Tideland Markers

Programmatic Biological Evaluation
Tideland Markers
Version: 13 October 2000

1. Summary of Activity:

a. In all Fresh Waters *excluding* the Columbia River mainstem: This programmatic biological evaluation does not apply to fresh water areas.

b. In the Columbia River *including* Snake River and Baker Bay: Placement of tideland markers, either by a single piling or buoys, provided that: work is done within the approved work window, work only occurs in the estuarine portions of the Columbia River (Baker Bay), no work occurs in or adjacent to vegetated shallows, piles are not treated with creosote or pentachlorophenol, no uncured concrete is used, barges and boats do not ground, if a barge is used, the barge does not ground out and the barge is not over or adjacent to vegetated shallows (except where such vegetation is limited to State-designated noxious weeds), and buoys are anchored securely and anchors and anchor lines do not drag. [RGPs on tidal markers]

c. In Marine/Estuarine Waters *excluding* Baker Bay: Placement of tideland markers, either by a single piling or buoys, provided that: work is done within the approved work window, no work occurs in or adjacent to vegetated shallows, piles are not treated with creosote or pentachlorophenol, no uncured concrete is used, barges and boats do not ground, if a barge is used, the barge does not ground out and the barge is not over or adjacent to vegetated shallows (except where such vegetation is limited to State-designated noxious weeds),, and buoys are anchored securely and anchors and anchor lines do not drag. [RGPs on tidal markers]

2. Programmatic Description: Individual permits (IPs), letters of permission (LOPs), and several Regional General Permits (RGPs) may authorize the placement of tideland markers in navigable waters of the U.S. in Washington State. This programmatic biological evaluation only applies to such work. Work that cannot be designed or constructed to fit under this biological evaluation must go through individual informal or formal ESA consultation.

3. Project Location: In all marine/estuarine waters 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 fish species and designated critical habitat and will not jeopardize proposed fish species or destroy or adversely modify proposed critical habitat.

4. Project Description: This programmatic biological evaluation does not cover any interrelated and/or interdependent work activities in any of the designated critical habitat areas, except those activities distinctly specified.

a. In the Columbia River mainstem including Snake River and Baker Bay: Placement of markers in the estuarine portions of the Columbia River (Baker Bay to designate public tidelands, vegetated areas, or shellfish harvesting closures. Single posts or buoys are used.

b. In Marine/Estuarine Waters *excluding* Baker Bay: Placement of markers to designate public tidelands, vegetated areas, or shellfish harvesting closures. Single posts or buoys are used.

5. Project Construction Description: [1]

a. Placement of buoys as tideland markers:

1. Equipment used: The equipment used is the boat to place the buoy; the buoy is a maximum of 1-foot diameter, the anchor is made of fully cured concrete or steel, with a maximum weight of 100 pounds (5-gallon bucket) and a maximum size of 0.025 cubic yards (2 square feet maximum), the line from anchor to buoy is either a combination of chain and nylon roper or chain and cable. The buoy is made of close cell Styrofoam only. The length of line varies based on the scope needed. The scope determines the ratio of length to depth based on currents in the waterbody. The average scope is a ratio of 3:1 line length to depth.

2. Access: Access to the buoy location is from a small boat (averaging 22 feet in length) or placement by hand at low tide. Occasionally, the buoy may be placed by a barge if in association with pile as tideland markers. Barges may be as long as 100 feet with the tug a maximum of 60 feet having the engine power equivalent to a 100 foot long pleasure vessel.

3. Placement: The buoy is placed at a maximum depth of 6 feet at high water. The boat is brought to a stop or an extremely low speed. The anchor is lowered to be partially suspended in the water before release, minimizing splash disturbance. The line is allowed to drop into the water with the buoy being tossed over board from the vessel.

4. Timing: The placement of the buoy occurs in a matter of minutes. The anchor drops at a rate of 10 feet per second, no matter the size.

5. Buoy design standards: The Coast Guard and Washington State Department of Transportation regulate the size, the material, and the scope used for the buoy, line and anchor. Each U.S. Coast Guard District regulates specific standards for design and placement. The U.S. Coast Guard 13th District regulates all navigable waters in Washington State. Channel buoy design

[1] Information about project construction methods provided by personal communication with John Pell, Navigation Expert, Corps of Engineers, Regulatory Branch, and Eric Winters, Chief of Floating Plan, Corps of Engineers, Navigation Branch on February 16, 2000.

requirements are described in the Boat Handling Guide from Boat/U.S. Foundation in Alexandria, Virginia.

b. Placement of a pile as tideland marker:

1. Equipment used: The equipment used includes a barge-mounted pneumatic pile driver, standard drop-hammer, or vibratory pile, barge averaging 50- by 100-feet (5,000 square feet), a tug boat with a maximum length of 60 feet and the engine power equivalent to a 100 foot long pleasure vessel, one pile, and signage (usually metal).

2. Access: The pile placement is accessed by a barge positioned by a tug boat. The barge anchors into position by dropping "spuds" – large steel piles that act as anchors at each corner of the barge.

3. Placement: The pile driving would be performed with a barge mounted pile driver. A crane on the pile driver lowers a pile into the water until it rests in place on the bottom of the waterbody. The pile is attached to a special rail system that allows precise placement of the pile. A heavy weight runs along a similar track system. The weight is then repeatedly dropped onto the upper end of the pile, driving the pile into the bottom of the waterbody. The pile is placed at an average of 6 feet at high water. After the pile is driven, then the signs are attached by hand using a welder, an hydraulic hammer, or a drill (depending on material).

4. Timing: Total construction time is less than one day.

5. Design standards: Design standards for the signage requirements are regulated by the U.S. Coast Guard and Washington State Department of Transportation. Each U.S. Coast Guard District regulates specific standards for design and placement. The U.S. Coast Guard 13th District regulates all navigable waters in Washington State.

6. Action Area Description: The action area is for activities in all marine/estuarine waters of Washington State. The action area included for the placement of a tideland marker is the location of the marker (the pile or buoy), the length of the line and placement of the anchor for buoys, the swing of the buoy to the anchor (an average radius of 5 feet), 25 feet radius[2] around the anchor placement or pile for potential water quality impacts with the anchor placement or pile driving, and 1,000 feet radius[3] around the pile for noise impacts associated with the pile driving. There is no interrelated and/or interdependent

[2] 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.

[3] 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.

work in any upland or wetland areas that would be considered designated critical habitat.

7. Species and Habitat Information:

Species Present: [4]

1. For the Columbia River mainstem in Washington State, *including* Snake River and Baker Bay: Snake River sockeye salmon - status endangered (designated critical habitat); Snake River spring/summer chinook salmon - status threatened (designated critical habitat); Snake River fall chinook salmon - status threatened (designated critical habitat); Snake River steelhead - status threatened (designated critical habitat); Columbia River chum salmon - status threatened (designated critical habitat); Columbia River bull trout – status threatened; Lower Columbia River steelhead – status threatened (designated critical habitat); Lower Columbia River chinook salmon – status threatened (designated critical habitat); Middle Columbia River steelhead – status threatened (designated critical habitat); Upper Columbia River steelhead – status endangered (designated critical habitat); Upper Columbia River spring chinook salmon – status endangered (designated critical habitat); Upper Willamette River chinook salmon – status threatened (designated critical habitat); Upper Willamette steelhead – status threatened (designated critical habitat); and, SW Washington/Columbia River/Coastal cutthroat trout – proposed threatened.

2. In all Marine/Estuarine waters of Washington State, *excluding* Baker Bay: Puget Sound chinook salmon, status threatened (designated critical habitat), Hood Canal chum salmon, status threatened (designated critical habitat), Coastal/Puget Sound bull trout, status threatened, Ozette Lake sockeye salmon, status threatened (designated critical habitat), SW Washington/Columbia River/Coastal cutthroat trout, proposed threatened, and, Puget Sound coho salmon, candidate species.

b. Species Utilization: Refer to Appendix B - Species Life Histories.

8. Activity History and Status: Each of the tideland marker files has a letter from Washington State Department of Natural Resources (WDNR), the only authorized agency to place tideland markers, dated December 23, 1983, that states "no additional beach markers will be installed under these permits." WDNR suspended the program due to budgetary problems, and will continue when budget problems are resolved. This program is still suspended with no activity since 1984.

[4] Other listed or proposed plants or animals may occur in the project area. However, this document addresses only listed or proposed fish species. Review of impacts to other listed or proposed species will be done on a case-by-case basis.

However, there is a potential for the program to be reinstated or the necessity to place tideland markers with WDNR's acquisition of new tidelands.

Shellfish closure markers are placed on a temporary basis by WDNR, WDFW, and/or Washington Department of Health. The Corps was unable to identify an entity that tracks the number of shellfish closure markers placed throughout the state on an annual basis. However, the Washington Department of Health website identified 18 areas with shellfish closures for the Summer of 2000 (http://www.doh.wa.gov/ehp/sf/biotoxin.htm). Several markers may occur at each location.

In light of the recent listings under ESA, the Corps proposes to track these activities, if they so occur, as outlined in the "Programmatic Biological Evaluation Notification and Tracking Description".

9. Environmental Baseline: Refer to Appendix C – Environmental Baseline.

10. Effects of the Action:

a. Direct Effects - Placement of buoys as tideland markers: Because the effects are relatively the same for all the listed or proposed fish species, the effects analysis does not distinguish between species type. Effects to listed or proposed fish species associated with the placement of tideland markers in any of the waters of the U.S. in Washington State are outlined below:

1. Water quality (anchor placement): Temporary water quality impacts may occur with the placement of the buoys as tideland markers when the anchor drops and a small amount of sediment is temporarily suspended in the water column. Buoys are usually placed during "slack tide" when the water is relatively still. Because the anchor drops in a matter of seconds and settles, sediment suspension is unlikely to exceed a radius of 25 feet from the anchor and would settle out of the water column to background levels in no more than an hour, depending on sediment type and currents. If the anchor is not installed properly or the weight is not sufficient, the anchor may drag along the substrate, causing additional sediment suspension. The Corps' experience is that this is rare. Buoys will be anchored securely so that the anchor and anchor line does not drag. Work occurs during approved work window to minimize impact to listed or proposed fish species and their forage species. All temporary water quality impacts associated with the anchor placement are insignificant and/or discountable.

2. Water quality (propwash): The boat placing the buoy is likely to cause some sediment suspension associated with propwash. The boat is stopped or moving extremely slowly during anchor placement so the disturbance with the propwash is extremely small. Any turbidity associated with propwash would also settle out of the water column to background levels in no more than an hour, depending on

sediment type and currents. Work occurs during approved work window when listed, proposed and forage fish species are least likely to be present. All temporary water quality impacts are insignificant and/or discountable.

3. Habitat Health: If a buoy is placed over or adjacent to vegetated shallows, the placement of the buoy and propwash from the vessel placing the buoy may destroy areas of the vegetated shallows. Vegetated shallows support forage species that the listed or proposed fish species are dependent upon, such as herring spawning in eelgrass beds in marine areas. Boat activity in or adjacent to vegetated shallows has been documented to damage and/or destroy vegetated shallows. (NOAA, 1998) To be covered by this informal consultation, the buoys will be placed so that the vessel and buoy are not over or adjacent to vegetated shallows. If the anchor is not installed properly or the weight is not sufficient, the anchor may drag along the substrate, destroying the substrate. The substrate may support benthic invertebrates that juvenile listed or proposed fish species are dependent upon for forage. Buoy anchors are to be installed so that the anchor line does not drag. When constructed as described, impacts to habitat health are insignificant and/or discountable.

b. Direct Effects - Placement of a pile as tideland marker: Because the effects are relatively the same for all the listed or proposed fish species, the effects analysis does not distinguish between species type. Effects of the placement of one pile is outlined below:

1. Water Quality (pile driving, spud placement, and propwash): Pile driving and spud placement to anchor the barge will have a temporary impact on water quality. As each pile is driven or each spud is placed into the substrate, a turbidity plume is created. The plumes will be small, localized and will dissipate quickly. Based on discussions between the Corps, USFWS, and NMFS in Informal Consultation Batch Meeting for structures in Lake Washington, the “plume” is unlikely to exceed a radius of 25 feet from the pile or dolphin and would settle out of the water column to background levels in no more than an hour, depending on sediment type and currents. Propwash impacts would only occur when the tug is either situating the barge in place or removing the barge. The work is done in the approved work window when listed, proposed and forage fish species are least likely to be present. Any turbidity associated with propwash from the tug and barge is relatively short-term and would settle out of the water column to background levels in no more than an hour, depending on depth, sediment type and currents. To ensure that sediment suspension impacts are discountable, the pile driving for the pile or dolphin and the anchoring of the barge will only occur during approved work windows when listed, proposed and forage fish species are least likely to be present. The impacts to water quality due to pile driving and spud placement, as described, are insignificant and/or discountable.

2. Water Quality (pile treatment and slag): No piles treated with creosote or pentachlorophenol will be used in marine/estuarine waters, in order to be covered under 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 are likely to 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). There is the potential slag will enter the water column when signs are welded to the pile. The amount of slag from welding one sign would be no more than 1 square inch. This amount is so small that any impact to water quality is insignificant and/or discountable. Using these methods of installation, adverse effects associated with pile treatment and/or slag are insignificant and/or discountable.

3. Water Quality (cured concrete): In order to be covered under this informal consultation, no uncured concrete shall come into contact with the waterbody. Wet concrete causes a change in the pH of the water due to the lime in the concrete, resulting in the water that comes into contact with the concrete becoming "basic" in fresh water systems. Basic water can adversely impact fish. These effects may be lessened in marine/estuarine waters, as the lime has more options to bind to aside from the water in marine/estuarine systems. If semi-wet concrete has a partially cured "skin" then the lime will leach at a slower rate.[5] Cured concrete in fresh water systems releases carbonate (CO_3^{2-}) through natural weathering processes. Carbonate reacts with hydrogen(H+) to form bicarbonate (HCO_3-) and/or carbonic acid (H_2CO_3). A product of these reactions is an increase in pH, thereby causing the water that comes into contact with the weathering concrete to become basic.[6] The activity constructed as described, adverse impacts associated with uncured concrete in marine/estuarine waters are insignificant and/or discountable.

4. Habitat Health (noise from pile driving): Pile driving 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

[5] Impacts associated with concrete were obtained through personal communication with Hal Michael, Fisheries Biologist, Washington Department of Fish and Wildlife on February 3, 2000.
[6] Information on the impacts of the natural weathering of concrete was obtained through personal communication with MaryAnn Baird, Soil Scientist, U.S. Army Corps of Engineers, Regulatory Branch.

pink and chum salmon 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). There is no reason to believe that listed or proposed salmonids would act differently. In order to ensure that adult and juvenile listed or proposed fish species will not be disturbed by the noise pile driving, the pile driving for the pile will only occur during approved work windows when listed, proposed, and forage fish species are least likely to be present. When constructed as discussed, the impacts to habitat health due to noise associated with pile driving are insignificant and/or discountable.

5. Habitat Health (pile driving impacts to vegetated shallows and forage fish spawning habitat): Vegetated shallows support forage species that the listed or proposed fish species are dependent upon, such as herring spawning in eelgrass beds in marine areas. Boat activity in or adjacent to vegetated shallows has been documented to damage and/or destroy vegetated shallows. (NOAA, 1998) This programmatic biological evaluation covers only those projects that do not occur over or adjacent to (within 300 feet) vegetated shallows. With this restriction, the pile driving and any propwash associated with the tug boat or pile driving barge will not impair or destroy vegetated shallows.

Markers are sometimes placed in beaches documented as forage fish spawning areas to notify the public of such things as shellfish harvesting restrictions or public property ownership. If signs are placed high on the beach in forage fish spawning areas, signposts versus piles are used. Placement of signposts are done extremely quickly and often using hand equipment. The area impacted by the post placement would be an area less than 25 feet in diameter. The work would be conducted during the approved work windows when listed, proposed, and forage fish species are least likely to be present. There is little to no disturbance to the beach substrate other than the post hole digging. When constructed as discussed, impacts to habitat health are insignificant and/or discountable.

c. Indirect Effects: There are no effects that would result from this activity that are later in time.

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

e. Determination of Effect: Tideland Markers may affect but are not likely to adversely affect listed fish species and designated critical habitat identified

above, and will not jeopardize proposed fish species or destroy or adversely modify proposed critical habitat identified above, provided that:

1. In all Fresh Waters *excluding* the Columbia River mainstem: This programmatic biological evaluation does not apply to fresh water areas.

2. In the Columbia River *including* Snake River and Baker Bay:

- Work is done within the approved work window.
- Work only occurs in the estuarine portions of the Columbia River (Baker Bay).
- No work occurs in or adjacent to vegetated shallows.
- If a barge is used, the barge does not ground out and the barge is not over or adjacent to vegetated shallows (except where such vegetation is limited to State-designated noxious weeds).
- Piles are not treated with creosote or pentachlorophenol.
- No uncured concrete shall come into contact with the waterbody.
- Barges and boats do not ground.
- Buoys are anchored securely and anchors and anchor lines do not drag.

3. In Marine/Estuarine Waters *excluding* Baker Bay:

- Work is done within the approved work window.
- No work occurs in or adjacent to vegetated shallows or spawning habitat for forage species.
- Piles are not treated with creosote or pentachlorophenol.
- No uncured concrete shall come into contact with the waterbody.
- Barges and boats do not ground.
- If a barge is used, the barge does not ground out and the barge is not over or adjacent to vegetated shallows (except where such vegetation is limited to State-designated noxious weeds).
- Buoys are anchored securely and anchors and anchor lines do not drag.