Upper Skagit Indian Tribe
Skagit River Groundwater Channel Feasibility Investigation
U.S Fish & Wildlife Service Tribal Landowner Incentive Grant

PROGRAM SUMMARY

Lower Skagit River & Loretta Creek:
Groundwater Channel Feasibility Investigation

A. Background.

In an unconstrained condition, a major river tends to migrate or meander across its floodplain in a somewhat predictable pattern. In doing so, formally active channels are constantly left in all stages of abandonment. These can vary from active overflow channels to small seeps and springs fed by floodplain groundwater to isolated oxbow ponds. This phenomenon is most commonly seen in large river basins where glacial activity left broad, flat and extensive river bottoms such as the Skagit River.

The remnant channels and sloughs that still maintain surface connectivity to the river and possess active flow, however low, can provide valuable if not critical habitat for some native salmonids especially chum and coho salmon. These species actively seek these areas for both spawning and rearing. Strong dependence on this type of habitat means that basin productivity for these fish can depend, in large part, on the quantity and quality of available sites. Usually this type of habitat is referred to as "off channel habitat".

The best or most productive sites are those with active year around flow and reasonable protection from flooding. With these conditions, winter scour and sediment deposition on incubating eggs (redds) is largely eliminated and stranding of juveniles (parr) during the generally low summer streamflow period is significantly reduced. These ideal conditions create the best survival through all freshwater life history stages. Typically, these better areas rely primarily on groundwater that tends to be somewhat warmer in winter, cooler in summer and of more even flow throughout the year compared to surface-fed streams.

B. Opportunity.

Lower Skagit:
The Highway 9 parcel purchased by the Upper Skagit Indian Tribe on the Skagit River near Sedro Woolley initially appears to possess the physical site conditions suitable for groundwater channel development. It is also the type of habitat project best suited to this property and would have the full support of the Tribe. Although located on the first river terrace of the river and subject to some flooding during severe events, this is not believed to be a significant problem. The site is buffered by a well-developed forested riparian zone and water depths during major storm occurrences are only a few feet judging by the recent high water of October 2003 now considered to be a 50-year event at this river mile. The berm built around any project from the excavated material would eliminate most flood problems. The prospective

work area is also an old pasture that is easily accessible for heavy equipment and would not entail any habitat destruction for either assessment or possible project construction. It is also located in a section of the river that would be immediately colonized by native stock. Probable orientation of any project would be down a remnant overflow swale.

Loretta Creek:
The Loretta Creek parcel purchased by the Upper Skagit Tribe provides another possibility for groundwater channel development. The opportunity here differs from the Lower Skagit site in that it would recover an old overflow channel of Loretta Creek rather than the Skagit River. In the historic period, Loretta Creek has been a stable incised channel of moderate to steep gradient down to its confluence with the river with only a small alluvial fan. A relic overflow swale on the left bank of the stream could provide a short groundwater-fed channel of about 400 linear feet if conditions are suitable. To match local topography, it would most likely be oriented to join Loretta Creek at its junction with the river. This site would rely primarily on Loretta Creek and hillside hyporheic flow for its flow conditions and not the Skagit River. A ridge of high ground between the swale and the creek would protect the site from at least a 50-year event based on the flood occurrence of October 2003. Since Loretta Creek is well escaped with both coho and chum salmon, a project would be immediately colonized.

PROGRAM NARRATIVE

Needs Assessment

Unfortunately, from the perspective of some native salmonids, active river meander that created ideal habitat for some species has largely been controlled and/or eliminated in the last 150 years. Control was accomplished by large hydroelectric projects and flood control dams that significantly regulated flows stopping the usual river meander progression. With reduced flood risk, settlement and intensive land use proceeded rapidly. Development led to the need to protect property so natural river channel processes were further modified by extensive bank protection projects, rechanneling and diking. Much of the original functioning "off channel" area became isolated from the river and was gradually graded and filled to accommodate human activities. Consequently, capability of the floodplain to provide habitat and support substantial numbers of some species was greatly reduced. Nowhere has this pattern been more apparent than the Skagit River Basin.

Objectives

During the last 20 years, the collective natural resource agencies in the Skagit River Basin have made a focused effort to save and restore much of the remaining off channel habitat for its high salmonid and wildlife value, through purchase, easements or other protections. We have also developed the ability to recreate these types of habitat with carefully designed and located construction projects. All work has been highly rewarding with intensive measured salmonid use oftentimes exceeding site capability. These efforts have usually relied on developing or restoring groundwater-fed flow to older sloughs and channels that have either been blocked or filled from disconnection to the river and former meander activity. Project location and development, however, have required a