YAKIMA RIVER SIDE CHANNEL ENHANCEMENT PROJECT 9705100

SHORT DESCRIPTION:

The project entails multiple activities. The floods of 1996 created numerous braids and side channels. Some of these channels contain excellent rearing and overwintering habitat, while others will need some help to establish adequate riparian vegetatio n and in-channel cover conditions. At several sites along the Naches River, land will be purchased to preserve conditions created by the flood and allow the river to interact with its floodplain. At other sites along the Yakima River near Yakima and upstream between Ellensburg and Easton, historical side channels isolated by dike construction will be reconnected to the river to allow juvenile access. The hydrograph is heavily impacted by USBOR storage and release regimes in this river reach. The intent is to provide high and low flow refugia, primarily for juvenile spring chinook. This project is an extension of project #5510200 which is intended to determine t

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SUB-CONTRACTORS:

Applicant will contract, through competitive bidding, with capable general contractor(s) for excavation and structure placement. Contractor has not been identified. The intent of the project is to create features that will not require long-term maintenance. YIN will pursue additional funding from Fish and Wildlife Program and/or other sources if maintenance is ever needed

GOALS

GENERAL:

Supports a healthy Columbia basin, Maintains biological diversity, Maintains genetic integrity, Increases run sizes or populations, Provides needed habitat protection

WATERSHED:

Implementation

NPPC PROGRAM MEASURE:

2.2A; 7.0A; 7.7

RELATION TO MEASURE:

Project is aimed at recreating habitats that are structurally alogous to lost floodplain features in an effort to increase life history diversity and overall egg to smolt survival for spring chinook salmon. Portions of the project will be implemented on private lands and will accordingly require cooperative agreements with landowners. In some cases land and/or easements will be purchased. Providing the landowner compensation accomplishes the habitat restoration objectives while avoiding the confrontational problems of a fish versus private property rights debate.

TARGET STOCK	LIFE STAGE	MGMT CODE (see below)
Coho	Fry through smolt	A, S
Upper Yakima, Naches , and American River Spring Chinook	Fry through smolt	N, S

AFFECTED STOCK	BENEFIT OR DETRIMENT
Rainbow Trout	Beneficial
Westslope Cutthroat	Beneficial

BACKGROUND

Stream name:

Yakima and Naches Rivers

Subbasin:

Yakima

Stream miles affected:

Land ownership:

ADAPTIVE MANAGEMENT IMPLICATIONS:
The subject project and other companion activities are based on the hypothesis that spring chinook smolt production is limited generally by high non-depensatory mortality through all post-emergence life history stanzas. If the hypothesis is correct, then increased availability of high quality , relatively stable habitats should increase total spring chinook smolt production, and decrease the observed variability in smolt per spawner rates. There are several adaptive management implications. First, existing construction techniques must be refined as needed to create habitats that are highly attractive to target fish species. Second techniques that maximize habitat suitability over a wide range of environmental conditions must be developed. Finally, the appropriateness of employing the strategy itself must be determined. We have experience with similar projects in the Yakima Basin and have borrowed from WDFW experiences in the Skagit River Basin, but we must continue to refine our techniques while weighing the relative cost effectiveness of this approach against other possible habitat enhancement strategies.

PURPOSE AND METHODS

SPECIFIC MEASUREABLE OBJECTIVES:
The objective of the project is to increase natural production of spring chinook and coho salmon. The objective will be accomplished in part through the development of a well distributed network of high quality habitat throughout the basin. The Yakima Nation has assembled a brood year cohort data base for the years 1981 through 1996 that will serve as a primary baseline for determining whether this and companion efforts are contributing to an increasing trend in smolt production and egg to smolt survival rates. Continued spawner surveys and smolt monitoring at the Chandler juvenile facility will be essential for determining the efficacy of habitat enhancement efforts. Sub-basin scale smolt production is the only practical means of evaluating project effectiveness as project-scale measurement lacks sufficient vigor to determine whether the project resulted in smolt or simply increased the number of fish inhabiting the treated are(s). Treated sites will be surveyed for fish utilization and density as a validation of the treatment design.

CRITICAL UNCERTAINTIES:
The risk of flood damage exists for any work in the floodplain. The subject project significantly minimizes flood risk by limiting side channel creation work to areas behind existing dikes and by acquiring floodplain lands at other sites. There is a risk that the contrived habitat sites will not be as attractive to fish as planned and the additional risk that survival will not exceed that experienced in existing habitats. Such risks are thought to rather minimal. If survival or utilization problems are documented they will be rectified as causal mechanisms are identified.

BIOLOGICAL NEED:
Egg to smolt survival in the Yakima Basin has varied from roughly one percent to nearly nine percent with a mean of roughly three and one half percent since 1981, while survival to emergence has been documented as high as sixty percent. While the latter is very near “optimal” as reported in the literature, the former significantly lags reported “average” values. The sub-basin hydrograph has been heavily altered by irrigation withdrawals, releases and storage. Additionally, the river has been diked from its floodplain along much of its length . These actions have conspired to create a generally hostile rearing environment for spring chinook. While coho have been functionally extinct in the sub-basin for more than twenty years, the YIN has recently been aggressively implementing a coho reintroduction program. The program was initiated by importing fish from the lower Columbia with hope of developing a locally adapted broodstock over time. As coho depend on floodplain and other off channel features for most of their fresh water life histories, this project should be viewed as an essential element of a coho restoration program.

ALTERNATIVE APPROACHES:
Totally removing existing dikes and restoring the natural hydrograph were judged to be politically and culturally ucceptable at the present time. Future, more enlightened generations may value the river as more than as an irrigation cal and drainage ditch as the present generation seems to. It is, however, impossible to forecast such an awakening with much precision. Therefore, the project proponents have chosen to embark upon the subject coping strategy.

JUSTIFICATION FOR PLANNING:
N/A

METHODS:

Sites for side channel reconstruction and /or reconnection will be selected based upon the recommendations of fluvial geomorphologist contracted under project # 55-102-00. That effort will include ground water evaluation, among other tasks to determine site candidacy. Construction will involve excavation, installation of grad control structures, addition of root wads and other available cover features, and potentially, installation of fish ways. At other sites where land acquisition or easements are used to simply protect existing side channel features created by floods, work will entail some revegetation using standard techniques, and, potentially minor flood proofing of structures near floodplain margins. Land acquisition will be used as tool only on private lands, and then only after an effort to persuade the affected landowner to accommodate channel shifts. Where cooperation can not be procured, easements or land purchase will be sought to avoid probable land owner efforts to relocate the river channel. All specific project sites will have a design and monitoring plan completed by the grantee or a subcontractor with restoration experience. The plans will include a description of existing conditions, actions needed to restore the side channels and riparian areas to target conditions, logistics to complete the work, expected benefits from the work. The monitoring plan will include an assessment of habitat conditions and fish utilization and density after project completion. The more important measure of the effectiveness of the subject and companion projects will be the evaluation and monitoring of longer term trends in natural smolt production and productivity. Success at this scale will be determined largely through spawner surveys, adult counts, and Chandler smolt counts. Pre-project data (1981-1997) will used as the baseline for determining success of this and other sub-basin wide efforts.

PLANNED ACTIVITIES

SCHEDULE:

Planning Phase	**Start**	pending completion of # 55-102-00	**End** se 1991	**Subcontractor** TBD

Task Planning will based on the results and recommendations of fy97 project # 55-102-00. As funds have not been released for the implementation of that project, construction planning start date is uncertain. Planning for the land acquisition has already begun, and land owner outreach is well underway.

Implementation Phase	**Start**	a.10/97 b.12/97 c. 2/98	**End**	a.12/97 b. 2/98 c.10/01
				Subcontractor

Task a. SEPA/NEPA compliance
b. Land/easement acquisition
c. construction and revegetation.

PROJECT COMPLETION DATE:

2002

OUTCOMES, MONITORING AND EVALUATION

SUMMARY OF EXPECTED OUTCOMES

Present utilization and convservation potential of target population or area:

The affected counties have adopted "zero rise" floodplain ordinances, but they still permit development within the jurisdictional flood plain. The ordinances do not affect existing structures, and additionally do not affect floodplain lots too small to comply with the ordinance. Much of the floodplain area of the affected rivers has been developed and diked. Spring chinook, the primary target fish population, are performing poorly with regard to total escapements and average productivity. It is believed that they will respond rapidly and favorably to an increase in floodplain, side channel, and other off-channel habitats.

Assumed historic status of utilization and conservation potential:

Depending on the source, estimates of historical spring chinook abundance vary from 100,000 to 200,000 compared to recent retu

rns of less than 500 to around 9,000

Long term expected utilization and conservation potential for target population or habitat:
The long term management goals for spring chinook and coho salmon are average escapements of 26,300 and 5,000 respectively. The long-term habitat management goal for floodplains and attendant habitat features, by order of priority, are to prevent additional encroachment and restore floodplain function by not replacing flood control structures damaged by floods, deliberate reclamation of floodplains, reclamation of stranded floodplain habitats, and creating habitats that are structurally alogous to lost floodplain habitats.

Indirect biological or environmental changes:
The project will help drive sediment and nutrient dymics to a state nearer natural it will increase the abundance and distribution of wetlands.

Physical products:
Two or more miles of protected shoreline and floodplain and the creation of up to 35 hectares of side channel habitat.

Environmental attributes affected by the project:
Created features will provide thermally benign summer and winter rearing environments. Land acquisition and easements will protect shoreline and floodplain areas and should allow the normal successiol progression of floodplain plant communities.

Changes assumed or expected for affected environmental attributes:
The project will provide immediate benefits that will increase substantially over time as vegetation progresses toward climax. The project should viewed as the partial relief of a significant stress (flood control/channelization on the system.

Measure of attribute changes:
See "G" above.

Assessment of effects on project outcomes of critical uncertainty:
Monitoring will occur in multiple forms. First, implementation monitoring will ensure that projects were built as designed. This will be accomplished through on-site inspection by program staff throughout the construction activity. Second, projects will be monitored for fish utilization for several years following implementation. Project success will ultimately be evaluated based on trends in sub-basin smolt production as measured at the Chandler juvenile trapping facility.

Information products:
The project will report physical accomplishments in terms of habitat protected and or created. Fish utilization will also be monitored and reported. Sub-basin smolt production is routinely reported annually as a task of Chandler facility operation.

MONITORING APPROACH
The region should measure outcomes in terms of long term changes in natural spring chinook smolt production and productivity rates.

Provisions to monitor population status or habitat quality:
Again, the Chandler facility will be an integral part of the monitoring effort. additionally, YIN staff conduct annual spring chinook spawner surveys throughout the sub-basin. These two efforts provide the means to reasobly

Data analysis and evaluation:
All sites will be monitored occasiolly to determine the extent to which fish are using them. If fish utilization is lower than anticipated then additional actions will be proposed to remedy identified causes of low utilization. If longer term natural smolt production doesn't improve as expected, then the viability of the technique will be questioned and our habitat management paradigm will need to be refined.

Information feed back to management decisions:
See previous response

Critical uncertainties affecting project's outcomes:
We are operating under the assumptions that we have identified most of the conspicuous habitat problems in the sub-basin, that these habitat problems are limiting smolt production, that these habitat problems can be substantially redressed, and that increased natural smolt production will results in corresponding increases in adult escapement. It is not clear that the impacts of irrigation and channelization can be sufficiently offset to meaningfully improve smolt production. The land acquisition component of the project is intuitive. If protecting healthy habitat does not provide any benefits then the fish are in even more trouble than currently feared. Out-of -basin factors could also offset any gains made in pre-smolt survival. None of these uncertainties be resolved.

EVALUATION
See response to "outcomes" above

Incorporating new information regarding uncertainties:
The project will be modified as needed in response to better information.

Increasing public awareness of F&W activities:
Some of the work will likely be featured in the local media. Projects on private lands will present an opportunity to educate small groups of landowners.

RELATIONSHIPS

RELATED BPA PROJECT	RELATIONSHIP
8811500	Project complements YFP production objectives
5510400	Restores coho habitat to assist with reintroduction
5510200 Yakima Basin Side Channel Survey and Rehabilitation	projects are linked

OPPORTUNITIES FOR COOPERATION:
Currently, no specific coordination plan has been formally adopted, but the Washington Department of Fish and Wildlife have expressed considerable interest in rehabilitating side channel rearing areas. Cost sharing or funds may be available through Yakima County or the natural Resource Conservation Service. Permits that may be needed on this project include Shoreline Variance Permits and Hydraulic Project Approvals. It is not anticipated that these permits will require more than eight months to acquire, and should pose little problem to the completion of the project. Private land owners within the scope of this project area will also be contacted to determine their interest and cooperation in restoration work. Washington Department of Fish and Wildlife has expressed willingness to manage any private lands acquired as part of this project.

COSTS AND FTE

1997 Planned: $705,760

FUTURE FUNDING NEEDS:

FY	$ NEED	% PLAN	% IMPLEMENT	% O AND M
1998	$972,160			
1999	$972,160			
2000	$972,160			
2001	$972,160			
2002	$100,000			

PAST OBLIGATIONS (incl. 1997 if done):

OTHER NON-FINANCIAL SUPPORTERS:
It is hoped that additional fincial cooperators will be identified. None were listed here as we have not received commitment from other entities at this time. A local timber company and the railroad participated with us on similar projects in the past, and the USBOR through the Yakima River Basin Water Enhancement Program will likely participate when YRBWEP funds are appropriated.. Other entities that may participate fincially and will participate in at least a non-fincial manner include the Washington State Department of Transportation, the Washington Department of Fish and Wildlife, and the U.S. Forest Service.

LONGER TERM COSTS:
The project will not require any costs beyond the term indicated above. It may be desirable to spend additional funds doing more of the same sort of work or to enhance the value of work done under the term. Future activities should not be viewed as an obligation to the Fish and Wildlife Program, however.
See above

1997 OVERHEAD PERCENT: 26.6%

HOW DOES PERCENTAGE APPLY TO DIRECT COSTS:
Percentage is the indirect charge rate for contracts and labor, excluding capital equipment.

CONTRACTOR FTE: 0.5

SUBCONTRACTOR FTE: TBD. Sub-contractor will likely employ 3-5 heavy equipment operators and 1-2 laborers.