

**Lincoln Park Beach Re-Nourishment
Seattle, King County, Washington
Draft Environmental Assessment
July 23nd, 2002**

Responsible Agency: The responsible agency for this project is the Seattle District, U.S. Army Corps of Engineers (Corps).

Abstract: This draft environmental assessment evaluates the potential impacts of the proposed placement of 1,750 cubic yards (cy) of select gravel and sand substrate onto 0.75 of an acre of Puget Sound beach, including upper intertidal areas, at southern Lincoln Park in Seattle, Washington. The proposed work would occur in the fall of 2002.

THE OFFICIAL COMMENT PERIOD ON THIS ENVIRONMENTAL ASSESSMENT
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DRAFT ENVIRONMENTAL ASSESSMENT
for
BEACH RE-NOURISHMENT
at
LINCOLN PARK, SEATTLE, WASHINGTON

July 23, 2002



**US Army Corps
of Engineers** ®
Seattle District

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BE: Biological Evaluation	MLLW: mean lower low water
CFR: Code of Federal Regulations	NEPA: National Environmental Policy Act
DPS: distinct population segment	NMFS: National Marine Fisheries Service
EFH: Essential Fish Habitat	USC: United States Code
ESA: Endangered Species Act	USFWS: United States Fish and Wildlife Service
ESU: evolutionarily significant unit	
FWCA: Fish and Wildlife Coordination Act	

1. INTRODUCTION

The United States (U.S.) Army Corps of Engineers (Corps) proposes place 1,750 cubic yards (cy) of select gravel and sand substrate onto 0.75 of an acre of Puget Sound beach, including upper intertidal areas, at southern Lincoln Park in Seattle, Washington. The proposed work would occur in the fall of 2002. In accordance with the National Environmental Policy Act (NEPA), this document examines the potential impacts of the proposed beach re-nourishment.

2. BACKGROUND

2.1. Project Location

Lincoln Park is located in King County, Washington, within the City of Seattle. The 130-acre park is operated by the Seattle Department of Parks and Recreation and bordered by the East Passage of Puget Sound on the west and by Fauntleroy Way on the east.

2.2. Project History

In the 1930's, the Works Progress Administration constructed a cobblestone and concrete seawall along the Lincoln Park shoreline. In subsequent years, erosion and scour lowered the beach profile along the southwestern beach and damaged the seawall (Figure 1). In the early 1980's, the beach had almost completely eroded down to a hardpan layer of clay, and portions of the seawall had collapsed. Complete loss of the seawall would have likely led to loss of important infrastructure, including a 30-inch diameter sewer force main, and a variety of park amenities behind the seawall. As a long-term solution to address the shoreline erosion, the Corps and the City of Seattle (the City) initiated the Lincoln Park Beach Re-Nourishment Project.



Figure 1. Lincoln Park seawall and steps in 1975 prior to the first beach nourishment project.

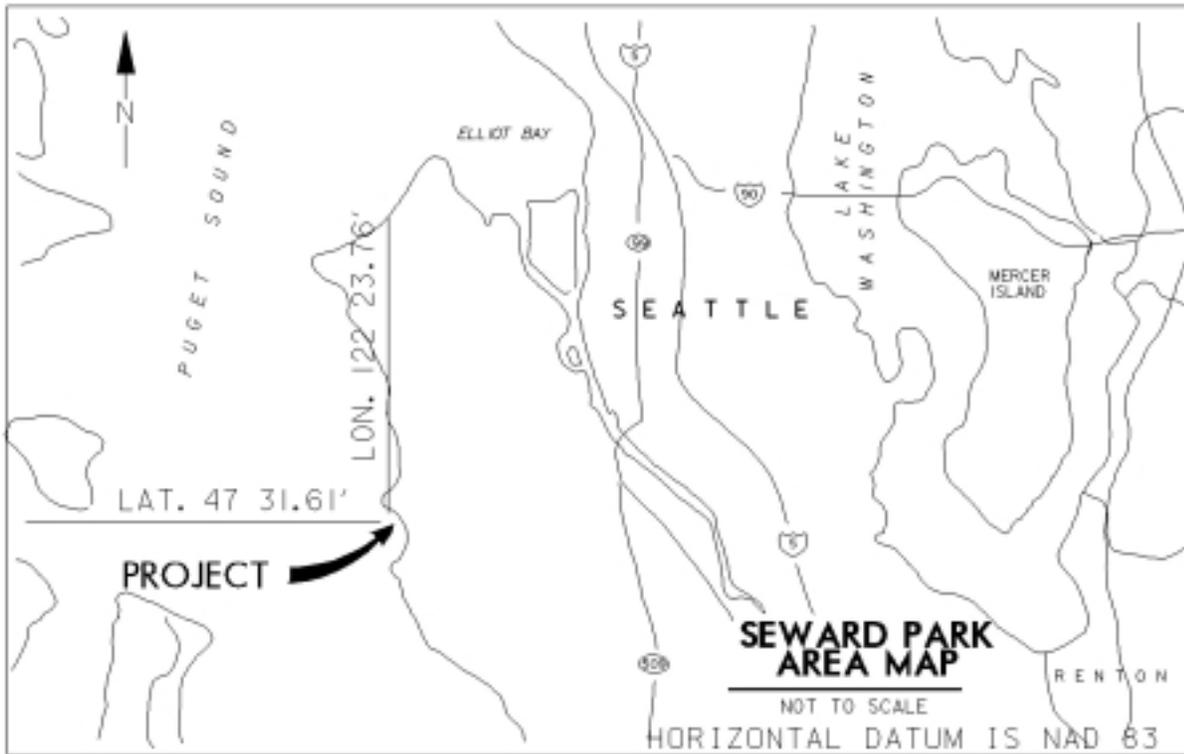


Figure 2. Location and Vicinity Map

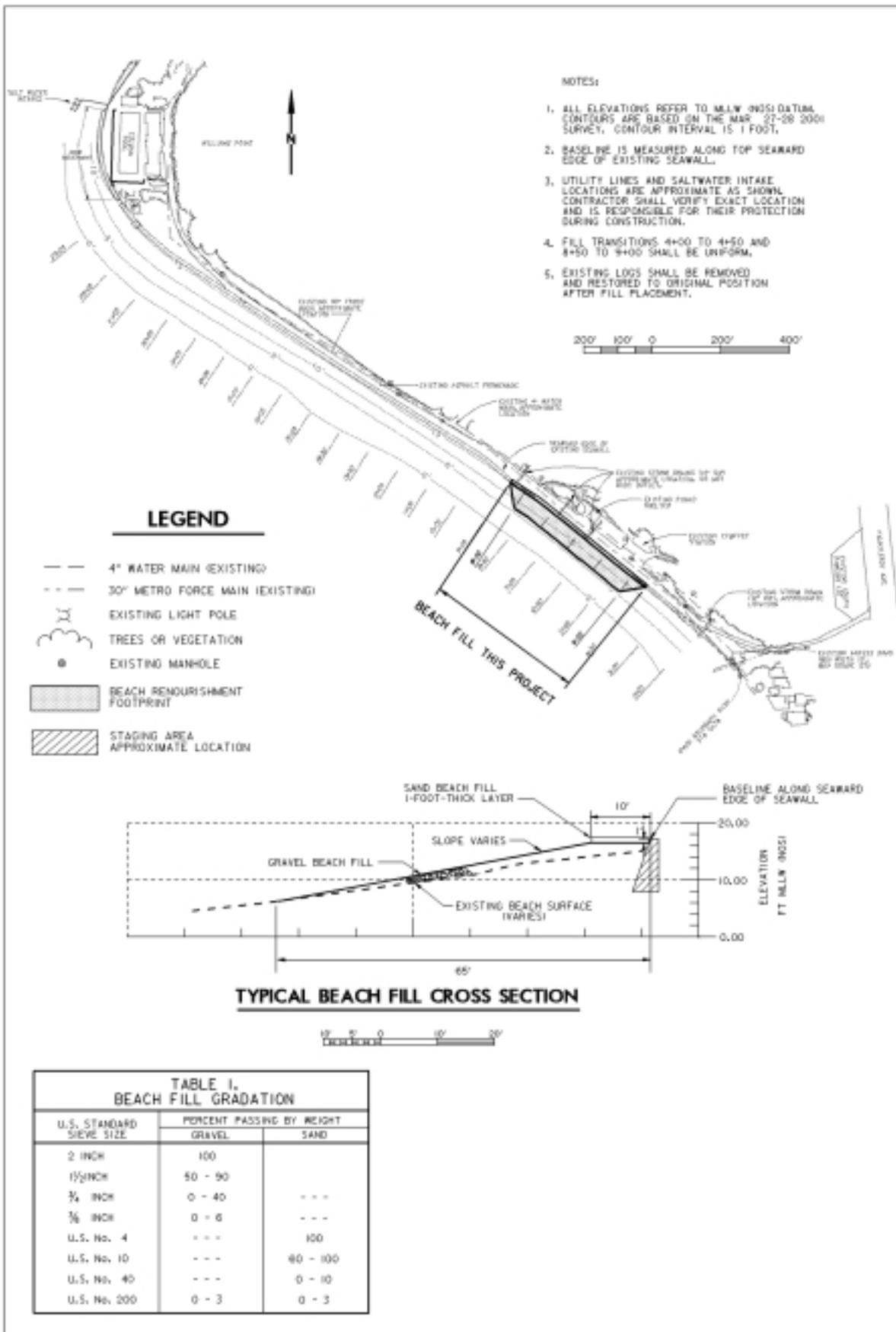


Figure 3. Plan and Section Views

The first phase of the project was constructed in 1988, with placement of a 5-foot-thick layer of armor rock placed upon a 2-foot-thick quarry spall filter blanket along 250 feet of beach at Williams Point; and beach nourishment consisting of 18,000 cy of sand and gravel along 2,300 feet of beach south of the point and 1,000 cy along the 250 feet of rock revetment. The substrate placement created a gravel beach along the Lincoln Park shoreline where erosion had previously scoured all substrate down to a hard clay layer at the toe of the seawall.

The authorizing document for original construction programmed periodic beach nourishment for project year 5 (the fifth year following project construction), or as necessary, and approximately every 5 years thereafter, with major rehabilitation of the revetment at project year 25 of the 50-year project life. The initial construction was designed to re-create a beach at the site and with the realization that periodic substrate re-nourishment would be needed. The first re-nourishment event occurred in October-November of 1994 and consisted of placement of 3,321 cy of coarse beach fill (gravel larger than $\frac{3}{8}$ -inch diameter) and 1,923 cy of fine beach fill (pit run sand and gravel) placed along the seaward side of the existing seawall for a distance of 1,800 feet north from the southern park boundary.

2.3. Project Authority

The proposed project is authorized under Section 103 of the Rivers and Harbors Act of 1962, as amended, and the Seattle 123 Bond Issue of 1984. The authority includes maintenance of the Lincoln Park shoreline through periodic beach re-nourishment, subject to local sponsor cost sharing, and periodic rock revetment rehabilitation by the local sponsor.



Figure 4. Lincoln Park beach in southern part of project area, November, 2001. Compare the elevation of the beach on the steps to the 1975 conditions shown in Figure 1.

2.4. Need and Purpose

Periodic beach re-nourishment is necessary to maintain the shoreline processes re-established by the initial beach nourishment and to prevent the storm damage and loss of public property at Lincoln Park that would result from scour and erosion. The proposed project would replace substrate lost since the last re-nourishment event in 1994, thereby protecting public property from damage and loss. While the beach profile maintains the top elevation just below the top of the seawall (Figure 4), the width of the top bench of the beach in the project area is 5 to 8 feet narrower than adjacent sections, indicating ongoing erosion and the need for additional material to perpetuate natural beach-forming processes.

3. DESCRIPTION OF PROPOSED PROJECT

The proposed project consists of placing approximately 250 cy of fine beach fill and 1500 cy of coarse beach fill material along 500 feet of the Lincoln Park shoreline. The substrate would be placed on the beach between 400 and 900 feet from the park's southern boundary (see Figures 1 and 2). Coarse material would be placed waterward of the break in beach slope and finer material placed on the level bench at the upper part of the beach just seaward of the seawall. Material placement would require a barge with conveyor off-loading capability, a small hydraulic excavator to remove and replace drift logs, and a small bulldozer to grade the new substrate. A barge would deliver all equipment and materials to the work area and construction activity would be confined to the approximate 65- by 500-foot project footprint (32,500 square feet or 0.75 acre). By restricting site access and the size of the work area, disruptions to aquatic biota would be minimal. Construction is anticipated for October 2002, to coincide with daytime high tides and lower park use. Once started, construction is expected to take about 1 week. See Appendix A for photographs of the 1994 construction. Due to the smaller size of the proposed project, the barge and conveyor would likely be smaller than that used in 1994 but the techniques used would be similar.

4. OTHER ALTERNATIVES CONSIDERED

4.1. No Action

Under the "No Action Alternative," no additional substrate would be placed at Lincoln Park. Erosion of the southwest beach would continue and the beach conditions, over time, would begin to resemble the pre-nourishment shoreline in the mid-1980's. The seawall and the infrastructure it protects would be increasingly vulnerable to damage from discrete storm events as well as long-term beach erosion. The beach would gradually become steeper and the area and value of intertidal habitat would be reduced as a result. Sub-tidal habitat would increase complementary to the loss of intertidal area. The "No Action Alternative" would not meet the need and purpose of the project.

4.2. Substrate Placement on 1000 Linear Feet of Beach

Preliminary survey of the site in early 2001 indicated that about 2250 cy of material had eroded from the southwest beach since the 1994 construction. The preliminary plans called for placement of approximately 2000 cy of additional beach substrate along the southern 1000 feet of the southwest beach between Stations 2+00 and 12+00. Subsequent investigations revealed that the existing beach profile adequately protects the seawall except along 500 feet of beach

between Stations 4+00 and 9+00 (the proposed project). Placement of 2,000 cy of material would cause more temporary construction impacts in the nearshore environment and exceeds the scope necessary to meet the project's need and purpose. Accordingly, this alternative will not be considered further.

4.3. Placement of Sandy Material On 500 Lineal Feet of Beach

The substrate placed on the beach could consist of finer, sandier particles instead of the proposed gravel. The resulting sandy beach may provide short-term recreational benefits. However, the prevailing wave and current energy along the southwest beach would soon mobilize the sandy material, resulting in rapid erosion and the return of the beach to pre-project conditions. Placement of sandy material would meet the need and purpose of the project, but would entail future re-nourishment events every one or two years, and the associated impacts from the more frequent construction. Also, larger storms may erode large amounts of sand in a short period of time, necessitating emergency actions to protect the seawall and infrastructure. Such emergency actions may occur at inopportune times of year from the standpoints of environment or recreation, and may not allow careful planning to avoid impacts to important resources. Accordingly, this alternative will not be considered further.

5. EXISTING CONDITIONS

5.1. Physical Characteristics

Lincoln Park is a heavily wooded and intensely landscaped park consisting of three distinct geographic areas: flat uplands, steep bluffs, and gently sloping beaches (see cover photograph). Park facilities include playfields, jogging and interpretive footpaths, picnic shelters, parking lots, restrooms, an outdoor 50-meter saltwater swimming pool (Colman Pool), and an easily accessible saltwater beach. Williams Point, extending into East Passage about midway between the north and south park boundaries, represents the most prominent point of land between Alki Point (about 3 miles to the north) and Brace Point (about $\frac{3}{4}$ mile to the south).

The 5,350 foot long shoreline of the park can be divided into three separate areas: a 2,700-foot-long northwest beach, the 250-foot-long beach at Williams Point, and a 2,300-foot-long southwest beach. A concrete and cobblestone seawall is located generally landward of the high tide line and extends the entire length of the Lincoln Park shoreline. A narrow strip of beach vegetation extends waterward of the seawall. In most areas of the beach, the vegetation strip is more than 10 feet wide (Figure 5). In the project area, the strip of beach vegetation is less than about 5 feet wide or entirely absent (Figure 6). Landward of the seawall, a paved asphalt pedestrian promenade/service road extends northward from the south park boundary along the shoreline. The paved promenade/service road provides access to public restrooms, picnic shelters, and associated utility lines. Shoreline access to the northwest beach north of Colman pool is possible by a footpath that originates near Colman pool.

A revetment on the highest part of the Williams Point beach protects Colman Pool. The southwest beach is primarily gravel, the substrate that was placed during previous nourishment events, with a small shelf between the steeper gravel beach and the seawall with a sand surface, driftwood, and sparse vegetation (such as beach grass, *Ammophila* sp.; Scot's broom, *Cytisus*



Figure 5. Strip of beach vegetation north of the project area (June, 2001).



Figure 6. Strip of beach vegetation within project area (June, 2001).

scoparius; and blackberry, *Rubus discolor*). The northwest beach has a coarse sand surface and extends up to the edge of the seawall with very little driftwood accumulation or vegetation.

5.2. Water Quality

Water quality in East Passage is generally good, particularly considering the urban nature of the Seattle shoreline. Elevated levels of fecal coliform have been documented, primarily in months with high rainfall, at the King County water quality sampling station at Lincoln Park (King County DNR, 2002). Fecal coliform levels in nearby Fauntleroy Cove commonly exceed state water quality standards for Class AA waters. Potential nearby sources of water quality degradation include urban runoff, several outfalls discharging to Fauntleroy Cove, and turbidity generated by ferry operations occurring about $\frac{1}{4}$ -mile from the southern park boundary.

5.3. Natural Resources

5.3.1. Eelgrass

Eelgrass (*Zostera marina*) beds are present just offshore and north of the project area and in shallow waters all along the Puget Sound shoreline of Seattle. The eelgrass distribution along the southwestern shoreline is highly irregular with some large, dense patches and other areas of sparse colonization. Some of the existing eelgrass results from transplant efforts done in 1993.

A survey of the intertidal zone was completed in spring of 2002 during a low tide of -2 feet (mean lower low water or MLLW). Four patches of eelgrass located at elevations at or below MLLW were observed within 300 feet of the southern park boundary. The largest eelgrass patch encompassed about 3 square feet. The eelgrass patches occur within a mosaic of dense algal growth. A cursory survey of the beach did not reveal any eelgrass within the limits of the proposed project (between 400 and 900 feet from the southern park boundary).

5.3.2. Macroalgae

A sparse bed of bull kelp (*Nereocystis luetkana*) lies offshore of the southwest beach at Lincoln Park. A large kelp bed occurs north of Point Williams. While the density of the bull kelp in this area has decreased precipitously since the mid-1980's, the distribution of the kelp does not appear to have substantially changed over the same time frame (Antrim and Thom, 1995). In 1996, *Laminaria* kelp was observed in many places where bull kelp was observed in previous years (EPA, 1996).

In the intertidal zone in the vicinity of the project area, a variety of algal species occur. In the upper intertidal zone (above +6 feet, MLLW), the gravel beach is mostly bare of algae. At lower elevations, the substrate changes to cobble. *Ulva* and *Enteromorpha* dominate the zone between about +6 and -2 feet (MLLW). Between +2 and -2 feet (MLLW) and lower, a mix of *Laminaria*, *Iridea*, *Fucus*, and *Sargassum muticum* almost completely covers the substrate.

5.3.3. Fish

Cutthroat trout (*Oncorhynchus clarki clarki*) and chinook (*O. tshawytscha*), chum (*O. keta*), and pink salmon (*O. gorbuscha*) feed and rear in nearshore areas like that present in the project area. Juvenile salmonids feed on epibenthic invertebrates in the intertidal zone. Adult salmonids

migrate along the shoreline during the late summer to early winter months. Fauntleroy Creek, about ¼ mile south of the southern park boundary, supports a run of coho salmon that was re-introduced in 1991 as part of the Salmon in the Classroom program (Fauntleroy Watershed Council, 2002). In recent years, between 125 to 170 adult coho have returned to Fauntleroy Creek (Fauntleroy Watershed Council, 2002).

In addition to salmonids, marine fish such as a variety of surfperch (Embiotocidae), flatfish (Pleuronectiformes), gunnel (Pholididae), prickleback (Stichaeidae), and rockfish (*Sebastes* sp.) species occur along Puget Sound shorelines. Common species that likely utilize the Lincoln Park nearshore habitat include striped perch (*Embiotoca lateralis*), surf smelt (*Hypomesus pretiosus*), staghorn sculpin (*Leptocottus armatus*), English sole (*Parophrys vetulus*), copper rockfish (*Sebastes caurinus*), and cabezon (*Scorpaenichthys marmoratus*). The intertidal and shallow subtidal zones provide feeding and rearing habitat for young marine fish and offer feeding and spawning habitat for mature adult fish. As with salmonids, the benthic invertebrate resources in nearshore areas provide abundant prey for marine fish.

5.3.4. Birds

Shallow nearshore waters and intertidal sediments in the project area produce fish, vegetation, and invertebrate forage for a variety of waterfowl, gulls, shorebirds, and other marine birds. Bird species known to occur offshore of Lincoln Park include black brant (*Branta bernicla nigricans*), common goldeneye (*Bucephala clangula*), harlequin duck (*Histrionicus histrionicus*), white-winged scoter (*Melanitta fusca*), marbled murrelet (*Brachyramphus marmoratus*), and rhinoceros auklet (*Cerorhinca monocerata*). With the exception of black brant (which prefer eelgrass and algae), these birds feed primarily on crustaceans, mollusks, and small fish.

Birds that frequent the Seattle portion of the Puget Sound shoreline must adapt to a moderately high level of disturbance. In the vicinity of the project site, the disturbance level is moderate and ranges from pedestrians (some with dogs) to regular ferry dockings at the nearby ferry terminal (with berthings approximately every 30 minutes between 5:30 a.m. and 11:25 p.m.).

5.3.5. Shellfish

The Lincoln Park intertidal area provides habitat for a variety of mollusks including butter clams (*Saxidomus gigantea*), littleneck clams (*Protothaca staminea*), macoma clams (*Macoma* spp.), and common cockle (*Clinocardium nuttalli*); and crabs including Dungeness crabs (*Cancer magister*) and red rock crab (*Cancer productus*). The Washington State Department of Health advises against shellfish harvest on any beach on the eastern shore of Puget Sound between Everett and Tacoma. Shellfish harvest on the Williams Point beaches is closed due to unsafe shellfish conditions.

5.3.6. Sensitive, Threatened and Endangered Species.

In accordance with Section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed and proposed threatened or endangered species. Several species protected under the Act are potentially found in Puget Sound in the Seattle area (Table 1). Information on the life histories and occurrence of these species in the project area can be found in the Biological Evaluation (BE) prepared for the proposed project. This document is available

online at <<http://www.nws.usace.army.mil/ers/envirdocs.html>> and is briefly summarized in section 6.3.5.

Table 1. ESA Protected Species Potentially Occurring in the Project Vicinity

Species	Listing Status	Critical Habitat
Bald Eagle <i>Haliaeetus leucocephalus</i>	Threatened	—
Marbled Murrelet <i>Brachyramphus marmoratus</i>	Threatened	Designated
Coastal/Puget Sound Bull Trout <i>Salvelinus confluentus</i>	Threatened	—
Puget Sound Chinook Salmon <i>Oncorhynchus tshawytscha</i>	Threatened	—
Steller Sea Lion <i>Eumetopias jubatus</i>	Threatened	Designated
Humpback Whale <i>Megaptera novaeangliae</i>	Endangered	—
Leatherback Sea Turtle <i>Dermochelys coriacea</i>	Endangered	Designated
Puget Sound/Strait of Georgia Coho Salmon <i>Oncorhynchus kisutch</i>	Candidate	—

5.4. Native American and Cultural Resources Sites

No archaeological, historical, or cultural resource sites occur in the project area. The project would occur entirely on top of substrate that was placed during the two previous beach nourishment events that have occurred since 1988.

5.5. Land Use

Park visitors intensively utilize the project area for a variety of recreational activities (see Paragraph 5.6). Surrounding land uses are primarily residential, with the exception of the Fauntleroy ferry terminal for the Washington State Department of Transportation Ferry System located about 1/4 mile south of the southern park boundary.

5.6. Recreation

In the vicinity of the project area, Lincoln Park amenities include picnic shelters, Colman Pool, the pedestrian walkway/promenade, restrooms, and trails leading up the bluff that overlooks Puget Sound. Heaviest use occurs from late spring to fall, but small numbers of people use the park even during the winter. Colman Pool is open during the summer only.

6. EFFECTS OF THE PROPOSED ACTION

6.1. Physical Characteristics

The rate of beach erosion appears to be slowing as the beach evolves toward a geomorphological equilibrium since the initial beach nourishment. The volume and extent of the proposed

substrate placement (1,750 cy over 500 linear feet of beach) is substantially less than that placed in 1994 (5,244 cy over 1,800 linear feet of beach). The beach appears to be relatively stable and the beach slope is consistent with that which might be expected to occur naturally in this area in the absence of nearby shoreline protection. While the pre-project beach profile appears to be essentially the same along the entire southwestern beach, the top of the sloping beach in the proposed re-nourishment area is much closer to the seawall than in other areas. The narrow width of the top beach shelf indicates some beach erosion has occurred in this area. Although the proposed re-nourishment area would restore the beach contours to the 1994 conditions, the project would not substantially change the beach slope or composition of the substrate.

6.2. Water Quality

The substrate that would be placed on the beach would be free from any pollutants or contamination. Some increased turbidity would likely occur for one or two high tides following placement, but the effects of the turbidity are expected to be minimal due to their localized and temporary nature. Waves, tides, and currents would likely rapidly disperse any turbidity. During construction, equipment operating on the beach would work in the dry and would be inspected daily for leaks or petroleum contamination prior to commencing work. A spill prevention control and containment plan designed to reduce the impacts from potential spills (fuel, hydraulic fluid, etc) would be in place prior to the start of construction. Accordingly, impacts to water quality parameters are expected to be minimal.

6.3. Natural Resources

6.3.1. Vegetation and Macroalgae

Since the initial beach nourishment in 1988, eelgrass and kelp extent and density have changed in areas offshore of the southwestern beach. The observed changes have likely resulted from changes in energy, substrate, and beach stability that occurred following the initial beach construction (Antrim and Thom, 1995). As the beach has stabilized in the 14 years since the initial construction event, the vegetation and macroalgae communities also appear to have stabilized. The size of eelgrass and bull kelp beds has decreased, while the extent of *Laminaria* kelp has increased substantially. The observed shift in kelp species offshore of the southwestern beach may indicate natural macroalgal succession. While bull kelp is an annual, *Laminaria* is a perennial species that displaces bull kelp if the substrate is stable and grazing is sparse.

The bulk of the proposed fill would occur at the highest parts of the beach with “feathering” of the fill prism down to a toe at +6.0 feet (MLLW). The substrate footprint extends no further waterward than elevation +6.0 feet. Eelgrass beds offshore of the project area lie between MLLW and approximately -3.5 feet (MLLW), with bull kelp growing at bottom elevations between -6.0 and -15 feet (MLLW). No eelgrass or kelp occurs in the project footprint.

During construction, a barge would ground on the beach to deliver equipment and material. Construction would be timed during the fall to coincide with relatively calm weather and high daytime tides that would allow the barge to access staging areas in the high intertidal or supratidal zone with no grounding in eelgrass or kelp beds. The barge would deliver gravel directly to the beach with a conveyor belt. The barge would not rest on the bottom below an elevation of -2 feet (MLLW) and would be positioned to avoid grounding on areas with eelgrass.

Construction activities would likely disturb the upper edge of the intertidal zone where *Ulva* and *Enteromorpha* were observed in spring of 2002. Grounding of the barge may indirectly impact the more diverse algae community in the lower intertidal zone. Substantial impacts to eelgrass are not anticipated due to low eelgrass density in the work zone. The impacts to algae would be temporary. Within several months, any disturbed algae are expected to re-grow.

The community dynamics of the algal species in the area may be affected by the proposed project. Since *S. muticum* was noted by algal surveys along the southwest beach in 1994, *S. muticum* abundance in the project vicinity appears to be gradually increasing. The proposed project may speed changes in the algal community by providing an opportunity for additional colonization by *S. muticum*.

The proposed work would cause temporary and minor disturbance to the macroalgae and eelgrass areas in and directly adjacent to the construction area. However, due to the small scope of the proposed re-nourishment and prudent management of the barge, substantial adverse impacts to the existing eelgrass and macroalgal communities are not anticipated.

6.3.2. Fish

During coordination for the earlier construction events, state and Federal agencies expressed concern about potential impacts to juvenile salmonid habitat. The primary ecological functions provided for juvenile salmonids along the shoreline of Lincoln Park are feeding and refuge. Monitoring of the beach following the initial construction event found that the overall density of important salmonid prey items along the southwestern beach is similar to a control beach (Pentec, 1993). By burying the beach surface, the proposed work would temporarily decrease populations of epibenthic organisms within the project footprint. Potential adverse effects would be minimal because the work would occur in the fall as epibenthic production seasonally decreases, the project footprint represents only a small proportion of the available foraging habitat in the vicinity, and any dip in epibenthic abundance would be short-term.

Peak abundance of juvenile salmonids at the project site occurs in the spring. Salmonids may occur in the vicinity of the project when the work would occur but these fish would likely be larger and not heavily dependent upon the nearshore environment.

The proposed construction would occur just prior to the peak of the migration of adult coho salmon returning to Fauntleroy Creek (Lynch, 2002). Although adult coho may orient along the shoreline during their migration, they are not specifically dependent upon the nearshore during migration. Coho may stage near the creek prior to their terminal migration but the project is likely too far from the creek mouth to be considered an important staging area. In-water disturbance during construction would be minimal and, in any event, much less magnitude than the regular ferry dockings at the terminal directly adjacent to the creek.

Sand lance and surf smelt spawn on beaches bracketing either side of the Fauntleroy ferry terminal. The beaches in these areas have a finer, sand substrate than that along the southwestern beach of Lincoln Park. Typically, sand lance and surf smelt prefer a beach substrate substantially less than 1-inch-diameter; pea gravel or smaller sized substrate is ideal. The beach substrate at Lincoln Park is larger than 1-inch-diameter and unlikely to be utilized by sand lance or surf smelt. Adverse effects to other marine fish are not anticipated since the work would

occur at relatively high elevations (higher than +6.0 feet, MLLW), the disturbance would be temporary, and the project area is small.

6.3.3. Birds

The proposed construction would slightly increase activity over ambient levels. Some displacement of birds may occur. Due to the small size of the project, construction disturbance would be limited in size and duration. Birds moving from the vicinity of the project would not be displaced from locally important habitat. The completed project would not change habitat features important to bird life. Overall, adverse impacts to birds are not anticipated as a result of the proposed work.

6.3.4. Shellfish

Monitoring following the 1988 beach nourishment found no effects of the work on shellfish resources at Lincoln Park (Antrim *et al.*, 1993). The proposed work would be much smaller in scope and should not affect shellfish occurring in the vicinity.

6.3.5. Sensitive, Threatened and Endangered Species.

There is an eagle nest approximately ¼-mile north of the project area. Due to the small size of the project, the timing and short duration of construction, and the restorative nature of the project, we have concluded that the project is not likely to adversely affect bald eagles, marbled murrelets, bull trout, chinook salmon, and Steller sea lions. To avoid adverse effects to these species, construction would occur during the period of August 16 to October 31. Additional conservation measures taken to avoid impacts to salmonids and eagles include management of the construction barge to avoid grounding, allowing work during daylight hours only, and replacement of all beach logs removed during construction. Humpback whale, and leatherback sea turtle would not be affected by the proposed work since they do not utilize the action area for the project. The BE contains more details about the project's potential effects on threatened, endangered, and sensitive species.

6.4. Native American and Cultural Resources Sites

The proposed project would have no effect on Native American and cultural resource sites since no such resources occur in the project area. The work would not adversely affect salmonid populations or impair fishing sites reserved by treaties for Native American use.

6.5. Land Use

During construction, public access to a portion of the Lincoln Park shoreline would be restricted. Construction would take place during the fall when park use is relatively low. After construction, use of land in the vicinity would be unaffected by the new beach substrate. The proposed project would not affect land use in areas adjacent to the project area, including the Fauntleroy ferry terminal or nearby residential properties.

6.6. Recreation

The project would occur during low-use months at Lincoln Park. Also, during the winter, most visitors to Lincoln Park utilize the upland areas, not the shoreline. Given the timing and short duration of construction and the small size of the project, substantial impacts to recreation are not

anticipated during the construction period. After construction, recreational use of the park and shoreline would be the same as before construction.

7. CUMULATIVE EFFECTS

The NEPA defines cumulative effects as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR §1508.7).

Although the southwest beach appears to be getting more stable over time, future re-nourishment would likely be necessary. While the exact re-nourishment schedule is dependent upon weather patterns and the frequency of larger storm events, it is reasonable to expect that additional substrate would next be placed on the beach in 5 to 8 years. The amount of re-nourishment would likely be the same or less than that currently proposed. In the interval between nourishment events, the beach would recover entirely from the minor disturbances that would result from the proposed project. As such, subsequent re-nourishment events would be essentially independent of previous projects and would not result in additive beneficial or detrimental effects on the environment in the project area.

The Fauntleroy ferry terminal is scheduled for a major repair and replacement of piling and decking, with in-water work occurring between mid-September to mid-October, 2002. During that time, the Fauntleroy ferry terminal would be closed to ferry traffic. The Fauntleroy ferry terminal work has been closely coordinated with interested groups and agencies to avoid and minimize potential impacts to Fauntleroy Creek (which flows under the landward end of the pier). The ferry terminal work will largely occur in offshore areas or above the waterline. Due to the distance between the beach nourishment and ferry terminal projects and the minor nature of the beach nourishment project, the two projects are not expected to result in synergistic adverse effects on Fauntleroy Cove, adjacent areas, or the resources of these areas.

The Washington State Department of Transportation routinely maintains the Fauntleroy ferry terminal. Typical activities include replacement of piling and dolphins. Routine maintenance at the ferry terminal would require environmental evaluation to minimize the potential adverse construction impacts. Additionally, compared to normal operation, routine maintenance activities would not substantially increase the level of activity at the ferry terminal. Routine maintenance work at the ferry terminal is not expected to interact with the proposed beach re-nourishment project.

Between the ferry terminal and the southern boundary of Lincoln Park, the shoreline is lined with residential properties. Currently, the shorelines of these properties are not armored, allowing relatively natural beach profiles to persist throughout Fauntleroy Cove. The prevailing direction of the alongshore current in the project vicinity is from the south. Over time, the nearshore currents and waves are capable of mobilizing large quantities of beach sediment, as evidenced by the complete loss of the Lincoln Park beach prior to the original beach nourishment event. By stabilizing the beach at Lincoln Park, the proposed re-nourishment helps prevent erosion of beaches to the south by the prevailing winds and currents. For that reason, bulkheads and riprap are not needed to protect the residential properties from erosion. Given the documented adverse environmental effects of marine shoreline armoring and that over half of shorelines in central

Puget Sound have already been armored or otherwise modified (Berry, 2002), preservation of the natural beach grade at the residential properties south of Lincoln Park represents a potential cumulative benefit of the proposed work.

8. TREATY RIGHTS

In the mid-1850's, the United States entered into treaties with a number of Indian tribes in Washington. These treaties guaranteed the signatory tribes the right to "take fish at usual and accustomed grounds and stations . . . in common with all citizens of the territory" [*U.S. v. Washington*, 384 F.Supp. 312 at 332 (WDWA 1974)]. In *U.S. v. Washington*, 384 F.Supp. 312 at 343 - 344, the court also found that the Treaty tribes had the right to take up to 50 percent of the harvestable anadromous fish runs passing through those grounds, as needed to provide them with a moderate standard of living (Fair Share). Over the years, the courts have held that this right comprehends certain subsidiary rights, such as access to their "usual and accustomed" fishing grounds. More than *de minimis* impacts to access to usual and accustomed fishing area violates this treaty right [*Northwest Sea Farms v. Wynn*, F.Supp. 931 F.Supp. 1515 at 1522 (WDWA 1996)]. In *U.S. v. Washington*, 759 F.2d 1353 (9th Cir 1985) the court indicated that the obligation to prevent degradation of the fish habitat would be determined on a case-by-case basis. The Ninth Circuit has held that this right also encompasses the right to take shellfish [*U.S. v. Washington*, 135 F.3d 618 (9th Cir 1998)].

The proposed project has been analyzed with respect to its effects on the treaty rights described above. We anticipate that:

- (1) The work will not interfere with access to usual and accustomed fishing grounds or with fishing activities or shellfish harvesting;
- (2) The work will not cause the degradation of fish runs and habitat; and
- (3) The work will not impair the tribes' ability to meet moderate living needs.

9. IRRETRIEVABLE AND IRREVERSIBLE COMMITMENTS OF RESOURCES

No federal resources would be irreversibly and irretrievably committed to the proposed action until this Environmental Assessment is finalized and a "Finding of No Significant Impact" has been signed.

10. ENVIRONMENTAL COMPLIANCE

10.1. National Environmental Policy Act

Section 1500.1(c) and 1508.9(1) of the National Environmental Policy Act of 1969 (as amended) requires federal agencies to "provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact" on actions authorized, funded, or carried out by the federal government to insure such actions adequately address "environmental consequences, and take actions that protect, restore, and enhance the environment". This assessment evaluates environmental consequences from the proposed placement of substrate along the shoreline of Lincoln Park at Seattle, Washington.

10.2. Endangered Species Act

In accordance with Section 7(a)(2) of the Endangered Species Act of 1973, as amended, federally funded, constructed, permitted, or licensed projects must take into consideration

impacts to federally listed or proposed threatened or endangered species. The potential effects of the project and conservation measures taken to reduce those effects are addressed in more detail in Paragraph 5.3.5 and the BE for the project.

10.3. Clean Water Act Compliance

The proposed work was evaluated pursuant to Section 404(b)(1) of the Clean Water Act in accordance with the guidelines promulgated by the Environmental Protection Agency (40 CFR 230) for evaluation of the discharge of dredged or fill material into waters of the United States. In addition, consideration has been given to the need for the work, and to such water quality standards as are appropriate and applicable by law. Alternatives not requiring the discharge of dredged or fill material into water of the U.S. are not available, practicable, or are more damaging to the aquatic ecosystem (see Paragraphs 3 and 4). The proposed discharge represents the least environmentally damaging practicable alternative and would include all appropriate and practicable measures to minimize adverse effects on the aquatic environment. The work would not result in the unacceptable degradation of the aquatic environment. The proposed action represents the least environmentally damaging, practicable alternative. The discharges and methods specified in the proposed work are in accordance with the Section 404(b)(1) guidelines.

10.4. Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA, 16 USC 470) requires that wildlife conservation receive equal consideration and be coordinated with other features of water resource development projects. This goal is accomplished through Corps funding of USFWS habitat surveys evaluating the likely impacts of proposed actions, which provide the basis for recommendations for avoiding or minimizing such impacts. Requirements of the FWCA were completed during review of the original plans and specifications in 1986.

10.5. Essential Fish Habitat

In accordance with the Essential Fish Habitat (EFH) requirements of the Magnuson-Stevens Fishery Conservation and Management Act, the Corps has determined that the proposed work would impact approximately 0.75 of an acre of EFH utilized by Pacific salmon, groundfish, and coastal pelagic species. We have determined that the proposed action would not adversely affect EFH for federally managed fisheries in Washington waters. The project's BE provides supporting documentation for our determination.

10.6. National Historic Preservation Act

The National Historic Preservation Act (16 USC 470) requires that the effects of proposed actions on sites, buildings, structures, or objects included or eligible for the National Register of Historic Places must be identified and evaluated. The project area does not include any sites listed or eligible for the National Register of Historic Places.

10.7. Clean Air Act

The proposed project has been analyzed for conformity applicability pursuant to regulations implementing Section 176(c) of the Clean Air Act. The proposed activities would not exceed *de minimis* levels of direct emissions of a criteria pollutant or its precursors and are exempted by 40 CFR Part 93.153. Any later indirect emissions are generally not within the Corps continuing

program responsibility and generally cannot be practicably controlled by the Corps. For these reasons, a conformity determination is not required for this project.

10.8. Environmental Justice

Executive Order 12898 directs federal agencies to identify and address disproportionately high and adverse human health or environmental effects of agency programs and activities on minority and low-income populations. No tribal resources would be harmed. No adverse effects to minority or low-income populations would result from the implementation of the proposed project.

11. CONCLUSIONS

Based on the above analysis, this project is not a major Federal action significantly affecting the quality of the human or natural environment, and therefore does not require preparation of an environmental impact statement.

12. REFERENCES

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APPENDIX A

Photographs of 1994 Construction
Equipment & Methods

Loaded Barge Approaching the Lincoln Park Beach in 1994.



Photo 1

Nov 1994

Conveyor unloading beach fill onto the upper beach in 1994.



Photo 2

Nov 1994