

YREKA CREEK
BANK STABILIZATION PROJECT

Cooperative Agreement #14-16-0001-89536

between the

City of Yreka

and

U.S. Fish and Wildlife Service

Final Report, May 20, 1990

Prepared by
Great Northern Corporation
James C. Cook
Biologist

ABSTRACT

Six hundred ninety-two feet of eroding silt banks were stabilized during this project. Over 1,430 willow slips were planted in the protected areas to quickly establish vegetative protection.

Current evaluation indicates a qualified success in decreasing siltation of the streambed and establishing permanent bank protection .

SUMMARY OF EXPENDITURES:

Salaries, including benefits	\$7,883.75
Operations and maintenance	\$ 798.06
Supplies and materials	\$ 797.89
Overhead @ 5.5%	\$ 520.30

INTRODUCTION:

Yreka Creek is a major steelhead spawning stream in the Shasta River system. Over 150 redds may be found in the creek during a normal spawning run.

It is suspected that siltation caused by eroding stream banks limit egg survival and decrease the quality of spawning riffle habitat (Dennis Maria, CDFG Fisheries biologist).

It is the objective of this project to improve spawning and early rearing conditions for anadromous fish by reducing erosion of fine sediments from streambanks using biotechnical methods. These methods included stabilizing soils by covering the eroding bank with a willow stem mat attached to steel posts driven into the offending bank. The mat would allow planted and invading plant species to become established. As the mat decomposes over a several year period, vegetation would take over bank protection. The vegetation will provide additional benefits to the stream system beyond bank protection, such as providing cover for thermal regulation, adding detritus, and providing wildlife habitat.

Great Northern Corporation was the first to use these methods in Siskiyou County. While the methods have been used with mixed success elsewhere, we were encouraged by the success demonstrated by Redwood CAA in the Eureka area. Bank stabilization funded by the California Departments of Water Resources and Fish and Game allowed us to test these methods on Siskiyou County streams. Based on the results of those previous projects we asked for and received funding for this project.

We believe that these methods are cost effective and increase anadromous fish habitat while decreasing habitat loss due to siltation. We should note that frequently stream siltation in creeks in Siskiyou County are the results of past and current stream habitat mismanagement and other human impacts, such as, huge scale dredge mining, over grazing, poor forestry practices and channelization.

It has been our policy to try and make an assessment of success of our habitat projects in our agency reports, rather than submit a simple "here is what we did" report. We have included our evaluation of this project in this report. Unfortunately, this has caused us to wait until nearly the contract end date to submit this report. We apologize for any consternation this has caused those who must worry about contract dates.

Great Northern received assistance from Matt Matthews and Boy Scout Troop #57. Their help in preparing willow stock for planting greatly increased the area and numbers which we were able to plant and we appreciate their assistance .

DESCRIPTION OF WORK AREA

Yreka Creek, a tributary to the Shasta River and the Klamath River. Banks stabilized varied in height from 4 feet to 10 feet above the stream channel, lengths vary from 30 feet to 165 feet. Soils included dredge spoils, compacted clays, silt and silty gravel stream beds.

Please see below and attached map for location of sites

DESCRIPTION OF WORK COMPLETED

Willow mats consisted of trimmed and untrimmed stems averaging three to four inches in diameter. Stems were bundled together in groups of three. Bundled groups were placed along the bank and held in place by larger stems placed vertical to the stream. Stems holding bundles in place were attached to five foot steel "T" posts driven four feet into the soil.

Willow stems were planted along the sites during winter. Stems were approximately two inches in diameter and three to four feet in length. All planted stems were treated with "Rootone" and planted two to three feet deep.

Site specifications:

Crowman #1, east side of stream, S1/2,NW 1/4, sec. 14 T45N, R7W, silt on bedrock, 110 feet in length, seven foot high cut bank, 219 willows planted.

Terry's Nursery, west side of stream, SW1/4,NW1/4, sec. 14 T45N, R7W, silt and gravel bank, 152 feet in length (in cooperation with DWR), 336 willows planted, also seeded.

Deer Creek #2, east side of stream, SW1/4,SW1/4,sec. 14 T45N, R7W, silt and spoils, 40 feet in length, (started this contract, finished DWR), 169 willows planted.

Waiiaka, west side of stream, SW1/4,NE1/4,sec.34 T45N,R7W, at old bridge abutment, 30 feet in length, 100 willows planted.

Crowman #2, east side of stream, NE1/4, sec. 14 T45N, R7W, silt, 50 feet in length, 126 willows planted.

Crowman #3, east side of stream, NE1/4, sec. 14 T45N, R7W, silt, 175 feet in length, 252 willows planted.

Deer Creek #3, east side of stream, SW1/4,SW1/4,sec. 14 T45N, R7W, spoils, 135 feet in length, 228 willows planted

RECOMMENDATIONS FOR MAINTENANCE

Biotechnical methods of bank stabilization are designed to not require any maintenance.

EVALUATION

Crowman #1, planted survival is currently 80%, we expect 25-30% survival. The streambed was silty before treatment, we found the gravel cleaned after a recent storm. 100%

Terry's Nursery, planted survival is currently 10%. This site needs supplemental water to establish vegetation quickly.

Deer Creek #2, planted survival is currently 80%, we expect 20% survival, reduction in silt on streambed. 100%

Waiiaka, planted survival is 10%, we expect even less. This site only needs five to eight trees for protection, however, the site may not ever stabilize due to old bridge abutment.

Crowman #2, planted survival is currently 90% we expect 50% survival. There has been a dramatic reduction in silt through this stretch. A silt bed has been cleaned to a gravel bed, riffles which may provide spawning sites area now available.

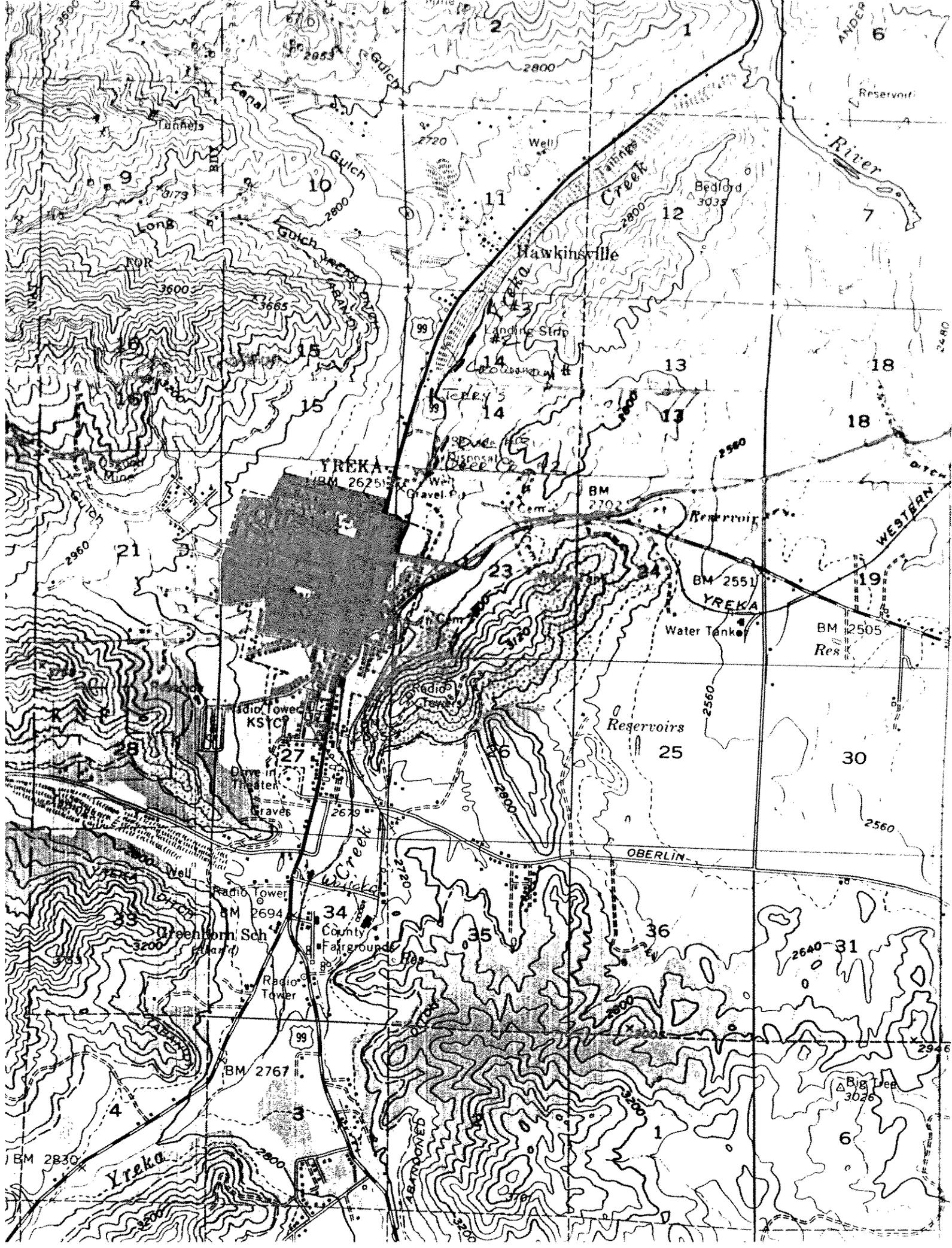
Crowman #3 planted survival is 100% we expect 85% survival, even the mats are sprouting. There has been a dramatic reduction in silt. This site should be considered a wild success.

Deer Creek #3, planted survival is 100% we expect 80% survival. There has been some reduction in silt load immediately downstream of site.

We believe ,at this time, the project is a qualified success. There has been dramatic reductions in silt load in most treated reaches and there is stabilization on all treated banks. Some banks already show excellent survival of planted materials, we are concerned that some banks do not have planted willows sprouting. The banks which have high survival rates receive some shade during the day and have soils with high silt percentage. Banks with low survival rates do not have these components. Banks with low survival of planted materials will need to depend on natural invasion. Great Northern Corporation intends to monitor these banks in order to improve our methods.

RECOMMENDATIONS FOR FURTHER EVALUATION

We strongly recommend that an additional follow up survey of the sites be conducted in late spring 1991 to determine if these methods continue to stabilize the treated banks. We also urge that the information be made available to those interested in habitat restoration in our region.



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YREKA
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Well
Gravel Pit
Cem.
BM 2702
Reservoir
Water Tank
YREKA
BM 2551
BM 2505
Res

Yreka
Greenhorn Sch
Fairgrounds
Radio Tower
Radio Tower
BM 2694
BM 2767
BM 2830

Yreka
Radio Tower
KSYC
Dive in
Theater
Graves
2679
Well
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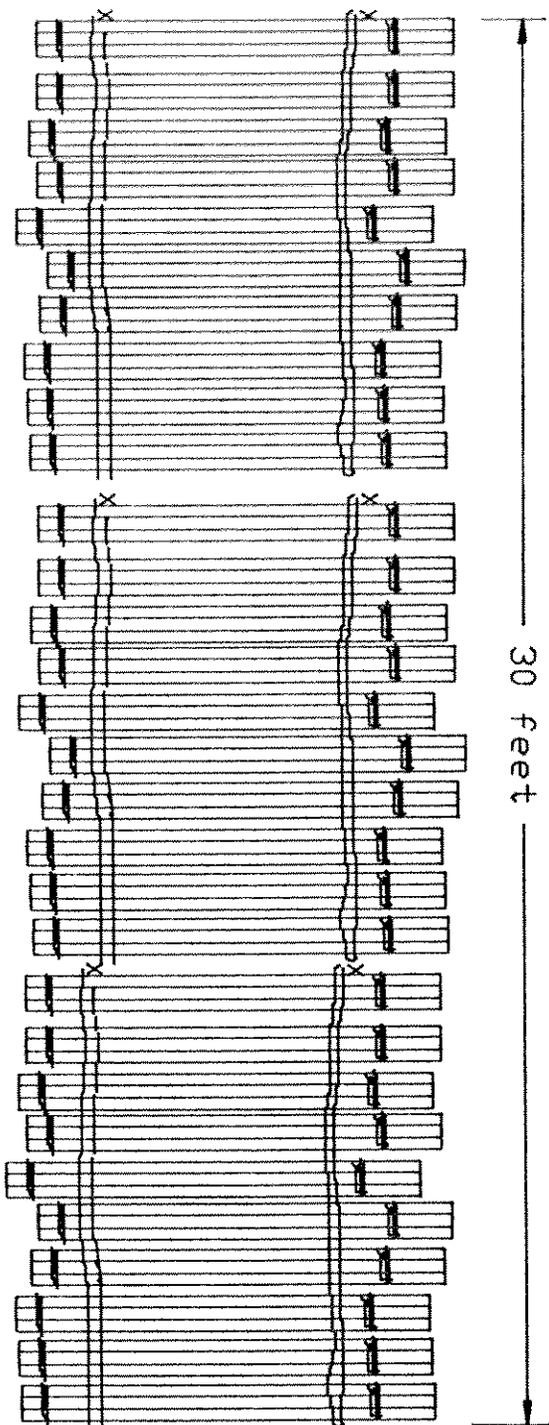
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stream

bank



Willow Mat

30 feet

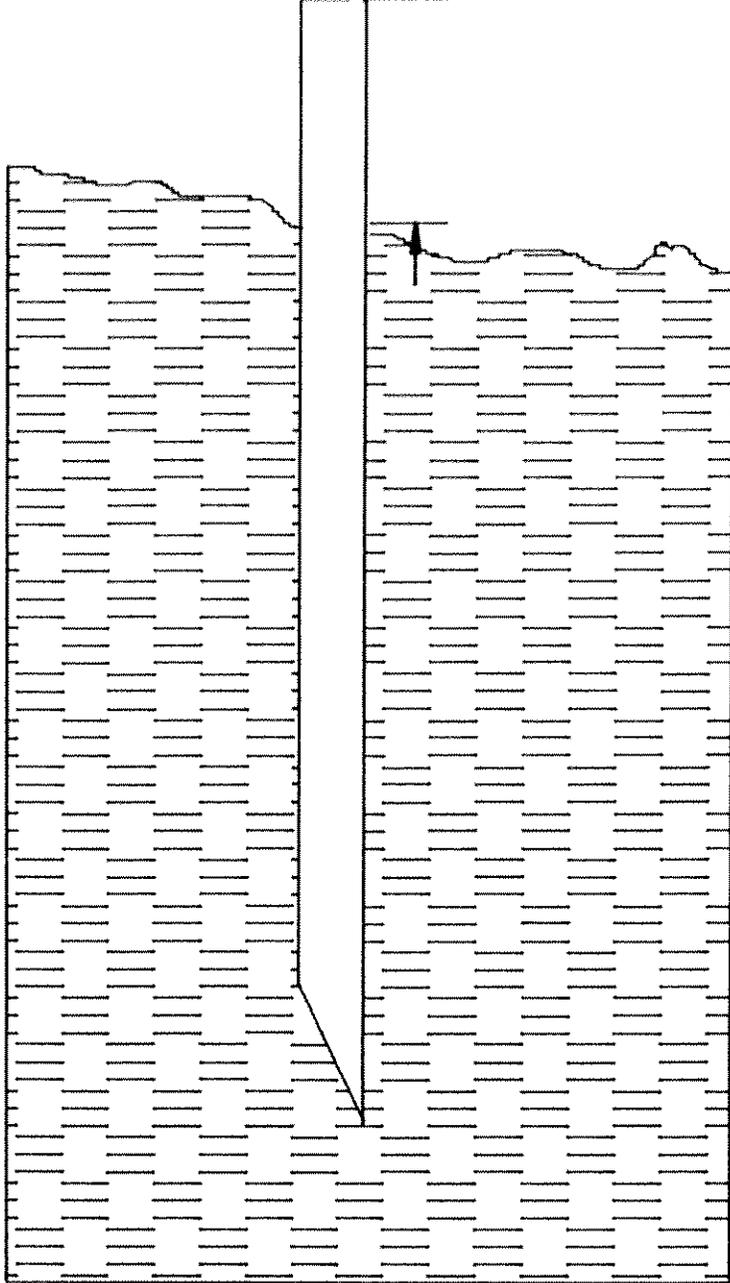
Executive Director Paul Wagner
Drawn by Jim Cook Date: 5/1/90
Yreka Creek Project, Siskiyou County
Client City of Yreka Address

Great Northern Corporation
780 South Davis Street, P.O. Box 20
Weed, California, 96094 (916) 938-4115

Planted willow stem

2 - 3 feet

1 foot



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Waiiaka

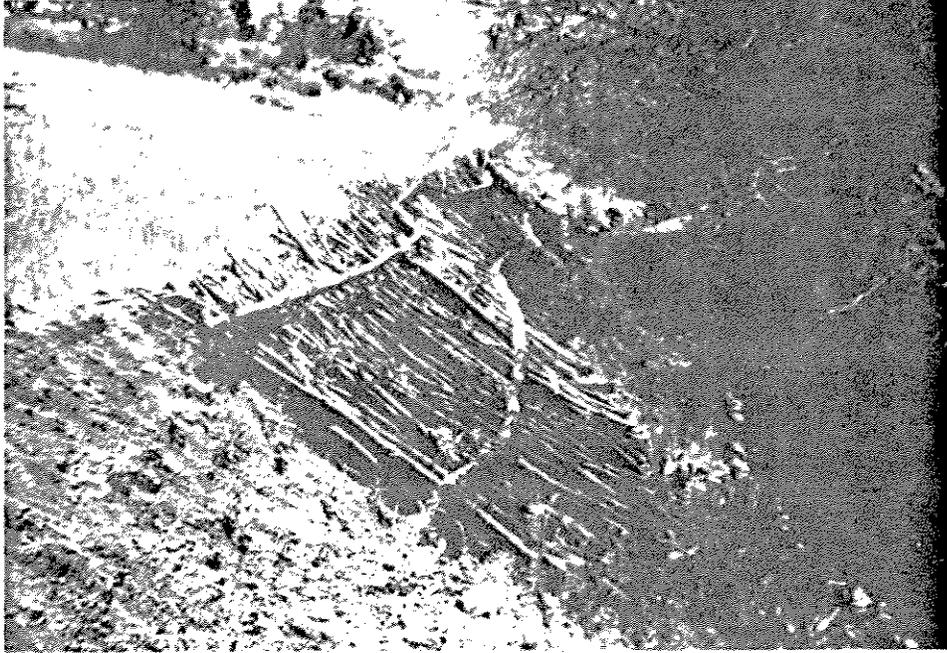


Deer Creek #3

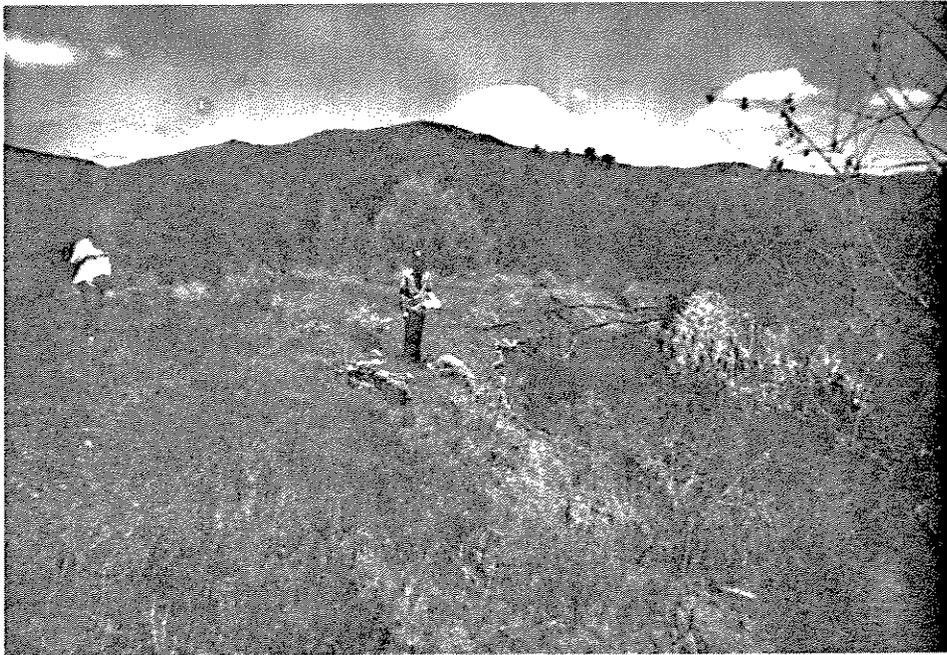


Deer Creek #2





Crowman
#1



Terry's

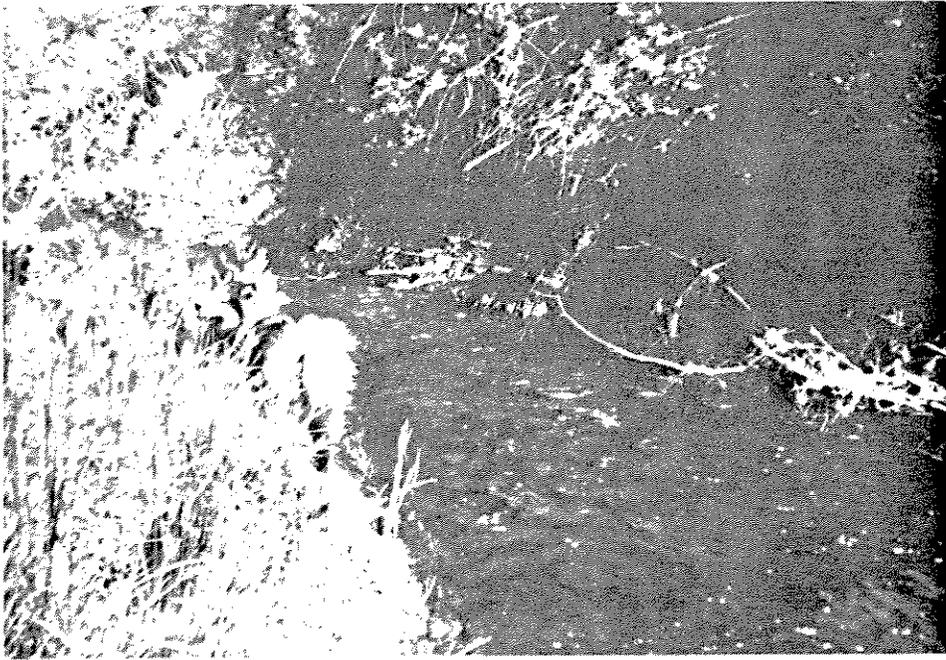


CROWMAN
#2





CROWMAN
#3



Flag is USFS
Stream Survey
Spawning Riffle

