

REPORT TO THE ALASKA BOARD OF FISHERIES
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INTRODUCTION

The Kuskokwim Area includes the Kuskokwim River drainage and all waters of Alaska that flow into the Bering Sea between Cape Newenham and the Naskonat Peninsula (Figure 1). Commercial salmon fishing takes place in four districts. District 1, Lower Kuskokwim River, is the portion of the Kuskokwim River upstream of Popokamiut to the regulatory markers located about one mile above the mouth of the Tuluksak River (Figure 2). District 2, Middle Kuskokwim River, is the Kuskokwim River upstream from regulatory markers at the upstream entrance to the second slough on the west bank downstream of Lower Kalskag upstream to the regulatory markers at Chuathbaluk (Figure 3). District 4, Quinhagak, is in Kuskokwim Bay between the mouth of Weelung Creek and the South Mouth of the Arolik River (Figure 4). District 5, Goodnews Bay, is Goodnews Bay (Figure 5).

W is the letter code assigned to the Kuskokwim salmon fishery by the Commercial Fisheries Entry Commission. It precedes the district number on the figures and in news releases (eg. W-1). This helps the public differentiate between announcements for the Yukon River districts (Y) and the Kuskokwim River (W) districts.

MANAGEMENT OBJECTIVES AND PROJECTS

The Alaska Department of Fish and Game's Division of Commercial Fisheries manages the subsistence and commercial fisheries in the Kuskokwim Area. The Department's goal is to manage both fisheries on a sustained yield basis within the policies set forth by the Alaska Board of Fisheries (Board).

Subsistence Fishery

The priority use of the Kuskokwim Area salmon resource is subsistence. The Kuskokwim Area subsistence salmon fishery is a large and important fishery, with over 1,300 families participating. Subsistence catches of chinook salmon in the Kuskokwim River normally exceed the commercial catch of this species (Table 1). All districts have more time for subsistence fishing than commercial fishing. For example, during the 1992 salmon runs in District 1, subsistence fishing was open for 78 days and commercial fishing for 14 days.

Regulations

The subsistence fishery is subject to few restrictions. Some restrictions are necessary to deter illegal commercial fishing and ensure adequate escapement. Because most subsistence fishers fish commercially, there is a temptation to sell fish caught during commercial closures. Short closures before, during, and following commercial periods discourage the sale of subsistence fish. In District 1 this subsistence closure includes the commercial fishing district, Kuskokuak Slough, and the Kuskokwim River between Districts 1 and 2, but not the spawning tributaries. In Districts 2, 4, and 5 the subsistence closures apply to the commercial districts and spawning tributaries.

In 1988, the Board passed a regulation closing the Kuskokwim River between Districts 1 and 2 during District 1 subsistence closures. This change has been

very successful. The number of boats fishing in this area would increase dramatically just before and during commercial fishing periods in the adjoining district. Enactment of the closure ended this practice. Four citations for fishing in closed waters have been issued there since 1988.

Harvest Surveys

The Division of Commercial Fisheries began annual subsistence salmon harvest surveys of Kuskokwim River communities in 1960, of Quinhagak in 1967, and the Goodnews Bay district in 1979. In 1988 the Division of Subsistence took over the annual surveys under a memorandum of agreement with the Commercial Fisheries Division. The project goals are:

1. To obtain estimates of the subsistence salmon catch, by species, for 32 Kuskokwim Area communities.
2. To get a total (expanded) harvest estimate for subsistence-caught salmon by species for the Kuskokwim Area.
3. To identify issues affecting subsistence.
4. To update community household lists and identify fishing households in Kuskokwim Area communities.

The Subsistence Division mailed 1992 subsistence "catch calendars" and household reply cards to over 1,500 Kuskokwim Area households. Calendar collection and interviews occur during house to house surveys in October and November. This timing provides more complete catch data, particularly for coho salmon.

Commercial Fishery

The commercial fishery has expanded during the last ten years. This expansion is due to increased participation by individual fishermen and improvements in fishing gear, tendering, and processing capabilities. In 1992, 814 of the 832 permit holders made at least one landing (Table 2). The number of permits fished in 1992 was above average (Table 2). Since the peak of 824 permits fished in 1989 and 1990, the number of active permits has declined slightly (Table 2).

Despite the reduction in the number of permits fished, the number of permit-hours fished was above average at 106,012 (Table 3). Permit-hours were below average in District 1 due to the long closure during the chum salmon fishery (Table 3). Permit holders transfer freely between districts. This caused the closure in District 1 to contribute to the increase in permit-hours in Districts 4 and 5. The 1990 amendment to the Kuskokwim River Management Plan (5 AAC 07.365) provided for coincidental fishing periods in Districts 1 and 2, except during the chinook salmon run. In previous years, a more restrictive fishing schedule caused the average permit-hours to be low for District 2 (Table 3).

Commercial fishing regulations set maximum gill net specifications of; 6-inch or smaller mesh, 50 fathoms in length and 45 meshes in depth for all districts. Fishing periods in District 1 and 2 are usually six hours in duration from 1:00 p.m. until 7:00 p.m., as required by the management plan. Longer fishing periods

divide the extra time before 1:00 p.m. and after 7:00 p.m. In Districts 4 and 5 fishing periods are normally 12 to 24 hours in length. Fishers prefer daylight fishing hours so the periods are normally 9:00 a.m. until 9:00 p.m.

Escapement Monitoring

The area's major spawning systems received provisional spawning escapement objectives in 1983. The objectives are the average escapement counts obtained in these systems since 1959. The objectives represent the minimum escapement levels needed to maintain the salmon stocks at past levels of abundance. Continuing assessment of the escapement data has required adjustment of the objectives to present the most accurate index of escapement available. A recalculation of the averages in 1992 resulted in several corrections to the objectives (Table 4).

Aerial surveys of "key" streams and lakes throughout the area, commercial and test fishery CPUE, weir projects on the Kogrukluuk and Goodnews rivers, and sonar counter in the Aniak River provide annual indexes of spawning escapements. The United States Fish and Wildlife Service operated weir projects on the Tuluksak and Kwethluk rivers in 1992.

Turbid water conditions and inclement weather often prevent accurate estimates of escapements. Timely escapement estimates for in-season management are difficult to obtain. Most spawning streams are many miles upstream of the commercial fishing districts. This results in a long delay between the commercial periods and their visible effects on escapement. Escapement estimates often are obtained too late for adjustment of fishing time. In-season management depends heavily on commercial catch data, the test fisheries and escapement models. Escapement models predict the final escapement by extrapolating the in-season counts by the historical percentage of run passage for that date.

The test fishery near Eek (Figure 2) sponsored by processors operated from 1988 through 1990. They were unable to provide for the fishery in 1991. The Department funded the fishery beginning the last week of July 1992. The processor in Aniak funded a new test fishery at two locations; Aniak and Chuathbaluk, for the entire 1992 season (Figure 3). This new fishery went very well and provided useful information. If continued, it will make a valuable addition to management of the fishery.

Development of a dual beam side-scanning sonar project in the Kuskokwim River began in 1988. Interviews and reconnaissance found a suitable location about three miles above Bethel in 1988. In 1989 and 1990 data collection to allow accurate interpretation of the sonar signal began. The feasibility test in 1991 discovered some technical problems. The primary goal in 1992 was to test the new transducers and the radio communication link for the far bank.

Kuskokwim River

Chinook Salmon

The combined commercial and subsistence chinook salmon harvest has increased from an average of 56,000 fish for the 10 year period 1960-1969 to 105,112 during 1982-1991 (Table 1). A commercial harvest target of 30,000 to 40,000 was in

effect from 1973-1984 to stabilize catches until the result of the harvest could be evaluated. Experience showed that the harvest range was too high during weak runs. In 1984, the Board of Fisheries reduced the range to 17-32,000 chinook salmon.

Beginning in 1985, restricting commercial gill nets to 6-inch or smaller mesh size reduced the harvest of larger female chinook salmon. This gear change increased the harvest of the smaller "jack" chinooks. This action did not stop the decline in total escapement in 1985 and 1986. The 1985 chinook salmon catch of 37,889 exceeded the harvest guideline while escapements were less than half the desired objective. The catch remained within the harvest guideline in 1986 and chinook salmon escapements were less than one third the objective (Figure 6). To provide for a subsistence harvest that averages 60,000 chinook salmon and maintain average spawning escapements the directed commercial harvest of chinook salmon was prohibited in 1987. This action followed earlier attempts to correct the declining escapements of Kuskokwim River chinook salmon.

The strategy used in 1987 continued to require the use of 6-inch or smaller mesh nets. The plan provided for three eight hour fishing periods in June to harvest chum salmon. A separation of six days insured that chinook salmon not caught during an opening would have adequate time to travel through District 1 before the next opening. Fishing was closed upstream of Bethel during the first commercial period (Figure 2). This prevented the harvest of earlier running chinook salmon in the upstream portion of the district while allowing the harvest of the later running sockeye and chum salmon. To encourage commercial fishers to take their subsistence chinook salmon from their commercial catch, only 14,000 could be sold in June. This final provision resulted in widespread dissatisfaction with the plan. The 1987 strategy resulted in chinook salmon reaching escapement objectives in the Kuskokwim River for the first time since 1981 (Figure 6).

Dissatisfaction with the 1987 plan resulted in a new management plan. The new management plan eliminated the chinook harvest cap. The management plan retained the required three 8 hour periods in June. The first period continued to be downstream of Bethel. The new management strategy included the adoption of the JOINT STATEMENT ON THE MANAGEMENT OF THE KUSKOKWIM RIVER SALMON FISHERY. This new approach and improved returns, allowed chinook salmon to reach or closely approach escapement objectives in 1988 through 1992 (Figure 6).

The Department, local Fish and Game advisory committees, subsistence, and commercial fishermen, and processors and the Board of Fisheries drafted the JOINT STATEMENT ON THE MANAGEMENT OF THE KUSKOKWIM RIVER SALMON FISHERY. The statement's goal is to increase the sustained yield of Kuskokwim River salmon stocks. This will provide for the subsistence and commercial fisheries. To work toward this goal the Kuskokwim River salmon users formed the Kuskokwim River Salmon Management Working Group with two purposes:

1. To arrive at a consensus regarding the openings and closures of the Kuskokwim River commercial fishery.
2. To work toward the development of a comprehensive management plan for all Kuskokwim River salmon stocks.

In 1989, the Board increased the upper end of the incidental harvest guideline to 50,000 chinook salmon. This followed the record chinook salmon run in 1988. Chinook salmon approached or reached escapement objectives from 1987 and 1992. During this period the total harvest (commercial and subsistence) remained above 100,000 chinook salmon (Table 1). Much higher than the 70,000 to 89,000 catches from 1983 to 1986 when escapement objectives were not reached (Table 1, Figure 6). This shows an increase in run size was primarily responsible for the increase in catch and escapement since 1987.

It is unlikely that a directed commercial fishery for chinook salmon will be possible unless the total run size increases dramatically. The weak chum salmon return in 1991 resulted in the fewest number of fishing hours during the chinook salmon return since 1960. The incidental catch resulted in the maximum allowable harvest of chinook salmon in spite of the brief fishing time (Figure 6). It appears that during years of weak returns even the incidental catch in the commercial fishery may threaten the maximum sustained yield of Kuskokwim River chinook salmon.

The six-inch mesh restriction has resulted in an improvement in quality of the escapement. The number of female chinook salmon and the percent of females with gill net marks at the Kogrukluik weir has notably increased (Table 5). This shows a higher net survival rate among females. The commercial catch is showing an increase in the number of males and a decrease in the number of females. From 1982-1984 while using large mesh gear the commercial catch was 30 to 60 percent female. During the 1985-1992 period with the gear restrictions the commercial catch was 20 to 40 percent female. The commercial fishery is now targeting the smaller male fish that escape the large mesh subsistence nets. This increases the sustained harvest. The increase in females has not resulted in a corresponding improvement in the sex ratio at the weir. We hypothesize that this is a result of the continued use of large mesh in the subsistence fishery combined with the increase in the subsistence harvest (Table 1). All age classes are approaching full utilization through this combination of gear types. The commercial and subsistence catch (Table 1) combined with the escapement index (Figure 6) shows that the chinook salmon run is being fully exploited.

Sockeye Salmon

The sockeye salmon catch is incidental to the chum salmon fishery in Districts 1 and 2. Before 1981, sockeye and chum salmon were not accurately identified in commercial or subsistence catches. This prevented an accurate record of the sockeye and chum salmon harvest in the Kuskokwim River. In 1981, fishermen, processors and the Department began to identify each species in the commercial harvest. Sockeye salmon comprised 5 to 33 percent of the sockeye-chum salmon catch since 1981. Before 1981, the reported sockeye salmon catch was less than 2 percent of the sockeye-chum salmon catch (Table 6). In 1992 the commercial harvest of 92,218 sockeye salmon was 21 percent of the sockeye-chum salmon catch (Table 6). Sockeye salmon escapement is documented incidentally to the other species. The Kogrukluik weir escapement estimate of 7,540 sockeye salmon in 1992 was above the objective of 2,000 adults (Table 7).

Chum Salmon

Before 1971, chum salmon were an incidental catch during the chinook and coho salmon fisheries. The expansion of the commercial chum salmon fishery began in 1971. Based upon 1924 - 1943 subsistence harvest estimates a total chum salmon harvest of 400,000 appeared to be consistent with the reproductive potential of the run (Table 8). A combined catch of 400,000 chum salmon was the management goal from 1971 to 1979. Subsistence catches for the entire river have declined since the inception of the commercial fishery in 1971 (Table 9). From 1971 to 1980 the average subsistence harvest was 173,680. The average harvest declined to 127,862 for the period 1981 to 1990 (Table 9). This is due to the decline in the use of dog teams for transportation, not the increased commercial harvest.

The commercial chum salmon harvest for the Kuskokwim River (Districts 1 and 2) has averaged 507,703 salmon in the last ten years (Table 9). The commercial harvest is managed on the basis of the following data:

1. Test fishing indexes showing relative abundance of chum salmon is similar to years in which adequate escapement occurred.
2. Commercial catch per unit effort compares to previous years when escapement was adequate.
3. Subsistence fishers report adequate subsistence catches.
4. Chum salmon escapement projects projecting adequate escapements will occur.

Declining run strength normally results in a 2 to 3 week closure beginning in early to mid-July. Before 1985, only the lower half of District 1 was open to commercial fishing during the chum salmon fishery. The Board instructed the Department to use the entire length of District 1 beginning in 1985. This increased the efficiency of the fleet and resulted in low chum escapements in 1986 and 1987. Although returns in 1988 and 1989 were at record levels, to reach escapement objectives required more time between fishing periods. The 1990 and 1991 returns were smaller but a 4 to 7 days spacing between periods resulted in approaching or reaching chum salmon escapement objectives.

In 1992, the early chum salmon stocks reached escapement objectives, while the later Aniak river stock had the worst escapement on record (Table 7). An extensive closure of the commercial fishery during July didn't bring the Aniak chum salmon escapement up to its' objective.

In June, the chum salmon run appeared to be of average strength in the commercial fishery. In-season age data showed that 5 year old chum salmon dominated the catch for the entire month of June. The new test fisheries at Aniak and Chuathbaluk showed that most of the chum salmon passing in June were passing the Aniak River. The fishing effort in June in Districts 1 and 2 was above average. The Kogrukluk Weir (the index for these fish) still reached its chum salmon objective (Table 7). In July the Aniak and Chuathbaluk test fisheries showed most chum salmon were entering the Aniak River. The sonar in the Aniak River continued to show record low escapement despite the total closure of the

commercial fishery (Table 7). In the District 1 spawning tributaries, the Tuluksak River weir was in its second year of operation and the Kwethluk River weir operated for the first time. Comparison of aerial survey and weir results show that the chum salmon met escapement objectives in the lower Kuskokwim River tributaries.

Parent year escapements were excellent and 1992 was the "high" year in the Kuskokwim River chum salmon cycle. The poor return of 4 year old chum salmon in 1992 is coincidental with the record cold temperatures in January and February of 1989. We suspect that a freeze down during the 1988-89 winter caused increased mortality of chum salmon eggs resulting in the weak return in 1992.

Coho Salmon

Limited funding has resulted in only two indexes of coho salmon escapement in the Kuskokwim River; the Kogrukluk Weir and the commercial CPUE in District 2. The objective at the weir is 25,000 coho salmon. Past years' commercial CPUE in District 2 showed that the weir reached 25,000 when CPUE was at or above 37 coho per hour in District 2. The Central Kuskokwim Advisory Committee reports poor subsistence fishing in years when CPUE is less than 37 fish per hour. This is a useful tool because in some years, like 1992, the weir is washed out by high water. It is in some ways better than the weir count since it represents an index for most of the Kuskokwim drainage, instead of a single stream.

Traditionally the subsistence fishery took few coho salmon due to poor drying conditions during August and September. Earlier migrating species normally met subsistence needs. This pattern has been changing gradually as the number of families with freezers increases. Coho salmon are the preferred species for freezing, accounting in part for the increased subsistence use of coho salmon during the last five years. The Department has emphasized collection of subsistence coho salmon catch data in recent years.

The Kuskokwim River commercial fishery reopens when coho salmon predominate in the subsistence and test fisheries. An assessment of run strength, shown by test fishing, subsistence and commercial catches, and the escapement trend at the Kogrukluk weir determines the amount of fishing time. Districts 1 and 2 close by regulation on 1 September. A strong run in 1984 and a late run in 1989 resulted in extending the season into September. The management strategy is identical with the strategy for chum salmon presented above.

Since statehood the commercial coho salmon catches for the entire river have ranged from 2,498 in 1960 to 666,000 fish in 1992 (Table 6). The previous ten year average (1982-1991) is 457,733 fish (Table 6). Effort in number of fishing permits has ranged from 83 in 1971 to 736 in 1990 (Table 10). In 1992, 706 fishermen landed coho salmon in District 1 (Table 10).

Kuskokwim Bay

Quinhagak (District 4)

District 4 is located in the marine waters adjacent to the village of Quinhagak at the mouth of the Kanektok River, about 25 miles south of the Kuskokwim River mouth (Figure 4). Commercial fishing occurs only in the marine waters of Kuskokwim Bay to ensure adequate escapement of salmon into the Kanektok and Arolik Rivers. Commercial fishing occurs primarily in the tidal channels that radiate out into the bay from the freshwater streams in the district.

Commercial fishing effort in this district has increased considerably in the last decade. Effort has ranged from 117 permits in 1982 to a record high during the 1990 season of 390 permit holders (Table 11). The past 10 year average is 279 permit holders. Recent changes in the June Kuskokwim River commercial fishery have shifted effort to this district, which is a targeted chinook salmon fishery. In the Kuskokwim Area fishers have unrestricted movement between commercial fishing districts.

Chinook Salmon

Commercial harvests of chinook salmon in the past ten years peaked at 46,400 chinook salmon in 1983 (Table 12). The 1991 harvest of 9,500 chinook is the lowest this decade and well below the ten year average of 25,300 chinook salmon. The escapement objective into the Kanektok River for this species is 5,000. Aerial surveys (including poor surveys) indicate that escapement has been achieved in 5 out of the last 10 years (Table 13). The 10 year average escapement is 7,426 for this drainage.

Sockeye Salmon

Sockeye salmon harvests have ranged from 6,500 in 1987 to 83,700 in 1990 (Table 12). The sockeye salmon escapement index of 15,000 has been surpassed every year with the exception of 1983 (Table 13). The objective was lowered from 30,000 to 15,000 in 1990. The past decade of aerial surveys documented an average escapement index of 29,000 sockeye salmon to this drainage.

Chum Salmon

Chum salmon harvests in this district for the past 10 years have ranged from 8,600 in 1987 to 73,400 in 1992 (Table 12). The previous ten year average is 26,850 (Table 12). The escapement goal of 30,500 for this species was achieved once in the last decade (Table 13). The 10 year average escapement for chum salmon is 16,124 fish (Table 13). This species is caught incidentally during harvest of sockeye salmon.

Coho Salmon

Commercial harvest of coho salmon in this district has ranged from 26,900 in 1990 to the record catch of 135,000 in 1984 (Table 12). The average of the past 10 years is 56,173 coho salmon (Table 12). Escapement of coho salmon into the

Kanektok River is extremely difficult to monitor because weather during September and August is typically rainy and stormy.

Goodnews Bay (District 5)

The Goodnews Bay fishing district is the southernmost salmon district in the Kuskokwim area. The majority of the commercial fishing fleet resides in the villages of Platinum and Goodnews Bay. Effort in this district peaked at 125 permit holders in 1988 and in the last decade has averaged 80 (Table 14). Fishing primarily is with drift gill nets in tidal channels and a few set nets near the mouth of the bay.

A counting tower established in 1981 on the middle fork of the Goodnews River provides estimates of salmon escapement for this district. In 1991 this project was replaced with a weir to improve accuracy and reduce costs. The primary objective of this project is to provide daily escapement information to improve management of the commercial fishery. The Goodnews River escapement project data provides a good indicator of aerial survey accuracy.

Chinook Salmon

Chinook salmon catches peaked in 1983 at 14,100 and the lowest chinook salmon catch of 900 was reported in 1991. The previous ten year average is 5,600 (Table 15). In 1990, a new management strategy that delayed the first commercial fishery opening, helped achieve a chinook escapement of 3,600 at the Goodnews River weir. Commercial openings were delayed during the last two years to improve escapement, weak returns resulted in escapement below objective (Table 16).

Sockeye Salmon

Sockeye salmon are the target species in June and July in the Goodnews Bay district. The 1991 commercial catch of 39,800 fish and 1992 catch of 39,200 fish have approached the record catch of 40,000 fish in 1981 (Table 15). The previous 10 year average catch is 25,700 (Table 15). Since 1983, sockeye salmon escapements have approached or exceeded escapement objectives, except 1985 and 1988 (Table 16). Estimations of run exploitation appear low (Table 16). A review of the five years of total run size data of sockeye salmon resulted in a decrease of the escapement objective from 25,000-35,000 to 20,000-30,000.

Chum Salmon

Chum salmon are taken incidentally to the sockeye salmon fishery in District 5. The chum salmon catch averaged 14,600 during the last ten years (Table 15).

Coho Salmon

A partial count of the coho salmon escapement was made 1992 due to budget constraints. Weather and water conditions in late August and early September often prevent aerial surveys of escapement. The commercial catch of coho salmon peaked at 71,000 in 1984 and dropped to a low of 7,800 in 1990 (Table 15). The

10 year average commercial catch for this species is 28,600 for this district (Table 15).

SEASON SUMMARY

The total 1992 Kuskokwim Area commercial salmon catch (Districts 1, 2, 4 and 5) consisted of 67,597 chinook, 192,341 sockeye, 772,449 coho, 85,978 pink and 436,506 chum salmon (Table 8). In 1992 the average Kuskokwim permit holder earned \$6,506 (Table 2). The total amount paid to fishermen was \$5,295,912, excluding bonuses and other incentives (Table 2). The value of the 1992 catch was slightly below average. Prices for chinook, coho, and pink salmon were below average (Table 17). Coho and pink salmon were heavier than average but the other species had below average weights (Table 17). Coho salmon were the most abundant and valuable species bringing fishermen over two million dollars (Table 18).

Kuskokwim River (District 1 and 2)

The Kuskokwim River Salmon Management Working Group (Working Group) continued to work closely with the Department in 1992. Through uncommon dedication by all the concerned parties the Working Group provided in-season management recommendations that helped accomplish management objectives (Table 19). Representatives of Kuskokwim River salmon users comprise the Working Group. During the season the Working Group met 13 times to evaluate the status of the salmon runs and make recommendations to the Department.

The Working Group, in the past, recommended one period at a time so that any unexpected changes in run strength could be dealt with. The Department suggested that fishing periods be Monday or Thursday but still one at a time to satisfy the requests from both commercial and subsistence fishers, and the Lower Kuskokwim Advisory Committee that the periods be predictable. The Working Group recessed on 23 June and 31 July until the co-chairs or the Department felt fishing for 6 hours Monday and Thursday was inappropriate for run strength. This strategy reduced the number of Working Group meetings and partially satisfied the permit holders who demanded a scheduled fishery. The Working Group's approach worked, but the advantage of fewer meetings may have been outweighed by the confrontation this strategy set up. The recesses resulted in the Working Group members being out of touch with run developments. When the Department called meetings due to a need to reduce fishing time, confrontation rather than cooperation seemed to occur. The unexpectedly weak chum salmon run, the upriver/downriver conflict, and other issues contributed to the confrontations.

The Working Group recommended that the first fishing period be Thursday 18 June in District 1, downstream of Bethel for 8 hours (Stat. Areas 335-11 & 335-12; Figure 2) in compliance with 5 AAC 07.365. KUSKOKWIM RIVER SALMON MANAGEMENT PLAN. Five hundred and sixty-seven permits landed salmon in the first opening (Table 20). The chum salmon catch confirmed the test fishery and showed the second highest CPUE recorded to date (Table 21). Chinook and sockeye abundance appeared average.

The 1992 chum salmon return was expected to be strong. The parent year of the normally dominant four year old fish was the record 1988 chum salmon run. After

a strong chum salmon run had been confirmed by the test fishery, the next eight hour period (required by the PLAN) was scheduled for Monday 22 June. The chinook salmon run appeared to be average and the Working Group recommended that the entire length of District 1 be used (Table 19).

The chum salmon catch on 22 June was the best on record for that date. The test fishery had slipped from second to third best historically but still appeared strong (Table 21). The Working Group recommended that the next period be Thursday 25 June. They recommended that 6 hour fishing periods be every Monday and Thursday until the Department or Co-chairs called a meeting. District 2 opened for the first time on 25 June (Table 22). The Working Group then recessed (Table 19).

On 25 June the chum salmon catch in District 1 was poor. The record catch for that date in District 2 showed good escapement from the District 1 fishery. The test fishery continued to show declining run strength. Normally at this time the catches are increasing. The new test fisheries at Aniak and Chuathbaluk showed most of the chum salmon were traveling above the Aniak drainage. The commercial catch samples showed that 5 year old chums continued to dominate the catch. Normally five year old fish are only dominant for the first period. The continued dominance of 5 year old chum salmon caused concern that the 4 year old age class was weak. In 1987, age five chum salmon dominated through 24 June (Anderson, 1991), the run was bimodal due to the late arrival of the 4 year old chum salmon. The next period in the schedule was 4 days away on Monday 29 June and the Department allowed the period.

The commercial CPUE in District 1 continued to show a weak run. In District 2 the commercial catch was the second poorest on record showing that escapement from District 1 was poor. The Bethel test fishery index was below every year that made escapement except 1984. The 1984 District 1 chum fishery occurred downstream of Bethel (Figure 1, 335-11 & 12) by regulation so the test fish numbers were not comparable. The Aniak sonar escapement model showed early, normal, and late runs failing to reach escapement objective. The Department called a Working Group meeting for 1 July and recommended meeting again on 3 July (Table 19).

The Department vetoed two motions to fish and reserved judgement on the third. By 3 July, the situation improved only slightly. To allow some chum salmon time to travel through the district, the Department vetoed the third motion for a period on 4 July. The next Working Group meeting on 5 July established a period on 6 July that the Department allowed to test the effect of a one week closure.

In both districts, CPUE continued to be below years when chum salmon reached escapement objectives. Test fishery and escapement data continued to be poor. The poor showing, in spite of 4 year old chum salmon finally dominating the catch, showed a serious chum salmon conservation problem. The Working Group continued to meet through 15 July to reappraise the situation and the fishery remained closed (Table 19).

Chinook Salmon

The incidental chinook salmon catch was above average at 44,677 in 1992 (Table 6). For the second year in a row chinook salmon approached escapement objective (Figure 6). Of the three contributing brood years, only 1986 was seriously below escapement objective. The above average catch and near average escapement shows the total run size was above average.

Sockeye Salmon

The incidental sockeye salmon catch of 92,218 was above average (Table 6). Sockeye salmon management is incidental to other species in the Kuskokwim River. There are no escapement projects for sockeye salmon but the escapement past the Kogrukluk Weir was above average (Table 7).

Chum Salmon

The chum salmon catch of 344,603 fish was 163,100 fish below the ten year average level (Table 6). The Aniak drainage had the lowest chum escapement on record. The Kogrukluk Weir chum salmon surpassed the escapement objective (Table 7). The USFWS operated weirs on the Tuluksak and Kwethluk Rivers in 1992. Weather and high water prevented successful aerial surveys in 1992 in these two rivers. Applying the aerial/weir count ratio's from the Goodnews Tower and Weir (Table 16) to the chum salmon counts at these weirs provides an estimate of what the aerial survey might have been. This gives an estimated aerial index of 6,425 to 17,745 in the Kwethluk and 2,348 to 6,486 in the Tuluksak River. This suggests that the long closure was successful in reaching or approaching the chum salmon escapement objectives in the lower Kuskokwim tributaries (Table 4).

District 2 had an above average number of fishing hours in spite of the closure (Table 3). Repeal of the District's harvest guidelines contributed to this increased fishing time. The management plan amendment giving District 1 and 2 the same fishing periods, unless chinook salmon would be targeted in District 2 by fishing before the chum salmon arrived.

Coho Salmon

The 1988 parent year escapement of Kuskokwim River coho salmon was half the objective level (Table 7). Coho salmon reached escapement objective once in the last four years. For these reasons the management information letter co-authored by the Working Group clearly stated that the Department's coho salmon management would be conservative in 1992. In previous years, the Department delayed management action in the coho salmon fishery until certain beyond a reasonable doubt that there was a problem. This resulted in bad escapements and poor subsistence fishing in the upper Kuskokwim River drainage. During the 1992 season we took action when it appeared prudent.

The Yup'ik co-chair of the Working Group called a meeting on 28 July after a two week recess. The Eek test fishery had recommenced with the new fiscal year but had only fished one day at the time of the meeting. The Bethel Test Fish index resembled years when the run was weak. Coho salmon catches were still irregular upstream of District 1. The weather was clear and still, conditions that

normally slow coho salmon entry. Over 90 percent of Kuskokwim River coho salmon are age four. The failure of the age 4 chum salmon in conjunction with the above data caused the Department to say it was too early to set a period. The Working Group disagreed and recommended a period on 30 July (Table 19). The Department reserved judgement until 29 July. On 29 July, we vetoed the motion because the situation had not changed.

The next meeting on 31 July continued to be contentious. The Department vetoed two motions for biological reasons. The final motion, recommending a period on 3 August and scheduled fishing Monday and Thursday until the co-chairs or Department called a meeting, passed.

The District 1 coho catch dropped dramatically during the second period on 6 July, when it should have been increasing. District 1 had the second lowest commercial coho salmon CPUE's recorded during the periods on 3 and 6 July (Table 20). District 2 CPUE's stayed above 37, the escapement objective, but the lower half of the district dropped to 28 on 6 July. The Bethel Test Fish index was the second lowest on record (Table 23). This evidence clearly showed that abundance was decreasing. The Department called a Working Group meeting on 9 August. There was a strident disagreement over the data. The Department recommended another meeting on 11 August. We felt that was a firm position going into the meeting.

The test fish tidal indexes preceding the meeting were very high. The weather forecast called for the first strong south wind of the season, which often moves the coho salmon if they are there. The Working Group recommended a period on 11 August based on this information. The Department did not veto the recommendation as planned, but reserved judgement until 10 August. Record daily test fish indexes at Eek' and Bethel persuaded us to allow the period on 11 August. It was the largest single period in the history of the fishery with 182,820 salmon landed in 6 hours (Table 20). Over 99 percent of the catch was coho salmon.

During the 1991 coho salmon season the Upper Kuskokwim subsistence representative warned that they might look into legal action if things did not change. The Department's failure to react (eg veto Working Group recommendations) earlier resulted in the upper Kuskokwim fishers losing their trust in the Working Group process. This contributed to the growing hostilities in the Working Group.

Following the chum salmon run failure to the middle Kuskokwim drainages, which was not caused by the fishery, subsistence fishers began looking into legal action. The Upper Kuskokwim Subsistence representative passed this information on to the Working Group. Personality conflicts created a hostile attitude in the meetings. At the 9 August meeting, a motion to recess until it could be clearly stated whether litigation would begin passed unanimously. The Working Group recessed and management became the sole responsibility of the Department.

All measures of run strength continued to be good. Based on the lower Kuskokwim Advisory committee's recommendation last fall and the Working Group's action earlier in the season, a Monday - Thursday 6 hour period schedule continued with announcements being made for one period at a time. To help people with end of the season planning, the final two periods were announced simultaneously.

The total coho salmon catch of 666,170 was the highest on record (Table 6). The KogrukluK Weir washed out in 1992. The only index of escapement is the commercial CPUE in District 2. When cumulative CPUE has exceeded 37 coho per hour; the KogrukluK Weir has reached or exceeded the 25,000 coho salmon objective. The Middle Kuskokwim Advisory committee has never complained of poor subsistence fishing in years when the CPUE was 37 or greater. This year's cumulative CPUE was 39 in District 2 (Table 23).

Pink Salmon

Pink salmon harvest is incidental to the chum and coho salmon fishery in the Kuskokwim River. Pink salmon have a strong odd - even year cycle in the Kuskokwim River and 7,451 pink salmon was an above average even year catch (Table 6). There is no pink salmon escapement program for the Kuskokwim River. The pink salmon escapement through the Kwethluk and Tuluksak weirs was 48,063 fish.

Enforcement

Fish and Wildlife Protection issued 25 citations in the Kuskokwim Area in 1992. The break down by type of citation was:

<u>Violation</u>	<u>Number of Citations</u>
Commercial Fishing Closed Season	16
Unmarked Commercial Gear	4
No Crewmember License or Photo ID	5

The extra attention given in recent years to subsistence nets fishing during the subsistence closures resulted in only 6 nets being pulled in 1992. All of these were pulled during the first commercial period in the river. Only one had been left unattended for so long that the fish had spoiled. This was a great improvement over 1991.

Quinhagak (District 4)

District 4 opened on 15 June in compliance with 5 AAC 07.367. DISTRICT 4 SALMON MANAGEMENT PLAN, which requires an opening before June 16. During the first opening 173 permit holders delivered fish (Table 24). This was the first fishing period of the season in the Kuskokwim area. In 1992, fishing effort peaked at 187 permit holders in mid-July. A total of 349 permit holders participated in the fishery in 1992 in this district (Table 11). Whenever possible, coincidental openings were held with other districts to keep effort levels down.

Aerial surveys are the only in-season measure of escapement in District 4. Management is based on historical commercial catch levels and when possible, aerial surveys.

The chinook salmon catch on 15 June set a new record high for that date. The next period (18 June) had a below normal catch. Commercial fishing remained on a once a week schedule for the remainder of the month because of the poor chinook salmon catches (Table 11). The total chinook catch in District 4 was 17,197 in 1992, which was well below the ten year average of 25,851 and the lowest catch since 1991 (Table 12). Chinook salmon were worth 16% of the total value of the

commercial fishery in this district. Buyers paid an average price of \$.65 per pound which totaled \$165,310 for this species (Table 18). Early season aerial surveys were poor but a good aerial survey of the Kanektok drainage on July 15 documented 3,856 chinook salmon (Table 13).

DISTRICT 4 SALMON MANAGEMENT PLAN (5 AAC 07.367.) requires management to target fishing on sockeye salmon when sockeye salmon are more than 50 percent of the chinook-sockeye salmon catch in District 4. The below average catch of chinook salmon and the strong sockeye salmon run resulted in this provision taking effect on 29 June in 1992 (Table 24). Sockeye salmon catches were above average and fishing was increased to the normal 3 twelve hour periods per week during the month of July (Table 22). The 24 hour period on 6 July took advantage of the steady strong run of sockeye salmon. The sockeye salmon catch of 60,929 is the second highest on record. An aerial survey documented 14,955 sockeye salmon in the Kanektok River drainage, which closely approaches the objective of 15,000 (Table 13). The average price paid for sockeye salmon was \$.90 per pound. A total of \$368,598 was paid for this species, which is 37% of the total value of the commercial catch in this district (Table 18).

Chum salmon are caught incidentally to the chinook and sockeye salmon commercial fisheries. The 1992 chum salmon catch was 73,383; which is a record chum salmon catch (Table 12). Chum salmon brought an average of \$.32 per pound, resulting in \$138,645 in payment to fishermen (Table 18). This is 14% of the total value of the fishery in this district. The escapement index for chum salmon is 30,500; 16,100 chum salmon were documented in a good aerial survey (Table 13).

Pink salmon are incidentally caught during the season; 62,217 were caught in the 1992 season (Table 12). An average of \$.06 per pound brought \$15,086 to the commercial fleet (Table 18).

Coho salmon dominated the commercial catch on 29 July. Fishing continued on a normal 3 twelve hour periods per week schedule (Table 22). The commercial coho salmon catch peaked at 10,458 fish on 12 August (Table 22). The 1992 coho salmon harvest of 86,404 is 30,000 fish above the ten year average and the second highest on record (Table 12). In 1992, commercial fishermen were paid \$.45 per pound for coho salmon. Coho salmon sales totaled \$303,371 which is 31% of the value of this district's commercial fishery (Table 18). Weather and water conditions prevented coho salmon enumeration by aerial surveys, but sport fishing catches indicated coho salmon well distributed throughout the drainage.

The commercial salmon fishing season closed by regulation on 8 September. There were no buyers present during the last commercial fishing period on 7 September.

Goodnews Bay (District 5)

The Goodnews Bay district opened to commercial fishing on 22 June. Effort peaked at 91 permit holders on 17 July (Table 25). This district usually has an effort of 30-35 permit holders. In 1992, to accommodate tendering availability and to fully utilize the strong sockeye salmon run, fishing periods were 24 hours long through most of July. Fishing effort increased due to closures in the Kuskokwim River districts.

A new chinook salmon management strategy in this district in the last 3 years has opened commercial fishing 5 to 7 days later than the normal historical opening date. This allows an increased escapement of chinook salmon into the Goodnews River drainage. This strategy helped achieve the escapement objective of 3,500 fish in 1990 but was not successful in 1991 or 1992 (Table 21). In 1992, 3,528 chinook salmon were commercially harvested, compared to the 10 year average harvest of 5,600 (Table 15). Fishers were paid an average of \$.65 per pound, which totaled \$30,688 paid for this species (Table 18). This is 7% of the total value of the commercial fishery in this district.

Sockeye salmon catches in Goodnews Bay were above average during the first commercial period. After a second period slump, sockeye salmon increased in abundance and appeared strong. When chinook salmon numbers began to decrease in the commercial catch, and sockeye catches were consistently above average, the fishing time increased to 24 hour periods (Table 25). This strategy allowed more fishing time to utilize the abundant sockeye and allowed tendering the fish to Bethel for processing. There were not enough tenders to allow the normal three 12 hour periods per week. The two 24 hour period a week schedule was very unpopular with fishers.

The 1992 sockeye salmon catch of 39,194 is the third highest on record (Table 15). The ten year average for this species is 25,696 salmon (Table 15). Sockeye salmon averaged \$.90 per pound which resulted in a payment of \$286,063 in 1992 (Table 18). This species is 63% of the 1992 total value of the Goodnews Bay District.

The department's escapement project for this district is a weir on the Goodnews River. During the peak of sockeye salmon migration the weir washed out. Use of historical sockeye salmon migration timing resulted in an estimate for 1992 of 27,267 sockeye salmon, which exceeds the escapement objective of 25,000 (Table 21).

The chum salmon catch is incidental to the sockeye salmon fishery in District 5. The 1992 catch of 18,520 is above the ten year average of 14,622 (Table 15). Fishers were paid \$.32 per pound for this species which totaled \$39,111 which is 10% of the total commercial fishery value in this district (Table 18). Chum salmon escapement of 22,023 at the Goodnews River weir exceeded the goal of 17,000 fish (Table 21).

The 1992 coho salmon catch of 19,875 is well below the 10 year average of 28,625 but much better than the two previous years (Table 15). Fishermen were paid an average of \$.45 per pound for coho salmon for a total of \$75,278 (Table 18). This is 18% of the total fishery value in this district (Table 18). Poor aerial survey conditions prevented a total coho salmon escapement count. Coho salmon escapement counts were not available since budget constraints closed the Goodnews River weir prior to completion of the coho salmon migration.

Pink salmon catches totaled 14,310 fish which averaged \$.05 per pound (Table 18). A total of \$2,913 was paid to fishermen for this species (Table 18).

OUTLOOK FOR 1992

The Department is developing a forecast of salmon returns in the Kuskokwim Area. Presently, only broad harvest projections made by examining brood year escapements and recent harvest trends are possible.

Chinook Salmon

Chinook salmon return to the Kuskokwim Area primarily as age 4, 5, and 6 fish. The brood years for 1993 will be 1987 through 1989.

Chinook salmon escapements approached or reached objective levels in all the brood years in the Kuskokwim River drainage (Figure 6). Catch levels in the Bethel test fishery were average to above average in all brood years. An incidental chinook harvest in the upper half of the range of 19,000 to 56,000 is expected (Table 26).

Quinhagak (District 4) has the only directed chinook salmon fishery in the Kuskokwim area. Chinook salmon escapement indexes were below objective levels in the Kanektok River in one of the three brood years (Table 13). A harvest in the top half of the range of 14,000 to 46,000 chinook salmon should occur in 1993 (Table 26).

Goodnews River chinook salmon were below the escapement objectives in all three of the brood years. The recent years' harvest trend has been below average. The harvest in 1993 will probably be below average. The incidental catch will probably be in the lower part of the range of 1,000 to 8,600 chinook salmon (Table 26).

Sockeye Salmon

The sockeye salmon catch in the Kuskokwim River is incidental to the chum salmon fishery. Escapements at the Kogrukluuk weir were below average in all three brood years. Catches in the Bethel test fishery were average to above average in all three brood years. The incidental catch probably will be 33,000 to 137,000 sockeye salmon in 1993 (Table 26).

Quinhagak (District 4) and Goodnews Bay (District 5) are the only fisheries in the Kuskokwim area that target on sockeye salmon. Most sockeye salmon return at five years of age in this area.

The 1988 brood year escapement index in the Kanektok River was 30,000 sockeye salmon; well above the escapement objective of 15,000 (Table 13). Harvest ranges in recent years' vary from 6,700 to a record high of 83,700 sockeye salmon. The sockeye harvest in District 4 should fall within the top half of this range (Table 26).

The 1988 brood year escapement estimate was 38,300 in the Goodnews River. This was above the objective of 20,000 to 30,000. This should result in a harvest in the top half of the range of 6,700 to 40,000 sockeye salmon in District 5 (Table 26).

Chum Salmon

Chum salmon return to the Kuskokwim Area primarily as 4 and 5 year old fish. The Kuskokwim River fishery targets on chum salmon. The chum salmon catch is incidental in Districts 4 and 5.

The escapement index in the Kuskokwim River was above objective in 1988 and 1989. Catch levels in the Bethel test fishery were very high in 1988 and average in 1989. The poor survival of the 1988 brood year seen in 1992 will weaken the 1993 return, particularly in June. The chum salmon harvest will probably be in the lower to middle part of the 199,000 to 1,380,000 range (Table 26).

Escapement levels in 1989 were poor in District 4 and District 5. The catch of chum salmon should be between 8,500 and 54,500 in District 4 and from 5,000 to 33,000 in District 5 (Table 26).

Coho Salmon

Coho salmon return primarily as 4 year old fish in the Kuskokwim Area. There is very little information on which to base coho salmon abundance. The Kogrukluk River weir is the only coho salmon escapement project in the Kuskokwim Area. The commercial coho salmon CPUE in District 2 is a Kuskokwim drainage escapement index. The goal is to maintain the cumulative CPUE at 37 coho per hour or higher.

In 1989 the Kogrukluk River weir washed out, therefore the parent year escapement is unknown. The commercial CPUE in District 2 in 1989 was 37.6, just above the goal of 37. The catch in the Bethel test fishery was average in 1989. An average run in 1993 should produce a catch in the upper half of the 196,000 to 666,000 range (Table 26). For unknown reasons the 1992 return was larger than expected based on the poor parent year escapement.

Past years catches are the only guide to the coho salmon run in Districts 4 and 5. The coho harvest in 1989 was below average in District 4 and average in District 5. In the last five years coho catches have ranged from 27,000 to 86,400 in District 4 and from 7,800 to 31,800 in District 5. Catches within these ranges are expected in 1993 (Table 26).

TABLES

Table 1. Utilization of Kuskokwim River chinook salmon, 1960-1992.

<u>Year</u>	<u>Commercial Harvest^a</u>	<u>Estimated Subsistence Harvest^b</u>	<u>Total Utilization</u>	<u>Estimated Total Run size</u>	<u>Exploitation Rate</u>
1960	5,969	20,361	26,330		
1961	18,918	30,910	49,828		
1962	15,341	14,642	29,983		
1963	12,016	37,246	49,262		
1964	17,149	29,017	46,166		
1965	21,989	27,143	49,132		
1966	25,545	49,606	75,151		
1967	29,986	57,875	87,861		
1968	34,278	30,230	64,508		
1969	43,997	40,138	84,135		
1970	39,290	69,204	108,494		
1971	40,274	42,926	83,200		
1972	39,454	40,145	79,599		
1973	32,838	38,526	71,364		
1974	18,664	26,665	45,329		
1975	21,720	47,784	69,504		
1976	30,735	58,185	88,920		
1977	35,830	55,577	91,407		
1978	45,641	35,881	81,522		
1979	38,966	55,524	94,490		
1980	35,881	59,900	95,781		
1981	47,663	59,669	107,332		
1982	48,234	53,310	101,544		
1983	33,174	52,000	85,174		
1984	31,742	57,000	88,742		
1985	37,889	42,277	80,166		
1986	19,414	51,019	70,433		
1987	36,179	67,352	103,504		
1988	55,716	53,877	109,593		
1989	43,217	73,035	116,252		
1990	53,504	71,281	124,785		
1991	37,778	80,865	118,643	152,618 ^c	78%
1992	46,872				
Ten Year Average (1981-1990)	40,699	64,413	105,112		

a District 1, 2 and 3.

b Estimated subsistence harvest expanded from villages surveyed.

c Estimate from prototype main river sonar, accuracy and precision unknown.

Table 2. Estimated dollar value of Kuskokwim Area commercial salmon fishery, 1964-1992.

<u>Year</u>	<u>Gross Value of Catch to Fishermen</u>	<u>Permits Fished^a</u>	<u>Average Income</u>
1964	83,030		
1965	90,950		
1966	87,466		
1967	138,647		
1968	290,370		
1969	297,233		
1970	362,470		
1971	371,220		
1972	360,727		
1973	827,735		
1974	1,056,042		
1975	899,178		
1976	1,380,229		
1977	3,891,950		
1978	2,337,470		
1979	3,678,000		
1980	2,725,134		
1981	3,766,525		
1982	4,213,954		
1983	2,670,400		
1984	5,809,000	774	7,505
1985	3,248,089	781	4,159
1986	4,746,089	789	6,015
1987	6,392,822	798	8,011
1988	12,514,492	811	15,431
1989	5,194,025	824	6,303
1990	4,895,070	824	5,941
1991	3,961,423	820	4,831
1992	5,295,912	814	6,506
Ten Year Average (1982-1991)	\$5,364,536	803 ^b	6,681 ^b

a Permit holders who made at least one delivery. Information not available prior to 1983.
b Previous eight year (1984-1991) average due to unavailable data.

Table 3. Commercial Fishing Effort in Kuskokwim Area by Permit - Hour^a, 1960-1992.

<u>Year</u>	<u>Dist. 1</u>	<u>Dist. 2</u>	<u>Dist. 3</u>	<u>Dist. 4</u>	<u>Dist. 5</u>	<u>Total</u>
1960	5,136	960	648	4,368	Closed	11,112
1961	16,200	1,512	1,512	4,992	Closed	24,216
1962	14,274		0	8,434	Closed	22,708
1963	5,712	1,722	0	5,520	Closed	12,954
1964	6,468	1,140	0		Closed	7,608
1965	13,500	546	0	3,696	Closed	17,742
1966	18,270		Closed		Closed	18,270
1967	88,248	1,932		3,954	Closed	94,134
1968	77,466	720		7,986	4,704	90,876
1969	67,140	1,488		29,952	14,055	112,635
1970	56,646	3,414		22,080	9,756	91,896
1971	18,060	1,842				19,902
1972	47,802					47,802
1973	77,478	3,072		18,372	2,928	101,850
1974	124,569	4,950		18,984	8,148	156,651
1975	181,786	3,648		12,312	5,400	203,146
1976	82,788	3,894		14,784	4,848	106,314
1977	73,944	3,426		17,592	3,780	98,742
1978	71,856	1,892		14,952	3,672	92,372
1979	49,608	984		27,096	8,220	85,908
1980	33,370	714		21,636	9,504	65,224
1981	45,096	1,248		25,656	11,256	83,256
1982	46,108	1,128		22,656	14,556	84,448
1983	47,040	708		20,748	9,456	77,952
1984	62,643	1,050		31,488	14,004	109,185
1985	37,452	462		22,254	8,544	68,712
1986	48,744	606		25,740	10,572	85,662
1987	60,525	576		21,222	10,332	92,655
1988	81,724	912		27,440	14,064	124,140
1989	66,470	816		26,134	12,552	105,972
1990	50,642	1,051		44,520	10,548	106,761
1991	62,672	1,320		29,160	11,532	104,684
1992	54,288	1,164		35,380	15,180	106,012
Ten Year Average (1982-91)	57,631	863		27,136	11,616	96,017

^a The number of permits which made deliveries times the number of hours in the period.

Table 4. Kuskokwim Area escapement index objectives for chinook, sockeye, coho and chum salmon.

	Escapement Objectives ^a			
	Chinook	Sockeye	Coho	Chum
<u>KUSKOKWIM RIVER:</u>				
1. Kwethluk River				
a. 3-step Mt. to Canyon Cr.	1.0	-	-	7.0
b. Canyon Creek	0.2	-	-	-
2. Kisaralik River				
a. Airstrip to Kisaralik L.	1.0	-	-	8.0
b. Kasigluk R. (upper to lower)	0.1	-	-	4.0
3. Tuluksak R. (Fog R. to Bear Cr.)	0.4	-	-	5.0
4. Aniak River				
a. Buckstock R. to Aniak L.	1.5	-	-	10.0
b. Salmon River	0.6	-	-	3.0
c. Aniak Sonar Project ^b	-	-	-	250.0
5. Holitna River				
a. Nogamut to Kashegelok	2.0	1.0	-	49.0 ^c
b. Kogrukluuk Weir ^d	10.0	2.0	25.0	30.0
6. Salmon River (Pitka Fork)	1.3	-	-	-
<u>KUSKOKWIM BAY:</u>				
1. Kanektok River to Kagati Lake	5.8	15.0	25.0	30.5
2. Goodnews River System				
a. Main Fork and lakes	1.6	15.0	15.0	17.0
b. Middle Fork and lakes	0.8	5.0	2.0	4.0
c. Middle Fork Tower/Weir Project ^e	3.5	25.0	-	15.0

a Escapement objectives in thousands of fish are preliminary and are subject to change as additional data becomes available. At this time the escapement objectives are being reevaluated. Unless otherwise indicated, escapement objectives are based on aerial index counts which do not represent total escapement, but do reflect annual spawner abundance trends when made using standard survey methods under acceptable survey conditions.

b Sonar total escapement estimates.

c Total Holitna River escapement estimate.

d Total Kogrukluuk River escapement estimates.

^e In 1991 the Middle Fork Tower was replaced with a weir at the same location. The objectives were based on the escapement estimates obtained from the tower results.

Table 5. Chinook salmon sex ratios and proportion of females with gill net marks, Kogrukluk weir, 1979-1992.

<u>Year</u>	<u>Actual Count</u>	<u>Number Females</u>	<u>Sex Ratio (% female)</u>	<u>% of females with gill net marks</u>
1979	10,125	1,786	17.6	11.03
1980	676	136	20.1	a
1981	16,075	7,584	47.2	12.47
1982	5,325	2,431	45.7	12.99
1983	1,049	285	27.2	16.49
1984	4,928	1,146	23.3	11.08
1985	4,306	1,485	34.5	18.99
1986	2,968	705	23.8	19.43
1987 ^b	770			
1988	7,677	2,631	34.3	13.34
1989	4,911	1,884	38.4	16.46
1990	10,093	2,271	22.5	14.35
1991	6,132	2,860	46.6	19.26
1992	6,397	2,138	33.4	30.03
1979-84 Average			30.2	10.68
1985-92 Average			33.3	18.84

a Gill net mark data was not reported

b Sample size too small to assess sex ratio and percentage of gill net marks.

Table 6. Lower Kuskokwim River, District 1, and the middle Kuskokwim River, District 2, combined commercial salmon harvest, 1960-1992.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	5,969	0	2,498	0	0	8,467
1961	18,918	0	5,044	0	0	23,962
1962	15,341	0	12,432	0	0	27,773
1963	12,016	0	15,660	0	0	27,676
1964	17,149	0	28,613	0	0	45,762
1965	21,989	0	12,191	0	0	34,180
1966	25,545	0	22,985	0	0	48,530
1967	29,986	0	56,313	0	148	86,447
1968	34,278	0	127,306	0	187	161,771
1969	43,997	322	83,765	0	7,165	135,249
1970	39,290	117	38,601	44	1,664	79,716
1971	40,274	2,606	5,253	0	68,914	117,047
1972	39,454	102	22,579	8	78,619	140,762
1973	32,838	369	130,876	33	148,746	312,862
1974	18,664	136	147,269	84	171,887	338,040
1975	21,720	23	81,945	10	181,840	285,538
1976	30,735	2,971	88,501	133	177,864	300,204
1977	35,830	9,379	241,364	203	248,721	535,497
1978	45,641	733	213,393	5,832	248,656	514,255
1979	38,966	1,054	219,060	78	261,874	521,032
1980	35,881	360	222,012	803	483,211	742,267
1981	47,663	48,375	211,251	292	418,677	726,258
1982	48,234	33,154	447,117	1,748	278,306	808,559
1983	33,174	68,855	196,287	211	267,698	566,225
1984	31,742	48,575	623,447	2,942	423,718	1,130,424
1985	37,889	106,647	335,606	75	199,478	679,695
1986	19,414	95,433	659,988	3,422	309,213	1,087,470
1987	36,179	136,602	399,467	43	574,336	1,146,627
1988	55,716	92,025	524,296	10,825	1,381,674	2,064,536
1989	43,217	42,747	479,856	464	749,182	1,315,466
1990	53,759	84,870	410,332	3,397	461,624	1,013,982
1991	37,778	108,946	500,935	378	431,802	1,079,839
1992	46,872	92,218	666,170	7,451	344,603	1,157,314
Ten Year Average (1982-1991)	39,710	81,785	457,733	5,957 ^a	507,703	1,089,282

a Even years only.

Table 7. Historic salmon escapement data from current Kuskokwim Area projects, 1976-1992.

YEAR	Operating Period	SPECIES				
		Chinook	Sockeye	Coho	Pink	Chum
KOGRUKLUK WEIR^a Objectives		10,000	2,000	25,000	NA	30,000
1976	06/29 to 07/31	5,579	2,326	b	-	8,105
1977	07/14 to 07/27	1,945	1,637	b	2	19,444
1978	06/28 to 07/31	13,667	1,670	b	2	48,051
1979	07/01 to 07/24	11,338	2,628	b	1	18,390
1980	07/01 to 07/11	6,572	3,200	b	1	41,777
1981	06/27 to 10/25	16,790	18,066	11,455	6	57,182
1982	07/09 to 09/14	10,993	17,297	42,354	19	63,890
1983	06/22 to 07/02	2,992	1,176	8,820	-	9,407
1984	06/19 to 09/15	4,934	4,133	27,185	-	41,492
1985	06/29 to 09/07	4,657	4,359	18,368	-	14,860
1986	07/06 to 10/05	5,038	4,224	25,240	-	14,630
1987	08/09 to 09/23	4,063	b	26,788	-	17,422
1988	07/05 to 09/17	8,505	4,397	13,315	-	39,447
1989	07/07 to 09/14	11,940	5,811	b	-	39,361
1990	06/28 to 09/07	10,218	8,406	5,093	1	26,764
1991	07/04 to 09/15	7,850	16,455	10,611	4	24,187
1992	07/01 to 08/21	6,755	7,540	26,057	11	34,105
ANIAK SONAR^c Objective						250,000
1980	06/22 to 07/30	56,469	-	-	-	1,091,286
	08/16 to 09/12	-	-	81,556	-	-
1981	06/16 to 08/06	42,060	-	-	-	526,320
1982	06/21 to 08/01	33,864	-	-	-	389,226
1983	06/18 to 07/28	4,911	-	-	-	114,869
1984	06/16 to 07/30	-	-	-	-	275,261
1985	06/22 to 07/28	-	-	-	-	253,048
1986	06/26 to 07/24	-	-	-	-	209,080
1987	06/22 to 07/31	-	-	-	-	193,464
1988	06/22 to 07/31	-	-	-	-	401,511
1989	06/21 to 07/24	-	-	-	-	243,936
1990	06/23 to 08/06	-	-	-	-	300,408
1991	06/29 to 07/29	-	-	-	-	282,475
1992	06/22 to 07/29	-	-	-	-	67,212

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Table 7. (page 2 of 2)

YEAR	Operating Period	SPECIES				
		Chinook	Sockeye	Coho	Pink	Chum
MIDDLE FORK GOODNEWS RIVER TOWER^a						
Objectives		3,500	25,000	NA	NA	15,000
1981	06/13 to 08/15	3,688	49,108	357	1,327	21,827
1982	06/23 to 08/03	1,395	56,255	62	13,855	6,767
1983	06/11 to 07/28	6,027	25,816	0	34	15,548
1984	06/15 to 07/31	3,260	32,053	249	13,744	19,003
1985	06/27 to 07/31	2,831	24,131	282	144	10,367
1986	06/16 to 07/24	2,083	51,069	163	8,133	14,756
1987	06/22 to 07/30	2,274	28,871	62	62	17,519
1988	06/23 to 07/30	2,712	15,799	6	6,781	20,799
1989	06/29 to 07/31	1,915	21,196	145	246	10,380
1990	06/19 to 07/24	3,636	31,679	0	3,378	6,410
1991 ^e	06/29 to 08/25	2,147	47,397	1,978	1,694	27,525
1992	06/21 to 08/04	1,899	27,267	150	23,030	22,023

- a Pink salmon can pass freely through the Kogrukluk Weir.
b No counts or incomplete count as project was not operated during the species' migration.
c Aniak sonar counts are adjusted to provide the total estimated escapements.
d The Goodnews River salmon counting tower's scheduled termination date precludes adequate assessment of the coho and pink salmon escapement.
e The Goodnews River Tower was converted to a weir in 1991.

Table 8. Kuskokwim Area commercial, subsistence, and personal use salmon catches, 1913-1992.

Year	COMMERCIAL CATCH					Total	SUBSISTENCE CATCH			COMBINED TOTAL HARVEST
	Chinook	Sockeye	Coho	Pink	Chum		Chinook	Other*	Total	
1913	7,800					7,800				7,800
1914		2,667				2,667				2,567
1915										
1916	949					949				949
1917	7,878					7,878				7,878
1918	3,055					3,055				3,055
1919	4,836					4,836				4,836
1920	34,853					34,853				34,853
1921	9,854					9,854				9,854
1922	8,944	6,120				15,064		180,000		195,064
1923	7,254					7,254				7,254
1924	19,253	900	7,167	7,167		34,487	17,700	203,148	220,848	255,335
1925	1,644	5,800				7,444	10,800	230,850	241,650	249,094
1926									738,576	738,576
1927									286,254	286,254
1928									481,090	481,090
1929									560,196	560,196
1930	7,626	2,448				10,074			538,650	548,724
1931	8,541					8,541			389,367	397,908
1932	9,339					9,339			746,415	755,754
1933							6,290	443,998	450,288	450,288
1934							20,800	597,132	617,932	617,932
1935	6,448		8,296			14,744	22,990	554,040	576,970	591,714
1936	624					624	33,500	549,423	582,923	583,547
1937	480					480			537,111	537,591
1938	624		828			1,452	10,153	400,242	410,395	411,847
1939	134					134	14,000	125,425	139,425	139,559
1940	247		500			747	8,000	415,523	423,523	424,270
1941	187		674			861	8,000	415,523	423,523	424,384
1942							6,400	325,339	331,739	331,739
1943							6,400	325,339	331,739	331,739
...										
1946	2,288		674			2,962				2,962
1947	5,356					5,356				5,356
...										
1951	4,210					4,210				4,210
...										
1954	57					57				57
...										
1959	3,760					3,760				3,760
1960	5,969	5,649	5,498		3	17,119	18,752	301,753	320,505	337,624
1961	23,246	2,308	5,090	91	18,864	49,599	27,457	179,529	206,986	256,585

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Table 8. (page 2 of 2)

Year	COMMERCIAL CATCH						SUBSISTENCE CATCH				COMBINED TOTAL HARVEST		
	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Coho ^a	Small ^d	Total			
1962	20,867	10,313	12,598	4,340	45,707	93,825	13,455	161,849	175,304	269,129	362,954		
1963	18,571		15,660			34,231	93,180	137,649	170,829	205,060	239,291		
1964	21,230	13,422	28,992	939	707	65,290	29,017	190,191	219,208	284,498	349,788		
1965	24,965	1,886	12,191		4,242	43,284	24,697		250,878	275,575	318,859		
1966	25,823	1,030	22,985	268	2,610	52,716	49,022		175,735	224,757	277,473		
1967	29,986	652	58,239		8,235	97,112	60,919		214,468	275,387	372,499		
1968	43,157	5,887	154,302	75,818	19,694	298,858	35,380		278,008	313,388	612,246		
1969	64,777	10,362	110,473	1,251	50,377	237,240	40,208		204,105	244,313	481,553		
1970	65,032	12,654	62,245	27,422	60,566	227,919	69,219	11,868	246,810	327,897	555,816		
1971	44,936	6,054	10,006	13	99,423	160,432	42,926	6,899	116,391	166,216	326,648		
1972	55,482	4,312	23,880	1,952	97,197	182,823	40,145	1,325	120,316	161,786	344,609		
1973	51,374	5,224	152,408	634	184,207	393,847	38,526	23,746	179,259	241,531	635,378		
1974	30,670	29,003	179,579	60,052	196,127	495,431	26,665	32,780	277,170	336,615	832,046		
1975	27,799	17,585	109,814	899	223,532	379,579	47,569		176,389	223,958	603,537		
1976	49,262	13,636	112,130	39,998	231,877	446,903	57,899	4,312	223,792	286,003	732,906		
1977	58,256	18,621	263,728	434	298,959	639,998	57,925	12,193	203,397	273,515	913,513		
1978	63,194	13,734	247,271	61,968	282,044	668,211	38,209	12,437	125,052	175,698	843,909		
1979	53,314	39,463	308,683	574	297,167	699,201	57,031		163,451	220,482	919,683		
1980	48,242	42,213	327,908	30,306	561,483	1,010,152	62,139	47,335	168,987	278,461	1,288,613		
1981	79,378	105,940	278,587	463	485,635	950,003	63,248	28,301	163,554	255,103	1,205,106		
1982	79,816	97,716	567,451	18,259	325,471	1,088,713	60,426	45,181	195,691	301,298	1,390,011		
1983	93,676	90,834	249,018	379	306,554	740,461	51,020	2,834	149,172	203,026	943,487		
1984	74,006	81,307	829,965	23,902	488,482	1,497,662	60,944	15,016	144,651	220,335	1,717,997		
							Chinook	Sockeye	Coho	Pink	Chum	Total	
1985	74,083	121,221	382,096	111	224,680	802,191	45,720	33,631	24,667	1,062	96,791	201,871	1,004,062
1986	44,972	142,029	736,910	16,569	349,268	1,289,748	54,256		29,742		142,930 ^e	226,928	1,516,676
1987	65,558	170,849	478,594	163	603,274	1,318,438	71,804	31,555	18,085	291	70,709	192,444	1,510,882
1988 ^a	74,552	149,927	623,719	37,592	1,443,916	2,239,786	56,695	25,571	32,426		118,181	232,873	2,565,615
1989 ^a	67,003	82,628	556,312	819	802,199	1,508,961	77,030	33,958	50,046		132,858	293,834	1,802,853
1990	84,706	203,374	445,062	16,082	522,535	1,272,759	77,328	32,218	44,519		108,557	262,622	1,535,381
1991	48,170	202,441	556,818	522	501,692	1,309,643	85,143	51,821	53,478		93,037	283,479	1,593,122
1992	67,597	192,341	772,449	85,978	436,506	1,554,871							
Ten Year Average (1982-1991)	70,654	134,233	542,595	22,481 ^a	556,807	1,306,836	64,037		31,599		146,268 ^e	241,871	1,558,009

a Primarily chum and coho salmon.

b Reported subsistence coho salmon harvest only. Coho salmon subsistence harvest is poorly documented with no Kuskokwim River estimates attempted prior to 1988.

c Includes sockeye, pink and chum salmon.

d The personal use catch is included with the subsistence catch.

e Even years only.

Table 9. Utilization of Kuskokwim River chum salmon, 1960-1992.

<u>Year</u>	<u>Commercial Harvest^a</u>	<u>Estimated Subsistence Harvest^b</u>	<u>Total Utilization</u>	<u>Estimated Total Run Size</u>	<u>Exploitation Rate</u>
1960	0	301,753 ^c	301,753		
1961	0	179,529 ^c	179,529		
1962	0	161,849 ^c	161,849		
1963	0	137,649 ^c	137,649		
1964	0	190,191 ^c	190,191		
1965	0	250,878 ^c	250,878		
1966	0	175,735 ^c	175,735		
1967	148	208,445 ^c	208,593		
1968	187	275,008 ^c	275,195		
1969	7,165	204,105 ^c	211,270		
1970	1,664	246,810 ^c	248,474		
1971	68,914	116,391 ^c	185,305		
1972	78,619	120,316 ^c	198,935		
1973	148,746	179,259 ^c	328,005		
1974	171,887	277,170 ^c	449,057		
1975	181,840	176,389 ^c	358,229		
1976	177,864	223,792 ^c	401,656		
1977	248,721	198,355 ^c	447,076		
1978	248,656	118,809 ^c	367,465		
1979	261,874	161,239 ^c	423,113		
1980	483,211	165,172 ^c	648,383		
1981	418,677	157,306 ^c	575,983		
1982	278,306	190,011 ^c	468,317		
1983	267,698	146,876 ^c	414,574		
1984	423,718	142,542 ^c	566,260		
1985	199,478	95,542	295,020		
1986	309,213	141,931	451,144		
1987	574,336	69,047	643,383		
1988	1,381,674	117,008	1,498,682		
1989	749,182	122,086	871,268		
1990	461,624	96,273	557,897		
1991	431,802	81,652	513,454	898,377 ^d	57%
1992	344,603	100,004 ^e	444,607		
Ten Year Average (1982-1991)	507,703	120,297	627,999		

a District 1 and 2.

b Estimated subsistence harvest expanded from villages surveyed.

c Includes small numbers of small chinook, sockeye and coho salmon.

d Estimate from prototype main river sonar, accuracy and precision unknown.

e Average of previous three years, subsistence catch not available at this writing.

Table 10. Lower Kuskokwim River, District 1, commercial effort, 1970 - 1992.

<u>Year</u>	<u>Unrestricted Mesh Season</u>	<u>Restricted Mesh Season</u>	<u>Coho Salmon Season</u>				<u>Total</u>
1970	361	a	266				387
1971	418	216	83				422
1972	405	176	245				425
1973	456	341	411				530
1974	606	467	516				666
1975	472	540	533				737
1976	561	517	516				674
1977	563	522	572				653
1978	615	617	597				723
1979	591	617	613				685
1980	553	579	586				663
1981	589	613	586				679
1982	610	576	596				686
1983	544	619	577				679
1984	520	587	619				654
1985	b	598	627				654
1986	b	631	663				688
1987	b	680	694				703
1988	b	c	c				746
	<u>Number of Permits Landing Each Species</u>						
	<u>Chinook</u>	<u>Sockeye</u>	<u>Coho</u>	<u>Pink</u>	<u>Chum</u>	<u>Roe</u>	
1989	695	688	732	261	719	22	745
1990	724	722	714	526	736	1	744
1991	687	705	731	159	733	1	749
1992	711	706	706	520	722	0	741
Ten Year Average (1982-1991)							705

a No commercial salmon season.
b No unrestricted mesh season.
c Fishery continued without interruption.

Table 11. Quinhagak District commercial effort 1970-1992.

<u>YEAR</u>	<u>EFFORT^a</u>
1970	88
1971	61
1972	107
1973	109
1974	196
1975	127
1976	181
1977	258
1978	200
1979	206
1980	169
1981	186
1982	117
1983	226
1984	263
1985	300
1986	324
1987	310
1988	288
1989	227
1990	390
1991	346
1992	349
TEN YEAR AVERAGE (1982-1991)	279

^a Permits that made at least one delivery during that year.

Table 12. Quinhagak District commercial salmon harvest, 1960-1992.

<u>Year</u>	<u>Chinook</u>	<u>Sockeye</u>	<u>Coho</u>	<u>Pink</u>	<u>Chum</u>	<u>Total</u>
1960	0	5,649	3,000	0	0	8,649
1961	4,328	2,308	46	90	18,864	25,636
1962	5,526	10,313	0	4,340	45,707	65,886
1963	6,555	0	0	0	0	6,555
1964	4,081	13,422	379	939	707	19,528
1965	2,976	1,886	0	0	4,242	9,104
1966	278	1,030	0	268	2,610	4,186
1967	0	652	1,926	0	8,087	10,665
1968	8,879	5,884	21,511	75,818	19,497	131,589
1969	16,802	3,784	15,077	953	38,206	74,822
1970	18,269	5,393	16,850	15,195	46,556	102,263
1971	4,185	3,118	2,982	13	30,208	40,506
1972	15,880	3,286	376	1,878	17,247	38,667
1973	14,993	2,783	16,515	277	19,680	54,248
1974	8,704	19,510	10,979	43,642	15,298	98,133
1975	3,928	8,584	10,742	486	35,233	58,973
1976	14,110	6,090	13,777	31,412	43,659	109,048
1977	19,090	5,519	9,028	202	43,707	77,546
1978	12,335	7,589	20,114	47,033	24,798	111,869
1979	11,144	18,828	47,525	295	25,995	103,787
1980	10,387	13,221	62,610	21,671	65,984	173,873
1981	24,524	17,292	47,557	160	53,334	142,867
1982	22,106	25,685	73,652	11,838	33,346	166,627
1983	46,385	10,263	32,442	168	23,090	112,348
1984	33,652	17,258	135,342	16,249	50,424	252,925
1985	30,401	7,876	29,992	28	20,418	88,715
1986	22,835	21,484	57,544	8,700	29,700	140,263
1987	26,022	6,489	50,070	66	8,557	91,204
1988	13,872	21,534	68,591	21,258	29,183	154,438
1989	20,820	20,582	44,607	273	39,395	125,677
1990	27,644	83,681	26,926	12,056	47,717	198,024
1991	9,480	53,657	42,571	115	54,493	160,316
1992	17,197	60,929	86,404	64,217	73,383	302,130
Ten Year Average (1982-1991)	25,322	26,851	56,173	14,020 ^a	33,632	149,053

^a Even years only.

Table 13. Kanektok River peak aerial surveys by species, 1959 - 1992^a.

Year	SPECIES			
	Chinook	Sockeye	Coho	Chum
1960	6,047	34,900		36,100
1961				
1962	935	43,108		
1963				
1964				
1965				
1966	3,718			28,800
1967				
1968	4,170	8,000		14,000
1969				
1970	4,112	3,028		80,100
1971				
1972				
1973	814			
1974				
1975		6,018		
1976		2,936		8,697
1977	5,787	6,304		32,157
1978 ^b	19,180	44,215		229,290
1979				
1980	6,172	113,931	69,325	25,950
1981 ^c	15,900	49,175		71,840
1982 ^d	8,142	55,940		
1983	8,890	2,340		9,360
1984 ^e	12,182	30,840	46,830	48,360
1985	13,465	16,270		14,385
1986	3,643	14,949		16,790
1987	4,223	51,753	20,056	9,420
1988	11,140	30,440		20,063
1989	7,914	14,735	1,755	6,270
1990	2,563	32,082		2,475
1991 ^d	2,100	43,500	4,330	18,000
1992 ^f	3,856	14,955		25,675
Average:	7,426	29,284	18,242	16,124
Objective:	5,000	15,000		30,500

- a Peak aerial surveys are those rated fair or good surveys obtained between 20 July and 5 August for chinook and sockeye salmon, 20-31 July for chum salmon, and 20 August and 5 September for coho salmon. Some surveys which do not meet these criteria may be referenced in this table; text are footnoted.
- b Chum salmon count excluded from escapement objective calculation due to exceptional magnitude.
- c Poor survey for chinook, sockeye, chum salmon.
- d Late Survey for chinook, sockeye salmon (after 5 August).
- e Poor coho survey.
- f Some chum may have been sockeye.

Table 14. Goodnews Bay, District 5 commercial effort 1970-1992.

<u>YEAR</u>	<u>EFFORT^a</u>
1970	35
1971	16
1972	14
1973	21
1974	49
1975	50
1976	40
1977	34
1978	35
1979	30
1980	48
1981	48
1982	48
1983	79
1984	77
1985	69
1986	86
1987	69
1988	125
1989	88
1990	82
1991	72
1992	111
TEN YEAR AVERAGE (1982-1991)	80

a Permits that made at least one delivery during that year.

Table 15. Goodnews Bay District commercial salmon harvest, 1968-1992.

<u>YEAR</u>	<u>CHINOOK</u>	<u>SOCKEYE</u>	<u>COHO</u>	<u>PINK</u>	<u>CHUM</u>	<u>TOTAL</u>
1968			5,458			5,458
1969	3,978	6,256	11,631	298	5,006	27,169
1970	7,163	7,144	6,794	12,183	12,346	45,630
1971	477	330	1,771	0	301	2,879
1972	264	924	925	66	1,331	3,510
1973	3,543	2,072	5,017	324	15,781	26,737
1974	3,302	9,357	21,340	16,373	8,942	59,314
1975	2,156	9,098	17,889	419	5,904	35,466
1976	4,417	5,575	9,852	8,453	10,354	38,651
1977	3,336	3,723	13,335	29	6,531	26,954
1978	5,218	5,412	13,764	9,103	8,590	42,087
1979	3,204	19,581	42,098	201	9,298	74,382
1980	2,331	28,632	43,256	7,832	11,748	93,799
1981	7,190	40,273	19,749	11	13,642	80,865
1982	9,476	38,877	46,683	4,673	13,829	113,538
1983	14,117	11,716	19,660	0	6,766	52,259
1984	8,612	15,474	71,176	4,711	14,340	114,313
1985	5,793	6,698	16,498	8	4,784	33,781
1986	2,723	25,112	19,378	4,447	10,355	62,015
1987	3,357	27,758	29,057	54	20,381	80,607
1988	4,964	36,368	30,832	5,509	33,059	110,732
1989	2,966	19,299	31,849	82	13,622	67,818
1990	3,303	35,823	7,804	629	13,194	60,753
1991	912	39,838	13,312	29	15,892	69,983
1992	3,528	39,194	19,875	14,310	18,520	95,427
Ten year Average (1982-1991)	5,622	25,696	28,625	3,994 ^a	14,622	76,580

^a Even years only.

Table 16. Historical estimated salmon run size and commercial exploitation rate, Goodnews River, 1981-1992.

Year	Species	Middle Fork Tower Estimate	Middle Fork Aerial Survey Count as a Percentage of Tower Est.	Goodnews River Escapement Estimate	Goodnews Bay Subsistence Harvest Estimate	Goodnews Bay Commercial Harvest	Total Run Size Estimate	Exploitation Rate (% of Run)
1981	Chinook	3,688	-b	7,766 ^a	1,409	7,190	16,365	53%
	Sockeye	49,108	-b	100,029 ^a	3,511 ^d	40,273	143,813	30%
	Chum	21,827	-b	53,799 ^a	-	13,642	67,441	20%
1982	Chinook	1,395	-b	2,937 ^a	1,236	9,476	13,649	78%
	Sockeye	56,255	-b	114,587 ^a	2,754 ^d	38,877	156,218	27%
	Chum	6,767	-b	16,679 ^a	-	13,829	30,508	45%
1983	Chinook	6,027	36%	14,398	1,066	14,117	29,581	51%
	Sockeye	25,816	22%	69,955	1,518 ^d	11,716	83,189	16%
	Chum	15,548	-b	38,323 ^a	-	6,766	45,089	15%
1984	Chinook	3,260	35%	8,743	629	8,612	17,984	51%
	Sockeye	32,053	27%	67,213	964	15,474	85,651	20%
	Chum	19,003	35%	117,739	189	14,340	132,268	11%
1985	Chinook	2,831	70%	7,979	426	5,793	14,198	44%
	Sockeye	24,131	11%	50,481	704	6,698	57,883	13%
	Chum	10,367	32%	25,025	348	4,784	30,157	17%
1986	Chinook	2,083	57%	4,094	555	2,723	7,372	44%
	Sockeye	51,069	28%	93,228	942	22,608	116,778	20%
	Chum	14,765	38%	51,910	191	10,355	62,456	17%
1987	Chinook	2,274	100%	4,490	816	3,357	8,663	48%
	Sockeye	28,871	85%	51,989	955	27,758	80,702	36%
	Chum	17,519	58%	37,802	578	20,381	58,761	36%
1988	Chinook	2,712	39%	5,419	310	4,964	10,693	49%
	Sockeye	15,799	30%	38,319	1065	36,368	75,752	49%
	Chum	20,799	21%	39,501	448	33,059	73,008	46%
1989	Chinook	1,915	67%	2,891	467	2,986	6,324	54%
	Sockeye	21,186	60%	35,476	869	19,299	55,644	36%
	Chum	10,380	28%	15,495	760	13,622	29,877	48%
1990	Chinook	3,636	-b	7,656 ^a	682	3,303	11,641	34%
	Sockeye	31,679	-b	64,528 ^a	905	35,823	101,256	36%
	Chum	6,410	-b	15,799 ^a	342	13,194	29,335	46%
1991 ^e	Chinook	2,147	-b	4,521 ^a	682	912	6,115	26%
	Sockeye	47,397	-b	96,544 ^a	900	39,838	137,228	30%
	Chum	27,525	-b	67,844 ^a	106	15,892	83,842	19%

a Commercial and subsistence exploitation

b Incomplete aerial survey results

c Average Middle Fork/Goodnews River escapement estimate ratio for 1983-1989 used to estimate Goodnews River escapement in years with no aerial survey data.

d Subsistence caught chum salmon is included in subsistence sockeye salmon harvest.

e Goodnews Tower Project changed to weir project in 1991.

Table 17. Mean salmon weights and prices paid to commercial fishers in the Kuskokwim Area, 1967-1992.

Year	Mean Weight - Pounds					Average Price - \$/Pound				
	Chinook	Sockeye	Coho	Pink	Chum	Chinook	Sockeye	Coho	Pink	Chum
1967	27.8	7.4	5.9	a	7.0	0.13	0.05	0.09	a	0.04
1968	23.8	6.2	7.2	4.0	7.9	0.16	0.10	0.09	0.05	0.04
1969	19.6	6.2	7.3	3.6	5.8	0.19	0.15	0.10	0.06	0.07
1970	18.9	5.4	7.3	3.3	6.1	0.20	0.21	0.14	0.08	0.08
1971 ^b	26.2	6.9	6.1	a	6.4	0.17	0.10	0.13	a	0.08
1972	a	a	a	a	a	0.20	a	0.16	a	0.08
1973	a	a	a	a	a	0.25	a	0.26	a	0.19
1974	a	a	a	a	a	0.46	0.34	0.27	0.23	0.25
1975	a	a	a	a	a	0.54	a	0.31	a	0.26
1976 ^c	17.0	6.7	7.8	3.5	7.0	0.64	0.43	0.40	0.25	0.27
1977	22.7	8.3	7.8	3.9	7.3	1.15	0.45	0.65	0.25	0.45
1978	24.2	6.5	7.1	3.9	8.9	0.50	0.49	0.40	0.12	0.32
1979	16.6	6.9	7.9	3.9	7.0	0.66	0.53	0.75	0.11	0.37
1980	14.1	6.7	6.9	3.6	6.4	0.47	0.31	0.64	0.12	0.24
1981	17.8	7.2	6.4	3.5	7.5	0.84	0.61	0.63	0.11	0.23
1982	19.3	7.2	7.3	3.6	7.3	0.82	0.41	0.53	0.05	0.22
1983	18.8	6.8	6.8	3.5	7.4	0.54	0.51	0.39	0.05	0.33
1984	16.4	6.6	7.7	3.2	6.7	0.89	0.52	0.55	0.07	0.28
1985	17.0	7.0	7.5	3.6	7.1	0.71	0.59	0.51	0.05	0.25
1986	17.0	7.2	6.4	3.4	6.8	0.80	0.70	0.60	0.05	0.25
1987	15.2	7.5	7.2	3.7	6.8	1.10	1.30	0.73	0.10	0.27
1988	15.1	7.3	7.5	3.4	8.1	1.30	1.42	1.25	0.15	0.40
1989	16.6	7.2	7.3	3.4	6.8	0.75	1.20	0.55	0.05	0.26
1990	15.1	6.7	6.5	3.2	6.9	0.56	1.05	0.75	0.12	0.26
1991	15.3	6.9	6.5	3.4	6.3	0.56	0.67	0.45	0.12	0.31
1992	13.4	7.0	7.3	3.9	6.8	0.66	0.90	0.45	0.06	0.32
Average (1982-91)	16.6	7.1	7.0	3.4	7.0	0.80	0.84	0.63	0.08	0.28

a Information unavailable.

b Information was not available for district 5.

c Information was not available for district 4.

Table 18. Kuskokwim Area commercial salmon fishery final calculated value by district and area, 1992.^a

	<u>CHINOOK</u>	<u>SOCKEYE</u>	<u>COHO</u>	<u>PINK</u>	<u>CHUM</u>	<u>DISTRICT TOTAL</u>
<u>LOWER KUSKOKWIM DISTRICT 1</u>						
TOTAL FISH	44,677	89,956	631,594	7,446	333,136	1,106,809
TOTAL POUNDS	578,950	641,072	4,564,544	27,607	2,252,113	8,064,286
TOTAL DOLLARS	\$376,318	\$576,965	\$2,054,045	\$1,380	\$743,197	\$3,751,905
AVERAGE WEIGHT	12.96	7.13	7.23	3.71	6.76	
<u>MIDDLE KUSKOKWIM DISTRICT 2</u>						
TOTAL FISH	2,195	2,262	34,576	5	11,467	50,505
TOTAL POUNDS	33,712	15,867	240,492	12	77,116	367,199
TOTAL DOLLARS	\$21,576	\$13,328	\$96,197	\$ 1	\$17,737	\$148,839
AVERAGE WEIGHT	15.36	7.01	6.96	2.40	6.20	
<u>QUINHAGAK DISTRICT 4</u>						
TOTAL FISH	17,197	60,929	86,404	64,217	73,383	302,130
TOTAL POUNDS	246,731	409,553	674,157	251,439	508,727	2,090,607
TOTAL DOLLARS	\$165,310	\$368,598	\$303,371	\$15,086	\$137,356	\$989,721
AVERAGE WEIGHT	14.35	6.72	7.80	3.92	6.93	
<u>GOODNEWS BAY DISTRICT 5</u>						
TOTAL FISH	3,528	39,194	19,875	14,310	18,520	95,427
TOTAL POUNDS	47,212	286,063	167,285	58,262	134,865	693,687
TOTAL DOLLARS	\$30,688	\$257,457	\$75,278	\$2,913	\$39,111	\$405,447
AVERAGE WEIGHT	13.38	7.30	8.42	4.07	7.28	
<u>TOTAL ALL DISTRICTS</u>						
TOTAL FISH	67,597	192,341	772,449	85,978	436,506	1,554,871
TOTAL POUNDS	906,605	1,352,555	5,646,478	337,320	2,972,821	11,215,779
TOTAL DOLLARS	\$593,892	\$1,216,348	\$2,528,891	\$19,380	\$937,401	\$5,295,912
AVERAGE WEIGHT	13.41	7.03	7.31	3.92	6.81	
AVERAGE PRICE/LB	\$0.66	\$0.90	\$0.45	\$0.06	\$0.32	
PRICE/FISH	\$8.85	\$6.33	\$3.29	\$0.24	\$2.18	

^a Does not include test fish sales.

Table 19. Executive summary of working group and department actions, 1992.

<u>DATE</u>	<u>DEPT. RECOMMENDATIONS</u>	<u>WORKING GROUP RECOMMENDATIONS</u>	<u>ACTUAL</u>
15 May	Reorganization, discussion, amendments and acceptance of 1992 Kuskokwim River Salmon Management Plan.		
17 June	District 1 for 8 hours on 18 June. (below Bethel required by regulation)	District 1 for 8 hours on 18 June. (below Bethel required by regulation) Three amendments to the rules of conduct were passed.	District 1 for 8 hours on 18 June. (below Bethel required by regulation)
19 June	District 1 for 8 hours on 22 June.	District 1 for 8 hours on 22 June.	District 1 for 8 hours on 22 June.
23 June	District 1 & 2 for 8 hours on 25 June.	District 1 & 2 for 8 hours on 25 June. Working Group recessed until a need to fish more or less than 6 hours on Monday and Thursday.	District 1 & 2 for 8 hours on 25 June.
01 July	Meet again on 03 July.	District 1 & 2 for 6 hours on 02 July. District 1 & 2 for 6 hours on 03 July. District 1 & 2 for 6 hours on 04 July.	Vetoed by Department. Vetoed by Department. Department will announce on 03 July if motion accepted.
03 July			Vetoed motion for period on 04 July.
05 July	Districts 1 and 2 for 6 hours on 6 July.	Districts 1 and 2 for 8 hours on 6 July.	Districts 1 and 2 for 8 hours on 6 July.

-continued-

Table 19. (page 2 of 2).

<u>DATE</u>	<u>DEPT. RECOMMENDATIONS</u>	<u>WORKING GROUP RECOMMENDATIONS</u>	<u>ACTUAL</u>
08 July	Meet again 10 July.	Meet again 10 July.	Meet again 10 July.
10 July	Recess until call of co-chair or Department.	Meet again on 12 July.	Meet again on 12 July.
12 July	Recess until call of co-chair or Department.	Meet again on 15 July.	Meet again on 15 July.
15 July	Recess until chum situation changes or coho dominate.	Recess until chum situation changes or coho dominate.	Recess until chum changes or coho dominate.
28 July	To early to set first coho period.	Districts 1 and 2 for 6 hours on 30 July.	Department will announce on 29 July if motion accepted.
29 July			Vetoed motion for period on 30 July.
31 July	Districts 1 and 2 for 6 hours on 3 August.	Districts 1 and 2 for 6 hours on 1 August. District 1 below Bethel for 6 hours on 1 August. Districts 1 and 2 for 8 hours on 3 August. The next meeting will be at call of co-chair if fishing can not continue for 6 hours on Monday and Thursday.	Vetoed by Department. Vetoed by Department. Districts 1 and 2 for 8 hours on 3 August.
09 August	Meet again on 11 August.	Districts 1 and 2 for 6 hours on 11 August. Recess until Middle Kuskokwim subsistence representative can tell the Working Group whether or not there is a law suit being brought.	Department will announce on 10 August if motion accepted.
10 August			Districts 1 and 2 for 6 hours on 11 August.

Table 20. Lower Kuskokwim River, District 1, commercial salmon harvest and fishing effort by period, 1992.

PERIOD	DATE	HOURS	PERMITS	CHINOOK		SOCKEYE		COHO		PINK		CHUM	
				NUMBER	CPUE	NUMBER	CPUE	NUMBER	CPUE	NUMBER	CPUE	NUMBER	CPUE
01	06/18	8	567	9,756	2.15	8,508	1.88					32,695	7.21
02	06/22	8	619	14,578	2.94	25,017	5.05			14		74,429	15.03
03	06/25	8	627	8,984	1.79	21,922	4.37			6		55,114	10.99
04	06/29	6	602	7,323	2.03	26,082	7.22			39	.01	60,213	22.21
05	07/06	8	587	3,250	.69	7,962	1.70	2		719	.15	84,196	17.93
06	08/03	8	619	306	.06	137	.03	78,233	15.80	6,113	1.23	4,069	.82
07	08/06	6	590	116	.03	98	.03	57,506	16.24	504	.14	1,319	.37
08	08/11	6	653	157	.04	76	.02	181,905	46.43	18		664	.17
09	08/14	6	632	63	.02	55	.01	87,959	23.20	26	.01	196	.05
10	08/17	6	596	47	.01	49	.01	79,357	22.19	6		122	.03
11	08/20	6	578	36	.01	17		73,363	21.15			53	.02
12	08/24	6	550	27	.01	19	.01	28,069	8.51			23	.01
13	08/27	6	481	26	.01	6		28,238	9.78	1		26	.01
14	08/31	6	374	8		8		16,962	7.56			17	.01
TOTALS		94	741	44,677	.64	89,956	1.29	631,594	9.07	7,446	.11	333,136	4.78

Table 21. Mean t PUE for chum salmon catches in the Bethel Test fishery, 1984-19

Date	Daily CPUE									Cumulative CPUE								Percentage Passage							Mean 84-91		
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1984	1985	1986	1987	1988	1989	1990	1991	1992	1984	1985	1986	1987	1988	1989		1990	1991
5/30	0	0	0	0	0					0	0	0	0	0				0	0	0	0	0	0	0	0	0	0
5/31	0	0	0	0	0					0	0	0	0	0				0	0	0	0	0	0	0	0	0	0
6/01	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
6/02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
6/03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
6/04	5	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
6/05	0	0	6	3	9	3	0	0	0	5	0	6	3	9	6	0	0	0	0	0	0	0	0	0	0	0	0
6/06	0	0	10	12	0	0	3	0	6	5	0	16	16	9	6	3	0	6	0	0	0	0	0	0	0	0	0
6/07	0	0	0	6	3	6	0	0	3	5	0	16	22	12	11	3	0	9	0	0	0	0	0	0	0	0	0
6/08	2	0	8	9	11	10	0	0	3	7	0	24	30	23	22	3	0	13	0	0	1	1	0	1	0	0	0
6/09	10	0	28	16	38	8	0	0	3	17	0	53	45	51	30	3	0	16	1	0	1	1	1	1	0	0	1
6/10	10	0	6	6	29	12	0	0	6	28	0	59	62	90	42	3	0	22	1	0	1	2	2	0	0	1	1
6/11	3	0	9	21	83	3	0	0	12	30	0	68	72	153	46	3	0	34	1	0	2	1	3	2	0	0	1
6/12	15	0	9	13	91	17	3	3	9	45	0	77	88	244	62	6	3	43	2	0	2	2	6	2	0	0	1
6/13	8	3	0	19	87	20	0	0	44	53	3	77	105	331	82	6	3	86	2	0	2	2	6	3	0	0	3
6/14	11	0	9	3	19	7	13	8	21	63	3	86	108	350	90	18	9	107	3	0	2	2	7	3	1	1	3
6/15	5	3	38	10	45	38	0	0	107	88	6	124	117	395	126	18	9	216	3	0	3	2	8	6	1	1	7
6/16	31	3	46	42	28c	24	3	0	119	100	8	170	159	421c	150	21	8	333	4	1	4	3	8	6	1	1	11
6/17	41	8	121	122	56	4	22	0	54	141	16	290	281	477	164	43	9	387	6	1	7	5	9	6	2	1	12
6/18	75	8	108	41c	195	49	20	0	42c	216	25	398	322c	671	203	63	9	429c	9	2	10	7	13	8	2	1	14
6/19	9	65	151	6	160	68c	28	0	0	225	90	549	328	832	271c	91	8	429	9	7	14	7	16	10	3	1	14
6/20	20	115c	64	60	50c	44	9c	25c	33	245	205c	613	388	881c	315	100c	34c	463	10	16	16	8	17	12	4	3	16
6/21	52	3	87	24	143	78	30	3	58	297	207	700	412	1025	391	130	37	521	12	18	17	8	20	16	6	3	17
6/22	8	25	104	200	251	56	22	8	49c	305	232	804	613	1276	446	162	46	571c	13	17	20	13	25	17	6	4	18
6/23	108	28	203	103	246	78c	53	14	53	413	260	1007	715	1522	525c	206	60	623	17	20	25	16	29	20	8	5	20
6/24	167	3c	112	48c	86c	167	77	6c	33	580	263c	1119	783c	1608c	692	282	66c	656	24	20	28	16	31	27	10	6	21
6/25	186c	52	460	66	16	208	32c	8	39c	746c	315	1579	829	1624	900	314c	74	695c	31	24	39	17	31	34	12	6	22
6/26	86	65	177c	100	63	111c	49	32	43	832	380	1756c	929	1697	1011c	363	108	738	35	29	43	19	33	39	13	8	24
6/27	109	58c	109	87	306	134	168	68	212	941	436c	1885	1015	1883	1146	531	183	850	39	33	46	21	38	44	20	13	31
6/28	105c	24	35	105	109c	79	72	50	110	1045c	483	1901	1120	2101c	1223	603	213	1060	44	35	47	23	40	47	22	17	34
6/29	22	180	6	268	108	122	87c	64	133c	1068	643	1907	1389	2210	1346	690c	277	1192c	45	48	47	28	43	52	25	22	38
6/30	59	177	105c	246c	88	106c	32	8	138	1126	620	2012c	1635c	2298	1452c	722	286	1331	47	62	49	33	44	56	27	23	43
7/01	115	77c	3	152	382	116	67	30c	124	1241	896c	2015	1787	2680	1667	769	315c	1456	52	69	50	36	52	60	29	25	47
7/02	150c	31	70	120	188c	66	28	91	43	1401c	928	2085	1906	2808c	1633	617	406	1497	59	70	51	39	55	63	30	32	48
7/03	68	24	193c	34c	437	78c	200	22	269	1467	952	2277c	1941c	3306	1711c	1017	427	1787	61	72	56	40	64	66	37	34	57
7/04	209	5c	123	62	489	57	214	33	326	1677	957c	2401	2003	3775	1768	1231	461	2092	70	72	59	41	73	68	45	36	67
7/05	163c	40	309	177	192c	182c	188c	6	193	1840c	897	2709	2180	3966c	1950c	1419c	466	2266	77	75	67	44	76	75	52	37	74
7/06	48	25	140	389	120	58	26	12c	105c	1898	1022	2850	2569	4086	2009	1445	478c	2390c	79	77	70	52	79	77	53	38	77
7/07	60	93	52c	463c	27	117	173	12	13	1948	1115	2912c	3032c	4114	2126	1618	490	2403	82	84	72	62	79	81	59	39	77
7/08	48	3	68	39	34c	55c	136	9	142	1996	1118	2979	3070	4148c	2190c	1764	499	2845	84	84	73	63	80	84	64	40	82
7/09	52c	5	246	272	92	67	61c	60	48	2048c	1123	3225	3342	4240	2247	1815c	569	2593	86	85	79	68	82	86	67	44	83
7/10	39	0	34c	208	148	66	81	46	47	2087	1123	3260c	3550	4388	2314	1896	606	2640	87	85	80	72	85	89	70	48	85
7/11	7	0	87	63c	83c	3c	78	26	57	2693	1123	3347	3612c	4471c	2317c	1975	631	2696	88	85	82	74	86	89	73	50	87
7/12	16c	3	163	63	65	7	74	43	69	2109c	1126	3510	3666	4636	2324	2048	674	2756	88	85	86	76	87	89	75	63	89
7/13	16	10	134	87	63	55	23	21c	51	2126	1137	3644	3752	4699	2379	2071	695c	2806	88	86	90	77	89	91	76	55	90
7/14	7	0	26	265	38c	35c	33c	28	49	2132	1137	3689	4007	4637c	2414c	2104c	723	2656	88	86	90	82	89	92	77	57	92
7/15	91	0	10	61c	69	11	24	20	27	2224	1137	3679	4088c	4706	2424	2128	743	2882	93	86	90	83	91	93	78	59	93
7/16	24c	6	16	33	92	20	37	12	21	2248c	1142	3696	4101	4788	2445	2165	756	2903	94	86	91	84	92	94	80	60	93
7/17	15	32	43	107	84	17	24	16	24	2262	1174	3739	4208	4862	2482	2190	770	2927	95	88	92	86	94	94	80	61	94
7/18	14	8	43	125	57c	23c	59	51c	27	2276	1183	3782	4333	4909c	2485c	2249	821c	2954	95	89	93	88	95	95	83	65	95
7/19	16	19	50	202	16	16	66	16	29	2292	1202	3831	4535	4925	2501	2315	837	2983	96	91	94	93	95	96	85	66	96
7/20	9	7	36	170c	29	29	73	16	4	2301	1209	3867	4706c	4954	2530	2388	853	2987	96	91	95	96	95	96	87	68	96
7/21	16	6	62	23	36c	13	57	40	3	2318	1214	3919	4729	4990c	2543	2446	894	2990	97	91	96	97	96	97	90	71	96

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Table 21. (page 2 of 2)

Date	Daily CPUE									Cumulative CPUE									Percentage Passage							Mean 84-91		
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1984	1985	1986	1987	1988	1989	1990	1991	1992	1984	1985	1986	1987	1988	1989	1990		1991	1992
7/22	1	12	34	12	10	7	40	57c	0	2319	1226	3953	4740	4999	2551	2485	851c	2990	97	92	87	97	96	98	91	75	96	93
7/23	9	8	26	8	8	13	35	33	23	2328	1231	3979	4748	5005	2564	2520	983	3013	98	93	88	97	96	98	93	78	97	94
7/24	3	2	29	28	24	0	24	12	17	2331	1233	4008	4778	5030	2564	2544	995	3030	98	93	89	97	97	98	93	79	98	94
7/25	8	9	11	41	15c	4	8	56c	8	2339	1243	4019	4817	5045c	2568	2552	1051c	3039	98	94	89	98	97	98	94	83	98	95
7/26	7	6	2	20	13	0	2	8	7	2346	1249	4021	4837	5058	2568	2554	1059	3048	98	94	89	98	97	98	94	84	98	95
7/27	7	2	3	4	18	0c	18	49	8	2353	1251	4023	4841	5075	2568c	2572	1108	3053	99	94	99	99	99	98	94	88	98	96
7/28	3	4	7	6	10c	0	35	18	9	2366	1255	4031	4847	5085c	2568	2607	1126	3062	99	95	99	99	99	98	96	89	99	97
7/29	8	10	11	5	13	1	36	36c	4	2384	1265	4042	4852	5088	2670	2643	1152c	3086	99	95	99	99	99	98	97	92	99	97
7/30	6c	4	5	2	23	0	9	14	6	2370c	1269	4047	4854	5120	2570	2651	1175	3073	99	95	100	99	99	98	97	93	98	98
7/31	1	1	0c	1	6	14	2	24	0	2370	1270	4047c	4858	5126	2584	2653	1199	3073	99	95	100	99	99	99	97	95	99	98
8/01	2	0	5	4	5c	6	6c	8c	0	2372	1270	4051	4880	5131c	2590	2659c	1207c	3073	99	95	100	99	99	99	98	96	99	98
8/02	3c	1c	0	3	4	8	6	6	15	2375c	1271c	4051	4883	5135	2599	2665	1213	3087	100	95	100	99	99	100	98	96	99	98
8/03	3	2	4	9	6	4c	6	12	2c	2378	1272	4055	4872	5142	2602c	2671	1224	3089a	100	95	100	99	99	100	98	97	99	99
8/04	5c	8	0c	11	3c	1	2	10	0	2383c	1281	4055a	4884	5148c	2603	2672	1234	3089	100	96	100	100	99	100	98	98	99	99
8/05	2	0c	0	3	3	0	1	0c	0	2385	1281c	4058	4887	5148	2603	2673	1234c	3089	100	96	100	100	99	100	98	98	99	99
8/06	0	4	3	4	7	3	23c	2	4c	2385	1285	4058	4891	5155	2608	2697c	1236	3083c	100	97	100	100	99	100	99	98	100	99
8/07	0	6	1c	0	18	2c	6	2	0	2385	1280	4058c	4891	5174	2608a	2703	1238	3093	100	97	100	100	100	100	99	98	100	99
8/08	0	0c	0	0c	3c	0	0	5c	2	2385	1280c	4059	4891c	5177c	2608	2703	1243c	3095	100	97	100	100	100	100	99	98	100	99
8/09	0c	0	2	2	3	2c	4	2	3	2385c	1280	4062	4893	5180	2610c	2707	1245	3099	100	97	100	100	100	100	99	99	100	99
8/10	0	3c	0	2	4c	0	2c	3	0	2385	1328	4062	4895	5184c	2610	2708c	1248	3098	100	100	100	100	100	100	100	99	100	100
8/11	0	1	0c	0	3	0	2	4	2c	2385	1327	4062a	4895	5187	2610	2710	1252	3100c	100	100	100	100	100	100	100	99	100	100
8/12	0	0c	0	0	2c	0c	4	3c	6	2385	1327c	4062	4895	5189c	2610c	2714	1258c	3106	100	100	100	100	100	100	100	99	100	100
8/13	0c	0	0c	0c	0	0	0c	2	0	2385c	1327	4062c	4895a	5189	2610	2714c	1257	3106	100	100	100	100	100	100	100	100	100	100
8/14	0	0	2	0	0	0	0	0c	0a	2385	1327	4063	4895	5189	2610	2714	1257c	3106a	100	100	100	100	100	100	100	100	100	100
8/15	0	0c	2c	4	0c	0c	2	2	0	2385	1327a	4066a	4899	5189c	2610c	2716	1258	3108	100	100	100	100	100	100	100	100	100	100
8/16	0c	0	0	1	0	0	2c	0	0	2385c	1327	4066	4900	5189	2610	2718c	1258	3108	100	100	100	100	100	100	100	100	100	100
8/17	0	0	0	0c	0	0	0	2	0c	2385	1327	4068	4900c	5189	2610	2718	1260	3108c	100	100	100	100	100	100	100	100	100	100
8/18	2	0	0c	0	0a	0a	0	2	0	2387	1327	4068c	4900	5189c	2610c	2718	1262	3108	100	100	100	100	100	100	100	100	100	100
8/19	0	0c	0	0c	0	0	0	0c	0	2387	1327c	4068	4900c	5189	2610	2718	1252c	3108	100	100	100	100	100	100	100	100	100	100
8/20	0c	0	0	0	0c	0	0c	0	0a	2387a	1327	4068	4900	5189c	2610	2718c	1262	3108c	100	100	100	100	100	100	100	100	100	100
8/21	0	0	0c	0c	0	0	0	0	0	2387	1327	4068c	4900c	5189	2610	2718	1262	3108	100	100	100	100	100	100	100	100	100	100
8/22	0	0c	0	0	0	0	2	0	0	2387	1327c	4068	4900	5189	2610	2720	1262	3108	100	100	100	100	100	100	100	100	100	100
8/23	0c	0	0	0	0	0a	0	0	0	2387c	1327	4068	4900	5189	2610c	2720	1262	3108	100	100	100	100	100	100	100	100	100	100
8/24	0	0	0	0c	0	0	0	0	0c	2387	1327	4068	4900c	5189	2610	2720	1262	3108c	100	100	100	100	100	100	100	100	100	100
8/25	0	0	0c	0	0	0	0	0	0	2387	1327	4068c	4900	5189	2610	2720	1262	3108	100	100	100	100	100	100	100	100	100	100
8/26	0	0c	0	0	0	0c	0	0c	0	2387	1327c	4068	4900	5189	2610c	2720	1262c	3108	100	100	100	100	100	100	100	100	100	100
8/27	0c	0	0	0c	0c	0	2c	0	0a	2387c	1327	4068	4800c	5189c	2610	2722c	1262	3108c	100	100	100	100	100	100	100	100	100	100
8/28	0	0	0c	0	0	0	0	0	0	2387	1327	4068c	4900	5189	2610	2722	1262	3108	100	100	100	100	100	100	100	100	100	100
8/29	0	0c	0	0	0	0c	0	0	0	2387	1327c	4900	5189	2610c	2722	1262	3108	100	100	100	100	100	100	100	100	100	100	100
8/30	0c	0	0	0	0	0	0	0	0a	2387c	1327	4900	4900	5189	2610c	2722	1262	3108	100	100	100	100	100	100	100	100	100	100
8/31	0	0	0	0c	0	0	0	0	0a	2387	4900c	4900	4900	5189	2610	2722	1262	3108c	100	100	100	100	100	100	100	100	100	100
9/01	0	0	0	0	0	0	0	0	0	2387	4900	4900	4900	5189	2610	2722	1262	3108c	100	100	100	100	100	100	100	100	100	100
9/02	0	0	0	0	0	0	0	0	0	2387	4900	4900	4900	5189	2610	2722	1262	3108c	100	100	100	100	100	100	100	100	100	100
9/03	0c	0	0	0c	0	0	0	0	0	2387c	4900c	4900c	4900c	5189	2610	2722	1262	3108c	100	100	100	100	100	100	100	100	100	100
9/04	0	0	0	0	0	0	0	0	0	2387	4900	4900	4900	5189	2610	2722	1262	3108	100	100	100	100	100	100	100	100	100	100
9/05	0	0	0	0	0	0	0	0	0	2387	4900	4900	4900	5189	2610	2722	1262	3108	100	100								

Table 22. Middle Kuskokwim River, District 2, commercial salmon harvest and fishing effort by period, 1992.

PERIOD	DATE	HOURS	PERMITS	CHINOOK		SOCKEYE		COHO		PINK		CHUM	
				NUMBER	CPUE	NUMBER	CPUE	NUMBER	CPUE	NUMBER	CPUE	NUMBER	CPUE
01	06/25	8	16	1,021	7.98	930	7.27					3,916	30.59
02	06/29	8	15	815	9.06	525	5.83					2,439	27.10
03	07/06	8	9	310	4.31	486	6.75			5	.07	2,840	39.44
04	08/03	8	17	27	.20	317	2.33	5,106	37.54			1,440	10.59
05	08/06	6	17	11	.11	1	.01	3,832	37.57			536	5.25
06	08/11	6	19	7	.06	1	.01	3,837	33.66			136	1.19
07	08/14	6	21			1	.01	8,216	65.21			70	.56
08	08/17	6	16					5,685	59.22			24	.25
09	08/20	6	14	1	.01			2,682	31.93			43	.51
10	08/24	6	14	3	.04	1	.01	2,827	33.65			17	.20
11	08/27	6	11					1,238	18.76			5	.08
12	08/31	6	11					1,153	17.47			1	.02
TOTALS		78	22	2,195	1.28	2,262	1.32	34,576	39.56	5		11,467	20.15

Table 23. Mean tidal CPUE for ooho salmon catches in the Bethel Test fishery, 1984-1992.

Date	Daily CPUE									Cumulative CPUE						Percentage Passage						Me B4								
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1984	1985	1986	1987	1988	1989	1990	1991	1992	1984	1985	1986		1987	1988	1989	1990	1991	1992		
7/13	0	0	0	0	2	2	0	0c	0	2c	0	0	0	2	2	0	0c	0	0	0	0	0	0	0	0	0	0	0		
7/14	0	0	0	0	0c	2c	0c	0	0	2c	2	0	0	0	2c	4c	0c	0	0	0	0	0	0	0	0	0	0	0		
7/15	0	0	2	0c	0	2	0	0	0	0	2	0	2	0c	2	0	0	0	0	0	0	0	0	0	0	0	0	0		
7/16	2c	0	2	0	0	0	0	0	0	2	4c	0	4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0		
7/17	2	2	2	0	4	2	0	0	1	8	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7/18	3	0	2	0	0c	4c	0	0c	7	9	2	0	0	0	0c	12c	0	0c	18	0	0	0	0	0	0	0	0	1		
7/19	7	2	4	0	0	0	4	2	9	16	3	11	0	0	6	12	4	2	27	0	0	0	0	0	0	0	0	0		
7/20	7	4	4	0c	4	10	13	0	5	23	7	15	0c	10	22	17	0	0	31	1	0	0	0	0	0	1	1	1		
7/21	5	6	10	7	2c	7	10	7	3	28	12	25	0	12c	30	27	15	34	1	1	1	0	0	1	1	1	1	1		
7/22	5	20	8	7	4	18	7	4c	7	33	33	33	7	18	46	34	19c	40	1	2	1	0	0	2	2	2	2	2		
7/23	12	0	21	2	0	0	3	0	2	45	33	54	9	16	51	37	25	43	1	2	1	0	0	2	2	1	1	1		
7/24	9	2	54	0	12	0	8	4	4c	54	35	107	9	28	57	46	29	47c	2	2	2	0	1	2	2	2	2	2		
7/25	16	24	29	0	16c	4	2	7c	9	88	58	138	9	44c	01	47	38c	55	2	3	3	0	1	2	2	2	2	2		
7/26	12	21	26	0	8	0	2	2	11	81	80	163	9	53	61	49	38	66	2	4	4	0	2	2	2	2	2	2		
7/27	18	0	74	2	44	2c	10	23	10	99	88	230	11	97	83c	69	01	76	3	5	5	1	3	2	2	2	2	2		
7/28	29	16	20	2	72c	9	43	34	11	128	103	280	14	169c	72	102	95	88	4	0	0	1	5	3	4	4	3	3		
7/29	60	40	04	12	28	8	35	42c	23	188	143	320	25	197	80	130	137c	110	6	8	7	1	5	3	3	3	3	3		
7/30	201c	14	54	5	43	37	12	71	25	390c	157	374	30	239	117	148	208	135	12	9	8	1	7	4	0	0	0	0	0	
7/31	154	29	31c	5	75	343	10	64	35	544	188	405c	35	314	460	158	271	170	17	10	9	2	8	18	13	5	5	1		
8/01	179	50c	323	13	43c	218	20c	42c	32	722	237c	727	47	358c	078	184c	314c	202	22	13	16	2	10	26	10	26	10	2	1	
8/02	104c	37	101	40	32	447	22	24	17	825c	274	828	87	390	1125	205	337	219	25	15	19	4	11	43	8	10	7	11		
8/03	312	69	404	93	79	78c	21	118	50c	1139	343	1233	180	468	1203c	228	455	299c	35	19	28	0	14	48	0	0	0	0	0	
8/04	45	0	419c	69	42c	24	54	124	11	1184	402	1852c	249	511c	1227	280	579	280	36	22	37	11	15	47	11	28	10	2	1	
8/05	78	47c	253	27	45	159	05	10c	11	1202	450c	1905	278	558	1396	345	889c	290	38	25	43	12	15	53	14	35	10	2	1	
8/06	109c	92	249	42	300	348	78c	32	57c	1430c	542	2154	318	850	1734	423c	621	347c	44	30	48	14	25	80	17	38	10	3	0	
8/07	45	182	210c	103	370	185c	50	20	58	1475	724	2363c	421	1220	1929c	473	641	404	46	40	53	19	36	74	19	38	13	3	0	
8/08	108	86c	86	53c	183c	54	73	04c	92	1583	809c	2450	475c	1409c	1983	540	705c	498	48	45	55	21	41	76	22	43	15	4	1	
8/09	70c	114	180	34	41	185c	118	43	228	1859c	924	2630	509	1450	2168c	664	747	724	50	52	59	23	42	83	27	43	18	4	1	
8/10	55	124	297	43	106c	33	58c	42	686	1715	1047	2927	551	1550c	2202	722c	790	1410	52	59	65	25	45	84	29	46	26	4	1	
8/11	105	218	87c	35	257	111	04	35	422c	1819	1280	3014c	587	1813	2312	780	824	1832c	55	71	67	20	53	88	32	50	60	5	1	
8/12	98	96c	328	189	250c	74c	210	248c	94	1918	1361c	3340	775	2070c	2386c	985	1072c	1825	58	70	75	35	60	91	40	60	60	5	1	
8/13	25c	75	96c	142c	08	24	180c	91	132	1843c	1437	3438c	918c	2138	2410	1176c	1103	2057	59	80	77	41	62	92	47	65	60	0	0	
8/14	24	29	84	348	174	17	160	40c	128c	1985	1488	3501	1265	2312	2427	1342	1203c	2185c	60	82	78	56	67	93	54	71	74	0	0	
8/15	113	84c	180c	205	185c	2c	268	30	41	2080	1550c	3681c	1470	2497c	2429c	1600	1239	2225	63	87	82	65	73	93	64	73	79	70	0	
8/16	10c	68	55	121	58	0	108c	20	80	2080c	1619	3735	1591	2555	2428	1709c	1258	2308	64	80	84	71	74	93	69	78	83	75	0	
8/17	279	19	48	107c	152	15	91	25	78c	2368	1637	3784	1689c	2706	2444	1798	1284	2383c	72	91	85	76	79	93	72	78	83	78	0	
8/18	304	23	101c	52	112c	4c	86	88	41	2672	1601	3885c	1751	2818c	2448c	1884	1371	2424	81	93	87	78	82	93	78	83	86	81	0	
8/19	204	8c	91	19c	35	0	01	35c	34	2878	1689c	3978	1770c	2853	2455	1945	1406c	2458	87	83	89	79	83	94	78	83	88	84	0	
8/20	8c	12	30	9	41c	14	83c	20	137c	2882c	1880	4008	1779	2894c	2468	2029c	1433	2595c	88	94	90	79	84	94	82	87	84	8	0	
8/21	28	17	84c	16c	10	35	39	38	17	2910	1898	4100c	1795c	2903	2503	2067	1470	2612	89	95	92	80	84	95	83	89	94	8	0	
8/22	110	0c	52	8	74	22	69	20	42	3020	1698c	4152	1804	2978	2525	2130	1491	2654	92	95	93	80	87	96	86	91	98	8	0	
8/23	4c	17	130	21	68	11c	131	10	53	3024c	1715	4288	1825	3048	2536c	2267	1501	2707	82	96	96	81	89	87	91	91	98	80	0	
8/24	8	0	100	26c	108	3	40	26	4c	3032	1723	4389	1850c	3154	2539	2307	1526	2711c	82	96	98	82	92	87	93	93	98	82	0	
8/25	33	12	28c	8	121	20	61	14	21	3085	1734	4414c	1859	3275	2564	2388	1540	2732	93	97	99	83	85	98	95	94	99	84	0	
8/26	26	0c	43	19	88	10c	56	42c	13	3091	1734c	4457	1878	3364	2574c	2424	1583c	2745	94	97	100	84	98	98	98	98	99	84	0	
8/27	24c	10	10	32c	64c	17	39c	17	9c	3115c	1744	4467	1910c	3428c	2591	2483c	1600	2754c	95	97	100	85	100	99	99	98	99	86	0	
8/28	14	34	4c	50	9	17	2	18	4	3128	1778	4471c	1960	3437	2609	2485	1618	2758	85	99	100	87	100	99	99	97	99	87	0	
8/29	48	12c	0	35	4	5c	13	18	2	3177	1790c		1995	3441	2615c	2477	1638	2760	97	100	100	89	100	100	100	100	100	87	0	
8/30	21c	0		48	2	8	0	0	5	3198c	1790		2043		2610	2485	1645	2765	97	100		91	100	100	100	100	100	100	88	0
8/31	24			0c	c	7	0	0	4c	3222			2043c	0	2624	2485	1645	2770c	98			91	100	100	100	100	100	100	88	0
9/01	5		0	20	c					3228			2063						98			92							88	0
9/02	11			23						3239			2088						99			93							88	0
9/03	7c			27c						3246c			2113c						99			94							88	0
9/04	5			23						3251			2137						99			95							88	0
9/05	29			22						3280			2189						100			96							88	0
9/06	7c			24						3287c			2183																	

Table 24. Quinhagak, District 4, commercial salmon harvest and fishing effort by period, 1992.

PERIOD	DATE	HOURS	PERMITS	CHINOOK		SOCKEYE		COHO		PINK		CHUM	
				NUMBER	CPUE	NUMBER	CPUE	NUMBER	CPUE	NUMBER	CPUE	NUMBER	CPUE
01	06/15	12	173	3,914	1.89	440	.21					2,821	1.36
02	06/18	12	78	1,942	2.07	574	.61			2		1,629	1.74
03	06/24	12	122	2,798	1.91	1,992	1.36					5,332	3.64
04	06/29	12	77	1,696	1.84	3,940	4.26					4,666	5.05
05	07/01	12	125	1,888	1.26	8,625	5.75					10,722	7.15
06	07/03	12	177	1,479	.70	3,555	1.67			144	.07	5,724	2.69
07	07/06-07	24	89	1,008	.47	8,381	3.92			464	.22	8,484	3.97
08	07/08	12	111	656	.49	4,001	3.00			982	.74	6,350	4.77
09	07/10	12	111	334	.25	7,583	5.69			348	.26	5,221	3.92
10	07/13	12	149	419	.23	6,867	3.84			2,699	1.51	5,112	2.86
11	07/15	12	187	352	.16	4,763	2.12			4,959	2.21	4,668	2.08
12	07/17	12	136	200	.12	3,302	2.02	10	.01	5,052	3.09	3,842	2.35
13	07/20	12	87	89	.09	1,252	1.20	42	.04	6,838	6.55	2,127	2.04
14	07/22	12	80	64	.07	1,298	1.35	131	.14	8,501	8.86	1,812	1.89
15	07/24	12	69	52	.06	1,138	1.37	400	.48	8,843	10.68	1,406	1.70
16	07/27	12	60	78	.11	802	1.11	711	.99	8,983	12.48	1,085	1.51
17	07/29	12	60	43	.06	997	1.38	1,336	1.86	8,030	11.15	868	1.21
18	07/31	12	56	35	.05	429	.64	1,281	1.91	4,900	7.29	468	.70
19	08/03	12	39	16	.03	127	.27	1,612	3.44	1,517	3.24	220	.47
20	08/05	12	55	14	.02	333	.50	3,514	5.32	1,955	2.96	254	.38
21	08/07	12	66	27	.03	122	.15	5,243	6.62			185	.23
22	08/10	12	55	10	.02	20	.03	8,522	12.91			53	.08
23	08/12	12	107	16	.01	116	.09	10,458	8.14			109	.08
24	08/14	12	63	16	.02	145	.19	7,883	10.43			166	.22
25	08/17	12	65	21	.03	39	.05	7,030	9.01			30	.04
26	08/19	12	76	6	.01	9	.01	9,959	10.92			6	.01
27	08/21	12	93	10	.01	23	.02	7,631	6.84			7	.01
28	08/24	12	66	4	.01	18	.02	5,394	6.81			8	.01
29	08/26	12	79	4		16	.02	6,505	6.86			2	
30	08/28	12	58	3		13	.02	4,684	6.73			5	.01
31	08/31	12	36	3	.01	3	.01	1,772	4.10			1	
32	09/02	12	27			5	.02	1,160	3.58				
33	09/04	12	19			1		1,126	4.94				
34	09/07	12	0										
						NO BUYER - NO COMMERCIAL FISHING							
TOTALS		420	349	17,197	.12	60,929	.43	86,404	.61	62,217	.45	73,383	.52

Table 25. Goodnews Bay, District 5, commercial salmon harvest and fishing effort by period, 1992.

PERIOD	DATE	HOURS	PERMITS	CHINOOK		SOCKEYE		COHO		PINK		CHUM	
				NUMBER	CPUE	NUMBER	CPUE	NUMBER	CPUE	NUMBER	CPUE	NUMBER	CPUE
01	06/22-06/22	12	29	792	2.28	1,074	3.09			4	.01	2,124	6.10
02	06/25-06/25	12	27	687	2.12	852	2.63					1,818	5.61
03	06/29-06/29	12	32	921	2.40	2,104	5.48			25	.07	2,983	7.77
04	07/02-07/02	12	35	318	.76	3,021	7.19			89	.21	2,276	5.42
05	07/06-07/06	12	36	235	.54	3,352	7.76			249	.58	2,390	5.53
06	07/09-07/10	24	55	143	.11	4,315	3.27			734	.56	2,503	1.90
07	07/13-07/14	24	66	139	.09	5,275	3.33			1,290	.81	1,836	1.16
08	07/16-07/17	24	91	111	.05	4,969	2.28	1		1,937	.61	1,095	.50
09	07/20-07/21	24	60	38	.03	2,338	1.62	7		1,466	1.02	586	.41
10	07/23-07/24	24	57	38	.03	3,966	2.90	16	.01	2,376	1.74	545	.40
11	07/27-07/28	24	32	32	.04	2,903	3.78	73	.10	2,357	3.07	177	.23
12	07/30-07/31	24	35	19	.02	1,982	2.36	146	.17	2,451	2.92	102	.12
13	08/03-08/03	12	29	13	.04	975	2.80	165	.47	937	2.69	52	.15
14	08/06-08/06	12	19	7	.03	382	1.68	458	2.01	649	2.85	18	.08
15	08/10-08/10	12	24	9	.03	286	.99	1,062	3.69	211	.73	2	.01
16	08/14-08/14	12	22	10	.04	382	1.45	2,041	7.73	121	.46	3	.01
17	08/17-08/17	12	27	4	.01	206	.64	2,873	8.87				
18	08/20-08/20	12	26	4	.01	139	.45	1,672	5.36	2	.01	3	.01
19	08/21-08/21	12	25	2	.01	85	.28	1,872	6.24	9	.03		
20	08/24-08/24	12	29	2	.01	196	.56	3,346	9.61			1	
21	08/27-08/27	12	28			118	.35	2,614	7.78	3	.01	2	.01
22	08/28-08/28	12	21			72	.29	1,016	4.03			1	
23	08/31-08/31	12	28	1		69	.21	1,084	3.23			1	
24	09/03-09/03	12	19	3	.01	72	.32	873	3.83				
25	09/04-09/04	12	17			61	.30	556	2.73			2	.01
26	09/07-09/07	12				NO BUYER - NO COMMERCIAL FISHING							
TOTALS		396	111	3,528	.08	39,194	.92	19,875	.47	14,310	.34	18,520	.43

Table 26. Preliminary projections of the 1993 Kuskokwim Area commercial salmon harvests in thousands of fish by species.

Species	Management Region			Total	
	Kuskokwim River	Quinhagak	Goodnews Bay	Kuskokwim Area ^a	
Chinook	19 - 56	9 - 42	3 - 14	31 - 112	
Sockeye	33 - 137	6 - 84	7 - 40	46 - 261	
Coho	196 - 665	27 - 135	8 - 71	231 - 871	
Pink	0 - 0.5 ^b	0 - 0.3 ^b	0 - 0.1	0 - 0.9	
Chum	199 - 1,382	9 - 54	5 - 33	213 - 1,469	
Total	447 - 2,241	51 - 315	23 - 158	521 - 2,717	

- a Except as noted all the projections are based on the previous years (1980-92) catches in all districts.
 b Kuskokwim Area pink salmon display a strong odd-even year cycle. This projection is based on the odd year catch for the previous 10 years.

FIGURES

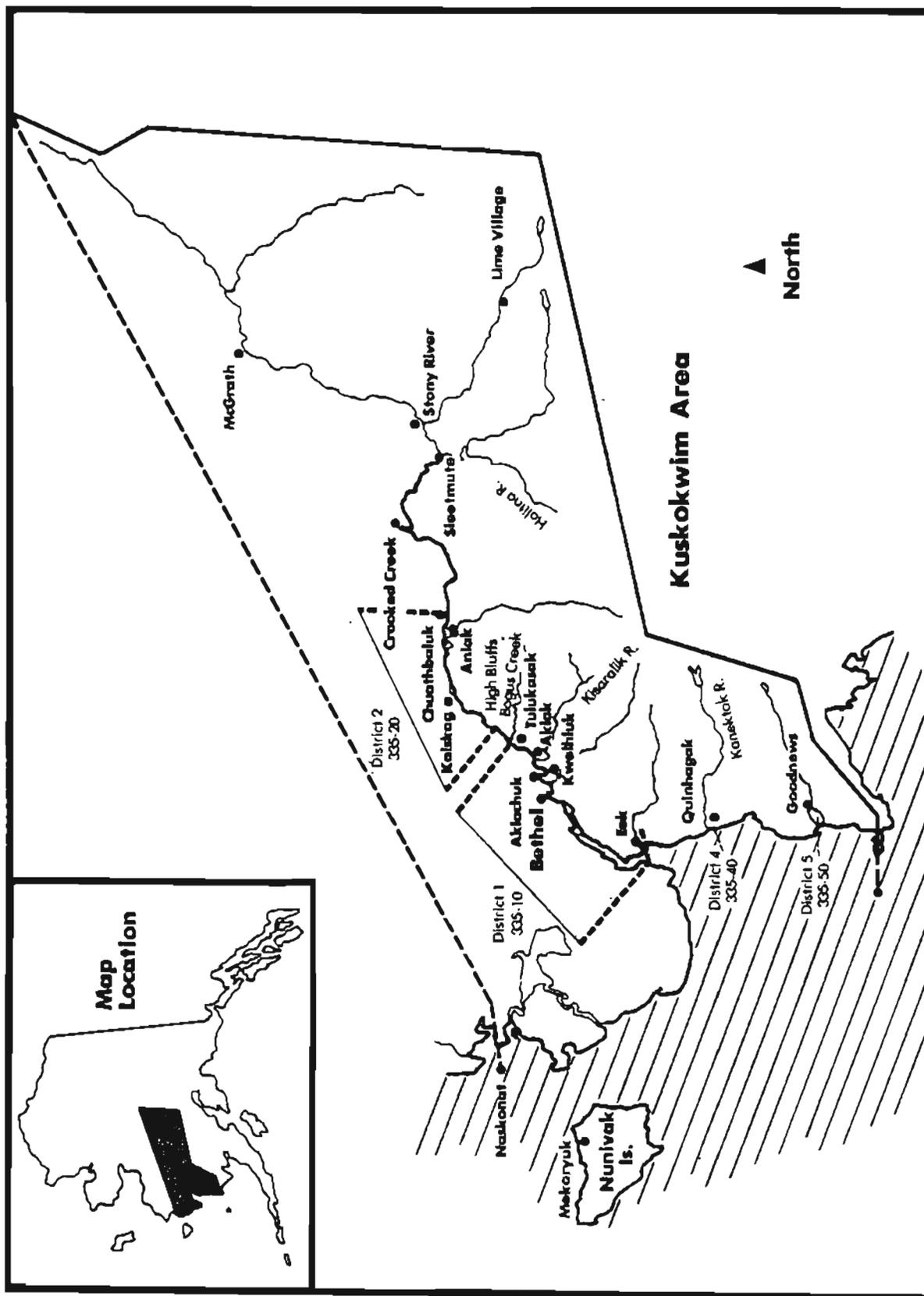


Figure 1. Kuskokwim Area Map.

**Kuskokwim Management Area
District W-1
Kuskokwim River**

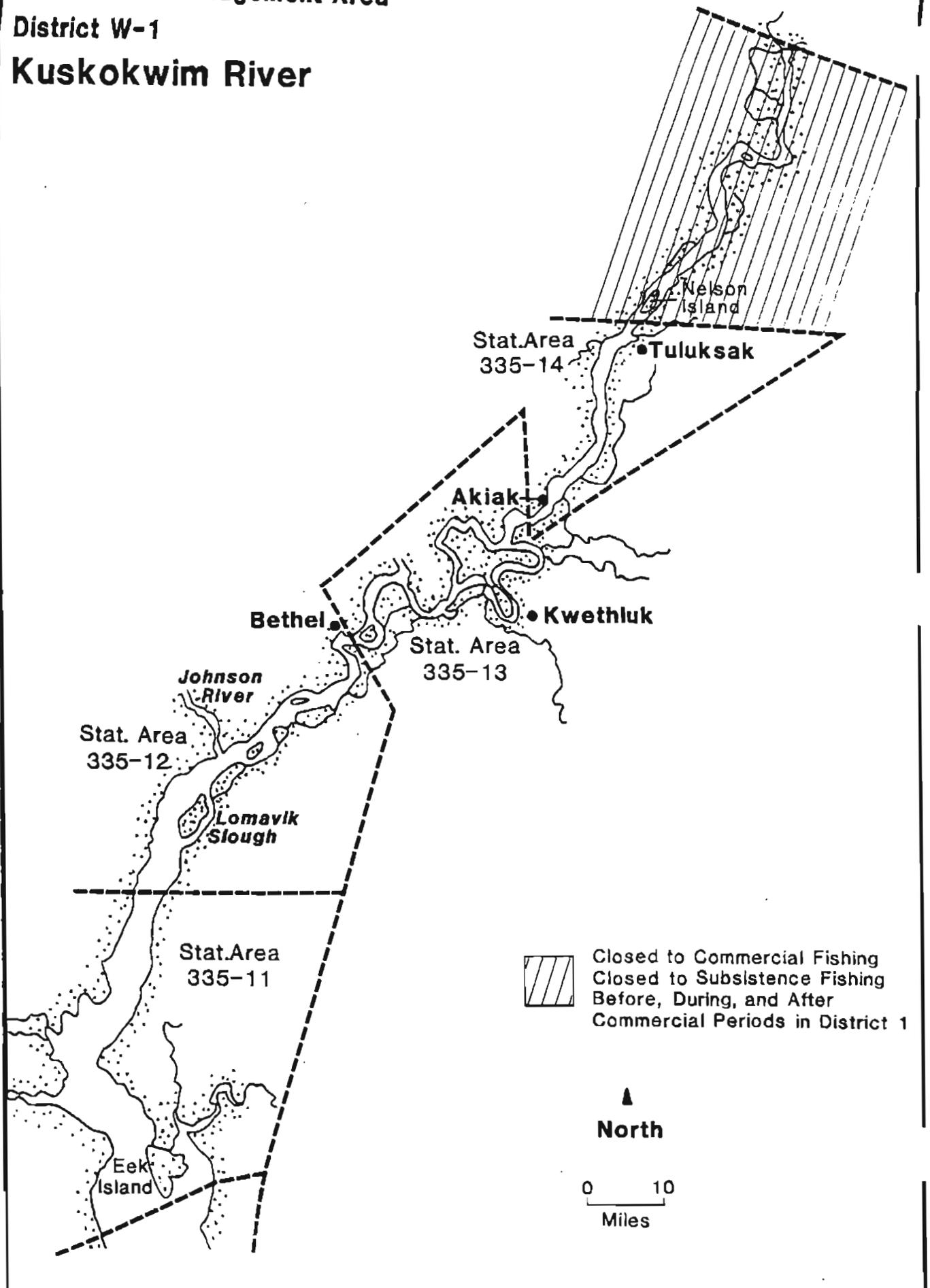


Figure . Kuskokwim Management Area, District W-1

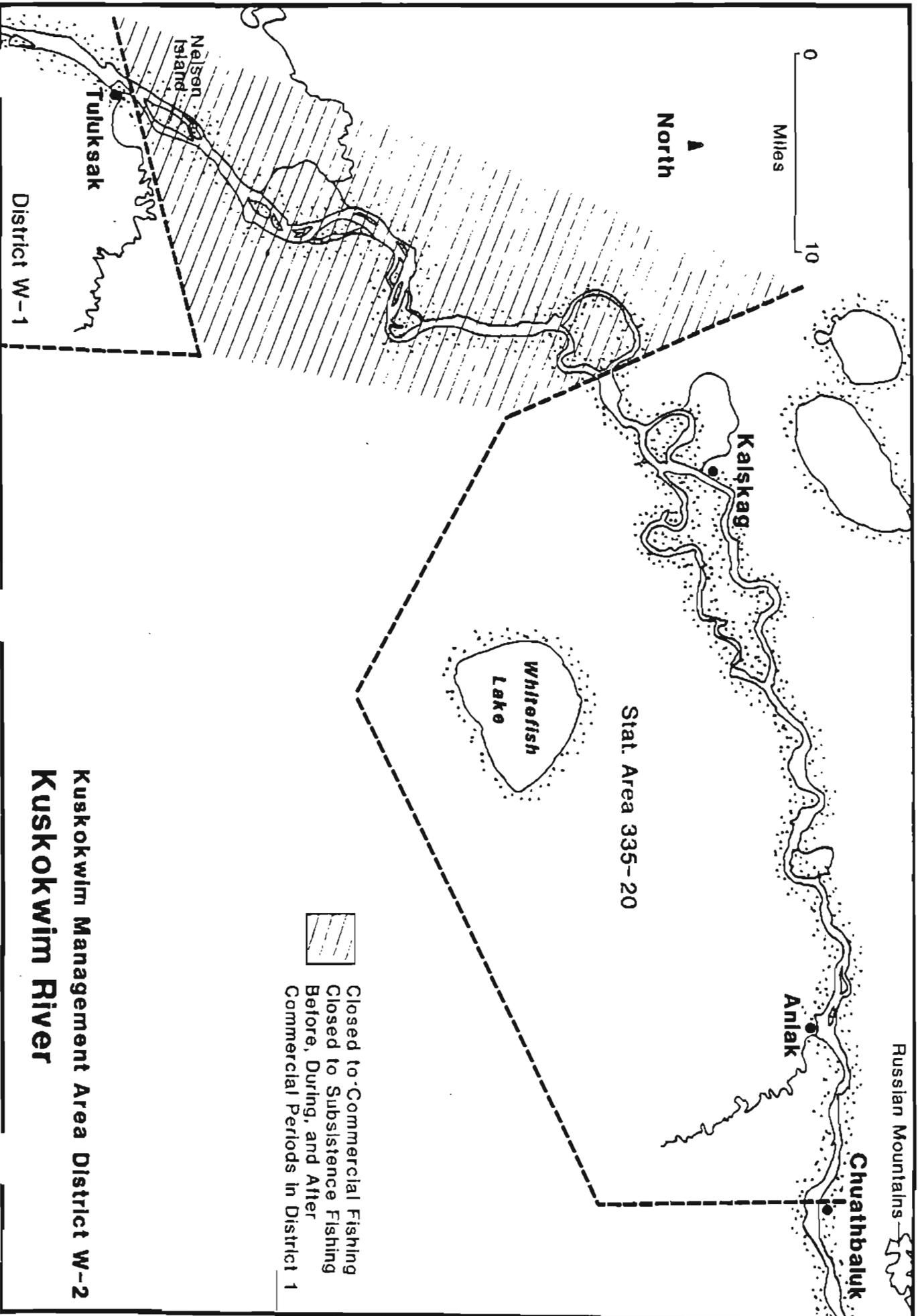


Figure . Kuskokwim Management Area, District W-2

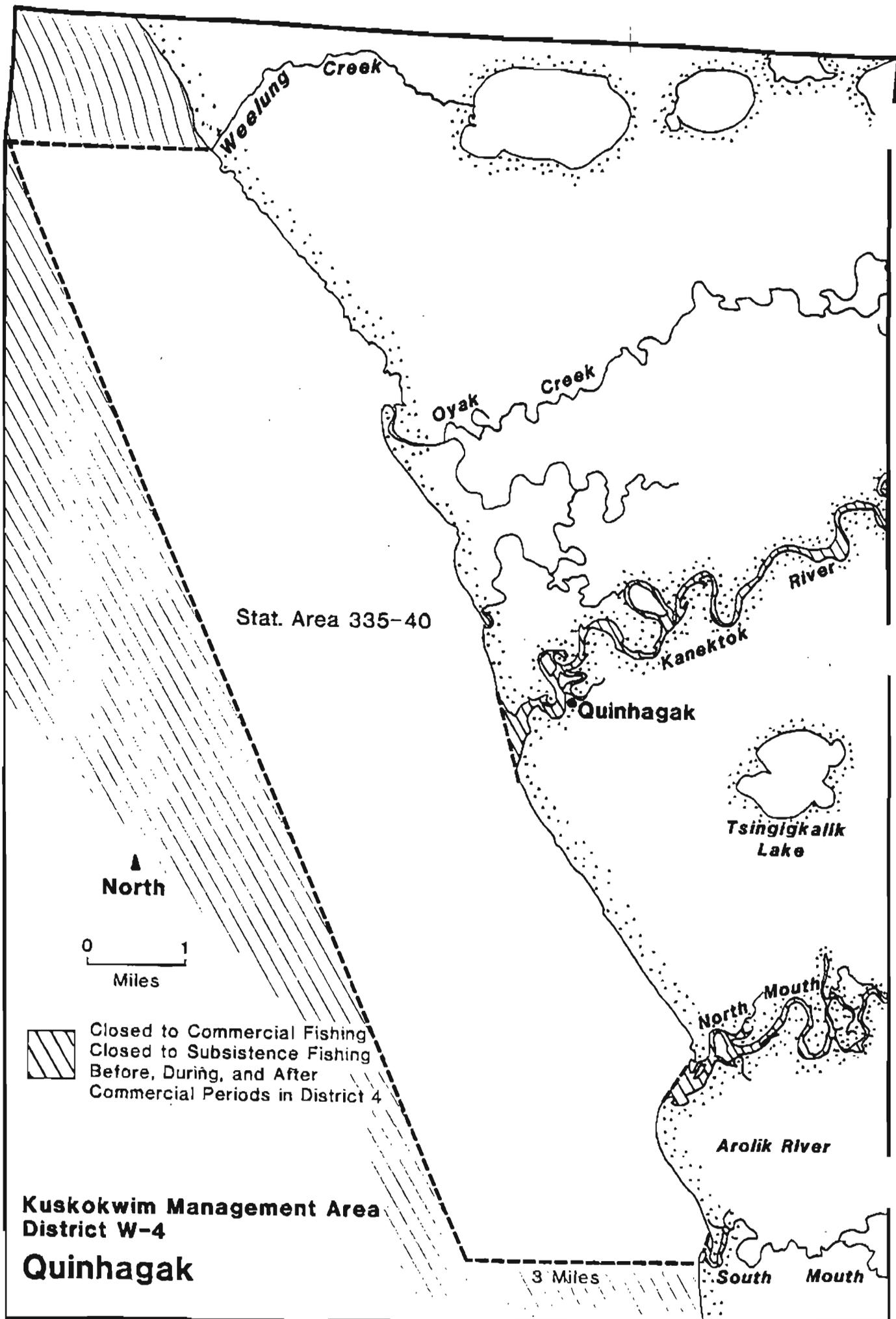


Figure Kuskokwim Management Area District W-4

Kuskokwim Management Area District W-5

Goodnews Bay

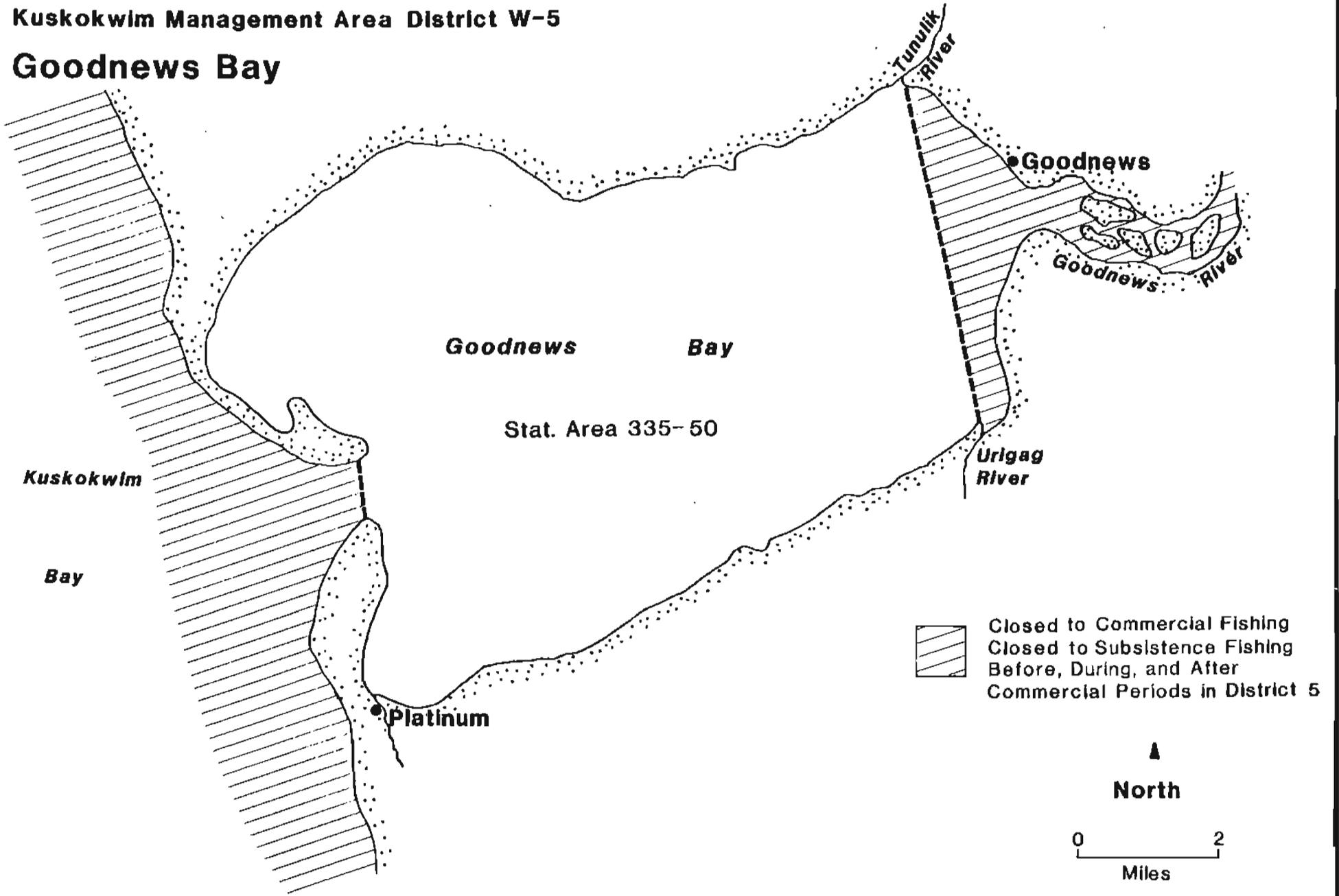


Figure . Kuskokwim Management Area, District W-5

