

**ENVIRONMENTAL ASSESSMENT
REPAIR OF NORTH AND SOUTH JETTIES
MOUTH OF THE COLUMBIA RIVER
CLATSOP COUNTY, OREGON and PACIFIC COUNTY, WASHINGTON**

1. Introduction

This EA is being written to evaluate the affects of a major rehabilitation of both the North and South Jetties at the Mouth of the Columbia River (MCR). Due to funding constraints, only the most severe areas will be repaired in the immediate future with the remaining components of the major rehabilitation to follow when funding becomes available. The immediate proposed work will be referred to in this EA as “repair” and the long term proposed work will be referred to as “rehabilitation”. Emergency action may also become necessary if either jetty breaches prior to the proposed repairs.

The MCR deep-draft navigation project consists of a 1/2-mile wide navigation channel extending for about six miles through a jettied entrance (three miles seaward and shoreward of the tip of the North Jetty) between the Columbia River and the Pacific Ocean (Figure 1; figures are located at end of this document). The channel was deepened to its present depths in 1984 and has been maintained at those depths to date. The northerly 2,000 feet of the channel is maintained at 55 feet and the southerly 640 feet is maintained at 48 feet, with an additional five feet of depth allowed for advanced maintenance.

The Columbia River estuary is a tidal estuary approximately five miles wide, north to south, at the mouth and about one mile wide above rivermile (RM) 30. The estuarine environment extends about 38 miles upriver. The ocean entrance to the river is protected by two jetties (Figure 1), whose tips are about two miles apart.

The South and North Jetties at the MCR were constructed to secure the Federal navigation channel though the ocean entrance to the Columbia River. The South Jetty is about 6.6 miles long. The first 4.5 miles of the South Jetty were constructed between 1885 and 1895. It was extended to its current authorized length in 1913 (Figure 2); however, about 4,000 feet (head loss) has deteriorated. Portions of the South Jetty were repaired in 1982. The North Jetty is about 2.5 miles long and was constructed in 1914-1917. About 1,700 feet of head loss has occurred (Figure 3). These existing project features were authorized by the River and Harbor Acts of 5 July 1884, 3 March 1905, and 3 September 1954. The oceanward portion of the North Jetty was the last repaired and completed in 1965 with the placement of 136,935 tons of stone

The jetties were constructed at the entrance to the Columbia River to confine tidal currents to obtain scouring velocities in the bar and entrance channels, to help maintain the authorized channel dimensions, and to help protect vessels entering and exiting the river. The North and South Jetties at MCR have experienced damage to both jetty heads and along the jetties at several locations.

A discussion of the MCR jetties and the surrounding environment can be found in the following U.S. Army Corps of Engineers documents:

- a. Dredging of the MCR navigation channel was addressed in the 1983 EIS for deepening and subsequent maintenance (Columbia River at the Mouth, Oregon and Washington: Navigation Channel Improvement.) U.S. Army Corps of Engineers, 1983).
- b. MCR, South Jetty, Major Rehabilitation. Environmental Assessment, March 1982. Dredged Material Management Plan & Final Supplemental EIS, Columbia and Lower Willamette River Federal Navigation Channel. U.S. Army Corps of Engineers, 1998.
- c. Dredged Material Management Plan & Final Supplemental EIS, Columbia and Lower Willamette River Federal Navigation Channel. U.S. Army Corps of Engineers, 1998.
- d. Integrated Feasibility Report for Channel Improvements and Final EIS, Columbia and Lower Willamette River Federal Navigation Channel. U.S. Army Corps of Engineers, 1999.
- e. EA/Finding of No Significant Impact for Repair of South Jetty, Mouth of the Columbia. U.S. Army Corps of Engineers, 1982.

A summary of the information contained in these documents is included in this assessment.

2. Purpose and Need

The purpose of the action is to repair critical trunk portions of the North and South Jetties and when future funding becomes available to rehabilitate the remaining critical sections of both jetties. This action is necessary to prevent further deterioration and subsequent breaching of the jetties.

Both North and South MCR Jetties contain badly deteriorated areas where degradation has accelerated in recent years due to increased storm activity and loss of sand, upon which the jetties are constructed. Breaching near the shoreline (most likely scenario, especially at the North Jetty) would allow sand to migrate into the Columbia River navigation channel, thereby disrupting deep draft navigation and increasing dredging requirements. Within the next five years there is a high likelihood that a significant breach will occur on either jetty. The likelihood of a jetty breach will continue to increase with time.

Emergency repairs required for either or both jetties within the next few years appears highly probable; however repairs could not necessarily be made during the winter, especially at the South Jetty. Costs to repair following a breach are estimated at two to five times higher than if completed prior to the failure.

Along the reach of the North Jetty proposed for rehabilitation and repair, 70 percent of the area has not been repaired since its original construction in 1917. The remaining 30 percent was last repaired in 1965. Along the South Jetty reach proposed for rehabilitation and repair, the jetty was last repaired in 1934 and 1962 and 1982; or at approximately 25-year increments from the

1903 original construction. The landward 35 percent of the reach was last repaired in 1982. At the South Jetty, 65 percent of the proposed repair area has not been repaired since 1962.

Scour of the seabed along the channelside of the North Jetty has resulted in increased depths of 10 to 40 ft, impacting not only the stability of jetty foundation but also wave impact on the already vulnerable jetty cross section. Increased depths along both the oceanside and channelside of the South Jetty repair area have also resulted in increased wave impact on the jetty.

3. Proposed Action and Alternatives

Proposed Action

With funding available for Fiscal Year 05 (Oct 1, 2004 to Sept 30, 2005), the Portland District plans to begin construction and repairs of the critical portions of the North Jetty and will prioritize critical repair work to the South Jetty subject to future availability of funding. Completion of the proposed repairs at the South Jetty may take from one to three years.

The premise of the jetty repair is to repair the most vulnerable areas of the North and South Jetties, where the consequences of jetty failure (a breach through either jetty) would rapidly and significantly degrade navigation through the Mouth of the Columbia River (MCR). The intent of the proposed design concept will be three-fold: 1) Improve the stability of the foundation (toe) of each jetty as affected by scour, 2) Improve the side slope (above and below water) stability of each jetty as affected by classical static slope stability criteria, 3) Improve the dynamic stability of each jetty as affected by wave forces impinging the jetties. The proposed action described below is “worst case;” i.e., it is the largest repair proposed for the degraded sections of jetty (Rehabilitation). The initial repair is likely to be less comprehensive.

The proposed rehabilitation would occur along an 8,000 foot-long reach of the South Jetty (stations 220+00 to 300+00) and a 4,000 foot-long reach of the North Jetty (stations 40+00 to 80+00), shown in Figures 4-5. The rehabilitation work would require placement of approximately 200,000 to 300,000 tons of stone along the North Jetty and 300,000 to 500,000 tons along the South Jetty. The total amount of stone to be placed for the repairs is 30,000 tons on the North Jetty and 40,000 tons on the South Jetty. For repairs, the total stone to be placed at the North Jetty is approximately 30,000 tons and for the South Jetty approximately 40,000 tons will be placed. The total stone to date placed on the South and North Jetty is 8.7 and 3.3 million tons, respectively.

Armor stone sizes for the proposed repair will range from 10 to 25 tons for the North Jetty and 10 to 40 tons for the South Jetty. Proposed repair cross sections are shown in Figures 6 and 7 for the North and South jetties, respectively.

The cross-section design (templates) proposed for the repair of the North and South Jetties lie essentially within the existing jetty footprint, based on the configuration of the original cross section, previous repair cross sections, and redistribution of jetty stone by wave action. There

may be a minor deviation of the proposed template design from the existing jetty configuration at rehabilitation areas where jetty damage has been extensive or scour along the toe has been severe. Crest elevation for the repair template for both the north and the south jetties is expected to be +25 ft mean lower low water (MLLW). Crest width is set at 30 feet wide.

Repair Work Generic to Both the North and South Jetties

The proposed jetty repair work would be conducted by marine and/or land access activities. For marine-based delivery and placement of stone the contractor will be provided with three options: marine-based using a tow boat and barge, a barge off-loading platform and land based operations bringing in material via existing park roads. Material will be trucked through the county park via the county road. The county road will be used to bring in the trucks for movement of the jetty stone, transportation of construction material and employee use during the construction timeframe. Prior to construction, the contractor will document the condition of the road and will be responsible for repairing the road to its pre-construction condition upon completion of the construction work.

Tow Boat and Barge

A tow boat and barge would deliver the stone to either jetty, where water depth, wave, and current conditions permit. During stone off-loading, the barge may be secured to four to eight dolphins situated within 200 feet of the jetty. The dolphins would be composed of multiple untreated timber piles driven to depth of 15-25 feet below grade, by a vibratory pile hammer. An impact hammer may be used at the final driving to ensure pilings are seated properly. The dolphins will be relocated as work advances along the jetty and would be removed at the conclusion of the work. The maximum number of dolphins present along the North or South Jetty during any one time during the work is estimated to be 10 to 20. Stone would be off-loaded from the “stone barge” by a crane (either land or marine based) and either placed directly within the jetty work or stock piled on the jetty crest for placement at a later time.

For marine-based stone placement, a lattice boom crane or large track hoe excavator would be fixed to a moored barge. The crane barge would be moored using either a series of anchors or the barge would be lashed to four to eight dolphins paralleling the jetty work area (same concept for a marine-based stone delivery). The marine-based crane would pick stones either directly from the stone barge or from stones stock-piled on the jetty crest and place the stones into the work area. The crane would advance along the jetty as work is completed.

Barge Off-loading Platform

The barge off-loading platform for either the South or North Jetty would be an enclosed cell structure constructed of sheet piles with the placement of clean quarry waste (crushed gravel) within the structure (Figures 8 and 9). Three inches of compacted material will be placed on top of the crushed gravel to form a road that will provide a stable surface for vehicles to load jetty stones. For the south jetty only, the area riverward of the sheet pile retaining wall will need to be dredged to accommodate the 12-16 foot draft of the off-loading barges. Approximately 2000 to 4000 cubic yards (cy) of material will need to be dredged for the south jetty platform. The

material will be tested prior to dredging. If found suitable, the contractor will have the option of reusing the material to back fill the area after removal of the sheetpile or to find a suitable location for the material upon removal. The North and South Jetties would require about 12,000 and 25,000 tons of rip rap and gravel, respectively. Access ramps would be removed following construction.

Land-based Placement

For land-based stone placement, a lattice boom crane or large track hoe excavator would be situated on top of the jetty. A land based placement operation would require the construction of a jetty “haul road” along the jetty crest within the proposed work area limits for each jetty, and possibly an access road that would ramp up to the jetty crest. Jetty haul and access roads associated with this phase of the rehabilitation and repair would be located above Mean Higher High Water (MHHW) and located to avoid wetlands. The crane or excavator would use the haul road to move along the top of jetty. Construction of a jetty haul road for the repairs along the North and South Jetty would require about 12,000 and 25,000 tons of rip rap and gravel, respectively. Access ramps would be removed following construction.

The North Jetty has the highest funding priority; however, once the activities are fully underway, repair work may occur simultaneously on the South and North Jetties. Unless otherwise directed by the Corps, the work along the North and South Jetties will be left to the contractor’s discretion. Where weather and other conditions allow, the work could occur throughout the year (winter, summer, fall, spring). Conditions that could shut down work on the jetties are wave direction and wave height. For the South Jetty, 10 foot offshore waves at high tide and 14 foot offshore waves at low tide would shut down construction. For the North Jetty, 14 foot waves at high tide and 18 foot waves at low tide would halt construction. Winds gusting to about 35 knots would cause boom crane operation to stop. The duration of stone placement activities for completing jetty repairs for both North and South Jetties is estimated to be one to three years and is largely dependent on quarry production rates.

Repair of the North and South Jetties is not expected to interfere with the dredging and disposal activities associated with the annual maintenance of the MCR navigation channel, including use of the North Jetty dredged material disposal site. Use of the North Jetty disposal site would be coordinated with the marine delivery of stone such that the use of the North Jetty site during jetty construction would not be impacted.

The South Jetty

For the South Jetty, marine-based activities likely would be used to deliver armor and fill stone from the barge off-loading platform to the project site by use of the pre-existing haul road from previous repairs (Figures 4a and b). Since the old haul road used a portion of the existing park road and would cut off use of the road and viewing platform at the end of the road, the contractor will be directed to construct a small, new section of the road from the off-loading platform to the existing haul road. The width of both the new and old road will be 20 feet wide. The new road will be bladed and gravel will be placed atop the new and existing haul road.

A 200-foot barge off-loading structure will be built at the end of the haul road (Figures 4a and b). Approximately fifty feet of sheet pile will be placed to form a cell structure that would be filled with clean quarry waste material. Approximately 4000 cy of material will need to be dredged riverward of the platform to ensure that the barges can off-load at the site. The material may be used as fill material for the haul road or may be placed on the beach. The new and old areas will be replanted upon completion of the project. Any damage to the existing asphalt roads will be restored to pre-project condition.

For land based jetty access, transportation of jetty stone would be via the existing asphalt surfaced road through Fort Stevens State Park to the work area located at the end of the east parking lot.

Two five-acre work areas would be needed where a stone weighing facility could be erected, to maneuver trucks/stone handling equipment and/or stockpile stone near the jetty. One five-acre site would be located adjacent to the barge off-loading platform. The second five-acre site would be located near the jetty and would use approximately half of the east parking lot and some adjacent land (see Figures 4a and b). Some grading of sand would be conducted and crushed gravel would be used to improve the work area. A temporary gravel access road would be placed to facilitate equipment access from the work area to the jetty crest. The work area and access road area would be restored after jetty work is completed. The 400 foot-long access road (25 feet wide) and ramp would be situated above MHHW and would be constructed of 4,000 cy of sand, gravel and small rip-rap. The access road and ramp would be removed at the completion of work. This road would require a 3-foot-diameter galvanized culvert to facilitate tidal exchange and surface water run off to/from the wetland within Clatsop Spit. (Temporary fill of waters of the U.S. related to construction is accommodated within Nationwide Permit number 33.)

The North Jetty

For the North Jetty, marine or land based activities could be used to delivery armor stone and fill stone to the project site. The method of delivery will be at the discretion of the contractor. For marine based construction, a barge off-loading platform could be constructed at approximate station 40+00 requiring approximately 12,000 cubic yards (cys) of quarry waste material to be placed within sheet piles on the ocean side of the north jetty and 500 cys of material placed on the land side of the jetty (Figure 5). The sheet piles will be driven by vibratory hammers. All material placed within the sheet piles will be removed before removal of the sheet piles. The total wetland area that may be impacted within the footprint of the jetty would be approximately 0.10 acres and outside the jetty footprint would be approximately 0.15 to 0.25 acres. The fill material will be quarry waste and removed upon completion of construction. Upon completion of the construction project, the area will be restored to its preexisting condition. Since the impact area to the wetlands outside the footprint of the jetty is minimal and will be restored to its pre-construction condition, no mitigation is proposed.

For land based construction, heavy equipment would access the site via an existing asphalt surfaced road to the Benson Beach Parking lot at Cape Disappointment State Park (Figure 5). A five acre work area for equipment and possible rock storage would be located near the parking

lot. A second five acre work area will be constructed across from the potential barge off-loading site where a stone weighing facility may be erected. Two rock access roads and ramps would be constructed adjacent to the jetty located approximately at between 60+00 and 70+00 stations. Both access roads will be removed once the jetty is repaired. The access roads, about 400 feet in length and 25 feet wide, would each be constructed of approximately 4,000 cy of sand, gravel and small rip rap and located above MHHW on beach sand.

The Benson Beach parking lot will be closed to the public during construction. To facilitate public access to Benson Beach, the existing fire road (Figure 5) will be used as a public access road. The road will have a small amount of new gravel placed on top of the existing layer to make the road accessible to foot traffic.

Alternatives

Various design alternatives were considered. These alternatives dealt with type and size of stone, slope, and which areas to repair first. The footprint of these designs would not exceed that of the proposed action.

The “no action” alternative was considered in the alternatives analysis and was determined to be unacceptable due to the danger and risk of jeopardizing the integrity of both jetties. To allow the jetties to continue to deteriorate will eventually lead to breaching and sediment transport into the estuary, which will increase offshore shoaling outside of the channel entrance (Figures 10 and 11). As the jetties continue to deteriorate, waves will move into the inner harbor adding to the difficulty of maintaining a reliable year round channel, and increase boating hazards.

Should the condition of the jetties worsen to the point an emergency is declared, repair would commence as soon as funding could be obtained. Environmental documentation would follow, if not completed prior to emergency construction.

4. Affected Environment

The Columbia River estuary is a drowned river estuary. The estuarine environment extends from the mouth to RM 38. The river varies from 2 to 5 miles wide throughout the estuary and is about 1 mile wide at RM 30. Tidal effect extends almost 150 miles upstream. (USACE 1983), but the saltwater wedge is limited to RM 20 (USACE 1999). Three jetties (North, South, and Jetty A) have been constructed at the mouth to help stabilize the channel and reduce the need for dredging. The navigation channel is currently maintained at authorized dimensions of 48-55 feet deep below MLLW and ½ mile wide from mile -3 to RM 3. River flows are controlled by upstream storage dams. A dredged material disposal site near the North Jetty was established in 1999 to protect the North Jetty from erosion and to disperse sand into the littoral zone. This site closely matches an historic disposal site. About 100,000 to 500,000 cubic yards of sand are placed here annually. All construction activities will be coordinated such that the rehabilitation and repair of the north jetty and the associated construction activities will not impact the use of the north jetty disposal location.

The MCR is a high energy area. Horizontal circulation in the estuary is generally clockwise, with incoming ocean waters moving upstream in the northern portion of the estuary and river waters moving downstream in the southern portion. Vertical circulation is variable, reflecting the complex interaction of tides with river flows and bottom topography and roughness (USACE 1983).

Both jetties are located in fairly high-energy areas subject to strong tidal and river currents and wave action. These high-energy conditions contribute to continual movement of sediments with both deposition and erosion occurring. The continual disturbance likely discourages biological productivity along the jetties themselves.

The lower Columbia River estuary is predominantly a marine environment. Dominant aquatic habitats near the jetties include mobile sand flats and rocky intertidal and subtidal habitat. The estuary is also a migratory route for anadromous fish species. Juvenile marine and estuarine fish species and macroinvertebrates such as Dungeness crabs also use the estuary as a rearing area.

The mobile sand community at the MCR provides habitat for such invertebrate species as polychaetes, clams (*Macona sp.*), amphipods and crabs. This is a high energy zone and generally less productive than other areas of the estuary. The jetties provide rocky intertidal and subtidal habitat at the mouth of the estuary. Dominant species on the jetties include macro-algae such as *Fucus*, *Ulva* and *Enteromorpha* that are attached to the rocks. Invertebrate species present include sponges, hydroids, sea anemones, crabs, tubeworms, limpets and mussels that live on the rocks or in crevices. Fish species associated with the jetties include rockfish, sculins, greenlings, ling cod, sea perch and blennies.

Near the MCR, the Oregon shore of the estuary is coastal plain, the Clatsop Spit. On the Washington shore Cape Disappointment, a narrow rocky headland, dominates the view. Behind the headland is beach dune and swale. Land adjacent to the jetties consists primarily of beach sands with European beach grass and some conifer saplings. Some estuarine and palustrine wetlands also occur.

Fishery resources within the estuary include both migratory and resident species. Among the most common estuarine inhabitants are white sturgeon, northern anchovy, surf smelt, shiner surfperch, Pacific herring, English sole, starry flounder, and rockfish. Salmonids found in the estuary are chinook, chum and coho and sockeye salmon, steelhead and cutthroat trout.

Pacific herring, starry flounder, and English sole prefer the sandy shoreline habitat. Cobble beaches are inhabited by rockfish, chinook salmon, and surf smelt. Shiner perch and white sturgeon are found in deeper water habitat, and English sole prefer the sandy silt areas.

Federally listed threatened and endangered species which may occur in the MCR area include 15 wildlife species and 12 stocks of salmon, steelhead and trout. Wildlife species potentially found within the area affected by the repair actions include blue, finback, sei, right, hump-backed and sperm whales, northern (Steller) sea lion, loggerhead and Pacific leatherback sea turtles, brown pelican, marbled murrelet, western snowy plover, bald eagle, Columbian white-tailed deer and Oregon silverspot butterfly. Adults and juveniles of the listed salmonid stocks are present in the

lower river year-round. Biological Assessments were prepared to address the likely presence of these species within the MCR area and potential effects of the proposed jetty repair actions.

Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act an Essential Fish Habitat (EFH) consultation is necessary for the above described actions. Essential fish habitat is defined by the Act in Section 3 (104-297) as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity". The estuary and the Pacific Ocean off the mouth of the Columbia River are designated as EFH for various ground fish and coastal pelagic and salmon species (PFMC 1998a and 1998b).

A detailed discussion of EFH for the ground fish species is provided in the Final Environmental Assessment/Regulatory Impact Review for Amendment 11 to the Pacific Coast Groundfish Fishery Management Plan [Pacific Fisheries Management Council (PFMC) 1998a] and the NMFS (June 15, 1998), Essential Fish Habitat for West Coast Groundfish Appendix. A detailed discussion of EFH for Coastal Pelagic species is provided in Amendment 8 to the Coastal Pelagic Species Fishery Management Plan (PFMC 1998b). Salmon EFH is discussed in Appendix A of Amendment 14 to the Pacific Coast Salmon Plan (PFMC, 1999).

Marine mammals known to occur in the Columbia River estuary and nearby offshore areas include gray whale, harbor porpoises, northern and California sea lions, and harbor seals. Most cetacean species observed by Green et al. (1991) occurred in slope (600 to 6,000-foot depths) or offshore waters. Harbor porpoises and gray whales were prevalent in shelf waters less than 600 feet deep. Pinniped species likely to occur in the vicinity of the proposed jetty repair sites are harbor seal and California and northern sea lion. No rookeries occur within the area (Bonnell et al., 1989). The South Jetty is used as a seasonal haulout area by northern (Steller) sea lions.

Two species of listed marine turtles, loggerhead, leatherback, have been recorded from strandings along the Oregon and Washington coastline. They are typically associated with warmer waters that occur over the Pacific slope waters during summer (Green et al., 1991). Their occurrence inshore is incidental in nature.

Pelagic birds are numerous off the Columbia River including gulls, shearwaters, auklets, common murre, fulmars, phalaropes and kittiwakes. Briggs, et al. (1992) found that seabird populations were most densely concentrated over the continental shelf (less than 600 feet in depth). Brown pelicans typically occur from late spring to mid-fall along the Oregon and Washington coast. Large concentrations (10,000 plus birds) of this species develop at the mouth of the Columbia River at the South Jetty and East Sand Island-Baker Bay. This species forages in nearshore waters of the Pacific Ocean and estuarine waters of the Columbia River (Ibid.). Three species of cormorants occur in the Columbia River estuary and forage in nearshore Pacific Ocean waters, the estuary or upriver. Pelagic and Brandt's cormorants nest on the cliffs of Cape Disappointment (USACE, 1999). Three species of terns occur in the Columbia River or over nearshore waters. Caspian terns are present from April to September and have established a large colony (plus or minus 9,000 pairs) on East Sand Island within the estuary. Common and Arctic terns occur off the Oregon and Washington coasts from April to September (Ibid.) principally during migration. Shorebirds found on coastal beaches at MCR and estuarine flats include western sandpipers, sanderlings, dunlins, least sandpipers and semi-palmated plovers.

Cultural Environment

The primary area affected by the MCR is the lower Columbia River region, from the river's entrance to Portland harbor. While the immediate area affected by the jetties is predominantly rural, the area affected by jetty failure extends to Portland and beyond.

Socio-economic data for the region can be found in various documents (see list above) and is not presented here. The nearest communities are Ilwaco in Washington and Astoria in Oregon.

Both jetties border State parks. In Oregon, Fort Stevens State Park is located on Clatsop Spit. Fort Canby State Park is located on Cape Disappointment in Washington. Lands adjacent to the jetties are administered by the Corps of Engineers and leased to the respective States. Recreational use includes sightseeing, bicycling, hiking, beachcombing, nature observation, and jetty and beach angling.

The jetties themselves are more than 50 years old and therefore "historic". They are not presently listed on the National Historic Register, but may be eligible for listing under National Register Criteria (a) "associated with events that have made a significant contribution to the broad patterns of our history."

5. Environmental Effects

The environmental impacts associated with the proposed action would be minor because the rehabilitation work is to an existing structure within a limited area within the original footprint and will not impact any significant benthic habitat. Some short-term loss of microhabitat will occur during the construction period but will be replaced by the completion of the proposed action. For rehabilitation, the North Jetty will require 200,000 to 300,000 tons of stone placed over the existing rock to complete this task. The South Jetty, which has experienced a significant loss from wave action and erosion, will require 300,000 to 500,000 tons of stone.

The proposed activities are expected to have minimal affects on wildlife species of the area and may affect listed fish species. An increase in suspended sediments in the water column is expected during the construction period; however, this impact is expected to stay within acceptable levels for fish and wildlife species of concern. Disturbed material would primarily be sand, which would settle quickly. Avoidance of the area may occur throughout the construction period as a result of the increased activities and noise, but all species would be expected to return following project completion. No significant adverse affects on any listed/candidate threatened or endangered species are anticipated.

Construction is expected to occur year-round. Some work would occur during appropriate in-water work periods determined by fishery agencies to minimize impacts to fish, wildlife and habitat; most of the work would occur outside these periods. Based on the analysis of the effects and consideration of environmental impact reduction measures that would be implemented to avoid and reduce effects, the Corps determined that the proposed project actions either would not

affect, or “may affect, but is not likely to adversely affect” with regard to listed wildlife species, and is likely to adversely affect listed salmonids. These impacts are expected to be intermittent in nature due to construction impacts.

Public access to the north and south jetties and adjacent beach will be closed or restricted during the construction period. Placement of the staging area near the base of the jetties, using State park parking lots and adjacent upland beaches for work areas and rock storage areas, will likely cause some inconvenience to park visitors during the construction period.

Off-loading rock from barges alongside the jetties would involve temporary disturbance of the benthos due to placement of pilings or dolphins and barge traffic. The pilings would be removed once construction is complete. Both placement and removal could cause minor temporary increases in turbidity. Because the contractor will determine the method of transporting material and equipment to the site, the route taken for road travel will not be known until the contract is awarded. The contractor will, however, be required to comply with all State and local regulations pertaining to the use of those roads.

The rock source will be determined by the contractor and as a result all the impacts resulting from the quarry activities cannot be predicted. It is expected that quarry activities would result in increased noise, dust, and traffic congestion in the vicinity of the quarry. Also, given the size of the jetty stone, repeated trips along the haul route could damage local roads.

Impacts to the construction staging areas should be minimal. The areas are beach with European beach grass, and as a result would not require much preparation. The sites will be restored following project completion. Temporary access roads, to haul equipment and rock up to the jetties would also be placed on beach sands. For the North Jetty, the access road would be located to avoid nearby swales. The South Jetty access road likely would be for equipment only (rock would be barged in) and would cross a tidal drainage route. A temporary culvert would be placed to accommodate tidal flow. The access road and culvert would be removed and the area restored to its pre-project condition.

The intertidal wetland located adjacent to the North Jetty, is affected by the jetty which delays water getting in and out of the area. The wetland area that may be filled consists of scattered conifers and minor deciduous tree components. Vegetation in the area consists of scotch broom and European beach grass. There is a narrow fringe of emergent marsh vegetation between subtidal and upland zones. On top of the jetty, there are a few scattered conifers and pockets of deciduous scrubs that have established a foothold atop the jetty stones.

Aquatic Life Forms

Various aquatic life forms utilize the jetties and surrounding area as habitat or migratory routes. These organisms, such as crabs, would temporarily be disturbed by construction activities. New rock would displace existing habitat and would, in time, provide new and additional habitat. Mobile organisms would avoid the area during construction. Non-mobile life forms such as algae, barnacles and benthic invertebrates would be lost as they are covered by new rock. These organisms would recolonize the area habitat quickly.

Listed Marine and Terrestrial Wildlife

It has been determined that there would be no effect on humpbacked, blue, Fin, Sei, right and sperm whales, leatherback and loggerhead sea turtle, western snowy plover, Columbian white-tailed deer, and Oregon silverspot butterfly. A determination of “may affect, but is not likely to adversely affect” has been made for Steller sea lion, bald eagle, brown pelican and marbled murrelet.

Listed Anadromous Fish

Both juveniles and adults of the listed species will be in the vicinity of the project area during the rehabilitation work. Though it is unlikely that they will occur close enough to the work area to be directly impacted by the construction activities it is likely that they will be disturbed during migration by the construction noise and turbidity generated during rock placement. Vibration and noise generated by constructing the mooring dolphins, offloading the rock and the placement of jetty stone and larger rock may displace or otherwise harass both adult and juvenile salmon during their migration. The extent of this potential impact cannot be quantified; however, it is expected to be small since the area impacted is small compared to the width of the MCR area. In addition, the impacts are intermittent, only occurring for short periods of time followed by longer periods of no vibration or noise while the piles or rocks are being prepared for the next activity. Consequently, it is likely that salmon can easily avoid the impacts from these activities and the short- and long-term effects would be minimal.

Temporary increases in suspended sediment and resultant turbidity from driving piles during the construction of the barge off-loading platform, the placement of the platform itself, the placement of jetty stones and larger rocks may also impact salmon. These increases in suspended sediment will generally be limited to the construction area and will be low and of short duration, as compared to baseline levels. Alteration of bottom habitat by pile driving or the placement of stone in the jetty areas will not impact salmon since these areas do not provide much of any valuable resting or feeding areas. The MCR is an active migration corridor and it is not likely that juvenile salmon are feeding to any extent in this area. Based on the above it is anticipated that MCR jetty rehabilitation will only have a minor impact on salmon. Consequently, the impact to the listed species is expected to be small and of short duration. A determination of “may affect, likely to adversely affect” has been made and a Biological Assessment submitted to NOAA.

Essential Fish Habitat

Based on the Essential Fish Habitat (EFH) requirements for the managed species of salmon, ground fish and coastal pelagics species, the potential direct, indirect, and cumulative effects of the proposed jetty maintenance project are not likely to adversely affect the total EFH for the managed species. Most of the EFH for the managed species would not be affected, or be minimally affected, because the jetties do not provide much habitat. Various species of rock fish could utilize the jetties, either as juveniles or adults, depending on the species. However, due to the abundance of rocky habitat and the short duration of construction activities in any one

location, any impact would be temporary, and be primarily one of avoidance of the immediate area. Rehabilitation would increase the amount of rocky habitat available after construction.

Recreation

Recreation at both State parks could be slightly affected. Heavy equipment using park roads and parking lots could delay or inconvenience visitors. Jetties would be closed or restricted to sightseers and anglers during construction. Construction activities themselves may attract some sightseers.

Cultural Resources

Cultural resources potentially affected by the proposed actions include shipwrecks. Jetty site evaluations have concluded that shipwrecks or remnants do not occur at these locations (U.S. Army Corps of Engineers, 1998). The jetties themselves are historic; however, they are typical rock jetties and currently not listed in the National Register. Rehabilitation of the jetties would preserve their historic function.

6. Coordination

This Environmental Assessment (EA) is being issued for a 30-day public review. Comments are requested from the following:

- Department of Land Conservation Division
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- National Marine Fisheries Service (NOAA Fisheries)
- Oregon Department of Environmental Quality
- Oregon Department of Fish and Wildlife
- Oregon Department of Parks and Recreation
- Oregon Division of State Lands
- Oregon State Historic Preservation Office
- Washington Department of Ecology
- Washington Department of Natural Resources
- Washington State Historic Preservation Office
- Washington State Parks and Recreation Commission
- Lower Columbia River Port Districts
- CREST
- Clatsop County, Oregon
- Pacific County, Washington
- Columbia River Crab Fishermen's Association
- Tribes

7. Consultation Requirements

a. **Clean Water Act of 1977 (33 U.S.C.):** A Section 404 (b)(1) Evaluation has been prepared to address the proposed discharge of dredged material into a water of the United States and is attached to the public notice. State Water Quality certification will also be obtained as required under Section 401 of the Act from both the States of Oregon and Washington. Temporary placement of a culvert in waters of the U.S. to access the South Jetty is addressed by Nationwide Permit number 33, Temporary Construction, Access and Dewatering. This NWP has received certification by the State of Oregon. Under Section 402, National Pollution Discharge Elimination System permits for construction runoff will be required from both the states of Oregon and Washington since the ground disturbance at both the north and south jetties work sites exceeds one acre. The Corps will be acquiring the NPDES permit from both the states of Washington and Oregon.

b. **Coastal Zone Management Act of 1972, as amended:** The proposed project is located within coastal zone of both Oregon and Washington. Consistency determinations that have addressed applicable enforceable policies of the approved programs have been submitted to both States in accordance with Section 307 of the CZMA.

c. **Endangered Species Act of 1973, as amended:** In a letter dated June 5, 2002, the U.S. Fish and Wildlife Service (USFWS) listed the marbled murrelet, bald eagle, western snowy plover, and brown pelican as threatened and endangered species which may occur in the project area. The Oregon silverspot butterfly and Columbian white-tailed deer were also listed. Under jurisdiction of the National Marine Fisheries Service, now referred to as National Oceanographic Atmospheric Administration Fisheries (NOAA Fisheries), are included gray, humpback, blue, fin, sei, right, and sperm whales; leatherback sea turtles; northern (Steller) sea lion; and 12 ESUs of salmonids. Biological Assessments (BA) have been prepared and determination made that the proposed action either does not affect, or may affect, but is not likely to adversely affect, or may affect, is likely to adversely affect but will not jeopardize any listed or candidate species. BAs have been submitted for concurrence with these determinations.

d. **Fish and Wildlife Coordination Act:** In compliance with this act, the proposed action is being coordinated with USFWS, NOAA Fisheries, the Oregon Department of Fish and Wildlife, and the Washington Department of Fish and Wildlife. A Fish and Wildlife Coordination Act Report is not required for operations and maintenance work.

e. **Magnuson-Stevens Fishery Conservation and Management Act.** An Essential Fish Habitat (EFH) consultation is necessary. An EFH evaluation has been prepared and submitted to NMFS.

f. **Marine Protection, Research, and Sanctuaries Act of 1972, as amended:** The proposed action does not involve the transportation of dredged material for the purpose of ocean disposal; therefore, this act does not apply.

g. **The National Historic Preservation Act of 1966, as amended through 2000:** The proposed project involves repair of the North and South Jetties at the MCR in Oregon and Washington. Both of these structures are older than 50 years. No known prehistoric sites have

been documented within the rehabilitation areas (these areas are most likely accreted ground). Coordination with Oregon and Washington State Historic Preservation Offices (SHPO), per Section 106 and 110 of the National Historic Preservation Act, will be undertaken. Any required coordination with tribes will also be conducted.

h. **Executive Order 11988, Flood Plain Management, 24 May 1977:** The proposed project would not encourage development in or alter any flood plain areas.

i. **Executive Order 11990, Protection of Wetlands, 24 May 1977:** Minimal impacts to a wetland area will be affected by this project. Tidal flow on the Clatsop Spit would be maintained through a temporary culvert under the construction access route.

j. **Analysis of Impacts on Prime and Unique Farmlands:** Not applicable.

k. **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Resource Conservation and Recovery Act (RCRA).** No hazardous, toxic and radioactive waste (HTRW) is known to occur in the proposed project vicinity. Presence of HTRW will be responded to within the requirements of the law and USACE regulations and guidance.

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- U.S. Army Corps of Engineers, Portland District. 2002c. Biological Assessment for Bald Eagles, Western Snowy Plovers, Brown Pelicans, Marbled Murrelets, Columbian White-tailed Deer and Oregon Silverspot Butterfly for the Maintenance Dredging and Use of Ocean and Shoreline Dredged Material Disposal Sites at Mouth of the Columbia River Federal Navigational Channel (MCR) Clatsop County, Oregon and Pacific County, Washington.

U.S. Army Corps of Engineers, Portland District. 1998. Dredged Material Management Plan & Supplemental Environmental Impact Statement. Final. Portland, Oregon. 1998.

U.S. Army Corps of Engineers, Portland District. 1983. Columbia River at the Mouth Navigation Channel Improvement, Final Environmental Impact Statement, Oregon-Washington.

Figures

Figure 1 – Columbia River Jetty System

Figure 2 – South Jetty

Figure 3 – North Jetty

Figure 4 – Plan View of South Jetty

Figure 5 – Plan View of North Jetty

Figure 6 – North Jetty Cross-Section

Figure 7 – South Jetty Cross-Section

Figure 8 – South Jetty Profile View of Barge Off-Loading Platform

Figure 9 – North Jetty Profile View of Barge Off-Loading Platform

Figure 10 – South Jetty Breach Shoaling Scenario

Figure 11 – North Jetty Breach Shoaling Scenario