0
30			1387	878	83	101		337	1	127.1	.0	5.5	66.0
TOTALS			248222	50643	14670	6332	5	58815	32				

TABLE 13

MONTHLY FISH PASSAGE SUMMARY REPORT — BONNEVILLE PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — OCT 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1			1322	663	64	114		355	1	137.7	.0	5.6	66.0
2			1390	823	76	164		378		114.3	.0	5.5	67.0
3			886	706	97	173		331	1	103.7	.0	5.5	66.0
4			769	629	70	116		258	1	92.9	.0	6.0	66.0
5			714	718	67	110		287		114.6	.0	5.9	66.0
6			724	539	44	128		216	-1	140.0	.0	6.0	67.0
7			482	380	36	128		179		126.6	.0	5.7	65.0
8			510	304	53	88		142		126.2	.0	5.9	65.0
9			546	341	51	95		133		132.8	.0	5.5	65.0
10			386	296	38	64		94		106.1	.0	4.8	64.0
11			519	243	30	86		122	2	97.0	.0	5.2	64.0
12			503	261	45	113		193		106.4	.0	5.8	64.0
13			763	324	32	110		131		135.0	.0	6.0	63.0
14			799	327	45	80		130		161.3	.0	5.8	63.0
15			754	294	53	63		140		165.6	.0	5.5	63.0
16			651	238	54	48		138		150.1	.0	5.0	63.0
17			521	242	26	35		101		121.3	.0	5.0	62.0
18			368	185	41	32		91		101.6	.0	5.0	62.0
19			492	202	34	24		75		127.4	.0	5.5	62.0
20			539	218	53	60		86		146.1	.0	5.0	61.0
21			305	182	40	59		85		144.0	.0	4.5	61.0
22			298	217	58	49		71		127.0	.0	5.0	61.0
23			199	136	31	48		84		130.4	.0	5.0	60.0
24			295	162	36	46		73		108.9	.0	4.0	60.0
25			253	137	21	33		81		100.5	.0	5.5	60.0
26			254	109	23	31		86		124.2	.0	5.0	60.0
27			225	131	30	28		71	1	130.6	.0	5.0	60.0
28			170	109	33	18		51		129.5	.0	5.0	59.0
29			113	95	28	23		69		120.7	.0	5.0	59.0
30			161	110	25	9		38		128.4	.0	5.5	59.0
31			94	88	17	10		41		110.8	.0	5.5	59.0
TOTALS			16005	9609	1371	2185		4331	5				

TABLE 14

MONTHLY FISH PASSAGE SUMMARY REPORT — BONNEVILLE PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — NOV 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1			91	55	8	4		38		97.3	.0	4.0	59.0
2			81	55	6	4		30		95.2	.0	4.0	59.0
3			74	34	11	11		38		107.3	.0	5.0	59.0
4			46	35	10	11		50		121.9	.0	5.0	58.0
5			56	32	17	12		44		109.5	.0	5.0	58.0
6			22	17	5	12		31		119.8	.0	5.2	57.0
7			38	11	5	2		33		105.9	.0	5.7	57.0
8			14	5	3	2		31		89.4	.0	5.2	57.0
9			21	22	2	1		16		105.4	.0	5.6	57.0
10			11	18	1	2		24	1	93.2	.0	5.5	56.0
11			18	14	4	2		16		94.9	.0	5.7	56.0
12			25	21	1	6		20		129.0	.0	5.6	56.0
13			14	15	3	6		12		119.1	.0	5.6	57.0
14			25	25	12	7		71		117.5	.0	5.6	57.0
15			-1	4	7	3		35		120.3	.0	5.0	57.0
16			11	4	7			38		99.4	.0	5.0	56.0
17			8	4	1	8		40		137.5	.0	4.7	56.0
18			4	3	7	10		39		125.9	.0	4.5	56.0
19			7	2		5		26		130.4	.0	4.5	56.0
20			5		2	11		24		118.0	.0	4.5	54.0
21			3	5	2			28		110.4	.0	4.5	53.0
22			5	6	2	1		19		120.3	.0	5.0	53.0
23			6	2	1			12		120.8	.0	5.5	53.0
24			1	-1				29		112.0	.0	4.0	53.0
25			9	2	4	1		42		133.8	.0	4.0	53.0
26			4	6	1			15		139.6	.0	5.0	52.0
27			3	1	4	2		21		129.1	.0	4.5	51.0
28				1				8		112.6	.0	4.5	51.0
29			1					17		100.3	.0	4.5	51.0
30			1					15		108.3	.0	4.5	50.0
TOTALS			603	398	126	123		862	1				

TABLE 15

WATER TEMPERATURE AND STREAM FLOW DATA
BONNEVILLE - 1987

DECEMBER			
DATE	DISCHARGE	TURBIDITY	WATER TEMP.
1	161.8	4.0	49.0
2	135.8	4.0	49.0
3	139.7	4.0	49.0
4	152.4	5.0	49.0
5	123.7	5.0	49.0
6	113.8	5.0	49.0
7	146.8	5.0	49.0
8	149.9	4.2	49.0
9	161.3	4.0	49.0
10	194.4	1.8	49.0
11	166.3	1.8	48.0
12	146.9	2.0	48.0
13	139.2	2.2	48.0
14	178.4	2.0	48.0
15	161.6	3.6	48.0
16	165.3	3.6	47.0
17	177.5	3.5	47.0
18	179.2	4.0	47.0
19	151.3	4.0	47.0
20	128.6	5.0	47.0
21	148.5	5.5	47.0
22	164.2	5.0	46.0
23	153.0	5.0	46.0
24	144.2	5.3	46.0
25	140.1	5.0	45.0
26	136.0	5.0	44.0
27	121.6	5.0	43.0
28	149.3	5.5	43.0
29	143.0	3.5	41.0
30	158.1	5.0	41.0
31	159.6	5.0	41.0

TABLE 16

MONTHLY COUNT OF CHINOOK SALMON
BONNEVILLE DAM - 1938-1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	SPRING *MAR 1 MAY 31	SUMMER JUN 1- JUL 31	FALL AUG 1- NOV 30*
1938					22,371	8,221	6,556	34,765	197,294	2,302	263	27	271,799	22,371	14,777	234,651
1939	6	12	121	51,410	25,159	5,602	17,828	32,909	150,851	2,197	78	16	286,189	76,708	23,430	186,051
1940			504	37,253	28,621	7,027	14,938	58,643	240,515	3,765	287	34	391,587	66,378	21,965	303,244
1941	4		1,360	51,486	19,445	7,013	9,395	12,590	351,967	7,179	866	138	461,443	72,295	16,408	372,740
1942	1	15	34	9,506	30,915	11,816	12,821	27,581	303,939	4,485	639	190	401,942	40,471	24,637	336,834
1943	11	6	43	12,172	53,268	5,440	8,044	28,985	201,414	3,354	365	21	313,123	65,500	13,484	234,139
1944	1	2	65	15,671	15,127	4,363	8,241	55,468	139,254	2,388	164	20	240,764	30,866	12,604	197,294
1945	6	4	81	17,148	26,276	11,293	16,317	32,254	189,675	4,281	137	6	297,478	43,515	27,610	226,353
1946	1	2	25	14,196	53,313	30,253	20,967	45,422	277,152	4,523	173	25	446,052	67,537	51,220	327,295
1947		2	141	83,520	49,899	25,502	13,358	43,062	260,385	3,945	526	37	480,377	133,562	38,860	307,955
1948	10		251	21,205	20,262	44,137	23,100	35,934	270,238	3,928	467	23	419,555	41,728	67,237	310,590
1949			5	5,765	44,304	24,232	22,500	41,500	137,599	1,571	215	6	277,697	50,074	46,732	180,891
1950			21	6,630	50,638	16,667	32,937	40,462	205,521	4,356	143		357,375	57,289	49,604	250,482
1951			32	28,801	86,055	54,889	24,394	33,785	97,131	6,489	212		331,788	114,888	79,283	137,617
1952			255	8,130	107,807	62,491	21,800	82,290	135,053	2,576	477		420,879	116,192	84,291	220,396
1953			1,254	126,450	42,583	27,228	30,593	27,398	75,145	1,495	333		332,479	170,287	57,821	104,371
1954		2	657	82,877	51,230	46,801	32,596	24,969	80,426	1,189	200		320,947	134,766	79,397	106,784
1955			1,391	84,436	85,769	45,502	37,437	32,833	70,558	1,803	124		359,853	171,596	82,939	105,318
1956			161	8,850	54,438	64,262	36,938	42,203	92,030	1,854	179	2	300,917	63,449	101,200	136,268
1957			328	90,984	45,128	104,243	30,790	34,829	95,457	1,352	175		403,286	136,440	135,033	131,813
1958			468	15,361	59,377	74,375	27,524	19,735	227,504	1,948	127		426,419	75,206	101,899	249,314
1959			182	26,944	34,007	39,581	49,371	24,945	168,187	1,643	168		345,028	61,133	88,952	194,943
1960			184	37,064	32,349	65,247	19,923	22,719	76,327	2,012	224		256,049	69,597	85,170	101,282
1961			476	72,526	25,693	41,302	25,159	22,675	90,688	3,108	353		281,980	98,695	66,461	116,824
1962			1,278	56,201	33,637	52,392	25,093	23,526	91,320	2,759	419		286,625	91,116	77,485	118,024
1963			2,802	43,859	28,810	36,836	27,178	28,586	104,415	5,571	503		278,560	75,471	64,014	139,075
1964			2,418	69,031	19,979	35,814	44,717	26,546	141,525	4,157	235		344,422	91,428	80,531	172,463
1965			1,238	47,083	35,945	38,482	37,515	38,727	112,664	6,074	229		317,957	84,266	75,997	157,694
1966			2,168	92,637	17,864	40,233	31,764	20,608	128,421	6,052	364		340,111	112,669	71,997	155,445
1967			1,620	71,957	11,358	41,847	53,812	25,760	154,323	5,405	155		366,237	84,935	95,659	185,643

TABLE 16 (Continued)

MONTHLY COUNT OF CHINOOK SALMON
BONNEVILLE DAM - 1938-1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	SPRING *MAR 1 MAY 31	SUMMER JUN 1- JUL 31	FALL AUG 1- NOV 30*
1968			1,342	69,420	28,425	46,793	36,126	27,779	126,994	4,010	265		341,154	99,187	82,919	159,048
1969			1,910	65,371	106,281	59,177	42,976	38,456	187,502	5,511	359		507,543	173,562	102,153	231,828
1970			2,020	78,605	30,351	35,091	29,811	44,559	159,710	4,364	269		384,780	110,976	64,902	208,902
1971			683	60,849	63,985	37,757	40,154	26,749	166,346	8,820	359		405,702	125,517	77,911	202,274
1972			426	154,443	31,271	36,758	34,072	23,577	109,820	3,939	150		394,456	186,140	70,830	137,486
1973			1,585	128,495	12,068	24,164	21,196	31,513	170,895	8,457	262		398,635	142,148	45,360	211,127
1974			434	57,516	76,585	13,424	32,472	15,554	156,543	13,923	308		366,759	134,535	45,896	186,328
1975			162	48,295	55,647	16,989	27,362	37,907	234,145	4,847	212		425,566	104,104	44,351	277,111
1976			587	58,978	53,883	39,130	29,883	48,776	262,615	13,395	526		507,773	113,448	69,013	325,312
1977			3,569	98,710	17,229	21,790	19,233	21,992	171,303	11,805	1,026		366,657	119,508	41,023	206,126
1978			4,291	100,712	44,860	27,125	17,198	23,513	165,411	11,104	386		394,600	149,863	44,323	200,414
1979			790	29,751	20,921	15,924	18,293	41,273	142,241	6,865	248		276,306	51,462	34,217	190,627
1980			535	30,732	29,720	15,384	15,681	26,106	118,669	8,404	287		245,518	60,987	31,065	153,466
1981			1,853	41,917	21,239	13,262	13,667	32,519	154,696	6,288	209		285,650	65,009	26,929	193,712
1982			312	30,282	45,450	15,439	11,175	34,058	174,348	11,487	258		322,809	76,044	26,614	220,151
1983			144	25,423	31,154	12,793	10,665	26,147	116,879	20,458	683		244,346	56,721	23,458	164,167
1984			351	27,185	23,509	13,060	15,447	41,909	180,867	21,673	424		324,425	51,045	28,507	244,873
1985			2,036	52,145	36,780	16,763	13,107	64,899	255,020	22,099	1,024		463,873	90,961	29,870	343,042
1986			2,292	82,356	38,395	18,365	12,676	38,737	337,721	39,511	828		570,881	123,043	31,041	416,797
1987			2,727	68,866	30,214	22,728	14,979	82,500	298,865	25,614	1,001		547,494	101,807	37,707	407,980
TOTAL	40	45	47,612	2,599,204	2,009,594	1,575,007	1,219,779	1,750,232	8,557,568	356,335	17,884	545	18,133,845	4,656,495	2,794,786	10,682,564
10-YEAR AVERAGE			1,533	48,937	32,224	17,084	14,289	41,166	194,472	17,350	535		367,590	82,694	31,373	263,523

* Assumed dates for chinook run may vary for preceeding years depending on the beginning and ending dates of fish counting.

TABLE 17

MONTHLY COUNT OF SOCKEYE SALMON
BONNEVILLE DAM - 1938-1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1938					1,025	17,811	53,864	2,097	235	6	2		75,040
1939				48	189	29,386	43,124	616	19				73,382
1940					206	59,639	85,885	3,063	13	1			148,807
1941				299	1,052	23,536	39,193	1,615	46				65,741
1942					13	12,624	41,301	1,477	49				55,464
1943					9	4,525	33,613	1,697	1				39,845
1944			1		16	3,099	11,171	659	126				15,072
1945			10	51	521	1,507	6,903	498	10	1			9,501
1946				9	67	7,815	64,715	1,747	21	2			74,376
1947					5	59,378	108,175	3,564	15	1		1	171,139
1948						12,023	117,652	1,849	13	4			131,541
1949					151	9,013	41,619	655	6				51,444
1950						341	75,784	1,826	42				77,993
1951					25	81,045	87,104	1,214	40				169,428
1952			7	1	3	136,939	47,188	467	30	2	8		184,645
1953			57	27	663	45,711	186,933	1,774	50				235,215
1954			1		13	52,359	76,505	1,212	17				130,107
1955					79	21,923	214,860	866	11	9			237,748
1956					10	29,649	125,185	1,564	7	3			156,418
1957					21	38,616	43,938	323	14	3			82,915
1958					25	38,736	82,719	878	23	8			122,389
1959				2	153	10,155	75,325	906	14	5			86,560
1960					4	41,758	17,615	321	15				59,713
1961				3	22	7,960	9,059	56	9	2			17,111
1962				1	21	9,713	18,310	82	47	5			28,179
1963					492	25,010	34,275	216	304	17	5		60,319
1964				3	570	32,079	66,857	213	110	10	14		99,856
1965					457	21,860	31,776	744	285	3			55,125
1966				10	338	57,509	97,845	800	155	4			156,661
1967				18	38	36,091	107,558	344	106	3			144,158

TABLE 17 (Continued)

MONTHLY COUNT OF SOCKEYE SALMON
BONNEVILLE DAM - 1938 - 1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1968				54	372	74,226	33,245	199	101	9	1		108,207
1969				5	165	24,238	34,970	120	124	13	1		59,636
1970				5	269	22,977	46,062	1,147	290	12			70,762
1971					70	14,789	72,203	313	69	2	1		87,447
1972					614	16,505	37,939	1,254	9	2			56,323
1973					17	29,314	29,308	337	3				58,979
1974					14	8,073	35,407	340	3				43,837
1975					2	17,961	40,050	192	7				58,212
1976					94	22,532	20,661	297	26	1			43,611
1977				1	38	74,551	25,178	61					99,829
1978				1	2	12,442	5,884	101	6				18,436
1979					1	25,474	26,297	826	30				52,628
1980						22,949	35,764	164	4	1			58,882
1981					1	36,931	19,001	100	4				56,037
1982					12	20,731	29,207	264	4	1			50,219
1983						52,134	48,004	400	5	2			100,545
1984					6	106,892	45,141	494	7	1			152,541
1985				3	13	112,054	53,842	422	4	2			166,340
1986					2	27,303	30,279	475	63	1			58,123
1987					1	75,674	40,930	383	5				116,993
TOTAL			76	541	7,881	1,725,560	2,775,423	41,232	2,597	136	32	1	4,533,479
10-Year Average					4	49,258	33,435	363	13	1			83,074

TABLE 17 (Continued)

TABLE 18

MONTHLY COUNT OF COHO SALMON
BONNEVILLE DAM - 1938-1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL (INCL. JACKS)	JACKS
1938								3,070	10,995	972	141	7	15,185	
1939	3							1,811	12,226	310	15	18	14,383	
1940	3							1,451	10,212	213	33	5	11,917	
1941	2							1,317	16,061	369	160	2	17,911	
1942								1,193	11,062	147			12,402	
1943								762	1,676	89	20		2,547	
1944								1,052	3,021	103	29	2	4,207	
1945							2	239	533	15		1	790	
1946		10	4				22	228	3,609	1		24	3,898	
1947	12	2	1					217	10,928	10	3	1	11,174	
1948	1						11	158	3,893	10	3	5	4,081	
1949							17	270	703	5	8	1	1,004	
1950								1,570	8,545	36			10,151	
1951								197	4,773	225	6		5,201	
1952							10	2,581	5,131	22	24		7,768	
1953							1	7,094	5,890	22	11		13,018	
1954								668	3,319	74	1		4,062	
1955								443	3,188	94			3,725	
1956							7	1,158	4,879	83			6,127	
1957								1,564	3,046	63	2		4,675	
1958								341	3,220	99	13		3,673	
1959								122	2,551	22			2,695	
1960								538	2,502	224	4		3,268	
1961								277	2,867	306	6		3,456	
1962							1	1,116	13,091	543	37		14,788	
1963							4	1,071	8,664	2,724	195		12,658	
1964							23	3,776	46,535	3,069	199		53,602	
1965						2	21	5,911	61,335	8,566	197		76,032	
1966						46	874	4,921	59,457	6,361	232		71,891	34,919*
1967						33	715	3,814	87,254	4,560	112		96,488	47,893

* In 1966 Jacks were classified as those Cohos under 12 inches in length. Beginning with 1967 Jacks were classified as under 22 inches.

TABLE 18 (Continued)

MONTHLY COUNT OF COHO SALMON
BONNEVILLE DAM - 1938-1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL (INCL. JACKS)	JACKS
1968						48	124	10,450	50,900	1,868	98		63,488	20,435
1969						38	443	4,671	41,176	2,998	52		49,378	25,216
1970						2	128	6,604	70,631	2,631	120		80,116	25,248
1971							57	7,292	58,235	9,753	652		75,989	22,172
1972							66	9,481	52,456	3,792	137		65,932	31,716
1973							636	12,656	33,736	6,715	866		54,609	28,760
1974							539	8,805	40,761	8,631	2,219		60,955	29,350
1975							56	5,373	39,167	11,892	1,819		58,307	25,535
1976							143	5,970	40,505	5,417	1,115		53,150	16,484
1977							55	1,134	15,163	2,582	474		19,408	10,083
1978				1			2	2,643	38,308	10,531	1,105		52,590	22,312
1979							68	7,324	28,732	7,583	1,621		45,328	15,716
1980							10	781	13,601	3,327	4,333		22,052	9,078
1981							4	3,162	23,962	3,108	274		30,510	8,575
1982							79	3,687	55,743	13,182	1,141		73,832	18,016
1983							44	319	7,237	5,020	2,553		15,173	6,775
1984							41	1,394	20,174	6,229	1,649		29,487	12,728
1985			1			7	92	3,977	46,749	5,670	361		56,857	18,307
1986							181	2,502	110,714	14,436	3,020		130,853	22,204
1987							464	2,364	21,002	3,556	249		27,635	9,713
TOTAL	21	12	6	1		176	4,940	149,519	1,220,118	158,258	25,309	66	1,558,426	461,235
10-YEAR AVERAGE							99	2,815	36,622	7,264	1,631		48,432	14,342

TABLE 18 (Continued)

TABLE 19

MONTHLY COUNT OF STEELHEAD TROUT
BONNEVILLE DAM - 1938-1986

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	A-RUN JAN 1- AUG 25	B-RUN AUG 26- DEC 31
1938					6,622	2,382	19,455	29,231	46,618	2,264	339	92	107,003	49,306	57,697
1939	23	19	570	8,110	1,587	1,490	36,681	38,062	33,891	1,264	216	119	122,032	80,096	41,936
1940	5	96	1,688	4,125	998	4,489	61,188	46,071	64,377	1,786	292	59	185,174	106,724	78,450
1941	37	76	1,641	6,392	1,518	996	21,940	29,600	50,542	3,980	1,063	304	118,089	58,109	59,980
1942	4	37	256	3,642	4,159	1,588	19,905	41,973	77,076	2,412	566	182	151,800	65,219	86,581
1943	14	18	654	3,374	4,698	1,564	7,755	29,894	41,051	2,444	573	94	92,133	41,219	50,914
1944	50	157	1,019	6,142	2,224	1,169	21,868	24,508	35,907	6,129	1,119	226	100,518	51,585	48,933
1945	1,003	1,078	3,008	4,685	1,557	1,109	24,537	40,593	40,194	1,925	302	142	120,133	72,685	47,448
1946	64	551	3,040	9,839	5,482	3,265	20,600	58,466	38,399	2,070	262	769	142,807	93,422	49,385
1947	197	321	1,968	6,889	2,025	1,595	28,134	40,819	50,025	2,905	443	123	135,444	75,035	60,409
1948	154	119	1,631	4,473	1,170	1,895	33,191	53,621	40,609	1,742	381	76	139,062	87,453	51,609
1949	1		1,689	3,293	1,712	1,264	34,314	54,281	20,786	1,161	686	98	119,285	90,762	28,523
1950	13	8	1,156	4,537	1,667	691	25,142	53,904	24,226	1,932	811		114,087	80,191	33,896
1951			375	2,338	1,568	5,187	74,980	39,712	15,357	947	225		140,689	121,100	19,589
1952			278	1,248	1,751	8,202	118,110	79,735	48,293	2,735	638		260,990	190,012	70,978
1953			1,310	5,308	1,456	5,313	106,712	64,006	36,107	2,797	905		223,914	173,135	50,779
1954		6	679	5,511	1,571	6,115	59,443	65,234	34,941	2,209	551		176,260	126,085	50,175
1955			1,006	2,100	1,149	2,418	79,124	84,746	24,239	3,361	268		198,411	161,614	36,797
1956			1,409	2,718	1,582	3,122	48,306	47,148	23,343	2,846	635	7	131,116	99,692	31,424
1957			926	2,081	760	8,434	66,738	34,915	24,029	1,069	231		139,183	105,179	34,004
1958			495	651	1,457	5,645	53,734	22,827	44,478	1,859	291		131,437	79,533	51,904
1959			219	746	1,236	2,562	60,549	38,417	23,579	1,540	178		129,026	98,198	30,828
1960			412	904	1,090	4,314	44,026	33,571	28,058	1,090	211		113,676	77,141	36,535
1961			374	1,161	692	2,246	44,379	41,237	47,409	1,561	660		139,719	79,269	60,450
1962			381	1,957	1,491	3,737	49,789	40,177	64,084	1,798	611		164,025	86,990	77,035
1963			503	1,035	1,385	4,192	51,951	31,441	35,446	2,920	545		129,418	83,858	45,560
1964			490	1,609	769	1,940	50,640	26,892	32,406	1,954	552		117,252	76,135	41,117
1965			211	1,516	1,419	4,265	89,405	29,506	37,529	1,971	631		166,453	120,560	45,893
1966			658	2,682	2,389	13,051	57,975	25,779	37,733	2,657	737		143,661	97,545	46,116
1967			416	1,182	899	3,062	40,881	36,787	35,472	2,701	472		121,872	78,794	43,078

TABLE 19 (Continued)

MONTHLY COUNT OF STEELHEAD TROUT
BONNEVILLE DAM - 1938-1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	A-RUN JAN 1-AUG 25	B-RUN AUG 26-DEC 31
1968			340	861	1,315	3,664	29,773	41,006	27,865	1,645	505		106,974	68,423	38,551
1969			911	2,164	2,897	6,889	63,222	36,077	26,565	1,484	573		140,782	104,051	36,731
1970			244	1,267	1,331	4,208	30,866	46,307	27,073	1,909	305		113,510	78,106	35,404
1971			463	1,377	1,810	4,469	84,877	58,249	38,619	3,739	363		193,966	141,054	52,912
1972			492	2,562	2,137	3,444	59,933	48,223	65,523	3,432	140		185,886	107,227	78,659
1973			830	2,534	1,367	5,360	53,820	46,399	43,275	3,918	320		157,823	100,011	57,812
1974			1,292	4,127	5,547	6,349	57,212	44,266	14,654	3,080	527		137,054	84,402	52,652
1975			1,080	4,284	4,324	6,058	30,823	28,623	9,106	904	338		85,540	71,586	13,954
1976			1,285	3,459	3,677	9,130	38,907	44,204	21,084	1,953	478		124,177	92,370	31,807
1977			1,159	4,121	4,115	11,395	67,554	35,161	66,084	3,298	550		193,437	113,682	79,755
1978			1,750	3,327	4,587	10,883	25,284	25,637	30,461	2,168	334		104,431	64,188	40,243
1979			1,333	1,905	1,785	7,585	33,379	39,399	23,592	4,710	291		113,979	79,472	34,507
1980			1,139	3,378	1,409	7,790	28,448	51,073	32,277	3,233	507		129,254	85,010	44,244
1981			1,031	3,812	3,887	12,628	56,787	52,435	25,737	2,650	303		159,270	121,785	37,485
1982			1,239	4,188	5,335	8,636	39,159	51,329	44,456	3,146	152		157,640	103,159	54,481
1983			458	1,253	1,638	6,017	69,036	86,066	48,920	4,636	415		218,439	148,853	69,586
1984			579	2,106	4,216	14,454	92,546	93,866	102,877	4,463	453		315,560	189,365	126,195
1985			977	2,956	3,997	13,036	102,256	152,455	63,575	4,088	647		343,987	251,723	92,264
1986			2,712	3,674	4,500	16,655	136,622	129,089	76,532	9,280	827		379,891	279,154	100,737
1987			1,189	2,112	3,233	12,443	104,615	115,481	58,815	4,331	862		303,081	227,013	79,120
TOTAL	1,565	2,486	48,965	155,715	121,190	278,395	2,656,571	2,508,498	2,003,294	136,096	24,284	2,291	7,939,350	5,317,280	2,625,122
10-YEAR AVERAGE			1,241	2,871	3,459	11,013	68,813	79,683	50,724	4,271	479		222,553	154,972	67,886

TABLE 19 (Continued)

TABLE 20

MONTHLY COUNT OF SHAD
BONNEVILLE DAM - 1938-1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1938						39	3,184	1,502	527	21			5,273
1939					14	1,539	3,065	157	28				4,803
1940					48	12,931	9,178	72	1				22,230
1941					5	2,417	16,010	197	12	16			18,657
1942					2	38	11,341	1,473	5				12,859
1943						18	2,545	265	20				2,848
1944						287	16,568	248					17,103
1945						2,801	90,773	948	4				94,526
1946						3,895	16,073	415					20,383
1947					8	5,645	20,280	105	3				26,041
1948						8	6,458	1,953	2	1			8,422
1949						2,647	19,609	322	1				22,579
1950							7,265	548	3				7,816
1951						1,269	6,792	277	15				8,353
1952						487	2,595	45	4				3,131
1953						53	14,856	1,502	19				16,430
1954						34	3,848	1,136	11				5,029
1955						21	4,411	1,358	18				5,808
1956					1	67	6,838	1,168	11				8,085
1957						1,695	11,039	422	1	2			13,159
1958						3,885	6,257	59					10,201
1959					3	32	6,315	369	1				6,720
1960						35,259	57,443	594	72				93,368
1961						18,952	245,471	1,236	33	5			265,697
1962						43,689	387,554	4,657	82	4	2		435,988
1963					70	77,961	307,466	4,044	217	14			389,772
1964					19	3,203	236,321	13,008	121	2			252,674
1965					1	33,815	570,432	12,844	194	35	2		617,323
1966					94	181,187	367,643	7,988	545	51	5		557,513
1967			1	1		6,673	212,681	2,944	152	8			222,460

TABLE 20 (CONTINUED)

MONTHLY COUNT OF SHAD
BONNEVILLE DAM - 1938-1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1968					800	107,881	183,878	1,387	121	10	1		294,078
1969			2	5	158	233,018	81,159	2,846	163	7			317,358
1970				2	250	228,519	99,659	566	262	18			329,276
1971					30	34,345	154,215	951	55	1			189,597
1972					38	16,689	192,608	5,301	88	1			214,725
1973					116,057	377,830	24,701	577	38	4			519,207
1974					7	6,122	91,302	1,496	17	1			98,945
1975					11	43,712	219,133	1,349	38	3			264,246
1976					4	123,053	179,994	2,112	49	7			305,219
1977					51,709	431,540	11,818	568	76	12			495,723
1978					30	802,110	57,997	991	33	5			861,166
1979					800	994,253	43,734	658	258	141	13		1,039,857
1980					1,460	766,473	170,705	685	51	15	1		939,390
1981				2	20,976	708,295	150,730	1,080	79	17			881,179
1982				1	6,888	655,037	117,325	914	37	9	1		780,212
1983					78,105	1,224,342	118,975	1,103	112	37			1,422,674
1984					553	950,406	320,526	4,097	153	55	1		1,275,791
1985					101,770	816,288	55,233	1,410	206	39	5		974,951
1986					104,724	722,443	29,622	1,164	166	47	4		858,170
1987				28	254,326	678,850	10,254	379	32	5	1		943,875
:OTAL			3	39	738,961	10,361,753	4,983,879	91,490	4,136,593	36			16,180,890
.0-YEAR AVERAGE					56,963	831,850	107,510	1,248	113	37			997,727

TABLE 20 (Continued)

TABLE 21
YEARLY TOTALS OF SALMONID FISH COUNTED OVER THE DALLES DAM
1957-1987

YEAR	CHINOOK	STEELHEAD	SOCKEYE	COHO	CHUM	PINK	TOTAL SALMONID
1957	312,678	129,361	90,201	6,793	75	4	539,112
1958	301,960	121,420	111,039	2,395	31	5	536,850
1959	207,461	156,090	86,259	2,709	25	9	452,553
1960	196,962	111,189	59,441	3,000	35	5	370,632
1961	201,335	134,572	16,689	2,139		4	354,739
1962	187,132	163,301	27,127	3,696		5	381,261
1963	180,969	118,957	56,931	3,716	23	3	360,599
1964	183,842	110,033	79,042	5,978		5	378,900
1965	195,049	141,052	44,279	17,468	1	3	397,852
1966	240,671	146,172	147,886	32,279		1	567,009
1967	280,112	121,614	120,589	32,015	1	4	554,335
1968	262,975	147,481	116,897	42,687		1	570,041
1969	314,258	112,529	37,226	17,054		1	481,068
1970	261,457	99,187	77,678	23,219		4	461,545
1971	250,528	151,348	76,103	29,061		3	507,043
1972	268,628	135,303	44,671	16,562			465,164
1973	280,945	100,082	52,303	11,152		1	444,483
1974	217,181	70,875	28,827	14,655			331,538
1975	217,283	57,675	43,198	13,976			332,132
1976	216,163	82,568	27,747	19,392			345,870
1977	224,950	133,882	86,252	10,021			455,105
1978	199,228	60,485	11,845	18,877			290,435
1979	150,647	83,364	32,791	8,726		4	275,532
1980	113,951	93,963	42,088	6,326			256,328
1981	135,176	113,268	35,447	6,941		1	290,833
1982	172,682	117,434	33,331	7,383			330,830
1983	156,190	171,055	84,204	3,459	1		414,909
1984	203,920	219,123	101,177	3,142		1	527,363
1985	370,982	276,025	117,254	4,625		5	768,891
1986	443,013	281,953	48,477	4,842	3	4	778,292
1987	421,190	217,768	87,599	3,310	1	2	729,870
TOTAL	7,369,518	4,179,129	2,024,598	377,598	196	75	13,951,114
10-YEAR AVERAGE	236,698	163,444	59,421	6,763	1	2	466,328

TABLE 22

MONTHLY TOTALS OF SALMONIDS AND SHAD COUNTED OVER THE DALLES DAM

1987

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
CHINOOK	-	-	-	48,812	27,586	17,923	12,145	50,680	236,216	27,828	-	-	421,190
STEELHEAD	-	-	-	1,069	366	3,280	55,395	58,850	76,461	22,347	-	-	217,768
SOCKEYE	-	-	-	-	1	48,798	38,443	348	8	1	-	-	87,599
COHO	-	-	-	-	-	-	12	91	2,409	798	-	-	3,310
CHUM	-	-	-	-	-	-	-	-	-	1	-	-	1
PINK	-	-	-	-	-	-	-	-	2	-	-	-	2
TOTAL SALMONID	-	-	-	49,881	27,953	70,001	105,995	109,969	315,096	50,975	-	-	729,870
SHAD	-	-	-	191	285,344	980,119	23,594	450		1	-	-	1,289,699

TABLE 22

TABLE 23
WATER TEMPERATURE AND STREAM FLOW DATA
THE DALLES DAM - 1987

DATE	JANUARY			FEBRUARY			MARCH		
	DISCHARGE	TURBIDITY	WATER TEMP.	DISCHARGE	TURBIDITY	WATER TEMP.	DISCHARGE	TURBIDITY	WATER TEMP.
1	155.9	3.0	42.0	121.9	1.5	37.0	127.5	3.0	41.0
2	133.0	3.0	42.0	161.2	1.5	37.0	126.8	3.0	41.0
3	116.0	3.0	42.0	148.7	1.5	37.0	132.7	3.0	41.0
4	117.9	*	42.0	129.9	1.6	37.0	118.1	3.0	41.0
5	141.0	4.0	42.0	118.5	3.6	38.0	138.5	3.0	41.0
6	154.9	4.0	42.0	142.0	3.5	38.0	126.0	3.0	41.0
7	190.0	3.3	42.0	126.6	3.5	38.0	117.6	3.2	41.0
8	191.9	3.5	42.0	114.0	3.5	38.0	123.9	3.2	41.0
9	184.9	3.1	42.0	138.5	3.5	39.0	140.8	2.0	42.0
10	165.4	3.1	42.0	140.1	3.6	39.0	136.0	*	41.0
11	156.6	3.8	42.0	142.2	3.5	39.0	138.1	*	41.0
12	181.6	3.0	41.0	144.0	2.8	39.0	129.0	*	42.0
13	173.3	3.5	41.0	144.5	3.5	40.0	130.9	3.2	43.0
14	170.5	6.0	41.0	141.9	3.5	40.0	118.2	*	42.0
15	205.9	6.5	41.0	130.7	4.0	40.0	137.5	*	43.0
16	169.6	6.0	41.0	145.7	3.0	40.0	166.2	*	43.0
17	184.7	3.2	41.0	144.3	3.0	40.0	159.3	1.5	44.0
18	174.2	5.8	40.0	140.9	3.0	40.0	153.7	1.2	44.0
19	195.8	5.1	40.0	129.0	3.0	40.0	177.3	1.5	44.0
20	185.2	5.4	40.0	148.2	3.0	40.0	110.3	2.3	44.0
21	168.7	6.4	39.0	144.2	2.0	41.0	125.6	1.3	44.0
22	182.1	6.0	39.0	127.0	2.8	41.0	146.9	1.8	44.0
23	181.4	6.0	38.0	150.4	2.7	41.0	130.7	2.0	44.0
24	162.3	5.5	38.0	157.8	2.5	41.0	116.6	2.0	44.0
25	131.7	7.0	37.0	155.4	2.0	41.0	119.2	2.0	44.0
26	173.2	7.0	37.0	158.1	2.0	41.0	130.9	2.6	45.0
27	154.4	7.0	37.0	141.0	3.0	41.0	154.4	2.6	45.0
28	134.7	3.5	37.0	133.9	3.0	41.0	136.4	2.9	45.0
29	147.4	6.5	37.0				126.2	2.9	45.0
30	144.1	2.0	37.0				144.9	2.9	45.0
31	120.1	2.5	37.0				123.3	2.6	45.0

* Data not available.

TABLE 24

MONTHLY FISH PASSAGE SUMMARY REPORT — THE DALLES PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — APR 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SEECHI)	(DEG F)
1	203							47		122.4	.0	2.0	46.0
2	691			1				37		111.2	.0	4.0	47.0
3	1088							47		134.0	.0	3.0	47.0
4	448							37		127.9	.0	3.7	47.0
5	497			3				47		115.1	.0	4.0	47.0
6	511			1				51		143.7	.0	3.5	47.0
7	795			4				45		137.9	.0	3.4	47.0
8	986			3				54	1	150.0	.0	2.2	48.0
9	1134			7				49	2	167.2	.0	3.4	48.0
10	814			2				48	2	152.6	.0	3.2	48.0
11	1322			3				52		135.9	.0	3.2	48.0
12	1088			4				40		131.2	.0	2.5	48.0
13	1516			1				47	2	155.2	.0	3.0	49.0
14	1561			9				43	4	179.2	.0	2.5	49.0
15	1461			15				44	2	153.6	.0	2.6	50.0
16	2590			21				50	4	127.4	.0	3.0	50.0
17	2272			8				39	5	140.7	.0	2.0	50.0
18	2815			14				36	3	160.8	.0	3.3	50.0
19	2218			15				31		133.0	.0	3.0	50.0
20	1548			13				26	4	163.9	.0	2.2	51.0
21	1299			15				23	6	142.0	.0	2.0	50.0
22	2158			24				18	4	143.9	.0	2.5	51.0
23	2905			42				24	11	142.5	.0	2.7	51.0
24	2606			23				15	2	160.4	.0	3.0	51.0
25	2796			48				20	4	137.4	.0	2.6	52.0
26	1863			37				16	3	140.3	.0	2.5	52.0
27	2587			41				17	10	135.9	.0	3.0	52.0
28	1943			41				22	8	139.1	.0	3.0	53.0
29	2332			60				18	64	171.4	.0	2.5	54.0
30	2222			88				26	50	231.1	.0	2.5	54.0
TOTALS	48269			543				1069	191				

TABLE 25

TABLE 25

MONTHLY FISH PASSAGE SUMMARY REPORT — THE DALLES PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — MAY 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1	2893			82				16	57	249.2	.0	3.0	54.0
2	2068			85				30	23	223.6	.0	2.5	54.0
3	2314			100				24	44	241.9	.0	2.5	54.0
4	1027			64				16	47	238.4	.0	2.5	55.0
5	1583			80				10	73	221.6	.0	2.4	55.0
6	1482			89				15	138	256.1	.0	2.5	56.0
7	1617			102				14	172	248.1	.0	3.0	57.0
8	1556			109				15	238	254.5	.0	2.6	57.0
9	877			76				8	299	255.0	.0	2.5	57.0
10	900			94				10	608	267.2	.0	2.2	57.0
11	1029			110				14	1280	254.7	.0	2.6	58.0
12	839			76				15	1130	241.6	.0	2.5	58.0
13	735			52				13	1378	237.8	.0	2.3	58.0
14	590			62				14	1814	266.2	3.5	2.3	58.0
15	603			59				9	2721	256.5	13.3	3.8	59.0
16	350			42				10	1460	258.1	8.4	2.5	59.0
17	322			32				13	3051	283.8	3.4	2.5	58.0
18	491			56				11	2573	260.3	.0	2.5	58.0
19	331			48				-3	2865	226.4	.0	2.0	57.0
20	396			28				-15	4048	223.5	.0	2.5	57.0
21	420			33				-1	4167	192.4	.0	2.2	57.0
22	389			29				21	4259	180.9	.0	2.3	58.0
23	319			26				7	6982	172.0	.0	2.2	58.0
24	350			35				10	25432	170.5	.0	2.5	58.0
25	484			26				17	30454	199.8	.0	2.6	58.0
26	411			19				20	27305	180.3	.0	2.0	58.0
27	316			22				9	32779	195.5	.0	2.0	58.0
28	323			17				15	40264	201.3	.0	2.0	58.0
29	289			14				11	37252	215.0	.0	2.5	59.0
30	236			12				15	19048	210.0	.0	1.5	59.0
31	395			12			1	3	33383	160.1	.0	2.0	59.0
TOTALS	25935			1691			1	366	285344				

TABLE 26

MONTHLY FISH PASSAGE SUMMARY REPORT — THE DALLES PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — JUN 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1	256			19				12	42860	183.5	.0	2.5	59.0
2	378			21			1	11	47737	189.2	.0	2.0	58.0
3	359			22				10	53197	197.2	.0	2.5	58.0
4		422		9			2	19	42473	183.2	.0	2.0	58.0
5		324		19			12	15	36525	167.7	.0	2.3	59.0
6		341		24			15	23	35701	202.8	.0	2.6	59.0
7		353		20			20	21	42609	204.1	.0	2.4	59.0
8		462		23			73	18	64253	195.5	.0	2.4	59.0
9		582		44			79	34	54977	176.5	.0	3.2	59.0
10		631		19			110	32	32262	205.9	.0	2.3	61.0
11		566		21			178	48	40788	184.1	.0	2.5	59.0
12		795		48			463	49	52043	132.8	.0	2.8	62.0
13		486		34			383	38	93142	118.1	.0	2.9	62.0
14		739		36			972	84	54144	117.2	.0	2.9	63.0
15		721		49			1621	93	35510	118.0	.0	2.9	63.0
16		868		45			1643	130	31911	113.9	.0	3.1	62.0
17		748		37			1210	143	32333	130.4	.0	3.0	62.0
18		703		34			1924	116	33303	140.9	.0	3.0	62.0
19		571		50			1868	127	27601	137.4	.0	3.0	63.0
20		610		47			2689	122	17650	133.3	.0	2.6	62.0
21		707		48			3419	124	28251	125.6	.0	3.0	63.0
22		805		82			4588	164	19661	106.6	.0	2.7	63.0
23		638		64			5709	184	12934	127.8	.0	3.0	62.0
24		496		36			3095	120	9721	130.8	.0	3.0	63.0
25		417		30			2457	144	9223	132.8	.0	4.0	63.0
26		387		31			1554	162	6551	119.4	.0	4.0	64.0
27		510		40			1569	203	5393	112.0	.0	3.3	64.0
28		730		52			2357	308	6127	100.5	.0	3.5	64.0
29		716		74			6139	404	5941	110.1	.0	3.5	65.0
30		451		53			4649	302	5298	126.9	.0	4.0	66.0
TOTALS	993	15779		1151			48798	3280	980119				

TABLE 27

TABLE 27

MONTHLY FISH PASSAGE SUMMARY REPORT — THE DALLES PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — JUL 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1		420		52			3601	396	5146	125.8	.0	3.1	66.0
2		382		38			2990	413	3113	129.8	.0	3.0	66.0
3		395		35			1896	350	2274	107.2	.0	3.5	66.0
4		500		34			2811	537	1639	90.0	.0	3.0	66.0
5		460		52			3463	755	1574	86.5	.0	3.0	67.0
6		340		51			4940	1049	1273	91.7	.0	3.0	67.0
7		418		73			2663	959	1143	94.8	.0	2.5	67.0
8		328		44			1760	726	771	115.3	.0	3.0	67.0
9		307		58			1327	603	631	124.6	.0	2.5	68.0
10		287		49			991	684	681	130.9	.0	2.5	68.0
11		527		75			1765	1265	781	122.7	.0	2.7	68.0
12		355		49			1240	1520	444	98.9	.0	3.0	68.0
13		295		50			1319	1435	786	121.7	.0	2.4	69.0
14		306		62			1380	1198	517	123.8	.0	2.7	69.0
15		347		54			1269	1125	442	121.1	.0	3.0	69.0
16		320		51			864	1217	288	117.2	.0	3.5	69.0
17		289		51			758	1528	186	100.8	.0	3.0	67.0
18		291		41	2		351	1435	246	96.6	.0	3.5	67.0
19		299		71	2		510	2044	223	83.5	.0	3.4	67.0
20		388		61	1		407	2850	310	105.0	.0	4.0	68.0
21		90		35	1		171	1221	181	128.5	.0	3.6	68.0
22		251		72			505	2252	200	110.8	.0	3.1	68.0
23		327		59	2		401	3112	45	107.9	.0	3.8	68.0
24		355		63			279	2505	203	117.1	.0	3.5	68.0
25		402		83			217	3387	82	106.3	.0	3.2	68.0
26		351		69			162	3932	87	89.1	.0	3.2	68.0
27		281		47	1		112	4010	96	99.0	.0	2.0	68.0
28		282		45	1	1	89	3455	93	117.0	.0	3.5	68.0
29		348		54	1		80	3350	70	112.8	.0	2.5	68.0
30		257		48			54	3233	32	104.5	.0	3.2	68.0
31		264		57			68	2843	37	117.6	.0	3.5	68.0
TOTALS		10462		1683	11	1	38443	55395	23594				

TABLE 30

MONTHLY FISH PASSAGE SUMMARY REPORT — THE DALLES PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — OCT 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1			1247	929	19	33		1193		134.9	.0	5.0	66.0
2			1167	947	11	34		916		113.9	.0	4.0	66.0
3			1313	1196	13	45		1202		99.0	.0	3.5	66.0
4			1124	829	15	48		1909		79.8	.0	4.8	65.0
5			682	687	12	38		1319		123.0	.0	5.0	65.0
6			373	445	4	26		583		139.4	.0	5.0	65.0
7			771	595	7	27		626		122.9	.0	4.0	65.0
8			396	525	2	32		489		122.1	.0	5.0	65.0
9			474	452	5	29		517		126.4	.0	5.0	65.0
10			704	423	5	15		795		103.9	.0	3.6	64.0
11			714	417	7	15		878		84.2	.0	4.5	64.0
12			402	249	6	15		527		116.7	.0	3.4	64.0
13			481	343	7	24		609		130.3	.0	3.5	64.0
14			216	232		19		534		159.2	.0	4.5	63.0
15			306	253	1	19		663		163.6	.0	4.0	63.0
16			841	272	5	12	1	989		147.5	.0	3.5	63.0
17			1077	398	8	13		892		106.8	.0	3.5	63.0
18			677	290	6	17		691		91.4	.0	4.0	62.0
19			213	157	4	20		451		145.0	.0	3.6	62.0
20			562	258	4	15		835		126.1	.0	3.4	62.0
21			249	133	2	9		434		121.0	.0	3.0	61.0
22			477	160	7	9		454		125.3	.0	4.0	61.0
23			269	160	10	7		557	1	147.3	.0	3.2	60.0
24			364	255	5	14		917		118.2	.0	3.3	60.0
25			205	176	16	8		573		95.7	.0	3.0	59.0
26			184	145	8	16		778		117.1	.0	3.2	59.0
27			164	104	6	4		567		129.5	.0	3.5	59.0
28			257	116	4	3		467		122.9	.0	4.8	59.0
29			208	80	7	8		323		118.2	.0	3.8	58.0
30			169	80	4	6		329		109.4	.0	5.0	58.0
31			165	71	4	4		410		90.1	.0	4.4	58.0
TOTALS			16451	11377	214	584	1	22347	1				

TABLE 31

WATER TEMPERATURE AND STREAM FLOW DATA
THE DALLES DAM - 1987

	NOVEMBER			DECEMBER		
	DISCHARGE	TURBIDITY	WATER TEMP.	DISCHARGE	TURBIDITY	WATER TEMP.
1	91.1	5.0	58.0	151.6	3.8	49.0
2	107.5	5.0	59.0	123.0	4.5	51.0
3	105.1	5.0	58.0	128.3	3.5	49.0
4	110.9	3.0	57.0	136.5	*	49.0
5	108.3	4.1	57.0	110.9	*	49.0
6	110.0	4.0	57.0	104.2	*	48.0
7	99.8	4.2	57.0	146.1	*	48.0
8	79.6	4.2	57.0	138.3	3.3	48.0
9	102.0	3.5	57.0	154.5	*	48.0
10	97.3	3.5	56.0	148.3	3.6	48.0
11	104.6	3.5	56.0	152.1	3.0	48.0
12	129.6	3.5	56.0	143.6	3.2	47.0
13	113.9	3.3	56.0	136.9	3.5	47.0
14	96.6	3.0	56.0	178.0	3.5	47.0
15	103.2	3.4	56.0	145.2	3.0	47.0
16	117.7	3.3	56.0	178.1	*	47.0
17	128.6	4.0	55.0	169.6	3.0	*
18	111.5	4.5	54.0	171.6	3.0	46.0
19	127.6	3.4	54.0	145.9	*	46.0
20	116.2	4.5	54.0	112.3	*	46.0
21	109.1	4.5	54.0	154.5	*	46.0
22	103.3	4.5	53.0	160.7	5.0	45.0
23	120.3	4.6	53.0	152.2	6.0	45.0
24	109.9	4.8	52.0	144.8	5.5	44.0
25	131.3	4.0	51.0	126.5	*	44.0
26	136.0	4.4	51.0	133.3	5.0	43.0
27	105.9	4.3	51.0	112.5	5.0	43.0
28	103.6	4.6	51.0	144.5	5.0	43.0
29	94.1	4.0	51.0	154.3	6.0	42.0
30	124.0	4.5	51.0	148.8	7.0	42.0
31				166.8	7.0	42.0

*Data not available.

TABLE 32

MONTHLY COUNT OF CHINOOK SALMON*
THE DALLES DAM - 1957-1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	SPRING JAN 1- JUN 3	SUMMER JUN 4- AUG 3	FALL AUG 4- DEC 31	JACKS
1957			22	42,161	59,410	86,096	35,643	28,828	56,753	3,564	201		312,678	109,723	116,661	86,294	37,374
1958			114	8,268	47,862	59,955	24,381	17,211	141,262	2,788	119		301,960	61,747	80,139	160,074	19,747
1959			8	16,771	32,634	27,799	42,817	20,142	65,229	2,022	39		207,461	50,874	71,362	85,225	39,857
1960				17,073	40,091	52,577	22,549	15,225	46,453	2,720	274		196,962	58,406	75,315	63,241	30,847
1961				43,822	35,059	24,478	24,596	16,866	53,371	3,143			201,335	79,183	50,824	71,328	35,409
1962				33,069	35,629	34,488	21,515	13,461	46,135	2,835			187,132	69,139	57,007	60,986	17,835
1963				19,119	33,207	25,063	20,414	21,865	57,248	4,053			180,969	52,937	47,333	80,699	54,749
1964			340	35,551	24,447	16,801	37,697	17,452	49,811	1,743			183,842	60,691	56,360	66,791	30,900
1965			190	17,870	24,930	17,900	31,072	25,119	74,904	3,064			195,049	43,617	50,527	100,905	67,552
1966			1,068	72,267	22,837	25,530	33,712	14,978	65,380	4,899			240,671	96,628	61,062	82,981	36,482
1967				48,744	22,817	24,718	45,346	23,927	107,427	7,133			280,112	71,976	72,582	135,554	98,817
1968			100	52,144	45,057	32,827	33,272	22,361	72,209	4,800	205		262,975	98,742	67,391	96,842	64,644
1969			65	19,025	80,162	33,432	27,750	29,330	118,890	5,604			314,258	100,482	61,978	151,798	96,244
1970				53,370	29,670	22,903	23,318	34,906	93,633	3,657			261,457	83,549	48,115	129,793	85,471
1971				28,227	44,181	22,011	29,655	16,190	103,370	6,894			250,528	73,655	51,847	125,026	75,329
1972				68,955	33,508	17,354	29,756	21,828	91,666	5,561			268,628	103,107	48,660	116,861	81,668
1973				94,334	15,040	19,548	19,181	23,341	101,771	7,730			280,945	111,088	38,774	131,083	72,088
1974				13,415	41,902	7,141	22,709	13,964	103,804	14,246			217,181	56,397	30,273	130,511	79,840
1975				18,526	32,869	12,155	26,447	28,973	90,193	8,120			217,283	52,483	39,062	125,738	74,418
1976				20,266	35,434	17,828	20,129	17,278	90,933	14,295			216,163	56,570	38,733	120,860	74,275
1977				72,726	16,672	22,084	22,059	12,266	69,927	9,216			224,950	90,373	44,378	90,199	55,067
1978				52,425	30,472	19,477	15,978	11,251	57,786	11,839			199,228	84,924	34,396	79,908	32,503
1979				13,993	12,569	14,310	17,687	20,458	61,757	9,516	357		150,647	27,297	32,298	91,052	42,886
1980				12,434	15,441	7,948	12,832	12,881	43,675	8,740			113,951	28,237	21,133	64,581	20,016
1981				24,227	16,335	8,491	10,779	15,802	53,840	5,702			135,176	41,160	19,676	74,340	33,919
1982				10,569	33,296	10,058	9,554	17,466	79,487	12,252			172,682	44,750	19,342	108,590	60,165
1983				13,270	22,893	8,766	8,430	12,501	73,942	16,388			156,190	36,856	17,051	102,283	41,335
1984				9,326	23,784	9,992	12,332	23,495	105,786	19,205			203,920	33,848	22,472	147,600	70,798
1985				36,035	39,173	15,785	10,332	37,806	203,470	27,058	1,323		370,982	76,514	25,385	269,083	145,007
1986			175	48,892	36,928	14,175	10,452	22,684	264,091	45,616			443,013	87,004	24,826	331,183	176,461
1987				48,812	27,586	17,923	12,145	50,680	236,216	27,828			421,190	77,453	30,804	312,933	65,115
TOTAL			2,082	1,065,686	1,011,895	729,613	714,539	660,535	2,880,419	302,231	2,518		7,369,518	2,119,410	1,455,766	3,794,342	1,916,818
10-YEAR AVERAGE				26,998	25,848	12,693	12,052	22,502	118,005	18,414			236,698	53,804	24,738	158,155	68,821

* Jacks Included

TABLE 33

MONTHLY COUNT OF SOCKEYE SALMON
THE DALLES - 1957-1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1957					125	33,476	54,294	2,081	221	4			90,201
1958					29	28,854	80,324	1,583	248	1			111,039
1959					413	7,176	76,347	2,245	77	1			86,259
1960					2	36,907	22,228	297	7				59,441
1961					66	5,863	10,629	116	15				16,689
1962					55	8,333	18,545	180	14				27,127
1963					199	17,914	38,633	185					56,931
1964					23	9,984	68,205	758	72				79,042
1965					184	11,023	31,622	1,438	12				44,279
1966					65	36,539	109,167	2,106	9				147,886
1967					114	15,713	103,862	892	8				120,589
1968					5	77,878	38,542	462	10				116,897
1969					22	15,165	21,933	102	3	1			37,226
1970					1	18,309	56,903	2,387	75	3			77,678
1971						8,887	66,841	369	6				76,103
1972						9,276	34,924	466	5				44,671
1973					8	19,510	32,674	105	6				52,303
1974					4	3,935	24,790	98					28,827
1975						7,679	35,291	225	2	1			43,198
1976					1	10,988	16,637	121					27,747
1977					5	60,049	26,146	52					86,252
1978					24	7,158	4,559	104					11,845
1979						14,750	17,734	307					32,791
1980						11,096	30,046	927	19				42,088
1981						17,692	17,686	68	1				35,447
1982						11,430	21,742	144	15				33,331
1983					1	34,684	49,302	197	19	1			84,204
1984						62,500	37,926	745	6				101,177
1985				1	17	75,603	41,107	521	4		1		117,254
1986					12	17,224	30,686	550	4	1			48,477
1987					1	48,798	38,443	348	8	1			87,599
TOTAL				1	1,376	744,393	1,257,768	20,179	866	14	1		2,024,598
10-YEAR AVERAGE					6	30,094	28,923	391	8				59,421

TABLE 34

MONTHLY COUNT OF COHO SALMON
THE DALLES - 1957 - 1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL*	JACKS
1957							220	605	5,615	342	11		6,793	
1958								96	2,132	161	6		2,395	
1959								46	2,428	234	1		2.709	
1960								475	2,288	227	10		3,000	
1961							4	5	1,898	232			2,139	
1962							5	258	3,194	239			3,696	
1963							2	361	2,931	422			3,716	
1964								506	4,723	749			5,978	
1965							7	200	13,064	4,197			17,468	
1966							225	3,850	25,476	2,728			32,279	
1967							192	494	27,860	3,469			32,015	20,456
1968							372	3,319	36,568	2,346	82		42,687	13,035
1969							412	970	13,179	2,493			17,054	11,218
1970							96	2,064	19,983	1,076			23,219	11,327
1971							1	1,589	26,066	1,405			29,061	11,174
1972							3	1,090	14,564	905			16,562	10,272
1973								793	9,443	916			11,152	5,256
1974								522	10,715	3,418			14,655	9,054
1975								465	10,356	3,155			13,976	8,534
1976								608	14,609	4,175			19,392	13,083
1977							1	91	8,131	1,798			10,021	6,096
1978								355	13,069	5,453			18,877	13,533
1979								211	7,109	1,367	39		8,726	4,836
1980								287	5,064	975			6,326	2,970
1981								295	6,061	585			6,941	4,405
1982								336	5,792	1,255			7,383	3,047
1983								65	2,343	1,051			3,459	2,256
1984								24	2,521	597			3,142	1,282
1985							4	208	3,537	828	48		4,625	1,555
1986							2	1	3,772	1,067			4,842	1,458
1987							12	91	2,409	798			3,310	1,953
TOTAL							1,558	20,280	306,900	48,663	197		377,598	156,800
10-YEAR AVERAGE							2	187	5168	1,398	9		6,763	3,730

* Total Including Jacks

TABLE 35

MONTHLY COUNT OF STEELHEAD TROUT
THE DALLES DAM - 1957-1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1957			1,603	951	977	4,782	45,445	33,319	35,396	6,545	343		129,361
1958			122	274	1,898	4,906	20,384	11,442	75,036	6,846	512		121,420
1959			1	541	502	2,227	46,271	60,841	41,026	4,502	179		156,090
1960				289	557	2,591	28,218	32,667	42,447	4,021	399		111,189
1961				305	307	1,396	21,906	17,850	87,344	5,464			134,572
1962				528	252	1,068	36,609	31,507	87,463	5,874			163,301
1963				153	451	1,361	30,485	25,360	48,066	13,081			118,957
1964			50	369	127	493	36,773	31,742	38,197	2,282			110,033
1965			36	502	484	896	60,522	21,132	53,389	4,091			141,052
1966		25	788	933	600	3,816	52,975	26,382	53,721	6,932			146,172
1967				258	183	435	27,914	22,746	56,082	13,996			121,614
1968			23	691	344	973	20,974	58,866	57,666	7,456	488		147,481
1969			54	953	414	1,442	33,952	22,963	44,146	8,605			112,529
1970				337	172	733	15,905	32,752	44,823	4,465			99,187
1971				408	233	821	40,712	31,812	69,602	7,760			151,348
1972				463	159	604	35,569	30,631	63,748	4,129			135,303
1973				723	326	1,981	29,067	25,437	38,017	4,531			100,082
1974				529	1,362	1,859	24,779	21,835	15,059	5,452			70,875
1975				1,018	1,334	1,973	18,046	20,531	11,519	3,254			57,675
1976				768	1,604	3,357	22,021	30,386	21,586	2,846			82,568
1977				1,666	1,332	5,038	42,859	13,022	61,678	8,287			133,882
1978				834	1,378	3,459	13,493	11,457	26,189	3,675			60,485
1979				478	244	1,942	23,054	21,974	20,961	14,079	632		83,364
1980				2,885	790	2,134	15,114	30,755	34,447	7,838			93,963
1981				1,389	1,632	3,768	34,242	36,537	26,837	8,863			113,268
1982				729	1,289	2,710	22,607	31,410	49,050	9,639			117,434
1983				438	324	1,492	37,029	47,521	75,210	9,041			171,055
1984				846	894	3,715	52,825	36,859	107,377	16,607			219,123
1985				2,405	1,511	5,679	41,534	102,866	107,574	13,337	1,119		276,025
1986			1,395	610	712	4,492	78,494	60,458	111,066	24,726			281,953
1987				1,069	366	3,280	55,395	58,850	76,461	22,347			217,768
TOTAL		25	4,072	24,342	22,758	75,423	1,065,173	1,041,910	1,681,183	260,571	3,672		4,179,129
10-YEAR AVERAGE				1,168	914	3,267	37,379	43,869	63,517	13,015			163,444

TABLE 36

YEARLY TOTALS OF SALMONID FISH COUNTED OVER JOHN DAY DAM
1968 - 1987

YEAR	CHINOOK	STEELHEAD	SOCKEYE	COHO	TOTAL* SALMONID
1968	233,654	121,256	87,847	38,233	480,990
1969	276,051	86,348	39,847	13,589	415,835
1970	222,506	82,440	78,133	19,543	402,622
1971	193,881	115,977	72,232	40,830	422,920
1972	225,631	141,628	51,793	17,533	436,585
1973	249,492	101,440	64,744	13,359	429,035
1974	167,888	43,756	33,121	14,651	259,416
1975	159,079	32,651	50,774	6,305	248,809
1976	175,911	59,808	30,446	5,806	271,971
1977	194,931	102,558	85,701	1,123	384,313
1978	174,852	44,188	13,778	8,355	241,173
1979	118,154	55,877	43,630	5,061	222,722
1980	100,664	78,199	50,675	1,924	231,462
1981	114,359	95,172	46,146	2,562	258,239
1982	144,082	108,603	37,970	4,063	294,718
1983	139,866	154,425	91,917	1,640	387,848
1984	188,373	201,154	107,951	2,080	499,558
1985	337,624	247,093	124,941	1,652	711,310
1986	346,700	238,010	46,327	1,933	632,970
1987	327,752	170,654	75,529	3,355	577,290
TOTAL	4,091,450	2,281,237	1,233,502	203,597	7,809,786
10 YEAR AVERAGE	199,243	139,338	63,886	3,263	405,729

*Jacks Included

TABLE 37

MONTHLY TOTALS OF SALMONIDS AND SHAD COUNTED OVER JOHN DAY DAM
1987

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
CHINOOK	-	-	-	33,985	26,852	13,651	8,948	24,363	196,596	23,367	-	-	327,752
STEELHEAD	-	-	-	3,926	-747	942	23,614	34,203	69,585	39,131	-	-	170,654
SOCKEYE	-	-	-	-	-	35,022	39,983	513	11	-	-	-	75,529
COHO	-	-	-	-	-	-	1	16	3,205	133	-	-	3,355
CHUM	-	-	-	-	-	-	-	-	-	-	-	-	-
PINK	-	-	-	-	-	-	-	-	1	-	-	-	1
TOTAL SALMONID	-	-	-	37,911	26,105	49,605	72,546	59,095	269,398	62,631	-	-	577,291
SHAD	-	-	-	5	84,528	620,667	34,482	3	5		-	-	739,690

*Jacks Included

TABLE 38

WATER TEMPERATURE AND STREAM FLOW DATA
JOHN DAY - 1987

DATE	JANUARY			FEBRUARY			MARCH		
	DISCHARGE	TURBIDITY	WATER TEMP.	DISCHARGE	TURBIDITY	WATER TEMP.	DISCHARGE	TURBIDITY	WATER TEMP.
1	157.8	3.6	42.0	115.3	4.0	36.0	133.0	2.5	41.0
2	129.7	3.4	40.0	162.8	4.5	36.0	124.8	3.2	41.0
3	118.7	3.6	42.0	148.8	4.5	43.0	129.2	2.5	41.0
4	114.9	4.7	44.0	126.1	2.8	38.0	119.7	3.7	41.0
5	140.4	3.9	43.0	120.1	3.0	37.0	134.6	4.0	41.0
6	155.8	4.1	44.0	139.0	2.9	37.0	126.7	3.0	41.0
7	197.4	4.0	42.0	124.5	4.5	40.0	117.5	3.0	43.0
8	197.6	4.0	41.0	112.1	3.2	37.2	122.9	3.0	41.0
9	185.3	4.0	41.0	135.0	4.5	37.0	142.9	1.5	41.5
10	170.0	4.0	41.0	141.6	4.0	37.0	135.5	1.7	43.0
11	162.0	4.2	41.5	140.4	6.0	40.0	139.9	1.7	41.5
12	184.6	4.0	40.0	145.6	4.5	37.0	130.4	1.6	41.5
13	173.3	6.0	42.0	143.7	5.0	37.0	128.6	1.6	41.5
14	172.5	6.5	41.0	139.7	5.0	37.0	117.0	2.7	41.5
15	210.9	7.5	40.0	132.0	5.0	38.0	131.0	3.0	41.5
16	172.4	5.6	41.0	144.7	5.2	39.0	163.9	1.4	41.6
17	188.2	7.0	41.0	145.4	5.6	39.0	154.0	2.0	42.0
18	177.4	7.0	41.0	136.7	4.5	40.0	159.6	1.6	44.6
19	200.7	7.1	41.0	133.3	3.6	41.0	171.7	1.5	41.8
20	192.2	7.2	39.0	146.2	3.2	41.0	109.4	1.5	41.8
21	167.2	7.1	41.0	144.2	3.8	40.0	126.3	1.5	42.0
22	188.3	7.0	39.0	125.7	4.2	41.0	151.8	1.5	42.0
23	185.7	4.2	38.0	147.3	3.3	41.0	126.5	2.0	42.0
24	163.9	4.2	38.0	159.4	2.4	41.0	119.9	1.5	42.0
25	134.1	4.0	38.0	150.0	4.2	41.0	119.1	2.6	44.5
26	171.3	4.2	38.0	156.8	2.4	41.0	138.8	1.2	45.0
27	152.9	4.0	37.0	144.6	2.5	41.0	151.2	1.5	42.0
28	133.3	4.0	38.0	132.2	2.6	40.0	137.9	4.0	46.0
29	155.6	4.0	38.0				124.9	3.5	45.0
30	147.0	4.0	36.0				144.3	3.8	45.0
31	121.9	4.0	36.0				122.7	3.8	45.0

TABLE 39

TABLE 39

MONTHLY FISH PASSAGE SUMMARY REPORT — JOHN DAY PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — APR 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1	28							75		117.9	.0	4.0	56.0
2	50							163		107.6	.0	3.5	45.5
3	204							103		134.1	.0	3.0	46.0
4	128							141		126.7	.0	2.8	45.8
5	398							243		113.9	.0	3.3	46.0
6	451							409		145.6	.0	3.3	46.0
7	197							190		138.2	.0	3.0	48.0
8	352							201		150.0	.0	2.5	48.0
9	127							182		166.4	.0	2.5	48.0
10	874			1				200		157.2	.0	2.5	48.0
11	314							71		139.1	.0	2.5	48.0
12	2293			3				111		131.4	.0	2.5	48.0
13	285			2				194		156.9	.0	2.5	48.0
14	168							185		178.4	.0	2.8	49.0
15	1087			2				115		159.7	.0	2.9	48.0
16	1184			3				133		121.9	.0	2.5	49.0
17	1465			3				228		142.7	.0	2.5	50.0
18	2682			15				243		163.6	.0	2.4	51.0
19	391			1				86		135.4	.0	2.5	50.0
20	1594			18				218		159.5	.0	2.6	50.5
21	1116			14				58		142.6	.0	2.2	49.2
22	1138			13				23		145.2	.0	3.2	51.0
23	937			12				47		145.6	.0	2.6	46.0
24	1212			8				-7		160.8	.0	2.9	52.0
25	3120			23				63		136.0	.0	2.5	51.0
26	2833			20				13		134.2	.0	2.5	51.0
27	1627			21				85		142.6	.0	2.6	50.0
28	1471			17				37	1	134.6	.0	3.0	52.0
29	2615			36				68	2	179.3	.0	2.5	51.0
30	3157			75				48	2	238.1	.0	3.0	53.0
TOTALS	33698			287				3926	5				

TABLE 28

MONTHLY FISH PASSAGE SUMMARY REPORT — THE DALLES PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — AUG 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1		501		71			49	3210	23	110.3	.0	2.8	66.0
2		534		78			33	2667	31	101.1	.0	4.0	67.0
3		522		85			33	4370	65	99.5	.0	2.5	68.0
4			291	54			23	2377	40	104.7	.0	4.0	68.0
5			616	97			33	3320	27	101.0	.0	3.0	68.0
6			545	52			16	2740	29	116.2	.0	4.0	68.0
7			490	56			20	3924	26	133.0	.0	3.0	68.0
8			678	60			18	3002	18	113.2	.0	4.5	66.0
9			394	55			9	2810	24	92.4	.0	3.0	68.0
10			553	63			15	1816	28	90.8	.0	5.5	68.0
11			444	48			8	1256	20	123.7	.0	3.3	63.0
12			505	63			6	1003	20	125.1	.0	3.2	68.0
13			557	91			6	1448	8	90.4	.0	4.7	68.0
14			801	70			5	1857	20	105.5	.0	4.2	70.0
15			1074	98			16	1910	16	93.5	.0	4.2	70.0
16			1125	135			4	1878	7	84.3	.0	5.6	70.0
17			933	115			6	1681	19	94.6	.0	4.7	70.0
18			511	85	2		10	976	13	106.8	.0	5.0	70.0
19			821	106			4	1047	9	101.9	.0	4.3	69.0
20			1301	159			3	976	1	98.4	.0	4.3	69.0
21			1500	197	2		4	992	-1	110.3	.0	4.5	69.0
22			1366	210	4	1	4	1220	4	114.3	.0	4.5	69.0
23			2475	303	3	1	6	2050	1	96.9	.0	4.0	70.0
24			2632	230	5	2	5	1875		98.8	.0	4.0	69.0
25			1694	309		5	2	1445	3	95.6	.0	4.8	70.0
26			1732	309	1	4	3	1222	-2	101.4	.0	4.6	69.0
27			1642	364			1	1074	-7	106.9	.0	5.0	70.0
28			3311	491	5	6	2	958	5	118.3	.0	5.5	71.0
29			5427	853	14	8	2	1151	3	99.8	.0	4.1	70.0
30			5161	770	10	3	1	1524		97.0	.0	5.0	70.0
31			4224	643	11	4	1	1071		117.5	.0	4.2	71.0
TOTALS		1557	42803	6320	57	34	348	58850	450				

TABLE 28

TABLE 29

TABLE 29

MONTHLY FISH PASSAGE SUMMARY REPORT — THE DALLES PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — SEP 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SEECHI)	(DEG F)
1			4251	765	6	8		711		101.0	.0	4.0	71.0
2			3842	770	5	8		580		98.8	.0	5.0	71.0
3			2371	786	4	9		567		89.7	.0	5.0	71.0
4			2727	781	5	9		927		105.7	.0	4.3	70.0
5			2531	862	2	12	2	1091		88.8	.0	4.7	70.0
6			1570	706	9	23		1189		81.2	.0	4.7	71.0
7			3096	690	10	20		1474		89.2	.0	5.0	71.0
8			3374	616	15	21		775		100.3	.0	3.8	71.0
9			6346	1181	19	31	1	1542		106.2	.0	5.0	71.0
10			4576	1088	31	33		1983		112.8	.0	5.5	71.0
11			3980	1283	19	50		1719		116.0	.0	5.0	71.0
12			4986	1147	42	82	3	2194		118.8	.0	5.7	71.0
13			24318	1825	107	104	2	7000		116.6	.0	5.2	70.0
14			23445	1834	139	101		6734		126.0	.0	5.0	70.0
15			20055	2310	88	46		5176		114.2	.0	5.0	70.0
16			16342	2379	73	58		5663		119.8	.0	5.5	69.0
17			16863	2227	97	55		7451		120.6	.0	5.5	69.0
18			12667	2220	86	48		4246		102.7	.0	4.0	69.0
19			11120	2657	55	38		3176		93.7	.0	4.6	69.0
20			6772	2912	52	49		3504		90.7	.0	4.0	69.0
21			3349	1811	54	58		2718		89.0	.0	5.0	68.0
22			2159	1695	23	55		1417		105.5	.0	5.0	68.0
23			2187	1603	18	55		1197		124.8	.0	4.5	68.0
24			1161	1362	10	33		1071		124.6	.0	4.3	68.0
25			2524	1736	26	67		1935		104.6	.0	5.0	68.0
26			2306	1560	21	66		3013		98.0	.0	5.0	67.0
27			2245	1365	21	54		3783		86.8	.0	5.0	66.0
28			1214	921	11	42		1973		107.2	.0	5.0	66.0
29			764	702	16	66		857		118.9	.0	5.0	66.0
30			685	552	11	33		795		123.6	.0	3.0	66.0
TOTALS			193866	42350	1075	1334	8	76461					

TABLE 40

MONTHLY FISH PASSAGE SUMMARY REPORT — JOHN DAY PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — MAY 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1	2000			46				20	2	250.9	.0	3.0	53.0
2	2290			81				7	1	232.5	.0	3.0	53.0
3	2680			89				3	5	245.3	.0	3.8	53.0
4	1616			78				17	7	235.6	.0	4.1	53.0
5	1214			44				-7	3	238.0	.0	3.8	53.0
6	1714			58				-46	12	251.7	.0	2.5	55.0
7	1334			75				-32	23	253.5	.0	3.3	55.0
8	1528			84				21	13	258.0	.0	4.1	57.0
9	1025			63				-9	52	273.1	.0	3.0	56.0
10	1326			78				4	43	267.1	.0	3.9	58.0
11	743			68				-15	234	262.7	.0	4.2	56.0
12	1097			108				-19	432	256.0	.0	3.0	57.0
13	381			64				-49	370	245.2	.0	3.0	57.0
14	647			67				-67	631	265.4	.0	3.0	57.0
15	841			59				-83	670	258.3	.0	4.2	56.0
16	451			53				-46	467	273.0	.0	2.5	57.0
17	358			38				-53	461	296.0	.0	3.2	55.0
18	256			25				-14	294	264.5	.0	2.4	56.0
19	229			36				-15	295	230.9	.0	2.7	57.0
20	293			41				-52	1661	216.8	.0	3.0	51.0
21	280			40				-45	2471	194.4	.0	3.4	57.5
22	327			28				-40	2611	179.8	.0	2.9	57.0
23	178			21				-34	2772	184.7	.0	3.7	57.0
24	380			27				-11	4899	174.1	.0	2.7	57.0
25	327			35				-59	5923	201.4	.0	3.5	57.0
26	317			37				-14	6240	183.0	.0	2.7	57.0
27	493			22				-23	5752	196.2	.0	2.7	57.0
28	348			19				-12	12585	204.3	.0	2.5	57.0
29	211			13				-18	14927	218.8	.0	3.0	57.0
30	79			7				-11	14315	215.8	.0	2.2	57.0
31	365			16				-45	6357	161.7	.0	2.5	57.0
TOTALS	25332			1520				-747*	84528				

*See page 8 of the narrative.

TABLE 41

MONTHLY FISH PASSAGE SUMMARY REPORT — JOHN DAY PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — JUN 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1	250			18				-22	6353	188.0	.0	2.2	57.0
2	271			17			1	-21	19544	191.2	.0	2.8	56.0
3	265			14			2	-37	29412	203.8	.0	2.6	56.0
4	286			11			1	-22	23654	182.7	.0	4.2	60.0
5	332			12			2	-5	15899	168.5	.0	3.0	57.0
6		149		8			3	-20	17677	203.6	.0	5.2	60.0
7		156		20			11	-33	35961	212.1	5.4	3.1	58.0
8		168		14			19	11	33072	192.3	1.6	5.2	60.0
9		254		28			54	2	23990	183.8	.0	2.8	59.0
10		300		16			75	-12	26179	202.7	.0	3.0	59.0
11		222		28			96	-19	34126	185.3	.0	5.2	60.0
12		473		18			192	7	35916	139.2	.0	5.0	60.0
13		397		38			295	11	26256	117.9	.0	3.5	61.0
14		430		27			428	13	34909	115.0	.0	3.5	61.0
15		577		38			675	54	25066	118.0	.0	3.5	61.0
16		510		41			1285	36	16768	111.7	.0	3.5	61.0
17		483		28			1503	38	23546	128.1	.0	3.1	61.5
18		412		31			1326	42	29154	141.8	.0	3.5	62.0
19		358		31			1431	39	23069	132.9	.0	3.9	62.0
20		702		59			2125	63	19019	134.2	.0	3.0	63.0
21		992		45			1855	56	16522	121.3	.0	3.7	62.0
22		721		92			3203	92	19337	106.4	.0	3.9	62.0
23		773		80			4203	74	13461	131.3	.0	3.5	61.5
24		321		74			2736	42	11744	129.1	.0	5.5	62.5
25		365		37			2687	56	16157	128.8	.0	4.5	63.0
26		455		37			2317	60	15638	123.6	.0	5.1	65.0
27		526		57			1670	79	8569	110.3	.0	4.2	65.0
28		287		25			1567	57	6459	98.9	.0	3.4	64.0
29		732		50			2393	117	8100	108.3	.0	4.3	65.0
30		484		96			2667	184	5110	126.5	.0	5.0	65.0
TOTALS	1404	11147		1090			35022	942	620667				

TABLE 42

MONTHLY FISH PASSAGE SUMMARY REPORT — JOHN DAY PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — JUL 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SEECHI)	(DEG F)
1		489		84			3671	167	5567	123.5	.0	4.9	65.0
2		374		98			3472	259	5973	130.3	.0	4.5	65.0
3		364		61			4115	212	4326	104.9	.0	4.4	66.0
4		374		60			2414	237	4534	89.7	.0	3.0	67.0
5		413		60			2985	282	2644	86.4	.0	3.0	66.0
6		252		76			2901	348	2655	89.0	.0	3.0	67.0
7		341		72			3943	406	2169	95.2	.0	5.5	67.0
8		230		49			1985	275	615	111.3	4.2	4.5	67.0
9		247		47			1731	314	928	124.7	2.0	4.0	67.0
10		165		20			734	184	735	132.0	2.8	3.0	66.0
11		198		73			1119	293	1024	121.1	3.5	4.0	61.0
12		238		51			980	520	509	98.4	3.7	3.0	68.0
13		111		60			955	475	612	120.5	3.5	6.5	74.0
14		160		56			1168	707	517	124.2	3.8	3.5	67.0
15		276		100			1302	823	216	124.2	2.4	4.0	66.0
16		241		75	1		1347	697	245	115.5	3.8	4.0	66.0
17		207		49			1063	707	267	99.5	2.2	4.0	67.0
18		198		69			791	707	194	97.2	4.5	4.2	67.0
19		208		53			426	414	83	77.8	1.0	4.5	67.0
20		191		37			428	573	130	105.7	2.2	4.0	65.0
21		120		31			376	802	133	125.7	3.0	4.1	67.0
22		268		53			308	934	81	111.9	5.5	4.5	65.0
23		76		39			292	992	92	108.7	4.4	4.0	67.0
24		84		50			293	880	59	113.5	1.7	4.5	67.0
25		112		96			272	1141	29	104.5	1.5	5.0	67.0
26		137		65			230	1595	28	83.3	1.1	5.1	68.0
27		246		102			195	1967	22	93.8	1.3	3.4	67.0
28		125		56			123	1077	5	117.6	2.1	5.0	67.0
29		187		31			191	2063	33	107.9	2.3	6.0	67.0
30		213		55			94	1552	21	106.5	2.3	3.5	67.0
31		226		49			79	2011	36	114.0	.0	6.0	67.0
TOTALS		7071		1877	1		39983	23614	34482				

TABLE 43

MONTHLY FISH PASSAGE SUMMARY REPORT — JOHN DAY PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — AUG 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SEECHI)	(DEG F)
1		145		58			75	1820	33	107.7	.0	3.8	68.0
2		114		48			32	1273	24	98.4	1.7	6.0	67.0
3		39		28			12	766	15	97.5	4.4	5.3	64.0
4		187		58			52	2796	33	103.4	3.1	5.8	68.0
5		374		80			53	2552	8	100.1	3.1	5.4	67.0
6			409	91			51	2416	4	115.5	1.5	5.4	67.0
7			367	57			20	1559	-1	133.6	2.8	5.2	67.5
8			210	40			32	1891	2	114.6	4.1	5.2	67.5
9			226	45			16	1930	7	86.5	1.5	5.0	69.0
10			519	41			10	1683	-9	92.5	1.2	5.5	68.0
11			370	44			20	1160	-7	122.8	5.1	5.5	68.0
12			506	58			17	1059	2	122.6	2.4	3.0	68.0
13			169	39			1	344	1	90.7	4.6	4.4	69.0
14			367	73			8	465	5	103.2	1.4	3.6	60.0
15			533	67			8	766	-10	93.1	.0	3.6	69.0
16			752	91			6	850	-1	81.1	.0	3.0	68.0
17			471	83			4	998	6	92.1	.0	3.6	68.0
18			217	88			8	576	-3	103.8	.0	4.8	68.0
19			76	38			7	438	-2	101.1	.0	5.0	68.0
20			461	62			5	598	-12	92.8	.0	4.0	68.0
21			1203	143			26	738	-2	112.8	.0	3.0	68.0
22			903	106			9	724	-5	112.7	.0	4.0	68.0
23			964	106			13	645	-6	96.1	.0	3.5	68.0
24			512	85			1	734	-6	99.2	.0	4.5	68.0
25			2257	242	1		6	1126	-6	90.8	.0	5.3	66.0
26			2327	263	6		11	1391	-13	103.2	.0	4.5	68.0
27			951	199	1		6	741	-7	105.1	.0	4.0	69.0
28			479	152			2	598	-4	118.4	.0	4.0	69.0
29			1767	289			1	587	-16	100.9	.0	6.5	68.0
30			1560	238				426	-13	96.2	.0	4.5	68.0
31			1661	249	7	1	1	543	-14	116.5	.0	5.5	67.0
TOTALS		859	20237	3267	15	1	513	34203	3				

TABLE 44

MONTHLY FISH PASSAGE SUMMARY REPORT — JOHN DAY PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — SEP 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1			2594	360		1	2	858	1	99.3	.0	4.5	70.0
2			4807	739	8	8	3	725	4	98.6	.0	4.5	65.0
3			2294	277	9	10		601		89.0	.0	4.7	69.0
4			1770	570	18	4		465		102.8	.0	5.0	70.0
5			2611	725	12	10	3	269		86.4	.0	4.0	70.0
6			1793	542	11	3		523		75.2	.0	5.0	70.0
7			287	172	8	6		582		80.0	.0	6.5	68.0
8			1274	482	4	13		1034		101.1	.0	5.0	68.0
9			4033	990	15	16		1251		104.1	.0	5.0	68.0
10			5003	1082	13	21		933		109.9	.0	5.4	70.0
11			2788	537	16	11		1129		116.3	.0	5.5	68.0
12			3622	928	29	12	1	1608		118.6	.0	5.0	68.0
13			5714	1246	36	19		2058		113.5	.0	5.6	68.0
14			21649	2349	337	99		5181		125.3	.0	5.5	68.0
15			17530	1945	346	111		3381		115.5	.0	4.5	68.0
16			13599	2041	191	78		3760		116.8	.0	4.6	68.0
17			14423	2089	190	66		3117		121.0	.0	4.7	67.0
18			12563	1924	149	72		3121		101.0	.0	4.4	67.0
19			10275	1915	281	135	1	4576		93.3	.0	4.7	67.0
20			8760	2346	100	79	1	5408		87.9	.0	4.1	65.0
21			4897	1647	52	70		5553		87.6	.0	4.8	67.0
22			3407	1230	61	40		4253		105.1	.0	5.0	67.0
23			1975	897	47	35		2464		123.1	.0	4.5	67.0
24			2421	1073	59	26		2119		121.7	.0	4.5	67.0
25			1444	1645	8	34	-1	2317		101.0	.0	5.0	65.0
26			2068	1716	17	46	1	2818		98.3	.0	4.1	66.0
27			2297	1719	33	45		3398		84.4	.0	4.0	66.0
28			1434	1395	13	33		2690		104.5	.0	3.5	66.0
29			1507	1327	5	18		2284		118.8	.0	4.0	65.0
30			822	626	2	14		1109		123.9	.0	4.0	65.0
TOTALS			160061	36535	2070	1135	11	69585	5				

TABLE 45

MONTHLY FISH PASSAGE SUMMARY REPORT — JOHN DAY PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — OCT 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SEECHI)	(DEG F)
1			457	357		3		1350		134.8	.0	4.0	66.0
2			752	512	1			1640		115.3	.0	4.5	65.0
3			594	420				1902		97.9	.0	3.5	64.5
4			1262	669				1984		75.1	.0	4.5	64.0
5			911	645				2015		121.0	.0	3.0	64.0
6			417	514	3	6		1863		139.3	.0	4.4	64.0
7			990	593	1	10		1405		124.7	.0	3.0	68.0
8			445	362		2		944		118.8	.0	4.0	68.0
9			163	155		6		715		126.5	.0	4.4	64.0
10			404	440	1	5		1229		102.9	.0	3.9	63.5
11			442	304		6		910		83.8	.0	2.4	65.0
12			328	260	1	2		1255		116.0	.0	4.3	51.0
13			295	135		1		1034		126.4	.0	4.0	65.0
14			229	167		2		1201		161.4	.0	4.0	65.0
15			483	220				1377		154.2	.0	4.5	62.0
16			821	348	3	7		1021		147.4	.0	4.0	62.0
17			340	265	2	8		1346		105.4	.0	5.0	65.0
18			592	332		8		1301		89.3	.0	5.0	63.0
19			338	261	5	13		1045		144.3	.0	4.5	62.0
20			554	353	2	9		1489		125.5	.0	4.5	62.0
21			473	278		4		1304		121.9	.0	3.0	61.0
22			546	296	1	5		1300		122.9	.0	4.5	60.0
23			476	174		2		1336		153.4	.0	3.6	60.0
24			374	160	1			1165		115.3	.0	3.6	60.0
25			316	165				1197		93.2	.0	3.4	60.0
26			179	191				1075		114.0	.0	4.5	60.0
27			166	179	1	5		1158		129.6	.0	4.0	60.0
28			121	118		3		979		121.8	.0	4.0	58.0
29			164	112	1	2		944		117.8	.0	3.5	59.0
30			274	99				769		110.7	.0	5.0	57.0
31			243	135	1			878		87.9	.0	3.5	58.0
TOTALS			14149	9218	24	109		39131					

TABLE 46

WATER TEMPERATURE AND STREAM FLOW DATA
JOHN DAY - 1987

DATE	NOVEMBER			DECEMBER		
	DISCHARGE	TURBIDITY	WATER TEMP.	DISCHARGE	TURBIDITY	WATER TEMP.
1	89.5	5.0	53.0	152.6	4.0	49.0
2	107.0	3.0	57.0	123.3	2.8	53.0
3	101.1	4.5	61.0	125.2	5.0	48.0
4	112.0	3.0	54.0	135.9	4.0	49.0
5	107.6	4.5	57.0	107.5	5.5	47.0
6	106.3	4.5	56.0	101.9	4.0	48.0
7	100.0	5.0	56.0	144.4	6.0	48.0
8	77.1	4.0	56.0	140.3	4.5	48.0
9	100.9	3.0	56.0	153.5	3.5	47.0
10	93.8	4.5	56.0	147.2	4.7	48.0
11	102.0	4.5	56.0	150.7	4.0	48.0
12	126.2	4.5	56.0	140.9	3.0	47.0
13	116.8	4.6	50.0	135.1	4.3	47.0
14	96.7	4.6	48.0	177.3	3.6	46.0
15	100.9	3.5	48.0	141.5	4.2	46.0
16	115.9	4.5	55.0	181.7	3.5	46.0
17	129.4	4.5	55.0	166.4	3.0	43.0
18	115.4	3.5	55.0	169.3	4.5	43.0
19	126.3	3.0	55.0	146.9	2.5	43.0
20	119.1	4.5	53.0	111.3	4.3	43.0
21	107.6	3.5	52.0	154.1	4.4	43.0
22	102.3	4.5	52.0	162.0	5.0	43.0
23	122.2	4.0	52.0	151.0	3.0	44.0
24	109.0	4.5	57.0	145.4	4.5	43.0
25	132.6	4.0	54.0	124.2	3.5	43.0
26	136.4	4.5	54.0	133.6	3.5	42.0
27	109.6	4.7	54.0	113.4	3.5	42.0
28	100.9	4.0	54.0	142.7	3.0	41.0
29	95.0	4.0	54.0	153.3	4.0	42.0
30	120.0	5.0	49.0	148.3	5.0	43.0
31				169.4	3.8	47.0

TABLE 47

MONTHLY COUNT OF CHINOOK SALMON OVER JOHN DAY DAM
1968-1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	SPRING APR 1*- JUN 5	SUMMER JUN 6- AUG 5	FALL AUG 6- OCT 31*	JACKS
1968				29,973	46,272	30,702	42,212	16,726	62,709	4,851	209		233,654	77,482	75,494	80,678	67,284
1969			6	4,266	72,966	35,899	31,071	18,523	103,778	9,542			276,051	81,724	64,732	129,595	93,928
1970				35,750	35,248	20,439	21,542	24,784	80,969	3,774			222,506	72,555	43,093	106,858	74,090
1971				13,995	40,620	24,364	25,692	10,403	73,157	5,650			193,881	56,625	50,030	87,226	61,380
1972				28,535	41,882	15,833	27,484	14,208	90,181	7,508			225,631	71,569	44,542	109,520	82,646
1973				67,467	27,091	18,972	15,067	16,995	89,913	13,987			249,492	96,710	34,206	118,576	73,687
1974				5,174	38,058	8,115	18,985	8,112	77,296	12,148			167,888	46,191	25,865	95,832	61,669
1975				7,727	27,989	11,058	21,359	18,250	65,367	7,329			159,079	37,716	32,179	89,184	62,403
1976				10,428	32,985	17,836	18,506	10,114	72,467	13,575			175,911	45,419	36,037	94,455	62,793
1977				55,061	19,422	15,674	13,764	7,853	71,302	11,855			194,931	75,782	29,194	89,955	60,386
1978				34,735	35,206	15,104	16,764	8,149	52,975	11,919			174,852	72,723	30,371	71,758	36,289
1979				8,224	12,568	9,537	13,580	14,128	50,977	8,566	574		118,154	21,981	23,572	72,601	41,364
1980				7,995	18,311	7,125	12,522	9,063	37,023	8,625			100,664	27,202	19,664	53,798	25,877
1981				18,178	18,325	7,292	8,992	8,524	44,626	8,422			114,359	37,677	15,813	60,869	34,547
1982				3,396	30,444	11,031	7,359	10,881	67,271	13,700			144,082	36,530	16,360	91,192	56,966
1983				7,123	25,391	7,990	7,064	8,195	66,078	18,025			139,866	33,480	14,834	91,552	43,440
1984				4,329	26,561	9,706	12,892	15,422	96,399	22,255	809**		188,373	32,035	22,795	133,543	69,874
1985				27,539	42,487	15,585	9,663	27,387	178,322	34,192	2,449**		337,624	72,389	23,489	241,746	149,281
1986			21	38,075	37,959	13,227	9,703	10,797	194,928	41,990			346,700	77,884	22,051	246,765	133,827
1987				33,985	26,852	13,641	8,948	24,363	196,596	23,367			327,752	62,313	22,244	243,195	53,794
TOTAL			27	441,955	656,637	309,130	343,169	282,877	1,772,334	281,280	4,041		4,091,450	1,135,987	646,565	2,308,898	1,345,525
10-YEAR AVERAGE				18,358	27,410	11,024	10,749	13,691	98,520	19,106			199,243	47,421	21,119	130,702	64,526

* 1968, 1969, 1979, 1984, 1985 and 1986 counting seasons varied slightly from these dates.
** Extended counting period.

TABLE 48

MONTHLY COUNT OF SOCKEYE SALMON
JOHN DAY DAM - 1968-1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1968						42,175	44,942	690	32	7	1		87,847
1969						13,383	26,174	245	37	8			39,847
1970						18,029	58,176	1,909	19				78,133
1971						5,219	66,183	787	38	5			72,232
1972						6,762	43,704	1,257	68	2			51,793
1973					2	21,283	42,588	864	6	1			64,744
1974						2,024	30,687	403	6	1			33,121
1975						6,154	44,454	163	2	1			50,774
1976						8,907	21,278	258	1	2			30,446
1977					6	52,852	32,269	537	34	3			85,701
1978						5,633	8,006	119	20				13,778
1979						13,466	29,603	560	1				43,630
1980						9,596	40,536	530	13				50,675
1981						17,064	28,975	94	13				46,146
1982						8,708	28,974	286	2				37,970
1983						27,372	63,995	506	37	7			91,917
1984						54,975	51,728	1,230	16	2			107,951
1985						78,326	46,184	421	10				124,941
1986						13,472	32,116	738		1			46,327
1987						35,022	39,983	513	11				75,529
TOTAL					8	440,422	780,555	12,110	366	40	1		1,233,502
10-YEAR AVERAGE						26,363	37,010	500	12	1			63,886

TABLE 49

MONTHLY COUNT OF COHO SALMON
JOHN DAY DAM - 1968-1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1968							4	1,311	32,882	3,848	188		38,233
1969							25	308	9,879	3,377			13,589
1970							14	1,026	17,272	1,231			19,543
1971								944	36,401	3,485			40,830
1972								1,253	14,965	1,315			17,533
1973								788	11,350	1,221			13,359
1974								730	11,253	2,668			14,651
1975								85	4,266	1,954			6,305
1976								57	3,739	2,010			5,806
1977								8	534	581			1,123
1978								6	2,676	5,673			8,355
1979							1	132	2,853	1,753	322		5,061
1980								27	1,431	466			1,924
1981								90	2,030	442			2,562
1982								145	3,032	886			4,063
1983								99	1,353	188			1,640
1984								4	1,736	331	9		2,080
1985								95	1,140	395	22		1,652
1986									1,527	406			1,933
1987							1	16	3,205	133			3,355
TOTAL							45	7,124	163,524	32,363	541		203,597
10-YEAR AVERAGE								61	2,098	1,067			3,263

TABLE 50

MONTHLY COUNT OF STEELHEAD TROUT
JOHN DAY DAM - 1968-1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1968				3,939	2,659	151	6,094	26,824	68,791	11,405	1,393		121,256
1969			314	3,986	3,691	714	12,004	13,267	40,082	12,290			86,348
1970				1,987	1,279	253	7,373	19,412	46,036	6,100			82,440
1971				1,472	592	263	17,459	19,693	63,868	12,630			115,977
1972				1,523	1,966	356	17,656	20,502	78,138	21,487			141,628
1973				8,019	3,546	785	12,134	15,608	46,566	14,782			101,440
1974				1,713	2,363	1,361	9,713	8,419	12,479	7,708			43,756
1975				760	428	648	6,251	8,583	9,977	6,004			32,651
1976				929	1,248	1,868	9,254	17,964	22,754	5,791			59,808
1977				1,319	418	2,341	18,366	7,088	56,134	16,892			102,558
1978				741	631	1,601	5,573	6,911	22,896	5,835			44,188
1979				602	136	253	8,012	10,717	16,202	18,072	1,883		55,877
1980				4,131	555	577	5,850	18,114	34,700	14,272			78,199
1981				2,061	1,539	2,515	15,999	18,283	34,098	20,677			95,172
1982				3,393	1,698	1,167	10,168	19,693	50,725	21,759			108,603
1983				1,492	434	560	15,088	31,453	83,215	22,183			154,425
1984				3,316	1,787	2,101	21,442	19,743	100,437	46,506	5,822		201,154
1985				6,821	1,723	3,583	19,631	64,456	109,488	37,227	4,164		247,093
1986			3,611	2,040	887	2,362	37,732	31,576	107,002	52,800			238,010
1987				3,926	-747	942	23,614	34,203	69,585	39,131			170,654
TOTAL			3,925	54,170	26,833	24,401	279,413	412,509	1,073,173	393,551	13,262		2,281,237
10-YEAR AVERAGE				2,852	864	1,566	16,311	25,515	62,835	27,846			139,338

TABLE 51

MISCELLANEOUS SPECIES
SIGHTED AT
BONNEVILLE, THE DALLES, AND JOHN DAY DAMS
1987

In addition to those fish species required to be counted, other food or game fish were recorded in the remarks section of the daily count forms. They do not represent the net upstream passage nor are they adjusted for hourly ten-minute breaks. Lamprey and sqawfish, being neither food nor game fish, were not recorded, but were probably the most numerous species seen. The lamprey and sqawfish were primarily sighted at Bonneville.

The following numbers are not exact and represent only sightings.

Species	Bonneville		The Dalles		John Day	
	WA Shore	OR Shore	WA Shore	OR Shore	WA Shore	OR Shore
Sturgeon	13	7	26	427	28	1
Catfish	11	2	4	78	1	19
Whitefish	1		21	313		
Bass	151	9	177	232	221	688
Walleye	3		5	120	27	4

TABLE 52

YEARLY TOTALS OF SALMONID FISH COUNTED OVER MCNARY DAM
1954 - 1987

YEAR	CHINOOK	STEELHEAD	SOCKEYE	COHO	TOTAL SALMONID
1954	126,555	75,059	108,181	950	310,745
1955	108,915	85,575	173,758	643	368,891
1956	114,342	42,554	102,145	683	259,724
1957	292,696	105,728	85,460	2,855	486,739
1958	226,092	87,890	102,397	1,350	417,729
1959	171,490	110,475	83,977	1,970	367,912
1960	176,767	96,895	55,372	1,580	330,614
1961	154,996	103,743	16,388	2,045	277,172
1962	152,756	163,181	29,372	3,195	348,504
1963	154,459	113,646	59,744	3,113	330,962
1964	167,934	100,742	83,931	3,317	355,924
1965	150,907	118,960	42,052	2,700	314,619
1966	223,141	145,130	173,028	8,525	549,824
1967	195,653	77,700	105,635	27,226	406,214
1968	200,488	112,522	101,007	39,518	453,535
1969	213,407	76,681	29,787	53,716	373,591
1970	168,892	69,759	59,636	36,399	334,686
1971	171,448	109,630	52,867	39,358	373,303
1972	168,821	93,820	26,422	45,635	334,698
1973	184,112	64,620	42,731	17,682	309,145
1974	127,858	26,932	26,505	13,746	195,041
1975	133,150	23,663	43,143	3,975	203,931
1976	163,314	54,000	24,632	7,539	249,485
1977	183,581	87,712	80,781	4,622	356,696
1978	144,148	34,740	18,511	20,356	217,755
1979	95,275	50,304	37,792	12,800	196,171
1980	80,773	66,524	44,301	571	192,169
1981	80,619	61,985	26,644	3,736	172,984
1982	102,225	75,099	15,077	3,119	195,520
1983	121,636	125,254	40,903	2,470	290,263
1984	159,071	135,515	56,906	2,841	354,333
1985	288,483	188,204	98,457	6,917	582,061
1986	342,417	193,481	46,443	1,374	583,715
1987	286,638	148,811	72,190	615	508,254
TOTAL	5,833,059	3,226,534	2,166,175	377,141	11,602,909
10-YEAR AVERAGE	170,129	107,992	45,722	5,480	329,323

TABLE 53

MONTHLY TOTALS OF SALMONIDS AND SHAD COUNTED OVER MCNARY DAM
1987

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
CHINOOK*	-	-	-	26,258	32,171	12,889	11,219	19,123	151,410	33,568	-	-	286,638
STEELHEAD	-	-	-	2,082	413	885	16,658	35,661	59,326	33,786	-	-	148,811
SOCKEYE	-	-	-	-	4	28,742	42,464	889	85	6	-	-	72,190
COHO*	-	-	-	-	-	-	3	24	377	211	-	-	615
CHUM	-	-	-	-	-	-	-	-	-	-	-	-	-
PINK	-	-	-	-	-	-	-	-	-	3	-	-	3
TOTAL SALMONID	-	-	-	28,340	32,588	42,516	70,344	55,697	211,198	67,574	-	-	508,257
SHAD	-	-	-	-	13,489	554,377	40,632	1,498	46	-	-	-	610,042

*Jacks Included

TABLE 54
WATER TEMPERATURE AND STREAM FLOW DATA
MCNARY DAM - 1987

DATE	JANUARY			FEBRUARY			MARCH		
	DISCHARGE	TURBIDITY	WATER TEMP.	DISCHARGE	TURBIDITY	WATER TEMP.	DISCHARGE	TURBIDITY	WATER TEMP.
1	140.9	3.5	44.0	116.0	4.1	38.0	114.2	3.5	41.0
2	122.0	3.5	44.0	140.6	4.0	41.0	116.4	3.5	41.0
3	126.4	4.0	43.0	134.3	3.0	41.0	117.6	3.5	41.0
4	113.0	4.0	43.0	124.6	3.8	39.0	130.2	3.5	41.0
5	128.9	4.8	42.0	131.2	3.8	40.0	123.4	3.5	41.0
6	170.4	4.8	42.0	131.8	3.8	40.0	114.6	3.5	41.0
7	180.5	4.8	42.0	119.3	3.8	40.0	115.3	3.5	41.0
8	189.5	4.8	42.0	107.6	3.8	39.0	113.0	3.5	42.0
9	181.6	4.8	42.0	124.1	3.8	39.0	127.5	3.5	42.0
10	172.3	4.8	42.0	138.7	3.8	39.0	118.3	3.0	42.0
11	165.4	4.8	41.0	131.3	3.8	39.0	124.3	2.5	42.0
12	177.6	4.8	41.0	131.9	3.8	39.0	114.0	2.5	42.0
13	173.9	4.8	41.0	154.7	2.0	39.0	108.2	3.0	42.0
14	167.6	4.8	41.0	125.8	3.8	39.0	125.7	2.8	42.0
15	177.7	3.0	40.0	122.2	2.4	38.0	114.6	2.7	42.0
16	194.4	2.8	40.0	128.6	2.3	38.0	138.9	3.0	43.0
17	194.5	2.8	40.0	134.8	3.0	38.0	121.1	3.1	44.0
18	167.0	3.0	40.0	128.9	3.0	38.0	133.1	2.1	44.0
19	186.8	4.5	40.0	121.3	3.9	38.0	129.1	2.1	44.0
20	165.8	3.3	39.0	137.2	3.9	41.0	117.4	2.0	44.0
21	166.0	4.2	38.0	137.1	4.1	41.0	130.2	2.0	44.0
22	182.5	4.2	38.0	123.9	4.0	41.0	87.1	2.0	44.0
23	191.6	4.3	37.0	143.8	4.0	41.0	150.6	2.0	44.0
24	151.7	4.8	37.0	141.9	4.0	41.0	124.8	2.2	44.0
25	146.2	4.8	37.0	149.3	3.5	41.0	114.6	2.2	44.0
26	156.0	4.8	37.0	153.1	3.5	40.0	160.8	2.2	44.0
27	131.4	4.8	37.0	146.1	3.5	40.0	137.2	2.2	44.0
28	131.3	4.8	37.0	130.0	3.5	41.0	128.3	2.2	44.0
29	159.7	4.0	37.0				111.7	2.2	44.0
30	126.0	4.0	37.0				118.3	2.2	44.0
31	125.6	4.0	38.0				117.0	2.2	44.0

TABLE 55

MONTHLY FISH PASSAGE SUMMARY REPORT — MCNARY PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — APR 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECHI)	(DEG F)
1	10							36		113.9	.0	2.4	45.0
2	36							96		119.1	.0	2.8	45.0
3	84							158		116.6	.0	2.3	45.0
4	87			4				174		134.6	.0	2.8	47.0
5	103			6				184		102.5	.0	2.6	47.0
6	123			2				96		120.6	.0	2.8	47.0
7	128							90		137.9	.0	2.5	47.0
8	248							106		150.4	.0	2.3	46.0
9	465							148		157.0	.0	2.0	46.0
10	88							56		145.0	.0	2.3	46.0
11	316			1				88		136.6	.0	2.4	46.0
12	500			6				104		118.6	.0	2.6	49.0
13	357							60		136.8	.0	2.5	49.0
14	236							31		146.1	.0	2.4	49.0
15	1915			19				44		100.0	.0	2.4	49.0
16	309			2				42		160.4	.0	2.4	50.0
17	381			2				99		164.5	.0	2.4	50.0
18	1301			3				72		138.6	.0	2.5	50.0
19	1590			7				54		142.2	.0	2.4	50.0
20	899			8				26		131.2	.0	3.0	50.0
21	1091			22				49		118.2	.0	2.5	50.0
22	1033			20				49		156.5	.0	3.4	50.0
23	2087			60				59		135.6	.0	3.0	50.0
24	2035			16				38		144.4	.0	2.7	51.0
25	1441			8				42		150.6	.0	3.0	51.0
26	377			10				13		137.8	.0	3.0	51.0
27	1469			6				19		145.7	.0	3.1	51.0
28	3043			23				4		129.6	.0	3.1	51.0
29	1361			23				21		176.3	.0	3.1	51.0
30	2854			43				24		235.7	38.6	3.3	52.0
TOTALS	25967			291				2062					

TABLE 56

MONTHLY FISH PASSAGE SUMMARY REPORT — MCNARY PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — MAY 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SEECHI)	(DEG F)
1	2158			33				26		235.3	37.1	3.0	52.0
2	4060			47				35		230.6	32.1	3.0	52.0
3	1926			52				27	2	228.7	25.6	3.0	52.0
4	868			23				22	2	200.3	1.6	2.9	52.0
5	1738			39				13	1	246.8	49.8	3.0	52.0
6	3079			96				12		256.6	60.4	3.0	52.0
7	1833			63				6		239.3	38.2	3.0	52.0
8	1502			42				9		262.0	50.0	3.5	52.0
9	1668			59				18		265.0	48.6	3.5	52.0
10	1322			58				23	8	230.5	18.7	3.5	52.0
11	949			53				17	16	245.5	47.6	3.5	52.0
12	903			54				8	6	266.5	71.7	3.5	52.0
13	668			30				10		271.3	71.6	2.8	56.0
14	1042			52				5	3	271.6	74.6	2.4	56.0
15	1041			62				8	2	291.6	101.8	3.0	56.0
16	536			32				11	14	274.7	87.5	2.7	56.0
17	710			45				8	47	238.5	51.0	2.5	56.0
18	520			44				16	22	236.3	53.2	2.4	56.0
19	551			52				18	39	229.8	53.6	3.1	56.0
20	591			47				17	124	171.6	.0	2.7	56.0
21	312			26				7	125	196.9	17.7	2.5	56.0
22	312			28				9	153	182.5	1.3	3.0	56.0
23	399			33				13	309	191.0	15.5	3.0	56.0
24	392			45			4	13	249	179.1	.0	3.0	56.0
25	249			22				-9	562	186.4	.0	3.1	56.0
26	164			20				14	526	182.8	.0	3.0	56.0
27	213			33				12	548	199.8	.0	3.0	56.0
28	207			23				7	1392	197.0	7.7	3.1	56.0
29	264			14				16	1995	204.5	.0	3.2	56.0
30	320			9				15	3045	203.4	.0	3.2	56.0
31	406			12				7	4299	162.1	.0	3.0	56.0
TOTALS	30923			1248			4	413	13489				

TABLE 57

MONTHLY FISH PASSAGE SUMMARY REPORT — MCNARY PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — JUN 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1	155			8				10	3292	176.9	.0	2.5	56.0
2	191			6				5	6897	193.9	.0	2.8	56.0
3	185			7				2	6396	199.0	.0	2.5	56.0
4	236			17			4	20	16635	173.1	.0	2.6	58.0
5	247			2				10	19666	176.5	.0	2.6	58.0
6	312			12			1	13	19758	198.5	.0	2.8	58.0
7	328			10				19	18808	189.9	.0	3.0	59.0
8	243			8			6	17	20470	192.1	.0	2.4	59.0
9		138		3			9	3	26693	187.3	.0	2.0	59.0
10		124		13			12	13	29445	196.0	.0	3.0	61.0
11		211		14			46	19	27974	175.0	.0	3.0	61.0
12		364		27			62	19	25054	157.5	.0	3.0	61.0
13		184		16			74	15	25953	115.2	.0	3.0	61.0
14		218		13			171	19	34167	129.7	.0	3.6	62.0
15		271		13			271	22	29328	129.3	.0	3.0	61.0
16		588		44			349	22	16361	122.3	.0	3.4	61.0
17		401		16			553	34	27077	157.9	.0	3.0	61.0
18		510		31			514	45	23077	145.8	.0	3.0	62.0
19		494		18			1309	45	15117	126.8	.0	3.0	62.0
20		586		23			1269	36	17032	129.4	.0	3.4	62.0
21		432		32			2013	63	11259	102.8	.0	3.8	63.0
22		695		49			2467	53	16580	103.3	.0	3.2	63.0
23		1316		48			3706	91	32435	129.9	.0	2.8	63.0
24		636		40			4081	50	17216	141.6	.0	4.0	63.0
25		1022		40			2645	41	17753	118.5	.0	4.0	65.0
26		678		33			1684	42	9869	114.0	.0	3.8	63.0
27		430		37			1982	41	9801	134.9	.0	3.5	65.0
28		434		26			1982	39	9780	96.1	.0	3.8	66.0
29		419		13			1846	52	13420	109.4	.0	3.6	66.0
30		191		29			1286	24	7064	136.6	.0	3.6	66.0
TOTALS	1897	10344		648			28742	885	554377				

TABLE 58

MONTHLY FISH PASSAGE SUMMARY REPORT — MCNARY PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — JUL 1987

	FISH COUNTS								RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1		329		43			1591	29	5449	119.2	.0	3.8	66.0
2		542		44			2809	64	3430	121.2	.0	3.0	66.0
3		852		53			2923	86	4135	101.8	.0	3.2	69.0
4		624		26			2539	96	3538	88.2	.0	4.0	69.0
5		863		53			2932	160	2903	79.9	.0	3.8	68.0
6		392		28			2976	125	2406	78.8	.0	4.0	67.0
7		399		35			2461	213	1762	121.2	.0	2.5	68.0
8		414		44			2285	232	1724	120.4	.0	3.0	68.0
9		333		31			2828	242	1099	129.6	.0	3.2	68.0
10		261		36			2025	232	1610	125.4	.0	3.1	67.0
11		229		39			1507	143	1907	113.6	.0	3.1	68.0
12		298		39			1379	145	1719	98.3	.0	2.8	68.0
13		187		38			1319	182	1700	105.6	.0	3.0	68.0
14		161		40			1097	154	921	126.4	.0	2.9	68.0
15		112		28			1004	144	857	125.1	.0	3.9	68.0
16		259		66			1805	504	851	116.3	.0	3.9	68.0
17		341		49			1227	703	577	99.8	.0	3.9	68.0
18		214		30			1197	376	237	110.2	.0	3.9	67.0
19		253		44	1		1112	365	450	86.9	.0	3.9	67.0
20		264		67			1100	776	256	88.3	.0	3.9	67.0
21		179		47			652	533	508	126.9	.0	3.7	67.0
22		282		35			512	549	303	103.3	.0	3.6	67.0
23		264		54			623	937	336	107.2	.0	3.6	66.0
24		370		34	2		488	924	455	123.1	.0	3.4	66.0
25		111		35			372	647	334	103.5	.0	3.6	67.0
26		150		55			395	997	321	81.2	.0	4.3	68.0
27		136		58			325	976	194	98.2	.0	3.0	67.0
28		170		45			252	1078	230	110.9	.0	4.0	68.0
29		281		50			335	1555	152	117.6	.0	3.6	67.0
30		264		41			204	1735	93	104.2	.0	3.6	67.0
31		292		46			191	1756	175	109.0	.0	2.7	69.0
TOTALS		9886		1333	3		42464	16658	40632				

TABLE 58

TABLE 59

MONTHLY FISH PASSAGE SUMMARY REPORT — MCNARY PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — AUG 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SEECHI)	(DEG F)
1		236		43			122	1694	109	104.1	.0	2.0	69.0
2		236		48			133	1036	217	89.1	.0	2.3	69.0
3		145		28			98	1013	172	103.0	.0	3.6	69.0
4		133		43			45	1322	79	109.3	.0	4.0	69.0
5		127		53			37	1296	97	103.3	.0	4.0	69.0
6		163		75			54	2770	84	119.5	.0	3.8	70.0
7		309		71			61	3026	109	126.2	.0	4.0	70.0
8		1404		98			41	2358	95	108.0	.0	3.0	70.0
9			620	61			38	1537	111	101.1	.0	3.2	70.0
10			336	54			29	1376	76	98.9	.0	3.0	70.0
11			344	44			33	3000	61	119.0	.0	3.2	70.0
12			434	70			28	2475	25	115.9	.0	3.2	70.0
13			444	75	2		31	1315	18	92.4	.0	2.7	70.0
14			260	61	1		15	1396	16	106.1	.0	2.8	70.0
15			367	48	2	1	19	1071	14	99.3	.0	3.1	70.0
16			417	51	2		20	843	12	83.9	.0	2.4	70.0
17			229	49	2		4	390	30	81.2	.0	2.4	70.0
18			409	73	1		12	563	15	102.8	.0	3.0	69.0
19			311	45			2	394	15	83.0	.0	3.5	69.0
20			213	38			3	425	16	113.6	.0	3.5	69.0
21			197	66			13	581	23	111.5	.0	3.5	69.0
22			280	53			6	652	23	108.1	.0	3.5	70.0
23			570	76	1		5	366	7	90.3	.0	3.5	70.0
24			989	124		1	6	347	16	84.7	.0	3.5	69.0
25			641	83	1		2	532	13	112.9	.0	4.0	70.0
26			939	145			8	472	2	110.6	.0	3.9	69.0
27			966	104			6	489	6	102.1	.0	4.2	70.0
28			1120	146			4	613	8	116.3	.0	3.5	70.0
29			1768	213	1		9	814	10	112.6	.0	4.0	70.0
30			985	233	1	1	1	866	11	90.7	.0	4.1	70.0
31			984	156	3	4	4	629	8	88.1	.0	3.6	70.0
TOTALS		2753	13843	2527	17	7	889	35661	1498				

TABLE 60

MONTHLY FISH PASSAGE SUMMARY REPORT — MCNARY PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — SEP 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1			1748	345	1	2	5	573	3	103.4	.0	3.0	70.0
2			1436	312	1	4	5	479	4	108.2	.0	4.1	70.0
3			1708	348		1		618	3	110.8	.0	3.1	70.0
4			2977	674		2	1	861	6	108.3	.0	3.1	70.0
5			2045	472	6	5	1	498	1	85.6	.0	3.5	70.0
6			1458	399	6	2		360	2	70.4	.0	3.2	70.0
7			1960	439				291		80.4	.0	3.2	70.0
8			2387	528				330	12	87.4	.0	4.8	70.0
9			840	369				272	4	99.9	.0	3.4	70.0
10			670	226			1	323	6	106.1	.0	4.3	69.0
11			1560	320				536	5	113.4	.0	4.0	69.0
12			2987	933	6	3	4	837		133.8	.0	3.2	71.0
13			3193	1044	6	9	16	1436		96.1	.0	3.2	70.0
14			4015	1025	30	30	13	1675		112.6	.0	3.2	70.0
15			5920	1686	12	13		3946		116.2	.0	3.8	70.0
16			7955	1599	14	25		4154		105.4	.0	3.0	70.0
17			8871	1452	9	16		3859		120.9	.0	3.1	70.0
18			8072	953	10	6		3865		101.3	.0	3.1	70.0
19			8932	918	5	3	12	2463		103.4	.0	2.9	70.0
20			8513	1568	6	10	17	2497		93.1	.0	3.0	70.0
21			10573	1750	8	7	2	3100		92.1	.0	3.1	70.0
22			8917	1510	7	10	2	3248		121.3	.0	3.2	70.0
23			4762	1468	14	6	2	3539		133.2	.0	3.0	70.0
24			3943	1591	7	6	1	2983		96.2	.0	3.0	67.0
25			2107	1237	10	6	2	3150		101.7	.0	3.0	67.0
26			3200	1854	5	5		3694		106.4	.0	3.0	68.0
27			2755	1510	13	1		2601		82.2	.0	3.0	68.0
28			2807	1321	5	3		2981		102.9	.0	3.0	68.0
29			2185	1005	3	5	1	2224		116.5	.0	3.0	66.0
30			2360	1045	7	6		1933		109.7	.0	3.9	66.0
TOTALS			120910	30500	191	186	85	59326	46				

TABLE 61

MONTHLY FISH PASSAGE SUMMARY REPORT — MCNARY PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — OCT 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1			1431	875	2			1838		125.0	.0	3.2	66.0
2			1337	1003	6	5		1890		132.8	.0	3.0	65.0
3			930	918	10	2		1421		99.6	.0	3.1	65.0
4			901	968	13	6		1803		87.9	.0	3.0	65.0
5			969	725	11	7		1013		113.9	.0	3.2	65.0
6			829	623	12	6	4	1245		127.5	.0	2.8	65.0
7			1101	985	9	13		1300		128.3	.0	3.0	65.0
8			748	757	6	8		1310		116.7	.0	3.0	65.0
9			870	709	14	10		1680		121.5	.0	3.8	64.0
10			884	626	3	6		1446		100.3	.0	3.5	64.0
11			599	487	8	4		1195		84.0	.0	3.5	64.0
12			416	323	2	4		840		105.5	.0	4.0	64.0
13			539	517		1		821		144.0	.0	4.0	64.0
14			315	451				824		159.5	.0	4.0	63.0
15			395	432	1	2		1197		128.2	.0	4.0	62.0
16			242	351				1149		104.5	.0	3.6	62.0
17			309	228				734		105.8	.0	3.6	62.0
18			487	252	3			896		98.9	.0	3.6	62.0
19			677	287				807		135.4	.0	3.6	62.0
20			809	279				1307		108.1	.0	3.4	62.0
21			555	290				1074		143.2	.0	3.6	62.0
22			608	268	6	6		897		124.3	.0	3.8	60.0
23			494	286		3	1	871		126.0	.0	3.8	60.0
24			670	307	3	2	1	969		121.7	.0	3.6	59.0
25			556	273	2	1		1218		102.2	.0	3.9	59.0
26			469	221	6			894		109.8	.0	3.5	59.0
27			396	194	1	1		832		110.3	.0	3.7	59.0
28			229	133	2			500		121.9	.0	3.7	58.0
29			190	143	2			379		115.4	.0	3.7	58.0
30			192	138	2			689		99.2	.0	3.7	59.0
31			246	126				747		85.9	.0	3.7	59.0
TOTALS			19393	14175	124	87	6	33786					

TABLE 62
DISCHARGE AND WATER QUALITY DATA
McNARY DAM - 1987

DATE	NOVEMBER			DECEMBER		
	DISCHARGE	TURBIDITY	WATER TEMP.	DISCHARGE	TURBIDITY	WATER TEMP.
1	89.3	3.3	59.0	150.3	4.0	50.0
2	100.6	3.2	59.0	115.8	4.5	49.0
3	104.5	3.4	58.0	122.1	4.0	49.0
4	113.8	3.6	58.0	122.3	4.0	49.0
5	99.1	3.4	58.0	105.7	4.0	49.0
6	102.0	3.5	58.0	101.3	4.0	49.0
7	99.5	*	58.0	121.9	4.0	49.0
8	67.0	3.2	58.0	152.7	3.8	49.0
9	89.9	3.8	58.0	156.1	3.6	50.0
10	99.6	3.7	58.0	144.2	3.6	50.0
11	113.2	3.2	58.0	150.6	4.1	50.0
12	121.2	3.3	57.0	133.0	3.9	50.0
13	102.1	3.2	56.0	139.9	3.6	49.0
14	104.1	2.8	56.0	152.0	3.6	49.0
15	96.0	3.5	56.0	146.1	3.5	48.0
16	107.9	3.3	56.0	171.9	3.0	48.0
17	128.7	3.2	56.0	167.4	3.2	47.0
18	127.4	3.7	55.0	168.8	4.0	45.0
19	117.0	3.6	54.0	142.1	4.0	45.0
20	111.6	4.0	54.0	117.2	4.0	45.0
21	115.1	3.4	54.0	145.6	3.9	45.0
22	97.2	3.8	54.0	158.1	3.9	45.0
23	115.0	4.2	54.0	150.8	3.9	45.0
24	100.8	3.8	53.0	139.8	4.0	45.0
25	134.9	3.8	51.0	128.3	4.0	44.0
26	130.0	4.0	51.0	115.2	3.4	44.0
27	95.4	4.4	51.0	115.9	3.2	44.0
28	98.2	3.7	51.0	144.6	3.4	43.0
29	104.6	3.8	51.0	158.5	3.6	43.0
30	118.3	4.0	50.0	152.1	3.0	43.0
				159.3	3.4	43.0

*Data missing

TABLE 63

MONTHLY COUNT OF CHINOOK SALMON

McNARY DAM - 1954-1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	SPRING *APR 1- JUN 8	SUMMER JUN 9- AUG 8	FALL AUG 9- NOV 10*
1954			14	919	42,625	28,510	35,993	9,287	8,626	568	13		126,555	52,014	61,065	13,476
1955				86	12,778	26,125	46,021	14,773	7,220	1,648	264		108,915	21,309	71,180	16,426
1956			7	307	10,746	34,360	50,409	11,073	5,636	1,360	444		114,342	12,717	90,335	11,290
1957			6	14,489	67,939	91,473	41,485	25,621	48,685	2,998			292,696	99,511	122,578	70,607
1958				1,864	36,684	61,898	25,140	11,120	82,890	6,496			226,092	54,910	73,654	97,528
1959				3,914	31,923	23,461	51,478	14,929	42,756	3,029			171,490	40,775	74,985	55,730
1960				4,808	44,721	49,506	25,710	13,376	35,329	3,317			176,767	52,490	76,940	47,337
1961				21,669	44,260	19,722	23,192	10,661	31,447	4,045			154,996	68,539	45,257	41,200
1962				10,527	44,053	28,621	21,008	11,751	33,541	3,255			152,756	55,884	52,756	44,116
1963				7,765	42,804	22,454	18,659	13,757	43,731	5,289			154,459	52,336	44,760	57,363
1964				19,856	33,310	10,893	39,334	14,930	45,514	4,097			167,934	54,279	55,062	58,593
1965				6,114	20,559	14,094	28,599	12,856	60,185	8,500			150,907	29,206	45,375	76,326
1966				53,484	32,282	21,161	35,895	13,811	58,275	8,233			223,141	87,195	60,827	75,119
1967				32,790	28,174	13,244	44,612	10,788	54,314	11,731			195,653	62,591	59,975	73,087
1968				13,328	51,443	20,456	37,127	15,713	53,597	8,824			200,488	67,092	60,639	72,757
1969				809	60,241	39,074	30,556	12,200	59,889	10,638			213,407	70,079	63,953	79,375
1970				28,015	34,027	18,661	23,132	13,773	44,635	6,649			168,892	63,982	43,356	61,554
1971				5,642	32,688	24,007	35,152	9,680	55,297	8,982			171,448	42,601	59,129	69,718
1972				25,911	41,609	12,553	35,322	10,154	37,131	6,141			168,821	69,023	50,491	49,307
1973				44,878	31,727	16,836	14,520	10,400	57,716	8,035			184,112	79,047	31,812	73,253
1974				1,918	34,767	7,976	18,181	6,251	45,845	12,920			127,858	40,037	25,812	62,009
1975				4,694	24,752	11,590	20,497	12,485	53,125	6,007			133,150	32,718	31,713	68,719
1976				4,868	30,435	16,714	19,821	9,143	64,863	17,470			163,314	38,505	36,818	87,991
1977				40,692	23,895	16,768	16,256	7,348	64,785	13,837			183,581	66,934	32,277	84,370
1978				27,191	37,613	14,505	18,095	7,799	30,273	7,296	1,376		144,148	68,414	31,589	44,145
1979			6	5,424	13,696	9,763	14,601	8,030	34,702	8,171	882		95,275	21,153	24,161	49,961
1980			3	3,481	18,108	6,705	12,166	7,001	24,409	8,284	616		80,773	23,001	18,862	38,910
1981			3	12,923	16,904	8,288	8,243	5,584	23,323	4,926	425		80,619	32,330	15,141	33,148
1982			3	1,638	23,487	10,357	8,749	5,091	44,276	8,624			102,225	28,352	16,574	57,299
1983				4,481	25,074	9,202	7,882	5,217	54,339	15,441			121,636	31,636	16,199	73,801
1984				1,772	23,806	9,235	12,256	8,840	79,004	23,391	767		159,071	27,474	21,196	110,401
1985			18	18,267	41,962	14,117	9,912	17,222	140,034	46,951			288,483	63,265	22,029	203,189
1986			2	28,739	44,459	14,515	12,315	9,636	168,230	64,521			342,417	76,077	25,798	240,542
1987				26,258	32,171	12,889	11,219	19,123	151,410	33,568			286,638	60,396	25,353	200,889
TOTAL			62	479,521	1,135,722	739,733	853,537	389,423	845,032	385,242	4,787		5,833,059	1,745,872	1,587,651	2,499,054
10-YEAR AVERAGE				13,017	27,728	10,958	11,544	9,354	75,000	22,117			170,129	43,210	21,690	105,180

* Dates vary depending on beginning and ending of fish counting.

TABLE 64

MONTHLY COUNT OF SOCKEYE SALMON
MCNARY DAM - 1954-1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1954					1	1,107	93,452	11,382	2,214	25			108,181
1955					43	287	163,902	9,402	121	3			173,758
1956					1	639	94,352	6,882	262	7	2		102,145
1957					13	6,318	74,874	4,233	22				85,460
1958						12,542	82,547	5,474	1,819	15			102,397
1959					21	2,031	73,735	7,981	209				83,977
1960						9,374	43,749	2,241	8				55,372
1961						1,088	14,149	1,138	11	2			16,388
1962						1,721	27,134	511	6				29,372
1963					78	8,712	50,415	535	4				59,744
1964						770	81,536	1,617	8				83,931
1965						328	40,790	923	10	1			42,052
1966						6,202	162,267	4,548	11				173,028
1967						1,935	101,044	2,647	9				105,635
1968						28,928	70,413	1,666					101,007
1969						5,787	23,353	647					29,787
1970						7,152	47,339	5,134	11				59,636
1971						317	50,568	1,982					52,867
1972						366	24,452	1,604					26,422
1973						9,011	32,301	999	420				42,731
1974						188	25,816	486	15				26,505
1975						1,517	41,011	615					43,143
1976						4,461	19,319	415	437				24,632
1977					8	36,708	43,077	739	207	42			80,781
1978						3,211	10,376	714	1,583	2,627			18,511
1979						6,317	29,571	1,547	321	36			37,792
1980						3,400	40,469	432					44,301
1981						4,419	22,042	180	1	2			26,644
1982						812	13,489	281	292	203			15,077
1983						5,897	33,851	997	142	16			40,903
1984						18,762	37,409	637	85	11	2		56,906
1985				1		60,067	36,567	522	593	707			98,457
1986						8,362	36,863	819	348	51			46,443
1987					4	28,742	42,464	889	85	6			72,190
TOTAL				1	169	287,478	1,784,696	80,819	9,254	3,754	4		2,166,175
10-YEAR AVERAGE						13,999	30,310	702	345	366			45,722

TABLE 65

MONTHLY COUNT OF COHO SALMON*
MCNARY DAM - 1954-1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1954								4	751	180	14	1	950
1955									350	260	33		643
1956								16	462	157	48		683
1957							18	208	2,364	265			2,855
1958								29	1,091	230			1,350
1959								32	1,892	46			1,970
1960								24	1,432	124			1,580
1961								22	1,731	292			2,045
1962							5	106	2,884	200			3,195
1963							5	437	2,259	412			3,113
1964							3	307	2,734	273			3,317
1965							22	105	2,264	309			2,700
1966								811	7,195	519			8,525
1967							11	11	22,492	4,712			27,226
1968								1,010	36,260	2,248			39,518
1969								1,643	45,497	6,576			53,716
1970								3,576	31,161	1,662			36,399
1971								927	33,828	4,603			39,358
1972								2,433	38,747	4,455			45,635
1973							66	1,768	14,452	1,396			17,682
1974								1,160	10,052	2,534			13,746
1975							1	268	3,675	31			3,975
1976								373	5,201	1,965			7,539
1977						2		274	2,698	1,648			4,622
1978						1		138	10,445	7,459	2,313		20,356
1979				1		4	194	652	9,058	2,431	460		12,800
1980								2	180	203	186		571
1981								421	2,840	435	40		3,736
1982							141	235	2,148	595			3,119
1983								229	1,536	705			2,470
1984						6		147	2,506	154	28		2,841
1985					14	37	44	2,040	4,493	289			6,917
1986								1	851	522			1,374
1987							3	24	377	211			615
TOTAL				1	14	50	513	19,433	305,906	48,101	3,122	1	377,141
10-YEAR AVERAGE							38	389	3,443	1,300	303		5,480

* Includes Jacks

TABLE 66

MONTHLY COUNT OF STEELHEAD TROUT
MCNARY DAM - 1954-1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1954			376	5,569	2,307	128	2,628	20,939	26,944	11,627	2,937	1,604	75,059
1955	931	35	70	3,279	1,791	162	5,257	36,035	17,463	16,941	2,874	737	85,575
1956	66	753	563	2,365	1,218	276	5,440	14,492	8,245	6,787	2,349		42,554
1957			840	2,084	147	334	18,100	28,926	34,478	20,775	8	36	105,728
1958	62	137	1,069	877	334	1,265	9,967	6,535	50,229	17,415			87,890
1959				1,317	685	748	10,508	32,872	49,542	14,803			110,475
1960				1,579	1,236	908	8,475	22,443	51,749	10,505			96,895
1961				896	580	1,281	7,469	11,428	64,521	17,568			103,743
1962				1,650	762	1,108	11,321	28,288	98,042	22,010			163,181
1963				813	1,751	2,639	8,252	26,282	47,982	25,927			113,646
1964				1,789	805	486	7,602	25,918	53,180	10,962			100,742
1965				1,361	363	231	11,749	31,155	54,450	19,651			118,960
1966				2,279	954	1,476	18,241	26,062	71,180	24,938			145,130
1967				1,434	1,130	152	5,771	14,894	32,310	22,009			77,700
1968				5,451	3,361	247	4,058	22,268	61,167	15,970			112,522
1969				2 304	1,792	711	7,668	13,641	35,836	14,729			76,681
1970				1,347	1,001	340	5,183	15,236	39,150	7,502			69,759
1971				813	374	271	8,931	21,324	62,083	15,834			109,630
1972				1,614	393	130	8,155	20,548	46,393	16,587			93,820
1973				3,178	846	270	6,898	11,121	32,701	9,606			64,620
1974				847	715	681	4,093	5,242	8,648	6,706			26,932
1975				612	209	254	3,623	6,708	9,329	2,928			22,663
1976				936	1,372	1,949	5,772	16,145	22,423	5,403			54,000
1977				1,730	987	2,916	13,132	7,833	43,792	17,322			87,712
1978				1,266	701	1,832	3,444	4,863	15,627	5,708	1,299		34,740
1979			970	681	156	93	4,955	9,970	14,648	15,580	3,251		50,304
1980			1,753	3,355	608	381	2,740	14,431	27,706	12,776	2,774		66,524
1981			861	1,479	809	878	7,212	12,839	19,961	15,652	2,294		61,985
1982			1,530	1,764	825	321	4,279	12,621	36,282	17,477			75,099
1983				1,051	215	137	7,746	25,821	70,369	19,915			125,254
1984				1,858	860	653	13,165	14,962	68,837	33,608	1,590		135,515
1985			1,583	6,483	1,383	2,949	13,818	46,632	87,026	28,330			188,204
1986			1,282	1,184	414	1,193	27,563	32,339	74,769	54,737			193,481
1987				2,082	413	885	16,658	35,661	59,326	33,786			148,811
TOTAL	1,059	925	10,897	67,327	31,497	28,285	299,873	676,456	1,496,388	592,074	19,376	2,377	3,226,534
10-YEAR AVERAGE				2,120	638	932	10,158	21,012	47,455	23,757			107,992

TABLE 67

YEARLY TOTALS OF SALMONID COUNTED OVER ICE HARBOR DAM
1962-1987

YEAR	CHINOOK	STEELHEAD	SOCKEYE	COHO	TOTAL SALMONID
1962	94,301	115,796	38	3,207	213,342
1963	61,190	74,539	1,118	1,933	138,780
1964	60,097	58,860	1,276	2,071	122,304
1965	39,233	62,873	317	320	102,743
1966	75,882	65,798	278	878	142,836
1967	84,930	44,205	717	3,770	133,622
1968	98,681	82,383	1,165	6,227	188,456
1969	100,514	63,889	745	5,316	170,464
1970	77,698	53,870	797	3,636	136,001
1971	70,248	67,029	532	2,969	140,778
1972	82,632	63,593	363	2,522	149,110
1973	81,821	38,311	233	2,443	122,808
1974	32,444	12,528	204	1,334	46,510
1975	31,686	16,218	243	1,559	49,706
1976	36,556	23,885	771	1,991	63,203
1977	56,514	54,820	582	1,561	113,477
1978	61,352	27,142	86	652	89,232
1979	13,929	23,117	30	398	37,474
1980	14,717	50,221	36	58	65,032
1981	22,092	41,290	142	82	63,606
1982	22,646	73,405	174	348	96,573
1983	20,259	88,475	216	465	109,415
1984	17,757	94,030	105	22	111,914
1985	47,981	128,481	24	10	176,496
1986	52,615	144,292	20	0	196,927
1987	47,477	74,491	13	0	121,981
TOTAL	1,405,252	1,643,541	10,225	43,772	3,102,790
10-YEAR AVERAGE	32,083	74,494	85	204	106,855

TABLE 68

MONTHLY TOTALS OF SALMONIDS AND SHAD COUNTED OVER ICE HARBOR DAM
1987

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
CHINOOK	-	-	-	11,141	18,821	6,550	2,437	329	6,089	2,110	-	-	47,477
STEELHEAD	-	-	-	2,136	235	262	3,292	4,972	28,491	35,103	-	-	74,491
SOCKEYE	-	-	-	-	-	-	12	-	1	-	-	-	13
COHO	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	-	-	-	13,277	19,056	6,812	5,741	5,301	34,581	37,213	-	-	121,981
SHAD	-	-	-	-	34	5,665	2,371	139	-	-	-	-	8,209

TABLE 69

TABLE 69
WATER TEMPERATURE AND STREAM FLOW DATA
ICE HARBOR - 1987

DATE	JANUARY			FEBRUARY			MARCH		
	DISCHARGE	TURBIDITY*	WATER TEMP.*	DISCHARGE	TURBIDITY*	WATER TEMP.*	DISCHARGE	TURBIDITY*	WATER TEMP.*
1	29.5	6.8	41.0	27.3	6.8	36.0	14.5	3.9	39.0
2	45.2	6.8	41.0	36.4	6.8	36.0	25.6	3.9	39.0
3	31.8	6.8	41.0	27.4	6.8	36.0	22.8	2.8	39.0
4	22.9	6.8	41.0	29.8	6.8	36.0	36.0	3.1	39.0
5	39.1	6.8	41.0	28.6	6.8	36.0	32.6	3.1	40.0
6	40.5	6.8	41.0	32.8	6.8	36.0	33.3	3.3	40.0
7	37.2	6.8	41.0	24.5	7.0	36.0	37.6	3.2	40.0
8	38.0	6.8	41.0	27.2	7.0	36.0	33.4	3.2	40.0
9	28.7	6.8	40.0	33.2	7.0	37.0	43.4	3.2	41.0
10	26.5	6.8	40.0	36.2	3.9	37.0	42.3	3.1	41.0
11	21.9	6.8	40.0	32.6	3.3	37.0	32.7	3.8	41.0
12	40.0	6.8	40.0	31.8	1.9	37.0	37.2	4.0	41.0
13	26.8	6.8	39.0	41.0	.8	37.0	26.1	4.0	41.0
14	35.4	6.8	39.0	35.0	.7	37.0	43.7	4.0	41.0
15	39.5	6.8	39.0	41.2	.7	37.0	43.1	4.0	41.0
16	30.8	6.8	39.0	43.8	1.1	38.0	41.5	4.0	41.0
17	31.2	6.8	38.0	37.4	1.9	38.0	45.0	2.8	41.0
18	24.0	6.8	38.0	32.6	2.2	38.0	40.1	2.8	41.0
19	28.2	6.8	38.0	27.9	2.7	38.0	52.3	2.9	42.0
20	25.0	6.8	37.0	28.7	3.2	38.0	46.7	3.2	43.0
21	31.4	6.8	37.0	29.4	3.7	38.0	32.6	3.9	43.0
22	28.6	6.8	37.0	21.2	4.0	38.0	32.9	3.9	43.0
23	31.8	6.8	36.0	28.0	4.0	38.0	48.4	3.9	43.0
24	23.6	6.8	36.0	25.7	4.1	39.0	40.8	3.9	43.0
25	18.3	6.8	36.0	29.9	3.5	39.0	25.8	3.9	43.0
26	25.3	6.8	36.0	19.4	3.7	39.0	28.2	3.4	44.0
27	18.7	6.8	36.0	22.1	3.9	39.0	29.7	3.3	44.0
28	26.2	6.8	36.0	27.4	3.9	39.0	38.4	3.0	44.0
29	28.5	6.8	36.0				25.7	3.0	44.0
30	29.3	6.8	36.0				32.3	2.7	45.0
31	27.1	6.8	36.0				27.6	2.7	45.0

TABLE 69

TABLE 70

MONTHLY FISH PASSAGE SUMMARY REPORT — ICE HARBOR PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — APR 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SEECHI)	(DEG F)
1	1							71		21.2	.0	3.1	46.0
2								72		27.5	.0	3.4	46.0
3	4							70		31.4	.0	3.0	46.0
4	7			2				96		31.7	.0	3.0	46.0
5	19							125		26.7	.0	3.0	47.0
6	35							142		33.0	.0	3.0	47.0
7	62							119		36.2	.0	3.0	47.0
8	48							121		38.1	.0	3.0	48.0
9	43							113		38.2	.0	3.0	48.0
10	26							94		39.5	.0	3.0	48.0
11	122							85		44.8	.0	3.0	48.0
12	137			1				74		26.0	.0	2.7	48.0
13	69							91		45.8	.0	2.5	48.0
14	134							94		39.1	.0	2.7	48.0
15	444			2				92		29.0	.0	2.6	48.0
16	79			1				96		32.9	.0	2.5	48.0
17	566			11				78		39.4	.0	2.5	49.0
18	473			13				83		43.2	.0	2.5	48.5
19	337			2				81		40.1	.0	2.7	49.5
20	690			7				70		41.1	.0	2.9	49.5
21	746			2				28		42.9	.0	3.0	50.0
22	555			1				38		42.8	.0	3.0	51.0
23	629			2				22		31.5	.0	2.9	52.0
24	855			3				28		42.0	.0	2.9	52.0
25	801			6				38		55.0	.0	2.9	52.0
26	573			5				26		49.6	.0	2.9	57.0
27	628			1				39		57.0	.0	3.0	53.0
28	486			10				19		64.6	.0	3.7	54.0
29	1045			23				18		69.6	1.2	3.5	56.0
30	1410			25				13		91.6	12.3	4.0	54.0
TOTALS	11024			117				2136					

TABLE 70

TABLE 71

TABLE 71

MONTHLY FISH PASSAGE SUMMARY REPORT — ICE HARBOR PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — MAY 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1	1565			29				27		93.1	6.7	4.0	55.0
2	623			9				24		92.6	10.2	4.0	55.0
3	2099			27				23		90.3	2.5	4.0	55.0
4	1269			24				17		74.7	.0	4.0	55.0
5	1064			31				23		65.4	.0	4.0	56.0
6	826			20				18		77.1	.0	4.0	56.0
7	1515			38				20		86.8	.0	4.0	57.0
8	1081			23				7		87.0	.0	4.0	57.0
9	789			27				6		86.1	.0	4.0	57.0
10	643			28				4		60.6	.0	3.0	57.0
11	742			26				7		81.8	.0	1.5	57.0
12	606			25				5		76.6	.0	1.4	57.0
13	490			18				7		85.0	.0	1.3	57.0
14	465			21				3		94.9	.0	3.0	57.0
15	337			21				6		97.3	.0	3.0	58.0
16	552			33				5		72.9	.0	3.0	59.0
17	361			19				3		76.4	.0	3.0	58.0
18	351			13				3		75.4	.0	3.0	58.0
19	407			30				3		49.9	.0	3.0	58.0
20	295			16				2		45.6	.0	3.0	58.0
21	215			23				1		39.8	.0	3.6	58.0
22	315			16				1		39.4	.0	3.9	58.0
23	165			17				2		30.9	.0	4.0	59.0
24	134			13				1	1	28.8	.0	4.3	59.0
25	218			12				3	5	48.9	.0	4.5	59.0
26	264			13				3	4	42.6	.0	4.5	59.0
27	179			12				2	2	35.1	.0	4.0	59.0
28	182			9				2	3	31.6	.0	3.8	59.0
29	140			8				1	5	35.1	.0	4.3	59.0
30	148			7				6	8	30.4	.0	4.3	59.0
31	168			5					6	30.9	.0	4.3	59.0
TOTALS	18208			613				235	34				

TABLE 72

MONTHLY FISH PASSAGE SUMMARY REPORT — ICE HARBOR PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — JUN 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SEECHI)	(DEG F)
1	218			6				2	3	41.7	.0	4.3	59.0
2	242			9				3	5	40.8	.0	4.2	59.0
3	170			2				5	18	36.2	.0	4.8	59.0
4	164			3					19	32.4	.0	4.8	59.0
5	173			10				3	34	31.6	.0	5.5	59.0
6	191			6				2	97	25.7	.0	5.5	59.0
7	173			8				1	237	27.1	.0	7.0	61.0
8	199			4				1	248	33.9	.0	7.0	61.0
9	282			7				9	146	22.7	.0	7.0	61.0
10	117			13					109	29.6	.0	7.0	61.0
11	115			9				3	187	31.4	.0	5.5	61.0
12		150		10				3	178	25.9	.0	5.4	62.0
13		179		10				2	342	22.4	.0	5.4	62.0
14		162		3					291	25.8	.0	5.4	62.0
15		162		8				1	153	28.8	.0	5.4	62.0
16		163		14				3	61	26.6	.0	5.3	64.0
17		234		17				4	194	23.6	.0	5.3	64.0
18		241		7				6	210	25.8	.0	5.3	64.0
19		233		11				4	144	33.3	.0	5.3	64.0
20		280		17				11	229	42.6	.0	5.3	64.0
21		290		17				14	121	13.7	.0	5.3	64.0
22		236		7				14	135	24.6	.0	4.5	64.0
23		274		15				23	248	30.8	.0	4.5	65.0
24		361		23				17	416	24.9	.0	4.5	65.0
25		311		13				23	304	24.0	.0	5.8	65.0
26		222		19				27	362	25.6	.0	6.2	65.0
27		282		15				28	353	24.7	.0	6.2	66.0
28		136		12				20	304	13.7	.0	6.5	66.0
29		162		13				18	340	24.4	.0	6.8	67.0
30		114		6				15	177	11.6	.0	6.8	67.0
TOTALS	2044	4192		314				262	5665				

TABLE 73

TABLE 73

MONTHLY FISH PASSAGE SUMMARY REPORT — ICE HARBOR PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — JUL 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SEECHI)	(DEG F)
1		75		4				22	121	17.9	.0	7.2	68.0
2		239		4				33	115	21.3	.0	7.2	68.0
3		196		14			1	21	251	16.9	.0	7.2	67.0
4		232		11			1	13	211	12.1	.0	7.0	69.0
5		244		14				55	157	11.9	.0	7.0	69.0
6		146		7				49	108	14.2	.0	7.0	69.0
7		262		11				52	150	15.2	.0	7.0	69.0
8		78		2				39	190	19.0	.0	5.8	69.0
9		74		6				48	100	21.4	.0	5.8	70.0
10		86		6				56	74	22.4	.0	5.9	70.0
11		62		6				33	91	15.4	.0	5.9	70.0
12		55		4			1	17	76	16.8	.0	5.9	70.0
13		40		1			1	11	59	25.9	.0	6.8	70.0
14		55		7				48	74	17.5	.0	6.8	70.0
15		46		6				51	45	19.0	.0	6.8	70.0
16		27						92	42	14.4	.0	6.8	70.0
17		44		2			1	74	45	14.1	.0	6.8	70.0
18		29		5				72	44	16.5	.0	6.8	70.0
19		24		3			1	55	61	11.8	.0	6.8	70.0
20		27		6			1	42	43	23.2	.0	6.8	70.0
21		41		6			3	118	40	20.5	.0	6.8	70.0
22		34		3				219	33	19.0	.0	7.0	70.0
23		29		1			1	260	52	23.3	.0	7.0	69.8
24		28		1			1	184	31	32.3	.0	6.8	70.0
25		26						174	27	25.7	.0	7.0	70.0
26		23		1				191	22	22.9	.0	6.8	70.0
27		13		1				202	23	30.1	.0	6.8	70.0
28		22						433	34	23.8	.0	6.8	70.0
29		17						222	32	12.8	.0	6.8	70.0
30		10						134	4	14.0	.0	6.8	70.0
31		19		2				272	16	21.3	.0	7.0	70.0
TOTALS		2303		134			12	3292	2371				

TABLE 74

MONTHLY FISH PASSAGE SUMMARY REPORT — ICE HARBOR PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — AUG 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1		18		1				253	22	13.4	.0	7.0	70.0
2		9		1				118	11	12.9	.0	7.0	70.0
3		8						112	11	16.7	.0	7.0	70.0
4		8						174	15	12.3	.0	6.8	70.0
5		12						139	1	14.5	.0	6.8	70.0
6		10						194	1	17.7	.0	6.8	70.0
7		8		1				309	6	20.9	.0	6.8	70.0
8		8		1				215	5	15.5	.0	6.8	70.0
9		8						171	3	14.6	.0	6.8	70.0
10		11		1				204	5	12.4	.0	6.8	71.0
11		11						296	5	14.6	.0	6.8	71.0
12			7					171	4	18.1	.0	6.8	72.0
13			5	1				261	9	14.8	.0	6.8	72.0
14			7					346	10	17.9	.0	6.8	71.0
15			14					237	5	12.0	.0	6.8	71.0
16			9	1				128	6	11.9	.0	6.0	71.0
17			7					85	3	18.3	.0	5.5	71.0
18			5	3				103	4	16.3	.0	5.3	71.0
19			7	3				76	1	13.7	.0	6.8	70.0
20			7	5				94	8	15.2	.0	6.8	70.0
21			10					113	3	12.8	.0	6.6	70.0
22			4	1				103	1	18.0	.0	6.9	71.0
23			10	2				133		13.8	.0	6.8	70.0
24			1					74		16.2	.0	6.8	70.0
25			8	1				112		20.2	.0	6.8	70.0
26			16	2				166		15.3	.0	6.8	70.0
27			2					110		17.4	.0	6.8	70.0
28			22	1				131		25.2	.0	6.5	70.0
29			19	1				158		12.1	.0	6.8	70.0
30			8	2				124		11.9	.0	6.8	70.0
31			15	7				62		15.9	.0	7.0	70.0
TOTALS		111	183	35				4972	139				

TABLE 74

TABLE 75

TABLE 75

MONTHLY FISH PASSAGE SUMMARY REPORT — ICE HARBOR PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — SEP 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1			16	1				116		12.1	.0	7.0	71.0
2			37	4				132		19.8	.0	6.8	71.0
3			55	10				264		23.4	.0	6.8	71.0
4			64	4				226		8.9	.0	6.8	71.0
5			40	1				101		14.2	.0	7.0	71.0
6			59	1				97		11.2	.0	7.0	71.0
7			36	6				86		22.7	.0	7.0	71.0
8			74	11				204		20.0	.0	7.0	71.0
9			85	9				259		24.7	.0	7.0	71.0
10			79	4				338		30.2	.0	7.0	71.0
11			47	6			1	371		30.6	.0	7.0	71.0
12			51	6				290		29.8	.0	7.0	71.0
13			131	16				787		28.0	.0	7.0	72.0
14			145	25				903		30.3	.0	7.0	72.0
15			181	24				1016		28.8	.0	7.0	71.0
16			223	27				1319		15.5	.0	7.0	71.0
17			265	21				814		24.7	.0	7.0	70.0
18			349	20				816		37.7	.0	7.0	70.0
19			400	22				1548		19.3	.0	7.0	70.0
20			421	29				1271		21.9	.0	7.0	69.0
21			377	58				1303		24.1	.0	7.0	69.0
22			274	31				1416		22.7	.0	7.0	69.0
23			465	42				1829		22.5	.0	7.0	68.0
24			280	49				1560		28.0	.0	6.8	68.0
25			356	51				2847		29.5	.0	7.0	68.0
26			220	50				2575		28.7	.0	6.8	68.0
27			209	35				1962		18.7	.0	6.8	68.0
28			131	34				978		27.7	.0	6.8	68.0
29			137	46				978		20.9	.0	6.8	67.0
30			187	52				2085		20.9	.0	7.0	67.0
TOTALS			5394	695			1	28491					

TABLE 76

MONTHLY FISH PASSAGE SUMMARY REPORT — ICE HARBOR PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — OCT 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1			126	39				1520		23.1	.0	7.0	67.0
2			41	24				2116		13.7	.0	7.0	67.0
3			103	41				1918		13.5	.0	6.8	66.0
4			115	42				1369		17.4	.0	6.8	66.0
5			73	30				910		18.2	.0	6.8	66.0
6			52	29				1223		16.8	.0	7.0	66.0
7			90	61				1920		18.9	.0	6.8	66.0
8			45	43				1159		16.0	.0	6.8	66.0
9			59	49				1597		19.7	.0	7.0	66.0
10			67	80				1859		17.6	.0	6.8	66.0
11			54	37				1572		14.8	.0	7.0	65.0
12			54	42				1610		22.1	.0	7.0	65.0
13			38	23				1491		18.9	.0	7.0	65.0
14			33	21				789		12.9	.0	6.8	64.8
15			35	32				1530		21.2	.0	6.8	64.0
16			23	32				930		25.0	.0	6.8	63.0
17			17	27				916		10.7	.0	6.8	62.0
18			7	25				725		12.3	.0	6.1	62.0
19			9	17				557		24.8	.0	5.8	62.0
20			24	25				1070		21.5	.0	5.8	60.0
21			15	22				1223		18.0	.0	5.8	60.0
22			23	26				945		15.0	.0	6.8	60.0
23			11	17				917		17.4	.0	6.5	60.0
24			13	20				781		11.1	.0	6.8	59.0
25			21	25				650		9.6	.0	6.8	59.0
26			13	4				555		25.2	.0	6.8	60.0
27			8	21				718		20.4	.0	6.8	59.0
28			18	7				579		19.7	.0	6.8	59.0
29			9	5				598		18.8	.0	6.8	59.0
30			9	17				663		18.9	.0	6.8	59.0
31			6	11				693		19.7	.0	6.8	59.0
TOTALS			1211	899				35103					

TABLE 77
WATER TEMPERATURE AND STREAM FLOW DATA
ICE HARBOR PROJECT - 1987

DATE	NOVEMBER			DECEMBER		
	DISCHARGE	TURBIDITY	WATER TEMP.	DISCHARGE	TURBIDITY	WATER TEMP.
1	17.2	6.8	58.0	27.4	5.2	50.0
2	28.3	6.8	58.0	30.3	5.2	49.0
3	10.3	6.8	58.0	26.9	5.2	48.0
4	24.8	5.2	58.0	33.7	5.8	48.0
5	21.0	5.2	58.0	26.4	5.8	48.0
6	22.5	5.2	58.0	23.2	7.0	48.0
7	19.9	5.2	58.0	30.9	7.0	48.0
8	21.0	5.2	58.0	31.4	5.5	48.0
9	25.1	5.2	57.0	35.7	5.5	48.0
10	26.3	5.8	56.0	32.2	5.5	48.0
11	14.0	5.8	56.0	33.6	6.0	47.0
12	24.9	5.8	56.0	34.5	6.0	47.0
13	28.8	4.9	56.0	24.4	5.8	47.0
14	26.9	4.9	56.0	32.9	5.8	47.0
15	13.9	5.0	55.0	39.6	6.5	47.0
16	26.8	5.8	55.0	29.8	6.0	47.0
17	29.4	6.0	55.0	32.2	5.9	47.0
18	38.9	5.0	55.0	26.1	6.0	44.0
19	23.1	5.0	55.0	33.0	6.0	44.0
20	25.6	4.8	55.0	22.2	6.0	43.0
21	29.0	5.6	52.0	29.7	6.0	43.0
22	21.4	5.5	51.0	24.7	6.0	43.0
23	28.1	5.5	51.0	34.5	6.0	43.0
24	31.2	5.5	51.0	26.4	3.0	43.0
25	30.4	5.5	50.0	24.2	6.0	42.0
26	29.5	5.5	50.0	29.1	5.7	42.0
27	25.1	5.6	50.0	21.5	4.7	40.0
28	22.3	5.6	50.0	27.6	4.7	40.0
29	17.8	5.6	50.0	31.4	4.0	40.0
30	28.2	5.6	50.0	30.1	4.0	40.0
				32.1	4.0	40.0

TABLE 78
MONTHLY COUNT OF CHINOOK SALMON*
ICE HARBOR DAM - 1962-1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	SPRING APR 1- JUN 11	SUMMER JUN 12- AUG 11	FALL AUG 12- OCT 31
1962				2,579	28,951	23,250	8,315	3,547	20,578	7,081			94,301	33,613	30,639	30,049
1963				3,434	21,790	14,001	7,591	1,415	9,342	2,918	677	22	61,190	26,778	20,875	13,537
1964		1	2	4,048	19,611	5,409	18,832	2,161	8,159	1,701	156	17	60,097	24,304	24,696	11,097
1965			4	1,677	9,649	5,072	10,209	803	9,318	2,152	349		39,233	12,178	14,701	12,354
1966				23,382	19,294	10,611	7,166	1,933	10,756	2,740			75,882	43,881	16,983	15,018
1967				15,973	18,137	9,020	22,218	820	11,947	6,815			84,930	35,593	30,315	19,022
1968				1,595	41,398	12,119	17,751	3,433	16,588	5,275	493	29	98,681	44,773	29,531	24,377
1969			195	697	43,181	24,918	12,861	2,369	12,027	3,555	708	3	100,514	52,090	30,917	17,507
1970				12,167	33,881	12,338	8,185	1,747	7,702	1,456	219	3	77,698	47,931	19,382	10,385
1971				1,104	25,089	19,265	13,364	873	8,960	1,593			70,248	32,638	26,606	11,004
1972				14,535	34,734	7,544	15,177	1,869	6,089	2,684			82,632	50,350	22,846	9,436
1973				34,277	23,627	10,925	4,254	840	6,657	1,241			81,821	60,639	12,829	8,353
1974				842	16,670	5,315	6,494	483	2,066	574			32,444	19,361	10,269	2,814
1975				1,314	17,796	5,817	3,972	506	1,875	406			31,686	21,401	7,727	2,558
1976				3,146	19,269	8,544	3,921	349	1,123	204			36,556	25,056	10,026	1,474
1977				24,003	17,626	9,328	3,606	297	1,370	284			56,514	44,421	10,337	1,756
1978				14,891	29,333	9,999	4,888	892	1,064	269	16		61,352	49,303	10,440	1,609
1979				1,731	6,528	2,234	1,216	379	1,489	333	19		13,929	9,247	2,608	2,074
1980				1,678	7,321	2,285	1,569	301	1,034	504	25		14,717	9,668	3,305	1,744
1981			1	6,744	8,542	2,884	1,751	161	1,530	470	9		22,092	16,167	3,814	2,111
1982			3	656	11,543	4,522	2,347	283	2,601	691			22,646	14,600	4,527	3,519
1983				1,925	9,418	4,132	1,921	316	1,945	602			20,259	12,602	4,922	2,735
1984				823	7,292	5,353	1,943	223	1,762	361			17,757	9,183	6,307	2,267
1985				12,245	18,334	6,885	1,294	546	5,414	3,263			47,981	33,527	5,290	9,164
1986			1	14,764	22,025	8,299	1,672	169	3,664	2,021			52,615	39,087	7,745	5,783
1987				11,141	18,821	6,550	2,437	329	6,089	2,110			47,477	32,083	6,982	8,412
TOTAL		1	206	211,371	529,860	236,619	184,954	27,044	161,149	51,303	2,671	74	1,405,252	800,474	374,619	230,159
10-YEAR AVERAGE				6,660	13,916	5,314	2,104	360	2,659	1,062			32,083	22,547	5,594	3,942

* Includes Jacks

TABLE 79
MONTHLY COUNT OF STEELHEAD TROUT
ICE HARBOR DAM - 1962-1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1962				8,758	716	261	2,384	7,450	75,924	20,303			115,796
1963				969	895	163	2,157	6,514	35,382	24,070	4,042	347	74,539
1964	105	136	796	2,269	807	153	1,596	9,462	34,435	7,357	1,347	397	58,860
1965	31	110	673	1,976	488	439	3,739	4,497	33,595	13,522	3,803		62,873
1966				2,161	810	413	1,383	2,517	40,185	18,329			65,798
1967				1,266	894	345	972	953	18,914	20,861			44,205
1968				2,558	2,933	357	952	8,107	45,552	17,270	3,692	962	82,383
1969	132	41	807	4,971	2,430	321	3,348	5,715	27,219	14,953	3,874	78	63,889
1970				1,597	1,067	389	2,620	7,611	30,101	8,290	1,891	304	53,870
1971			458	1,938	843	215	3,064	2,996	42,481	15,034			67,029
1972				1,853	553	152	3,062	6,503	34,134	17,336			63,593
1973				1,570	827	254	1,785	2,699	22,021	9,155			38,311
1974				972	359	104	1,482	2,202	3,661	3,748			12,528
1975				564	409	76	1,223	3,878	6,816	3,252			16,218
1976				508	142	165	1,714	5,138	11,141	5,077			23,885
1977				685	220	308	3,654	3,017	30,610	16,326			54,820
1978				908	88	43	1,308	2,907	15,094	6,092	702		27,142
1979			454	538	114	60	1,995	1,778	6,136	9,717	2,325		23,117
1980			1,420	2,796	563	39	1,303	4,333	22,064	15,424	2,279		50,221
1981			797	1,106	433	137	2,305	1,431	16,563	16,669	1,849		41,290
1982			1,471	1,931	918	45	2,564	8,895	30,574	27,007			73,405
1983				1,001	150	36	3,773	9,875	48,519	25,121			88,475
1984				2,218	488	49	4,103	4,554	50,638	31,980			94,030
1985			1,892	7,353	439	306	3,070	14,468	75,378	25,575			128,481
1986			2,561	1,642	187	174	6,600	8,679	63,598	60,851			144,292
1987				2,136	235	262	3,292	4,972	28,491	35,103			74,491
TOTAL	268	287	11,329	56,244	18,008	5,266	65,448	141,151	849,226	468,422	25,804	2,088	1,643,541
10-YEAR AVERAGE				2,163	362	115	3,031	6,189	35,706	25,354			74,494

TABLE 80

YEARLY TOTALS OF SALMONID FISH COUNTED OVER LOWER MONUMENTAL DAM
1969-1987

YEAR	CHINOOK	STEELHEAD	SOCKEYE	COHO	TOTAL SALMONID
1969	86,700	71,436	1,127	6,466	165,729
1970	75,310	62,167	240	2,972	140,689
1971	68,885	70,114	808	2,171	141,978
1972	72,220	66,857	415	733	140,225
1973	80,557	39,530	206	1,333	121,626
1974	31,728	15,139	114	812	47,793
1975	33,013	17,363	146	572	51,094
1976	34,395	21,822	364	361	56,942
1977	49,301	47,749	293	122	97,465
1978	56,835	20,540	96	218	77,689
1979	11,288	17,794	31	194	29,307
1980	10,885	34,322	48	73	45,328
1981	19,991	35,923	136	63	56,113
1982	21,965	62,772	154	89	84,980
1983	19,082	80,562	118	110	99,872
1984	17,866	88,655	63	26	106,610
1985	42,437	109,718	68	24	152,247
1986	50,584	120,479	26	9	171,098
1987	42,434	62,586	16	6	105,042
TOTAL	825,476	1,045,528	4,469	16,354	1,891,827
10-YEAR AVERAGE	29,337	63,335	76	81	92,829

TABLE 81
MONTHLY TOTALS OF SALMONIDS AND SHAD COUNTED OVER LOWER MONUMENTAL DAM
1987

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
CHINOOK*	-	-	-	8,706	21,166	5,492	2,400	278	2,625	1,767	-	-	42,434
STEELHEAD	-	-	-	2,483	264	142	2,531	4,692	20,766	31,708	-	-	62,586
SOCKEYE	-	-	-	-	-	-	14	2	-	-	-	-	16
COHO*	-	-	-	-	-	-	-	-	5	1	-	-	6
TOTAL	-	-	-	11,189	21,430	5,634	4,945	4,972	23,396	33,476	-	-	105,042
SHAD	-	-	-	-	1	2,591	3,920	49	-	2	-	-	6,563

* Jacks Included

TABLE 82
WATER TEMPERATURE AND STREAM FLOW DATA
LOWER MONUMENTAL - 1987

DATE	JANUARY			FEBRUARY			MARCH		
	DISCHARGE	TURBIDITY*	WATER TEMP.*	DISCHARGE	TURBIDITY*	WATER TEMP.*	DISCHARGE	TURBIDITY*	WATER TEMP.*
1	30.0			27.3			14.8		
2	42.9			34.7			24.0		
3	32.6			27.5			23.6		
4	23.5			31.1			36.6		
5	38.1			28.0			30.1		
6	38.9			32.1			32.8		
7	38.0			25.8			38.8		
8	35.1			26.9			33.1		
9	30.1			33.2			42.1		
10	26.0			35.7			42.8		
11	24.1			32.2			33.8		
12	40.2			32.8			36.7		
13	24.1			39.3			28.5		
14	38.2			34.0			44.8		
15	37.5			39.6			43.2		
16	29.3			43.8			41.9		
17	31.5			36.6			45.2		
18	24.2			33.5			39.2		
19	27.9			28.0			48.8		
20	25.4			28.9			44.4		
21	31.9			27.8			36.0		
22	28.7			21.4			34.9		
23	31.6			27.0			43.1		
24	24.5			26.2			40.8		
25	18.8			29.1			27.7		
26	24.9			19.7			29.2		
27	19.8			22.3			31.8		
28	26.9			27.2			34.9		
29	27.9						27.4		
30	29.5						30.1		
31	27.4						27.4		

*Water quality data were not collected 1 January through 31 March 1987.

TABLE 83

TABLE 83

MONTHLY FISH PASSAGE SUMMARY REPORT — LOWER MONUMENTAL PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — APR 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SEECHI)	(DEG F)
1								125		21.5	.0	2.0	45.0
2	1							99		28.0	.0	2.0	46.0
3	2							88		31.5	.0	2.0	46.0
4								113		31.1	.0	2.0	46.0
5	1							91		26.3	.0	2.0	46.0
6	6							84		34.2	.0	2.0	46.0
7	1							97		36.9	.0	2.0	46.0
8	6							115		38.0	.0	2.0	46.0
9	19							91		38.3	.0	2.0	46.0
10	13							137		40.4	.0	2.0	47.0
11	30							108		44.8	.0	2.0	47.0
12	85							113		27.5	.0	2.0	47.0
13	14							101		44.5	.0	2.0	47.0
14	32							115		36.2	.0	2.0	48.0
15	59							77		30.9	1.8	2.0	48.0
16	281			1				92		32.7	3.7	2.0	48.0
17	266			2				75		37.6	4.0	2.0	49.0
18	146							92		47.0	2.1	2.0	49.0
19	478			2				71		42.9	.0	2.0	49.0
20	482			2				65		40.0	1.3	2.0	49.0
21	449			4				52		45.2	.0	2.0	50.0
22	839			4				64		41.9	.0	2.0	50.0
23	855			3				75		34.3	1.4	2.0	51.0
24	656			1				68		44.2	1.5	2.0	51.0
25	605			1				82		54.6	2.1	2.0	51.0
26	829			6				25		53.9	4.1	1.5	52.0
27	555			6				27		55.6	4.2	1.5	52.0
28	590			10				59		71.1	5.7	1.5	52.0
29	704			8				49		74.1	11.9	1.5	52.0
30	645			7				33		94.8	15.1	1.5	53.0
TOTALS	8649			57				2483					

TABLE 84

MONTHLY FISH PASSAGE SUMMARY REPORT — LOWER MONUMENTAL PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — MAY 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1	1707			11				24		94.0	22.4	1.5	54.0
2	1246			10				6		92.0	24.1	1.5	54.0
3	1225			19				30		89.6	21.4	1.5	54.0
4	1996			30				31		69.7	11.9	1.5	54.0
5	1841			34				18		69.8	10.5	1.5	54.0
6	917			26				14		80.7	14.9	2.0	54.0
7	550			15				13		87.6	15.4	2.0	55.0
8	612			13				23		86.4	18.2	2.0	55.0
9	866			27				16		84.2	17.9	2.0	55.0
10	1014			30				13		69.4	16.2	2.0	55.0
11	935			29				11		79.2	13.3	2.0	55.0
12	1089			35				14		83.6	9.5	2.0	55.0
13	967			33				4		85.9	17.7	2.0	55.0
14	511			18				3		94.2	21.0	2.0	56.0
15	643			25				3		95.9	18.7	2.0	57.0
16	486			15				2		73.8	13.2	2.0	57.0
17	462			16				4		75.5	11.5	2.0	58.0
18	251			29				6		77.4	10.4	2.0	58.0
19	184			9				5		46.7	7.3	2.0	58.0
20	510			29				7		46.3	7.8	2.0	58.0
21	675			22				2		41.8	5.4	2.0	58.0
22	202			9				5		40.0	6.3	2.0	57.0
23	296			13				2		34.3	4.7	2.0	57.0
24	163			7				1		31.6	5.6	2.0	57.0
25	99			5				1		51.0	7.7	2.0	57.0
26	166			13						37.4	5.1	2.0	58.0
27	136			9				1		35.3	.0	2.0	58.0
28	394			18				2		33.8	.0	2.0	58.0
29	96			9						35.6	.0	2.0	58.0
30	108			9				2	1	32.5	.0	2.0	58.0
31	248			4				1		31.6	.0	2.0	57.0
TOTALS	20595			571				264	1				

TABLE 85

TABLE 85

MONTHLY FISH PASSAGE SUMMARY REPORT — LOWER MONUMENTAL PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — JUN 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1	178			5				2		48.0	4.8	2.0	57.0
2	95			10				1		37.5	1.3	2.0	58.0
3	124			4						35.0	.0	2.0	58.0
4	105			6				2		34.3	.0	2.0	59.0
5	313			6				1		33.7	.0	2.0	60.0
6	117			6				1	2	30.0	.0	2.0	59.0
7	134			6				2	1	29.7	.0	2.0	60.0
8	111			5				1	38	35.0	.0	2.0	60.0
9	214			3				3	18	25.4	.0	2.0	60.0
10	172			6					20	32.6	.0	2.0	60.0
11	131			2				3	53	30.7	.0	2.0	60.0
12	163			13					91	35.7	.0	3.0	60.0
13	133			6					48	26.2	.0	3.0	61.0
14		92		2					75	27.9	.0	3.0	61.0
15		87		6				1	24	30.6	.0	3.0	61.0
16		171		5					30	25.6	.0	3.0	61.0
17		118		11				3	52	22.0	.0	3.0	61.0
18		112		10					57	30.9	.0	3.0	61.0
19		165		12				1	94	29.0	.0	3.0	62.0
20		286		30				11	273	43.8	.0	3.0	62.0
21		174		18				2	152	18.9	.0	3.0	63.0
22		297		20				14	282	26.5	2.1	3.0	63.0
23		206		23				7	358	29.2	4.2	3.0	64.0
24		189		12				3	145	28.7	4.2	3.0	64.0
25		262		36				4	183	25.1	4.2	3.0	64.0
26		241		10				24	102	26.2	4.2	3.0	65.0
27		366		11				20	145	26.1	4.2	3.0	66.0
28		197		11				19	132	17.8	4.2	3.0	66.0
29		30		4				3	48	21.3	4.1	3.0	66.0
30		189		16				14	168	16.4	4.2	3.0	66.0
TOTALS	1995	3182		315				142	2591				

TABLE 86

MONTHLY FISH PASSAGE SUMMARY REPORT — LOWER MONUMENTAL PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — JUL 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1		175		13				13	424	20.6	4.1	3.0	66.0
2		115		11			1	11	297	19.5	4.2	3.0	66.0
3		156		15				12	343	19.1	4.2	3.0	68.0
4		141		14				6	240	12.5	4.1	3.0	68.0
5		186		20				15	201	12.4	4.2	3.0	68.0
6		243		16				18	424	17.6	4.2	3.0	68.0
7		170		10				25	372	19.5	2.1	3.5	68.0
8		200		4				28	284	19.9	.0	3.0	68.0
9		123		13				31	144	23.5	.0	3.5	68.0
10		98		10			2	49	264	23.1	.0	3.5	67.0
11		41		8			1	28	106	18.1	.0	3.5	67.0
12		59		7			1	29	69	16.2	.0	3.5	69.0
13		39		5				37	79	27.6	.0	3.5	69.0
14		48		11			1	33	66	18.7	.0	3.5	69.0
15		49		13				19	85	19.9	.0	3.5	69.0
16		27		13			1	37	41	17.8	.0	3.5	69.0
17		31		2				38	13	14.7	.0	3.5	69.0
18		26						36	85	15.4	.0	3.0	69.0
19		22		3				92	19	17.0	.0	3.0	69.0
20		36		3				65	71	23.7	.0	3.0	69.0
21		35		2				54	68	20.1	.0	3.0	69.0
22		22		2			3	79	30	21.1	.0	3.5	69.0
23		30		1			1	119	21	25.6	.0	3.5	68.0
24		9		4				119	26	32.4	.0	3.5	68.0
25		25		2				191	32	28.7	.0	3.5	68.0
26		14		6				119	25	22.6	.0	3.5	68.0
27		11		1			1	235	24	31.8	.0	3.5	70.0
28		9		1				191	22	25.8	.0	3.5	70.0
29		15		4			1	327	19	13.7	.0	3.5	71.0
30		15		1			1	219	14	18.7	.0	3.5	71.0
31		14		2				256	12	19.7	.0	3.5	71.0
TOTALS		2183		217			14	2531	3920				

TABLE 87

MONTHLY FISH PASSAGE SUMMARY REPORT — LOWER MONUMENTAL PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — AUG 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1		11		2			2	149	3	15.8	.0	3.5	71.0
2		9		2				172	6	14.3	.0	3.5	71.0
3		7		2				155	9	17.5	.0	3.5	71.0
4		15						117	6	15.2	.0	3.5	71.0
5		4		1				143	1	16.0	.0	3.5	71.0
6		9		2				138	6	18.7	.0	3.5	70.0
7		8		2				152	2	21.0	.0	3.5	71.0
8		5		1				123	1	17.6	.0	3.5	71.0
9		1						154	1	14.0	.0	3.5	71.0
10		15						237		16.4	.0	3.5	70.0
11		3						299		16.4	.0	3.5	71.0
12		15						194	2	18.0	.0	3.5	71.0
13		8						198	1	17.0	.0	3.5	71.0
14			5	1				364	1	18.9	.0	3.5	71.0
15			15					295		15.0	.0	3.0	70.0
16			7					431		14.4	.0	3.5	70.0
17			8	4				156	7	16.8	.0	3.5	70.0
18			3	2				123		16.5	.0	3.5	70.0
19			2	1				78	1	14.6	.0	3.5	70.0
20			10	1				90		14.4	.0	3.5	70.0
21			6	1				75		12.6	.0	3.5	70.0
22			6					83		19.5	.0	3.5	70.0
23			5	3				86		14.5	.0	3.5	70.0
24			2					47		18.8	.0	3.5	70.0
25			2	3				90	2	20.6	.0	3.5	70.0
26			7	4				124		16.5	.0	3.5	70.0
27			5	4				78		20.4	.0	3.5	70.0
28			15					73		23.7	.0	3.5	70.0
29			13	1				113		12.1	.0	3.5	70.0
30			12	3				74		14.0	.0	3.5	70.0
31			4	1				81		18.3	.0	3.5	70.0
TOTALS		110	127	41			2	4692	49				

TABLE 88

MONTHLY FISH PASSAGE SUMMARY REPORT — LOWER MONUMENTAL PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — SEP 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SEECHI)	(DEG F)
1			11	1				119		13.6	.0	3.5	71.0
2			12	9				103		20.5	.0	3.5	71.0
3			20	6				178		22.5	.0	3.5	71.0
4			20	3				140		12.0	.0	3.5	71.0
5			7	8				116		14.0	.0	3.5	71.0
6			11					97		12.1	.0	3.5	71.0
7			5	6				99		21.9	.0	3.5	71.0
8			15	3				62		17.2	.0	3.5	71.0
9			18	4				114		23.9	.0	3.5	71.0
10			14	4				129		30.8	.0	3.5	71.0
11			17	10				193		27.7	.0	3.5	71.0
12			18	13				234		30.6	.0	3.5	71.0
13			17	10				481		28.3	.0	3.5	71.0
14			27	22		1		580		30.4	.0	3.5	70.0
15			22	16				689		26.7	.0	3.5	70.0
16			38	31		1		701		17.0	.0	4.0	70.0
17			21	14				466		26.7	.0	4.0	70.0
18			64	24				887		34.6	.0	4.0	69.0
19			235	22				861		21.2	.0	4.0	69.0
20			118	31				554		23.6	.0	4.0	69.0
21			157	27				783		23.1	.0	4.0	68.0
22			99	24				986		22.3	.0	4.0	68.0
23			100	23				1069		24.6	.0	4.0	68.0
24			270	25				1595		28.3	.0	4.0	68.0
25			370	77				1597		28.3	.0	4.0	68.0
26			94	61				2100		29.5	.0	4.0	68.0
27			90	42		1		2018		21.3	.0	4.0	68.0
28			48	17		1		1353		26.1	.0	4.0	68.0
29			77	27				1548		21.6	.0	4.0	67.0
30			33	17		1		914		20.9	.0	4.0	66.0
TOTALS			2048	577		5		20766					

TABLE 89

MONTHLY FISH PASSAGE SUMMARY REPORT — LOWER MONUMENTAL PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — OCT 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1			62	31				988		22.7	.0	4.0	66.0
2			72	25				2119		13.2	.0	4.0	66.0
3			64	68				1566		13.4	.0	4.0	66.0
4			37	32				1788		17.5	.0	4.0	66.0
5			29	25				1353		17.9	.0	4.0	65.0
6			20	25		1		1045		16.6	.0	4.0	65.0
7			21	18				638		18.3	.0	4.0	65.0
8			27	21				798		17.0	.0	4.0	65.0
9			30	30				1851		21.7	.0	4.0	64.0
10			26	29				1490		16.2	.0	4.0	63.0
11			43	13				903		15.2	.0	4.0	63.0
12			15	23				827		21.5	.0	4.0	63.0
13			146	29				2291		17.6	.0	4.0	62.0
14			145	21				1469		13.7	.0	4.0	62.0
15			51	5				866		20.4	.0	4.0	61.0
16			63	26				1159		24.7	.0	4.0	61.0
17			50	16				936		12.5	.0	4.0	61.0
18			37	20				816		13.0	.0	4.0	61.0
19			21	18				786		20.3	.0	4.0	60.0
20			22	12				741		20.3	.0	4.0	60.0
21			24	12				631	2	17.2	.0	4.0	60.0
22			21	10				783		16.0	.0	4.0	60.0
23			13	11				768		21.3	.0	4.0	60.0
24			10	15				922		11.9	.0	4.0	58.0
25			9	8				624		12.3	.0	4.0	58.0
26			13	9				704		23.5	.0	4.0	58.0
27			20	16				676		20.7	.0	4.0	58.0
28			15	8				638		19.5	.0	4.0	58.0
29			25	19				706		19.3	.0	4.0	58.0
30			11	14				457		17.8	.0	4.0	58.0
31			10	6				369		19.2	.0	6.8	57.0
TOTALS			1152	615		1		31708	2				

TABLE 90
WATER TEMPERATURE AND STREAM FLOW DATA
LOWER MONUMENTAL PROJECT - 1987

DATE	NOVEMBER			DECEMBER		
	DISCHARGE	TURBIDITY*	WATER TEMP.*	DISCHARGE	TURBIDITY*	WATER TEMP.*
1	16.9			28.1		
2	24.7			29.8		
3	12.7			27.0		
4	25.1			32.8		
5	20.3			27.0		
6	21.8			23.3		
7	20.7			31.7		
8	21.7			30.7		
9	21.7			34.5		
10	22.4			33.1		
11	17.3			33.9		
12	24.6			34.7		
13	26.9			24.5		
14	27.1			33.2		
15	16.3			39.4		
16	26.0			30.4		
17	29.1			31.8		
18	39.0			27.7		
19	23.7			32.5		
20	26.5			24.2		
21	30.2			28.9		
22	21.7			26.8		
23	27.8			33.4		
24	30.0			28.4		
25	30.6			25.7		
26	30.8			29.1		
27	23.7			22.3		
28	22.3			28.0		
29	19.0			30.7		
30	27.7			30.6		
31				32.0		

* Water quality data were not collected 1 November through 31 December 1986.

TABLE 91

MONTHLY TOTALS OF CHINOOK COUNTED OVER LOWER MONUMENTAL DAM
1969 - 1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL*
1969			1	67	38,702	25,289	13,832	1,776	5,069	1,619	340	5	86,700
1970	1		1	9,194	32,623	15,818	9,369	1,720	5,178	1,281	122	3	75,310
1971				358	19,340	23,842	14,492	857	8,599	1,397			68,885
1972				6,838	36,448	6,989	15,501	1,835	3,737	872			72,220
1973				27,168	31,973	11,282	4,343	678	4,273	840			80,557
1974				327	15,796	4,904	7,241	602	1,972	886			31,728
1975				704	17,421	6,648	4,884	548	2,428	380			33,013
1976				1,995	19,292	7,731	3,172	175	1,609	421			34,395
1977				19,125	17,093	7,884	3,092	300	1,321	486			49,301
1978				12,324	30,067	8,941	3,853	831	536	283			56,835
1979				1,332	5,637	2,010	922	211	916	260			11,288
1980				1,008	5,198	2,318	1,315	319	405	322			10,885
1981				4,039	9,012	3,349	1,924	97	1,100	470			19,991
1982				372	11,319	5,031	2,773	264	1,631	575			21,965
1983				1,250	10,262	3,841	2,103	220	1,008	398			19,082
1984				513	7,186	6,297	2,549	205	789	327			17,866
1985				7,360	20,572	7,303	1,279	402	2,451	3,070			42,437
1986				10,893	25,454	7,436	1,821	123	2,786	2,071			50,584
1987				8,706	21,166	5,492	2,400	278	2,625	1,767			42,434
TOTAL	1		2	113,573	374,561	162,405	96,865	11,441	48,433	17,725	462	8	825,476
10-YEAR AVERAGE				4,780	14,587	5,202	2,094	295	1,425	954			29,337

* Jacks Included

TABLE 92

MONTHLY COUNT OF STEELHEAD TROUT
LOWER MONUMENTAL DAM - 1969-1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1969		5	1,525	9,235	5,475	248	2,141	6,410	26,647	15,195	4,189	366	71,436
1970	252	1,025	1,519	3,143	2,134	232	1,989	7,947	30,701	11,194	1,615	416	62,167
1971			422	2,404	1,510	131	2,199	2,992	42,438	18,018			70,114
1972				2,182	744	86	2,336	7,184	32,417	21,908			66,857
1973				2,061	658	82	2,060	3,505	21,241	9,923			39,530
1974				1,221	256	17	1,237	2,835	4,929	4,644			15,139
1975				745	444	24	873	4,417	7,437	3,423			17,363
1976				806	256	146	1,092	4,409	10,328	4,785			21,822
1977				849	192	127	3,026	2,991	22,494	18,070			47,749
1978				1,324	128	16	719	2,522	10,477	5,354			20,540
1979				643	118	28	1,314	1,937	4,898	8,856			17,794
1980				2,467	573	70	754	3,725	14,078	12,655			34,322
1981				996	321	75	1,783	1,632	12,416	18,700			35,923
1982				2,026	1,123	35	1,851	7,373	22,426	27,938			62,772
1983				1,021	131	14	3,027	10,101	40,004	26,264			80,562
1984				2,663	482	52	3,150	4,820	42,788	34,700			88,655
1985				6,889	548	189	1,888	10,086	63,734	26,384			109,718
1986				1,914	205	89	5,082	7,751	46,876	58,562			120,479
1987				2,483	264	142	2,531	4,692	20,766	31,708			62,586
TOTAL	252	1,030	3,466	45,072	15,562	1,803	39,052	97,329	477,095	358,281	5,804	782	1,045,528
10-YEAR AVERAGE				2,243	389	71	2,210	5,464	27,846	25,112			63,335

TABLE 93

YEARLY TOTALS OF SALMONIDS COUNTED OVER LOWER GRANITE DAM
1975 - 1987

YEAR	CHINOOK	STEELHEAD	SOCKEYE	COHO	TOTAL SALMONID
1975	28,460	17,311	209	921	46,901
1976	31,667	23,017	531	900	56,115
1977	49,123	53,037	458	268	102,886
1978	54,246	30,068	123	152	84,589
1979	12,548	25,046	25	158	37,777
1980	10,986	40,454	96	43	51,579
1981	19,198	40,234	218	17	59,667
1982	19,476	72,840	211	59	92,586
1983	16,200	86,234	122	51	102,607
1984	16,517	98,923	49	0	115,489
1985	36,567	118,463	35	2	155,067
1986	43,023	134,519	15	1	177,558
1987	37,677	70,151	29	0	107,857
TOTAL	375,688	810,297	2,121	2,572	1,190,678
10-YEAR AVERAGE	26,644	71,693	92	48	98,479

TABLE 94
MONTHLY TOTALS OF SALMONIDS AND SHAD COUNTED OVER LOWER GRANITE DAM
1969 - 1987

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
CHINOOK*	-	-	1	4,836	22,217	5,578	3,532	216	664	508	116	9	37,677
STEELHEAD	-	-	2,962	2,951	251	51	783	2,342	16,644	34,235	8,809	1,123	70,151
SOCKEYE	-	-	-	-	-	5	16	7	1	-	-	-	29
COHO*	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL SALMONID	-	-	2,963	7,787	22,468	5,634	4,331	2,565	17,309	34,743	8,925	1,132	107,857
SHAD	-	-	-	-	-	52	893	92	-	-	-	-	1,037

* Jacks Included

TABLE 95
WATER TEMPERATURE AND STREAM FLOW DATA
LOWER GRANITE PROJECT - 1987

DATE	JANUARY			FEBRUARY		
	DISCHARGE	TURBIDITY*	WATER TEMP.*	DISCHARGE	TURBIDITY*	WATER TEMP.*
1	30.1			27.7		
2	37.6			23.5		
3	31.2			29.1		
4	25.6			28.8		
5	36.0			27.5		
6	38.4			25.5		
7	34.5			27.1		
8	32.2			25.9		
9	33.8			32.2		
10	33.2			32.8		
11	28.7			31.9		
12	32.4			32.2		
13	28.9			39.0		
14	32.3			32.9		
15	35.1			39.7		
16	33.0			41.2		
17	33.2			37.5		
18	23.9			29.5		
19	30.7			28.0		
20	27.8			29.0		
21	31.6			26.5		
22	29.0			21.7		
23	32.4			24.9		
24	24.3			25.7		
25	17.2			26.5		
26	23.3			20.7		
27	18.2			23.1		
28	27.1			24.7		
29	27.2					
30	27.7					
31	26.7					

*Water quality date were not collected 1 January through 28 February 1987.

TABLE 96

MONTHLY FISH PASSAGE SUMMARY REPORT — LOWER GRANITE PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — MAR 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SEECHI)	(DEG F)
1								17		15.0	.0	3.8	38.0
2								8		22.1	.0	3.8	38.0
3								10		23.8	.0	3.9	38.0
4								14		28.9	.0	3.9	38.0
5								5		29.3	.0	3.7	38.0
6								12		31.1	.0	3.7	38.0
7								23		39.2	.0	3.5	38.0
8								41		33.8	.0	3.5	38.0
9								67		37.4	.0	3.0	40.0
10								120		36.6	.0	2.5	41.0
11								121		31.0	.0	2.2	43.0
12								79		33.2	.0	2.4	42.0
13								118		34.2	.0	2.4	42.0
14								74		44.8	.0	2.5	43.0
15	1							151		44.2	.0	2.5	43.0
16								94		40.8	.0	2.5	43.0
17								112		41.6	.0	2.0	44.0
18								174		36.7	.0	2.0	44.0
19								140		45.5	.0	2.0	44.0
20								184		45.1	.0	2.0	44.0
21								145		38.5	.0	2.0	44.0
22								124		31.8	.0	2.0	44.0
23								118		40.0	.0	2.0	44.0
24								80		36.2	.0	2.0	44.0
25								126		31.0	.0	2.0	44.0
26								137		30.4	.0	2.0	44.0
27								132		30.7	.0	2.0	44.0
28								151		33.3	.0	2.2	44.0
29								196		25.7	.0	2.8	45.0
30								130		29.3	.0	2.8	45.0
31								59		25.6	.0	3.0	46.0
TOTALS	1							2962					

TABLE 97

MONTHLY FISH PASSAGE SUMMARY REPORT — LOWER GRANITE PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — APR 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SEECHI)	(DEG F)
1								113		23.2	.0	3.0	46.0
2								137		26.6	.0	3.0	46.0
3								168		29.2	.0	3.2	46.0
4	1							140		30.3	.0	3.0	46.0
5	1							113		30.3	.0	3.0	47.0
6								142		29.7	.0	3.8	47.0
7	1							133		37.4	.0	3.8	48.0
8	3							157		36.1	.0	4.1	49.0
9	2							142		39.2	.0	4.0	49.0
10	2							144		40.3	.0	4.0	49.0
11	1							185		42.2	.0	4.0	49.0
12	1							119		31.3	.0	3.8	50.0
13	7							100		41.6	.0	3.0	50.0
14	12							158		32.7	.0	3.0	50.0
15	21							113		32.2	.0	3.0	50.0
16	8							84		34.1	.0	3.0	50.0
17	28							98		43.2	.0	3.7	51.0
18	31							80		42.7	.0	3.5	51.0
19	108			1				99		42.2	.0	3.6	51.0
20	124							76		37.0	.0	3.6	52.0
21	77							59		41.7	.0	3.6	52.0
22	60							50		39.0	.0	3.3	52.0
23	497							57		35.8	.0	3.3	50.0
24	484							52		47.4	.0	3.6	51.0
25	811			1				47		56.5	.0	3.9	52.0
26	765			4				50		49.6	.0	3.8	52.0
27	117			2				49		53.6	.0	3.5	53.0
28	384			3				23		72.6	.0	3.5	54.0
29	914			3				27		74.7	.0	3.5	54.0
30	360			2				36		100.1	.1	3.4	53.0
TOTALS	4820			16				2951					

TABLE 97

TABLE 98

MONTHLY FISH PASSAGE SUMMARY REPORT — LOWER GRANITE PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — MAY 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1	563			3				28		94.5	.0	3.0	53.0
2	514			10				20		90.0	.0	1.5	53.0
3	92			2				13		80.6	.0	.2	52.0
4	635			7				19		73.9	.0	1.2	51.0
5	445			8				15		65.1	.0	2.0	51.0
6	730			9				21		76.6	.0	2.3	50.0
7	889			10				5		93.1	.0	2.5	51.0
8	3699			55				29		98.8	.0	3.4	51.0
9	839			36				18		74.5	.0	3.4	52.0
10	774			30				6		65.2	.0	3.6	53.0
11	1408			33				10		72.7	.0	3.6	56.0
12	1096			14				8		88.6	.0	3.8	55.0
13	684			32				5		96.1	.0	3.5	55.0
14	1097			38				6		97.0	.0	3.5	55.0
15	1877			58				13		89.9	.0	3.5	58.0
16	782			38				6		76.1	.0	3.6	56.0
17	756			39				2		78.8	.0	3.6	57.0
18	122			14				2		67.7	.0	3.8	56.0
19	334			26				4		51.2	.0	3.8	56.0
20	312			22						44.3	.0	4.6	56.0
21	732			44				4		42.3	.0	4.0	56.0
22	758			29				3		40.6	.0	4.1	58.0
23	415			39				6		37.3	.0	4.1	58.0
24	358			25						32.8	.0	4.1	59.0
25	232			19				2		36.4	.0	4.1	59.0
26	137			14						34.7	.0	4.1	59.0
27	232			13				1		35.5	.0	4.1	58.0
28	242			17				2		39.5	.0	4.2	59.0
29	305			32				3		37.9	.0	5.0	59.0
30	243			14						34.3	.0	5.0	58.0
31	164			21						31.3	.0	5.0	59.0
TOTALS	21466			751				251					

TABLE 98

TABLE 99

TABLE 99

MONTHLY FISH PASSAGE SUMMARY REPORT — LOWER GRANITE PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — JUN 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1	71			14						46.4	.0	5.0	58.0
2	164			22						40.2	.0	5.0	58.0
3	250			7				4		36.2	.0	5.0	59.0
4	158			14				1		33.8	.0	5.0	59.0
5	122			7						32.7	.0	5.0	60.0
6	105			8						29.6	.0	5.0	59.0
7	121			11						30.9	.0	5.0	59.0
8	156			7				1		32.7	.0	5.0	61.0
9	248			18						25.6	.0	5.0	61.0
10	107			7						32.6	.0	5.0	62.0
11	123			7				2		31.4	.0	5.0	63.0
12	271			11				1		32.4	.0	5.0	65.0
13	204			9						28.9	.0	5.0	66.0
14	149			8						26.2	.0	5.0	65.0
15	52			3				1	1	28.7	.0	5.0	68.0
16	148			16				1		27.9	.0	5.0	67.0
17	99			10				1	1	26.6	.0	5.0	67.0
18		152		9						25.2	.0	5.0	68.0
19		153		19					1	33.9	.0	5.0	68.0
20		167		21				3		36.7	.0	5.0	68.0
21		155		16						21.5	.0	5.0	68.0
22		266		30					10	25.4	.0	5.0	68.0
23		242		19			1		7	30.7	.0	5.0	68.0
24		301		28			1	6	13	29.2	.0	5.0	67.0
25		261		12				7	1	23.8	.0	5.0	68.0
26		202		26			1	11	4	29.0	.0	5.0	69.0
27		201		14				3	6	21.9	.0	5.0	69.0
28		222		32			1	3	8	16.7	.0	5.0	68.0
29		96		10			1			22.2	.0	5.0	71.0
30		162		35				6		16.8	.0	5.0	72.0
TOTALS	2548	2580		450			5	51	52				

TABLE 100

MONTHLY FISH PASSAGE SUMMARY REPORT — LOWER GRANITE PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — JUL 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1		275		30				2	1	21.0	.0	5.0	68.0
2		242		20				5	3	22.3	.0	5.0	68.0
3		220		7				4		21.2	.0	5.0	68.0
4		132		22				2	5	12.4	.0	5.0	69.0
5		124		12			2	3		12.0	.0	5.0	68.0
6		168		25				13	12	17.7	.0	5.0	68.0
7		149		39			1	9	11	17.6	.0	5.0	70.0
8		480		55			2	24	19	19.8	.0	5.0	68.0
9		292		17			1	14	43	21.9	.0	5.0	68.0
10		212		10				19	100	21.9	.0	5.0	69.0
11		134		13				25	40	18.7	.0	5.0	69.0
12		116		10			1	20	24	18.1	.0	5.0	70.0
13		42		9			1	15	56	23.7	.0	5.0	71.0
14		42		2			1	7	45	18.7	.0	5.0	71.0
15		43		10				3	21	20.2	.0	5.0	71.0
16		23		2			1	13	41	17.3	.0	5.0	70.0
17		59		16				6	42	12.2	.0	5.0	70.0
18		49		10				8	49	15.1	.0	5.0	70.0
19		43		11			2	27	39	19.5	.0	5.0	70.0
20		39		12				20	55	23.2	.0	5.0	71.0
21		50		7			1	23	42	21.1	.0	5.0	70.0
22		34		2				23	69	19.3	.0	5.0	71.0
23		28		8				45	18	25.0	.0	5.0	72.0
24		25		12				27	23	29.2	.0	5.0	72.0
25		25		6				39	16	28.9	.0	5.0	71.0
26		20		2				23	31	22.2	.0	5.0	71.0
27		21		3			1	34	24	30.2	.0	4.7	71.0
28		15						55	27	23.9	.0	4.7	71.0
29		14		1				57	20	15.6	.0	4.7	70.0
30		10		2				57	7	18.6	.0	4.7	70.0
31		30		1			2	161	10	21.1	.0	5.0	71.0
TOTALS		3156		376			16	783	893				

TABLE 100

TABLE 101

TABLE 101

MONTHLY FISH PASSAGE SUMMARY REPORT — LOWER GRANITE PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — AUG 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1		18		1			1	125	6	14.7	.0	5.0	71.0
2		9		2			2	101	5	12.4	.0	5.0	72.0
3		10		1			1	94	10	17.5	.0	5.0	72.0
4		4		2				44	5	16.4	.0	5.0	72.0
5		18		3				73	11	16.8	.0	5.0	72.0
6		9						82	3	17.6	.0	5.0	72.0
7		4		1				64	1	19.0	.0	5.0	72.0
8		6						40	4	17.1	.0	5.0	70.0
9		2						34	3	14.8	.0	5.0	71.0
10		7						44	1	15.7	.0	5.0	71.0
11		6						145	3	19.3	.0	5.0	71.0
12		16					1	85	4	18.8	.0	5.0	71.0
13		19		3				146	4	14.3	.0	5.0	70.0
14		8						83	2	17.3	.0	5.0	70.0
15		6					1	79	1	14.0	.0	5.0	70.0
16		2						110	1	16.1	.0	5.0	70.0
17		11					1	112	2	14.9	.0	5.0	70.0
18			4	1				99	5	16.1	.0	5.0	71.0
19			5					80	12	17.0	.0	5.0	71.0
20			3	2				106	1	13.5	.0	5.0	71.0
21			6					124		16.0	.0	5.0	71.0
22			3					73		18.4	.0	5.0	72.0
23				1				70		14.5	.0	5.0	70.0
24			5					36	8	16.6	.0	5.0	71.0
25			1	1				34		19.5	.0	5.0	70.0
26			2	1				60		19.0	.0	5.0	71.0
27				1				53		21.2	.0	5.0	71.0
28			1					42		19.7	.0	5.0	71.0
29			4	1				37		12.2	.0	5.0	72.0
30				1				32		14.4	.0	5.0	72.0
31			5					35		19.0	.0	5.0	72.0
TOTALS		155	39	22			7	2342	92				

TABLE 102

MONTHLY FISH PASSAGE SUMMARY REPORT — LOWER GRANITE PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — SEP 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1			4	1				22		14.0	.0	5.0	73.0
2			4	2				25		19.3	.0	5.0	71.0
3			6	5				160		19.8	.0	5.0	71.0
4			5	3				138		17.5	.0	5.0	71.0
5			17					116		16.0	.0	5.0	71.0
6			8	2				108		15.8	.0	5.0	70.0
7			8	1				147		15.8	.0	.5	70.0
8			2	2				75		19.3	.0	5.0	70.0
9			13	2				102		22.6	.0	5.0	70.0
10			2					61		30.0	.0	5.0	70.0
11			5	1				134		25.7	.0	5.0	70.0
12			6	2				89		27.0	.0	5.0	70.0
13			14	3				113		28.3	.0	5.0	70.0
14			6	2				164		33.3	.0	5.0	70.0
15			4	5				250		26.2	.0	5.0	69.0
16			1	2				380		20.4	.0	5.0	68.0
17			8	7				588		26.5	.0	5.0	68.0
18			13	13				685		29.7	.0	5.0	66.0
19			12	11				465		22.0	.0	5.0	65.0
20			6	5				469		24.6	.0	5.0	65.0
21			16	10				648		23.9	.0	5.0	66.0
22			25	9				674		22.9	.0	5.0	66.0
23			22	14				596		25.6	.0	5.0	66.0
24			39	10				942		28.4	.0	5.0	65.0
25			34	10				1245		27.1	.0	5.0	65.0
26			59	29				1866		29.4	.0	5.0	63.0
27			26	7				1284		23.7	.0	5.0	63.0
28			29	9				1416		24.4	.0	5.0	63.0
29			27	11				1924		20.4	.0	5.0	63.0
30			43	22			1	1758		24.6	.0	5.0	63.0
TOTALS			464	200			1	16644					

TABLE 102

TABLE 103

MONTHLY FISH PASSAGE SUMMARY REPORT — LOWER GRANITE PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — OCT 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SEECHI)	(DEG F)
1			6	12				1297		21.7	.0	5.0	63.0
2			19	12				1763		14.2	.0	5.0	63.0
3			13	11				1298		15.7	.0	5.0	63.0
4			10	9				1789		16.3	.0	5.0	63.0
5			8	3				960		18.2	.0	5.0	63.0
6			9	6				1230		16.8	.0	5.0	62.0
7			10	8				1384		18.1	.0	5.0	63.0
8			15	2				1417		17.3	.0	5.0	63.0
9			34	15				1238		20.6	.0	5.0	63.0
10			12	11				1193		17.3	.0	5.0	62.0
11			12	7				1242		14.9	.0	5.0	62.0
12			13	10				1326		18.8	.0	5.0	62.0
13			9	3				1375		18.3	.0	5.0	61.0
14			22	4				1544		13.7	.0	5.0	61.0
15			15	1				1257		19.2	.0	5.0	61.0
16			41	6				1438		20.8	.0	4.0	61.0
17			10	5				1491		16.5	.0	4.0	61.0
18			9	3				1033		14.1	.0	4.0	60.0
19			2	3				952		18.1	.0	4.0	60.0
20			3	2				954		21.1	.0	4.3	60.0
21			5	3				814		14.8	.0	4.3	60.0
22			9					668		15.5	.0	4.5	59.0
23			11	7				917		19.8	.0	5.0	58.0
24			9	3				816		17.5	.0	5.0	58.0
25			13	5				772		12.3	.0	5.0	57.0
26			4	1				791		19.4	.0	5.0	57.0
27			4	2				596		19.8	.0	5.0	57.0
28			2	2				646		19.2	.0	5.0	57.0
29			3	3				486		18.7	.0	5.0	56.0
30			6	2				663		17.1	.0	5.0	56.0
31			4	5				845		17.9	.0	5.0	55.0
TOTALS			342	166				34235					

TABLE 104

MONTHLY FISH PASSAGE SUMMARY REPORT — LOWER GRANITE PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — NOV 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY	WATER TEMP
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1			6					403		16.7	.0	5.0	55.0
2			8	4				260		21.3	.0	5.0	55.0
3			1	1				354		15.2	.0	5.0	55.0
4			6	1				208		25.9	.0	5.0	55.0
5			5	1				383		19.6	.0	5.0	55.0
6			4	4				678		22.2	.0	5.0	54.0
7			8	1				404		23.5	.0	5.0	54.0
8			5	2				426		17.2	.0	5.0	54.0
9			4					276		20.1	.0	5.0	54.0
10			2					386		19.4	.0	5.0	53.0
11			5	1				326		20.1	1.6	5.0	53.0
12								235		24.8	.0	5.0	53.0
13			4					295		24.0	.0	5.0	53.0
14			6	1				637		26.4	.0	5.0	53.0
15			6	1				539		18.4	.0	5.0	53.0
16			2					300		25.5	.0	5.0	53.0
17			4					300		28.6	.0	4.8	52.0
18								226		37.9	.0	4.9	52.0
19								202		23.2	.0	4.7	52.0
20			2	1				343		28.4	.0	5.0	52.0
21			6					199		29.3	.0	5.0	52.0
22			2					172		24.5	.0	5.0	50.0
23								59		25.4	.0	5.0	50.0
24			4					115		28.1	.0	5.0	49.0
25			1					109		32.9	.0	5.0	49.0
26			1					211		30.6	.0	5.0	48.0
27			1					268		20.6	.0	5.0	48.0
28			1	1				282		23.4	.0	5.0	47.0
29			1					166		18.8	.0	5.0	47.0
30			2					77		27.9	.0	5.0	47.0
TOTALS			97	19				8809					

TABLE 104

TABLE 105

MONTHLY FISH PASSAGE SUMMARY REPORT — LOWER GRANITE PROJECT

U.S. ARMY ENGINEER DISTRICT, PORTLAND — DEC 1987

	FISH COUNTS									RIVER CONDITIONS			
	CHINOOK ADULTS			CHINOOK	COHO	COHO				DISCHARGE	SPILL	TURBIDITY*	WATER TEMP*
DATE	SPRING	SUMMER	FALL	JACKS	ADULTS	JACKS	SOCKEYE	STEELHEAD	SHAD	(KCFS)	(KCFS)	(SECCHI)	(DEG F)
1								114		28.1	.0	5.0	47.0
2			1					107		28.1	.0	4.7	47.0
3			5					80		27.2	.0	5.0	47.0
4			2					86		31.4	.0	5.0	47.0
5			1					42		26.2	.0	5.0	46.0
6								38		24.0	.0	5.0	46.0
7								25		30.8	.0	5.0	45.0
8								19		30.2	.0	5.0	44.0
9								53		32.4	.0	5.0	44.0
10								68		32.4	.0	5.0	44.0
11								148		33.0	.0	4.8	44.0
12								149		33.6	.0	4.5	44.0
13								96		25.9	.0	4.8	44.0
14								65		30.5	.0	4.6	44.0
15								38		38.6	.0	4.7	43.0
16										29.1	.0		
17										31.9	.0		
18										29.5	.0		
19										30.6	.0		
20										23.5	.0		
21										29.0	.0		
22										28.8	.0		
23										31.4	.0		
24										30.5	.0		
25										27.4	.0		
26										23.4	.0		
27										22.2	.0		
28										26.9	.0		
29										30.0	.0		
30										29.6	.0		
31													
TOTALS			9					1123					

* Water quality data were not collected 16 December through 31 December 1987.

TABLE 106

MONTHLY TOTALS OF CHINOOK COUNTED OVER LOWER GRANITE DAM
1975 - 1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1975				1	11,693	8,722	4,854	1,183	1,462	474	71		28,460
1976				149	14,358	10,438	5,074	428	605	535	80		31,667
1977				12,824	22,892	6,718	4,622	203	961	776	125	2	49,123
1978				3,329	29,983	11,464	6,976	1,234	698	519	42	1	54,246
1979				234	4,461	4,455	1,794	256	1,003	302	43		12,548
1980				328	5,227	2,558	1,916	241	345	343	28		10,986
1981				1,380	10,730	2,713	2,561	92	1,008	677	37		19,198
1982				42	9,121	4,650	3,217	329	1,399	650	62	6	19,476
1983				113	7,676	3,551	3,167	234	828	552	79		16,200
1984				134	4,915	5,602	4,274	303	719	522	48		16,517
1985				1,429	20,384	10,466	1,971	281	1,285	697	53	1	36,567
1986				3,623	26,434	7,472	2,796	137	1,250	1,136	172	3	43,023
1987			1	4,836	22,217	5,578	3,532	216	664	508	116	9	37,677
TOTAL			1	28,422	190,091	84,387	46,754	5,137	12,227	7,691	956	22	375,688
10-YEAR AVERAGE				1,545	14,115	5,851	3,220	332	920	591	68		26,644

TABLE 107

MONTHLY COUNT OF STEELHEAD TROUT OVER LOWER GRANITE DAM
1975 - 1987

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1975				1,724	1,065	104	102	3,337	6,396	3,584	703	296	17,311
1976	173	21	181	1,120	575	120	527	3,816	8,720	6,837	860	67	23,017
1977		9	142	1,235	229	59	1,538	2,652	16,296	27,492	2,950	435	53,037
1978	354	716	2,276	2,009	252	9	478	2,721	10,829	9,528	788	108	30,068
1979	12	44	802	962	192	16	1,197	2,602	5,143	11,323	2,487	266	25,046
1980			1,149	3,403	1,172	36	517	3,378	13,291	15,455	2,053		40,454
1981			1,052	1,610	604	98	1,422	1,609	9,391	20,714	3,096	638	40,234
1982			1,778	2,202	1,472	66	817	9,118	20,219	32,850	3,945	373	72,840
1983			3,336	1,416	244	7	1,676	8,899	32,063	34,028	4,425	140	86,234
1984			2,647	3,914	961	40	1,886	3,458	34,709	46,445	4,841	22	98,923
1985			2,474	9,686	856	146	706	5,027	63,074	33,137	3,230	127	118,463
1986			8,179	2,358	163	62	3,031	2,323	39,780	71,426	6,671	526	134,519
1987			2,962	2,951	251	51	783	2,342	16,644	34,235	8,809	1,123	70,151
TOTAL	539	790	26,978	34,590	8,036	814	14,680	51,282	276,555	347,054	44,858	4,121	810,297
10-YEAR AVERAGE			2,666	3,051	617	53	1,251	4,148	24,514	30,914	4,035	332	71,693

Columbia and Snake River Projects

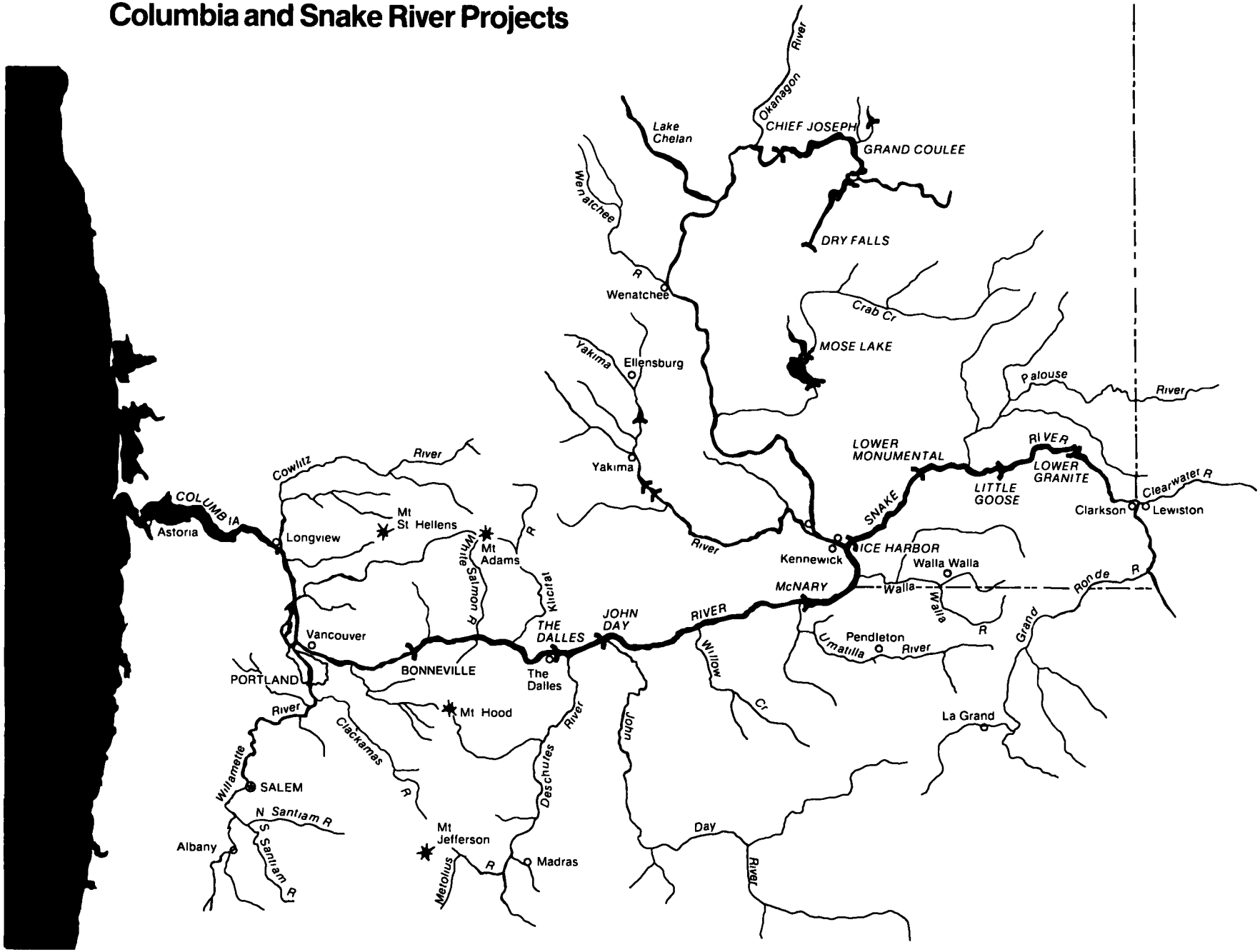
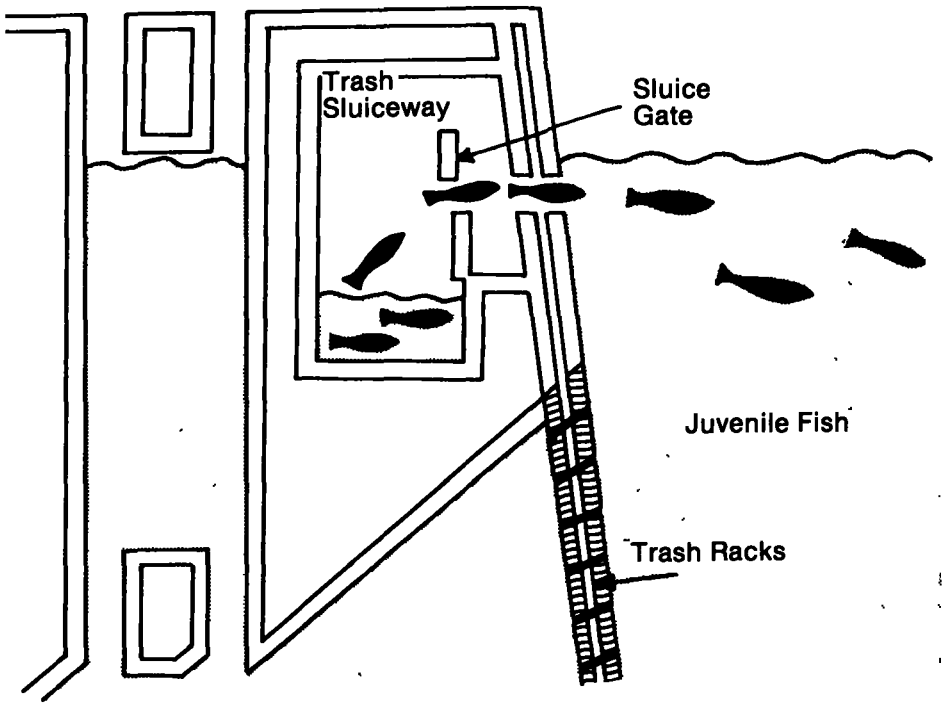


Plate 1

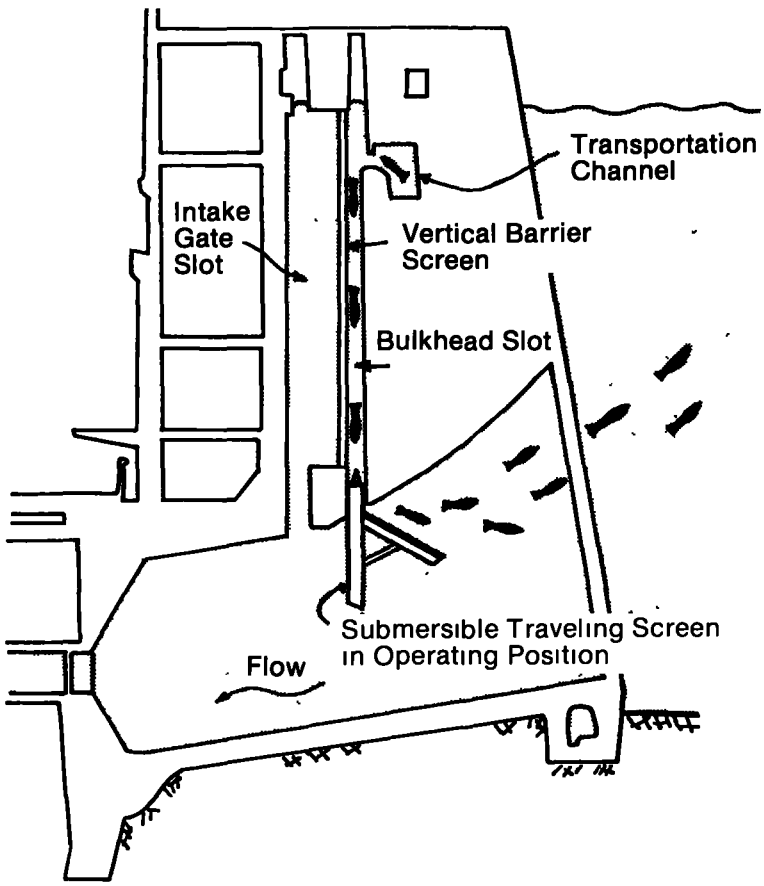
Juvenile By-pass Systems

The Dalles
Ice Harbor



Ice and Trash Sluiceway

Bonneville
John Day
McNary
Little Goose
Lower Granite



Submergible Traveling Screen

Not to Scale

Plate 2

Bonneville Lock and Dam

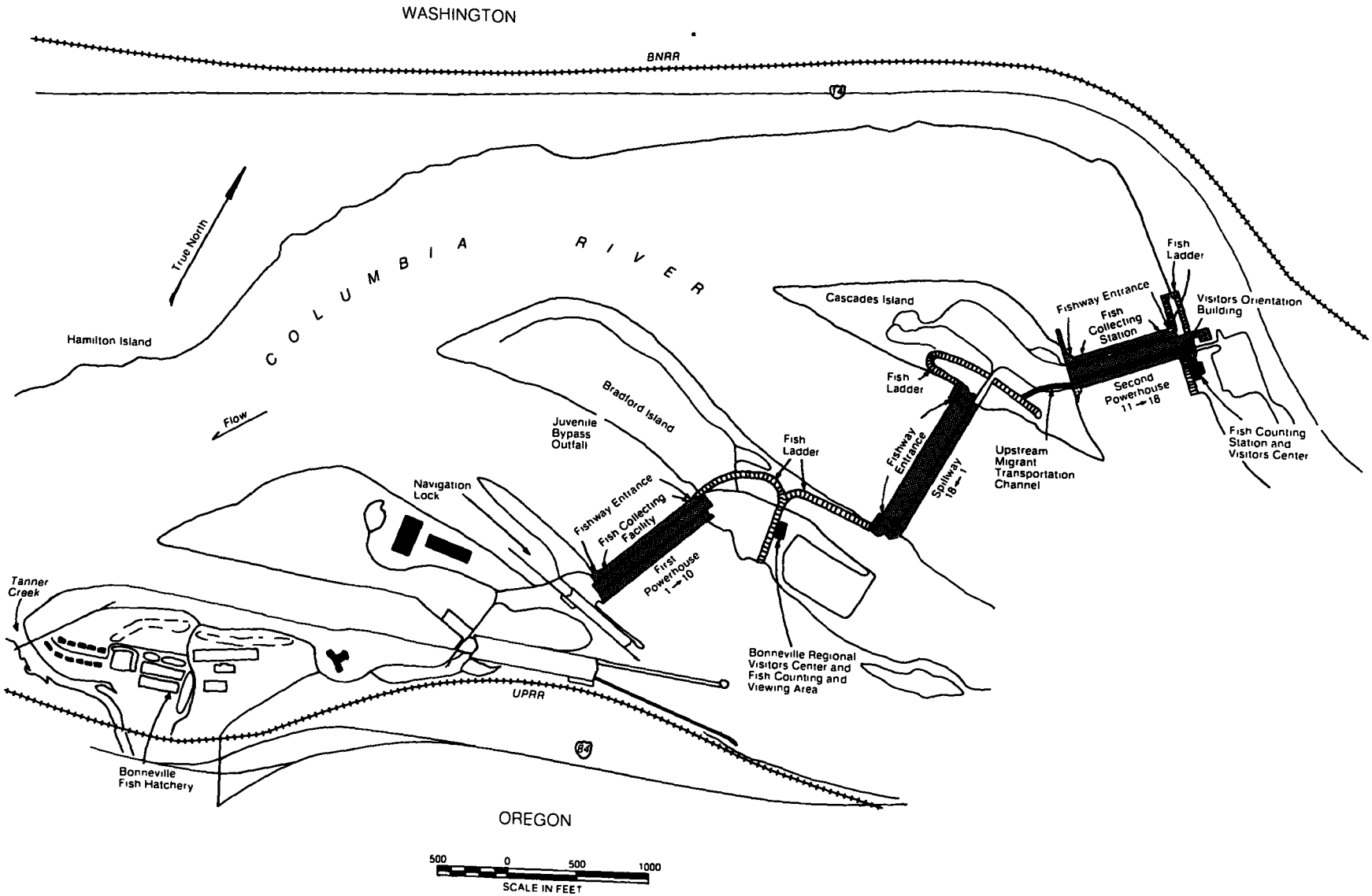


Plate 3

The Dalles Lock and Dam

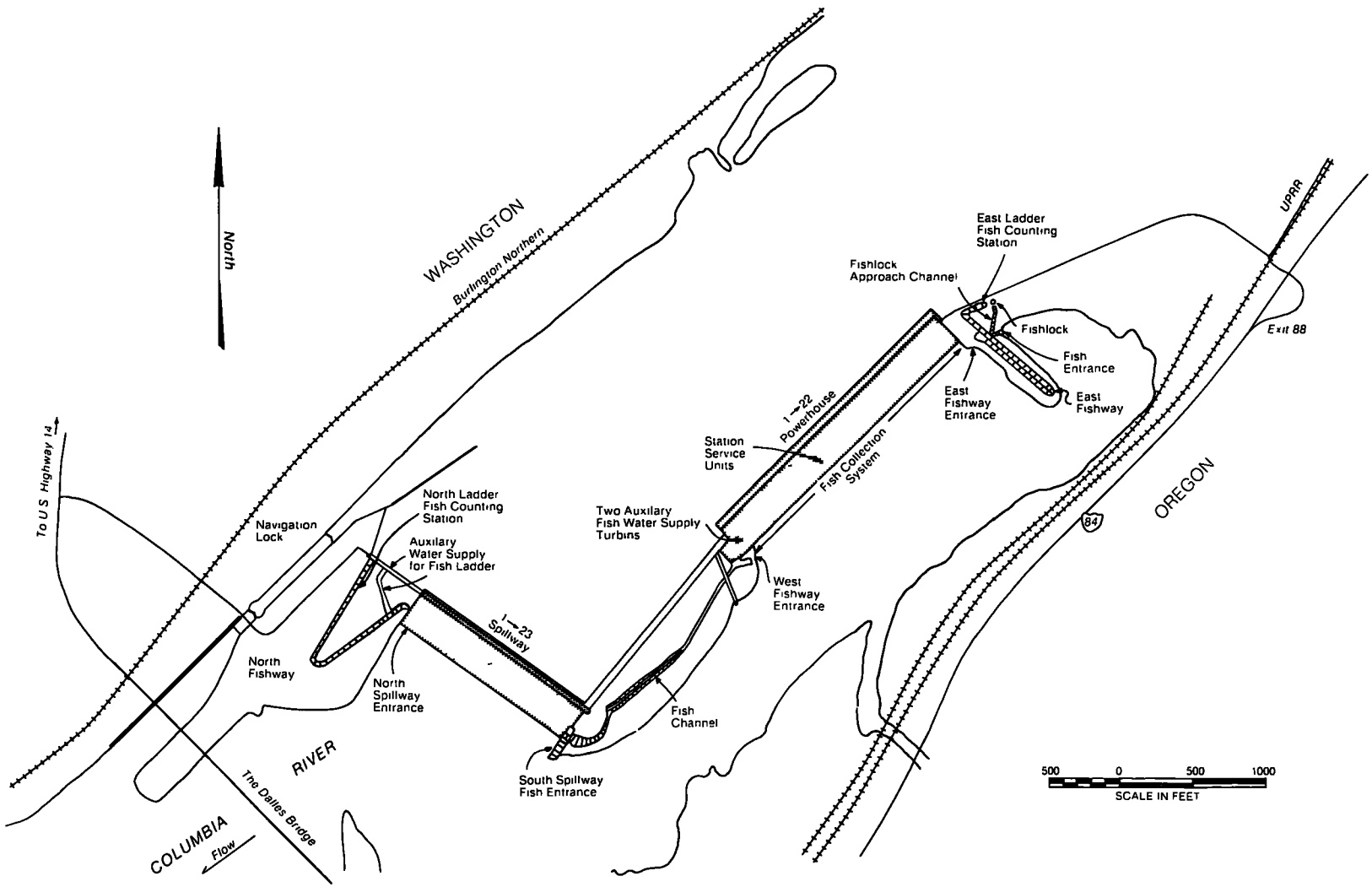


Plate 4

John Day Lock and Dam

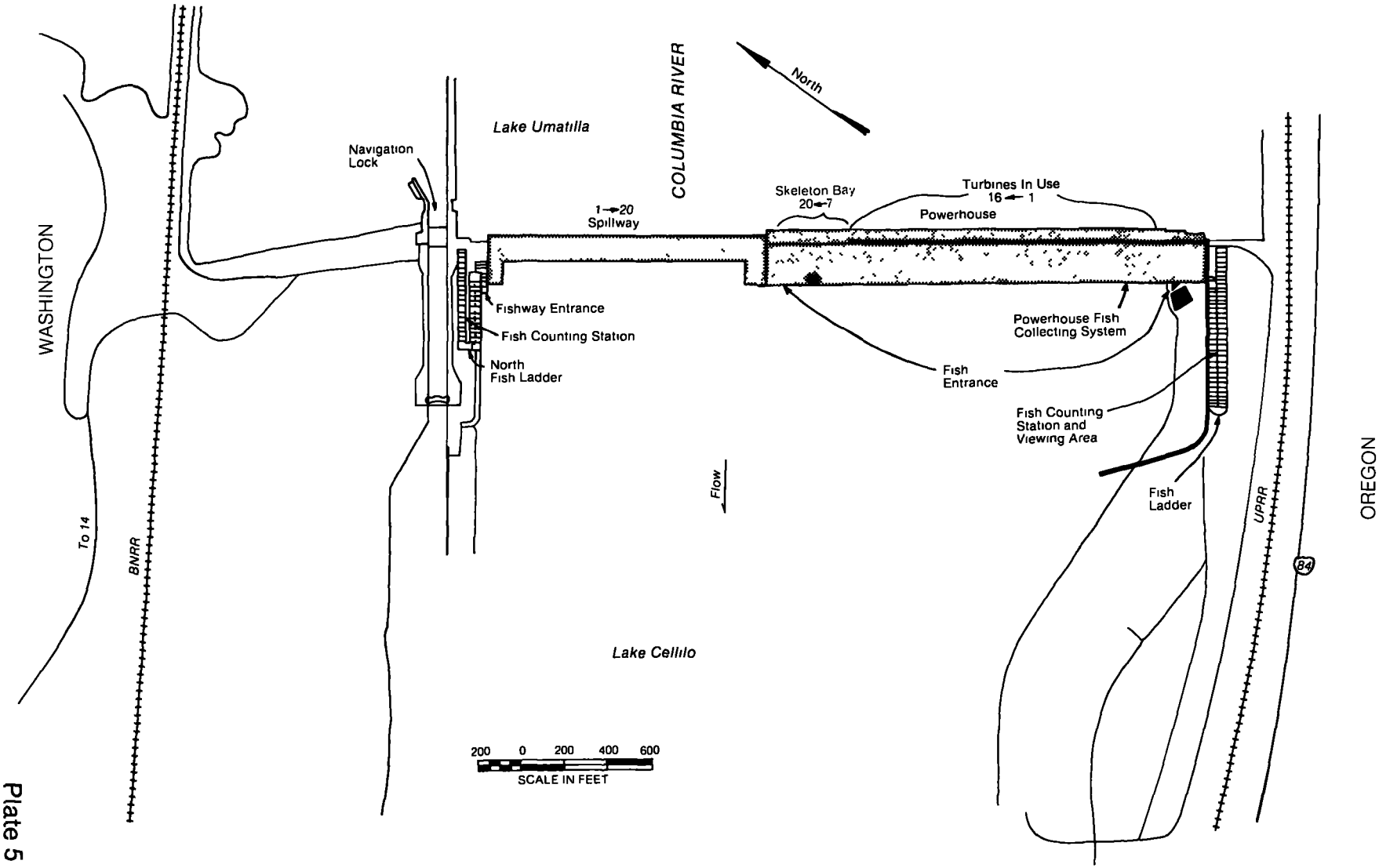


Plate 5

McNary Lock and Dam

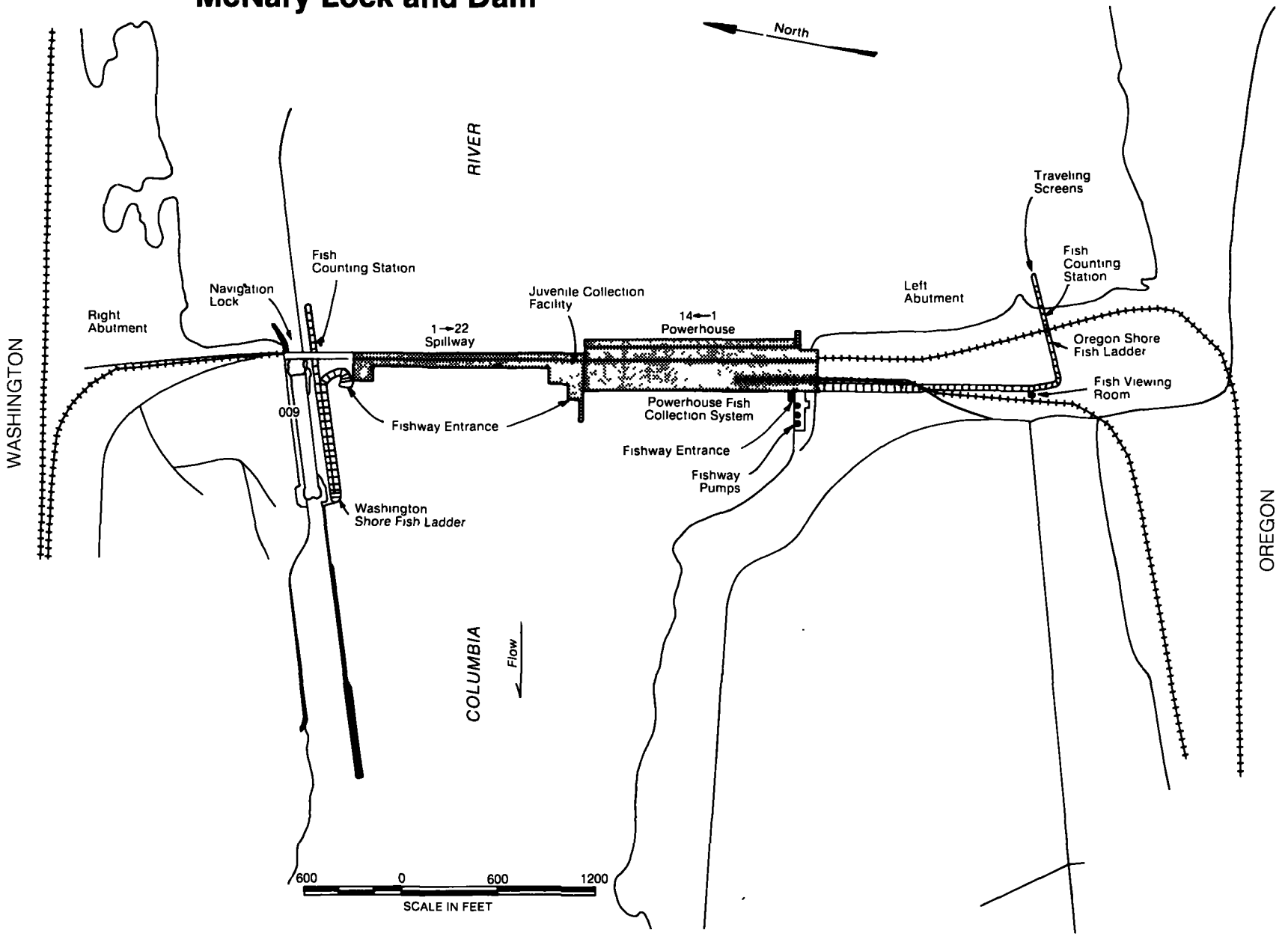
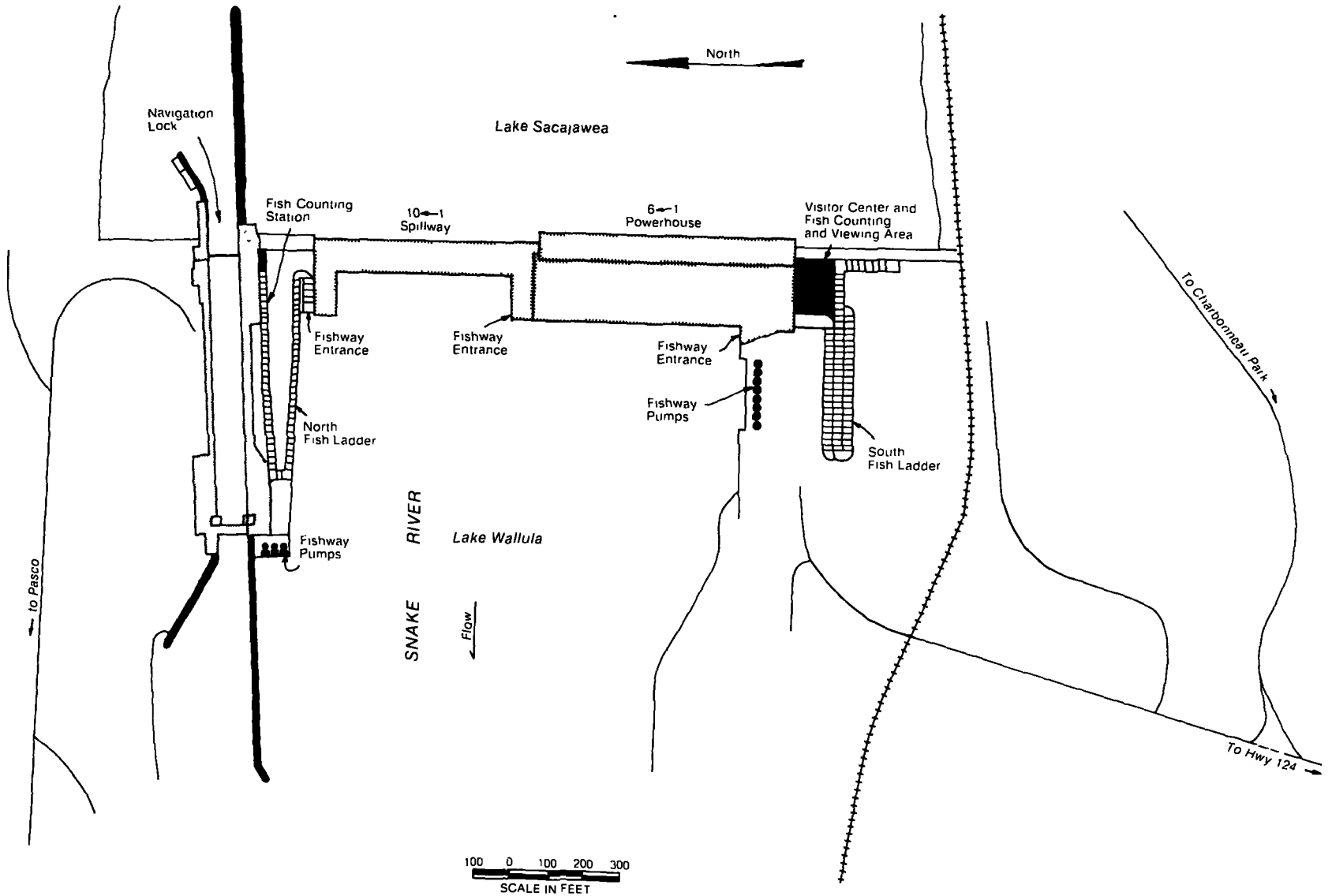


Plate 6

Ice Harbor Lock and Dam



SPBS

Plate 7

Lower Monumental Lock and Dam

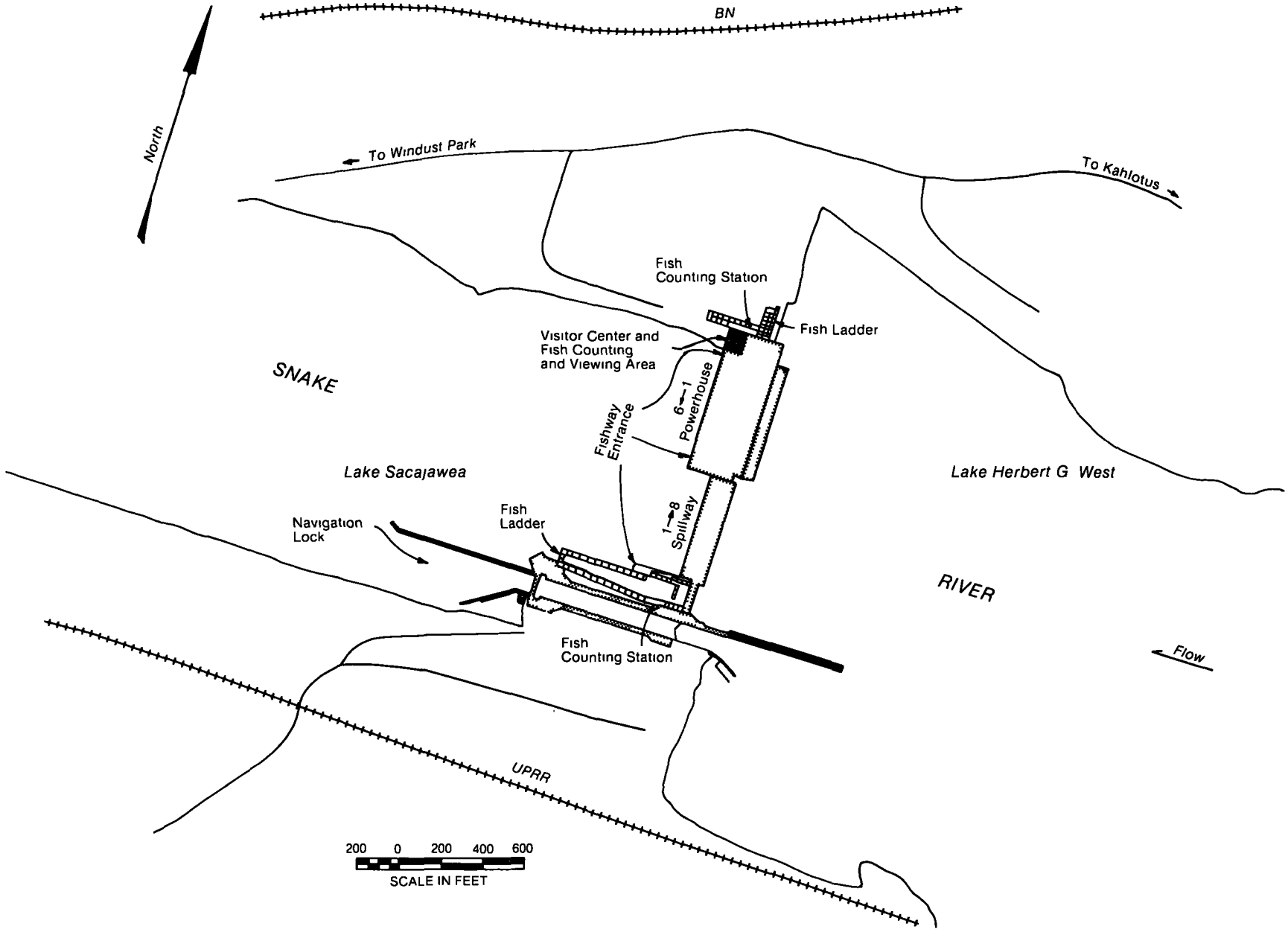


Plate 8

Little Goose Lock and Dam

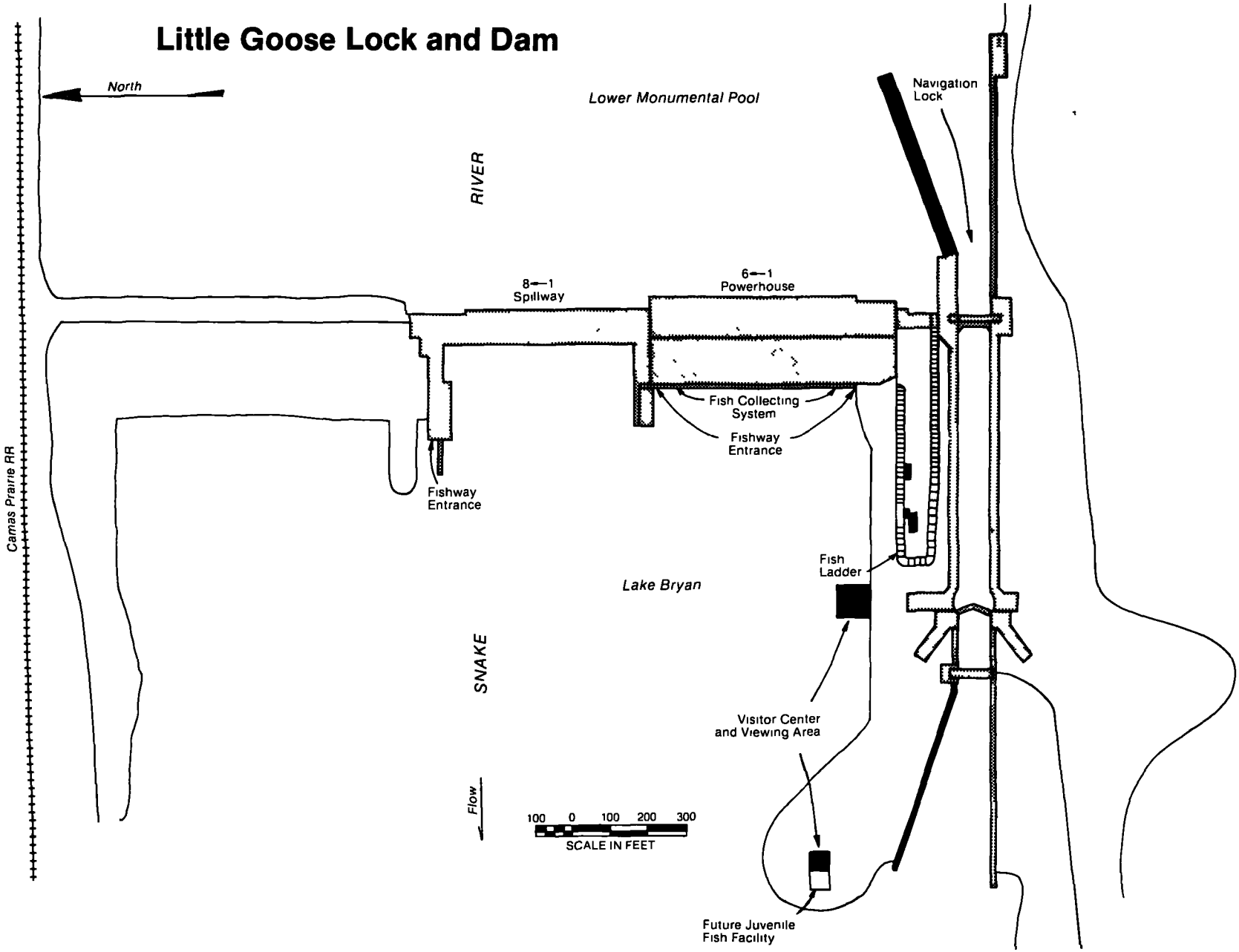


Plate 9

Lower Granite Lock and Dam

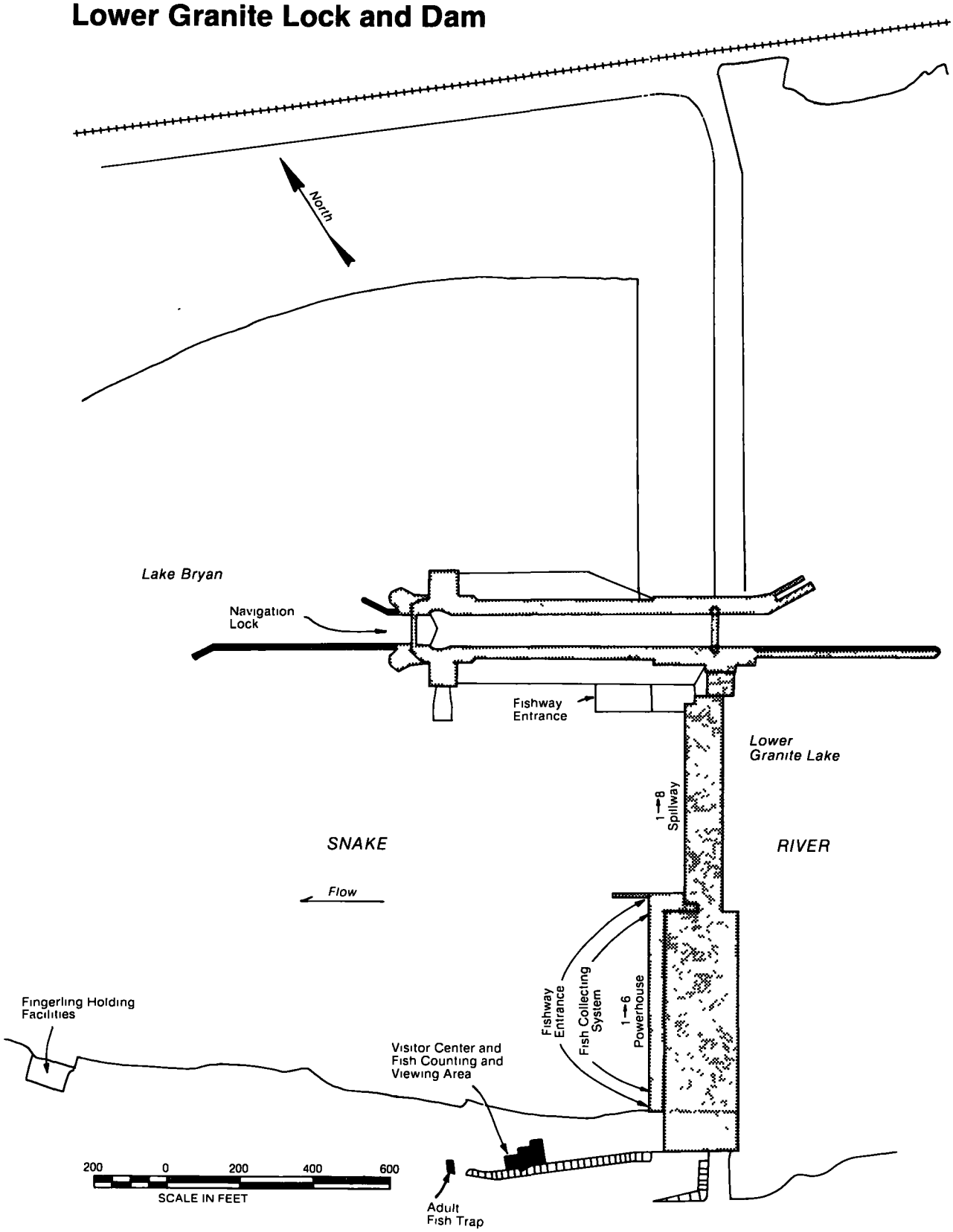


Plate 10