
6.0 INVENTORIES AND SURVEYS

The use of Swan Creek by chinook or coho salmon, or bull trout is not well documented. Although WDFW (1999) reports that coho salmon inhabit Swan Creek, no detailed studies of juvenile or adult use of Swan Creek by coho salmon is available. No data regarding the use of Swan Creek by chinook salmon or bull trout is available. The Port of Tacoma has been conducting ongoing studies on salmonid use of the lower reaches of Clear Creek and the Puyallup River. These studies document that chinook salmon use Clear Creek upstream to the mouth of Swan Creek (Grette, G., Pacific International Engineering, Inc., pers. comm., October 1999) but there is no documented use of Swan Creek by chinook, although juvenile chinook salmon could utilize Swan Creek. Pentec (1999) assessed the salmonid habitat conditions in Swan Creek during June and July of 1999 (Appendix C).

No bald eagle nests or territories are reported within a 1.5-mile radius of the proposed project site (WDFW 1999a, b, c).

7.0 ANALYSIS OF EFFECTS

7.1 GENERAL

Short-term and localized construction effects on water quality and waterborne noise will be timed to occur during periods of the year when minimal numbers of anadromous salmonids are expected to be present (Figure 3).

Juvenile salmonids have been shown to avoid areas of unacceptably high turbidities (e.g., Servizi (1988); they also may seek out areas of moderate turbidity (10 to 80 NTU) presumably as cover against predation (Cyrus and Blaber 1987a,b). Feeding efficiency of juveniles is also impaired by turbidities in excess of 70 NTU, well below sublethal stress levels (Bisson and Bilby 1982). Reduced preference by adult salmon homing to spawning areas has been demonstrated where turbidities exceed 30 NTU (20 mg/L suspended sediments). However, chinook exposed to 650 mg/L of suspended volcanic ash were still able to find their natal water (Whitman et al. 1982). Based on these data, it is unlikely that the locally elevated turbidities generated by the proposed action would directly affect juvenile or adult salmonids that may be present.

The following net long-term improvements to salmonid habitat will result from the combined stream channel creation and stream and wetland enhancement project: This project will create approximately 2,249 ft² of instream rearing habitat for all species of juvenile salmonids, and spawning habitat for adult coho and cutthroat trout. Additionally, this project will provide access to 3 acres of existing wetlands for salmonid rearing habitat.

All of these changes are considered to be positive in terms of quality of habitat for salmonids in the Swan Creek drainage.

Although no bald eagle nests or territories occur near the proposed project, bald eagles may fly over the site. Because this project will potentially increase spawning habitat for salmonids, thereby increasing the number of salmonids in the project area, there will be an increase in forage food for bald eagles. Therefore, this project will benefit bald eagles.

7.2 INTERDEPENDENT, INTERRELATED, AND CUMULATIVE EFFECTS

A number of active programs have had or will have cumulative positive effects on the status of salmon in the Puyallup River drainage. The Recovery Plan for White River Spring Chinook Salmon (Muckleshoot Indian Tribe et al. 1996) identifies a series of objectives and actions designed to enhance the recovery of White River spring chinook, the only remaining spring run of chinook in the Puyallup system. These actions are targeted at improved freshwater spawning and rearing conditions with the goal of reducing run dependence on artificial production.

Increasingly strict enforcement of Clean Water Act Section 404, and the State of Washington Hydraulic Project Approval rules (WAC 220-110) and guidelines requiring "no net loss" of wetlands and habitat for fish and shellfish resources, have reversed the trend of continued losses of marine littoral habitat that had persisted from the time of earliest Euro-American settlement through the 1970s. The first major project for which a substantial mitigation area was provided was the Port of Tacoma's completion in 1986 of the 9.6-acre Gog-Li-Hi-Ti tidal wetland approximately 2 km up the Puyallup River. This project was constructed as compensation for filling a similar-sized site containing isolated wetlands. Subsequent monitoring (Shreffler et al. 1992) has shown that this saltmarsh/mudflat complex provides a productive foraging area for juvenile salmonids including chinook.

About the same time (1988), a settlement was reached between the Simpson Tacoma Kraft Company and the EPA that resulted in the capping of an area of contaminated sediments at the end of the peninsula between the Puyallup River and the St. Paul Waterway to create about 7.5 acres of restored littoral habitat. This site has been monitored continually (e.g., Parametrix 1997) and has been shown to have a rich and diverse infauna and epibenthos, as well as seasonal use by juvenile salmon migrating out from the Puyallup River. The Port of Tacoma has also completed mitigation projects at Rhone-Poulenc and the Fairliner Marina site in the Blair Waterway.

In addition, the Port has expanded an existing freshwater wetland at Clear Creek up the Puyallup River and provided for access by juvenile salmon. Monitoring to date has indicated that this project will more than meet their goals for provision of habitat for juvenile salmonids, among other species.

7.3 POTENTIAL EFFECTS ON PROPOSED CRITICAL HABITAT

Based on the preceding discussion, the proposed stream channel creation and stream and wetland enhancement project will have no adverse effect on chinook critical habitat because chinook salmon are not known to inhabit Swan Creek, although if juvenile spring chinook migrate into Swan Creek for rearing, this project will have a positive affect by providing additional rearing habitat. The proposed project will have a net positive effect on other salmonid habitat including coho salmon rearing habitat within the Swan Creek drainage. Additionally, if bull trout inhabit the Swan Creek drainage, this proposed project will not adversely affect their critical habitat.

8.0 MANAGEMENT ACTIONS RELATED TO THE SPECIES

The preceding impact assessment indicates that the proposed project will result in a net positive effect on salmonid habitats in the Swan Creek drainage. Because the proposed action will result in net positive impacts on salmonid habitat, no mitigation is warranted or planned.

9.0 CONCLUSION

The existing habitat in Swan Creek and the Haire Wetland in the project area contains rearing habitat for coho salmon, but chinook salmon and bull trout probably do not use this area. Improvement of the habitat conditions in the lower Puyallup drainages has been occurring over the past few years. This proposed project will have a net positive effect on juvenile salmonid habitat and is one more step in the trend of improving habitat in the lower Puyallup drainages.

This BE leads to the following conclusion regarding the potential effects of the Swan Creek streamchannel creation and stream and wetland enhancement project on chinook salmon, coho salmon, and bull trout: **The project may affect but is not likely to adversely affect chinook or coho salmon, or bull trout, or their critical habitat.** Chinook salmon and bull trout, because they most likely do not use the Swan Creek drainage, will be less affected by the short-term disturbances and the positive aspects of the project.

This BE concludes further that the proposed action will have **no effect on bald eagles** that may occur in the project vicinity.

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***Appendix A—
Response Letter
from USFWS***



United States Department of the Interior

FISH AND WILDLIFE SERVICE

North Pacific Coast Ecoregion

Western Washington Office

510 Desmond Drive SE, Suite 102

Lacey, Washington 98503

Phone: (360) 753-9440 Fax: (360) 753-9518

OCT 2 2

Dear Species List Requester:

You have requested a list of listed and proposed threatened and endangered species, candidate species, and species of concern (Attachment A) that may be present within the area of your proposed project. This response fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act of 1973, as amended (Act). We have also enclosed a copy of the requirements for Federal agency compliance under the Act (Attachment B).

Should the Federal agency determine that a listed species is likely to be affected (adversely or beneficially) by the project, you should request section 7 consultation through this office. If the Federal agency determines that the proposed action is "not likely to adversely affect" a listed species, you should request Service concurrence with that determination through the informal consultation process. Even if there is a "no effect" situation, we would appreciate receiving a copy for our information.

Both listed and proposed species may occur in the vicinity of the project. Therefore, pursuant to the regulations implementing the Act, impacts to both listed and proposed species must be considered by the Federal agency in a Biological Assessment (BA) (Attachment B for more information on preparing BAs). Formal conference with the Service is required by the Act if the federal agency determines that the proposed action is likely to jeopardize the continued existence of a proposed species, or result in the destruction or adverse modification of proposed critical habitat. The results of the BA will determine if conferencing is required. If the species is ultimately listed, your agency may be required to reinitiate consultation.

Species of concern are those species whose conservation standing is of concern to the Service, but for which further status information is still needed. Conservation measures for species of concern are voluntary, but recommended. Protection provided to these species now may preclude possible listing in the future.

There may be other Federally listed species that may occur in the vicinity of your project which are under the jurisdiction of the National Marine Fisheries Service (NMFS). Please contact NMFS at (360) 753-9530 to request a species list.

In addition, please be advised that Federal and state regulations may require permits in areas where wetlands are identified. You should contact the Seattle District of the U.S. Army Corps of Engineers

for Federal permit requirements and the Washington State Department of Ecology for State permit requirements.

Your interest in endangered species is appreciated. If you have additional questions regarding your responsibilities under the Act, please contact Bobbi Barrera at (360) 753-6048, or John Grettenberger of this office, at the letterhead phone/address.

Sincerely,

A handwritten signature in cursive script, appearing to read "John Grettenberger" with a smaller signature below it.

Gerry A. Jackson
Supervisor

BB
Enclosure(s)

c: COE
WDFW Region 4

**LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES,
CANDIDATE SPECIES AND SPECIES OF CONCERN
WHICH MAY OCCUR WITHIN THE
VICINITY OF THE PROPOSED SWAN CREEK RESTORATION
PROJECT IN PIERCE COUNTY, WASHINGTON**

(T20N R03E S10,11)

FWS REF: 1-3-99-SP-1472

LISTED

Bald eagle (*Haliaeetus leucocephalus*) - There is one bald eagle nesting territory located in the vicinity of the project at T20N R03E S13. Nesting activities occur from January 1 through August 15.

Wintering bald eagles may occur in the vicinity of the project. Wintering activities occur from October 31 through March 31.

Major concerns that should be addressed in your biological assessment of the project impacts to listed species are:

1. Level of use of the project area by listed species.
2. Effect of the project on listed species' primary food stocks, prey species, and foraging areas in all areas influenced by the project.
3. Impacts from project construction (i.e., habitat loss, increased noise levels, increased human activity) which may result in disturbance to listed species and/or their avoidance of the project area.

PROPOSED

Bull trout (*Salvelinus confluentus*) - Coastal/Puget Sound population occur in the vicinity of the project.

CANDIDATE

None.

SPECIES OF CONCERN

The following species of concern may occur in the vicinity of the project:

Pacific lamprey (*Lampetra tridentata*)

River lamprey (*Lampetra ayresi*)

ATTACHMENT B

FEDERAL AGENCIES' RESPONSIBILITIES UNDER SECTIONS 7(a) AND 7(c) OF THE ENDANGERED SPECIES ACT OF 1973, AS AMENDED

SECTION 7(a) - Consultation/Conference

- Requires:
1. Federal agencies to utilize their authorities to carry out programs to conserve endangered and threatened species;
 2. Consultation with FWS when a federal action may affect a listed endangered or threatened species to ensure that any action authorized, funded, or carried out by a federal agency is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. The process is initiated by the federal agency after it has determined if its action may affect (adversely or beneficially) a listed species; and
 3. Conference with FWS when a federal action is likely to jeopardize the continued existence of a proposed species or result in destruction or an adverse modification of proposed critical habitat.

SECTION 7(c) - Biological Assessment for Construction Projects *

Requires federal agencies or their designees to prepare a Biological Assessment (BA) for construction projects only. The purpose of the BA is to identify any proposed and/or listed species which is/are likely to be affected by a construction project. The process is initiated by a federal agency in requesting a list of proposed and listed threatened and endangered species (list attached). The BA should be completed within 180 days after its initiation (or within such a time period as is mutually agreeable). If the BA is not initiated within 90 days of receipt of the species list, please verify the accuracy of the list with the Service. No irreversible commitment of resources is to be made during the BA process which would result in violation of the requirements under Section 7(a) of the Act. Planning, design, and administrative actions may be taken; however, no construction may begin.

To complete the BA, your agency or its designee should: (1) conduct an onsite inspection of the area to be affected by the proposal, which may include a detailed survey of the area to determine if the species is present and whether suitable habitat exists for either expanding the existing population or potential reintroduction of the species; (2) review literature and scientific data to determine species distribution, habitat needs, and other biological requirements; (3) interview experts including those within the FWS, National Marine Fisheries Service, state conservation department, universities, and others who may have data not yet published in scientific literature; (4) review and analyze the effects of the proposal on the species in terms of individuals and populations, including consideration of cumulative effects of the proposal on the species and its habitat; (5) analyze alternative actions that may provide conservation measures; and (6) prepare a report documenting the results, including a discussion of study methods used, any problems encountered, and other relevant information. Upon completion, the report should be forwarded to our Endangered Species Division, 510 Desmond Drive SE, Suite 102, Lacey, WA 98503-1273.

* "Construction project" means any major federal action which significantly affects the quality of the human environment (requiring an EIS), designed primarily to result in the building or erection of human-made structures such as dams, buildings, roads, pipelines, channels, and the like. This includes federal action such as permits, grants, licenses, or other forms of federal authorization or approval which may result

in construction.

***Appendix B—
Enhancement and
Restoration Plan***

APPENDIX B ENHANCEMENT AND RESTORATION PLAN

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. This site contains a 3-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. The City is proposing to create a 530-ft, meandering stream channel that will connect Swan Creek to the associated Haire Wetland and enhance a portion of Swan Creek and the Haire Wetland. The proposed action is described herein.

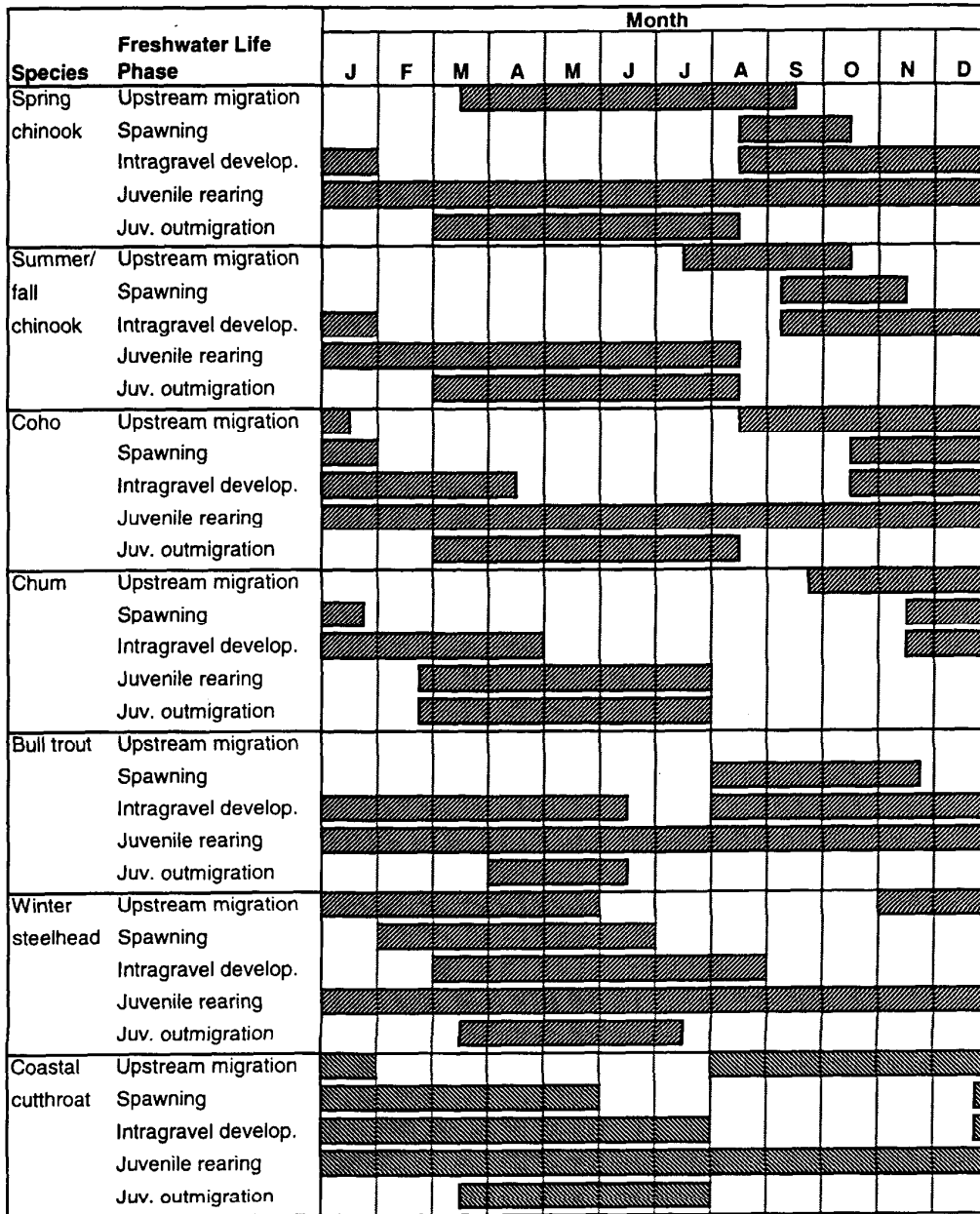
FISH HABITAT

Coho salmon (*Oncorhynchus kisutch*), chum salmon (*O. keta*), and steelhead (*O. mykiss*) and cutthroat trout (*O. clarki*) are the anadromous salmonid species found in Swan Creek (WDFW 1999, WDFW and WWTIT 1994, Williams et al. 1975). The timing and life history phases of each of these species are shown in Figure B-1. Chum salmon spend the least amount of time in fresh water where as coho salmon and steelhead and searun cutthroat trout 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 these salmonids. Additionally, resident cutthroat and rainbow trout may inhabit this portion of Swan creek and would benefit from enhanced, restored, and created fish habitat.

The objectives of the fish enhancement plan are as follows:

- Increase the coho and cutthroat trout spawning habitat in the Swan Creek drainage.
- Provide off-channel rearing habitat for coho salmon and cutthroat and rainbow/steelhead trout, and amphibian and invertebrate species.
- Provide increased and enhanced wetland habitat for salmonids inhabiting the lower Puyallup River system and estuary.
- Increase invertebrate production and salmonid spawning habitat in the lower reach of Swan Creek.
- Increase public awareness of the importance of diverse salmonid habitat in stream systems by providing stewardship and educational opportunities for city and county residents.

Figure B-1 Puyallup River salmonid life history stages.



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

To achieve these objectives, a meandering stream channel (Channel A) will be designed and created to provide salmonids with summer and winter rearing habitat and, potentially, spawning habitat for coho salmon and cutthroat trout in the Swan Creek drainage. Channel A will connect the Swan Creek to the Haire Wetland, to allow fish access into this habitat. 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 sill 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.

HYDROLOGICAL AND BIOLOGICAL CRITERIA

The proposed stream channel will be designed to provide diverse habitat for summer- and winter-rearing juvenile coho salmon and cutthroat trout. Large woody debris structures and boulder structures will be placed in the stream to provide cover. The design of Channels A and B will satisfy hydrological criteria to tolerate 100-year flood events and biological criteria necessary to facilitate fish passage and encourage the use of the channels for salmonid rearing and spawning. Based on the species of fish present in Swan Creek and the existing habitat in the Swan Creek drainage, the habitat created will most favor coho salmon and cutthroat trout. For this reason, channel design will be directed toward optimizing habitat features desirable to these species.

Included in the design elements for the fluvial fish habitat are (1) channel gradient, (2) cross-sectional area, (3) substrate (size, amount, sorting), (4) residual pool depth, (5) habitat structures, (6) velocity (estimated maximum and minimum), (7) weir heights, and (8) riparian coverage. Included in the controlling variables for these designs are (1) discharge (maximum and minimum estimated flows), (2) sediment load, and (3) topography and space. The goals of the fish habitat design include (1) maintaining an appropriate temperature range, (2) providing diverse and complex habitat, (3) maintaining sufficient flow in Swan Creek, and (3) accounting for interspecies interactions. Table B-1 details criteria necessary to achieve a functional channel for spawning and rearing.