Piling Replacement

1.0. Summary of Activity

1.1 For all Fresh Waters excluding the Columbia River mainstem

Replacement of existing piling with up to one hundred (100) untreated wood, plastic, or concrete piling or forty (40) steel piling, provided that:

1. Work will be accomplished within 14 days and is done within the approved work window.

2. Projects that are in or adjacent to an existing or previously designated Superfund site or a site currently or previously designated for cleanup under the Washington State Model Toxic Cleanup Act will follow BMPs established by EPA during CERCLA coordination.

3. No piles are associated with log raft booms.

4. No sheet piling is used in lieu of pole piling.

5. Existing piles are either partially cut with a new pile secured directly on top, fully extracted, or cut at the mud-line using best management practices. Partial cutting can be used if the pile is partially deteriorated. Full extraction of piles is used if partial cutting is not possible and when piles are too deteriorated to remove without breaking, piles are cut at the mud-line using a pneumatic saw.

6. Removed creosote treated piles shall be disposed of in a manner that precludes their further use. Piles must be cut into manageable lengths (4 ft lengths are preferable) for transport and disposal in an approved upland location. In all cases, applicants must be prepared to provide documentation of disposal with the statement of compliance.

7. Hydraulic water jets are not used to remove or place piles.

8. Piles are replaced in the same general location and do not extend beyond the footprint of the existing structure (i.e. pier).

9. This programmatic doesn't apply to steel piles greater than 12 inches in diameter or concrete piles greater than 24 inches in diameter. Sound attenuation measures will be used for installation of steel piles with an impact hammer. These measures are described in Section 5 under construction methods. [from NWP 3 or LOP]

1.2 For the Columbia River Mainstem including the Snake River and Baker Bay

Replacement of up to one hundred (100) untreated existing wood, plastic, or concrete piling or forty (40) existing steel piling, provided that:

1. Work will be accomplished within 14 days and is done within the approved work window.

2. Projects that are in or adjacent to an existing or previously designated Superfund site or a site currently or previously designated for cleanup under the Washington State Model Toxic Cleanup Act will follow BMPs established by EPA during CERCLA coordination.

3. No piles are associated with log raft booms.

4. No sheet piling is used in lieu of pole piling.

5. Existing piles are either partially cut with a new pile secured directly on top, fully extracted, or cut at the mud-line using best management practices. Partial cutting can be used if the pile is partially deteriorated. Full extraction of piles is used if partial cutting is not possible and when piles are too deteriorated to remove without breaking, piles are cut at the mud-line using a pneumatic saw.

6. Removed creosote treated piles shall be disposed of in a manner that precludes their further use. Piles must be cut into manageable lengths (4 ft lengths are preferable) for transport and disposal in an approved upland location. In all cases, applicants must be prepared to provide documentation of disposal with the statement of compliance.

7. If a barge is used, the barge will not ground out and will not be anchored over eelgrass beds.

8. Hydraulic water jets are not used to remove or place piles.

9. Piles are replaced in the same general location and do not extend beyond the footprint of the existing structure (i.e. pier).

10. Work is not done within one mile of a known steller sea lion haul-out.

11. This programmatic doesn't apply to steel piles greater than 12 inches in diameter or concrete piles greater than 24 inches in diameter. Sound attenuation measures will be used for installation of steel piles with an impact hammer. These measures are described in Section 5 under construction methods. [from NWP 3 or LOP]

1.3 For all Marine/Estuarine Waters excluding Baker Bay

Replacement of up to one hundred (100) wood, plastic, or concrete piling or forty (40) existing steel piling, provided that:

1. Work will be accomplished within 14 days and is done within the approved work window.

2. Projects that are in or adjacent to an existing or previously designated Superfund site or a site currently or previously designated for cleanup under the Washington State Model Toxic Cleanup Act will follow BMPs established by EPA during CERCLA coordination.

3. No piles are associated with log raft booms.

4. No sheet piling is used in lieu of pole piling.

5. No piles treated with creosote or pentachlorophenol are used.

6. Existing piles are either partially cut with a new pile secured directly on top, fully extracted, or cut at the mudline using best management practices. Partial cutting can be used if the pile is partially deteriorated. Full extraction of piles is used if partial cutting is not possible and when piles are too deteriorated to remove without breaking, piles are cut two feet below the mud-line using a pneumatic saw.

7. Removed creosote treated piles shall be disposed of in a manner that precludes their further use. Piles must be cut into manageable lengths (4 ft lengths are preferable) for transport and disposal in an approved upland location. In all cases, applicants must be prepared to provide documentation of disposal with the statement of compliance.

8. If a barge is used, the barge will not ground out and will not be anchored over eelgrass beds.

9. Hydraulic water jets are not used to remove or place piles.

10. Piles are replaced in the same general location and do not extend beyond the footprint of the existing structure (i.e. pier).

11. Work is not done within one mile of a known steller sea lion haul-out.

12. This programmatic doesn't apply to steel piles greater than 12 inches in diameter or concrete piles greater than 24 inches in diameter. Sound attenuation measures will be used for installation of steel piles with an impact hammer. These measures are described in Section 5 under construction methods. [from NWP 3 or LOP]

13. A marine mammal/marbled murrelet buffer area will be monitored during and immediately prior to pile driving activity. Pile driving will not be initiated or will be temporarily suspended if a marbled murrelet or an ESA-listed marine mammal is within a 400 foot radius of the work site.

2.0 Programmatic Description

Individual permits (IPs), letters of permission (LOPs), Nationwide Permit 3 (NWP 3), and several Regional General Permits (RGPs) may authorize the replacement of existing piling in navigable waters of the U.S. in the State of Washington. This programmatic biological evaluation applies only to such activities where a maximum of 100 wood, plastic or concrete piles or 40 steel piles will be replaced. Piling replacement activities that do not fall under the parameters of this programmatic biological evaluation will need to undergo individual informal or formal ESA consultation.

3.0 Project Location

In all navigable fresh and marine/estuarine waters only in the counties of Washington State where the National Marine Fisheries Service and U.S. Fish and Wildlife Service have concurred that the project is not likely to adversely affect listed species and designated critical habitat and will not jeopardize proposed species or destroy or adversely modify proposed critical habitat.

4.0 Project Description

Replacement of existing piling with up to one hundred (100) wood, plastic or concrete piling or forty (40) steel piling in all navigable waters of Washington State. This programmatic biological evaluation does not cover any interrelated and/or interdependent activities in any of the designated critical habitat areas or areas used by listed or proposed species, except those activities distinctly specified.

5.0 Project Construction Description[1]

Construction Equipment

Pile driving equipment varies but generally consists of an open barge with crane and a guide on the end of the barge for placement of piling in specific locations. Some barges are self-propelled while others are assisted by a tug boat or work skiff. If a work barge is large, long steel spuds are generally used by lowering them to the bottom to keep the barge in position. For smaller barges, anchors are dropped or cables are attached to an onshore object and winches are then used to position the barge. Barges are typically 150 feet in length, but up to 250 feet long. The length of barge used depends on the depth of pile replacement. For private piers, shorter barges are generally used. The barge anchors into position by dropping "spuds" – large steel piles that act as anchors at each corner of the barge. The tug boat is a maximum of 60 feet in length with engine power equivalent to an 100-foot long pleasure vessel.

Construction Methods

1) Pile removal: Three methods are used to repair or replace piling: partial cutting with new pile secured directly on top, full extraction, or cutting at the mudline. (See appendix E for Best Management Practices)

    a) Partial cutting with new pile secured directly on top: The extent of disrepair or deterioration of the pile is first assessed. If the pile is only partially deteriorated, then the deteriorated portion of the pile is removed and a new "top" or "stub-pile" is placed on the pile by using a "sleeve" (usually a 10- to 12-inch diameter pipe). If in marine waters, the "stub-pile" is treated wood, usually chemonite. The pipe or sleeve is placed on the portion of the pile remaining after cutting has occurred, and the new "top" is secured to the pipe/sleeve and existing pile with steel bolts. Concrete may also be used to connect the two piles. For this method, a "seam" where the piles are joined is fitted with a steel form/collar. The form/collar tightly fits on the pile, so that no concrete leaks out of the form/collar. The concrete is then poured into the collar through a tremie, which is a long flexible tube attached to a cement mixer located on the pier or dock. The mouth of the tremie is placed at the bottom of the steel collar and concrete is pumped in from the bottom of the form. While the concrete is being poured, the tremie nozzle is submerged within the concrete at all times to ensure that no concrete leaches from the mix into the water column. The tremie is raised as the level of concrete rises, but remain below the surface level of the concrete. The pouring of the concrete is stopped when the surface level is below the top of the form to prevent overflow. All concrete is contained within a steel collar and does not come into contact with the water column either during placement or during the life of the project.[2]

    b) Full extraction: If partial cutting is not an option and the pile is not too deteriorated or rotted, then the pile is removed in its entirety. Constraints to removal are if the pile is so rotted that it falls apart or breaks during removal or if the pile is driven firmly and deep into the substrate where the pile will break upon attempts at full extraction. For full extraction, the pile is removed either by use of a "choker" chain and crane or with a vibratory pile drive. For the "choker" method, the "choker" chain is placed securely around the pile and then by using a crane mounted on a barge, the pile is pulled directly up until it is completely out of the

[1] Information on construction techniques for piling replacement was obtained by personal communication with John Pell, Navigation Specialist, Corps of Engineers, Regulatory Branch on February 15, 2000 and Steve Zuvela, Waterfront Construction, on May 5, 2000.
[2] Information on the "tremie" and concrete method was obtained from "Construction and Repair Methodologies: Washington State Ferries", prepared by Pacific International Engineering, 1999.

substrate. For the vibratory pile driving method, the vibratory pile driver is mounted on a barge and the vibratory hammer is clamped onto the top of the pile. The vibration of the pile driver loosens the pile from the substrate. The vibratory hammer is raised directly upward as the pile loosens until the pile is completely free from the substrate. The vibratory method is the preferred method, especially when the pile is firmly secured in the substrate. There is less likelihood for the pile to break. Once removed, the pile is placed on the barge and disposed of at an appropriate upland location (disposal depends on chemical treatment of piling). Hydraulic water jets are sometimes used to loosen piles, but are not covered under this programmatic biological evaluation.

c) Pile cut at the mudline: When the pile is either too deteriorated or rotted to the extent that extraction would cause greater impacts because of the pile breaking and subsequent needs to removal all material dispersed in the water column, then the pile is cut at the mudline. If the pile inadvertently breaks during extraction, cutting will also then occur along with removal of the broken portions within the water column. The piles are cut by a diver underwater using a pneumatic saw. Depending on the height of the piles, they may be cut in sections.

d) Pile placement: Upon removal of the piling, new or recycled piling are driven using a barge-mounted pneumatic pile driver, standard drop-hammer, or vibratory pile driver. A pile is lowered through the piling-guide until it rests in place on the bottom and then driven in place. Pneumatic pile drivers are most common today but the older pile drivers using a heavy weight dropping on top of the pile are still being used. Hydraulic water jets are not covered as method of pile placement under this programmatic biological evaluation.

   For all steel piles installed with an impact hammer pile driver will require the use of micarta piles caps as a sound attenuation measure.

Materials Used

The use of wood, steel, concrete, or plastic piling may be used. All piling used in fresh waters, including the Columbia River shall be untreated. All piling replaced in marine or estuarine waters shall not be treated with creosote or pentachlorophenol. In some Washington lakes, older piers used sheet piling in lieu of timber piles to support the structure. When replacing damaged sheet piling, only replacement with pole-type piles is covered under this informal consultation.

Cleanup

All piling to be replaced and piling debris shall be completely removed from the aquatic environment. Removed creosote treated piles shall be disposed of in a manner that precludes their further use. Piles must be cut into manageable lengths (4 ft lengths are preferable) for transport and disposal in an approved upland location. In all cases, applicants must be prepared to provide documentation of disposal with the statement of compliance.

Construction Timing

The replacement of existing piling with up to one hundred (100) wood, plastic or concrete piling or forty (40) steel piling will be accomplished in a maximum of fourteen workdays.

6.0 Action Area Description

The action area for the replacement of piling as specified above in all navigable fresh, marine, and estuarine waters of Washington State is the pile being replaced, a 25-foot radius[3] around each pile for potential water quality impacts due to pile driving, and a 1000-foot radius[4] around each pile for potential noise impacts associated with pile driving. If there is any interrelated or interdependent work associated with the piling replacement, such work would need to undergo individual informal or formal ESA consultation. Such work is not covered by this programmatic biological evaluation on piling replacement.

7.0 Species and Habitat Information

7.1 Species Present

The plants, animals, insects, and fish present in the project area are provided in Table 1 through Table 4. Details on each species can be found in Appendix B.

Table 1. Sensitive Terrestrial Animals and Insects Potentially Occurring in Designated Project Areas

Species Name *Scientific Name*	**Status**	**Fresh Water Areas (excluding the Columbia River mainstem)**	**Mainstem Columbia River Area (including Snake River and Baker Bay**	**Marine/Estuarine Water Area (excluding Baker Bay)**
Brown Pelican *Pelecanus occidentalis*	E	X	X	X
Marbled Murrelet *Brachyramphus marmoratus*	T	X	X	X
Northern Spotted Owl *Strix occidentalis*	T	X		X
Short-Tailed Albatross *Phoebastria albatrus*	E	X	X	X
Western Snowy Plover *Charadrius alexandrinus*	T	X	X	X
Canada Lynx *Lynx canadensis*	T	X		
Columbia White-Tailed Deer *Odocoileus virginianus leucurus*	E	X	X	
Gray Wolf *Canis lupis*	E	X		
Grizzly Bear *Ursus arctos horribilis*	T	X		
Pygmy Rabbit *Barchylagus idahoensis*	E	X	X	
Woodland Caribou *Rangifer tarandus caribou*	E	X		
Oregon Silverspot Butterfly *Speyeria zerene hippolyta*	T	X	X	X

[3] The determination of impact area for potential water quality impacts is based on personal communication with John Malek, Sediment Management, Environmental Protection Agency, on May 10, 2000. Mr. Malek stated that typically turbidity impacts of a pile driving, anchor placement or the like would not exceed a 15-foot radius, a 25-foot radius is the maximum extent of impact, regardless of substrate type and currents at a project site.

[4] The determination of direct impact area for noise impacts associated with pile driving of 1000- foot radius around the pile is based on information provided in Feist, 1991.

Table 2. Sensitive Marine Animals Potentially Occurring in Designated Project

Species Name *Scientific Name*	**Status**	**Fresh Water Areas (excluding the Columbia River mainstem)**	**Mainstem Columbia River Area (including Snake River and Baker Bay**	**Marine/Estuarine Water Area (excluding Baker Bay)**
Blue Whale *Balaenoptera musculus*	E			X
Fin Whale *Balaenoptera physalus*	E			X
Humpback Whale *Megaptera novaeangliae*	E			X
Sei Whale *Balaenoptera borealis*	E			X
Sperm Whale *Physeter macrocephalus*	E			X
Killer Whale *Orcinus orca*	E			X
Steller Sea Lion *Eumetopias jubatus*	T		X	X
Green Sea Turtle *Chelonia mydas*	T			X
Leatherback Sea Turtle *Dermochelys coriacea*	E			X
Loggerhead Sea Turtle *Caretta caretta*	T			X

Table 3. Sensitive Plants Species Potentially Occurring in Designated Project Areas

Species Name *Scientific Name*	**Status**	**Fresh Water Areas (excluding the Columbia River mainstem)**	**Mainstem Columbia River Area (including Snake River and Baker Bay**	**Marine/Estuarine Water Area (excluding Baker Bay)**
Bradshaw's Desert Parsley *Lomatium bradshawii*	E	X	X	
Golden Paintbrush *Castilleja levisecta*	T	X	X	
Kincaid's Sulphur Lupine *Lupinus sulphureus ssp. Kincaidii*	T	X		
Marsh Sandwort *Arenaria paludicola*	E	X		
Nelson's Checker-Mallow *Sidalcea nelsoniana*	T	X	X	
Showy Stickseed *Hackelia venusta*	PE	X		
Spalding's Silene *Silene spaldingii*	PT			
Water Howellia *Howellia aquatilis*	T	X	X	
Wenatchee Mountain Checker-Mallow *Sidalcea oregana var. calva*	E	X		
Ute Ladies'-Tresses *Spiranthes diluvialis*	T	X	X	

Table 4. Sensitive Fish Species Potentially Occurring in Designated Project Areas

Species Name *Scientific Name* Evolutionary Significant Unit (ESU)/Distinct Population Segment (DPS)	**Status**	**Fresh Water Areas (excluding the Columbia River mainstem)**	**Mainstem Columbia River Area (including Snake River and Baker Bay**	**Marine/Estuarine Water Area (excluding Baker Bay)**
Bull Trout *Salvelinus confluentus*				
Coastal/Puget Sound DPS	T	X		X
Columbia River DPS	T	X	X	X
Chinook Salmon *Oncorhynchus tshawytscha*				
Puget Sound ESU	T	X		X
Snake River Fall Run ESU	T	X	X	X
Snake River Spring/Summer-run ESU	T	X	X	X
Lower Columbia River ESU	T	X	X	X
Upper Columbia River Spring-run ESU	E	X	X	X
Upper Willamette River ESU	T		X	X
Sockeye Salmon *Oncorhynchus nerka*				
Ozette Lake ESU	T	X		X
Snake River ESU	E		X	X
Coho Salmon *Oncorhynchus kisutch*				
Lower Columbia River/SW WA ESU	C	X	X	X
Chum Salmon *Oncorhynchus keta*				
Hood Canal Summer-run ESU	T	X		X
Columbia River ESU	T	X	X	X
Steelhead Trout *Oncorhynchus mykiss*				
Upper Columbia River ESU	E	X	X	X
Middle Columbia River ESU	T	X	X	X
Lower Columbia River ESU	T	X	X	X
Snake River Basin ESU	T	?	X	X
Upper Willamette River ESU	T		X	X
Puget Sound ESU	T	X		X

8.0 Activity History and Status

Table 5 is a breakdown of the number of pile replacement activities authorized by the Corps of Engineers. The breakdown is organized by year and waterbody. The waterbody includes all creeks, streams, and unnamed tributaries that flow into it unless otherwise noted. Each of the waterbodies is categorized as below:

8.1 Marine

All marine waters within Washington State (i.e., Pacific Ocean, Willapa Bay, Grays Harbor, Strait of Juan de Fuca, Strait of Georgia, Puget Sound, Hood Canal, Sammish Bay, Skagit Bay, Totten Inlet, Dabob Bay, Commencement Bay, etc.). Because of the design of the Corps database, it was not possible to separate out tidal areas from minor freshwater creeks, streams, and unnamed tributaries that flow into these waterbodies.

8.2 Fresh

All fresh waters within Washington State including all rivers, tributaries, lakes, and reservoirs (regardless of size) and excluding the Columbia River mainstem (i.e., Snoqualmie River, Skagit River, Puyallup River, Nisqually River, Cowlitz River, Yakima River, Wenatchee River, Snake River, Pend Oreille River, Lake Washington, Lake Sammamish, Lake Chelan, Moses Lake, Baker Lake, Spanaway Lake, etc).

8.3 Columbia River

Mainstem Columbia River within Washington State, including the Snake River, Baker Bay, and lakes and reservoirs (i.e. Lake Entiat, Lake Wallula, Franklin D. Roosevelt Lake, Priest Rapids Lake, etc.). Data for all tributaries are included under freshwater areas.

To determine the number of authorized pile replacements, all finalized permit actions were queried against the key word "NWP 3" and cross-referenced with the work type "pile." The cross-referencing ensures that the activity is properly categorized and each NWP 3 verification is only counted once. NWP 3 activities do not require "notification" to the Corps, therefore the data set below represents only those activities where the Corps was notified and a verification was actually issued, via a Nationwide Permit. The following data also includes before– and, when applicable, after-the-fact authorizations.

The 1999 data from WDFW recorded 120 piling replacement activities in marine waters and 62 piling replacement activities in fresh waters, for a total of 182 piling replacement activities authorized in 1999. In comparing the Corps database with one year of data from WDFW (1999) for piling replacement, the Corps database represents approximately 14 % of the actual number of piling replacement activities.

Table 5. Historical Record of Corps Authorization of Pile Driving

WATERBODY	**1995**	**1996**	**1997**	**1998**	**1999**
Marine	23	27	21	17	15
Fresh	9	7	8	6	10
Columbia River	1	3	0	1	0
Total	**33**	**37**	**29**	**24**	**25**

As of August 2005, this programmatic had been used 233 times since authorization.

9.0 Environmental Baseline

The environmental baseline is provided in Appendix C.

10.0 Effects of the Action

10.1 Direct effects

1. Water Quality (turbidity): Under the terms of this informal programmatic consultation, work is done within approved work windows when listed or proposed species, or forage/prey species are least likely to be present. The removal of existing piling, the driving of replacement piling, the placement of spuds or anchors to anchor the barge, and associated propwash from the tug and barge will have a temporary impact on water quality. All of these activities would produce temporary, localized sediment plumes within the action area that would dissipate following cessation of the activity. The "plume" should settle out of the water column to background levels within an hour, depending on sediment type and currents. Any necessary excavation of material is removed with a clamshell or hydraulic dredge, then placed and contained on the barge. During excavation, small amounts of sediment may fall from the dredge before reaching the barge. As outlined in Appendix F: Implementation Conditions, appropriate erosion and sedimentation control measures will be taken. Potential for sediment to enter the waterbody either during excavation or from the barge after excavation will be insignificant. When work proceeds as described, the impacts to water quality due to pile driving and pile removal are insignificant and/or discountable.

2. Water Quality (chemical contaminants from piling removal): It is possible that removal of piling within existing or previously designated Superfund Clean-up sites or sites currently or previously designated for clean-up under the Washington State Model Toxic Clean-up Act could result in exposure of hazardous or toxic chemical contaminants within the substrate (sediments contaminated by industrial pollutants). Thus, to be covered by this informal programmatic consultation, piling replacement projects will abide by BMPs established by EPA during CERCLA consultation. In other areas, the removal of treated piling may resuspend sediments contaminated by the existing treated piles. Partial cutting of the piling may result in the exposure of undried chemical treatments to the water column at the center of the pile. Under partial cutting, the pile will have a metal sleeve with another pile directly secured on top of the existing pile. When partial cutting is done, the work is done at low water, where the majority of the pile is exposed. However, depending on where the cut is made, the work may be done below the water surface. Since the pile will be capped with another pile immediately (no more than 3 hours of exposure), the exposure of the chemicals to the water column will be temporary and insignificant. Full extraction of the pile may result in either the pile breaking and exposing undried chemicals in the center of the pile to the water column or the suspension of contaminated sediments around the pile into the water column. If the pile is likely to break, then the pile is cut versus extracted. This expedites removal, as well as, limits the potential for contaminants from the pile itself to enter the water column.

3. Water Quality (chemical contaminants from replacement piling): It is possible that removal of piling within existing or previously designated Superfund Cleanup sites or sites currently or previously designated for clean-up under the Washington State Model Toxic Clean-up Act could result in exposure of hazardous or toxic chemical contaminants within the substrate (sediments contaminated by industrial pollutants). Thus, to be covered by this informal programmatic consultation, piling replacement projects will abide by BMPs established by EPA during CERCLA coordination. In addition, only untreated piles will be used in fresh waters and no piles treated with creosote or pentachlorophenol will be used in marine/estuarine waters, in order to be covered by this informal consultation. Studies by NMFS have shown that the primary metal of concern in pile treatment is copper as it is the "most acutely toxic" (NMFS, 1998). Copper has

been shown to be the most actively leaching metal with arsenic and chromium rating second (Warner and Solomon, 1990). About 300 compounds including polycyclic aromatic hydrocarbons (PAHs) – which are also known to be very toxic and bioconcentrate - are found in creosote. (NMFS, 1998) Exposure to these chemicals could result in the death of both adults and juveniles of the listed or proposed fish species or prey organisms. (NMFS, 1998.) Dioxins are found in pentachlorophenol. When wood is treated with pentachlorophenol, the dioxins may leach into the water column. Exposure of female fish species, including salmon and trout, to dioxins and dioxin-like contaminants cause increased larval mortality. (Hornung, et al., 1998). Using these methods of installation, there will be no harm or death occurring to listed, proposed or forage fish species. To be covered under this informal programmatic consultation, all piling replaced in fresh waters, including the Columbia River, shall be untreated. Similarly, all piling replaced in marine or estuarine waters will not be treated with creosote or pentachlorophenol. The activity constructed as described will have insignificant and/or discountable impacts to water quality.

4. Habitat Health (underwater noise from pile driving): Pile driving using an impact hammer, in particular on steel, can cause a considerable amount of noise. The impact of the weight causes sound waves to radiate outward. Studies conducted in estuarine areas in Puget Sound indicate, though inconclusively, that the sound waves generated by pile driving frighten juvenile pink and chum salmonids in estuaries away from the pile driver (Feist, 1991). The effects of the pile driving were observed up to 1000 feet away. The juvenile salmonids fled, and remained away from the area during active pile driving, and for a short time after the pile driving stops (Feist, 1991). No conclusive evidence was found to show any long term effects on juvenile growth rates or feeding patterns from the sound waves created from pile driving (Feist, 1991). Tests showed the fish had been actively feeding during the pile driving (Feist, 1991). Juveniles apparently moved to other feeding areas and returned shortly after the pile driving ceased (Feist, 1991). Underwater noise impacts on whales can include confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding (IWC 2002). Noise impacts on sea turtles include interference with travel and foraging. In order to minimize impacts from pile driving noise, the pile driving for the pile or dolphin will only occur during approved work windows when listed or proposed species, or forage fish species, are least likely to be present and pile driving methods would implement noise reducing BMPs (Appendix D and E). Sound disturbance impacts related to construction activities would likely be short-term and result in temporary displacement of animals rather than injury. The duration of pile driving sound and the probability of impact to listed species would be minimized by implementing timing restrictions and BMPs (Appendices D and E) designed to avoid or minimize impacts.
5. Habitat Health (Airborne Noise): Noise from the operation of heavy equipment, especially impact hammer pile drivers, may have an effect on listed species. The noise associated with construction equipment and activities could disrupt murrelet nesting and foraging activities and cause murrelets to temporarily avoid the project area. However, sound disturbance impacts related to construction activities would likely be short-term and result in temporary displacement of species rather than injury. Noise generated by pile driving and the operation of installation vessels is expected to have a minor impact on listed fish, marine species, and terrestrial species. The duration of pile driving sound and the probability of impact to listed species would be minimized by implementing timing restrictions and noise reducing BMPs (Appendices D and E) designed to avoid or minimize impacts.
6. Habitat (listed or proposed species habitat and prey/forage species habitat): Under the terms of this informal programmatic consultation, work will be done in the approved work windows for listed or proposed, or prey/ forage species and if a barge is used, the barge will not ground out and will not be anchored over eelgrass beds. The work is replacement of piles at existing structures. Pile replacement activities occur in marine systems, lakes and large rivers. The listed

or proposed salmonid species typically do not spawn in these areas though chinook salmon have been documented in large rivers and, in rare instances, on lake beaches. Forage fish species are likely to spawn on beaches in the marine/estuarine nearshore areas if substrate size and elevation are adequate. Degradation to the listed, proposed or forage fish spawning or nursery areas by the presence of the structure and piles and associated activity has already occurred. If listed or proposed or prey/forage species are still present in these areas, pile replacement of this amount (up to100 piles) constructed within the approved work windows when listed or proposed, or prey/forage species are least likely to be present, will have insignificant impacts on the habitat. Pile removal and pile driving activities may disturb vegetated shallows. (NOAA, 1998) Vegetated shallows can support prey/forage species that the listed or proposed species are dependent upon, such as herring spawning in eelgrass beds in marine areas. Using these methods of installation, additional impacts to spawning areas or nursery areas will be insignificant and/or discountable.

7. Disturbance: The presence and operation of equipment (i.e., vessel) may have an effect on listed species. Construction activities could disrupt marine mammals, sea turtles, and murrelet nesting and foraging, causing animals to temporarily avoid the project area. However, construction activities would be short-term and potential impacts to listed species would be minimized by implementing timing restrictions (Appendix D and E) designed to avoid or minimize impacts.

10.2 Indirect effects

1. Water Quality (chemical contaminants from old piling): Once old piles are removed, they are often sought out for recycling or re-use. Since many of the old piles were treated with creosote, their re-use could re-introduce effects into other waterbodies. To be covered by this informal programmatic consultation, removed creosote-treated or other treated piles will be cut into a maximum of 4- foot lengths prior to disposal (Appendix E). When work activities proceed as described, indirect effects from piling replacement will be insignificant and/or discountable.

There are no other effects that would result from this activity that are later in time. As described herein, the activity will result in no substantive change in the current environmental baseline and no positive effect on the recovery of species, except for the fact that creosote treated piling will be removed from the aquatic ecosystem and replaced with either untreated piling in fresh waters or other less impacting treated piling in marine/estuarine waters. Habitat for listed or proposed or prey/forage species are likely to have already been disturbed by the operation of the existing structure (boat moorage and/or water access). There might be a slight increase in use in that operation of the structure because use may have been limited by the damaged piling. However, this change in the operation of the structure by the pile replacement will be insignificant. In the likelihood that sensitive areas are present for listed or proposed or prey/forage species are utilized, spawning areas will remain and utilization will continue with insignificant impacts, as the change to the operation of the structure is insignificant.

10.3 Others

For all other pathways and indicators not specifically mentioned above, the activity will not alter the present environmental baseline.

10.4 Determination of Effect

The replacement of existing piling with up to one hundred (100) untreated wood, plastic or concrete piling or forty (40) steel piling may affect certain threatened and endangered species, species proposed for listing as threatened or endangered, and designated or proposed critical habitat for those species

(summarized in Table 6 through Table 9). The determination of effect for each species assumes the following:

For all Fresh Waters excluding the Columbia River mainstem:

- Work is done within the approved work window.
- Projects that are in or adjacent to an existing or previously designated Superfund site or a site currently or previously designated for cleanup under the Washington State Model Toxic Cleanup Act will follow BMPs established by EPA during CERCLA coordination.
- Only non-treated pilings are used.
- No piles are associated with log raft booms.
- No sheet piling is used in lieu of pole piling.
- Existing piles are partially cut with a new pile secured directly on top, fully extracted, or cut at the mudline.
- Removed creosote treated piles shall be disposed of in a manner that precludes their further use. Piles must be cut into manageable lengths (4 ft lengths are preferable) for transport and disposal in an approved upland location. In all cases, applicants must be prepared to provide documentation of disposal with the statement of compliance.
- Hydraulic water jets are not used to remove or place piles.
- Piles are replaced in the same general location and do not extend beyond the footprint of the existing structure (i.e. pier).
- This programmatic doesn't apply to steel piles greater than 12 inches in diameter. Sound attenuation measures described in Section 5 will be used for installation of steel piles with an impact hammer.

For the Columbia River Mainstem including the Snake River and Baker Bay:

- Work is done within the approved work window.
- Projects that are in or adjacent to an existing or previously designated Superfund site or a site currently or previously designated for cleanup under the Washington State Model Toxic Cleanup Act will follow BMPs established by EPA during CERCLA coordination.
- Only non-treated pilings are used.
- No piles are associated with log raft booms.
- No sheet piling is used in lieu of pole piling.
- Existing piles are partially cut with a new pile secured directly on top, fully extracted, or cut at the mudline.
- Removed creosote treated piles shall be disposed of in a manner that precludes their further use. Piles must be cut into manageable lengths (4 ft lengths are preferable) for transport and disposal in an approved upland location. In all cases, applicants must be prepared to provide documentation of disposal with the statement of compliance.
- If a barge is used, the barge will not ground out and will not be anchored over eelgrass beds.
- Hydraulic water jets are not used to remove or place piles.

- Piles are replaced in the same general location and do not extend beyond the footprint of the existing structure (i.e. pier).
- This programmatic doesn't apply to steel piles greater than 12 inches in diameter. Sound attenuation measures described in Section 5 will be used for installation of steel piles with an impact hammer.

For all Marine/Estuarine Waters excluding Baker Bay

- Work is done within the approved work window.
- Projects that are in or adjacent to an existing or previously designated Superfund site or a site currently or previously designated for cleanup under the Washington State Model Toxic Cleanup Act will follow BMPs established by EPA during CERCLA coordination.
- No piles are associated with log raft booms.
- No sheet piling is used in lieu of pole piling.
- No piles treated with creosote or pentachlorophenol are used.
- Existing piles are partially cut with a new pile secured directly on top, fully extracted, or cut 2-feet below the mudline.
- removed creosote treated piles shall be disposed of in a manner that precludes their further use. Piles must be cut into manageable lengths (4 ft lengths are preferable) for transport and disposal in an approved upland location. In all cases, applicants must be prepared to provide documentation of disposal with the statement of compliance.
- if a barge is used, the barge will not ground out and will not be anchored over eelgrass beds.
- Hydraulic water jets are not used to remove or place piles.
- Piles are replaced in the same general location and do not extend beyond the footprint of the existing structure (i.e. pier).
- This programmatic doesn't apply to steel piles greater than 12 inches in diameter. Sound attenuation measures described in Section 5 will be used for installation of steel piles with an impact hammer.

Brown Pelican (*Pelecanus occidentalis*)

The proposed activity "may affect, but is not likely to adversely affect" brown pelicans. In Washington, brown pelicans inhabit only coastal marine waters. The proposed activity could occur in or near coastal marine waters and could result in temporary displacement of brown pelicans during construction due to the associated noise and visual disturbance. Direct mortality or sub-lethal effects are unlikely. To minimize impacts, sound attenuation measures would be implemented and work would be limited in Pacific and Grays Harbor Counties by the work window specified in Appendix E.

Marbled Murrelet (*Brachyramphus marmoratus*)

The proposed activity "may affect, but is not likely to adversely affect" marbled murrelets and their critical habitat. The proposed activity may result in temporary displacement of marbled murrelets during construction due to the associated noise and visual disturbance. Direct mortality or sub-lethal effects are unlikely. The proposed activity will not alter or impact critical habitat because activity would occur offshore or at the shoreline, away from old growth habitat. In addition, sound attenuation measures would

be implemented and work would be prohibited in or near critical habitat areas and during sensitive nesting or foraging periods as described in Appendix E.

Northern Spotted Owl (*Strix occidentalis*)

The proposed activity "may affect, but is not likely to adversely affect" the northern spotted owl and its critical habitat. The proposed activity may result in temporary displacement of spotted owls during construction due to the associated noise and visual disturbance. Direct mortality or sub-lethal effects are unlikely. The proposed activity will not alter or impact current spotted owl prey and habitat because activity would occur offshore or at the shoreline, away from old growth habitat. In addition, sound attenuation measures would be implemented and work would be prohibited in or near critical habitat areas and during sensitive nesting periods as described in Appendix E.

Short-Tailed Albatross (*Phoebastria albatrus*)

The proposed activity "may affect, but is not likely to adversely affect" short-tailed albatross. In Washington, short-tailed albatross inhabit only coastal and offshore marine waters. The proposed activity could occur in coastal marine waters and could result in temporary displacement of short-tailed albatross during construction due to the associated noise and visual disturbance. Sound attenuation measures (Appendix E) would be implemented to minimize disturbance. Direct mortality or sub-lethal effects are unlikely.

Western Snowy Plover (*Charadrius alexandrinus*)

The proposed activity "may affect, but is not likely to adversely affect" western snowy plover and its proposed critical habitat. Plovers inhabit only ocean beach areas in Pacific and Grays Harbor counties; southwest Washington is furthest known northern area for snowy plovers. Western snowy plover utilize open shoreline areas where little vegetation exists. The proposed activity could occur near the shoreline or along beaches and could result in temporary displacement of western snowy plover during construction due to the associated noise and visual disturbance. Direct mortality or sub-lethal effects are unlikely. To minimize impacts, sound attenuation measures would be implemented and work would be limited by the work window and distance to nesting areas specified in Appendix E.

Canada Lynx (*Lynx canadensis*)

The proposed activity would have "no effect" on Canada lynx. The proposed activity would occur in navigable waters and would not occur near remote areas of the Selkirk Mountains or the Cascade Range where lynx occur. Because there would be no overlap of the proposed activity action area and Canada lynx or their habitat, the proposed activity would have no potential to affect Canada lynx.

Columbia White-Tailed Deer (*Odocoileus virginianus leucurus*)

The proposed activity "may affect, but is not likely to adversely affect" Columbia white-tailed deer. Any construction noise or activities along the lower Columbia River from River Mile (RM) 50 to RM 52 may result in temporary displacement of Columbia white-tailed deer due to the associated noise and visual disturbance. Direct mortality or sub-lethal effects are unlikely. To minimize impacts, sound attenuation measures would be implemented and work will be prohibited in or near sensitive habitat areas as specified in Appendix E.

Gray Wolf (*Canis lupis*)

The proposed activity would have "no effect" on gray wolves. The proposed activity would occur in navigable waters and would not occur near remote areas of the Selkirk Mountains or the Cascade Range where gray wolves occur. Because there would be no overlap of the proposed activity action area and gray wolves or their habitat, the proposed activity would have no potential to affect gray wolves.

Grizzly Bear (*Ursus arctos horribilis*)

The proposed activity would have "no effect" on grizzly bears. The proposed activity would occur in navigable waters and would not occur near remote areas of the Selkirk Mountains or the Cascade Range where grizzly bears occur. Because there would be no overlap of the proposed activity action area and grizzly bear or their habitat, the proposed activity would have no potential to affect grizzly bears.

Pygmy Rabbit (*Barchylagus idahoensis*)

The proposed activity "may affect, but is not likely to adversely affect" pygmy rabbits. Pygmy rabbits occur in the shrub steppe habitat of Douglas County, Washington. Such habitat occurs along the Columbia River mainstem where pile driving activities could occur. Proposed activities would occur offshore and would not affect habitats that support the pygmy rabbit. However, the loud noise and vibrations associated with pile driving could result in temporary displacement or behavioral changes (i.e., hiding instead of feeding). To minimize impacts, sound attenuation measures would be implemented (Appendix E) and construction will avoid being near suitable habitat and known populations of pygmy rabbit.

Woodland Caribou (*Rangifer tarandus caribou*)

The proposed activity would have "no effect" on woodland caribou. The proposed activity would occur in navigable waters and would not occur in or near the Selkirk Mountains where woodland caribou occur. Because there would be no overlap of the proposed activity action area and woodland caribou or their habitat, the proposed activity would have no potential to affect woodland caribou.

Oregon Silverspot Butterfly (*Speyeria zerene hippolyta*)

The proposed activity "may affect, but is not likely to adversely affect" Oregon silverspot butterflies and their critical habitat. Oregon silverspot butterflies inhabit coastal salt spray marshes and open meadows. In Washington, Oregon silverspot butterflies may be extirpated. However, areas suitable for recolonization or reintroduction occur in southwest Washington. Activities near sand dune, salt-spray meadows or open field habitat in the Pacific coastal and Willapa Bay areas of Pacific County could impact the butterfly or their habitat. The early blue violet is a host species for the butterfly larvae, and no activity would be allowed where blue violet is detected by a plant survey conducted at the appropriate time of year. To minimize potential impacts work will be prohibited in or near sensitive habitat areas as specified in Appendix E.

Blue Whale (*Balaenoptera musculus*)

The proposed activity "may affect, but is not likely to adversely affect" whales. The blue whale occurs in marine areas where activities could occur. Any work in marine waters may result in temporary disturbance of blue whales during construction due to the associated noise and visual disturbance. Construction noise and activity could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding. To minimize impacts, sound attenuation measures would be implemented.

Fin Whale (*Balaenoptera physalus*)

The proposed activity "may affect, but is not likely to adversely affect" fin whales. The fin whale occurs in marine areas where activities could occur. Any work in marine waters may result in temporary disturbance of fin whales during construction due to the associated noise and visual disturbance. Construction noise and activity could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding. To minimize impacts, sound attenuation measures would be implemented.

Humpback Whale (*Megaptera novaeangliae*)

The proposed activity "may affect, but is not likely to adversely affect" humpback whales. The humpback whale occurs in marine areas where activities could occur. Any work in marine waters may result in temporary disturbance of humpback whales during construction due to the associated noise and visual disturbance. Construction noise and activity could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding. To minimize impacts, sound attenuation measures would be implemented.

Sei Whale (*Balaenoptera borealis*)

The proposed activity "may affect, but is not likely to adversely affect" sei whales. The sei whale occurs in marine areas where activities could occur. Any work in marine waters may result in temporary disturbance of sei whales during construction due to the associated noise and visual disturbance. Construction noise and activity could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding. To minimize impacts, sound attenuation measures would be implemented.

Sperm Whale (*Physeter macrocephalus*)

The proposed activity "may affect, but is not likely to adversely affect" sperm whales. The sperm whale occurs in marine areas where activities could occur. Any work in marine waters may result in temporary disturbance of sperm whales during construction due to the associated noise and visual disturbance. Construction noise and activity could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding. To minimize impacts, sound attenuation measures would be implemented.

Killer Whale (*Orcinus orca*) and Critical Habitat

The proposed activity "may affect, but is not likely to adversely affect" killer whales and their critical habitat. The killer whale occurs in marine areas where activities could occur. Any work in marine waters may result in temporary disturbance of killer whales during construction due to the associated noise and visual disturbance. Construction noise and activity could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding. To minimize impacts, noise attenuation BMPs would be implemented.

Steller Sea Lion (*Eumetopias jubatus*)

The proposed activity "may affect, but is not likely to adversely affect" steller sea lions and their critical habitat. In Washington, Steller sea lions inhabit pelagic areas of marine waters and occasionally move up the lower Columbia River to feed during the fall. Any work in marine waters or the lower Columbia River

may result in temporary disturbance of Steller sea lions during construction due to the associated noise and visual disturbance. Activities could result in confusion, disruption of social cohesion, separation, alteration of travel, and interference with feeding or breeding. To minimize impacts, sound attenuation measures would be implemented and work will be prohibited near or in critical habitat and within one mile of a known steller sea lion haul-out.

Green Sea Turtle (*Chelonia mydas*)

The proposed activity "may affect, but is not likely to adversely affect" green sea turtles. The green sea turtle occurs in marine areas where activities could occur. Any work in marine waters may result in temporary disturbance of green sea turtles during construction due to the associated noise and visual disturbance. Construction noise and activity could interfere with travel and foraging. To minimize impacts, sound attenuation measures would be implemented.

Leatherback Sea Turtle (*Dermochelys coriacea*)

The proposed activity "may affect, but is not likely to adversely affect" leatherback sea turtles. The leatherback sea turtle occurs in marine areas where activities could occur. Any work in marine waters may result in temporary disturbance of leatherback sea turtles during construction due to the associated noise and visual disturbance. Construction noise and activity could interfere with travel and foraging. To minimize impacts, sound attenuation measures would be implemented.

Loggerhead Sea Turtle (*Caretta caretta*)

The proposed activity "may affect, but is not likely to adversely affect" loggerhead sea turtles. The loggerhead sea occurs in marine areas where activities could occur. Any work in marine waters may result in temporary disturbance of loggerhead sea turtles during construction due to the associated noise and visual disturbance. Construction noise and activity could interfere with travel and foraging. To minimize impacts, sound attenuation measures would be implemented.

Bradshaw's Desert Parsley (*Lomatium bradshawii*)

The proposed activity would have "no effect" on Bradshaw's desert parsley. Bradshaw's desert parsley occurs in wet meadows. Populations of desert parsley have been identified near streams in Clark County, Washington. Surveys to determine the presence of desert parsley can help avoid and minimize potential impacts. In addition, it is unlikely that species or habitat would be affected by the proposed activity because construction would be limited to offshore areas or at the shoreline, where plants are not expected to occur

Golden Paintbrush (*Castilleja levisecta*)

The proposed activity would have "no effect" on golden paintbrush. Golden paintbrush occurs in small populations in uplands in the Puget Trough, San Juan County, and Clark County. It is unlikely that species or habitat would be affected by the proposed activity because the proposed activity is associated with navigable waters, away from upland areas and work would be prohibited in or near sensitive areas as specified in Appendix E.

Kincaid's Sulphur Lupine (*Lupinus sulphureus ssp. Kincaidii*)

The proposed activity would have "no effect" on Kincaid's sulphur lupine. Kincaid's sulphur lupine occurs in upland prairie habitat in southwest Washington. It is unlikely that species or habitat would be affected by the proposed activity because the proposed activity is associated with navigable waters, away from upland areas and work would be prohibited in or near sensitive areas as specified in Appendix E.

Marsh Sandwort (*Arenaria paludicola*)

sandwort may be extirpated in Washington, but marsh sandwort historically occurred in freshwater wetlands. Surveys to determine the presence of marsh sandwort can help avoid and minimize potential impacts. Because it may be extirpated and the activity would be limited to offshore areas or at the shoreline, where plants are not expected to occur, there is an insignificant and discountable chance that activities would affect marsh sandwort habitat.

Nelson's Checker-Mallow (*Sidalcea nelsoniana*)

The proposed activity would have "no effect" Nelson's checker mallow. Nelson's checker-mallow occurs in meadows and along streams in southwest Washington and the Olympic peninsula. Surveys to determine the presence of Nelson's checker-mallow can help avoid and minimize potential impacts. It is unlikely that species or habitat would be affected by the proposed activity because construction would be limited to offshore areas or at the shoreline, where plants are not expected to occur and work would be prohibited in or near sensitive areas as specified in Appendix E.

Showy Stickseed (*Hackelia venusta*)

The proposed activity would have "no effect" on showy stickseed. Showy stickseed occurs in open-mountain sites composed of loose sand or talus slopes, areas where activities would not occur. Therefore, it is unlikely that species or habitat would be affected by the proposed activity because the proposed activity is associated with navigable waters.

Spalding's Silene (*Silene spaldingii*)

The proposed activity would have "no effect" on Spalding's silene. Spalding's silene occurs in upland grasslands in eastern Washington, areas where activities would not occur. Surveys to determine the presence of Spalding's silene can help avoid and minimize potential impacts. In addition, it is unlikely that species or habitat would be affected by the proposed activity because the proposed activity is associated with navigable waters, away from upland grasslands.

Water Howellia (*Howellia aquatilis*)

The proposed activity would have "no effect" on water howellia. Water howellia occurs in seasonal wetlands in the Puget lowlands and the Columbia basin, primarily in small, vernal ponds, although some ponds may retain water throughout the year. Ponds would not be influenced or affected by proposed activity, which occurs in navigable waters. Surveys to determine the presence of water howellia can help avoid and minimize potential impacts. It is unlikely that species or habitat would be affected by the proposed activity because construction would be limited to offshore areas or at the shoreline, where plants are not expected to occur and work would be prohibited in or near sensitive areas as specified in Appendix E.

Wenatchee Mountain Checker-Mallow (*Sidalcea oregana var. calva*)

The proposed activity would have "no effect" on the Wenatchee mountain checker-mallow and its critical habitat. Wenatchee mountain checker-mallow occurs in wet meadows within a small region southeast of Leavenworth, Washington, areas that are not expected to be affected by the proposed activity, which occurs in navigable waters. Surveys to determine the presence of Wenatchee mountain checker-mallow can help avoid and minimize potential impacts. It is unlikely that species or habitat would be affected by the proposed activity because construction would be limited to offshore areas or at the shoreline, where plants are not expected to occur and work would be prohibited in or near sensitive areas as specified in Appendix E.

Ute Ladies'-Tresses (*Spiranthes diluvialis*)

The proposed activity would have "no effect" Ute ladies'-tresses. Ute ladies'-tresses can occur in wet meadows associated with meandering wetland complexes. Impacts to Ute ladies'-tresses are unlikely to occur as a result of the proposed activity since the activity is associated with navigable waters. Surveys to determine the presence of Utes ladies'-tresses can help avoid and minimize potential impacts. It is unlikely that species or habitat would be affected by the proposed activity because construction would be limited to offshore areas or at the shoreline, where plants are not expected to occur and work would be prohibited in or near sensitive areas as specified in Appendix E.

Pacific Salmon and Bull Trout

Adult and juvenile salmonids utilize habitats within the action area as migratory corridors and rearing habitat and may be affected by construction activities. The proposed activity may result in temporary increases in suspended sediment during construction; however, turbidity is expected to be short-term. Proposed activity will not occur in or near vegetated shallows where listed salmonids or forage fish may occur. No creosote or pentachlorophenol treated piling may be installed under this PBE. No treated piles are authorized in freshwater. Any piles to be replaced must be fully extracted, if possible. Pile installation BMPs will be implemented to minimize potential impacts associated with turbidity, contaminants, construction noise, and high decibel noise associated with pile driving through adherence of work windows and the use of sound attenuation methods to avoid exceeding 180 dB (re: 1 μPa) (see Appendix D and E). The in-water work windows (see Appendix D) will minimize the chance that adult and juvenile salmonids are present during project construction, and forage fish spawning will be protected.

The proposed activity "may affect, but is not likely to adversely affect":

- Snake River sockeye and their critical habitat
- Snake River spring/summer chinook and their critical habitat
- Snake River fall chinook and their critical habitat
- Snake River steelhead and their critical habitat
- Columbia River chum
- Columbia River bull trout
- Lower Columbia River steelhead
- Lower Columbia River chinook
- Middle Columbia River steelhead
- Upper Columbia River steelhead

- Upper Columbia River spring chinook
- Upper Willamette River chinook
- Upper Willamette River steelhead
- Ozette Lake sockeye
- Hood Canal summer chum
- Puget Sound chinook and their critical habitat
- Puget Sound steelhead
- Coastal/Puget Sound bull trout/dolly varden and their critical habitat
- Lower Columbia River/SW Washington coho salmon

The proposed activity may result in temporary increases in suspended sediment during construction; however, turbidity is expected to be short-term. Adherence to work windows will minimize potential impacts from work occurring while listed salmonids are in the project area.

Table 6. Effect Determinations for Listed Terrestrial Animals and Insects

Species Name *Scientific Name*	**Status**	**Determination**	**Rational for Determination**
Brown Pelican *Pelecanus occidentalis*	E	May affect, but not likely to adversely affect	Any work near coastal marine waters and associated with the proposed activity may result in temporary displacement during construction due to noise and visual disturbance. To minimize impacts work would be limited in Pacific and Grays Harbor Counties by a work window and sound attenuation measures would be implemented (Appendix E).
Marbled Murrelet *Brachyramphus marmoratus*	T	May affect, but not likely to adversely affect	The proposed activity may result in temporary displacement during construction due to noise and visual disturbance. Sound attenuation measures would be implemented and work will be prohibited in or near critical habitat areas and during sensitive nesting or foraging periods (Appendix E).
Northern Spotted Owl *Strix occidentalis*	T	May affect, but not likely to adversely affect	The proposed activity may result in temporary displacement during construction due to noise and visual disturbance. Sound attenuation measures would be implemented and work will be prohibited in or near critical habitat areas and during sensitive nesting or foraging periods (Appendix E).
Short-Tailed Albatross *Phoebastria albatrus*	E	May affect, but not likely to adversely affect	In Washington, short-tailed albatross inhabit only coastal and offshore marine waters where temporary displacement during construction due to noise and visual disturbance has the potential to affect short-tailed albatross.
Western Snowy Plover *Charadrius alexandrinus*	T	May affect, but not likely to adversely affect	Plovers inhabit only ocean beach areas in Pacific and Grays Harbor counties where temporary displacement during construction due to noise and visual disturbance has the potential to affect western snowy plover. Sound attenuation measures would be implemented and work will be prohibited in or near critical habitat and sensitive nesting areas (Appendix E).
Canada Lynx *Lynx Canadensis*	T	No effect	The proposed activity would not occur near remote areas of the Selkirk Mountains or the Cascade Range where lynx occur.
Columbia White-Tailed Deer *Odocoileus virginianus leucurus*	E	May affect, but not likely to adversely affect	Construction noise and activities along the lower Columbia River from River Mile (RM) 50 to RM 52 may temporarily displace Columbia white-tailed deer. Sound attenuation measures would be implemented and work will be prohibited in or near sensitive habitat areas as specified in Appendix E.
Gray Wolf *Canis lupis*	E	No effect	The proposed activity would not occur near remote areas of the Selkirk Mountains or the Cascade Range where grey wolves occur.
Grizzly Bear *Ursus arctos horribilis*	T	No effect	The proposed activity would not occur near remote areas of the Selkirk Mountains or the Cascade Range where grizzly bear occur
Pygmy Rabbit *Barchylagus idahoensis*	E	May affect, but not likely to adversely affect	The proposed activity may result in temporary displacement or behavioral changes (i.e., hiding instead of feeding) to pygmy rabbits due to the louse noise and vibrations generated by pile driving. Sound attenuation measures would be implemented (Appendix E) and construction will avoid areas of suitable habitat and known populations of pygmy rabbit.
Woodland Caribou *Rangifer tarandus caribou*	E	No effect	The proposed activity would not occur in or near the Selkirk Mountains where woodland caribou occur.

Species Name *Scientific Name*	**Status**	**Determination**	**Rational for Determination**
Oregon Silverspot Butterfly *Speyeria zerene hippolyta*	T	May affect, but not likely to adversely affect	Activities near sand dune, salt-spray meadows or open field habitat in the Pacific coastal and Willapa Bay areas of Pacific County could impact the butterfly or their habitat. Work will be prohibited in or near sensitive habitat areas as specified in Appendix E.

Table 7. Effect Determinations for Listed Marine Animals

Species Name *Scientific Name*	**Status**	**Determination**	**Rational for Determination**
Blue Whale *Balaenoptera musculus*	E	May affect, but not likely to adversely affect	Construction noise and activity could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding.
Fin Whale *Balaenoptera physalus*	E	May affect, but not likely to adversely affect	Construction noise and activity could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding.
Humpback Whale *Megaptera novaeangliae*	E	May affect, but not likely to adversely affect	Construction noise and activity could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding.
Sei Whale *Balaenoptera borealis*	E	May affect, but not likely to adversely affect	Construction noise and activity could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding.
Sperm Whale *Physeter macrocephalus*	E	May affect, but not likely to adversely affect	Construction noise and activity could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding.
Killer Whale *Orcinus orca*	E	May affect, but not likely to adversely affect	Construction noise and activity could result in confusion, disruption of social cohesion, separation, alteration of travel, and/or stranding.
Steller Sea Lion *Eumetopias jubatus*	T	May affect, but not likely to adversely affect	Construction noise and activity could result in confusion, disruption of social cohesion, separation, alteration of travel, and interference with feeding or breeding.
Green Sea Turtle *Chelonia mydas*	T	May affect, but not likely to adversely affect	Construction noise and activity could interfere with travel and foraging
Leatherback Sea Turtle *Dermochelys coriacea*	E	May affect, but not likely to adversely affect	Construction noise and activity could interfere with travel and foraging
Loggerhead Sea Turtle *Caretta caretta*	T	May affect, but not likely to adversely affect	Construction noise and activity could interfere with travel and foraging.

Table 8. Effect Determinations for Listed and Proposed Plant Species

Species Name *Scientific Name*	**Status**	**Determination**	**Rational for Determination**
Bradshaw's Desert Parsley *Lomatium bradshawii*	E	No effect	Species or habitat would not be affected by the proposed activity because construction would be limited to offshore areas or the shoreline, where plants are not expected to occur. Surveys to determine the presence of desert parsley can help avoid and minimize potential impacts.
Golden Paintbrush *Castilleja levisecta*	T	No effect	Construction would occur in navigable waters and indirect effects would be limited to the near shore/shoreline area. This plant is associated with upland habitat; hence, the proposed activity would not affect the species or suitable habitat. Work would be prohibited in or near sensitive areas as specified in Appendix E
Kincaid's Sulphur Lupine *Lupinus sulphureus ssp. Kincaidii*	T	No effect	Construction would occur in navigable waters and indirect effects would be limited to the near shore/shoreline area. This plant is associated with upland prairie habitat; hence, the proposed activity would not affect the species or suitable habitat. Work would be prohibited in or near sensitive areas as specified in Appendix E
Marsh Sandwort *Arenaria paludicola*	E	No effect	Proposed activity is unlikely to occur near populations or habitat because marsh sandwort may be extirpated in Washington and the activity would be limited to offshore areas or at the shoreline where plants are not expected to occur.
Nelson's Checker-Mallow *Sidalcea nelsoniana*	T	No effect	Species or habitat would not be affected by the proposed activity because construction would be limited to offshore areas or at the shoreline where plants are not expected to occur and work would be prohibited in or near sensitive areas as specified in Appendix E.
Showy Stickseed *Hackelia venusta*	PE	No effect	Construction would occur in navigable waters and indirect effects would be limited to the near shore/shoreline area. This plant is associated with open mountain sites composed of loose sand or talus slopes; hence, the proposed activity would not affect the species or suitable habitat.
Spalding's Silene *Silene spaldingii*	PT	No effect	Construction would occur in navigable waters and indirect effects would be limited to the near shore/shoreline area. This plant is associated with upland grasslands; hence, the proposed activity would not affect the species or suitable habitat.
Water Howellia *Howellia aquatilis*	T	No effect	Construction would occur in navigable waters and indirect effects would be limited to the near shore/shoreline area. This plant is associated with small vernal ponds where activities would not occur; hence, the proposed activity would affect the species or suitable habitat. Work would be prohibited in or near sensitive areas as specified in Appendix E.
Wenatchee Mountain Checker-Mallow *Sidalcea oregana var. calva*	E	No effect	Construction would occur in navigable waters and indirect effects would be limited to the near shore/shoreline area. This plant is associated with wet meadows, within a small region southeast of Leavenworth, Washington; where the proposed activity is not likely; hence, the proposed activity would not affect the species or suitable habitat. Work would be prohibited in or near sensitive areas as specified in Appendix E.
Ute Ladies'-Tresses *Spiranthes diluvialis*	T	No effect	Species or habitat would not be affected by the proposed activity because construction would be limited to offshore areas or at the shoreline where plants are not expected to occur. Work would be prohibited in or near sensitive areas as specified in Appendix E.

Table 9. Effect Determinations for Listed, Proposed, and Candidate Fish Species

Species Name *Scientific Name* Evolutionary Significant Unit (ESU)/Distinct Population Segment (DPS)	**Status**	**Determination**	**Rational for Determination**
Bull Trout *Salvelinus confluentus* Coastal/Puget Sound DPS Columbia River DPS	 T T	May affect, but not likely to adversely affect	Proposed activity occurs in areas where fish may occur and potential impacts from turbidity, contaminants, and noise associated with construction could affect fish.
Chinook Salmon *Oncorhynchus tshawytscha* Puget Sound ESU Snake River Fall Run ESU Snake River Spring/Summer-run ESU Lower Columbia River ESU Upper Columbia River Spring-run ESU Upper Willamette River ESU	 T T T T E T	May affect, but not likely to adversely affect	Proposed activity occurs in areas where fish may occur and potential impacts from turbidity, contaminants, and noise associated with construction could affect fish.
Sockeye Salmon *Oncorhynchus nerka* Ozette Lake ESU Snake River ESU	 T E	May affect, but not likely to adversely affect	Proposed activity occurs in areas where fish may occur and potential impacts from turbidity, contaminants, and noise associated with construction could affect fish.
Coho Salmon *Oncorhynchus kisutch* Lower Columbia River/SW WA ESU	 T	May affect, but not likely to adversely affect	Proposed activity occurs in areas where fish may occur and potential impacts from turbidity, contaminants, and noise associated with construction could affect fish.
Chum Salmon *Oncorhynchus keta* Hood Canal Summer-run ESU Columbia River ESU	 T T	May affect, but not likely to adversely affect	Proposed activity occurs in areas where fish may occur and potential impacts from turbidity, contaminants, and noise associated with construction could affect fish.
Steelhead Trout *Oncorhynchus mykiss* Upper Columbia River ESU Middle Columbia River ESU Lower Columbia River ESU Snake River Basin ESU Upper Willamette River ESU Puget Sound ESU	 E T T T T T	May affect, but not likely to adversely affect	Proposed activity occurs in areas where fish may occur and potential impacts from turbidity, contaminants, and noise associated with construction could affect fish.

11.0 Essential Fish Habitat

Overview

Public Law 104-297, the Sustainable Fisheries Act of 1996, amended the Magnuson-Stevens Fishery Conservation and Management Act to establish new requirements for Essential Fish Habitat (EFH) descriptions in Federal fishery management plans and to require federal agencies to consult with NMFS on activities that may adversely affect EFH.

The Magnuson-Stevens Act requires all fishery management councils to amend their fishery management plans to describe and identify EFH for each managed fishery. The Pacific Fishery Management Council (1999) has issued such an amendment in the form of Amendment 14 to the Pacific Coast Salmon Plan, and this amendment covers EFH for all fisheries under NMFS jurisdiction that would potentially be affected by the proposed action. Specifically, these are the chinook, coho and pink salmon fisheries. EFH includes all streams, lakes, ponds, wetlands, and other currently viable water bodies and most of the habitat historically accessible to salmon. Activities occurring above impassable barriers that are likely to adversely affect EFH below impassable barriers are subject to the consultation provisions of the Magnuson-Stevens Act.

The Magnuson-Stevens Act requires consultation for all federal agency actions that may adversely affect EFH. EFH consultation with NMFS is required by federal agencies undertaking, permitting, or funding activities that may adversely affect EFH, regardless of its location. Under Section 305(b)(4) of the Magnuson-Stevens Act, NMFS is required to provide EFH conservation and enhancement recommendations to federal and state agencies for actions that adversely affect EFH. Wherever possible, NMFS utilizes existing interagency coordination processes to fulfill EFH consultations with federal agencies. For the proposed action, this goal is being met by incorporating EFH consultation to the Endangered Species Act Section 7 consultation, as represented by this biological evaluation.

Location

The location of the activity covered by this assessment has been described in detail earlier in this document (see Section 3).

Description of Proposed Activity

The activity covered by this assessment have been described earlier in this document (see Section 4).

Potential Adverse Effects of the Proposed Activity

Projects would occur in or along the edges of marine, estuarine, and freshwater waters. EFH for ground fish (Table 10), coastal pelagics (Table 11) and salmonids (Table 12) could be affected by proposed activity.

Ground Fish EFH

Effects to the environmental baseline that would impact groundfish species are discussed in detail in Section 10.

Coastal Pelagic EFH

Effects to the environmental baseline that would impact coastal pelagic species are discussed in detail in Section 10.

Salmon EFH

Effects to the environmental baseline that would impact salmon species are discussed in Section 10.

EFH Conservation Measures

Conservation measures designed to protect listed species and those proposed as threatened or endangered will also help avoid and minimize impacts of the proposed activities on salmonid and groundfish EFH (see Appendix D, E, F and G).

Conclusion

In accordance with EFH requirements of the Magnuson-Stevens Fishery Conservation and Management Act, the Corps has determined that the proposed activity would not adversely impact EFH utilized by Pacific salmon and groundfish. It has been determined that the proposed action will not adversely affect EFH for federally managed fisheries in Washington waters.

Table 10. Ground Fish Species with Designated EFH and the Life History Stages that May Occur in the Action Area (PFMC, 1998a).

GROUND FISH SPECIES	Adults	Spawning/ Mating	Large Juvenile	Small Juvenile	Larvae	Eggs/ Parturition
Leopard Shark	X	X	N/A	X	N/A	X
Soupfin Shark	X	X	N/A	X	N/A	X
Spiny Dogfish	X		X	X	N/A	X
California Skate	X	X	N/A	X	N/A	X
Ratfish	X	X	N/A	X	N/A	
Lingcod	X	X	X	X	X	X
Cabezon	X	X	X	X	X	X
Kelp Greenling	X	X	X	X	X	X
Pacific Cod	X	X	N/A	X	X	X
Pacific Whiting (Hake)	X	X	N/A	X	X	X
Sablefish				X		
Jack Mackerel	X		N/A		X	
Black Rockfish	X			X		
Bocaccio				X	X	
Brown Rockfish	X	X	N/A	X		X
Calico Rockfish	X		N/A	X		
California Scorpionfish						X
Copper Rockfish	X		X	X		X
Kelp Rockfish				X		
Quillback Rockfish	X		X	X	X	X
English Sole	X	X	N/A	X	X	X
Pacific Sanddab			N/A	X	X	X
Rex Sole	X		N/A			
Starry Flounder	X	X	N/A	X	X	X

N/A - Not Applicable. Either the species does not have a particular life stage in its life history, or when EFH of juveniles is not identified separately for small juvenile and large juvenile stages. For many species, habitats occupied by juveniles differ substantially, depending on the size (or age) of the fish. Frequently, small juveniles are pelagic and large juveniles live on or near the bottom; these life stages are identified separately in the table when sufficient information is available to do so. When juvenile habitats do not differ so substantially or when information is insufficient to identify differences, EFH is identified only for the juvenile stage (small and large juveniles combined), and N/A is listed in the column for the large juvenile stage in the table (PFMC, 1998a).

Table 11. Coastal Pelagic Species with Designated EFH and the Life History Stages that May Occur in the Action Area (PFMC, 1998a).

COASTAL PELAGIC SPECIES	Adults	Spawning/ Mating	Large Juvenile	Small Juvenile	Larvae	Eggs/ Parturition
Northern Anchovy	X		X		X	X
Pacific Sardine	X		X		X	X
Pacfici Mackerel	X		X		X	X
Jack Mackerel	X					
Market Squid	X	N/A		N/A	N/A	N/A

N/A - Not Applicable. Either the species does not have a particular life stage in its life history, or when EFH of juveniles is not identified separately for small juvenile and large juvenile stages. For many species, habitats occupied by juveniles differ substantially, depending on the size (or age) of the fish. Frequently, small juveniles are pelagic and large juveniles live on or near the bottom; these life stages are identified separately in the table when sufficient information is available to do so. When juvenile habitats do not differ so substantially or when information is insufficient to identify differences, EFH is identified only for the juvenile stage (small and large juveniles combined), and N/A is listed in the column for the large juvenile stage in the table (PFMC, 1998a).

Table 12. Salmonid Species with Designated EFH and the Life History Stages that May Occur in the Action Area (PFMC, 1998a).

PACIFIC SALMON	Egg	Larvae	Young Juvenile	Juvenile	Adult	Spawning
Chinook salmon	X	X	X	X	X	X
Coho salmon	X	X	X	X	X	X
Pink salmon	X	X	X	X	X	X