ELWHA-DUNGENESS BASIN
Water Resource Inventory Area 18

The Dungeness and Elwha rivers are the principal drainages within this basin. The Dungeness River with a total length of 31.9 linear miles and a watershed drainage of 198 square miles provides excellent spawning and rearing characteristics for both anadromous and resident fishes. The river's headwaters originate in the Olympic Mountains within national park boundaries. The mainstem Dungeness originates around the 4,000 foot level between Mount Constance and Mount Deception and then flows northeast to the Strait of Juan de Fuca. The Greywolf River originates in the Needles Range between Mount Deception and Elk Mountain where Cameron Creek and Grand Creek also drain from elevations around 4,000 feet. The mainstem Dungeness flows through a narrow valley and is characterized by many cascades, falls, and rapids. The streambed is comprised principally of large rock material with patch gravel. The Greywolf flows northeast through similar terrain and stream conditions as the upper Dungeness, while in the lower stretch it exhibits a more moderate gradient resulting in an increase in streambed area suitable for anadromous fish use. At RM 15.8 the junction of the Greywolf and Dungeness occurs below which the mainstem Dungeness meanders across a broad valley floor with a gentle gradient. The lower river is predominantly pool-riffle with few rapids and suitable streambed for spawning and rearing of anadromous species.

The Elwha River originates deep in the Olympic National Park from many glaciers and extends into a deep valley between the Bailey Range on the west and the Elk Mountain, Mount Norton, Mount Christie, Mount Scott, and Mount Barnes ranges on the east. Most of the tributary headwaters originate at about the 4,000-foot elevation. Despite the rugged headwater terrain, the river maintains mostly moderate gradient throughout much of its length with excellent pool-riffle areas and occasional cascades and rapids. The Elwha River contains 44.8 linear miles of total stream length and 321 square miles of drainage area, but only 3.4 miles of main river above the mouth are accessible to anadromous species. Two dams exist on the Elwha River. The lower Elwha Dam at RM 4.9 forms Lake Aldwell and the Glaines Dam at RM 13.4 forms Lake Mills.

Thirteen independent streams also flow into the Straits within this basin. Moving westward from Sequim Bay these streams appear in this order: Bell Creek, Gierin Creek, Cassalery Creek, the Dungeness River, then McDonald Creek, Siebert Creek, Bagley Creek, Morse Creek, Lees Creek, Ennis Creek, Peabody Creek, Valley Creek, Tumwater Creek, Dry Creek, and the Elwha River.

PHOTO 18-1. The mouth of the Dungeness River is protected by an extensive sand spit.

Bell, Gierin and Cassalery creeks lie in the flat Sequim Valley east of the Dungeness River and flow generally northeasterly entering the Strait of Juan de Fuca between Sequim Bay and Dungeness Bay. These are short run, drainage type streams dependent on irrigation and groundwater run-off for continuous year-round flows. Bell and Gierin creeks have the potential for coho production; however, none have been observed here.

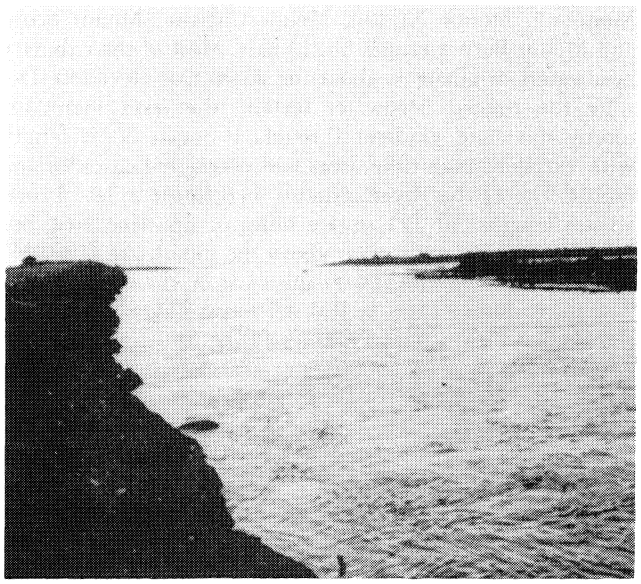


PHOTO 18-2. The mouth of the Elwha River has one of the most limited estuaries in Puget Sound.

The ten independent streams lying between the Dungeness River and Elwha River flow northward into the Strait of Juan de Fuca from the foothills of the Olympic Mountains. Most of these streams contain steep gradients in the upper watersheds with many cascades and falls which are impassable to anadromous fish. Although each stream contains only a few miles of fish production area, the combined total accessible area for these streams is approximately 34.0 linear miles. The combined Elwha-Dungeness drainage contains over 1,025 linear miles of rivers, tributaries, and independent streams.

Fish Inventory and Distribution

Four species of Pacific salmon; chinook, coho, pink, and chum, currently utilize the Elwha-Dungeness basin drainages. A few sockeye have been recorded in the Elwha and Dungeness rivers; however, their numbers are presently insignificant.

Chinook Salmon — In this basin chinook salmon utilize the mainstem Dungeness and its one major fork, the Greywolf River. Two distinct runs inhabit these drainages, the spring chinook and fall chinook.

In the Elwha River the lower 3.4 miles of mainstem below the diversion dam is all the area that is accessible for chinook spawning and rearing. The Elwha River presently contains only fall chinook, but it once sustained a significant spring chinook run into Little River prior to construction of the lower Elwha Dam in 1910. Little River flows westward entering the Elwha immediately above Lake Aldwell. With this prime spring chinook area blocked, the run has diminished and only a remnant run exists today. Few chinook are known to inhabit any of the independent streams of this basin.

Juvenile chinook rear in the total accessible length of the mainstems of the Dungeness and Greywolf rivers plus the tributary streams inhabited by spawning adults. They are also present throughout the total accessible portions of the lower Elwha River and side channels below the barrier dam.

The adult spring chinook migration into the Dungeness River begins in mid-May and continues through July (Table 18-1). The summer-fall run of chinook begins its upstream migration in late July and continues until the end of September. In the Elwha the summer-fall chinook spawning migration enters the river in early August and extends into the first part of November. Fall chinook fry, following emergence from the gravel, rear throughout these rivers for about three months prior to seaward migration. A small portion of these juveniles rear for longer periods with some extending into the winter months; however, the major out-migration coincides with the spring run-off flows between March and June. The spring chinook fry, following emergence from the gravel, normally reside in the Dungeness system until the following year before being triggered by high spring run-off flows to move seaward.

Adult spring chinook observations at the Dungeness Hatchery and Greywolf system indicate that annual escapement has ranged from 150 to 600 fish, averaging 250 per year from 1966 to 1971 (Table 18-2). Although the Dungeness Hatchery has been artificially propagating spring chinook in this river for over three decades, the runs have not increased appreciably.

The summer-fall race of chinook spawners handled at the Dungeness Hatchery rack and those counted on the spawning grounds in the lower mainstem, where the heaviest concentration is located in the lower three miles, shows annual escapements ranging from 100 to 400 fish, averaging 200 per year since 1966. This summer-fall run was artificially stimulated in the lower river and has only been increasing since 1963.

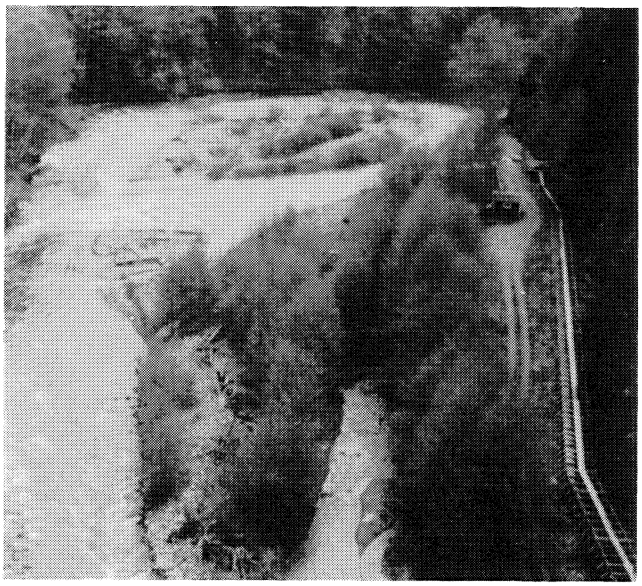


PHOTO 18-3. Spring chinook spawning area on the Dungeness River in the vicinity of the hatchery water intake.

Elwha summer-fall chinook escapements in the lower 3.5 miles of river range from 350 to 800 adults, averaging 500 during the 1966-1971 period.

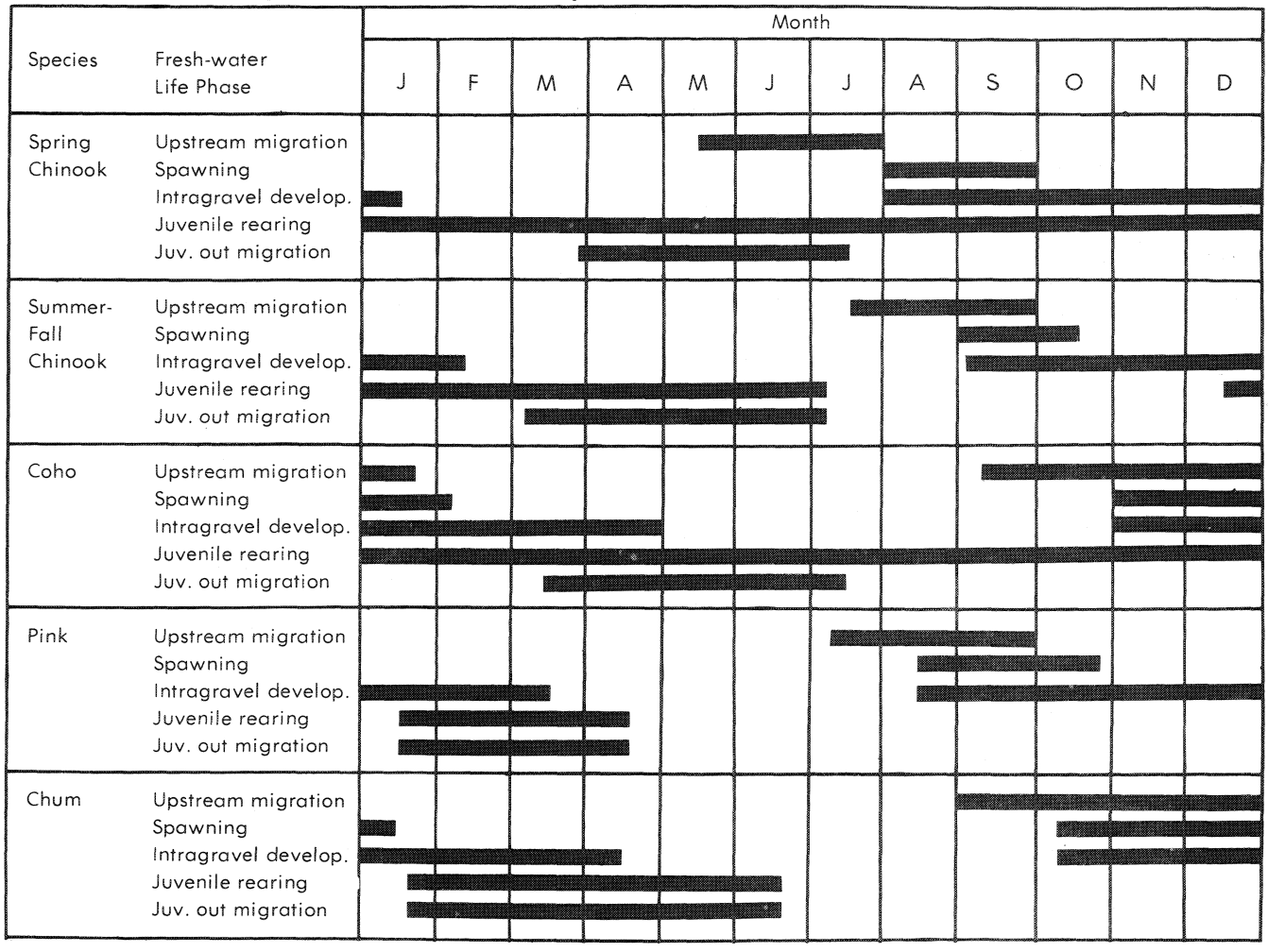
Coho Salmon — All accessible tributaries and side channel spawning areas within the mainstem Dungeness River and Elwha River, as well as the independent streams in this basin, are utilized by coho salmon. Streams known to be of particular importance include McDonald, Morse, and Siebert creeks; the fringe perimeters and side channels that comprise much of the mainstem Dungeness River, Greywolf River, and Gold Creek tributaries, and the mainstem Elwha River with the Elwha Springs area in the lower valley, which is composed mainly of overflow channels. Minor coho production occurs in the other independent streams of the basin. Dry, Tumwater, Valley, and Ennis creeks all flow through residential and industrial areas within the city limits of Port Angeles, which has confined parts of their lower reaches into extensive culverts.

Coho spawning migrations are generally later in this basin than in the other Puget Sound drainages. In the Dungeness and Elwha rivers this upstream migration starts in mid-September and extends into mid-December. Major movement doesn't start until after mid-October. The small independent streams contain late runs that normally don't occur until after these watersheds have swelled with fall and winter rains.

PHOTO 18-4. Morse Creek is typical of the small independent streams in this area.

Spawning commences by mid-November and continues until the last week of January. Inter-gravel egg development takes place into March when the fry begin emerging from the gravel. These juveniles generally remain in the system

Timing of salmon fresh-water life phases in Elwha-Dungeness Basins WRIA 18



for more than a year before moving seaward. However, population densities, low water conditions, and lack of food organisms in these colder waters can force many juvenile coho to move into the lower rivers and estuaries during the first summer or fall season. Out-migration of juveniles normally occurs in their second year of freshwater life with the major migration in late February to mid-April and dwindles into mid-July.

Based on stream surveys and the total available rearing area in the basin, it is estimated that coho escapements varied from 2,000 to 23,000 for the period 1966 to 1971, averaging about 10,000 annually.

Pink Salmon — Odd year runs of pink salmon flourish in both the Dungeness and Elwha river systems. The Dungeness stock also exhibits the earliest spawning migration of all Puget Sound rivers, ascending the river by July 10th. Production is composed of two distinct segments separated by timing and area of spawning. The early, upper river migration peaks in late July with spawning during late August and early September. These fish return to the upper Dungeness, Greywolf, and mainstem Dungeness rivers above RM 10.

Late run pink salmon enter from early August through mid-September and mature in pools in the lower main river. The majority of spawning occurs during the period from September 15 through October 20 in the lower four miles of the main river. Peak spawning is normally about October 1.

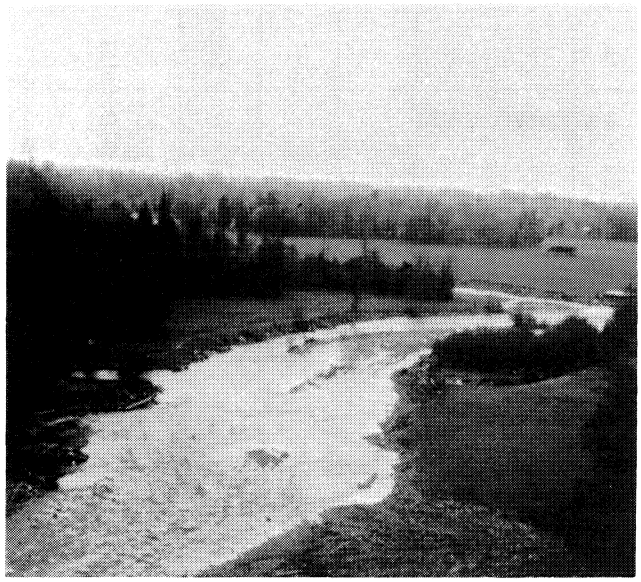


PHOTO 18-5. Heavy pink salmon spawning occurs in the lower Dungeness River.

Virtually the entire escapement spawns in mainstem areas of the lower and upper Dungeness and its Greywolf River branch.

Elwha pinks spawn in all suitable gravel areas accessible below the lower Elwha Dam at RM 3.5. A few fish utilize the small left bank tributary (Elwha Springs) near the head of tidewater. Timing is slightly later than the lower Dungeness run by perhaps a week to ten days. Fish enter in late August to September and spawn from late August through most of October.

Morse Creek supports a minor pink salmon run that spawns in its lower two miles. Timing of spawning is late September through mid-October.

The Dungeness-Elwha basin pink populations have demonstrated the wide fluctuations in abundance typical of this species. The Dungeness escapement reached 400,000 on the huge 1963 return and was at a probable all time low ebb of 14,400 in 1969. The spawning population has averaged 52,000 during the past three cycles. Elwha pink salmon escapements have averaged 12,000 spawners since 1959 and have included the wide extremes of 1,500 in 1969 to 40,000 in 1963. Morse Creek escapement has rnaged from approximately 50 to 300 spawners in recent years. The average for the entire Elwha-Dungeness basin has been 57,000 for the period 1967-1971 (Table 18-2).

Chum Salmon — The Elwha River contains a good run of chum salmon; however, only a minor run occurs in the Dungeness River. This species utilizes the side channel splits and lower mainstems of these two river systems for spawning. Only a few chums are known to inhabit McDonald, Morse, Siebert, and Ennis creeks. Two distinct runs of chum salmon occur in the basin with the early run utilizing the Dungeness River and the late run inhabiting the Elwha River. There is a distinct probability that a late chum run occurs in the Dungeness River; however, due to the high, off-colored waters found in this system during December and January, no observations have been made here. It is suspected that this late run is small, consisting of less than 100 fish.

The early chum run is also quite small, spawning in the lower two miles of mainstem river from late September to early October. The timing of this run is similar to that of early chums in Sequim Bay and Discovery Bay.

In the Elwha River approximately 1,500 late-run chums spawn over a period from late November through the month of December, throughout the lower accessible area below the diversion dam. Small numbers of late-run chum salmon are also found in McDonald, Siebert, Morse, and Ennis creeks.

Salmon Production

A six-year base period, 1966 through 1971, has been selected for the presentation of all salmon production figures. This span of years is used for both naturally and artificially produced fish, as well as escapement and harvest figures.

The Dungeness State Salmon Hatchery located at RM 10.5 on the Dungeness River near Sequim was built in 1902. It experienced success in egg-taking operations until about 1909 when extensive irrigation projects began to be developed on the Dungeness. These early diversions were not screened and as a consequence many millions of downstream juvenile migrants were washed into the irrigation ditches and destroyed. Severe depletions in the spawning stocks were noted thereafter. The hatchery was completely rebuilt in 1945 and now operates as a 16 standard pond station handling Dungeness spring chinook, coho, and some Elwha fall chinook. Due to low water temperatures at the hatchery, additional incubation facilities and gravel rearing ponds were constructed at Epperson Springs on Herd Creek, a tributary to the main Dungeness River, in 1959 and 1961.

TABLE 18-2. Salmon Escapement Level for the Elwha-Dungeness Basin WRIA 18.

Species	1966-1971 Escapements [1] Range	Average
Chinook	600— 1,800	950
Coho	2,000— 23,000	10,000
Pink	15,000—105,000	65,000
Chum	600— 4,000	2,500

Species	Natural Escapement Potential
Chinook	3,000
Coho	15,000
Pink	100,000
Chum	5,000

[1] *Includes natural plus artificial combined escapements.*

Two large ponds were built directly in the creek; an upper pond, 16 feet wide by 320 feet long by 36 inches deep, and the lower pond, 16 feet wide by 280 feet long by 28 inches deep. In addition, four gravel ponds were built further downstream outside the creek on Department of Fisheries' property. These four side by side ponds are each 30 feet by 90 feet by 36 inches deep. Another pond was formed adjacent to these measuring 100 feet by 150 feet by 10 inches deep, but the shallowness of this pond precludes its continuous usefulness. Coho, spring chinook, fall chinook, and pink salmon are handled at the Epperson Springs facility.

For the period 1966 to 1971, spring chinook returns to the Dungeness hatchery rack ranged from 90 to 555 averaging 264 adults annually. Coho rack counts ranged from 947 to 20,242 averaging 7,166 spawners annually.

During the period 1966 to 1971 the annual number of total salmon reared and released from the Dungeness artificial propagation facilities ranged from 1,712,000 to 4,977,000. Although the quantity of each species propagated has varied each year, the average production of juveniles released into the Elwha-Dungeness basin amounted to 359,000 spring chinook, 791,000 fall chinook, and 735,000 coho.

Plants in 1971 included 2,175,000 juvenile chinook (31,300 lbs.) and 2,537,000 juvenile coho (42,300 lbs.) [1] into the Dungeness, Quilcene, and Lyre-Hoko watersheds.

Preliminary information from commercial and sport catch statistics indicate that the present salmon planting program in this basin contributes approximately 211,000 chinook and 127,000 coho to these fisheries annually.

[1] *The average weights of juvenile salmon from hatchery releases are 20 coho/lb. and 125 chinook/lb.*

Harvest

Salmon produced or reared in the Dungeness and Elwha basin contribute to U.S. and Canadian, Pacific Ocean sport and commercial fisheries and to the sport and commercial fisheries existing throughout the Strait of Juan de Fuca and Admiralty Inlet. No sport fisheries were allowed in either the Dungeness or Elwha rivers until 1970 when a jack salmon fishery was established during the period of July 1 to November 30. The Dungeness River was opened downstream from markers at the former Taylor Bridge site approximately one mile below the state salmon hatchery rack. All waters of the lower Elwha River are open up to the fish barrier dam. The daily bag limit on these rivers is six salmon not less than 10 inches nor more than 20 inches in length.

The basin's coastal marine waters are encompassed by, and contain a portion of, the extensive salmon preserve along the Strait of Juan de Fuca which is closed to commercial salmon fishing. This preserve extends three miles out into the Straits following the meandering coastline. A small fleet of gill nets operates in the waters in the center of the Straits outside the preserve line adjacent to the basin boundaries. However, the major net fishery is normally concentrated out near the entrance to the Straits between Tatoosh Island and Bonilla Point.

Harvest of pink salmon occurs mainly in the Strait of Juan de Fuca net fisheries, both U.S. and Canadian, and in ocean and Strait sport fisheries. The exploitation rate is less than on stocks from other basins within Puget Sound due to the absence of extensive local net fisheries.

In past years there has not been much Indian fishing in this area, but Indian fishing rights' adjudication now in progress may cause significant alterations in both fishing patterns and distribution of catch.

The estimated total contribution (all species) to these various fisheries from basin waters has in recent years ranged from 40,000 to 311,400 salmon.

Sport salmon fishing is extremely popular in this area's marine waters and attracts many fishermen from outside the basin. The protection afforded by the Port Angeles Harbor and Dungeness Spit also makes this area attractive to pleasure boating. Salmon fishermen concentrate their efforts around Angeles Point, Ediz Hook, Green Point, and Dungeness Spit. Other excellent fishing waters lie westward of the basin along the Strait of Juan de Fuca coastline. In 1970 an estimated 144,688 angler trips for salmon occurred in the marine waters of this basin, based on punch card information, with 26,027 salmon being harvested. The harvest of salmon "jacks" from fresh water areas within the Dungeness and Elwha rivers in 1970 was relatively light according to punch card returns, with the catch amounting to just over 100 fish. [2]

Limiting Factors

Limiting factors refer to conditions that lead to a complete loss or reduction of the environment's fish production potential, excluding harvest or exploitation. They include only those conditions presently considered alterable. Within the Dungeness-Elwha basin major limiting factors include seasonal flooding, low summer flows, cold water temperatures, irrigation and municipal water demands, physical barriers, and water quality problems throughout the area.

[2] *Not less than 10 inches nor more than 20 inches in length.*

Stream flow — The steep, mountainous terrain and high stream gradients in the headwaters of the Dungeness River provide impetus to the damaging effects of heavy runoff conditions. Some flooding occurs annually in the lower four miles of the Elwha River through reservoir buildup and excessive water releases from the lower Elwha Dam. The smaller independent streams with their steep headwater gradients experience extreme run-offs after heavy snow melts and Pacific on-shore storms.

Low flows are prevalent throughout the basin, particularly in the Dungeness system and in the independent drainages. Extensive water diversion for irrigation from the mainstem Dungeness and from many of the smaller tributaries combine to severely reduce the naturally low summer flows occurring in these streams. Low flows combined with a buildup of sand and mud bars at the river mouth often restrict entrance of upstream migrating adult salmon.

PHOTO 18-6. Irrigation diversions (left bank) limit the summer rearing capacity of the Dungeness River.

Physical barriers — Known physical barriers limiting anadromous fish production in the basin include falls and cascades on the upper Dungeness near Gold Creek, steep cascades on Morse Creek, diversion dams on the lower Dungeness and some of the smaller tributaries, occasional low flow conditions at the mouth of the Dungeness, and the hydroelectric dam located on the lower Elwha River. Also, barriers are created intermittently on smaller streams through the buildup of logs and debris. No major jams are known to exist at this time.

Water Quality — Degraded water quality areas exist in the lower mainstem Dungeness River, in the lower reaches of many of the smaller independent drainages, and in some areas of the estuary and marine waters in and near Port Angeles Harbor. Principal causes for water quality reductions are domestic and agricultural influences in the streams, and domestic and industrial effluents in the estuary and marine waters. A potential pollution problem exists in the heavily forested areas of the upper Elwha and Dungeness drainages where new methods of pest control call for chemical spraying applied by aircraft. Such application in these steep, fast run-off watersheds will tend to shorten the time interval and increase the intensity of toxic chemicals leaching into the streams and rivers.

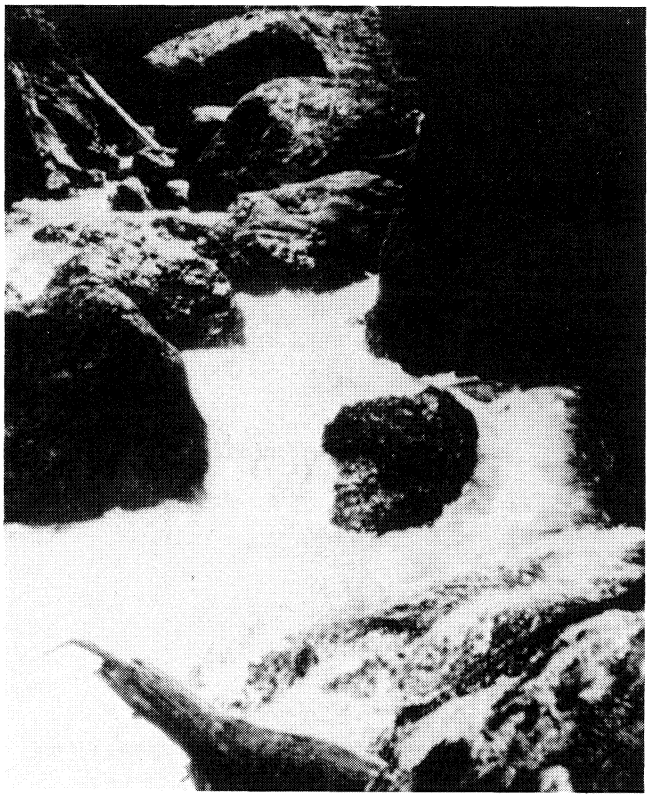


PHOTO 18-7. A series of cascades block salmon migration on the Dungeness River just above the mouth of Gold Creek.

Water temperature problems are considered a serious limiting factor in the Dungeness River system, particularly in the artificial propagation program. Prevailing low water temperatures restrict fish growth and the production of food organisms. Occasionally, with low summer flows present, high temperatures will occur along the lower reaches of the Dungeness River and in some of the smaller independent streams.

It is expected that at certain times of the year extreme water fluctuations from the Elwha power dams create unnaturally wide temperature ranges in the river below. Such conditions could be very damaging to fish life and to the production of natural fish food, depending on the extent and rate of the temperature change.

Limited spawning and rearing — Most areas within the Elwha-Dungeness basin have a good balance of spawning and rearing area. Some of the flat gradient, lowland streams in the Dungeness area do lack spawning area. Also, there is some evidence of loss of spawning material in the mainstem Dungeness River below the confluence of the Greywolf, which is caused principally from a combination of high flows through channelized areas.

In the Elwha River a major problem area exists in the lower four miles where sudden and excessive water releases have removed most of the smaller gravel, destroying available spawning grounds. This material, vital to the continuation of salmon life, is not naturally replaceable since dams existing upstream halt the natural downstream movement of small rock.

PHOTO 18-8. Lower Elwha Dam blocks all anadromous fish migration at R.M. 4.9 (1949 photo).

Watershed development — The development of power dams on the Elwha River is probably the most significant factor limiting natural fish production within the entire basin. These dams block many miles of what is considered to be highly suitable spawning and rearing area. Also, the operation of these dams, producing widely fluctuating flows, degrades the remaining spawning and rearing habitat existing in the lower four miles of river.

PHOTO 18-9. The upper Elwha Dam creates Lake Mills.

Depending upon its extent, clear-cut section logging in the upper Dungeness watershed may prove to be a very definite limiting factor, creating flash run-off conditions and increasing siltation and turbidity downstream. Also on the Dungeness, the extensive diversion of water from the river for agricultural purposes severely reduces natural stream areas utilized by fish. The effect of pest control spraying and intensive fertilization over the lower flat land drainage of the Dungeness is unknown at this time. However, if these agricultural operations do become extensive they will influence the fish production capacity of the river.

Expanding industrial operations in the Port Angeles area definitely influence water quality in adjacent estuary and marine areas. Such conditions affect both adult and juvenile salmonids.

So far minimal development of river front property has occurred within the basin. Should this trend occur, anticipated increases in demands for channelizing and diking will present additional limiting factors on fish production. Such stream alterations are seldom coordinated with basic fish needs.

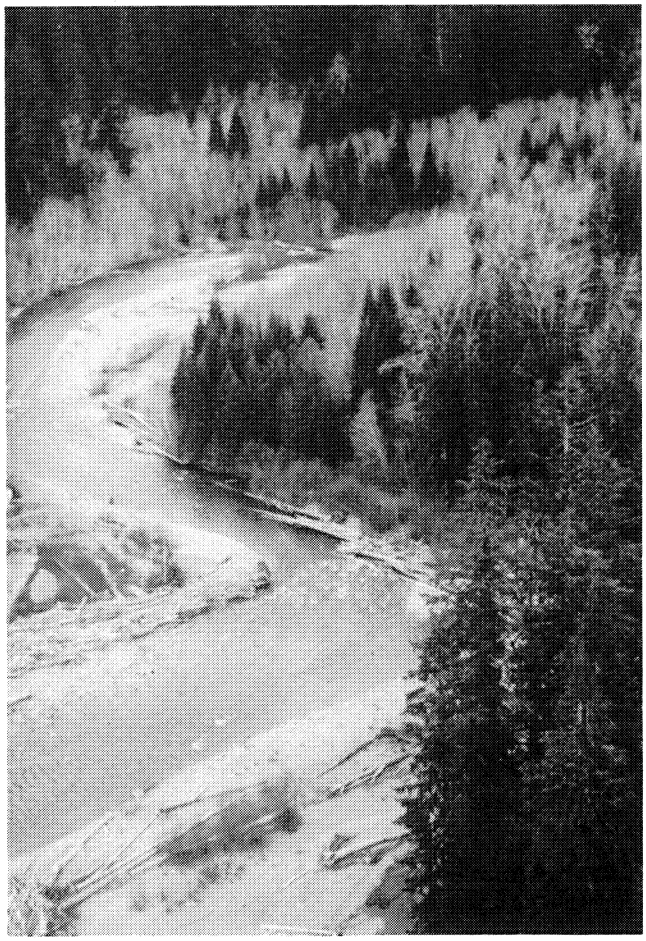


PHOTO 18-10. Many miles of exceptional stream area lie above the dams on the Elwha River.

ELWHA-DUNGENESS BASIN WRIA 18
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Map Title	Stream Numbers	Page
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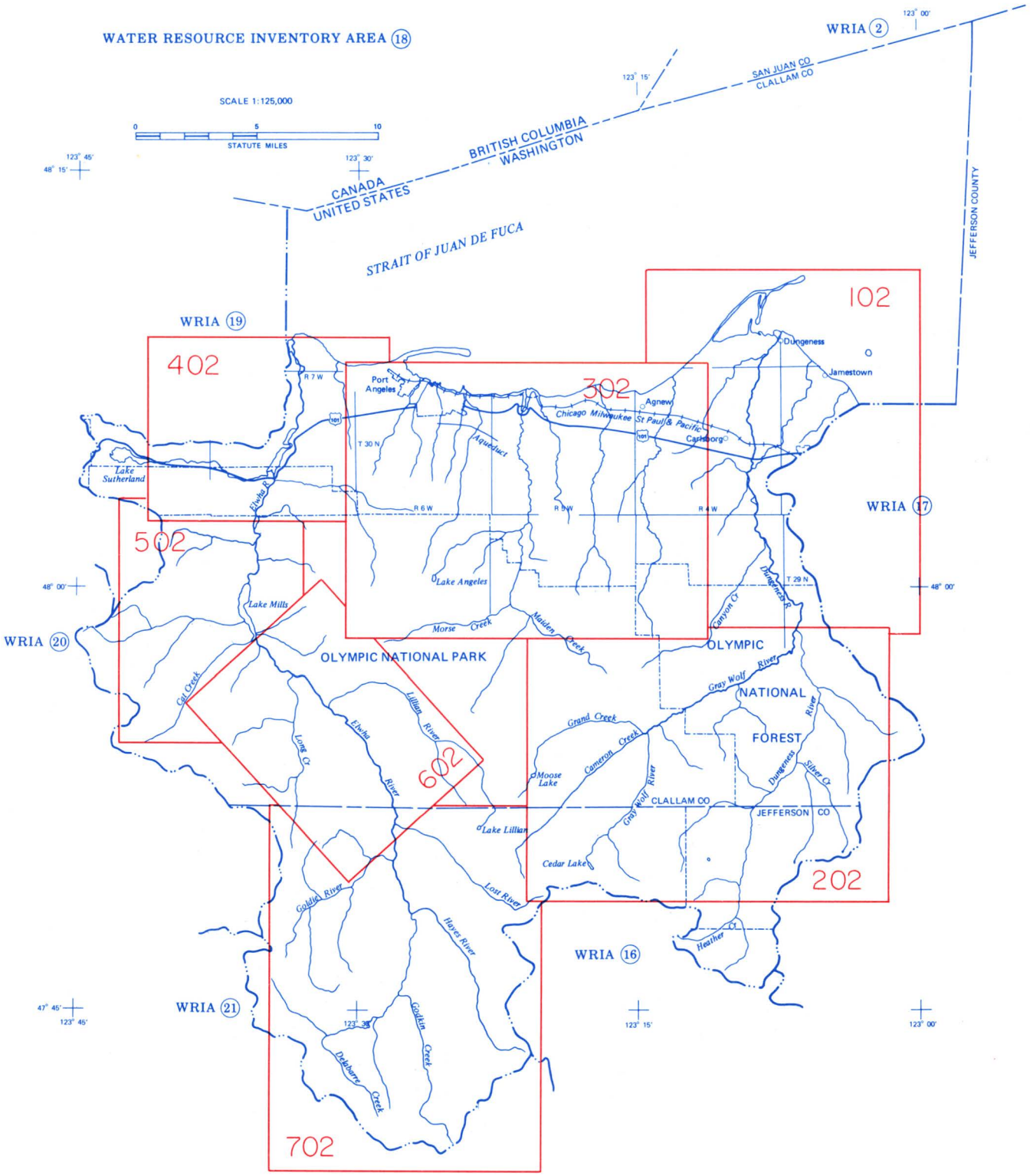
PORT ANGELES (Independent Drainages)	(18.0160—18.0264)	Elwha-Dungeness— 302
ELWHA RIVER (Lower Mainstem)	(18.0265—18.0338)	Elwha-Dungeness— 402
ELWHA RIVER (Lake Mills Area)	(18.0339—18.0416) (18.0422—18.0460)	Elwha-Dungeness— 502
ELWHA RIVER (Lake Mills to Lost River)	(18.0417—18.0421) (18.0461—18.0529)	Elwha-Dungeness— 602
ELWHA RIVER (Lost River to Headwaters)	(18.0530—18.0644)	Elwha-Dungeness— 702



ELWHA - DUNGENESS BASIN

WRIA - 18

DUNGENESS RIVER
Lower Mainstem

This section includes the Dungeness River downstream from the confluence with the Gray Wolf River, plus 5 nearby independent drainages. There are 15.8 miles of mainstem plus 97.9 tributary miles in this section, including 49.1 miles of irrigation ditches or canals. Independent drainages total 20.0 miles.

Stream Description

The Dungeness River, one of the principal drainages of the Olympic Mountains, enters the Strait of Juan de Fuca at Dungeness Bay. The upper portion of this section lies in heavily forested mountainous terrain and flows through a deep, steep-walled valley. It opens abruptly at R.M. 10 into a broad fertile lowland. There has been scattered logging, but none along the river. The lower valley is intensely farmed and is moderately settled. The City of Sequim, and communities of Dungeness and Carlsborg lie near the river. Stream bank cover is excellent through the upper areas, and intermittent along the lower river. The lower three miles of stream are bordered by a setback levee along its east side that precludes development near the river.

Gradient is rather steep throughout all but the lower five miles, where it moderates approaching the river mouth. Patch gravel is available above mile nine to the mouth of the Gray Wolf River, with much of the substrate being composed of rubble and coarse material. The stream channel is stable and contains numerous pools. Several cascade sections are present but all are easily passable by salmon. From mile four to nine the channel broadens but becomes unstable with numerous separations. Channel stability is regained in the lower four miles and this section contains abundant spawning gravel of excellent quality, separated occasionally by deep pools.

The Sequim Valley lies in the "Rain Shadow" of the Olympic Mountains and has an extremely dry climate. There is extensive irrigation during summer and fall months, and this has dominated the flow pattern. Lower river tributaries and irrigation canals often coincide, converge, or diverge, and it is impossible to distinguish natural stream area and tributary flow from areas that are impacted by artificial regulation. Mainstem flows are greatly reduced below R.M. 10; however, a portion of the diverted water filters back in the lower 2-3 miles of stream. The City of Sequim also diverts water from the Dungeness River for its municipal water supply. Average discharge (U.S.G.S. records) at R.M. 11.8 has been 379 cfs. This is above all diversion and regulation within the river.

Few tributaries are usable for salmon. The gradient of lower tributaries is shallow, and water quality is a problem, while upper tributaries are steep and inaccessible.

The independent streams include Bell, Gierin, Cassalery, and two small unnamed creeks. Bell and Gierin creeks contain some favorable gravel habitat and are utilized by salmon. Grays Marsh is an extensive wetland and swampy area that lies in the lower reaches of Gierin Creek.

Salmon Utilization

Pink salmon are the most predominant species. Within Puget Sound these populations are rather unique, since they include an extremely early run and a normally timed late run. The early run spawns in the upper river above mile 9, while the late run spawns in the lower 4 miles of stream. There is little or no overlap in timing or spawning area. The Dungeness River also includes spring and fall chinook. Coho spawn primarily in upstream mainstem areas, and utilize the entire stream for rearing. Dungeness River salmon escapements normally total 88,000 pink, 1,400 chinook, 1,500 coho, and 100 to 200 chum annually.

Limiting Factors

Low flows resulting from heavy irrigation have occasionally restricted adult upstream migration and have impacted rearing in the lower portions of the Dungeness River. Natural limiting factors include the steep gradient which regulates quantity of spawning gravel, and the unstable channel that influences spawning success in the middle section of the river.

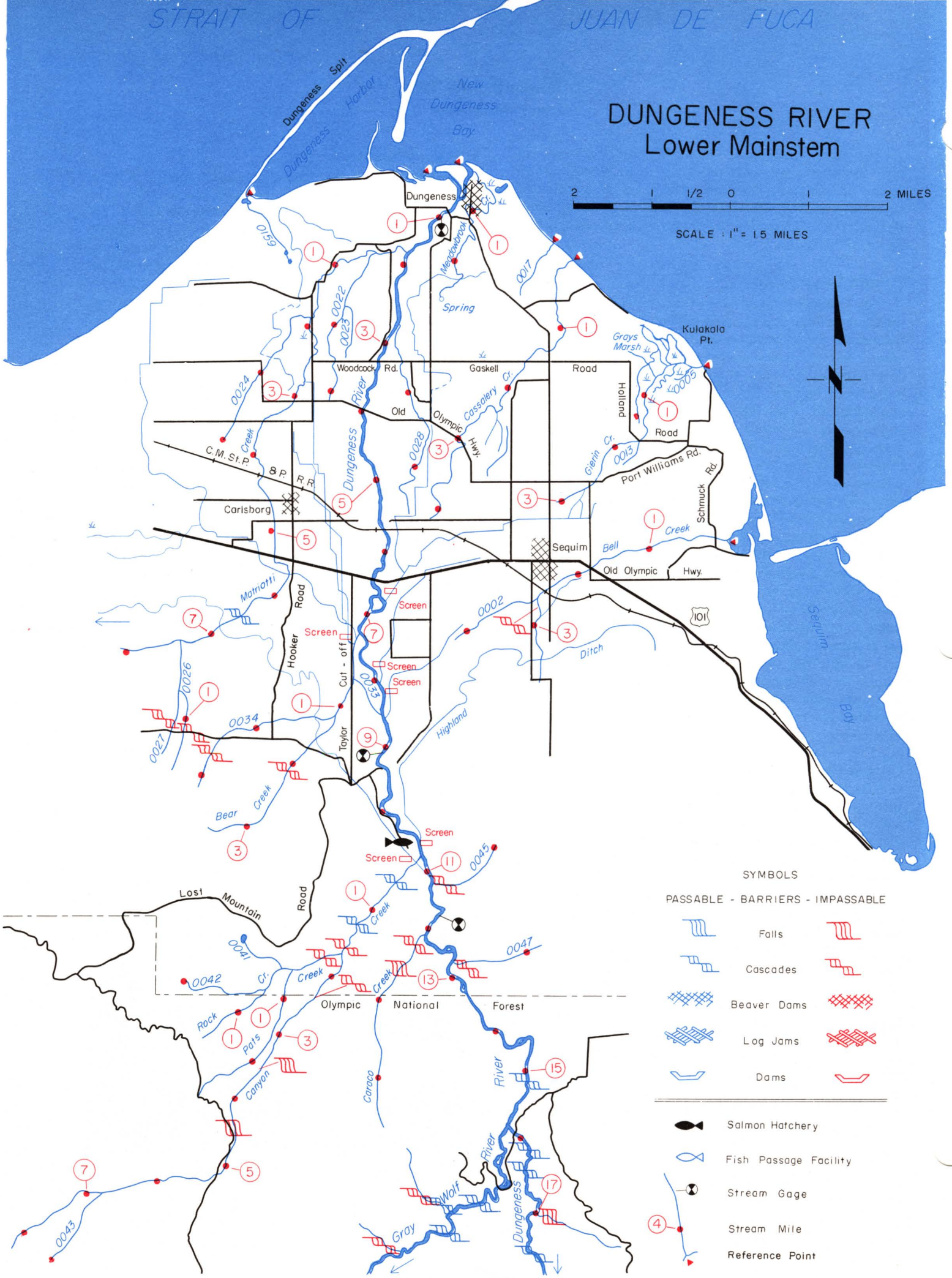
Beneficial Developments

The Washington Department of Fisheries operates the Dungeness Hatchery, located at R.M. 10.5, as well as a satellite station at Hurd Creek (right bank tributary at R.M. 2.9). Production has included spring and fall chinook and coho.

Habitat Needs

To restore damaged habitat would require correction of the limiting factors listed above. It is important that no additional diversion of water be permitted, and that rigid enforcement of the hydraulic code be exercised. Stabilization of the stream area between R.M. 4.0 and 9.0 would immensely enhance fish production.

PHOTO 18-11. Delta deposits create fish passage problems — mouth Dungeness River.


STRAIT OF JUAN DE FUCA
DUNGENESS RIVER
Lower Mainstem
2 1 1/2 0 1 2 MILES
SCALE : 1" = 1.5 MILES
Dungeness Spit
New Dungeness Bay
Dungeness Harbor
Dungeness
Meadowbrook Cr.
Spring
Kulakala Pt.
Grays Marsh
Woodcock Rd.
Gaskell Road
Old Olympic Hwy.
Cassalery Cr.
Holland Road
Gierin Cr.
Port Williams Rd.
Schmuck Rd.
Bell Creek
Sequim
Old Olympic Hwy.
C.M.St.P. & P. R.R.
Carlsborg
Matriotti Road
Hooker Road
Cut - off
Taylor
Screen
Ditch
Highland
Sequim Bay
101
Bear Creek
Lost Mountain Road
Olympic National Forest
Rock Pass Canyon
Caraco Creek
Wolf Creek
Gray Creek
Dungeness River
0510
0017
0022
0023
0024
0028
0013
0005
0002
0026
0027
0034
0033
0045
0047
0041
0042
0043
SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point

DUNGENESS RIVER — LOWER MAINSTEM
Elwha-Dungeness Basin — WRIA 18

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0001	Bell Creek	Sec22,T30N,R3W	3.8	—	Coho, (Chum)
0002	Unnamed	LB-2.65	1.2	—	Unknown
0004	Gierin Creek	Sec9,T30N,R3W	3.1	—	(Coho), (Chum)
	Grays Marsh	Outlet-0.1	—	—	
0010	Unnamed	LB-0.6	1.1	—	Unknown
0014	Irrigation Ditch	RB-2.66	~ 1.1	—	Unknown
0015	Cassalery Creek	Sec32,T31N,R3W	4.2	—	(Coho), (Chum)
0016	Irrigation Ditch	RB-2.35	~ 1.4	—	Unknown
0018	Dungeness River	Sec25,T31N,R4W	31.9	198.0	Chin., Coho, Pink, Chum
0019	Unnamed Slough	RB-0.7	0.7	—	Chin., Coho, Pink, Chum
0020	Meadowbrook Creek	RB-0.3	2.8	—	(Coho), (Chum)
	Marsh	Outlet-0.3	—	—	
	Unnamed Lake	Outlet-2.15	—	—	
0021	Matriotti Creek	LB-1.9	8.1	—	(Coho), (Chum)
0022	Unnamed	RB-0.4	2.2	—	(Coho)
0024	Unnamed	LB-1.91	2.0	—	(Coho)
0025	Drainage Ditch	RB-2.8	~ 2.6	—	Unknown
0026	Unnamed	RB-7.45	1.7	—	Unknown
0028	Unnamed (Hurd Creek)	RB-2.7	2.9	—	(Coho)
0029	Irrigation Ditch	RB-6.7	~ 8.75	—	Unknown*
0030	Bear Creek	LB-7.3	3.6	—	Coho, (Chum)
0031	Irrigation Ditch	LB-0.1	12.75	—	Unknown
0032	Irrigation Ditch	LB-0.2	~ 3.7	—	Unknown*
0034	Unnamed	LB-1.2	2.25	—	(Coho)
0035	Irrigation Ditch	RB-8.1	~ 2.3	—	Unknown
0036	Irrigation Ditch	RB-8.55	~ 1.9	—	Unknown
0037	Highland Ditch	RB-10.65	5.75	—	Unknown*
0038	Canyon Creek	LB-10.8	8.2	11.9	Chin., Coho, Pink, Chum
0039	Pats Creek	LB-1.65	2.9	—	None
0040	Rock Creek	LB-0.6	1.55	—	None
0042	Unnamed	LB-0.5	1.0	—	None
0043	Unnamed	RB-6.8	1.0	—	None
0044	Irrigation Ditch	RB-11.1	~11.3	—	Unknown*
0045	Unnamed	RB-11.15	1.0	—	Unknown

** Above natural anadromous fish use. Juvenile salmon planting program supplies rearing stock to accessible streams.*

DUNGENESS RIVER — LOWER MAINSTEM
Elwha-Dungeness Basin — WRIA 18

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0046	Caraco Creek	LB-12.1	2.7	—	Unknown
0047	Unnamed	RB-12.8	1.2	—	Unknown
	(Cont. Elwha-Dungen. 203)				

DUNGENESS-GRAY WOLF
Upper Mainstem

This drainage area consists of the upper mainstem Dungeness and Gray Wolf rivers. Both have headwaters in the Olympic National Park and below this flow through the Olympic National Forest. The upper mainstem Dungeness has 16.1 miles of stream, while the Gray Wolf has 17.4 miles. Both have many tributaries, totaling 94.2 miles in the Gray Wolf and 64.1 in the upper main river. The area is accessible in the lower reaches by Forest Service road, and in upstream areas by trail.

Stream Description

The Dungeness and Gray Wolf rivers originate in the Olympic Mountains, with branches draining snow fields. The Gray Wolf River flows northeasterly, while the upper Dungeness flows due north toward their confluence. Both drainages have similar characteristics of terrain, valley configuration, watershed cover, and stream gradient. The area is mountainous with coniferous forest covering the steep valley walls, sparsely near timber line, but becoming heavier and eventually dense in the lower valleys. It provides excellent stream bank cover. Stream gradient in the upper main branches and tributaries is steep and often precipitous above approximately 2,500-foot elevation. Below this the gradient remains too steep to afford much usable area, although patches of gravel are interspersed among the predominating rubble and boulder substrate. Stream channels are stable because of the confining topography.

The Gray Wolf has 3 major upstream branches, Grand and Cameron creeks plus the mainstem, that join at "Three Forks". Below this it continues for 9.6 miles to meet the Dungeness. The lower 7 miles contain a number of passable rapids and cascades. Above this, partial barriers are formed by cascade sections, and while fish may ascend to about R.M. 9.0, the cumulative effect of many hazards restrict this.

The mainstem Dungeness has a number of small tributaries, the three largest being Gold, Silver and Royal creeks, all with very steep gradient. The watershed to about mile 23 has been opened to access for logging, but Forest Service management has permitted only limited removal of timber. Timber in this drainage exhibits extremely slow growth rate and logging must be carefully managed. Salmon access in the upper Dungeness is blocked at a falls just above the mouth of Gold Creek, at mile 18.8. Thus only 3.1 miles of this branch is usable for salmon reproduction. Gradient is steep, with rubble and boulders interspersed with patches of suitable gravel.

Gold Creek is the only tributary used by salmon. It is accessible for approximately 0.2 miles, but substrate is of a coarse material.

Salmon Utilization

Early-run pink, coho, and spring chinook utilize the Gray Wolf River to about mile 8.0, and the upper mainstem to the falls. Upper Dungeness pink salmon are unique in Puget Sound and deserve special mention. Typical stocks approach maturity while in salt water, and migrate through mainstem or lower stream reach areas requiring little strenuous swimming. Spawning normally commences upon arrival in the stream. In contrast, early Dungeness pink salmon enter the stream while still in prime condition. They move rapidly upstream to their spawning destination, where they remain in pools up to one month while completing maturity. They must negotiate numerous rapids, cascades, and small falls that would be barriers for other populations. The excellent condition of these fish and their early timing are apparent adaptations to compensate for physical conditions of the river, and benefit from summer snow runoff.

Limiting Factors

Conditions that restrict the production of salmon are primarily related to the naturally rugged terrain. The steep gradient limits accessibility, and regulates the quality and quantity of suitable spawning gravel. While there has been logging, impact has not been serious.

One serious problem arose during the winter of 1968-1969, when a glacial deposit slide occurred in Gold Creek, and sediment has been deposited on downstream spawning areas. The gravel quality deterioration and its impact on salmon has been evaluated through the use of intragravel sediment monitors, core sampling, hydraulic sampling of fry, and evaluation of adult returns. The impact has been most severe upon pink salmon, with the 1973 return only about 10% of its anticipated level.

Beneficial Developments

The Department of Fisheries' Dungeness Hatchery is located downstream of this drainage sub-basin, and its production contributes to returns in the Gray Wolf and upper Dungeness. A cooperative project between the Forest Service and the U.S. Army repaired the Gold Creek slide during the summer of 1975.

Habitat Needs

Forest management practices that are compatible with salmon production are essential to maintain a high production of fish in this stream.

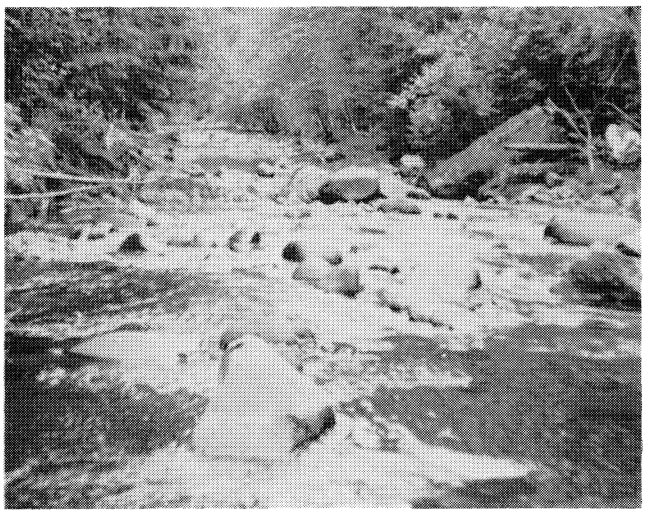
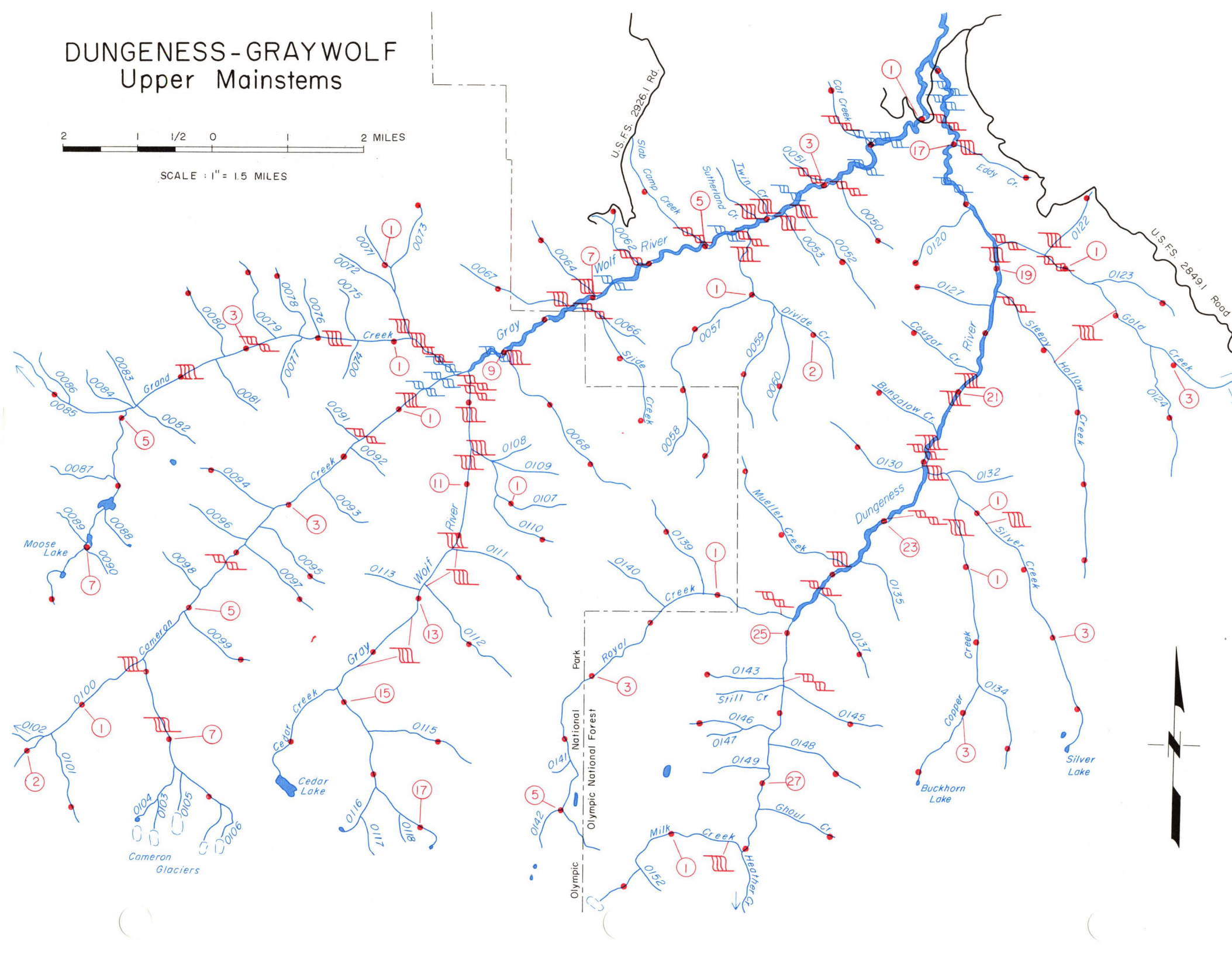


PHOTO 18-12. Dungeness River below confluence of Gold Creek.


DUNGENESS-GRAYWOLF
Upper Mainstems
2 1 1/2 0 1 2 MILES
SCALE : 1" = 1.5 MILES
U.S.F.S. 2926.1 Rd.
U.S.F.S. 2849.1 Road
Olympic National Park
Olympic National Forest
Wolf River
Gray Wolf River
Dungeness River
Slab Camp Creek
Sutherland Cr.
Twin Cr.
Cat Creek
Eddy Cr.
Slide Creek
Divide Cr.
Cougar Cr.
Bungalow Cr.
Sleepy Hollow Creek
Gold Creek
Mueller Creek
Silver Creek
Copper Creek
Still Cr.
Milk Creek
Ghoul Cr.
Heather Cr.
Grand Creek
Cameron Creek
Royal Creek
Cedar Creek
Moose Lake
Cedar Lake
Silver Lake
Buckhorn Lake
Cameron Glaciers

DUNGENESS — GRAY WOLF — UPPER MAINSTEMS
Elwha-Dungeness Basin — WRIA 18

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0018	Dungeness River				Chin., Coho, Pink, Chum
0048	Gray Wolf River	LB-15.8	17.4	76.0	Chin., Coho, Pink, (Chum)
0049	Cat Creek	LB-2.0	1.1	—	Unknown
0050	Unnamed	RB-2.8	1.3	—	None
0052	Unnamed	RB-3.5	1.8	—	None
0054	Twin Creek	LB-4.0	1.0	—	None
0055	Sutherland Creek	LB-4.1	1.0	—	None
0056	Divide Creek	RB-4.3	2.7	5.79	None
0057	Unnamed	LB-1.0	3.3	—	None
0059	Unnamed	LB-1.35	1.8	—	None
0060	Unnamed	LB-1.5	1.5	—	None
0061	Slab Camp Creek	LB-5.1	1.7	—	None
0062	Unnamed	LB-6.2	1.0	—	None
0064	Unnamed	LB-7.0	1.4	—	Unknown
0065	Slide Creek	RB-7.4	2.1	—	Unknown
0067	Unnamed	LB-7.6	1.7	—	None
0068	Unnamed	RB-8.9	2.7	—	None
0069	Cameron Creek	LB-9.6	8.7	—	Chin., Coho, (Pink)
0070	Grand Creek	LB-0.2	8.1	15.2	Chin., Coho, (Pink)
0071	Unnamed	LB-0.8	1.6	—	None
0073	Unnamed	LB-0.95	1.0	—	None
0078	Unnamed	LB-2.25	1.1	—	None
0079	Unnamed	LB-2.6	1.2	—	None
0080	Unnamed	LB-3.3	1.1	—	None
0085	Unnamed	LB-4.9	1.9	—	None
	Unnamed Lake	Outlet-6.2	—	—	None
	Moose Lake	Outlet-6.8	—	—	
	Unnamed Lake	Outlet-7.5	—	—	
0094	Unnamed	LB-3.2	1.1	—	None
0095	Unnamed	RB-3.5	1.2	—	None
0097	Unnamed	RB-3.9	1.3	—	None
0099	Unnamed	RB-5.1	1.1	—	None
0100	Unnamed	LB-5.9	2.3	—	None
0101	Unnamed	RB-1.6	1.3	—	None
0107	Unnamed	RB-10.6	1.8	—	None

DUNGENESS — GRAY WOLF — UPPER MAINSTEMS
Elwha-Dungeness Basin — WRIA 18

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0110	Unnamed	LB-0.8	1.1	—	None
0111	Unnamed	RB-12.2	1.7	—	None
0112	Unnamed	RB-12.8	1.7	—	None
0114	Cedar Creek	LB-14.8	1.6	—	None
0115	Unnamed	RB-15.45	1.5	—	None
	Unnamed Lake	Outlet-17.4	—	—	
0119	Eddy Creek	RB-17.0	1.1	—	Unknown
0120	Unnamed	LB-18.1	1.0	—	Unknown
0121	Gold Creek	RB-18.7	4.6	—	Coho, Pink
0122	Unnamed	RB-0.65	1.1	—	None
0123	Unnamed	RB-1.5	1.2	—	None
0124	Unnamed	LB-2.6	1.7	—	None
0126	Sleepy Hollow Creek	RB-19.3	4.2	—	None
0127	Unnamed	LB-19.55	1.0	—	None
0128	Cougar Creek	LB-20.6	1.2	—	None
0129	Bungalow Creek	LB-21.7	1.1	—	None
0130	Unnamed	LB-22.05	1.5	—	None
0131	Silver Creek	RB-22.1	4.6	9.85	None
0133	Copper Creek	LB-0.7	4.1	—	None
0134	Unnamed	RB-2.6	1.3	—	None
	Buckhorn Lake	Outlet-4.1	—	—	
	Silver Lake	Outlet-4.6	—	—	
0136	Mueller Creek	LB-23.8	2.2	—	None
0137	Unnamed	RB-24.3	1.4	—	None
0138	Royal Creek	LB-24.8	5.8	10.8	None
0139	Unnamed	LB-1.2	1.4	—	None
0143	Unnamed	LB-25.6	1.0	—	None
0145	Unnamed	RB-25.75	1.3	—	None
0146	Unnamed	LB-26.3	1.1	—	None
0148	Unnamed	RB-26.5	1.3	—	None
0150	Ghoul Creek	RB-27.4	1.05	—	None
0151	Milk Creek	LB-28.1	2.4	–	None
	Dungeness R. cont. as Heather Creek	@ mi. 28.11	—	—	
0153	Unnamed	RB-28.9	1.1	—	None
0154	Unnamed	RB-29.3	2.9	—	None
0155	Unnamed	RB-1.4	1.4	—	None
0156	Unnamed	RB-30.1	1.4	—	None

PORT ANGELES
Independent Drainages

Streams include 10 independent drainages entering the Strait of Juan de Fuca between Dungeness Bay and Port Angeles. They range in size from an unnamed tributary 0.25 mile long, to Morse Creek with 16.3 mainstem miles plus several tributaries. Total mainstem mileage of all streams is 77.3, and total tributary mileage is 125.6. All are located in Clallam County, and are readily accessible except in upper watershed areas.

Stream Descriptions

The four larger streams, McDonald, Siebert, Morse, and Ennis creeks have headwaters in the higher elevations of Blue Mountain, Elk Mountain and Mount Angeles, in Olympic National Park. The smaller streams include Bagley, Lees, Peabody, Valley, and Tumwater creeks, plus one unnamed tributary. Origin of these streams is in the lower foothills. Much of the upper region of these watersheds have been reforested following earlier logging operations. Lower watershed areas of McDonald, Siebert and Bagley creeks are well developed with rural homes and farms, while the other streams have more intensive development. Morse, Lees, and Ennis creeks flow through suburban areas of Port Angeles, while Peabody, Valley and Tumwater creeks flow through, and under, downtown sections of the city.

The gradient is predominantly steep throughout this region, particularly in upper watershed areas. The lower portions of most streams contain some moderate gradient, and gravel suitable for salmon spawning. Stream channels are generally well defined and stream bank cover is favorable in all areas except those of heaviest development.

Accessibility is limited because of steep terrain and passage problems at culverts and debris jams. McDonald Creek is accessible to a falls at mile 5.2; however, a sand-gravel bar sometimes delays entry at the mouth. Irrigation water is diverted from McDonald Creek at mile 3.1. Siebert Creek is accessible for more than 8 miles; however, passage problems exist at culverts that form partial barriers at times. Bagley Creek formerly could be negotiated by salmon up to Highway U.S. 101; however, a slide associated with recent road building near the mouth has created an impassable barrier at mile 0.1. On Morse Creek a cascade and falls section at mile 3.8 limits upstream migration. Fish usage in Lees Creek is limited by its small size and low summer flows. Ennis Creek and White Creek also have culvert problems, although Ennis Creek is accessible for approximately 1 mile above Highway 101. The three streams entering Port Angeles (Tumwater, Valley and Peabody creeks) have extensive culverted areas that create passage problems.

U.S.G.S. stream flow records are available for Morse Creek, Siebert Creek and Ennis Creek. Discharge from Morse Creek has averaged 130 cfs, normal low flow in the 10-15 cfs range. Water is diverted from Morse Creek for the Port Angeles municipal water supply. Diversion rate is from 5 to 13.5 cfs according to the season, with the heaviest diversion during the driest period of the year. The mean flow for Siebert Creek was 17.1 cfs, with low flows normally 2 to 3 cfs. Ennis Creek has flow data for only one summer, the lowest flow being 2.3 cfs.

Salmon Utilization

Salmon production has been impacted by development of the area; however, many stream sections are still utilized. The most important species is coho, with minor runs of pink and chum. McDonald, Siebert, Morse, and Ennis creeks support healthy coho runs, while Bagley, Lees, and Tumwater creeks also contain a few fish. The Valley Creek coho run is believed extinct, and possibly that in Peabody Creek. Tumwater Creek still receives limited usage. Total coho escapement ranges from 500 to 1,000 annually. About 100 to 300 pinks normally spawn in the lower portions of Morse Creek.

Limiting Factors

Stream accessibility due to the steepness of gradient, has regulated salmon production. Access has been further reduced with the increasing development of the area, particularly in areas associated with improper culvert installation. Natural low summer stream flow problems have been intensified by settlement of the area, removal of vegetation, and diversion of water.

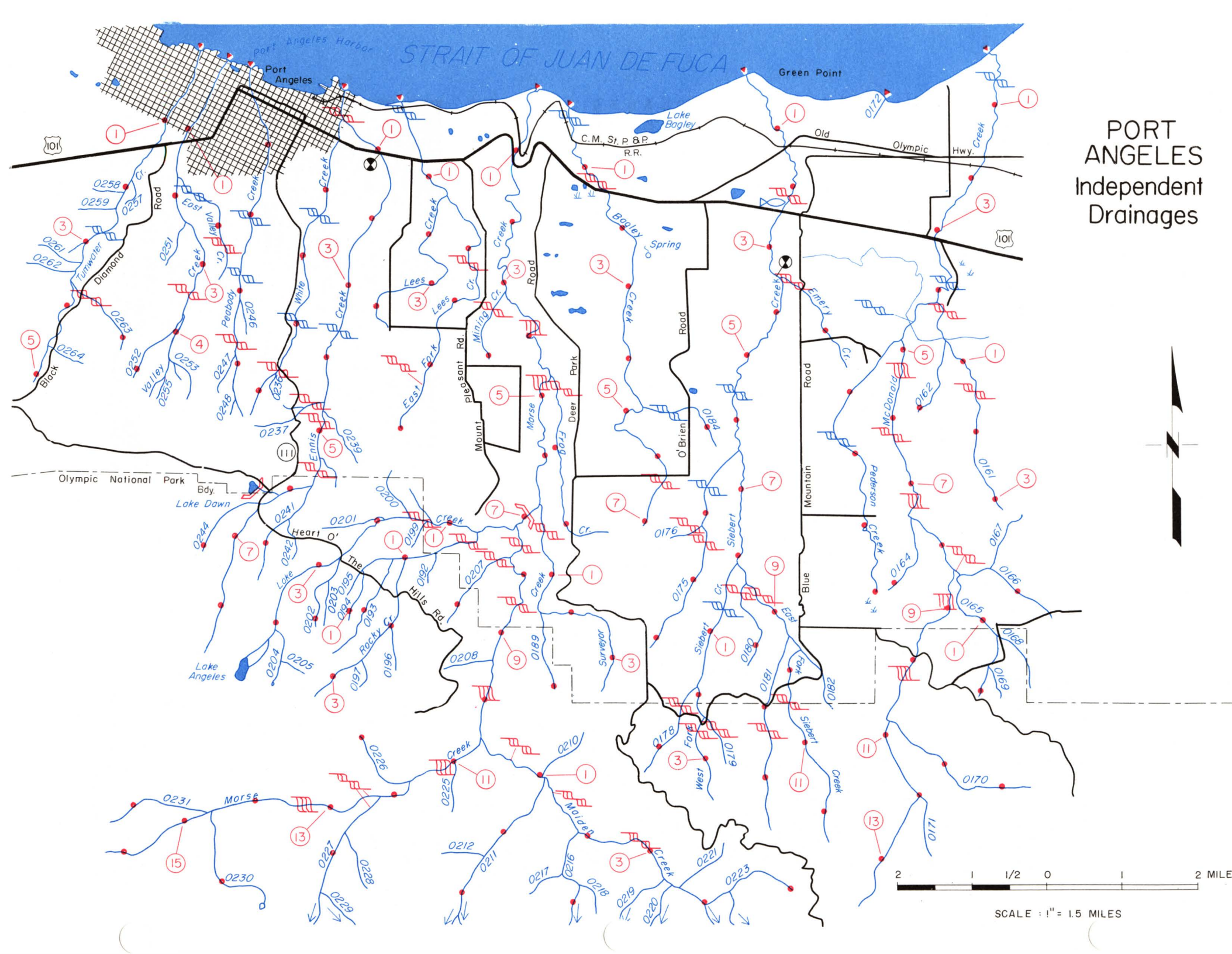
Beneficial Developments

Peninsula Community College has reared and released coho into Ennis Creek. Occasional plants of coho have been made from the Department of Fisheries' Dungeness Hatchery into Morse, Ennis, Siebert, McDonald, and Tumwater creeks. Two ladder facilities have been constructed at culverts on Siebert Creek to provide passage above former barriers.

Habitat Needs

Stream maintenance and passage facilities are needed at a number of sites. Strict adherence to the hydraulics code is required or the watershed will continue to deteriorate, along with fish production. Any additional water diversion from these streams should be discouraged.

PHOTO 18-13. Fishway below Highway 101 on Sieberts Creek.


PORT ANGELES
Independent Drainages
STRAIT OF JUAN DE FUCA
Port Angeles Harbor
Port Angeles
Green Point
Lake Bagley
C.M., St. P & P R.R.
Old Olympic Hwy.
101
Olympic National Park Bdy.
Lake Dawn
Lake Angeles
Heart O' The Hills Rd.
Mount Pleasant Rd.
Deer Park Road
Bagley Creek
Spring
Mountain Road
Blue
Black Diamond Road
East Valley Cr.
White Creek
Ennis Creek
Lees Cr.
East Fork
Mining Cr.
Morse Creek
O'Brien
Emery Cr.
McDonald Creek
Pederson Creek
Siebert Cr.
East Fork
Siebert Creek
Rocky Cr.
Surveyors
Maiden
Fork West
Siebert Creek
Tumwater
Peabody
Valley
SCALE : 1" = 1.5 MILES
2 1 1/2 0 1 2 MILE

PORT ANGELES — INDEPENDENT DRAINAGES
Elwha-Dungeness Basin — WRIA 18

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0160	McDonald Creek	Sec5,T30N,R4W	13.6	23.0	(Chin.), Coho, Pink, Chum
0161	Unnamed	RB-4.1	3.1	—	Unknown
0162	Unnamed	LB-0.55	1.1	—	None
0163	Pederson Creek	LB-4.9	4.0	3.90	(Coho)
	Unnamed Marsh	Outlet-4.0	—	—	
0164	Unnamed	LB-7.5	1.1	—	None
0165	Unnamed	RB-8.5	2.1	—	None
0166	Unnamed	RB-0.05	1.5	—	None
0170	Unnamed	RB-10.8	2.3	—	None
0173	Siebert Creek	Sec2,T30N,R5W	12.4	19.5	Coho, (Chum)
0174	Emery Creek	RB-3.41	1.6	—	Unknown
0175	Unnamed	LB-6.4	3.1	—	(Coho)
0177	W. Fk. Siebert Creek	LB-8.1	3.6	3.59	(Coho)
0178	Unnamed	LB-1.9	1.5	—	Unknown
	Siebert Cr. cont. as E. Fk. Siebert Creek	@ mi. 8.11	—	5.14	
0180	Unnamed	LB-8.45	1.3	—	Unknown
0181	Unnamed	LB-9.4	2.7	—	None
0183	Bagley Creek	Sec8,T30N,R5W	7.05	7.71	(Coho), (Chum)
0184	Unnamed	RB-4.7	1.3	—	None
0185	Morse Creek	Sec5,T30N,R5W	16.3	—	Chin., Coho, Pink, Chum
0186	Mining Creek	LB-3.1	1.0	—	Unknown
0187	Frog Creek	RB-4.7	2.6	—	Unknown
0188	Surveyor Creek	RB-6.7	3.5	—	None
0189	Unnamed	LB-1.6	1.1	—	None
0190	Lake Creek	LB-7.2	4.6	7.45	None
0191	Rocky Creek	RB-0.6	3.4	—	None
0193	Unnamed	LB-1.0	1.7	—	None
0194	Unnamed	LB-0.25	1.1	—	None
0202	Unnamed	RB-2.75	1.05	—	None
	Lake Angeles	Outlet-4.6	—	—	
0207	Unnamed	LB-7.7	1.3	—	None
0209	Maiden Creek	RB-10.5	6.1	22.0	None
0211	Unnamed	LB-1.01	5.2	—	None
0213	Unnamed	LB-2.3	3.2	—	None
0214	Unnamed	LB-3.4	1.2	—	None
0215	Unnamed	LB-3.9	1.2	—	None

PORT ANGELES — INDEPENDENT DRAINAGES
Elwha-Dungeness Basin — WRIA 18

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0216	Unnamed	LB-1.9	1.7	—	None
0219	Unnamed	LB-3.4	2.3	—	None
0220	Unnamed	LB-3.5	1.0	—	None
0222	Unnamed	LB-4.0	1.2	—	None
0223	Unnamed	RB-4.4	1.0	—	None
0226	Unnamed	LB-11.7	1.0	—	None
0227	Unnamed	RB-12.2	2.7	—	None
	P.J. Lake	Outlet-2.7	—	—	
0230	Unnamed	RB-14.6	1.7	—	None
0231	Unnamed	LB-14.7	1.4	—	None
0232	Lees Creek	Sec12,T30N,R6W	4.25	—	(Coho), (Chum)
0233	E. Fk. Lees Creek	RB-1.4	4.0	—	Unknown
0234	Ennis Creek	Sec11,T30N,R6W	8.65	—	(Coho), (Chum)
0235	White Creek	LB-0.3	4.35	—	(Coho), (Chum)
0241	Unnamed	RB-5.7	1.5	—	None
0245	Peabody Creek	Sec3,T30N,R6W	4.8	—	Unknown
0249	Valley Creek	Sec3,T30N,R6W	4.9	—	(Coho), (Chum)
0250	East Valley Creek	RB-1.7	1.8	—	Unknown
0252	Unnamed	LB-3.75	1.15	—	None
0256	Tumwater Creek	Sec4,T30N,R6W	5.1	—	(Coho), (Chum)
0263	Unnamed	RB-3.65	1.2	—	Unknown

ELWHA RIVER
Lower Mainstem

The Elwha is the largest river draining the north Olympic Peninsula into the Strait of Juan de Fuca. Total tributary mileage is 77.4, with the major portion of this in Little River and Indian Creek. Dry Creek, an independent drainage that enters the Straits two miles east is also included in this drainage.

Stream Description

The primary feature of the lower mainstem river is Elwha Dam. It is a total block to migration at R.M. 4.9, and its impact has been extensive. Lake Aldwell, its reservoir, lies within a deep valley and is 3.5 miles in length. Two major inaccessible tributaries enter the upper end of Lake Aldwell; Indian Creek at mile 7.5, and Little River at mile 7.8. Indian Creek drains Lake Sutherland and flows through an area of second growth timber and intermittent farmland. It lacks suitable spawning substrate, and contains warm water during summer months from surface flows of Lake Sutherland. Little River is a large tributary, badly abused by logging practices in early years. Potential spawning areas are scattered throughout the lower three miles of stream, below a falls. Watershed cover is predominantly second growth coniferous timber.

Downstream from Elwha Dam (R.M. 4.9) the river follows a deep steep-walled canyon to approximately R.M. 3.0. Here the left bank remains moderately steep and is covered with second growth timber, while the valley adjoining the right bank is broad and level with rural development and farms. A portion of the lower valley is Clallam Indian Reservation. Gradient of the entire lower river is moderate; however, substrate is predominantly coarse. The canyon and valley area above mile 3.0 contains boulders, with some rubble and coarse gravel providing little suitable spawning area. Rubble and coarse material also make up the majority of the lower three miles; however, some suitable spawning riffles are available along "cut-bank" areas of recent minor bank erosion. Numerous deep pools are distributed through the entire stream length. A passable diversion dam is located at mile 3.4, owned by the Crown Zellerback Company, for industrial water use in Port Angeles. With both power and diversion facilities regulating flow, discharges have fluctuated accordingly. For 59 years the mean flow at mile 8.5 (above Lake Aldwell, Indian Creek and Little River) has been 1,505 cfs. The stream channel in the lower Elwha has remained stable. A small left-bank slough and springs area near the river mouth provide excellent quality spawning and rearing habitat for several salmon species.

Dry Creek has 4.8 miles of mainstem plus 9.6 miles of tributaries. Despite its moderate size, much of the watershed is dry during periods of the year, limiting production.

Salmon Utilization

In spite of limited access and spawning material, the Elwha River produces important runs of chinook, coho, pink and chum. Historically it was one of the major salmon-producing rivers in the State of Washington, prior to construction of Elwha Dam in 1910. Historical records are lacking regarding the precise magnitude of production and upper limits of migrating salmon. Recent chinook escapement levels have been approximately 10,000 pink, 1,000 chum and 500 coho. All suitable spawning gravel within the lower section of the river is heavily utilized.

Limiting Factors

The blockage of the river by Elwha Dam has greatly disrupted salmon production in the stream. The obvious impact was the elimination of access to upstream spawning areas. Studies have been conducted to determine feasibility of restoring production to the upper river watershed, and have determined that serious problems would be encountered with survival of juvenile salmon on their downstream migration at the two dams. A secondary impact of the dam has been the total elimination of recruitment of stream gravel and sediment to downstream areas. As gravel substrate is removed during high flows from the river, it has not been replaced and only coarse material remains. Minor gravel recruitment occurs from sources within the lower river flood plain, such as erosion of cut-banks and minor channel changes.

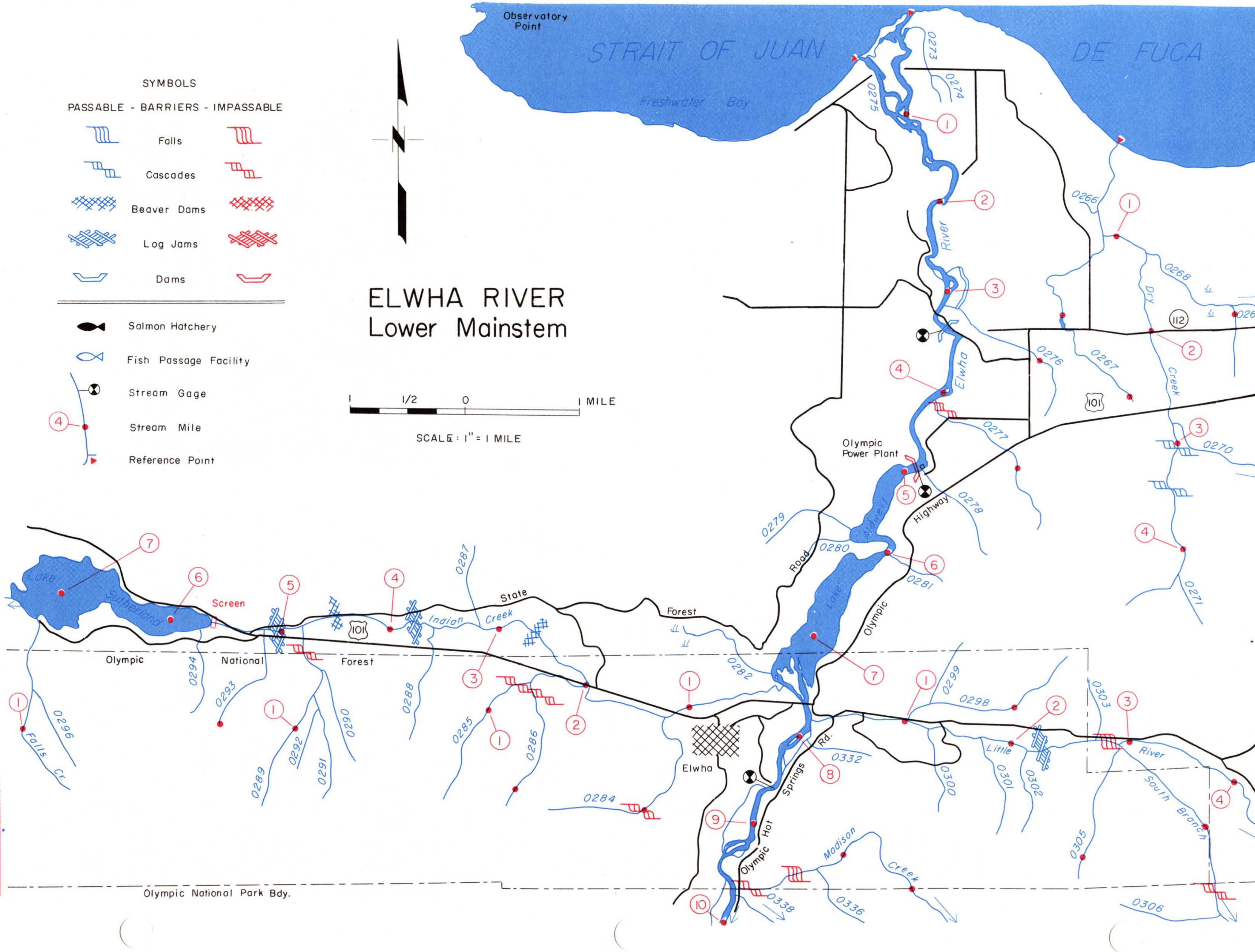
Beneficial Developments

A fish rearing facility was completed during 1975 for the purpose of restoring the Elwha River fall chinook production to near its historical level. This facility is operated by the Soleduck and Dungeness hatcheries.

Habitat Needs

The entire flood plain of the Elwha River below the dam is of extreme importance since it is the only possible source of spawning gravel below the dam. Therefore, its absolute protection from any disruptive development is essential to salmon production.

PHOTO 18-14. Diversion intake (RB) on lower Elwha River.


ELWHA RIVER
Lower Mainstem
SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point
1/2
0
1 MILE
SCALE: 1" = 1 MILE
Observatory Point
STRAIT OF JUAN DE FUCA
Freshwater Bay
Elwha River
Olympic Power Plant
Lake Aldwell
Lake Mills
Lake Sutherland
Screen
Indian Creek
State Forest
Olympic National Forest
Olympic Highway
Road
Olympic Hot Springs Rd.
Elwha
Madison Creek
Little River
South Branch
Dry Creek
Falls Cr.
Olympic National Park Bdy.
101
112
0266
0267
0268
0269
0270
0271
0273
0274
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0299
0300
0301
0302
0303
0305
0306
0332
0336
0338

ELWHA RIVER — LOWER MAINSTEM
Elwha-Dungeness Basin — WRIA 18

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0265	Dry Creek	Sec36,T31N,R7W	4.8	—	Coho, (Chum)
0267	Unnamed	LB-0.9	2.05	—	Coho, (Chum)
0268	Unnamed	RB-1.3	1.55	—	Unknown
0270	Unnamed	RB-2.8	1.05	—	Unknown
0272	Elwha River	Sec27,T31N,R7W	44.8	321.0	Chin., Coho, Pink, Chum
0276	Unnamed	RB-3.1	1.5	—	Unknown
0277	Unnamed	RB-4.1	1.6	—	Unknown
	Lake Aldwell	Outlet-4.9	—	—	
0283	Indian Creek	LB-7.5	5.65	—	None
0284	Unnamed	RB-1.2	1.8	—	None
0285	Unnamed	RB-2.0	1.9	—	None
0286	Unnamed	RB-0.55	1.2	—	None
0289	Unnamed	RB-4.8	1.9	—	None
0293	Unnamed	LB-5.15	1.0	—	None
	Lake Sutherland	Outlet-5.6	—	7.98	
0295	Falls Creek	RB-7.1	1.7	—	None
0297	Little River	RB-7.8	7.45	23.0	None
0298	Unnamed	RB-1.0	1.6	—	None
0304	S. Br. Little R.	LB-2.9	7.6	14.2	None
0305	Unnamed	LB-0.05	1.2	—	None
0307	Cowen Creek	LB-2.0	1.45	—	None
0308	Unnamed	RB-0.35	1.2	—	None
0315	Unnamed	RB-3.05	1.35	—	None
0319	Unnamed	LB-3.85	1.3	—	None
0321	Unnamed	RB-4.1	1.15	—	None
0333	Unnamed Side Channel	LB-9.5	0.7	—	None
0334	Freeman Creek	LB-0.6	1.35	—	None
0335	Madison Creek	RB-9.7	3.2	—	None
0338	Unnamed	RB-9.8	1.1	—	None
	(Cont. Elwha-Dungen. 503)				

ELWHA RIVER
Lake Mills Area

The Lake Mills area encompasses the mainstem Elwha River and its tributaries between R.M. 10.3 and 17.5 at the mouth of Haggerty Creek. All of this area lies within Olympic National Park and is accessible to its lower reaches via the Olympic Hot Springs Road, approximately 6 miles west of Port Angeles. Total stream miles within this area are 138.0, mostly in the 15 tributaries.

Stream Description

One major feature dominates this stream section, Glines (upper Elwha) Dam, and its reservoir Lake Mills. The entire area lies upstream from the lower Elwha Dam (see Elwha-Dungeness 402) and is inaccessible to anadromous fish. Historically this area of the Elwha contributed to production of some of Puget Sound's major salmon runs.

There are three major tributaries within this area: Hughes, Boulder, and Cat creeks. Smaller tributaries include Griff, Stukey, and Wolf creeks. All of these except Cat Creek have extremely steep gradient throughout their entire length. Most originate in mountainous area above 4,000-foot elevation. Cat Creek enters the Mills Lake Reservoir at its upper end and its lower 0.8 miles has moderate gradient with suitable spawning material.

The mainstem Elwha River includes sections below Glines Dam and above Mills Reservoir. The downstream area has moderate gradient; however, substrate is very coarse and has little potential for salmon production. This is due to the long-term lack of recruitment of gravel substrate materials blocked by the dam. Rica Canyon lies immediately above Mills Reservoir and extends 1.5 miles upstream. At "Gobblins Gate" near the mouth of Haggerty Creek, the Elwha River abruptly enters this spectacular canyon. This interesting name aptly describes the almost eerie disappearance of the river as it leaves a rather broad valley through an extremely narrow opening in a vertical rock wall. The upper one-half of this vertical walled canyon section is steep gradient with small falls and cascades, while the lower one-half has moderate gradient with beautiful gravel areas. It is apparent that gravel that would normally move gradually downstream and provide spawning area for the entire lower Elwha River, and has been accumulating in the lower part of Rica Canyon above the reservoir and dam, for several decades. Depth of the gravel substrate is unknown, but it now completely fills the lower 0.7 miles of canyon that was once a portion of Lake Mills Reservoir.

Salmon Utilization

Anadromous fish access to this area has been blocked since 1910. The area was historically important for salmon production, and this subsection was highly suitable for chinook and coho, as well as chum and pink salmon in its lower portions.

Limiting Factors

Quality of the watershed has remained at its natural level, since all areas lie within Olympic National Park.

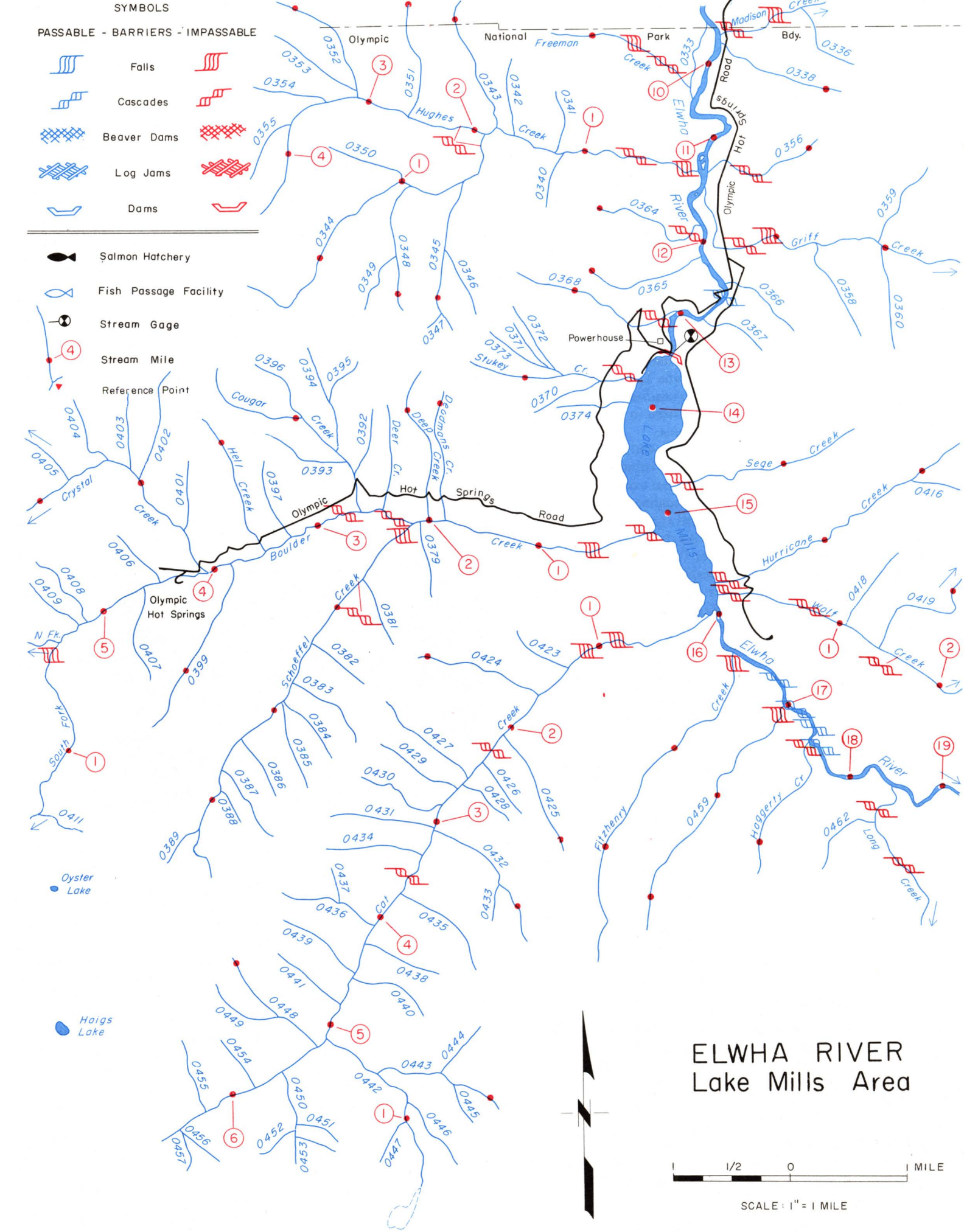
Beneficial Developments

There have been no facilities or programs to benefit salmon production in this area. The accumulation of excellent spawning gravel habitat in the lower portion of Rica Canyon has been a benefit to resident species of fish.

Habitat Needs

The environment in this area has total protection, since it lies within Olympic National Park. Access for anadromous fish would be desirable, since the area has highly productive capacity; however, no possibility of this appears feasible at this time. Juvenile coho and chinook could be planted above the dams to utilize the available rearing area; however, studies have shown that passage through the two hydroelectric facilities would result in high mortalities to downstream migrants.

PHOTO 18-15. Split channels above Lake Mills.


SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point
Olympic National Park
Bdy.
Madison Creek
Freeman Creek
Hughes Creek
Elwha River
Hot Springs Road
Olympic
Powerhouse
Griff Creek
Stukey Cr.
Lake Mills
Sege Creek
Hurricane Creek
Wolf Creek
Cougar Creek
Deer Cr.
Deadmans Cr.
Hell Creek
Crystal Creek
Boulder Creek
Olympic Hot Springs
N Fk.
South Fork
Schoeffel Creek
Cat Creek
Fitzhenry Creek
Haggerty Cr.
Long Creek
Oyster Lake
Haigs Lake
ELWHA RIVER
Lake Mills Area
1/2
0
1 MILE
SCALE: 1" = 1 MILE

ELWHA RIVER — LAKE MILLS AREA
Elwha-Dungeness Basin — WRIA 18

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0272	Elwha River				Chin., Coho, Pink, Chum
0333	Unnamed Side Channel	LB-9.5	0.7	—	None
0334	Freeman Creek	LB-0.6	1.35	—	None
0335	Madison Creek	RB-9.7	3.2	—	None
	(See Elwha-Dungeness 403)				
0338	Unnamed	RB-9.8	1.1	—	None
0339	Hughes Creek	LB-11.3	4.6	8.10	None
0343	Unnamed	LB-1.8	1.2	—	None
0344	Unnamed	RB-1.9	2.9	—	None
0345	Unnamed	RB-0.45	1.3	—	None
0348	Unnamed	RB-0.95	1.15	—	None
0351	Unnamed	LB-2.6	1.0	—	None
0352	Unnamed	LB-3.1	1.15	—	None
0356	Unnamed	RB-11.35	1.1	—	None
0357	Griff Creek	RB-11.4	4.05	—	None
0364	Unnamed	LB-11.8	1.0	—	None
0365	Unnamed	LB-12.15	1.0	—	None
0368	Unnamed	LB-13.0	1.5	—	None
	Lake Mills	Outlet-13.45	—	—	
0369	Stukey Creek	LB-13.7	1.5	—	None
0375	Sege Creek	RB-14.7	1.65	—	None
0376	Boulder Creek	LB-15.1	7.6	20.9	None
0377	Deadmans Gulch Creek	LB-1.85	1.1	—	None
0378	Deep Creek	LB-1.0	1.4	—	None
0380	Schoeffel Creek	RB-2.15	3.7	—	None
0391	Cougar Creek	LB-2.6	1.9	—	None
0398	Hell Creek	LB-3.5	1.25	—	None
0399	Unnamed	RB-3.8	1.5	—	None
0400	Crystal Creek	LB-4.05	2.8	—	None
0410	S. Fk. Boulder Cr.	RB-5.5	2.25	—	None
	Boulder Cr. cont. as N. Fk. Boulder Cr.	@ mi. 5.51	—	—	
0412	Unnamed	RB-5.95	1.05	—	None
0414	Unnamed	RB-6.2	1.1	—	None
	Boulder Lake	Outlet-7.6	—	—	
0415	Hurricane Creek	RB-15.7	2.45	—	None

ELWHA RIVER — LAKE MILLS AREA
Elwha-Dungeness Basin — WRIA 18

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0417	Wolf Creek	RB-15.8	4.0	3.62	None
0419	Unnamed	RB-1.45	1.75	—	None
0420	Unnamed	LB-2.8	1.15	—	None
0422	Cat Creek	LB-15.9	6.65	15.8	None
0424	Unnamed	LB-1.6	1.1	—	None
0425	Unnamed	RB-2.05	1.05	—	None
0432	Unnamed	RB-3.06	1.35	—	None
0442	Unnamed	RB-5.1	1.7	—	None
0443	Unnamed	RB-0.5	1.1	—	None
0448	Unnamed	LB-5.2	1.05	—	None
0458	Fitzhenry Creek	LB-16.35	2.95	—	None
0459	Unnamed	LB-17.0	2.25	—	None
0460	Haggerty Creek	LB-17.5	1.25	—	None
	(Cont. Elwha-Dungen. 603)				

ELWHA RIVER
Lake Mills to Lost River

This upper portion of the Elwha River lies entirely within Olympic National Park in the northern Olympic Mountains. The mainstem river totals only 10.3 miles, from mile 17.5 to 27.7; however, 17 tributaries add 91.4 stream miles to the drainage. This picturesque area is only accessible by national park trails.

Stream Description

The Elwha River flows in a northerly direction throughout this entire section. Features that dominate the area are the mountainous terrain, steep-walled canyons, and total absence of development within the watershed. The watershed is heavily covered by predominantly coniferous timber in all but its uppermost alpine areas. The natural scenic qualities of the area are spectacular.

The lowermost mainstem within this sub-basin flows through Geyser Valley, between R.M. 17.5 and 19.5. Gradient is moderate, with occasional short rapids sections, and a number of pools. Above Geyser Valley the stream is confined within Grand Canyon, approximately 3 miles in length where the gradient steepens, with numerous cascades and several small falls. The terrain immediately adjoining the river is extremely rugged, with vertical walls through most of the length, often several hundred feet high. Above Grand Canyon from R.M. 22.5 to the mouth of Lost River at R.M. 27.7, stream gradient continues moderately steep with much coarse material interspersed with patches of gravel. Valley walls continue to be steep, with some canyon areas, throughout the remainder of this mainstem section.

Two major tributaries enter the Elwha River within this sub-basin area. Long Creek enters from the left bank at R.M. 18.5. It heads on the north side of Mount Ferry, and has extremely steep terrain throughout its length. Lillian River enters the right bank at R.M. 20.9, within Grand Canyon. Its headwaters are in Lillian Glacier, above 6,000-foot elevation, and its gradient is also steep and often precipitous. Other tributaries are small, with invariably steep gradient. Stream cover of all tributaries is mostly dense coniferous timber.

Salmon Utilization

Since 1910 salmon access to this area of the Elwha River has been blocked by the lower Elwha Dam hydroelectric development. Stream surveys and close assessment of the area indicate that this section of the Elwha River was once accessible to a portion of the river's historically large salmon runs. While a number of cascades and potential migration hazards have been noted, none were considered to be total barriers to migration.

Limiting Factors

There are no man-made limiting factors for existing production within this section, since it lies entirely within Olympic National Park. Historical production prior to development of Elwha River hydroelectric dams is unknown, but it is estimated that at one time this stream reach contributed heavily to natural salmon production.

Beneficial Developments

There have been no developments within this area for benefitting salmon production.

Habitat Needs

Since this area is extremely remote and has the protection of national park regulations, there are no salmon habitat needs as long as migration access is blocked at lower Elwha Dam.

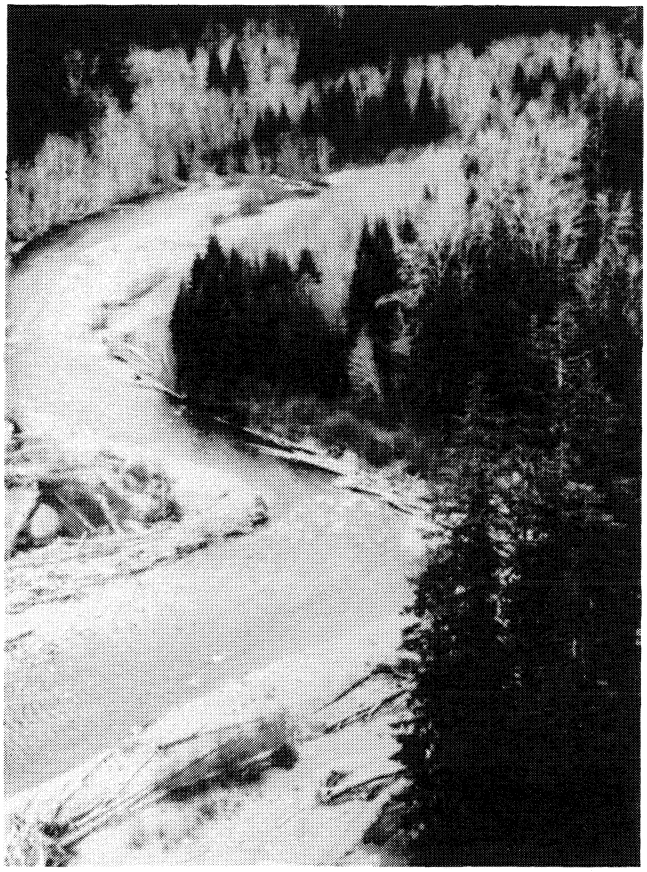
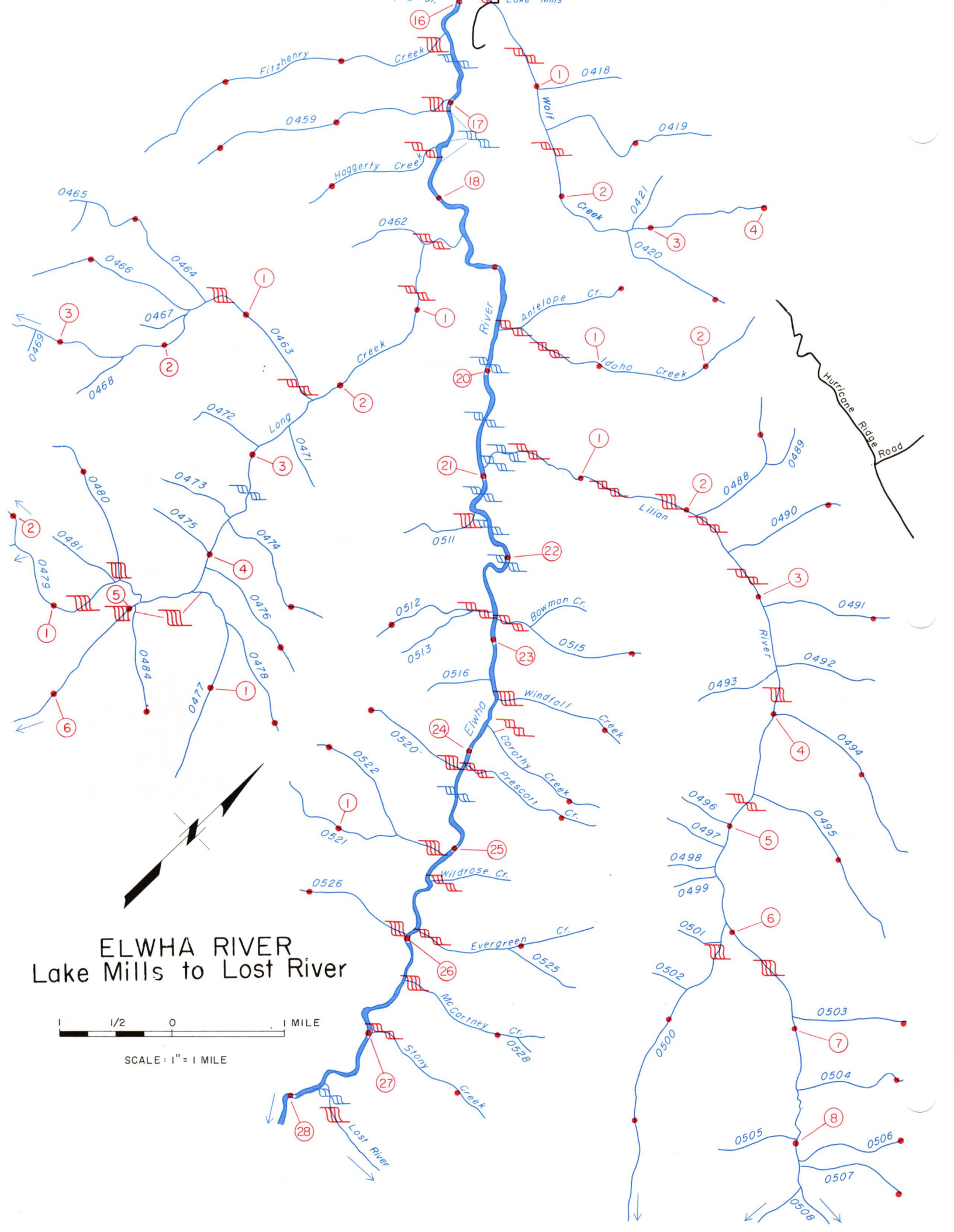


PHOTO 18-16. Section near Lost River.


Fitzhenry Creek
0459
Haggerty Creek
0465
0466
0464
0467
0469
0468
0462
0463
Creek
0472
Long
0471
0473
0480
0475
0474
0481
0479
0476
0484
0477
0478
Lake Mills
0418
Wolf
0419
Creek
0421
0420
Antelope Cr.
River
Idaho Creek
Hurricane Ridge Road
0511
0488
0489
Lilian
0490
0491
River
0492
0493
0494
0495
0496
0497
0498
0499
0501
0502
0500
0503
0504
0505
0506
0507
0508
0512
Bowman Cr.
0515
0513
0516
Windfall Creek
Elwha
Dorothy Creek
Prescott Cr.
0520
0522
0521
Wildrose Cr.
0526
Evergreen Cr.
0525
McCartney Cr.
0528
Stony Creek
Lost River
ELWHA RIVER
Lake Mills to Lost River
1/2
0
1 MILE
SCALE: 1" = 1 MILE

ELWHA RIVER — LAKE MILLS TO LOST LAKE
Elwha-Dungeness Basin — WRIA 18

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0272	Elwha River				None
0417	Wolf Creek	RB-15.8	4.0	3.62	None
0419	Unnamed	RB-1.45	1.75	—	None
0420	Unnamed	LB-2.8	1.15	—	None
0422	Cat Creek	LB-15.9	6.65	—	None
	(See Elwha-Dungeness 503)				
0458	Fitzhenry Creek	LB-16.35	2.95	—	None
0459	Unnamed	LB-17.0	2.25	—	None
0460	Haggerty Creek	LB-17.5	1.25	—	None
0461	Long Creek	LB-18.5	7.95	25.9	None
0463	Unnamed	LB-2.25	4.25	—	None
0464	Unnamed	LB-1.45	1.8	—	None
0466	Unnamed	LB-1.6	1.55	—	None
0474	Unnamed	RB-3.7	1.3	—	None
0476	Unnamed	RB-4.15	1.25	—	None
0477	Unnamed	RB-4.4	1.8	—	None
0478	Unnamed	RB-0.45	1.05	—	None
0479	Unnamed	LB-4.9	3.05	—	None
0480	Unnamed	LB-0.3	1.4	—	None
0482	Unnamed	RB-1.7	1.0	—	None
0484	Unnamed	RB-4.95	1.0	—	None
0485	Idaho Creek	RB-19.6	2.65	—	None
0486	Antelope Creek	RB-0.2	1.0	—	None
0487	Lillian River	RB-20.9	11.1	24.8	None
0488	Unnamed	RB-2.1	1.3	—	None
0490	Unnamed	RB-2.5	1.1	—	None
0491	Unnamed	RB-3.1	1.1	—	None
0494	Unnamed	RB-4.0	1.9	—	None
0495	Unnamed	RB-4.7	1.8	—	None
0500	Unnamed	LB-5.9	3.1	—	None
0503	Unnamed	RB-6.9	1.0	—	None
0504	Unnamed	RB-7.55	1.1	—	None
0506	Unnamed	RB-8.15	1.0	—	None
0507	Unnamed	RB-8.2	1.0	—	None
0508	Unnamed	RB-8.4	1.0	—	None
0509	Unnamed	RB-10.2	1.5	—	None
	Lake Lillian	Outlet-11.1	—	—	

ELWHA RIVER — LAKE MILLS TO LOST LAKE
Elwha-Dungeness Basin — WRIA 18

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0512	Unnamed	LB-22.75	1.2	—	None
0514	Bowman Creek	RB-22.8	0.9	—	None
0515	Unnamed	LB-0.3	1.1	—	None
0517	Windfall Creek	RB-23.5	1.2	—	None
0518	Dorothy Creek	RB-23.7	1.3	—	None
0519	Prescott Creek	RB-24.1	1.4	—	None
0520	Unnamed	LB-24.15	1.0	—	None
0521	Unnamed	LB-25.1	1.65	—	None
0522	Unnamed	LB-0.45	1.1	—	None
0524	Evergreen Creek	RB-25.9	1.6	—	None
0526	Unnamed	LB-26.0	1.1	—	None
0527	McCartney Creek	RB-26.4	1.4	—	None
0529	Stony Creek	RB-27.0	1.3	—	None
0530	Lost River	RB-27.7	7.7	—	None
	(Cont. Elwha-Dungen. 703)				

ELWHA RIVER
Lost River to Headwaters

The headwaters of the Elwha River lie in the highest regions of the Olympic Mountains, with the upper mainstem draining the southeast portion of the Mount Olympus area. Headwaters are adjacent to those of the Queets River, which drains directly into the Pacific Ocean. Total stream mileage within this section includes 17.1 miles of mainstem, plus 141.9 linear miles of tributaries. Several major tributaries form the upper Elwha River section.

Stream Description

The uppermost tributaries of the Elwha River, and its mainstem, have their headwaters in glacial, alpine areas of the Olympic Mountains. The watersheds are extremely rugged, and much of the upper stream gradient is precipitous. The deep valleys are heavily vegetated below timberline, with increasing cover proceeding downstream.

Important tributaries within this basin section include Lost River, Goldie River, Hayes River, and Godkin Creek. Buckinghorse and Delabarre creeks are somewhat smaller, while other tributaries are quite short in length. The gradient in most of the major tributaries moderates somewhat as they approach confluence with the mainstem Elwha River. As the streambed slope shallows, the substrate tends to change from boulder and rubble materials to finer cobbles and occasional gravel areas. The mainstem Elwha River plummets downward in its upper reaches, then surprisingly the gradient moderates sharply in a 5-mile section above the mouth of Delabarre Creek downstream to Godkin Creek. This section contains excellent gravel areas that would be heavily utilized if accessible to salmon. Downstream from Godkin Creek the gradient steepens slightly, with coarse material as well as extensive gravel areas. The mainstem then flows through Carlson Canyon, a short, steep-walled section containing rapids and cascades interspersed with gravel areas. Stream gradient continues moderately steep downstream through Press Valley to the mouth of Lost River.

This upper Elwha watershed is extremely remote, and has been totally untouched except for limited recreational use.

Salmon Utilization

The upper limit of salmon production, prior to construction of the Elwha dams, is not known. Comments from long-term residents of Clallam County indicate that many areas of the upper Elwha were utilized by salmon spawners. Certainly this uppermost section contains much favorable spawning and rearing area; however, its historic value remains unknown. It is truly a beautiful area, uncontaminated by civilized developments and improvements.

Limiting Factors

The possible utilization of this area was precluded by construction of the lower Elwha Dam. Otherwise, the watershed remains in its pristine nature and therefore affords a completely natural habitat.

Beneficial Developments

No facilities, projects or programs have been developed to benefit salmon production.

Habitat Needs

Since the entire headwaters are included within the Olympic National Park, they are adequately protected under federal watershed management.

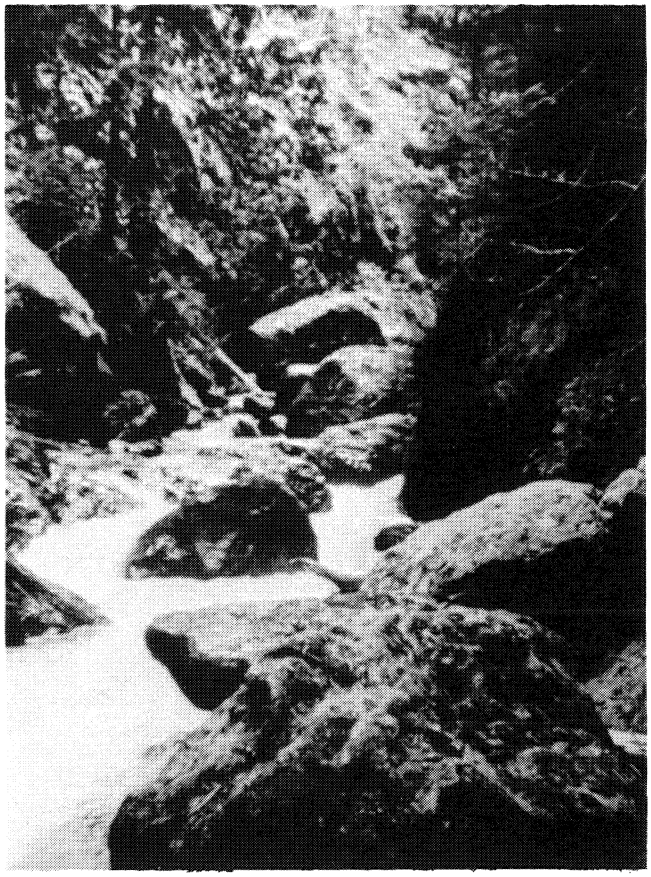
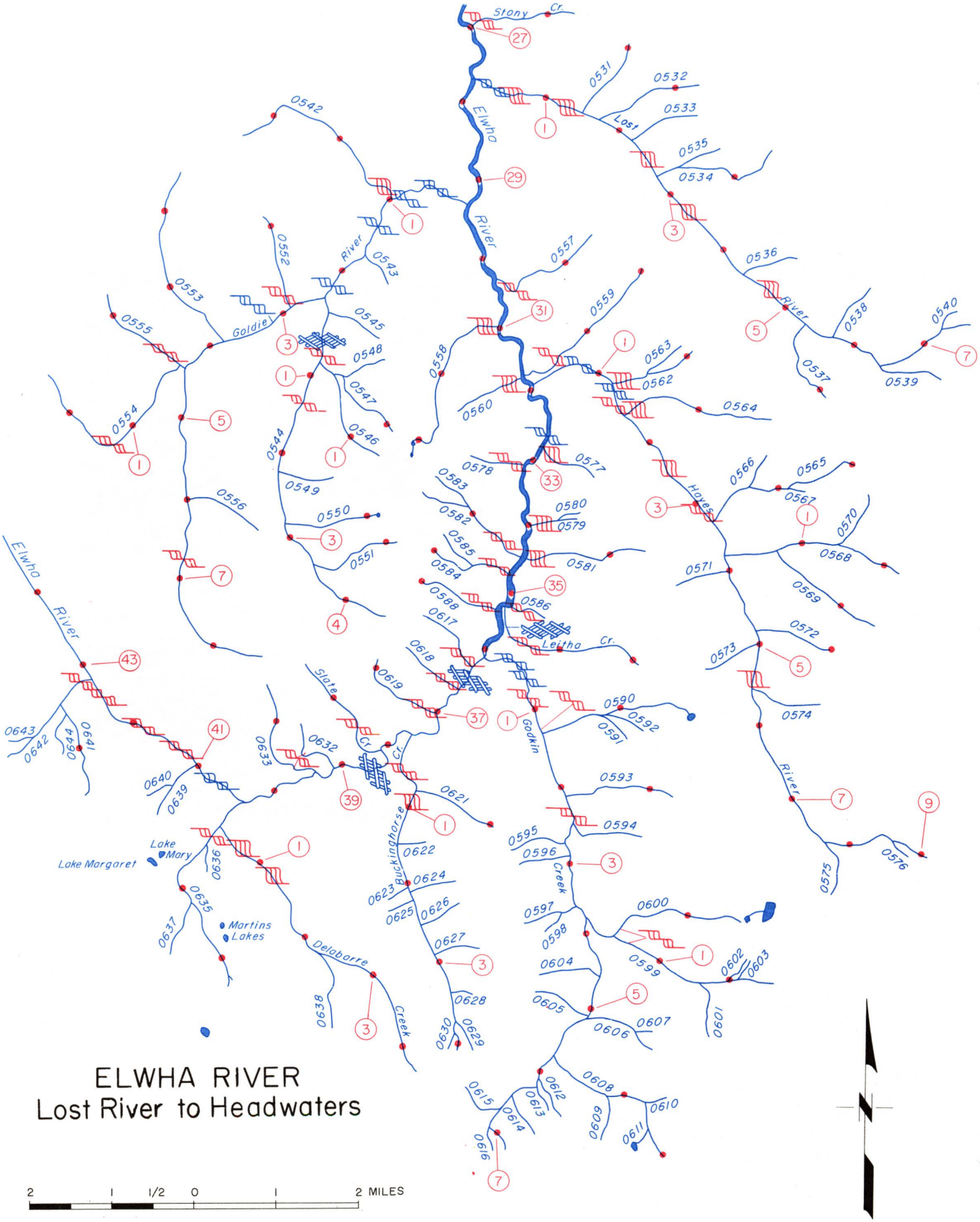


PHOTO 18-17. Headwater tributaries are precipitous.



ELWHA RIVER
Lost River to Headwaters

2 1 1/2 0 1 2 MILES

SCALE : 1" = 1.5 MILES

ELWHA RIVER — LOST RIVER TO HEADWATERS
Elwha-Dungeness Basin — WRIA 18

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0272	Elwha River				None
0529	Stoney Creek	RB-27.0	1.3	—	None
0530	Lost River	RB-27.7	7.7	12.1	None
0531	Unnamed	RB-1.5	1.0	—	None
0532	Unnamed	RB-1.7	1.2	—	None
0534	Unnamed	RB-2.7	1.6	—	None
0537	Unnamed	LB-5.3	1.0	—	None
	Unnamed Lake	Outlet-7.7	—	—	
0541	Goldie River	LB-29.4	8.6	28.3	None
0542	Unnamed	LB-1.0	2.4	—	None
0544	Unnamed	RB-2.4	4.5	—	None
0546	Unnamed	RB-0.8	1.4	—	None
0547	Unnamed	RB-0.2	1.1	—	None
0550	Unnamed	RB-2.8	1.1	—	None
0551	Unnamed	RB-3.4	1.1	—	None
0552	Unnamed	LB-2.9	1.1	—	None
0553	Unnamed	LB-3.8	2.4	—	None
0554	Unnamed	LB-4.4	2.4	—	None
0555	Unnamed	LB-0.05	1.3	—	None
0557	Unnamed	RB-30.3	1.5	—	None
0558	Unnamed	LB-31.0	2.1	—	None
0559	Unnamed	RB-31.75	2.0	—	None
0561	Hayes River	RB-31.9	9.0	18.6	None
0562	Unnamed	RB-1.2	1.1	—	None
0564	Unnamed	RB-1.55	1.8	—	None
0565	Unnamed	RB-3.3	2.0	—	None
0568	Unnamed	RB-3.8	2.3	—	None
0569	Unnamed	LB-0.7	1.5	—	None
0572	Unnamed	RB-4.8	1.0	—	None
0581	Unnamed	RB-34.5	1.5	—	None
0582	Unnamed	LB-34.51	1.5	—	None
0584	Unnamed	LB-34.75	1.0	—	None
0587	Leitha Creek	RB-35.2	2.05	—	None
0588	Unnamed	LB-35.3	1.0	—	None
0589	Godkin Creek	RB-36.1	7.2	17.9	None
0590	Unnamed	RB-1.3	1.8	—	None
	Unnamed Lake	Outlet-1.8	—	—	

ELWHA RIVER — LOST RIVER TO HEADWATERS
Elwha-Dungeness Basin — WRIA 18

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0593	Unnamed	RB-2.1	1.3	—	None
0599	Unnamed	RB-3.8	2.5	—	None
0600	Unnamed	RB-0.4	1.8	—	None
0608	Unnamed	RB-5.7	2.0	—	None
0619	Unnamed	LB-37.0	1.1	—	None
0620	Buckinghorse Creek	RB-37.5	4.1	—	None
0621	Unnamed	RB-0.8	1.0	—	None
0631	Slate Creek	LB-38.1	1.5	—	None
0633	Unnamed	LB-39.4	1.4	—	None
0634	Delabarre Creek	RB-40.4	4.3	6.91	None
0635	Unnamed	LB-0.35	2.3	—	None
0641	Unnamed	RB-42.8	1.5	—	None