

## **1.0 Introduction**

This report presents the monitoring results of a pilot study designed to examine the placement of dredged material in the near shore environment along the Oregon Coast. The pilot study consisted of placing dredged materials from the Mouth of the Columbia River (MCR) navigational channel as a beneficial use at a near shore location. The pilot study was sponsored by the Lower Columbia Solutions Group (LCSG), convened by the governors from the states of Oregon and Washington, which consists of stakeholders interested in and affected by dredged disposal activities in the Lower Columbia River. Stakeholders include commercial crabbers, fishing interests, environmental groups, development interests, the Port of Astoria, and local, state, and federal government agencies including the U.S. Army Corps of Engineers (USACE). The funding for the project was provided by eleven different stakeholders involved in the collaborative effort. The USACE, Portland District provided the dredge Essayons, personnel, and financial support to conduct the pilot project. The Port of Astoria served as the project permittee and contractual agent (in conjunction with the USACE Portland District) for conducting the monitoring of the study area.

### **1.1 Project Background**

The pilot study was designed to evaluate the feasibility of the enhanced disposal of dredged material in a near shore area. This test of the enhanced dumping method was intended to measure per-run ocean-bottom accumulations to verify projected results and help determine the viability of this method. Dredged material from the annual maintenance dredging of the MCR navigational channel was used for the study. The near shore placement area, located to the south of the MCR South Jetty, was selected as a site for the beneficial use of dredged material. Presently, dredged material from MCR maintenance dredging is disposed of at three permitted Ocean Disposal Sites (ODS), including the Shallow Water Site (an expansion of the former disposal Site E), the North Jetty Site, and the Deep Water Site located approximately 6 miles off shore located near the North Jetty of the MCR. Current stakeholder concerns with the existing disposal sites include the limited annual capacity of the SWS and North Jetty Sites, and the removal of material from the littoral zone when disposed at the DWS (Figure 1).

The objective of the pilot study was to evaluate the feasibility of the site-specific beneficial use of the MCR dredged material in the near shore environment. The beneficial uses include:

- Accretion of material in the littoral zone to prevent further erosion to the foundation of the MCR South Jetty. The addition of material to the substrate will help maintain and protect the structural integrity of the jetty by reducing wave energy on the jetty.
- Replenish littoral sands in a previously identified erosive area. Net erosion in the near shore area has resulted in physical changes to the seafloor including exposed ancient laminate clay/mud substrates and increased bottom slope.
- Increase supply of sand substrate for benthic infauna and epibenthic infauna habitat in the near shore area.

## **1.2 Pilot Study Design**

The pilot study design involved the placement of approximately 30,000 cubic yards of dredged material at a new disposal location to the south of the MCR South Jetty. A total of six hopper dredge loads were supplied by the USACE dredge Essayons, placed along six disposal lanes of approximately 6,000 feet long by 500 feet wide. Water depths in the pilot study placement area ranged between -40 to -60 ft mean lower low water (MLLW). The study area is considered a high-energy site, subject to strong currents, tidal influence, and wave action. Material from the hopper dredge was released from approximately 20 to 30 feet below the ocean surface, reducing the potential for lumping and re-suspension of sediments. Material disposed along each transect was initially estimated to spread up to 500 feet in width. Therefore, buffer areas of an additional 500 feet were incorporated between each placement lane to prevent encroachment of material from adjacent lanes.



**Dredge Essayons**

The source material used for this pilot project was dredged from Quadrant 4, located between River Mile 1.0 and 2.0 the MCR navigational channel, as part of the routine annual maintenance dredging. The dredged material has been evaluated and determined suitable for ocean disposal following the protocols of the Dredged Material Evaluation Framework-Lower Columbia River Management Area (USACE 1998). The navigational channel material was most recently characterized as clean sand to support the maintenance dredging of the authorized federal navigation project and the designation of new ODS off the MCR (USACE 2000). The source area material and native material were expected to have similar physical characteristics.

An ocean research permit was issued on September 13, 2005, by the U.S. Environmental Protection Agency (EPA) to the Port of Astoria, pursuant to Section 102 of the Marine Protection, Research, and Sanctuaries Act (MPRSA or Ocean Dumping Act). The permit allowed the use of enhanced disposal methodology to determine if thin-layer (2"-4" deep) disposal in the nearshore zone was feasible. The permit was issued based on the determination that enhanced disposal methodology has the potential to minimize temporal loss of benthic habitat and minimize impacts to economically important species (i.e. Dungeness crab). In addition, the EPA concluded in their Biological Assessment and Essential Fish Habitat Assessment, that the research project would 'not likely adversely affect' listed species under the Endangered Species Act (ESA) and would have negligent to minimal impact to managed species under the Magnuson-Stevens Act (MSA). The National Marine Fisheries Service and U.S. Fish and Wildlife Service concurred with EPA's Findings (USEPA 2005).

The placement of dredged material at the study site and concurrent monitoring efforts were conducted over a two-day period, September 14<sup>th</sup> and 15<sup>th</sup>, 2005, immediately following the issuance of the research permit. Section 2.0 describes the monitoring design and data collection methods that were conducted. The results of the dredged material disposal and monitoring results are provided in Section 3.0.

