1.2 BACKGROUND INFORMATION

Project Name:	Oline Property Primary Restoration/Enhancement Site Habitat Restoration Project, Commencement Bay, Washington
Project Location:	Tacoma, Washington (Pierce County) Section 21, Township 21 North, Range 3 East
Project Proponent:	The Trust for Public Land *(on Behalf of The Commencement Bay Natural Resource Trustees)* Northwest Region 1011 Western Avenue, Suite 605 Seattle, WA 98104
Contact:	Kent Whitehead, Trust for Public Land Phone: (206) 587-2447 Jennifer Steger, NOAA (Trustee Contact) Phone: (206) 526-4363
Proposed timing or schedule:	Work will begin no earlier than January 1, 2000. In-water work will occur no later than March 15, 2000. All work will be completed prior to the opening of the fish window on March 15, 2000.
Project Engineer:	Greg Fladseth, Operations Manager, Env. Division Global Environmental 3840 West Marginal Way SW Seattle, Washington 98106 (206) 623-0621
Contact:	Kent Whitehead, Trust for Public Land 1011 Western Avenue, Suite 605 Seattle, Washington 98104 (206) 587-2447
Preparer:	Jennifer Steger, Ecologist / Restoration Case Manager NOAA Damage Assessment & Restoration Center NW 7600 Sand Point Way NE Seattle, Washington 98115
Contact:	Jennifer Steger, NOAA Phone: (206) 526-4363 Gail Siani, NOAA General Counsel (206) 526-4566

2.0 DESCRIPTION OF THE PROJECT AREA AND HABITAT

This section identifies the project site and describes current environmental conditions. The site is on Commencement Bay, adjacent to the Port of Tacoma, a world class industrial port created by dredging operations beginning about 100 years ago. Dredging converted the delta of the Puyallup River and the associated mudflats and salt marshes into shipping channels and port shipping facilities. Dredge spoils were used to create upland industrial areas adjacent to the channels.

2.1 Project Goals

The project goal is to enhance a migration corridor and preserve an upland buffer area, restore, intertidal salt marsh, mixed cobble beach, and shallow subtidal habitat currently not available due to the presence of two dilapidated barges assumed to have been deposited on the beach nearly 40 years ago. The barges are considered orphan as their owner is unknown. The barges block a portion of the migration corridor along the northeastern shore of Commencement Bay for salmonids leaving the Puyallup River and the Hylebos Waterway.

Specific construction techniques for this project will be developed by the contractor; however, based on past experience with these types of projects, the project proponents and project engineer anticipate that work will progress in the following manner:

1. Installation of a silt fence and/or straw bale dikes on or near the project boundary if deemed necessary;
2. Installation of a boom to surround the project area on the waterward side of the project area in order to provide wave protection and contain any floating debris prior to removal;
3. Demolition and removal of the standing portions of the derelict vessels barges, cutting off at grade of those portions of the barges that cannot be removed without excavation.
4. Simultaneous placement of large woody debris (logs already on site) to avoid erosion as a result of the barge removal, with the anticipation that over time the wood will provide a seed depository.

Heavy equipment used for construction will probably include backhoes, front-end loaders, and dump trucks. No pilings will be installed or removed as part of the project. Neither drilling equipment nor blasting will be used during the project. In water working only at low tides will minimize work. All in-water work will be completed prior to the opening of the fish window on March 15, 2000.

2.2 TIMING/CHRONOLOGY OF SPECIFIC CONSTRUCTION ACTIONS

A period of no longer than 50 days is anticipated for all activity at the site, which is expected to include no more than 45 days of actual demolition and debris removal. The timing for in-water work will be determined by the Hydraulic Project Approval (HPA) issued by the Washington Department of Fish and Wildlife (WDFW). The expected in-water work window for this project

will be between January 1, 2000 and March 14, 1999 at low tides to minimize in-water work. This timing is also consistent with the in-water construction season for Commencement Bay (June 15 through the winter to March 14).

3.0 STATUS OF THE SPECIES AND CRITICAL HABITAT

Information provided by NMFS (1999a, 1999b) and USFWS (1999) indicates that the project will occur within the general range of the following species:

Common Name	Scientific Name	Regulatory Agency/Status*
Humpback whale	*Megaptera novaengliae*	NMFS/ Endangered
Leatherback sea turtle	*Dermochelys coriacea*	NMFS/ Endangered
Steller sea lion	*Eumetopias jubatus*	NMFS/ Threatened
Bald eagle	*Haliaeetus leucocephalus*	USFWS/ Threatened
Chinook salmon	*Oncorhynchus tshawytscha*	NMFS/Threatened
Bull trout	*Salvelinus confluentus*	USFWS/ Proposed Threatened
Coho salmon	*Oncorhynchus kisutch*	NMFS/Candidate

There are no records of humpback whales, leatherback sea turtles, or steller sea lions occurring in the project area.

3.1 HUMPBACK WHALE (*Megaptera novaengliae*)

The most recent documented sighting of humpback whales in Puget Sound occurred in 1999 near Seattle (Calambokidis, personal communication, 1999). Such sightings are rare, however, occurring about every one to two years. The occurrence of humpback whales in Commencement Bay is more rare: about once every three to four years.

Due to the proximity of industrial activity, lack of prey and insufficient water depth, the possibility of humpback whales entering the project area is effectively zero.

3.2 LEATHERBACK SEA TURTLE (*Dermochelys coriacea*)

Leatherback sea turtles are seen infrequently on the outer coast of the Olympic Peninsula. The closest documented observation to Commencement Bay occurred at Port Angeles, more than 100 miles north (McAllister, personal communication, 1999).

Due to the lack of documented sightings of leatherback sea turtles in southern Puget Sound, the possibility of an encounter in Commencement Bay during the proposed habitat restoration projects is effectively zero.

* See Glossary for category definitions

3.3 STELLER SEA LION (*Eumetopias jubatus*)

The Steller sea lion ranges from the Channel Islands of southern California, north to the Bering Sea. There are no regular patterns of occurrence or migration corridors within Puget Sound, but individual animals have been sighted within groups of California sea lions in the Straits of Juan de Fuca and on navigation buoys south of Commencement Bay (Norberg, personal communication, 1999).

There is no habitat suitable to Steller sea lions within Commencement Bay. While the opportunity to feed on salmon migrating through the project area is not zero, the likelihood that Steller sea lions would occur in the project vicinity is discountable.

Based on the low likelihood of occurrence, and the absence of potential impact mechanisms, the habitat enhancement project at the Oline Property is expected to have no effect on humpback whales, leatherback sea turtles, or Steller sea lions, or their critical habitat. Therefore, these species are not addressed further in this document.

3.4 PUGET SOUND ESU CHINOOK SALMON (*Oncorhynchus tshawytscha*)

Chinook salmon have a historic range from the Ventura River in California to Point Hope, Alaska in North America, and from Hokkaido, Japan to Anadyr River in Russia. The Puget Sound Evolutionarily Significant Unit (ESU) chinook salmon was listed as a threatened species on March 16, 1999. The ESU includes "all naturally spawned populations of chinook salmon from rivers and streams flowing into Puget Sound including the Straits of Juan De Fuca from the Elwha River, eastward, including rivers and streams flowing into Hood Canal, South Sound, North Sound and the Strait of Georgia in Washington" (NMFS, 1999a).

Spring and fall run chinook spawn in the Puyallup River above river mile (RM) 10.5, and in the White River and it's tributaries (WDFW, 1994). Puget Sound ESU Chinook are listed as threatened under the ESA in Washington State, and have been identified as inhabiting the project areas (NMFS, 1999).

Hylebos Creek Salmon

Although chinook salmon do not occur naturally in Hylebos Creek, the Puyallup Tribe has attempted to introduce fall run chinook, and have augmented the creek with chum and coho salmon (Ladley, personal communication, 1999). This program was discontinued in recent years, and no attempt has been made to quantify the vestigial populations. Hylebos Creek salmon migrate through the Hylebos Waterway as both adults and juveniles, though are not afforded specific protection under the ESA.

Although adult salmon are anticipated to be in the area impacts to these populations are expected to be minimal as the in-water work will be minimized. The work window occurs outside the known juvenile (spring) migration periods (Ladley, personal communication, 1999).

Critical Habitat

There is no critical habitat designated for Puget Sound ESU Chinook Salmon. Critical habitat is currently proposed by NMFS, though not yet granted specific protection. Proposed critical habitat includes all marine, estuarine and river reaches accessible to chinook salmon in Puget Sound, including Commencement Bay.

Life History

Chinook require varied habitats during different phases of their life cycle. Spawning habitat typically consists of riffles and the tailouts of pools with clean substrates dominated by gravel located in the mainstem of rivers and large tributaries. Adult summer and fall chinook salmon in the Puyallup Basin spawn in freshwater streams in the late summer and fall, and fry emerge in the late winter and early spring. Juvenile chinook rear from three months to two years in the lower mainstem of rivers before entering the estuary and salt marshes. Chinook generally migrate to salt water as smolt in the spring and summer, and thereafter spend from two to four years feeding in the North Pacific Ocean before returning to spawn (WDFW, 1994).

3.5 COASTAL BULL TROUT (*Salvelinus confluentus*)

The historical distribution of bull trout extends from northern California to Alaska. In Washington, bull trout are found throughout coastal and inland streams and lakes (WDFW, 1998), and are proposed for listing by the USFWS as threatened. Bull trout in the Puyallup Basin are considered coastal bull trout.

Critical Habitat

The USFWS has not established or identified critical habitat for coastal bull trout.

Life History

Bull trout have a complex life history with two primary life history types: a resident form and a migratory form. Bull trout considered migratory may be stream dwelling (fluvial), lake-dwelling (adfluvial), or ocean- or estuarine-dwelling (anadromous) (USFWS, 1998). Individuals of each form may be represented in a single population, though, migratory populations may dominate where migration corridors and subadult rearing habitats are in good condition (USFWS, 1998). Most inland populations of bull trout are either fluvial or adfluvial, migrating from larger rivers and lakes to spawn in smaller tributary streams in August through October (Wydoski and Whitney, 1979). Bull trout spawn in streams with clean gravel substrates and cold (<9°C) water temperatures (USFWS, 1998). Spawn timing is relatively short, occurring from late October through early November. Redds are dug by females in water eight to 24 inches deep, in substrate gravel 0.2 to 2 inches in diameter (Wydoski and Whitney, 1979), and emergence generally occurs in the spring. Bull trout are opportunistic feeders, consuming fish in the water column and insects on the bottom (WDFW, 1998).

Bull trout have been found in the Puyallup River, though in low numbers and only in the upper reaches (above river mile 43). Little is known of this species occurrence in Commencement Bay, though it is conceivable that the anadromous form could migrate through, or rear within areas such as the Hylebos, or other waterways.

Environmental Baseline

Low stream temperatures and clean substrates are essential features of bull trout habitat. This species is most commonly associated with pristine or only slightly disturbed basins (USFWS, 1998), conditions that do not exist in Commencement Bay.

3.6 BALD EAGLE (*Haliaeetus leucocephal*)

The occurrence of bald eagles in Puget Sound and the Tacoma area has been documented since pre-settlement times (Stalmaster, 1987). Eagle populations have decreased within the region because of hunting and the widespread use of DDT, but their numbers have been increasing since the early 1970's. The species is currently de-listed.

Critical Habitat

No critical habitat has been established or identified for bald eagles.

Life History

Bald eagles generally perch, roost, and build nests in mature trees near water bodies where they spot prey while soaring or from perches (Ehrlich et al., 1988). Stalmaster (1987) reports that over 50 percent of an eagle's diet is fish, 25 percent from other birds, and 15 percent from mammals, although they will also feed on carrion (Stokes and Stokes, 1989).

Bald eagles are both residents in, and migrants through, Pierce County where populations are usually highest in January, as birds that had moved north to feed in late summer return to the region. Bald eagles breed in mid- to late-winter, usually returning to one of several nests located within an established nesting territory (Stalmaster, 1987). As bald eagles are primarily fish eaters, they usually nest within one mile of open water, where their home range can extend up to eight miles. Eggs laid in March or April will hatch within one and a half months, and the young eagles fledge in mid-summer (August).

Environmental Baseline

Commencement Bay, the Hylebos Waterway, Hylebos Creek and a migration corridor along the northeastern shoreline of Commencement Bay provide foraging habitat for both nesting and wintering bald eagles, though sightings are uncommon. There are large trees at, above and at adjacent areas to the project site, including several large cottonwood, cedar, and evergreen trees in and around the project site. Nonetheless, there are no eagle nest sites, perches or roosts known to occur within one mile of the project (WDFW, 1999). A transient bald eagle may occur within the vicinity of the Oline property during project construction, but eagle use in the project area is unlikely due to the high level of ambient industrial-based noise.

3.7 PUGET SOUND/STRAIGHT OF GEORGIA ESU COHO SALMON (*Oncorhynchus kisutch*)

On July 25, 1995, NMFS determined that listing was not warranted for Puget Sound/Straight of Georgia ESU coho salmon. The ESU, however, is designated as a candidate for listing due to concerns over specific risk factors. The ESU includes all naturally spawned populations of coho salmon from drainages of Puget Sound and Hood Canal, the eastern Olympic Peninsula (east of Salt Creek), and the Strait of Georgia from the eastern side of Vancouver Island and the British Columbia mainland (north to and including the Campbell and Powell Rivers), excluding the upper Fraser River above Hope (NMFS, 1999).

As a candidate species, no specific protections are afforded under the ESA, and section 7 consultation or conference with NMFS is not required for anticipated impacts to these species. Summary information for this candidate species is included herein in the event these candidate species become "listed" or "proposed" before project completion.

Critical Habitat

No critical habitat has been proposed for Puget Sound/Straight of Georgia ESU coho salmon.

Life History

Coho salmon occur in most major river basins around the Pacific Rim from central California to Korea and northern Hokkaido, Japan. Adult coho salmon spawn in freshwater streams in the late fall and early winter. Coho typically spawn in low gradient riffles with clean substrates ranging from pea-sized gravel to orange-sized cobbles. Rearing juveniles prefer off-channel pools with complex cover including both large and small woody debris. Juvenile coho rear in freshwater for a year to 18 months, and smolts migrate to the ocean in the spring of their second year. Most male coho, and all female coho, spend from 16 to 20 months rearing in the ocean and return to spawn in fresh water as three-year old adults. The spawner distribution of the Puyallup coho salmon stock includes Commencement Bay and the Hylebos Creek (WDFW, 1994).

Environmental Baseline

Natural coho populations in the Puget Sound/Strait of Georgia ESU have been influenced by hatchery introductions and harvests focused on exploiting hatchery augmented stocks. Coho escapement data are the most comprehensive in Puget Sound, and indicate that the Puyallup Basin coho salmon stock in the Puget Sound/Strait of Georgia ESU is depressed (WDFW, 1994).

There is habitat in the Oline property vicinity considered suitable to adult coho salmon. The many stranded logs and other materials on the shallow subtidal and intertidal areas could likely provide cover, and the same substrate provides benthic prey items for feeding and migrating juveniles while the area is inundated by high tide.

4.0 ESSENTIAL FISH HABITAT

The intent of restoration is to return injured natural resources and natural resource services to their pre-release - or "baseline" condition additionally, restoration projects are designed to compensate for interim losses of natural resources and services. While the overall goal is to restore and enhance the injured habitat, restoration activities could cause short-term adverse impacts to EFH. These potential adverse impacts may include short-term construction activities (e.g., reduced water quality, species displacement, reduced habitat quality). No long term adverse impacts are anticipated.

This restoration project impacts are a result of vessel and debris removal from a beach area including upland, high intertidal and intertidal habitat. Although a short term impact may be created by the presence of heavy equipment, the net result of the activity is to restore intertidal habitat and increase its area in Commencement Bay. Demolition activities will be primarily in the dry and the connection of the hydrological system during low tide.

Life History

The area in which the restoration project is planned (barge and debris removal, with placeement of large woody debris already incorporated into the site) has been identified as EFH for species managed by the Pacific Fishery Management Council under the Amendment 11 to The Pacific Coast Groundfish Fishery Management Plan (October, 1998).

This Plan identifies twenty-four species and life stages within the estuarine composite EFH. These species include five species of Class Elasmobranchiomorphi and nineteen species of Class Osteichthyes. Eight species of Family Scorpaenidae (rockfish) and four species of Order Pleuronectiformes (flatfish) are identified within the Plan. Environmental conditions (i.e., temperature, salinity, water depth, substrate) greatly reduce the potential for the presence of these species in the project area for even short periods of time during extreme high tides. The species that may occasionally visit the project area include: Squalus acanthias (spiny dogfish), Raja inornata (California skate), Pleuronectes vetulus (English sole), Errex zachirus (rex sole), Citharichthys sordidus (Pacific sanddab), and Platichthys stellatus (starry flounder). Due to construction activities in the dry or at extreme low tide during periods of the year with minimum fish activities, no adverse impacts will occur to EFH.

Due to construction activities in the dry during low tides, and opening of the intertidal habitat to salmonids and flatfish, impacts to essential fish habitats should be minimal. The eggs, larval stages, and some juvenile fish may occasionally be present in the area of the activity. The project is intended to enhance essential fish habitat. Therefore, no additional EFH conservation recommendations have been put forward. The actions to enhance the Oline property in Commencement Bay will not have an adverse impact on essential fish habitat.

Environmental Baseline

Commencement Bay is tidally influenced and does not provide chinook salmon spawning habitat. Additionally, the substrate at the project site is a mix of sand and cobble, overlaying silt and mud which extends into the shallow subtidal and deeper subtidal areas unsuitable for

chinook salmon spawning. There is little cover but the habitat could be suitable for foraging juvenile chinook salmon.

There is habitat for migrating adult chinook salmon. The proposed habitat rehabilitation work will occur in the intertidal habitat where juvenile and adult chinook salmon may occur. Following project construction stranded logs and other materials on the beach and possibly shallow subtidal/mudflats would likely provide cover for feeding and migrating juveniles while the area is inundated by high tide, and the mudflats provide a source of benthic prey.

5.0 EFFECTS OF THE ACTION

5.1 DIRECT EFFECTS

Habitat at the Oline site has not been extensively modified, the migration corridor has simply been blocked to a certain degree due to barge and vessel demolition activities which have taken place on the shoreline. Little modification to the shoreline was necessary for the activities to be executed. However, as a result of demolition activities and storm activity, three derelict vessels have remained in the intertidal salmonid migration corridor for what appears to be the better part of the last three decades. Work on Oline property restoration will include three main project elements that will result in direct effects to the project area:

1) Demolition and removal of the existing barges and debris from the beach and intertidal areas;
2) Cutting the remaining barge debris to grade, flush with the beach; and
3) Simultaneous placement of large woody debris in selected areas of the shoreside wall of the larger barge (lays to the north on the beach) in order to avoid erosion and facilitate seed recruitment.

Potential Direct Effects on Fish Species

Puget Sound ESU Chinook
Vicinity use by chinook juveniles during project construction is expected to be low, as the site substrate conditions provide limited forage.

The proposed work window lies within the period that adult Puyallup River Puget Sound ESU Chinook are migrating to the spawning grounds. It is likely that these chinook could briefly enter the project site enroute to the Hylebos Waterway and Puyallup River and these fish are not precluded from accessing the project site (Table 1).

Bull Trout
The level of use by bull trout within the project areas is expected to be minimal. No bull trout spawning or rearing is known to occur within the area. Bull trout use, if any, within the habitat restoration area during construction is expected to be limited to foraging anadromous bull trout adults straying from other drainages or basins.

Puget Sound/Straight of Georgia ESU Coho Salmon
Vicinity use by coho juveniles during project construction is expected to be low. Coho juveniles smolt and move from natal streams from mid-April to mid July (WDFW, 1994), so any overlap with in-water construction work would be minimized.

Fisheries Impact Summary

The potential for direct impacts to fish will be minimal, and will be related to demolition and clearing. Any debris removal below the MHHW could result in the displacement of foraging juvenile chinook and coho salmon, though fish will be excluded from the area of activity by tides and to a certain extent by booms. Disturbances related to construction could also displace adult bull trout, if present, from the project areas. The removal of the vessels above and near the MHHW could result in an increased potential for erosion and sedimentation during the demolition. Using control measures such as hay bales, the placing of large woody debris and utilization of booms, will minimize erosion and sedimentation impacts.

Sedimentation within Commencement Bay because of the barge removal construction activities is expected to be minimal. The bulk of material to be removed is large wood and rebar, it is intended that the substrate will be disturbed only as necessary to facilitate the removal of anthropogenic debris. Soil testing demonstrated that there are no contaminated soils on the site (Tetra Tech, 1999). Soil testing will again be conducted following barge removal to ensure that no contaminated sediments will be exposed following the habitat enhancement activities. The site has soil/silt and cobble covering the work area, however, the silt surface is above water during most of the daily tidal fluctuations, and will be protected by a silt fence and straw bale dike during construction. Minor short term and episodic increases in turbidity may occur in the vicinity because the site work will be open to tidal inundation.

The preferred timing for construction is during the winter months (January through Mid-March, 2000). This timing is also consistent with the in-water construction season for Commencement Bay (June 15 through the winter to March 14).

Projects of this scope typically involve a minimal use of heavy equipment and may involve multiple construction crews. These elements are necessary to effectively and safely complete projects of this type. Accidents such as spills of hazardous materials (fuel or hydraulic fluid) or unanticipated additional construction impacts could occur, though are not likely, which could degrade water quality and be toxic to fish.

Potential Direct Effects on Bald Eagles

The potential of the project to directly affect bald eagles is expected to be negligible. Commencement Bay provides foraging habitat for both nesting and wintering bald eagles, though sightings are uncommon. There are large trees at the site including are several large cottonwood trees in and around the site. Nevertheless, no eagle nest sites, perches or roosts are known to occur within one mile of the project (the northern limit of the Priority Habitat and Species data maps) (WDFW, 1999). Transient bald eagles may occur within the vicinity of project activities during construction, but eagle use in the project area is unlikely.

Adverse affects to bald eagles due to construction and temporary increases in noise levels are not anticipated due to limited potential for use of the project area, and the high level of ambient industrial-based noise.

5.2 INTERRELATED AND INTERDEPENDENT EFFECTS

The Oline site habitat enhancement project is not anticipated to result in any interrelated or interdependent deleterious effects to any listed species.

5.3 INDIRECT EFFECTS

Potential Indirect Effects on Fish Species

A clear migration corridor will be created along the intertidal boundary of the eastern shore of Commencement Bay. This will stimulate indirect effects to fish species due to increased habitat suitability.

Soils disturbed by the barge demolition and debris removal and the placement of large woody debris will avoid any potential short or long term bank erosion and sedimentation as it will be properly stabilized following construction. Bank erosion and sedimentation could result in degraded foraging habitat for all fish species at the project site if the stabilization activities are not undertaken.

Potential Indirect Effects on Bald Eagles

Bald eagles prefer fish in their diet, and there are no long-term adverse impacts to fish anticipated. No upland forest will be disturbed by the project and, therefore, no present or future nesting habitat for bald eagles will be impacted.

5.4 CUMULATIVE EFFECTS

NMFS and USFWS (1998) define cumulative effects as actions that are reasonably certain to occur, and not involving a federal action that would be evaluated through a separate section 7 review. This restoration project is part of an overall Commencement Bay Final Restoration Plan and will, on a cumulative basis, contribute to Commencement Bay's overall environmental health, particularly in combination with other Commencement Bay remediation and habitat enhancement projects. For further analysis on cumulative impacts please refer to the Commencement Bay Environmental Impact Statement and Restoration Plan.

5.5 BENEFICIAL EFFECTS

NMFS and USFWS (1998) define beneficial effects as actions which "are contemporaneous positive effects without any adverse effects." This project will improve the intertidal habitat and increase benthic and epibenthic prey diversity. A clear migration corridor will be created along the intertidal boundary of the eastern shore of Commencement Bay. The proposed restoration actions will increase habitat suitability. These improvements will have beneficial effects not only to Commencement Bay salmon stocks in particular, but also to other Puget Sound salmon stocks.

6.0 INCIDENTAL TAKE

6.1 FISH SPECIES

While the demolition, debris removal and placement of large woody debris may temporarily increase sedimentation in the part of the Bay adjacent to the project site, a likely adverse effect, the relationship of incidental take to these two affects is currently unknown. The potential direct affect of demolition on the aquatic environment is expected to be minimized by the proposed conservation measures. Similarly, the proposed conservation measures are anticipated to reduce potential affects to chinook, bull trout, and coho in Commencement Bay to negligible levels.

Chinook Salmon

Comprehensive studies have not yet been published documenting chinook and coho fry densities in Commencement Bay, Hylebos Creek or Hylebos Waterway. Chinook salmon representing a vestigial population introduced to Hylebos Creek are unlikely to occur at the project site during construction due to the timing of migrations. There are no natural or constructed barriers to exclude Puget Sound ESU chinook from the project site, though it is unlikely that these fish would occur in the project vicinity due to migration timing. It is highly unlikely that juvenile or adult chinook will be subject to an incidental take.

Bull Trout

It is expected that anadromous adult bull trout, if present, would be unlikely to use the waters of the project site or migration corridor during construction, and would not be directly harmed by this habitat rehabilitation project. The potential to take adult bull trout because of the work at the site is expected to be discountable.

Coho Salmon
Because coho salmon spawn in Hylebos Creek, adult and juvenile coho migrate through the project areas. The likelihood of an incidental take, however, is minimized by the construction window, and by habitat suitability. The construction window for these projects coincides with seasonal periods when coho are least likely to be present. Utilization of the near-shore habitat is directly related to water quality, food availability, and the presence of predatory refuge. These qualities are only marginal at the project site. It is highly unlikely that juvenile or adult coho will be subject to an incidental take.

6.2 BALD EAGLE

The potential for the incidental take of bald eagles is expected to be negligible. Adverse affect to bald eagles due to construction and temporary increases in noise levels are not anticipated due to limited potential for use of the project area, and the high level of ambient industrial-based noise.

7.0 DETERMINATIONS OF EFFECT

7.1 THREATENED SPECIES

Puget Sound ESU Chinook salmon

The proposed habitat enhancement project may affect, but is not likely to adversely affect, Puget Sound ESU Chinook salmon.

A "may affect" determination is warranted based on the following rationale:

- Puget Sound ESU Chinook salmon are present in the Puyallup River basin and are not precluded from rearing and migrating within the project vicinity.
- Puget Sound ESU Chinook salmon have not been documented in the specific site area, but there exists a reproducing population of introduced chinook in that drainage.

A "may affect, not likely to adversely affect" determination is warranted for chinook because:

- The level of use by chinook adults or juveniles within the work areas is expected to be low since project construction will take place primarily in the dry and outside the migration timing juvenile outmigration.
- Daily construction monitoring will ensure that turbidity levels are maintained within allowable limits as determined by WDFW and other permitting agencies. If water quality monitoring indicates excessive or chronic turbidity, remediation actions will be immediately implemented as directed by the project engineer with support from the on-call biologist.
- Other indirect impacts to the Bay will be mitigated in large part by the implementation of Best Management Practices (BMP's) and other specific mitigation measures that will be described in construction documents for this project.
- No chinook mortality is expected as a result of the proposed habitat restoration.

Bald Eagle

Based on the information referenced in this report and project information provided in the construction drawings, these projects "may affect" and are "not likely to adversely affect" bald eagles.

A "may affect" determination is warranted based on the following rationale:

- Bald eagles have been documented in the area.

A "may affect, not likely to adversely affect" determination is warranted for bald eagles because:

- There is no bald eagle habitat identified within one mile of either project area (WDFW, 1999).
- No potential nesting, roosting, or perching habitat trees will be impacted by the project.
- Bald eagles are could forage along the Bay; as foraging activity is expected during the fall when mature salmon return to Hylebos Creek and Puyallup River. The project activities are scheduled to begin after the peak return spawning period for salmon in October. Eagles, however, are not precluded from the project area during the construction window for this project.
- Impacts to the eagles prey base are expected to be negligible.

7.2 PROPOSED SPECIES

Coastal bull trout

Coastal bull trout are currently proposed for listing as a threatened species. A final listing decision is expected in the fall of 1999, before the implementation of the proposed habitat rehabilitation in 2000. Based on the information referenced in this report, this project is not expected to adversely affect bull trout and, therefore, is not expected to jeopardize this species. Upon listing, it is expected that the proposed habitat rehabilitation "may affect," but is "not likely to adversely affect" coastal bull trout.

A "may affect" determination is warranted based on the following rationale:

- Populations of bull trout have been identified in the Puyallup River system.
- Adult bull trout straying from other Water Resource Inventory Area (WRIA) basins are not specifically precluded from the project area.

A "may affect, not likely to adversely affect" determination is warranted for coastal bull trout because:

- Puyallup River bull trout are limited to the upper drainages, and have not been identified in the project area.
- No bull trout spawning or rearing is known to occur within the project site. Bull trout use, if any, during construction is expected to be limited to foraging anadromous adults.

- Adult anadromous bull trout will not be adversely affected, as they will likely avoid the site during construction.
- No bull trout mortality is expected as a result of the proposed habitat rehabilitation.

7.3 CANDIDATE SPECIES

Puget Sound/Straight of Georgia ESU Coho Salmon

Puget Sound/Straight of Georgia ESU Coho Salmon are currently a candidate species. No protection for candidate species is afforded under the ESA, and section 7 consultation or conference with NMFS is not required for anticipated impacts. Summary information for this candidate species is included here in the event Puget Sound/Straight of Georgia ESU coho salmon become listed or proposed before project completion. It is expected that further consultation would result in a "may affect, not likely to adversely affect" determination for coho salmon.

A "may affect" determination is warranted based on the following rationale:

- Multiple sources document coho usage in Hylebos Creek, the Puyallup River and Commencement Bay.

A "may affect, not likely to adversely affect" determination is warranted for coho salmon because:

- The migration corridor within the project vicinity does not contain habitat suitable to support spawning and rearing by coho salmon.
- The project has been scheduled to avoid work during periods of coho spawning, egg incubation, and the peak outmigration of juveniles.
- The level of use by coho juveniles within the work areas is expected to be low (less than five fish).
- No coho salmon mortality is expected as a result of the proposed habitat rehabilitation.

8.0 RECOMMENDED CONSERVATION MEASURES

The following measures are recommended to avoid or minimize potential direct impacts and minimize or compensate for indirect impacts. No interrelated or interdependent impacts have been identified associated with the proposed habitat rehabilitation.

1. To avoid potential direct impacts to chinook, coho, and bull trout (as well as other aquatic species), construction should only occur within the work-window specified for the project. This will limit sedimentation to winter flood months, before the peak smolt migration, and after most spawning has occurred, and intragravel development periods for chinook and coho in the fall (Table 1).
2. The contractor will implement the Temporary Erosion and Sedimentation Control Plan (TESCP) as shown in many contract documents and construction drawings. The TESCP

should be implemented before the start of any ground disturbing activities. The TESCP should be based on the proponents current Best Management Practices and should include measures such as silt fences, and straw bale dikes to allow excavation to proceed in unsaturated conditions.

3. The Trustees will identify a responsible party periodically inspect the site during construction to verify that the contractor is effectively implementing the TESCP. Work procedures that are out of compliance should be terminated and an acceptable solution should be developed before work is allowed to continue.
4. To minimize the potential for direct impacts to listed, proposed, and candidate fish, the proponents should require that no hazardous materials or toxic materials be transferred or stored within 50 feet of the MHHW of Commencement Bay.
5. To minimize the potential for direct impacts to listed, proposed, and candidate fish, the proponents should require that no equipment is refueled or maintained within 50 feet of the MHHW of Commencement Bay. Equipment should be serviced or maintained in designated areas where stormwater runoff can be prevented from directly entering the water.
6. To minimize the potential for accidents resulting in direct effects to listed, proposed, or candidate fish, an emergency spill kit should be stored at each work site and construction crews trained in their proper use.
7. To minimize the potential for accidents that may result in direct effects to listed, proposed, or candidate fish, the proponents or their agent should inform and educate all crewmembers and all onsite personnel, to environmental precautions. These precautions must include: Clearly marking the work area, clearly marked clearing limits, specifically identifying debris to be removed, large woody debris which is to remain and/or placed in specified locations on the site, and all applicable laws and permit conditions.

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10.0 GLOSSARY

BA: Biological Assessment. A document required under Section 7 of the Endangered Species Act whereby all federal agencies consult with USFWS and NMFS if they determine that any action they fund, authorize, or carry out, may affect a listed species or designated critical habitat.

Conservation Measures: Actions that, when implemented by the applicant, would reduce or eliminate the adverse impacts of the proposed activity.

Determination of Effect: The finding or determination of effect is the conclusion of the biological assessment and indicates the overall effect of the proposed activity to listed species or critical habitat. This finding must be supported by documentation in the biological assessment.

ESA: Endangered Species Act.

ESU: Evolutionarily Significant Unit. A population within an ESU is both reproductively isolated and genetically unique

EFH: Essential Fish Habitat

Federal Status:

Endangered: Species that are in danger of extinction within the near future throughout all or a significant portion of their range.

Threatened: Species are likely to become endangered within the near future.

Proposed Threatened: Species likely to be listed as threatened unless a recovery plan is developed and implemented.

Candidate: Species is on waiting list for federal listing consideration.

Incidental Take: Harm that may come to a listed species indirectly, through acts not intended to maliciously or purposely harm the species.

LWD: Large Woody Debris.

MLLW: Mean lower low water. The average height of lower low waters over a 19-year period.

MHWL: Mean high water line. The line on a chart or map that represents the intersection of the land with the water surface at the elevation of mean high water.

MHHW: Mean higher high water. The average height of the higher high waters over a 19-year period.

NGVD: National Geodetic Vertical Datum of 1929. A fixed reference adopted as a standard geodetic datum for elevations determined by leveling. This establishes mean sea level.

NMFS: United States Department of the Interior, National Marine Fisheries Service.

NOAA: National Oceanographic and Atmospheric Administration.

Puget Sound ESU Chinook: Includes all naturally spawned populations of chinook salmon from rivers and streams flowing into Puget Sound including the Straits of Juan De Fuca from the Elwha River, eastward, including rivers and streams flowing into Hood Canal, South Sound, North Sound and the Strait of Georgia in Washington. Chinook salmon (and their progeny) from the following hatchery stocks are considered part of the listed ESU: Kendall Creek (spring run); North Fork Stillaguamish River (summer run); White River (spring run); Dungeness River (spring run); and Elwha River (fall run).

Redd: A shallow depression excavated by female salmon in the substrate of streams or lakes to deposit eggs. At spawning time, the male and female take adjacent positions over the redd facing upstream, extend pectoral fins, mouths agape, and expel sexual products into the excavated depression. The female refills the redd with gravel after spawning.

RM: River Mile

Take: Defined in ESA Section 3(18) means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

Trustees: Commencement Bay Natural Resource Trustees.

USFWS: United States Department of the Interior, Fish and Wildlife Service.

WRIA: Water Resource Inventory Area

11.0 APPENDIX A: TABLES AND FIGURES

Table 1: Life History of Puyallup Basin chinook and coho salmon, and Project Timing

Month	J	F	M	A	M	J	J	A	S	O	N	D
Construction activity work window												
Adult migration – chinook[1]												
Adult migration - coho												
Adult spawning –chinook												
Adults spawning –coho												
Intragravel development - chinook												
Intragravel development -coho												
Rearing –chinook												
Rearing –coho												
Smolting & migration –chinook												
Smolting & migration –coho												

[1] (WDFW, 1994)-information in this portion of the graph is specific to Puyallup Basin chinook and coho stocks.