Swan Creek Channel Creation and Stream and Wetland Enhancement

Biological Evaluation

Draft Report

Prepared for:

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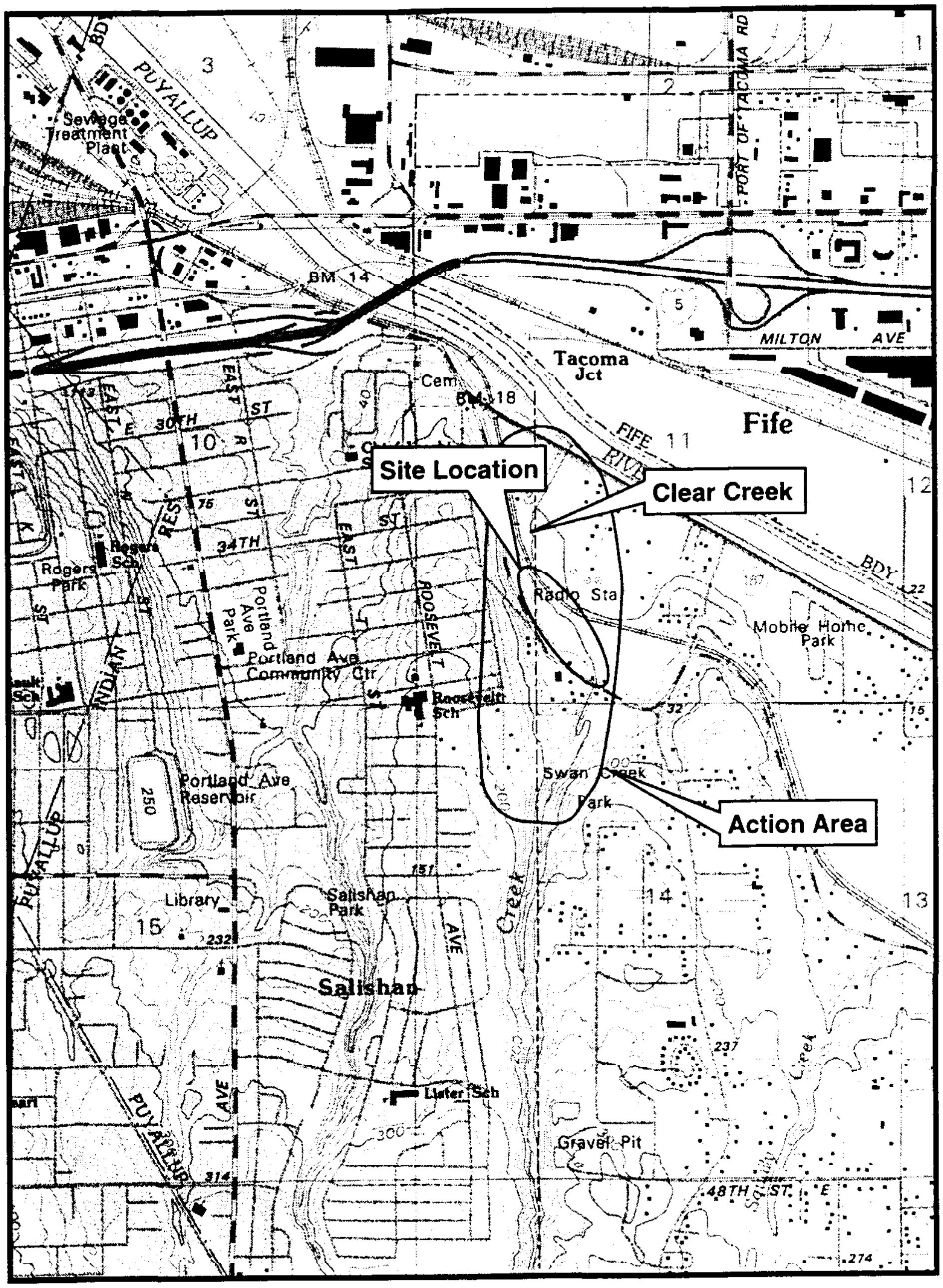
1.0 INTRODUCTION

The City of Tacoma (City) is proposing to restore and enhance a 12-acre site located in Section 11, Township 20N, Range 3E in Tacoma, Washington (Figure 1). This site contains a 3.0-acre wetland complex named the Haire Wetland and the former 2-acre Walter Wetland. Approximately 1,600 ft of Swan Creek flows through this site. Swan Creek is a tributary to Clear Creek, itself a tributary to the lower Puyallup River. The City is proposing to create a channel that connects Swan Creek to the Haire Wetland and to enhance a portion of Swan Creek and the Haire Wetland that is associated with Swan Creek (Figure 2). Because this project may impact species listed as threatened or endangered under the Endangered Species Act (ESA), steps must be taken, as described below, to investigate potential effects of the proposed project on these species and their habitat.

On May 24, 1999, the National Marine Fisheries Service (NMFS) formalized the listing of Puget Sound chinook salmon (*Oncorhynchus tshawytscha*) as threatened under the ESA. On October 28, 1999, the US Fish and Wildlife Service (USFWS) listed bull trout (*Salvelinus confluentus*) as threatened under the ESA. These listings require that NMFS and USFWS (referred to as the "services") be consulted pursuant to Section 7 of the ESA by federal agencies making any decisions that may affect these species. In this case, the US Army Corps of Engineers (Corps) will issue a Nationwide Permit for the restoration and enhancement action along Swan Creek. As part of the consultation, the Corps must prepare a biological evaluation (BE) of the potential impact of their action on listed species. Pentec Environmental, Inc. (Pentec), prepared this BE for the City's submittal to the Corps and the services to aid the services in decision-making regarding the proposed Swan Creek restoration and enhancement project. This BE generally follows the format and content specified by NMFS (1999).



Map prepared from USGS 7.5 Minute Quadrangle Tacoma South, Washington

APPROXIMATE SCALE IN FEET

0' 1000' 2000' 4000'

Pentec ENVIRONMENTAL	Swan Creek Biological Evaluation Tacoma, Washington for the City of Tacoma	Figure 1 Site vicinity map.

10/25/99 fig_1.FH8

To determine what listed, proposed, or candidate species occur in the action and/or project area (defined in Section 2.1), Pentec contacted each of the services. Mr. Thom Hooper, NMFS (pers. comm., 1999), indicated that Puget Sound chinook salmon and coho salmon (*O. kisutch*) may be present in the project area and/or action area.

The USFWS also responded to a similar request with a list of endangered, threatened, proposed, and candidate species in the Swan Creek area (Jackson, G., USFWS, pers. comm., 1999, Appendix A). The letter from USFWS indicated that the anadromous form of the bull trout may occur in the project area, as well as the bald eagle (*Haliaeetus leucocephalus*).

This document therefore addresses potential effects of the proposed project on chinook and coho salmon, bull trout, bald eagle, and their habitat. The existing conditions in Swan Creek, on the former Walter property, and in the Haire Wetland, and the proposed restoration and enhancement work in these areas, have been described in detail in a previous document (Pentec 1999). Sections of that report are duplicated in Appendices B and C.

2.0 PROJECT DESCRIPTION

2.1 PROJECT LOCATION

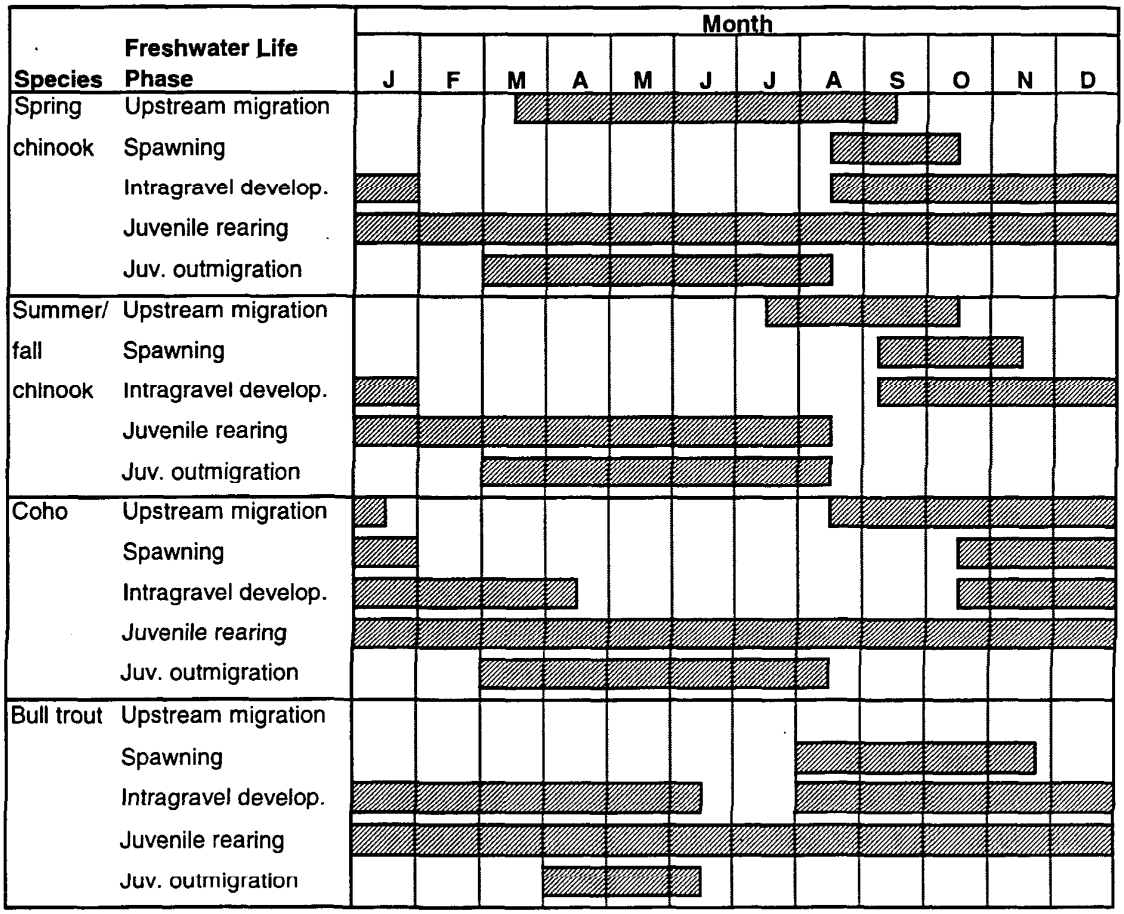
The project area's eastern and western boundaries are the base of the Northern Pacific Railroad bed and Pioneer Way, respectively, and the southern and northern boundaries are the culvert that passes under Pioneer Way and the land that is parallel to 34th Street, respectively (see Figure 1). The action area for this project is lower Swan Creek and lower Clear Creek to its confluence with the Puyallup River at river mile 3 (Figure 1).

2.2 CHANNEL CREATION, AND STREAM ENHANCEMENT AND RESTORATION PLAN

Coho salmon is the only salmonid species considered in this report that is documented to inhabit Swan Creek (WDFW 1998, WDFW and WWTIT 1994, Williams et al. 1975). The timing and life history phases of coho are shown in Figure 3. Coho rear in fresh water for at least 1 year before migrating to saltwater; therefore, adequate summer and winter habitat is needed to ensure the survival of this species. Recent (spring 1999) studies by the Port of Tacoma have found juvenile chinook salmon smolts in Clear Creek as far up as the mouth of Swan Creek (Grette, G., Pacific International Engineering, Inc., pers. comm., October 1999). These fish are presumably from Puyallup River stocks, not from local spawning, however, movement of some chinook juveniles into lower Swan Creek is a distinct possibility. Additionally, resident and sea-run cutthroat (*O. clarki*) and steelhead/rainbow trout (*O. mykiss*) may inhabit this portion of Swan Creek and would benefit from created, enhanced, and restored fish habitat.

The proposed project entails creating a 530-ft, meandering stream channel (Channel A) that will connect Swan Creek to the 3-acre Haire Wetland, thus providing access for juvenile salmonids to this wetland for rearing. Additionally, Channel A will provide salmonids with summer and winter rearing habitat and potentially spawning habitat (Figure 4). Two weirs will be installed to control water flow into and out of Channel A. One weir will be installed at the confluence of Swan Creek and Channel A, and one weir will be installed at the outlet of the channel into the Haire Wetland. The weir at Swan Creek will be adjustable to allow for any needed modifications in the amount of water that flows from Swan Creek into Channel A. The

Figure 3 Puyallup River salmonid life history stages.



Sources: PNRBC 1970, WDFW and WWTIT 1994, City of Tacoma 1998.

project design has taken into consideration the minimum flows that are needed in Swan Creek to avoid creating fish passage barriers. The Haire Wetland will then be connected to the lower reach of Swan Creek by a second channel (Channel B). Enhancement work is also planned for the lower reach of Swan Creek: Two log will structures will be installed to increase invertebrate production and provide potential spawning habitat for coho and cutthroat, and two flow-constrictor structures will be installed to flush out sediment in this section. A detailed project description, including hydrologic and biological criteria for the channel design, is provided in Appendix B.

2.3 RIPARIAN, WETLAND, AND UPLAND HABITAT PLANTING PLAN

The goal of the proposed planting plan is to enhance the structural complexity and diversity of existing plant communities. This goal will be achieved by removing and replacing invasive species with native plants typically and historically found in palustrine wetlands and adjacent forested uplands in the Pacific Northwest region. Enhancing and restoring native plant communities will improve the natural biological support functions of both wetland and upland plant communities. In addition, the existing and created wetland complex will improve the water quality protection and flood storage and attenuation functions compared to existing conditions. Furthermore, the native plant communities are expected to provide instream and overhead cover and a source of terrestrial insects to salmonids and other fishes that use Swan Creek. A detailed description of the planting enhancement plan is described in Appendix B.

2.4 SCHEDULE AND CONSTRUCTION METHODS

The channel construction and the enhancement work in Swan Creek and in the wetland and riparian zones will begin August 1, 2000, and will continue through November 1, 2000. This work is planned outside the fish window (which is March 15 through June 14), when few salmonids other than locally rearing residents and juvenile coho, cutthroat, and steelhead are expected to be present. However, adult coho may begin to enter the system in late October. To avoid impacting coho adult migration, work in Swan Creek will take place between August 1, 2000, and September 1, 2000.

A backhoe will be used to excavate Channels A and B, and the area of Swan Creek where enhancement work will take place. It is expected that during excavation for Channel A, substantial amounts of water inflow will be encountered, particularly from permeable zones of wood chips; therefore, it is anticipated that dewatering will be necessary during channel excavation to control water inflow and possible caving of excavated sidewall soils, and to allow placement of 3 ft of clean fill soils as necessary. Excavation can be accomplished to depths of about 6 to 10 ft before groundwater is reached and dewatering becomes necessary. At this point, a series of dewatering wells will be installed along the inner perimeter of the excavation and used to draw down the immediate groundwater levels, so that additional excavation can be accomplished. It is anticipated that the pumped water will be returned to the Haire Wetland, possibly with some time spent in a temporary settlement basin (most likely, a portion of the channel excavation) so that fine sediments settle out. Turbidity measurement of the pumped water will be taken before this water is returned to the Haire Wetland. Water will not be returned to the Haire Wetland until the turbidity measurements are less than 5 NTUs above the water in the Haire Wetland. During excavation it may also be necessary to install temporary sump pumps to remove any remaining water from the excavated surface.

A total of 6,200 cubic yards of fill will be removed from the former Walter property and disposed of either on site or at a licensed facility. Suitable excavated soil may be utilized on site to create topographic features, such as small berm between Pioneer Way and the restored wetland area. Material might also be used to create a similar berm in places between the pedestrian walkway and project habitat areas as a method of encouraging people to use only developed pedestrian access facilities. There will be no excavation or filling in wetlands.

Invasive vegetation will be removed either by hand or using a backhoe.

Work at the site will be sequenced to avoid turbidity or suspended solids within Swan Creek or the Haire Wetland. During the installation of the weir at Swan Creek and during construction of the stream improvements in Swan Creek, a diversion will be established to temporarily divert streamflow from Swan Creek. The diversion will be accomplished using sandbags or other materials. The stream's temporary route will maintain flow away from the area of work and will return flow to its regular course downstream of the area of work. The exact route of diverted flow and location of its return to the bed of Swan Creek will be determined by the contractor in the field. The diverted flow will be east of the existing creek bed.

Erosion- and sediment-control methods are described and a layout is shown on Sheet 8 of 8. These erosion- and sediment-control methods, which will minimize erosion, loss of sediment, and entry of sediment into Swan Creek or the Haire Wetland during construction of the proposed project, will include the following:

- Excavating and connecting the channels from the inside outward, such that the inlet and outlet connections to Swan Creek are made last, after excavation is completed, and after the turbid water that may be within the excavations has had time for suspended solids to settle
- Installing silt fences immediately downslope of all construction activities, including clearing, excavating, and soil placement
- Covering stockpiles of imported or excavated soil with secured plastic sheeting to minimize erosion and soil loss due to precipitation and wind
- Establishing stockpile and/or staging areas greater than 20 ft from the crest of the slope to the Haire Wetland, Swan Creek, or excavated sideslopes
- During dry conditions, spraying active areas of exposed soil with water to minimize dust
- Using stabilized construction entrances to the site for all ingress and egress by heavy equipment and trucks/trailers
- Placing sandbags or other flow-diversion structures to keep water from entering the excavated areas
- Constructing the temporary access road by laying down 12 inches of quarry spalls over a layer of filter fabric over the cleared subgrade, while minimizing removal of trees
- Following completion of construction, removing all temporary erosion and sediment controls and temporary access road(s) and restoring the site to its previous condition
- Protecting adjacent waters of Swan Creek and the Haire Wetland during construction of Channel B using temporary sandbag berms around inlet and outlet of channel
- Operating equipment from upland areas
- Mulching exposed soils

3.0 DESCRIPTION OF THE PROJECT AREA

3.1 GENERAL

The site is generally flat and is situated in a low area between a railroad bed (Northern Pacific Railroad) and the slope that forms the southern edge of the Puyallup River valley. The base of the railroad bed is coincident with the eastern property boundary. Pioneer Way defines the western boundary of the site along the base of the slope that forms the southern edge of the Puyallup River valley. The western portion of the site contains the 2.3-acre Haire Wetland complex and what was formerly the 2-acre Walter Wetland, which was filled in the early 1970s. The site's southern boundary is the outlet of the culvert that passes under Pioneer Way and the northern boundary is in line with 34^{th} Street if extended in Tacoma.

Swan Creek flows north through the eastern portion of the site and then passes through a culvert under Northern Pacific Railroad, where it enters Clear Creek. Clear Creek flows into the Puyallup River at river mile 3.

Upland and wetland vegetation on the site is typical of disturbed and urbanized areas within the Puget Lowland region (Appendix C). Upland forests are composed entirely of deciduous tree species that are pioneers and the first to colonize disturbed or previously developed areas. Upland and wetland forest stands on the site are relatively simple, consisting primarily of mature deciduous trees of the same ages and height, and lacking structural diversity. Non-native and invasive plant species commonly found in the region are abundant in both upland and wetland vegetation communities on the site, especially around previously filled areas, existing structures, along Pioneer Way, near the railroad tracks, and on the banks of previously channelized sections of Swan Creek.

3.2 SUMMARY OF EXISTING FISH HABITAT CONDITIONS

Pentec conducted a fish habitat survey in June and July 1999. (A detailed description of the habitat survey is provided in Appendix C.) This survey revealed that the fish habitat conditions in Swan Creek between the outlet of the Pioneer Way culvert and the inlet of the Northern Pacific Railroad culvert lack suitable spawning habitat for fish living in this system.

Additionally, this portion of Swan Creek does not have suitable substrate to foster invertebrate communities.

Based on this information, the enhancement plan for Swan Creek will include the creation of a 530-ft, meandering spawning and rearing channel for coho and possibly cutthroat trout. This channel will connect Swan Creek with the Haire Wetland, and will provide coho and cutthroat trout rearing habitat for both summer and winter months. Off-channel winter and summer habitat has been shown to increase coho smolt production (Everest et al. 1985). The enhancement plan also will call for adding gravel and cobble substrate to Swan Creek to enhance the invertebrate populations, which will increase the food available to fish in the system. Additionally, a flow-constrictor structure will be placed in conjunction with the cobble and gravel substrate to increase flow, which will flush out fine sediment and slow the sedimentation process.

3.3 VEGETATION

Vegetation communities were distinguished by dominant plant species, habitat structure, topography, and apparent hydrologic regime. An area was identified as a wetland if it exhibited the following three characteristics: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Wetland plant communities were classified according to the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979). The location and geographic extent of each community was determined by visual estimation and the use of a base map carried during the field investigation. Identification of some plant communities as wetlands is tentative, and will be confirmed using the information gathered during the jurisdictional wetland delineation performed by the City of Tacoma.

Although these plant communities are represented as distinct units, community boundary lines are approximate and are not always abrupt or distinct in the field. This is due to interspersion of plant species between adjacent vegetation communities. In addition, the degree to which the vegetation communities are distinguished from each other varies across the site.

The Haire Wetland and riparian vegetation associated with Swan Creek cover most of the site. In total, eight plant communities were identified within the project area (see Figure 5). The communities classified as wetland appear to meet the criteria for hydrophytic vegetation, hydric soils, and wetland hydrology. The general characteristics of these communities are summarized in this section, as are the wildlife habitat and known or likely species present on the site. A complete description of the vegetation in each community is provided in Appendix C.

The wetland on site contains a number of different wetland vegetation classes and habitat types, including forested, emergent, and unconsolidated bottom. Also, there are some other specific habitat features within the wetland complex, including snags, large woody debris, and apparently permanently inundated areas (sometimes called open water). These features are most abundant in Community B. The relatively large size, edge habitat, and continuity with mature forested uplands likely provide habitat for many mammals, birds, reptiles, and amphibians commonly found in western Washington.

Swan Creek, the Haire Wetland complex (including Communities B, E, F, and G), and adjacent forested uplands (including Communities A, C, and D) support a diverse array of habitat for fish and wildlife. However, many of these habitats provide relatively limited value due, in part, to relatively low structural and habitat diversity. Dense communities of invasive species, including Himalayan blackberry (*Rubus discolor*) and reed canarygrass (*Phalaris arundinacea*), contribute to the relatively low structural diversity and diminished habitat values.

Results of the reconnaissance investigations done on the site were used to develop enhancement and restoration plans within the different communities. Proposed plantings of shrubs and trees were selected for their compatibility with existing vegetation and based on existing site conditions. In addition, plant species also were selected based on their ability to contribute to habitat diversity and complexity.

4.0 LIST OF SPECIES

This BE addresses chinook salmon, bull trout, and the bald eagle, which have been listed as threatened with endangerment in the Puget Sound area. This BE also covers coho salmon, which is a candidate species.

5.0 DESCRIPTION OF THE SPECIES AND HABITAT

5.1 CHINOOK SALMON

Like all Pacific salmon, chinook reproduce in fresh water, but most of their growth occurs in marine waters. Chinook juveniles rear in the Puyallup River or its tributaries for periods of a few weeks to over a year before migrating downstream to the Puget Sound and out to the Pacific Ocean (Figure 3).

In watersheds with an unaltered estuary (and historically in the Puyallup estuary), chinook smolts spend a prolonged period (several days to several weeks) during their spring outmigration feeding in saltmarshes and distributary channels as they transition gradually into more marine waters (Simenstad et al. 1982). Chinook fry and subyearlings in saltmarsh and other shallow habitat predominantly prey on emergent insects and epibenthic crustaceans such as gammarid amphipods, mysids, and cumaceans. As chinook mature and move to neritic habitat, they feed on small nekton (decapod larvae, larval and juvenile fish, and euphausiids) and neustonic drift insects (Simenstad et al. 1982; see also detailed life history review by Healey 1991).

Two races, or runs, of chinook salmon, a spring/summer run and a fall run, are found in the Puyallup River system. Spring chinook historically spawned primarily in upper tributaries of the White River and perhaps the mainstem of the Puyallup and Carbon rivers (Williams et al. 1975). Rearing occurs in the spawning areas and in lower mainstem reaches; most outmigrate as subyearlsings (Muckleshoot Indian Tribe et al. 1996) and may rear for a time in Commencement Bay. Historic spring chinook runs (pre-1950) averaged nearly 3,000 fish, but recent runs have been much reduced, and supported primarily by artificial production (WDFW and WWTIT 1994). Fall chinook spawn throughout larger streams in the Puyallup system, including the mainstem of the Puyallup, the lower White and Carbon rivers, and Kapowsin, South Prairie, and Voight creeks. Historic average run size of fall chinook has been 3,000 to 4,000 fish (Williams et al. 1975). In contrast, data from Table 1 indicate that the total Puyallup system natural chinook escapement (both runs) has averaged 2,401 fish over the 1991-1996 period.

As a result of the physical alterations of the Puyallup estuary, chinook (and other salmon) juveniles reaching the river mouth are forced to migrate along shorelines that provide suboptimal conditions for feeding, shelter, and physiological transition to living in areas of high salinity. Abundance of epibenthic prey may be high at middle and lower tidal elevations, but productive, low-gradient mudflats are lacking at higher tidal elevations (e.g., Blaylock and Houghton 1981); this may limit the opportunities for feeding on benthic prey during periods of high tide, and hasten the shift of feeding mode from epibenthic to pelagic prey. Moreover, epibenthic prey may be contaminated by close association with the sediments; contaminants taken up from the food and water appear to decrease the ability of juvenile salmon to survive future challenges (e.g., Varanasi et al. 1993, Arkoosh et al. 1991 Stein et al. 1995).

Table 1 Puyallup River escapement estimates for naturally reproducing (native, non-native, and mixed origin) summer/fall chinook, coho, and steelhead trout.

Year	Summer/Fall Chinook	Coho	Steelhead Trout
1983	1,184	4,100	2,241
1984	1,258	3,600	2,237
1985	1,147	3,200	2,471
1986	740	1,700	3,767
1987	925	6,200	2,329
1988	1,332	4,200	3,396
1989	2,442	1,300	3,354
1990	3,515	6,600	1,950
1991	1,702	5,500	1,898
1992	3,034	1,900	2,313
1993	1,999	2,600	1,596
1994	2,526	9,400	1,631
1995	2,701	4,700	2,146
1996	2,444	6,600	1,368
1983-1990 Average	1,568	3,863	2,718
1991-1996 Average	2,401	5,117	1,825

Source: Baranski, C., WDFW, pers. comm., 1998.

5.2 COHO SALMON

Coho salmon typically spend one or two full years rearing in streams and rivers before beginning their migration to sea (Figure 3). Within a few days after emergence, coho fry congregate in quiet backwaters, side channels, and small creeks, especially utilizing shady areas with overhanging branches (Sandercock 1991). Older fry occupy areas along open shorelines and progressively move into areas of higher velocity in midstream and on the stream margins. Off-channel habitat is especially important during the winter months when higher flows exist. Coho prefer habitat areas with very low flow. Coho fry primarily feed on drifting organic material consisting of stream and terrestrial insects while in fresh water (Sandercock 1991). When yearlings, coho become predators, eating fry of their own and other species as well as insects. Because of their larger size when entering saltwater, coho are generally considered less dependent on estuarine rearing than chinook or chum salmon (Simenstad et al. 1982). Coho tend to move through estuaries more rapidly, using deeper waters along shorelines. Feeding is primarily on planktonic or small nektonic organisms including decapod larvae, larval and juvenile fish, and euphausiids (Miller et al. 1976, Simenstad et al. 1982). Coho also eat drift insects and epibenthic gammarid amphipods, especially in turbid estuaries (see detailed life history review by Sandercock 1991).

Historically, coho salmon spawned in all accessible streams and tributaries of the Puyallup River system, including the mainstem of the Puyallup, Carbon, and White rivers (Kapowsin, Canyonfalls, Fennel, and Fiske creeks on the Puyallup; and Boise, Slippery, and Huckleberry creeks, plus West Fork, Greenwater, and Clearwater rivers on the White; and South Prairie and Voight creeks on the Carbon River). An estimated 112 linear miles of stream were used by spawning coho salmon. Rearing occurred in all streams used by spawning adults and throughout the mainstem Puyallup, Carbon, and White rivers. The lower mainstem Puyallup River and the estuarine waters of Commencement Bay were most important.

Natural coho escapement to the Puyallup system averaged 50,000 fish per year from 1966 to 1971, with a range of 42,000 to 70,000 fish (Williams et al. 1975). More recently, coho escapement has averaged 3,863, with a range of 1,300 to 6,600 for the years 1983 through 1990 (Table 1). From 1991 through 1996, the coho escapement average was 5,117, with a range of 1,900 to 9,400.

5.3 BULL TROUT

The status and occurrence of anadromous populations of bull trout in Puget Sound are subject to some scientific debate; separation of anadromous bull trout from the closely related anadromous Dolly Varden char (*S. malma*) is very difficult and can only be accomplished using electrophoretic techniques (Leary and Allendorf 1997). Until further resolution is possible, the Washington Department of Fish and Wildlife (WDFW) has made a decision to manage all Puget Sound stocks as if they were a single bull trout/Dolly Varden complex (Washington Department of Wildlife [WDW, now WDFW] 1993).

Bull trout spawn in the fall in streams containing clean gravel and cobble substrate and gentle slopes, with cold, unpolluted water. Bull trout require long incubation periods (4 to 5 months) compared with other salmon and trout. Fry hatch in late winter or early spring and remain in the gravel for up to 3 weeks before emerging. A few weeks after emerging, some bull trout migrate to saltwater, while the remainder stay in the streams where they hatched (USFWS 1998). Small bull trout eat terrestrial and aquatic insects. Large bull trout are primarily fish predators, eating whitefish, sculpins, and other trout (USFWS 1998). Bull trout are more sensitive to changes in temperature, poor water quality, and low flow conditions in fresh water than many other salmon because of their life history requirements (USFWS 1998).

The bull trout population in the Puyallup River has been separated into three stocks: the Puyallup River, White River, and Carbon River stocks. Although there are no genetic data available to determine if these stocks are distinct, WDFW considers them distinct stocks due to the probable geographic isolation of their spawning populations (WDFW 1997). Timing of spawning and specific spawning locations are unknown for all three stocks. Information to determine the status of the three stocks is insufficient, but all three stocks are native and maintained by wild reproduction (WDFW 1997). Historical accounts indicate anadromous bull trout entered the three drainages in "vast numbers" in the mid-1800s (Suckley and Cooper 1860). Today, total abundance for the Puyallup River stock is believed to be less than 5,000 individuals or 500 adults (Chan, J., WDFW, pers. comm., 1999). There are insufficient data to determine population trends for the White and Carbon River stocks (WDFW 1997).

5.4 BALD EAGLE

The bald eagle is found along the shores of saltwater, and freshwater lakes and rivers. In Washington, breeding territories are located in predominantly coniferous, uneven-aged stands with old-growth components. Territory size and configuration are influenced by a variety of habitat characteristics, including availability and location of perch trees for foraging, quality of foraging habitat, and distance of nests from waters supporting adequate food supplies. Habitat models for nesting bald eagles in Maine show that the eagles are selecting areas with (1) suitable forest structure, (2) low human disturbance, and (3) highly diverse or accessible prey (Rodrick and Milner 1991).

Bald eagles typically build nests in mature old-growth trees, which are generally used in successive years. In Washington, courtship and nest-building activities generally begin in January and February. Egg laying begins in March or early April, with eaglets hatching in mid-April or early May. Eaglets usually fledge in mid-July and often remain in the vicinity of the nest for another month (Rodrick and Milner 1991). No bald eagle nests or territories are located in the project or action areas (WDFW 1999).

Eagles often depend on dead or weakened prey, and their diet may vary locally and seasonally. Various carrion, including spawned salmon taken from gravel bars along wide, braided river stretches, are important food items during fall and winter. Waterfowl often are taken as well. Anadromous and warm-water fishes, small mammals, seabirds, and carrion are consumed during the breeding season (Rodrick and Milner 1991).