

Upper Clackamas River Habitat Improvement Project

1993 ANNUAL REPORT

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Prepared for

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## ABSTRACT

In 1993, the Clackamas Ranger District completed project work on two side channels along the Clackamas River at River Mile (RM) 58 and 62. The combined length of the two side channels is approximately 0.4 miles. The work consisted of digging a channel through the floodplain and digging through fill material to connect historical side channels to the mainstem Clackamas River. Post-digging work consisted of installing coarse woody debris along with boulders in the channel to diversify habitat and control grade of the channel, Native vegetation was also planted along the channel to stabilize the banks and promote shade. Juvenile fish quickly moved into the channels soon after connecting the channel to the mainstem Clackamas River.

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## INTRODUCTION:

In 1993, the Clackamas Ranger District completed the Clackamas River Dispersed Site Rehabilitation Project environmental assessment. Part of the project was to create new side channels and reconnect historical side channels to the main stem. The selected alternative included a proposal to work in five areas to create new side channels and reconnect historical side channels to the mainstem Clackamas River.

In 1993, Oregon Trout petitioned the National Marine Fisheries Service to include coho salmon, specifically mentioning the late-run Clackamas River coho salmon, on the federal Endangered Species List. The National Marine Fisheries Service determined that the petition had merit and the National Marine Fisheries Service is reviewing the status of the stock at this time. The 1993-1994 return of adult late-run coho salmon past North Fork Dam reached a record low. Returns of coho from December through March include only 50 adults and about 20 jacks (Doug Cramer, Portland General Electric, personal communication). Reconnecting the side channel to the mainstem would benefit the native steelhead and coho stocks as well as other salmon and trout stocks that use the upper basin by increasing the quantity and quality of available habitat.

Monitoring efforts conducted in the Clackamas River basin and peer reviewed literature show that natural and human created side channels contain some of the highest fish densities within the basin. In addition, literature shows that these side channels or off-channel rearing areas are very important overwintering areas for anadromous fish.

## DESCRIPTION OF PROJECT AREA

The Clackamas River is a sixth order tributary to the Willamette River. The project area is located upstream of the confluence with the Collawash River at RM 57 about 30 miles south of Estacada, Oregon (Figure 1.). This section of the upper Clackamas River is a fifth order river (T.6S., R.6E., Sec. 22). The upper Clackamas River supports runs of early (hatchery origin) and native late-run coho (Oncorhynchus kisutch), and spring chinook salmon (O. tshawytscha), and summer and winter steelhead (O. mykiss). The native late-run coho salmon and native winter steelhead have declined from historical levels. These two stocks are now considered at a moderate risk of extinction (Nehlsen, et al., 1991).

Fish habitat in the project reach (RM 57 to RM 65) is primarily composed of riffles. The Forest Service constructed a side channel in 1988 and 1989, respectively (Figure 2). During 1991, the upper Clackamas River was surveyed using the Hankin-Reeves stream survey methodology (Hankin and Reeves 1988). Riffles make up about 86 percent of the habitat in this reach with pools and side channels accounting for less than 4 percent each (Bergamini and Herrington 1991). The floodplain is typically narrow (100 to 200 feet wide) with much of the historical floodplains filled or isolated from the mainstem due to construction of Forest Service Road 46. The effects of road 46 which constrains the channel are evident by the high percentage of riffles and low percentage of pools and side channels. Consequently, smolt production is presently estimated to be below the potential based on smolt habitat capability models. Smolt production is much lower for species such as coho salmon due to

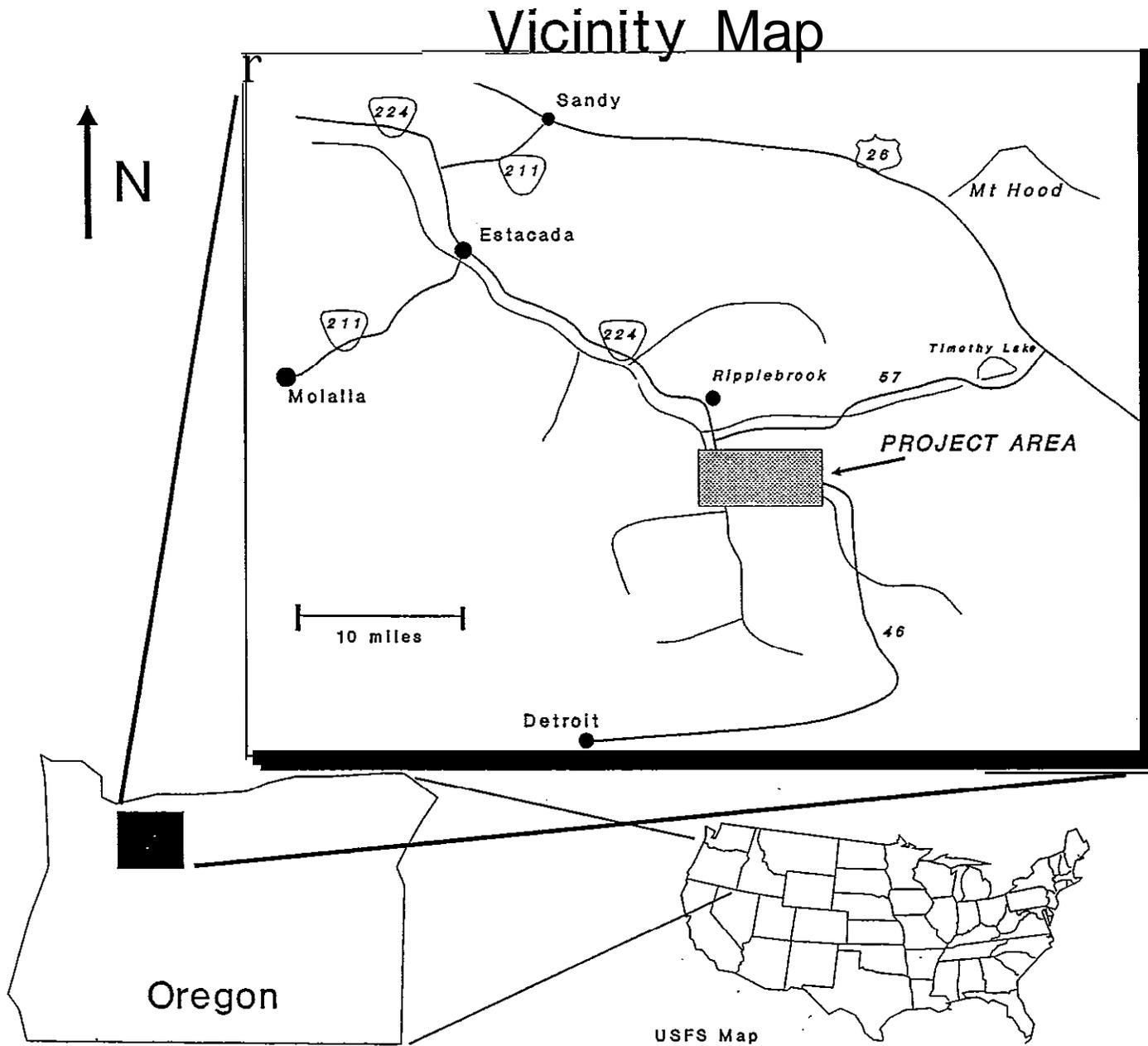


Figure 1. Vicinity map for the upper Clackamas River Project.

# Clackamas River Side Channels

Clackamas Ranger District  
Bonneville Power Administration

1988-1994

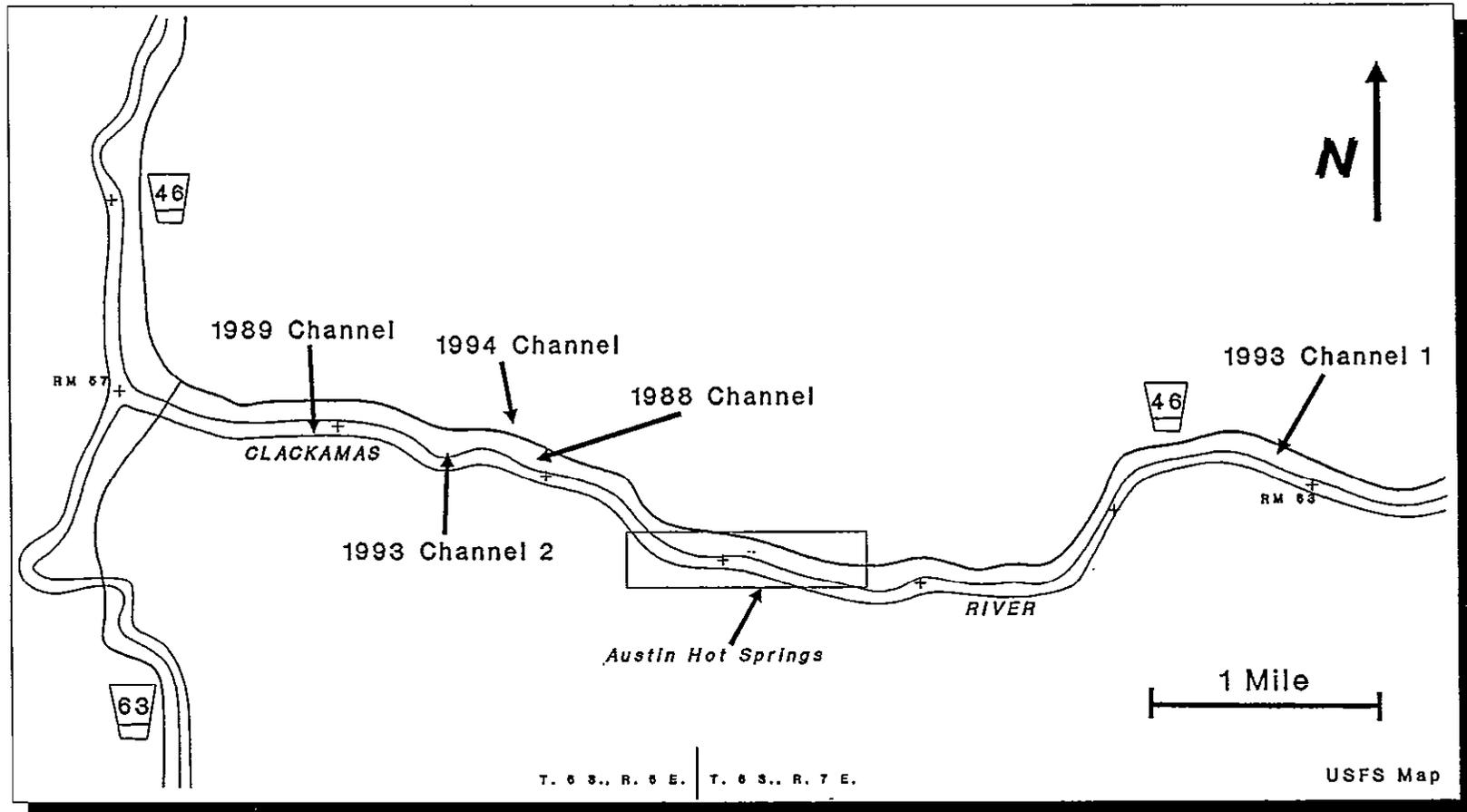


Figure 2. Past, present and future side channels within the project area.

their preference for slower water and large amounts of coarse woody debris for cover. These habitat characteristics are lacking in this section of the Clackamas River.

The upper Clackamas River is a federally designated Wild and Scenic River and a proposed Tier 1 Key Watershed under the Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Related Species within the Range of the Northern Spotted Owl (1994). Tier 1 Key Watersheds were designated because they currently provide or have the potential to provide high quality habitat to support the anadromous fish stocks at risk.

The upper Clackamas River basin area is 115,000 acres and mainstem length is approximately 26 **miles**. Most of the river and river basin is on Forest Service administered lands with the exception of the 155 acre private parcel near RM 60. Anadromous fish migrate up to RN 77 where a series of cascades blocks access to the upper Clackamas River.

#### METHODS AND MATERIALS

In August, 1993, the Forest Service initiated work on two side channels (Figures 3 and 4). Work consisted of removing 4500 cubic yards of material at RM 62 and hauling in about 60 boulders and 15 logs. About 24 boulders and 8 logs were used in the channel at RN 62 and 36 boulders and 7 logs in the channel at RM 58. The boulders and logs were incorporated into the channels to control the grade of the channel and velocity of the water and provide hiding cover. Each channel is about 0.2 miles long. In addition, the channel at RM 62 includes a large culvert which allows vehicle access to a dispersed camp site.

Following completion of the two channels, the banks were stabilized with erosion cloth and planted with native vegetation., Native vegetation planted along the channels included: sword and deer fern, salal, Oregon grape, blue wild rye, brome grass, Western red cedar, Douglas-fir, red twig dogwood, red huckleberry, alder, white pine, Western hemlock, willow (spp.), and black cottonwood.

During the winter of 1993-1994, the channels were qualitatively monitored for fish use and stability during high flows this past winter. Habitat mapping was not done in 1994 to allow the channels to go through at least one high flow season and adjust to the **natural** hydrology of the river.

#### RESULTS AND DISCUSSION

The **structure** work in 1993 resulted in the creation of two side channels, totalling about 0.4 miles long. Initial monitoring efforts showed that fish started using the channels within 2 days of connecting them to the main stem Clackamas River. Monitoring efforts this winter showed that fish overwintered in the new side channels. As of March, 1994, newly emerged spring chinook salmon were observed in the channel at RM 62. Some of the native vegetation planted in the fall of 1993 has died; these areas will be replanted this spring.

During high flows, monitoring this past winter, there was little erosion occurring (no evidence of discolored water). The design of the entrances to

# Clackamas River Side Channels

Clackamas Ranger District  
BPA

1993 Channel 1

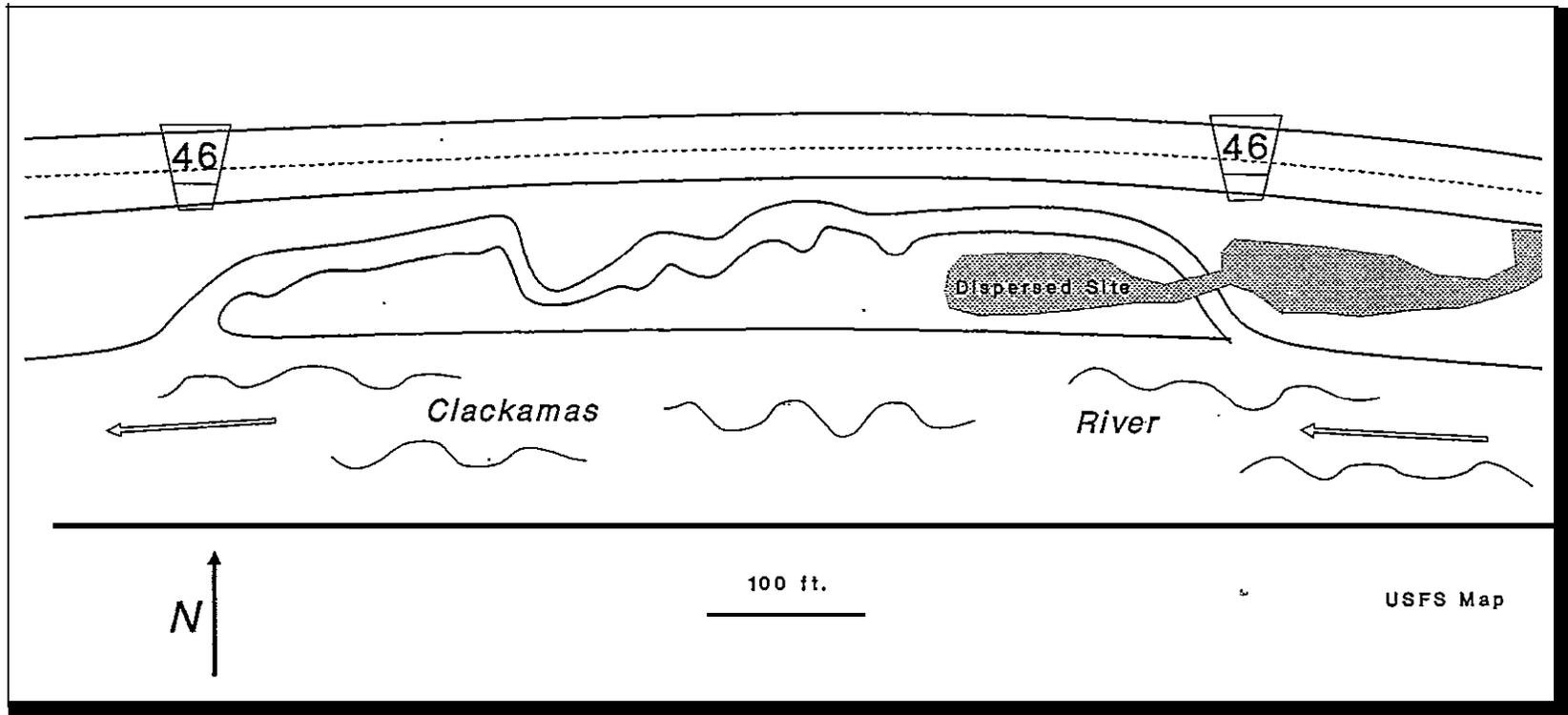


Figure 3. Schematic of channel 1 located at RM 58 in the upper Clackamas River.

# Clackamas River Side Channels

Clackamas Ranger District  
BPA

1993 Channel 2

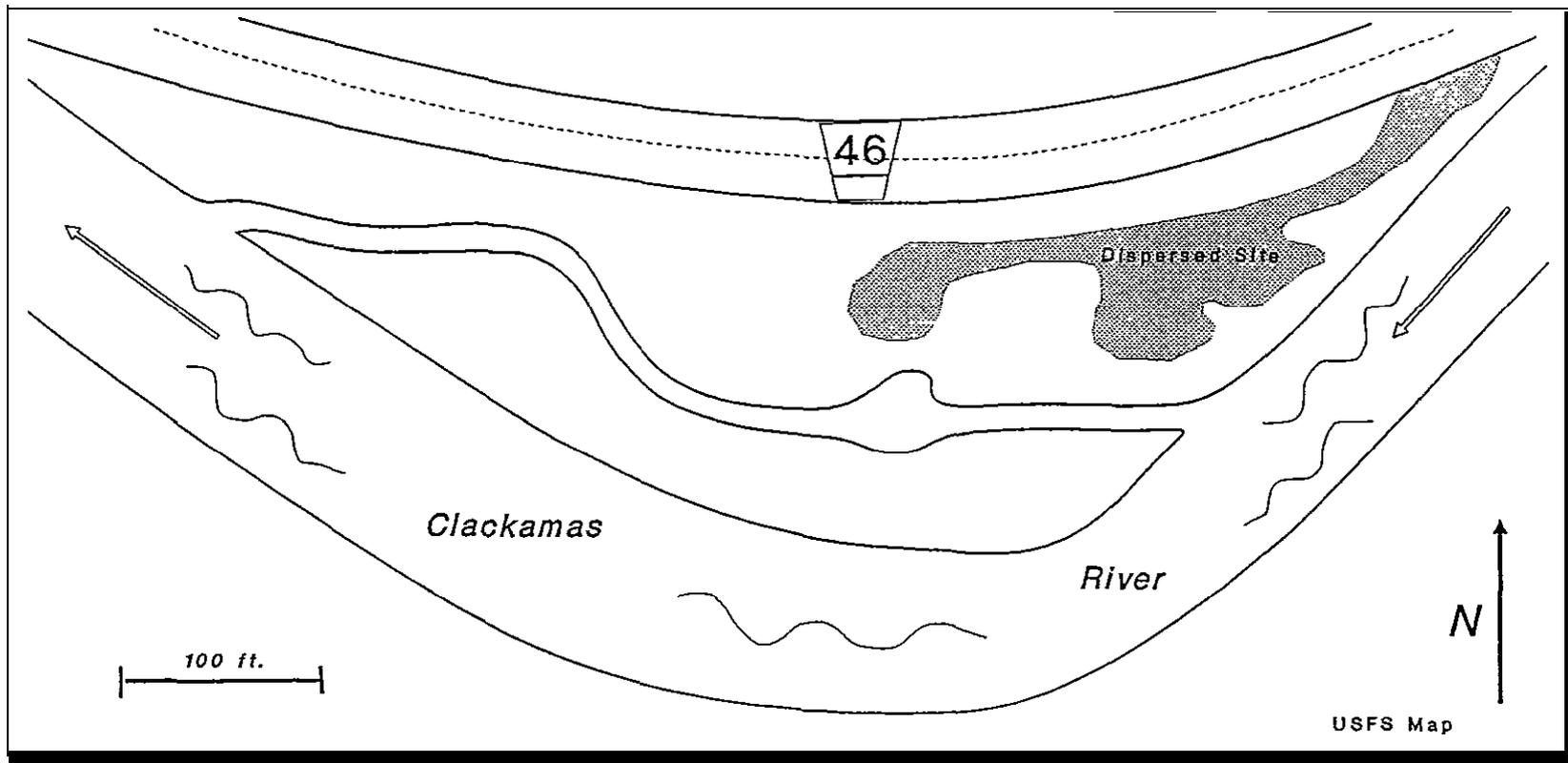


Figure 4. Schematic of channel 3 located at RM 62 in the upper Clackamas River.

the channels appears to be working as planned. Fishery biologists reviewing the channels during the high flows did not see a threat to the channels being washed out during typical high flow events.

#### BUDGET

The Forest Service spent all of the allocated budget for the project in 1993 and 1994. The total costs for developing the environmental documentation, contracts, salaries, materials and supplies was about \$44,000. The cost breakdown is as follows:

Salaries, material, & supplies.....	\$23,500
Contracts.....	<u>\$20,500</u>
Total.....	\$44,000

#### SUMMARY AND CONCLUSIONS

The objective of the project was to improve anadromous fish habitat and thus, fish production capability via creation of side channels. The initial work in creating two side channels along the Clackamas River appears to be successful in creating the desired physical habitat. Monitoring efforts in 1994 will focus on fish use will give more insight as to the success of the project to support juvenile anadromous fish. One of the parameters to determine success of the project will be comparing fish densities and species composition in the new channel to those found in the adjacent mainstem and in natural side channels.

Work proposed for the 1994 field season includes combining Forest Service restoration funds with BPA contract funds to reconnect a natural river meander to the main stem at RM 58 (Figure 2). This new project site is located just upstream from the side channel constructed in 1993. In addition, 1994 work will include additional planting more native vegetation along the channels to replace plants that died. This will promote the establishment of a dense riparian vegetative canopy.

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- Nehlsen, W., J. E. Williams, and J.A. Lichatowich. 1991. Pacific salmon at the crossroads: stocks at risk from California, Oregon, Idaho, and Washington. Fisheries: 16: 4-21.
- U.S. Department of Agriculture, Forest Service and U.S. Department of the Interior, Bureau of Land Management. 1994. Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Related Species within the Range of the Northern Spotted Owl. Portland, Oregon. 321 pp.

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<sup>1</sup>Habitat information based on 1991 Clackamas River Riparian Survey on file at the Mt. Hood National Forest Supervisor's office.